Appendix 5.1.3.3A
Vegetation 2011 – 2013 Baseline Report

Vegetation
2011-2013 Baseline Report
Appendix 5.1.3.3A

newgold™

Blackwater Gold Project

November 2013 / AMEC VE52277

amec

Blackwater Gold Project

2013 Vegetation Baseline Report

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ACRONYMS

Abbreviations and Units of Measure	Definition
AMEC	AMEC Environment and Infrastructure
BC	British Columbia
BC *EAA*	*British Columbia Environmental Assessment Act*
BC CDC	British Columbia Conservation Data Centre
BC MFLNRO	British Columbia Ministry of Forests, Lands, and Natural Resource Operations
BC MOFR	British Columbia Ministry of Forests and Range
BCSEE	British Columbia Species and Ecosystem Explorer
BE	Biodiversity Emphasis
BEC	Biogeoclimatic Ecosystem Classification
BGC	Biogeoclimatic
CF	Cultivated Field
COSEWIC	Committee on the Status of Endangered Wildlife in Canada
ha	hectare
km	kilometre
LU	landscape unit
LSA	Local Study Area
m	metre
NDT	natural disturbance type
Proponent (the)	New Gold Inc.
Project (the)	Proposed Blackwater Gold Project
ROW	right-of-way
RSA	Regional Study Area
RZ	Road Surface
SARA	*Species at Risk Act*
SIL	Survey Level Intensity
TEM	Terrestrial Ecosystem Mapping
TRIM	Terrain Resource Information Management
VRI	Vegetation Resource Inventory
%	percent

GLOSSARY

At risk	A taxon that meets one or more of the following criteria: is listed in Schedule 1 of *SARA*; is Blue-listed in British Columbia; is Red-listed in British Columbia.
Blue-Listed Species	Any ecosystem or indigenous species, subspecies, or variety considered to be of special concern (formerly vulnerable) in British Columbia by the BC CDC.
Biogeoclimatic Unit	Refers to any of the following levels of biogeoclimatic ecosystem classification: zone, subzone, variant, or phase.
Committee on the Status of Endangered Wildlife in Canada (COSEWIC)	When *SARA* became law in 2003, COSEWIC became an independent body of experts responsible for identifying and assessing wildlife species considered to be at risk in Canada. It reports results to the Canadian government and public. Wildlife species designated by COSEWIC may qualify for legal protection and recovery under *SARA*.
Ecoregion	A lower level of classification within the Ecoregion Classification system. Ecoregion represents an area with major physiographic and minor macroclimatic or oceanographic variation, defined at the regional level.
Ecosection	A lower level of classification within the Ecoregion Classification system. Ecosection represents an area with minor physiographic and macroclimatic or oceanographic variation, defined at the sub-regional level.
Ecosystem Unit	Refers to a plant association or site series within a biogeoclimatic unit (zone, subzone, variant or phase).
Endangered Species	A wildlife species on Schedule 1 *of SARA* that is facing imminent extirpation or extinction.
Extinct	A species that no longer exists, with a global conservation status of GX.
Extirpated Species	A wildlife species on Schedule 1 *of SARA* that no longer exists in the wild in Canada, but exists elsewhere in the wild.
Global Rank	Global conservation status rank for an element, as determined by NatureServe, based on information provided by Natural Heritage Programs and Conservation Data Centres.
Invasive Plant	A plant that is non-native to British Columbia.
Landscape Unit	Landscape units are spatially identified areas of land used for long-term planning of resource management activities. Landscape units are important for designing strategies and objectives to maintain landscape level biodiversity and for managing other forest resources. Landscape units are also used to initiate landscape unit plans, which provide direction on biodiversity, old growth forest retention, wildlife habitat maintenance and timber harvesting.
NatureServe	An organization dedicated to providing reliable information on species and ecological communities for use in conservation and land use planning. NatureServe is an independent non-profit organization created in collaboration with the Network of Natural Heritage Programs and Conservation Data Centres and The Nature Conservancy (US). It represents an international network of biological inventories (known as natural heritage programs or conservation data centers) operating in all 50 US States, Canada, Latin America, and the Caribbean.

Noxious Species	Any weed designated by regulation to be noxious under the BC *Weed Control Act* (1996) and Regulations, administered by the BC Ministry of Agriculture and Lands.
Old Growth Forest	Old, structurally complex stands composed mainly of shade-tolerant and regenerating tree species. The age of old growth forests varies among BGC units.
Provincial Lists	List of elements considered to be either endangered or threatened (Red List), special concern (Blue List) or not at risk (Yellow List) in B.C.
Provincial Rank	Conservation status rank for an element occurring or formerly occurring in BC
Provincially Extirpated	Taxa that no longer exist in the wild in British Columbia, but do occur elsewhere.
Provincially Endangered	Taxa that are facing imminent extirpation or extinction in British Columbia.
Provincially Threatened	Taxa that are likely to become endangered in British Columbia if limiting factors are not reversed.
Red-Listed Species	Any ecosystem or indigenous species, subspecies, or variety that the BC CDC determines to be a candidate for Provincial extirpated, endangered, or threatened status in British Columbia.
Species at Risk Act (*SARA*)	This legislation represents a key commitment by the Government of Canada to prevent wildlife species from being extirpated or becoming extinct, to provide for the recovery of wildlife species that are extirpated, endangered, or threatened as a result of human activity, and to manage species of special concern to prevent them from becoming endangered or threatened.
Site Series	Site series refers to sites capable of producing the same mature or climax plant communities within a biogeoclimatic subzone or variant.
Species of Special Concern	A wildlife species that may become classified as threatened or endangered due to a combination of biological characteristics and identified threats.
Structural Stage	Describes the appearance of a stand or community; structural features and age criteria are considered; e.g., “structural stage 2d” refers to a dwarf shrub community, while “structural stage 6” refers to a mature forest stand.
Taxa/Taxon	A group of organisms at a particular taxonomic rank, such as genus, species, or subspecies (taxa when plural; taxon when singular).
Threatened Species	A wildlife species on Schedule 1 *of SARA* that is likely to become endangered if nothing is done to reverse the factors leading to its extirpation or extinction.
Zone	Biogeoclimatic zones are generalized units representing extensive areas of broadly homogeneous macroclimates.
Subzone	Biogeoclimatic zones are subdivided into subzones based on climatic and geographic variations, such as slightly drier, wetter, snowier, or warmer than other areas within a zone.
Variant	Biogeoclimatic subzones are further subdivided into variants based on geographic variations, such as Kluskus versus Stuart area.

EXECUTIVE SUMMARY

This report provides descriptions, interpretations, and maps for the baseline condition of upland vegetation occurring within the local study areas (LSAs) and regional study area (RSA) of New Gold's (the proponent) Project. Wetlands are dealt with exclusively within the Wetland Baseline Report (AMEC 2013). Project components in the LSA include: mine site, mine site access road, fresh water supply system (water intake, pipeline and fresh water reservoir), airstrip, transmission line (including two re-route options: Mills Ranch and Stellako), and existing Kluskus Forest Service Road (FSR). The vegetation baseline study reports on upland vegetation resources, and includes information on ecosystem distribution, ecosystems at risk, sensitive ecosystems (riparian, old growth forest and sparsely vegetated), plant species at risk and invasive plants.

The baseline information was compiled using the results of field sampling programs conducted by AMEC Environment and Infrastructure (AMEC), literature reviews, interpretation of aerial photography and existing mapping information. The baseline compilation and mapping incorporated the applicable methods for interpretation of Terrestrial Ecosystem Mapping in BC and utilized existing Predictive Ecosystem Mapping and Vegetation Resource Information data.

In support of this baseline report, AMEC conducted seven field programs over a period of three years, from July 2011 to July 2013. This included three terrestrial ecosystem mapping (TEM) and four species at risk surveys. In total, 492 field inspections were completed; 363 within the LSA, 71 within the RSA and 58 outside of the RSA.

The Project LSAs combined are approximately 14,000 ha and spans two ecoregions, the Fraser Plateau and Fraser Basin; and three ecosections, the Nazko Upland, Bulkley Basin and Nechako Lowland. There are six biogeoclimatic (BGC) variants within the project LSA.

1. SBSdk (Dry Cool Sub-Boreal Spruce subzone);
2. SBSdw3 (Stuart Dry Warm Sub-Boreal Spruce variant);
3. SBSmc2 (Babine Moist Cold Sub-Boreal Spruce variant);
4. SBSmc3 (Kluskus Moist Cold Sub-Boreal Spruce variant);
5. ESSFmv1 (Nechako Moist Very Cold Engelmann Spruce-Subalpine Fir variant); and
6. ESSFmvp (Nechako Moist Very Cold Engelmann Spruce-Subalpine Fir Parkland variant).

The mine site LSA is characterized by mountainous topography; Mt. Davidson being the highest point. The relief is moderately steep with an overall northerly aspect descending to Davidson Creek. Three biogeoclimatic (BGC) variants occur within the proposed mine site

LSA, listed from highest percent area to lowest: ESSFmv1, SBSmc3, and ESSFmv1p. The SBSmc3 and SBSdk occur within the proposed fresh water supply system LSA. The SBSmc3 occurs exclusively within the proposed mine access road LSA. The SBSmc3 and SBSmc2 occur within the proposed airstrip.

The proposed transmission line LSA is a long (approximately 133 km) corridor and runs northwards from the mine site towards Endako, it is represented by the: SBSdk, SBSmc3, SBSdw3, SBSmc2, and ESSFmv1 BGC units, listed from highest percent area to lowest. The existing Kluskus Forest Service Road LSA traverses the same BGC units as the transmission line; however, the SBSmc3 has the largest area followed by, in decreasing order: SBSdk, SBSdw3, ESSFmv1, and SBSmc2.

The proposed mine site occurs in a landscape that is primarily high elevation forest with limited forestry activity (cutblocks and roads). Lower elevation areas have been extensively logged where evidence of mountain pine beetle is prevalent. The most abundant upland ecosystem within the proposed mine site LSA is the ESSFmv1 Subalpine fir - Rhododendron-Feathermoss (01/FR) ecosystem with a total of 1,829 ha (34%). Subalpine fir (*Abies lasiocarpa*) is by far the most abundant tree species in the canopy of this ecosystem. Engelmann spruce (*Picea engelmannii*), and lodgepole pine (*Pinus contorta* var. *latifolia*) are also present. White-flowered rhododendron (*Rhododendron albiflorum*) is a very common shrub in the understory, while five-leaved bramble (*Rubus pedatus*) and blueberries (*Vaccinium scoparium*, *V. caespitosum*) are common dwarf shrubs. The drier Subalpine fir - Huckleberry - Feathermoss (03/FF) is the second most common ecosystem in the mine site LSA with at total of 754 ha (14%). The SBSmc3 occupies a smaller area than the ESSFmv1. The Lodgepole pine - Feathermoss - Cladina (01/SB) covers a total of 615 ha (12%). Moist sites, such as those that support gooseberries (*Ribes species*) and twinberry (*Lonicera involucrata*) occur throughout the area, but tend to be less extensive and restricted to lower slope - moisture receiving areas.

Linear Project components occur mainly north of the mine site LSA and occupy lower elevations. The proposed fresh water supply system and mine site access road LSA are dominated by the mesic Hybrid white spruce - Huckleberry (SBSmc3 - 01/SB) ecosystem. While the Airstrip LSA is dominated by the dry Lodgepole pine - Feathermoss - Cladina (SBSmc3 03/LF) ecosystem and has a total of 41 ha (21%). Other common sites are the nutrient-poor black spruce (*Picea mariana*) forests (SBSmc3 - 05/BF) and the moist Hybrid white spruce - Twinberry (SBSmc3 - 07/ST) ecosystem.

The entire length of the transmission line traverses a variety of BGC units as well as individual ecosystems. As a result there is a greater diversity of ecosystems that occur within this LSA. The overall landscape includes a mixture of rural landscapes, forestry activity, roads; quarries and cultivated fields. The most common ecosystem is the Hybrid white spruce - Purple peavine (SBSdk - 01/SP) with a total of 685 ha (17%). The Kluskus forestry service road (FSR) is an existing road that intersects a variety of BGC units and as

a result also has a variety of ecosystems; the Hybrid white spruce - Huckleberry (SBSmc3 - 01/SB) is the most common with a total of 492 ha (22%).

In total ten ecosystems at risk were mapped in the Project LSA and twelve in the RSA, all of which occur in either the SBSdk and SBSdw3. As a result the project components that support ecosystems at risk are the: transmission line, Stellako reroute, Mills Ranch reroute and Kluskus FSR LSAs.

Sensitive ecosystems in the Project LSA include riparian, old growth forest, and sparsely vegetated areas. Riparian areas and old growth forest are present in all project components whereas sparsely vegetated areas only occur in the mine site LSA. Old growth objectives are implemented base on landscape units (LUs). There are 9 LUs that occur in the project LSA; four of which have intermediate biodiversity emphasis (BE) and five of which have low BE. The mine site LSA lies predominantly, 6,107 ha (99%) within the Tatelkuz LU and 19 ha (<1%) within the Blackwater LU, both have intermediate biodiversity emphasis.

Sparsely vegetated ecosystems such as talus, and rock outcrops are extremely uncommon and only occur within the upper elevations of the mine site LSA. Talus occurs in the parkland and rock outcrop occurrences are few and are patchily distributed at the upper elevation of the ESSFmv1. In total, sparsely vegetated ecosystems represent less than 1% of the mine site LSA.

Five plant species at risk were documented within the Project area: whitebark pine (*Pinus albicaulis*), meesia moss (*Meesia longiseta*), sickleleaf tomentypnum moss (*Tomentypnum falcifolium*), small-flowered lousewort (*Pedicularis parviflora subsp. parviflora*) and swollen beaked sedge (*Carex rostrata*). Whitebark pine, sickleleaf tomentypnum moss, small-flowered lousewort and meesia moss are found within the mine site LSA. Swollen beaked sedge and meesia moss occur within the mine site access road LSA and swollen beaked sedge occurs in the transmission line LSA. All of the confirmed plant species at risk are found in wetlands with the exception of whitebark pine.

The Invasive Alien Plant Program (IAPP) identified a total of 232 records and 24 invasive plant species that occur within 20 km of the RSA. In addition field surveys recorded both yellow salsify (*Tragopogon dubius*) and orange hawkweed (*Hieracium aurantiacum*). This information will be used to prepare an Invasive Species Management Plan.

The RSA is one continuous boundary surrounding all the proposed features of the Project and totals approximately 31,000 ha, of which 25,465 ha (94%) are upland ecosystems and 1,664 (6%) are non-vegetated, sparsely vegetated or anthropogenic. In total, 376 ha (1%) are upland ecosystems at risk. The same BGC units that occur in the LSA also occur in the RSA; however, the Undifferentiated Boreal Altai Fescue Alpine (BAFAun) subzone occurs in the southern portion of the RSA.

Twelve of the 13 potentially occurring ecosystems at risk were mapped and there is a total of approximately 376 ha (1%) ecosystems at risk in the RSA. A small portion of the RSA has

a high biodiversity emphasis rating with a total of 1,832 ha (6%). Most of the RSA occupies landscape units that have been rated intermediate with a total of 20,956 ha (68%). The low biodiversity emphasis rated landscape units have a combined total of 7,860 ha (26%). Riparian area covers a total of 3,645 ha (12%), old growth forest covers a total of 4,857 ha (16%) and sparsely vegetated including cliff, talus and rock outcrop covers less than 1%.

1.0 INTRODUCTION

This report presents the baseline vegetation condition for upland vegetation resources of the proposed Blackwater Gold Project (the Project). The baseline discussion provides detailed descriptions and mapping of upland vegetation. The baseline conditions are presented for each of the Project components including the proposed mine site, fresh water supply system (water intake, pipeline and fresh water reservoir), mine site access road, airstrip, transmission line (including two re-route options, Mills Ranch and Stellako), and existing Kluskus Forest Service Road (FSR). The results of field sampling programs and ecosystem mapping within the Project study area are presented.

The Wetland Baseline Report dealing with wetland ecosystems and function is a separate report (Wetland Baseline Report, AMEC, 2013). Metal analysis and bioaccumulation of metals in plant tissue is presented in the Environmental Health Baseline Report (Environmental Health Baseline Report, AMEC, 2013).

1.1 Project Area

The Project area is the collective term for the local study area (LSA) and regional study area (RSA) of the proposed mine site and associated components: fresh water supply system, mine access road, airstrip, transmission line (including two re-route options), and existing Kluskus Forest Service Road (FSR).

The mine site LSA includes the proposed mine site and a buffer zone of 500 m around the proposed mine site. The LSAs of all proposed linear features: fresh water supply system, mine access road, airstrip, transmission line, and Kluskus FSR extend 100 m beyond their corridors in either direction (240 m total). The corridor is the area defined as right-of-way (ROW) plus 50 m buffer. The LSA of the existing Kluskus FSR extends 100 m beyond the right-of-way in either direction. The various LSAs are meant to circumscribe the boundaries of the potential effects of the proposed Project components, including a buffer zone. They encapsulate any predicted contiguous effects from activities that may cause disturbance to the upland environment surrounding the proposed mine site and other Project components. The combined LSA is approximately 14,000 ha.

The RSA is a contiguous boundary around all the component LSAs. It is delineated using a 3 kilometre (km) buffer around the mine site and extends 500 m on either side of the ROW of all linear features including the fresh water supply system, mine access road, airstrip, transmission line, and Kluskus FSR. Refer to **Table 1.1-1** and **Figure 1.1-1** for summaries and depictions of the Project LSAs and RSAs. The RSA encompasses all the project components and is approximately 31,000 ha.

Table 1.1-1: Summary of Local and Regional Project Area Boundaries

Project Component	ROW (estimate)	Corridor	Local Study Area (LSA)	Regional Study Area (RSA)
Mine Site	n/a	n/a	500 m from mine footprint	3 km from mine footprint
Water Pipeline	20 m	100 m (50 m either side of ROW)	200 m (100 m either side of corridor)	1 km (500 m either side of corridor)
Mine Access Road	20 m	100 m (50 m either side of ROW)	200 m (100 m either side of corridor)	1 km (500 m either side of corridor)
Airstrip and Airstrip Access Road	20 m	100 m (50 m either side of ROW)	200 m (100 m either side of corridor)	1 km (500 m either side of corridor)
Transmission Line	40 m	100 m (50 m either side of ROW)	200 m (100 m either side of corridor)	1 km (500 m either side of corridor)
Kluskus FSR	20 m	100 m (50 m either side of ROW)	200 m (100 m either side of corridor)	1 km (500 m either side of corridor)

Note: N/A = not applicable

320000 360000 400000 440000

6000000 5960000 5920000 5880000

N

Ellis Island Ecological Reserve
Drywilliam Lake Ecological Reserve
Beamont Provincial Park
Endako
Stellako
Fraser Lake
Nadleh Whuten
Fort Fraser
Nechako River
Engen
Vanderhoof
Stuart River Park
Stuart River
Weneez
Sinkut River
Saik'uz
Nulki
Nulki Lake
Mapes
Cluculz Lake
Cluculz Creek
Khai
Sinkut River
Corkscrew
Stony
Tachick Lake
Smith Creek
Nechako River
Tahultzu Lake
Hallett Lake
Deer Creek
Targe Creek
Knapp Creek
Cheslatta River
Cheslatta
Bird Creek
Proposed Transmission Line
(Stellako Reroute)
François Lake
Cheslatta Carrier
Danskin
Skin Tyee
Uncha Mountains Red Hills Park
Francois Lake Park
Francois Lake Protected Area
Nithi River
Uncha Lake
Takysie Creek
Binta Lake
Proposed Transmission Line
Kluskus FSR
Meridian Road (Vanderhoof) Ecological Reserve
Nechako Canyon Protected Area
Lucas Lake
Lucas Creek
Knewstubb Lake
Big Bend Creek
Finger Lake
Tatuk Lake
Finger Tatuk Park
Chilako River Ecological Reserve
Chilako River
Natalkuz Lake (Nechako Reservoir)
Tetachuck River
Entiako River
Proposed Transmission Line
(Mills Ranch Reroute)
Chedakuz Creek
Kluskus-Ootsa FSR
Proposed Airstrip
Entiako Park
Entiako Lake
Top Lake
Tatelkuz Lake
Proposed Fresh Water Supply System
Kluskus-Blue FSR
Exploration Road
Proposed Mine Access Road
Fawnie Creek
Johnny Lake
Moose Lake
Kuyakuz Lake
Euchiniko Lakes
Kluskoil Lake Park
Nazko
Kluskus
West Road (Blackwater)
Tsacha
Batnuni Lake
Taiuk Creek
Euchiniko River
Nataniko Creek
Euchiniko
Baezaeko

Legend

- Populated Place
- Highway
- Kluskus FSR
- Kluskus-Blue FSR
- Kluskus-Ootsa FSR
- Exploration Road
- Existing Transmission Line
- Stream (>= 4th Order)
- Waterbody (>= 100 Ha)
- Parks & Protected Areas
- Proposed Mine Access Road
- Proposed Water Pipeline Route
- Proposed Transmission Line
- Proposed Transmission Line (Stellako Reroute)
- Proposed Transmission Line (Mills Ranch Reroute)
- Proposed Airstrip
- Proposed Mine Site

Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area

Scale: 1:500,000
0 5 10 20
Kilometres

Reference
BC Government GeoBC Data Distribution

CLIENT: newgold

PROJECT: Blackwater Gold Project

Local and Regional Study Areas Blackwater Gold Project

DATE: October, 2013	ANALYST: MY	**Figure** 1.1-1
JOB No: VE52277	QA/QC: LR	PDF FILE: 06-100-001_v18_terr_SA.pdf
GIS FILE: 06-100-001_v18_terr_SA.mxd		
PROJECTION: UTM Zone 10	DATUM: NAD83	amec

Y:\GIS\Projects\VE\VE52095_Richfield_Blackwater\Mapping\06_vegetation\Baseline\06-100-001_v18_terr_SA.mxd

1.2 Scope of Work

The scope of the vegetation program includes: field surveys for the purposes of verifying ecosystem types; ground verification for mapping; documenting plant species and ecological communities at risk; collecting plant and soil samples for conducting metal uptake analysis; identifying areas with high vascular plant diversity; and identifying invasive plants. Surveys were required to classify and describe the ecosystems occurring in the study areas. This information was used to interpret ecosystems using imagery such as aerial photography and satellite imagery. Final ecosystem maps were generated that can be used to interpret the distribution of ecosystems, ecological communities at risk, sensitive ecosystems, and wildlife habitat.

1.3 Objectives

The Project has the potential to alter ecosystems and the composition, abundance, and structure of plant species within the Project area. As such, the Project is subject to the requirements of the *Species at Risk Act* (*SARA*) (GOC, 2002), and the *Weed Act* (GOC, 1996). The objectives of the vegetation studies were to determine:

- the types and distribution of ecosystems;
- potential and documented ecological communities at risk;
- sensitive ecosystems, such as old growth forest;
- potential and documented plant species at risk; and
- distribution of invasive plants.

2.0 METHODS

2.1 Information Sources

A review of existing information was conducted and primary information sources are listed below. Field surveys, site inspection took place in July 2011, August 2011, July 2012 and July 2013.

2.1.1 Primary Information Sources

- BC Species and Ecosystem Explorer (BC Conservation Data Centre (BC CDC), 2013);
- E-Flora BC (Klinkenberg, 2013);
- Predictive ecosystem mapping (Timberline 2001a, 2001b);
- Biogeoclimatic Line Work Version 8 (Data BC, 2012);
- Endangered Species And Ecosystems – Non-Confidential Occurrences (DataBC, 2013a);

- Endangered Species and Ecosystems – Masked (Confidential) Occurrences (DataBC, 2013b);
- Digital Terrain Resource Information Management (DataBC, 2013c);
- Vanderhoof Land and Resource Management Plan (BC Ministry of Environment, Lands and Parks (BC MELP), 1997);
- Ecological Reports Catalogue (BC Ministry of Environment (BC MOE), 2013a);
- Cross-Linked Information Resources (BC MOE, 2013b);
- The invasive Alien Plant Program (BC Ministry of Forests, Lands and Natural Resource Operations (BC MFLNRO), 2013a);
- Vegetation resource inventory (BC MFLNRO, 2013b);
- Field Guide to Noxious and Other Selected Weeds of BC (Ministry of Agriculture, 2013);
- Northwest Invasive Plant Council 2012 Strategic Plan and Plant Profiles (Northwest Invasive Plant Council, 2012); and
- Cariboo Chilcotin Coast Invasive Plant Committee 2012 Regional Strategic Plan (Cariboo Chilcotin Coast Invasive Plant Committee, 2012).

2.1.2 Regulatory Setting and Administrative Boundaries

The vegetation section is included as a requirement of the BC *Environmental Assessment Act* (BC *EAA*) (Government of BC, 2002). Assessment of vegetation is also considered within the BC *Mines Act* (Government of BC, 1996). This baseline fulfills the part of New Gold's (proponent) responsibilities outlined in the BC *EAA* and *Mines Act* for the Project.

Plant species at risk are listed federally under Schedule 1 of the *SARA* Schedule 1 (Government of Canada, 2002), as recommended by the Committee on the Status of Endangered Wildlife in Canada (COSEWIC, 2010).

The BC CDC recognizes ecological communities at risk; however, no legislation supports this policy. Invasive plant designation and legislation are addressed by the BC Ministry of Agriculture *Weed Control Act* (Government of British Columbia, 2011), and the BC Ministry of Forests, Lands, and Natural Resource Operations (BC MFLNRO) *Forest and Range Practices Act*. Legal protection for riparian areas in BC include: the British Columbia Environmental Assessment Act (BC EAA) and the Forest Practices Code of BC Act (FRPC; Stevens, 1995).

2.2 Methods for Data Collection and Data Analysis

Ecosystem classification and mapping were based on the Standards for Terrestrial Ecosystem Mapping in British Columbia (RIC, 1998) and data collection was based on the principles and methods outlined by the Field Manual for Describing Terrestrial Ecosystems (BC Ministry of Forests and Range, 2010).

Based on the Standards for Terrestrial Ecosystem Mapping in British Columbia (RIC, 1998), three different survey intensity levels (SIL) were used to assist the ecosystem mapping process (**Table 2.2-1**). The mine site was given the highest SIL due to the degree of disturbance anticipated in the area; SIL-3 or 26% to 50% of polygon inspection. Whereas for linear components, such as the water pipeline and transmission line, where less disturbance was anticipated, SIL-5 or 5% to 14% polygon inspection. For existing linear components such as the Kluskus Forest Service Road (FSR) where very limited disturbance was anticipated due to a possible re-alignment upgrade, reconnaissance level survey or 0% to 4% of polygon inspection. Ecosystem mapping was completed at a scale of 1:5,000 for all project components with the exception of the existing Kluskus FSR, which used 1:20,000 scale Predictive Ecosystem Mapping (PEM).

The actual number of inspections or plots established were based on the number of polygons mapped. Average polygon size was determined to be approximately 5 ha. Generally polygons were restricted to a minimum of 0.5 ha unless a specific feature, such as a sensitive ecosystem, needed to be captured.

Table 2.2-1: Target Sampling Intensity Levels for Ecosystem Mapping

Sampling Intensity Level	Percentage of Polygons Inspected
3	26% to 50%
5	5% to 14%
R	0% to 4%

2.2.1 Field Survey

Six field surveys were conducted over a three-year period (2011 to 2013) to collect vegetation, site, and ecosystem information to assist in the mapping of the proposed study areas. The data was used to classify and describe ecosystems, and survey for plant species and ecosystems at risk and invasive plant species. A preliminary sampling plan was developed before the commencement of fieldwork each year. Survey plots completed in 2011 were focused on collecting data from the mine site LSA. The subsequent field survey in 2012 focused on collecting data from the proposed water pipeline, transmission line, and access road. The final field survey in 2013 focused on collecting data from the revised, added or expanded mine site, proposed mine access road, airstrip and transmission line.

Provincial standards (Resource Inventory Committee (RIC), 1998) distinguish three types of field inspections depending on the level of detail: full plots, ground inspection, and visual checks. Full plots are comprehensive plots that record detailed site, vegetation, soils, and terrain information. Plots are based approximately on a 10 m x 10 m area but the actual dimensions can vary depending on the type of ecosystem being inspected. Data was recorded on Ecosystem Field Form FS882, which consists of three subforms: site, vegetation, and soil. Ground inspection forms are an abbreviated version of the full plot forms; a two-page form that collects pertinent site, detailed vegetation, and limited soils information. In 2012, the ground inspection form was replaced by the newer Site Visit Form

(SIVI), which provides more space for detailed vegetation data. Visual checks are quick inspections completed as either a ground or an air call, recording essential information only (e.g., ecosystem type).

The structure of the plant communities was evaluated by estimating the percentage cover of each species by layer (e.g., moss/lichen/seedling, herb, low shrub, tall shrub, subcanopy, and main canopy) for both Full and Ground or SIVI plots. All data collection was based on the Field Manual for Describing Terrestrial Ecosystems (BC Ministry of Forests and Range, 2010). A summary of each field inspection type is provided in **Table 2.2-2**.

Table 2.2-2: Summary of Field Inspection Types Undertaken in the Project Study Area

Full Plot	Ground Inspection	Visual Check
Ecosystem Field Form (FS882)	Ground Inspection Form (GIF)	Visual Checks (brief notes)
Full plots include detailed descriptions of site, soil and vegetation.	Ground inspections are less detailed than full plots, but more detailed than visual checks.	Visual checks are intended to be quick inspections for mapping purposes.
For example: • Site: aspect, slope, elevation, UTM coordinates, SMR, SNR, structural stage, site diagram, ecosystem unit classification, surface topography, surface substrate • Soils: pits are 30 cm to 100 cm deep. Requires full soil classification and examination by soil horizons (organic horizons, mineral horizons, rooting depth, drainage, and texture). • Vegetation: species and percent cover of species by layer and percent cover by layer.	For example: • Site: aspect, slope, elevation, UTM coordinates, SMR, SNR, structural stage, and ecosystem unit classification. • Soils: pits are most often 10 cm to 30 cm deep, sufficient to determine essential characteristics such as texture and drainage. • Vegetation: species and percent cover of species by layer and percent cover by layer.	For example: • Visual checks can be referenced by UTM coordinates. Usually elevation, slope, aspect and an ecosystem summary of the polygon is recorded.

Note: SMR = soil moisture regime, SNR = soil nutrient regime; UTM = universal transverse mercator.
Source: RIC, 1998.

2.2.2 Ecosystem Mapping Methods

Ecosystem mapping is a hierarchical approach which combines ecosections (Demarchi, 2011), biogeoclimatic (BGC) units: zones, subzones, and variants, and ecosystem units. It is the stratification of a landscape into ecosystem units according to a combination of ecological features such as: climate, physiography, surficial material, bedrock geology, soil, and vegetation (RIC, 1998). An ecosystem unit combines site series or site associations, site modifiers (denotes site conditions), and structural stages. The landscape is delineated into polygons and each polygon can contain up to three ecosystem units each denoted by a decile (percent of polygon).

Given the complexity and extent of the Project area, ecosystem mapping methods varied depending upon the project component. The mine site and water pipeline were mapped using a standard TEM approach based on bioterrain and three-dimensional (3D) aerial photograph interpretation. The transmission line and access road were mapped using a modified TEM approach. The Kluskus FSR was mapped using a combination of PEM and VRI with available imagery. Detailed methods are provided in the immediate sections that follow.

2.2.2.1 Mine Site, Mine Site Access Road, Fresh Water Supply System, and Airstrip

The most current (2011) high resolution digital aerial photography and laser imaging detection and ranging (LIDAR) were available for the entire extent of the mine site, fresh water supply system, airstrip and mine site access road LSAs and RSAs. The chosen mapping method (TEM) was followed to provincial standards and guidelines.

Map units were delineated with 3D aerial photograph interpretation using a 3D software program (DAT/EM's Summit Evolution). Digital aerial photograph models are processed and loaded into the 3D mapping program, which allows the photo interpreter to see the landscape in 3D and delineate ecosystems into polygons.

The first step delineates geomorphological terrain features using high resolution LIDAR imagery. Examples of terrain features include morainal blanket (Mb), glaciofluvial terrace ($F^{G}t$), and colluvial veneer (Cv). Once the terrain mapper has delineated and attributed the bioterrain polygons, an ecosystem mapper views the aerial photographs in 3D to further refine the polygons based on ecological features such as slope, aspect, soil moisture, soil nutrient, slope position, and vegetation. Each polygon is attributed with up to three ecosystem components each represented by a decile to indicate percent cover. BGC zone lines are refined based on plot data collected in the field. The TEM map legend is provided in **Annex 1**.

2.2.2.2 Transmission Line

Modified ecosystem mapping was completed for the proposed transmission line study area, using the best available imagery; satellite imagery with digital 50 cm colour precision ortho photo, 1 m digital elevation model (DEM) and 1 m digital terrain model (DTM) per km^2, (August 2012). Satellite imagery does not provide a 3D platform for photo interpretation; therefore, ecosystem mapping was completed in a 2D setting using ArcMap. To provide a visual representation of relief in order to verify slope position, slope, and aspect, a model was created. The slope-aspect model provides a visual representation of relief using colour hues and saturation to depict aspect and slope on a 2D map (Brewer and Marlow, 1993). Three slope categories were mapped with differences in saturation, and near flat slopes were mapped with gray for all aspects. Lightness sequences were used to approximate relief shading. The detailed mapping procedure is outlined as follows.

Current high-resolution digital aerial photography was not available; however, older (1953 and 2000) low-resolution hardcopy photography was available. A draft bioterrain map was created using the hardcopy photography to manually delineate bioterrain features. The bioterrain line work was then transferred digitally to ArcMap.

Existing Predictive Ecosystem Mapping (PEM) conducted by Timberline (2001a; 2001b) covered all of the proposed transmission line. Using the bioterrain polygons as a polygon base, the polygons were attributed and labelled using PEM as a guide. Vegetation resource inventory (VRI) (BC MFLNRO, 2013b) data, such as age class, were used to determine the structural stage associated with forested polygon ecosystems. The VRI data also provided information on tree species and presence of wetlands, herb, and shrub communities. The satellite imagery provided sufficient detail to distinguish non-forested, forested, vegetated, non-vegetated, herbaceous, and shrub-dominated sites.

2.2.2.3 Kluskus Forest Service Road

The proposed mine site access road departs from the main Kluskus FSR at approximately the 120 km post, and heads directly south to the proposed mine site. The majority of the Kluskus FSR was mapped using existing PEM in combination with satellite and web-based imagery where available and VRI data. With respect to PEM reliability, the Timberline report states “average knowledge base accuracy of all BGC units was 94.5%” based on 355 point samples (Timberline, 2001). For the portions of the road where PEM was not available (i.e, the last 20 km at the north end of the Kluskus FSR), polygon lines were delineated and digitized in 2D using ArcMap, and attributed using the imagery and VRI data.

2.2.3 Ecosystem Distribution

The Biogeoclimatic Ecosystem Classification (BEC) (Meidinger and Pojar, 1991) is the basis for ecosystem classification in BC. The classification of site series is primarily influenced by regional climate and local site conditions. Site series that have the potential to produce a similar distinct climax or near-climax plant association because of a shared regional (zonal) climate are assigned to the same site series. However, a site series may also produce a similar climax or near-climax plant association, not because of a shared zonal climate, but because of other similar abiotic conditions, such as soil texture, soil moisture, soil nutrient, site position, slope percent, and aspect (e.g., warm or cool). Land Management Handbook 24 (LMH) (DeLong et al., 1993) provides a framework for organizing ecological data, and assisted the classification of ecosystems into site series. The LMH was used to classify site series in the Project area. (DeLong et al., 1993).

Site Series are classified on a micro-scale level based on a meso-slope position. Meso-slope position refers to the position of an ecosystem relative to the localized catchment area (BC MOFR and BC MOE, 2010). A site on a small topographic crest that is convex and shedding water will be a markedly different type of ecosystem than one occurring mid-slope, or one in a depression that is concave in all directions. Information on meso-slope position,

soil moisture regime, soil nutrient regime, soil drainage, soil depth, percent slope, aspect, and parent material are synthesised to identify ecosystems at a site level.

Ecosystem mapping is the delineation of the landscape into polygons which represent up to three ecosystem units. An ecosystem unit combines site series, site modifiers (denotes site conditions), and structural stages (related to age class and structural complexity). See map legend in **Annex 1** for a complete definition of site modifiers and structural stages.

Once all polygons were attributed, the area in hectares of each ecosystem was quantified using ArcMap and ACCESS to calculate the number of hectares of each ecosystem unit. The final ecosystem map shows the baseline distribution of ecosystems across the landscape for all project component LSAs and the RSA.

2.2.4 Ecosystems At Risk

The BC CDC (2013) defines an ecological community at risk as a community that is extirpated, endangered, threatened, or of special concern (Red- or Blue-listed; BC CDC, 2013). Similar to some plant species at risk, ecological communities have no legislated status. All ecological communities at risk (from herein referred to as ecosystems at risk), were documented by field crews following standard protocols for describing upland ecosystems (BC MOFR and BC MOE, 2010).

The BC CDC maps known locations of Red- and Blue-listed species and ecological communities. Detailed records are compiled for each known “Element Occurrence.” The BC CDC database is based on “best-known” information. The addition and upkeep of records is an ongoing process. The absence of recorded occurrences in the Project area does not necessarily mean there are no species or ecosystems at risk present, only that no species or ecosystems are currently recorded in the BC CDC database. A detailed assessment of the Project study area conducted during the appropriate season was used to confirm presence of ecosystems at risk. For the purposes of this assessment only upland ecosystems at risk were reported. As mentioned in Section 1.0 above, wetlands including wetland ecosystems at risk are presented in the Wetland Baseline Report.

2.2.5 Sensitive Ecosystems

Sensitive ecosystems are ecologically fragile or at-risk portions of the landscape that provide critical areas of high conservation value. Ecological fragility is a measure of an ecosystem’s sensitivity to a range of disturbance factors potentially leading to the decline or loss of ecosystem health or integrity (Iverson et al., 2008). These factors include direct physical impacts, introduction and spread of invasive plant species, or fragmentation of the ecosystem.

High biological diversity (i.e., the ecosystem supports a large variety of plant and animal species) is a common feature of sensitive ecosystems. Sensitive ecosystems are also

critical, specialized habitats for many species of plants and animals. These communities provide wildlife habitat, wildlife corridors, and linkages between natural areas, allowing wildlife species to utilize a variety of different habitats and to move between them.

Sensitive ecosystems vary from region to region, according to their natural distribution. Initially, the rationale for mapping sensitive ecosystems in BC originated in regions where anthropogenic development pressures and expanding human population pressures are extreme, such as east Vancouver Island and the Gulf Islands (Ward et al., 1998), and the Okanagan Valley (Iverson et al., 2008). However, the concept of sensitive ecosystems applies to the entire province of BC wherever development pressures are increasing and cumulative. Sensitive ecosystems include riparian, old growth forests, and sparsely vegetated area (e.g. cliff, rock outcrop, and talus).

2.2.5.1 Riparian

Riparian areas are corridors that occupy the area or shoreline adjacent to streams, lakes and wetlands that develop a typically rich and diverse array of vegetation. In addition to contributing to biodiversity, riparian areas provide bank stability, connective corridors within a landscape, and are an important source of coarse woody debris and nutrient input for aquatic ecosystems (Banner and MacKenzie, 1998). Riparian areas rely on adjacent upland habitat to support these important ecological functions. Because these functions are generally found within one tree height of a stream (Sevens et al, 1995), a buffer of 30 m assumed average tree height in LSA, has been applied. Therefore, for the purposes of depicting riparian areas on the ecosystem maps, TEM & PEM polygons containing greater than 50% wetland ecosystems were buffered by 30 m, as well as, TRIM features (i.e. rivers, streams, lakes, marshes and swamps). It also included the following riparian floodplain associations: Drummond's willow - Bluejoint (Fl05), Black cottonwood - Dogwood - Prickly rose (08/CD), low bench shrub floodplain (LU) and low bench sedge herb floodplain (LO).

2.2.5.2 Old Growth Forests

The age of old growth forests varies from one BGC unit to another. Forests that occur in areas where stand-initiating events are frequent have shorter intervals since their last disturbance, and old growth forests in these areas are generally older than 140 years. The time since last disturbance in stands with infrequent stand-initiating events is greater, and old growth forests in these areas are generally older than 250 years old. **Table 2.2-3** summarizes old growth forest classifications by BGC unit.

Table 2.2-3: Table Showing the Relationship Between BGC Unit and Old Growth Forest

Group	BGC Unit	Old Growth Forest
A	SBSdk, SBSdw3, SBSmc2, SBSmc3	>140 years
B	ESSFmv1, ESSFmv1p	>250 years

Notes: BGC = Biogeoclimatic Unit; SBSdk = Sub-Boreal Spruce Dry Cold; SBSdw3 = Sub-Boreal Spruce Dry Warm Stuart variant; SBSmc2 = Sub-Boreal Spruce Moist Cold Babine variant; SBSmc3 = Sub-Boreal Spruce Moist Cold Kluskus variant; ESSFmv1 = Engelmann Spruce-Subalpine Fir Moist Very Cold variant; and ESSFmvp = Engelmann Spruce-Subalpine Fir Moist Very Cold Nechako Parkland variant.

The 2004 Provincial Non-spatial Old Growth Objectives (BC ILMB, 2004) establishes non-spatial old growth forest retention objectives. The Order identifies the amount of old growth forest to be retained by BGC variant within each LU. Targets apply to natural disturbance types (NDTs) which are assigned to each biogeoclimatic variant. Retention targets are considered as general guidance rather than firm thresholds given that the non-spatial order applies to forest licensees and not necessarily other crown land tenure holders.

The amount of old growth forest in each of the project component LSAs was calculated based on the ecosystem map. In TEM, structural stage 7 represents old forest; therefore, ecosystem units mapped as structural stage 7 were selected to represent old growth forest. Structural stage was cross-referenced with VRI to validate the structural stage attribute.

The Kluskus FSR was based on PEM not TEM, and structural stage designations was not available for each ecosystem unit. The structural stage for the PEM portion was determined by intersecting each PEM polygon with a VRI polygon thus linking the required age class attribute. In VRI age class 8 represents 141 to 250 years, and age class 9 represents 251 plus years. Once age class was associated with each polygon, the age class was verified using the latest imagery available and converted to structural stage to provide a seamless map product for the Project area.

2.2.5.3 Sparsely Vegetated

Sparsely vegetated ecosystems are defined as areas where rock or talus limits vegetation establishment; vegetation cover is discontinuous and interspersed with bedrock or rock outcrops (Iverson et al., 2008). These include talus, cliff, and rock outcrops.

2.2.6 Plant Species At Risk

Plant species at risk are commonly referred to as “rare plants,” but for this report the term “plant species at risk” is used. The rationale for this is that not all rare plants are at risk, and neither are all plant species at risk rare. Common and abundant plant species may experience rapid population declines and negative trends in population size and number, and therefore be deemed at risk. Alternatively, a rare plant may have stable populations that are not threatened or declining, and therefore not be at risk. To that end, for the purposes of this report, plant species at risk are defined as:

- vascular and non-vascular species listed by the BC CDC that are Red- or Blue-listed (BC CDC, 2013); and
- species listed as special concern, threatened, or endangered under Schedule 1 of the federal *SARA* (Government of Canada, 2002).

Desktop

A two-pronged approach to identify plant species at risk potentially occurring in the Project area was applied, using Element Occurrence (EO) records from the BC CDC and ecosystem data from the BC Species and Ecosystem Explorer (BC CDC, 2013).

Element Occurrence Records

The BC MOE's Endangered Species and Ecosystems—Non Sensitive Occurrences and Endangered Species and Ecosystems—Masked Sensitive Occurrences (BC CDC, 2013) were reviewed in ArcMap to determine if any occurrences occur within the Project area, within 50 km of the Project area, or within BGC subzones that are contiguous with the Project area.

BC Species and Ecosystem Explorer

The BC CDC database was queried to generate a list of potentially occurring plant species at risk in the Project area. This list included all plants from the following BGC subzones: BAFAun; ESSFmv; ESSFxv; SBSdk; SBSdw; and SBSmc.

Field

The guidelines for rare plant surveys in BC followed the methods described in Penny and Klinkenberg (2013), the California Natural Resources Agency (CNRA, 2009), and the Alberta Native Plant Council (Lancaster, 2000). Methods used in 2011 and 2012 were identical, but those developed for 2012 benefited from the results and onsite experience gained during the 2011 field season.

A list of habitat preferences was compiled for each potential plant species at risk using personal knowledge and multiple secondary literature sources (Douglas et al., 1998-2002; Klinkenberg, 2013; Ball and Reznicek, 2002; and Douglas et al., 2002). These habitat requirements were summarized and used to target specific regions in the Project area during the plant species at risk field surveys. Particular attention was paid to micro-habitats, south exposures, rock outcrops, wet areas, ecotones (transition zones), seepage areas, and disturbances. As recommended by the CNRA (2009), the primary focus of the plant species at risk surveys was floristic in nature:

> "Surveys should be floristic in nature, meaning that every plant taxon that occurs on site is identified to the taxonomic level necessary to determine rarity and listing

status. 'Focused surveys' that are limited to habitats known to support special status species or are restricted to lists of likely potential species are not considered floristic in nature and are not adequate to identify all plant taxa on site to the level necessary to determine rarity and listing status." (CNRA, 2009)."

Aerial photographs, TEM, and PEM (**Section 2.2.2** Ecosystem Mapping Methods) aided in planning the plant species at risk survey prior to fieldwork commencing. Peak flowering and fruiting times in the Project area are bimodal, with one occurring in July and another in August.

A qualified AMEC plant species at risk specialist conducted the plant species at risk surveys. Floristic data was recorded and survey sites were photographed. Potential reference sites adjacent to the Project area were visited and documented when additional information on potential plant species at risk habitats in the Project area could be obtained (CNRA, 2009).

Plant identifications were made using personal knowledge, Flora of North America (2012), and Illustrated Flora of BC (Douglas et al., 1998-2002). Plants not identifiable in the field and putative plant species at risk were collected using recognized botanical plant pressing techniques and collection protocols (CNRA, 2009), and later identified at the University of British Columbia (UBC) Herbarium.

2.2.7 Invasive Plants

Invasive plants are known by various names depending on the regulatory agency. For the Project, AMEC defines an invasive plant as one that meets one or more of the following criteria:

- is listed as an "alien invasive species" in Sections 1 or 2 of the BC Schedule of the Community Charter (2004);
- is listed as a "noxious weed" in Part I or II of Schedule A of the BC *Weed Control Act* (1996);
- is listed as an "invasive plant" in the *Forest and Range Practices Act* (2004) as "extremely invasive," "very invasive," "invasive," or "aggressive or under bio-control" in Table 3 the Northwest Invasive Plant Council 2012 Strategic Plan and Plant Profiles (2012);
- is listed as a "priority species" in Appendix 1 of the Cariboo Chilcotin Coast Invasive Plant Committee 2012 Regional Strategic Plan (2012); or
- occurs within the jurisdictional boundaries of at least one of these acts, bylaws, or strategic plans.

Scientific names for invasive plants are not always used in these acts, bylaws, or strategic plans, and when used they can be out of date. In these cases, we deferred to Klinkenberg (2013) for the most recent accepted plant names for BC.

Invasive plants are the second largest threat to global biodiversity and can negatively impact agricultural and silvicultural productivity. As a result, invasive plants are a management concern. The goal of the baseline invasive plant study is to establish what invasive plants occur in and near the study area.

The Invasive Alien Plant Program (IAPP) is administered by the BC MFLNRO and records known locations of invasive species. The IAPP Application is an online database for invasive plant data in BC and shares information generated by various agencies and non-government organizations involved in invasive plant management. The IAPP database was queried to determine what invasive plants are known to occur within 20 km of the RSA.

3.0 RESULTS AND DISCUSSION

3.1 Baseline Condition Local Study Area

3.1.1 Field Surveys

Field data was collected over a three year period during July and / or August of 2011, 2012 and 2013. Three types of survey data were included: TEM, plant species at risk and select wetland plots. During the first two years (2011 and 2012) separate TEM and plant species at risk surveys were conducted which targeted the proposed mine site. The third year (2013) the TEM survey crew was accompanied by a plant species at risk specialist that searched for plant species at risk while the TEM crew completed their survey. In 2013, 148 plots were completed which focussed along the Transmission Line, the updated mine footprint and new project components.

Wetland plots conducted within the terrestrial LSA were added to the overall dataset as this information was relevant to the field verification of the final ecosystem map. In total, 492 plots were completed; 363 within the combined LSA and 71 within the RSA. Due to Project footprint changes, 58 plots fell outside of the upland RSA. A tally of plots by study area is provided in **Table 3.1-1,** and survey locations are shown in **Figure 3.1-1**. A chronological summary of survey locations and description of survey types is provided in **Annex 2.1** and a summary of plot data is provided in **Annex 2.2**.

Table 3.1-1: Number and Type of Vegetation Plots in the LSA by Project Component

Project Component	# of TEM Plots	# of RP Plots	# of WL Plots	Total # of Plots
Mine Site	192	38	7	237
Mine Site Access Road	9	0	2	11
Fresh Water Supply System	24	0	0	24
Airstrip	15	0	0	15
TL-Main	47	4	0	51
TL-Mills Ranch	9	2	0	11
TL-Stellako	6	2	0	8
Kluskus FSR	6	0	0	6
Total LSA	**308**	**46**	**9**	**363**
Total RSA	**45**	**16**	**10**	**71**
Grand Total				**434**

Note: # = number; TEM = Terrestrial Ecosystem Mapping; RP = Rare Plant Plots; WL = Wetland Plots; LSA = Local Study Area

The target survey intensity levels which were mentioned in Section 2.2 above, were achieved in all Project components. **Table 3.1-2** shows the percentage of polygons inspected within each Project component LSA.

Table 3.1-2: Tally of Number of Plots and Percent Polygons Inspected by Project Component

Project Component	Total # of Plots	# of Polygons >0.1ha	Percent Polygons Inspected (%)	Project Component Area (ha)
Mine Site	237	752	31.52	6,122
Mine Site Access Road	11	51	21.57	195
Fresh Water Supply System	24	78	30.77	372
Airstrip	15	43	34.88	208
Transmission Line	51	1004	5.08	4,290
Mills Ranch reroute	11	93	11.83	505
Stellako reroute	8	55	14.55	200
Kluskus FSR	6	637	0.94	2,426

360000 400000 440000 480000

5960000

5920000

Endako
Stellako
Fraser Lake
Nadleh Whuten
Fort Fraser
Engen
Vanderhoof
Weneez
Sinkut River
Saik'uz
Nulki
Mapes
16

Proposed Transmission Line
(Stellako Reroute)

Proposed Transmission Line

Kluskus FSR

Proposed Transmission Line
(Mills Ranch Reroute)

Kluskus-Ootsa FSR

Proposed Airstrip

Proposed Fresh
Water Supply System

Kluskus-Blue FSR

Exploration Road

Proposed Mine
Access Road

Fraser Lake
Nechako River
Engen
Stellako
Stuart River
Smith Creek
Tachick
Lake
Stony
Nulki Lake
Nithi River
Tahultzu
Lake
Nechako River
Cluculz Lake
Hallett Lake
Greer Creek
Sinkut River
Cluculz Creek
Knapp Creek
Targe Creek
Corkscrew
Chesiatta
Bird Creek
Lucas Lake
Lucas Creek
Knewstubb
Lake
Big Bend Creek
Finger Lake
Tatuk Lake
Chedakuz Creek
Taluk Creek
Top Lake
Tatelkuz
Lake
Fawnie Creek
Kuyakuz
Lake
Euchiniko
Lakes

N

0 5 10 20
Kilometres
Scale: 1:450,000

Legend

- TEM & Plant Species At Risk Location
- Populated Place
- Highway
- Kluskus FSR
- Kluskus-Blue FSR
- Kluskus-Ootsa FSR
- Exploration Road
- Existing Transmission Line
- Stream (>= 4th Order)
- Waterbody (>= 100 Ha)
- Proposed Mine Access Road
- Proposed Water Pipeline Route
- Proposed Transmission Line
- Proposed Transmission Line (Stellako Reroute)
- Proposed Transmission Line (Mills Ranch Reroute)
- Proposed Airstrip
- Proposed Mine Site

Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area

Biogeoclimatic Zone

- BAFAun
- ESSFmv1
- ESSFmvp
- SBPSdc
- SBPSmc
- SBPSmk
- SBSdk
- SBSdw2
- SBSdw3
- SBSmc2
- SBSmc3
- SBSmk1

Reference
BC Government GeoBC Data Distribution

CLIENT: newgold

PROJECT: Blackwater Gold Project

Terrestrial Ecosystem Mapping and Plant Species at Risk Survey Locations

DATE:	ANALYST:	Figure 3.1-1
October, 2013	MY	
JOB No: VE52277	QA/QC: LR	PDF FILE: 06-100-062_PlotLocations_TEM_RP_3.pdf
GIS FILE: 06-100-062_PlotLocations_TEM_RP_3.mxd		
PROJECTION: UTM Zone 10	DATUM: NAD83	amec

Y:\GIS\Projects\VE\VE52095 Richfield BlackwaterMapping\06 vegetationBaseline\tc06-100-062 PlotLocations TEM RP 3.mxd

3.1.2 Ecological Setting

The ecological setting encompassing the Project LSA was described using two hierarchical classification systems: Ecoregions of BC (Demarchi, 2011) and the BEC (DeLong et al., 1993). The Project area spans the Fraser Plateau (FAP) Ecoregion, the Fraser Basin (FAB) Ecoregion, and three ecosections: the Nazko Upland (NAU), Bulkley Basin (BUB) and Nechako Lowland (NEL), (**Figure 3.1-2**).

The divide between FAP and FAB occurs along the northern portion of the Project area where the Kluskus FSR crosses Greer Creek; also it marks the divide between the NAU and NEL.

Near Big Bend Creek and Knewstubb Lake, the Bulkley Basin Ecosection dips into the Project area from the west to include approximately 2 km of the transmission line and 0.5 km of the access road study areas. North of Nechako River, the transmission lines are entirely within the BUB.

Six BGC units occur in the Project LSA. A brief description of each ecoregion, ecosection, and BGC unit occurring within the Project area is provided.

3.1.2.1 Ecoregions and Ecosections

Fraser Plateau Ecoregion

The FAP Ecoregion is a broad, rolling plateau of basaltic lava flows entirely overridden by ice sheets, moving eastward in the north and northward in the south, during the last glaciation. The climate is sub-continental, with extremely cold springs and winters due to the influence of cold arctic air. However, influence from coastal weather systems carrying moisture laden air comes from the Kitimat Ranges (Demarchi, 2011). The FAP contains two ecosections within the Project area: the NAU and the BUB. The mine site, mine site access road, airstrip and fresh water supply system LSAs occur completely within the FAP. The lower two-thirds of the transmission line and access road lie within the FAP; the remainder occur within the FAB. The FAP is the dominant ecoregion within the Project LSA covering 9,363 ha (65%), while the FAB covers approximately 4,964 ha (35%) within the LSA (**Table 3.1-3**, **Figure 3.1-2**).

320000 360000 400000 440000

5960000 5920000

N

FRASER BASIN

Nechako Lowland

Bulkley Basin

FRASER PLATEAU

Nazko Upland

Endako
Stellako
Fraser Lake
Nadleh Whuten
Fort Fraser
Engen
Vanderhoof
Weneez
Sinkut River
Saik'uz
Nulki
Mapes
Skin Tyee
Tatla Carrier
François Lake
Uncha Lake
Binta Lake
Ni'thi River
Tahultzu Lake
Hallett Lake
Nechako River
Stellako River
Fraser Lake
Nechako River
Engen
Stuart River
Smith Creek
Tachick Lake
Stony
Nulki Lake
Sinkut River
Cluculz Creek
Khai
Creer Creek
Corkscrew
Knapp Creek
Targe Creek
Cheslatta River
Cheslatta
Bird Creek
Lucas Lake
Lucas Creek
Knewstubb Lake
Big Bend Creek
Finger Lake
Tatuk Lake
Chilako River
Natalkuz Lake (Nechako Reservoir)
Tetachuck River
Entiako River
Chedakuz Creek
Tailuk Creek
Batnuni Lake
Euchiniko River
Nataniko Creek
Tatelkuz Lake
Entiako Lake
Top Lake
Chedakuz Creek
Kuyakuz Lake
Euchiniko Lakes
Johnny Lake
Fawnie Creek

Proposed Transmission Line (Stellako Reroute)
Proposed Transmission Line
Kluskus FSR
Proposed Transmission Line (Mills Ranch Reroute)
Kluskus-Ootsa FSR
Proposed Airstrip
Proposed Fresh Water Supply System
Kluskus-Blue FSR
Exploration Road
Proposed Mine Access Road

0 5 10 20
Kilometres
Scale 1:450,000

Reference
BC Government GeoBC Data Distribution

CLIENT: newgold

PROJECT: Blackwater Gold Project

Distribution of Ecoregions and Ecosections in the LSA

DATE:	ANALYST:	
October, 2013	AA	**Figure** 3.1-2
JOB No: VE52277	QA/QC: LR	PDF FILE: 06-100-065_Ecoregions_v2.pdf
GIS FILE: 06-100-065_Ecoregions_v2.mxd		
PROJECTION: UTM Zone 10	DATUM: NAD83	amec

Legend

- Populated Place
- Highway
- Kluskus FSR
- Kluskus-Blue FSR
- Kluskus-Ootsa FSR
- Exploration Road
- Existing Transmission Line
- Stream (>= 4th Order)
- Waterbody (>= 100 Ha)
- Proposed Mine Access Road
- Proposed Water Pipeline Route
- Proposed Transmission Line
- Proposed Transmission Line (Stellako Reroute)
- Proposed Transmission Line (Mills Ranch Reroute)
- Proposed Airstrip
- Proposed Mine Site
- Fraser Basin Ecoregion
- Fraser Plateau Ecoregion
- Ecosection

Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area

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Table 3.1-3: Ecoregions in the LSA by Project Component

Ecoregion	Project Component Code	Minesite		Mine Site Access Road		Fresh Water Supply System		Airstrip		Transmission Line		Mills Ranch		Stellako		Kluskus FSR		Total Area (ha)	Total Percent (%)
		(ha)	(%)	(ha)	(%)	(ha)	(%)	(ha)	(%)	(ha)	(%)	(ha)	(%)	(ha)	(%)	(ha)	(%)		
Fraser Plateau	FAP	6,125	100	195	100	373	100	208	100	101	2	505	100	200	100	1,656	68	9,363	65
Fraser Basin	FAB	0	0	0	0	0	0	0	0	4,192	98	0	0	0	0	772	32	4,964	35
Total Ecoregion		**6,125**	**100**	**195**	**100**	**373**	**100**	**208**	**100**	**4,292**	**100**	**505**	**100**	**200**	**100**	**2,428**	**100**	**14,326**	**100**

Note: ha = hectares;% = percent;

Table 3.1-4: Ecosections in the LSA by Project Component

Ecoregion	Project Component Code	Minesite		Mine Site Access Road		Fresh Water Supply System		Airstrip		Transmission Line		Mills Ranch		Stellako		Kluskus FSR		Total Area (ha)	Total Percent (%)
		(ha)	(%)	(ha)	(%)	(ha)	(%)	(ha)	(%)	(ha)	(%)	(ha)	(%)	(ha)	(%)	(ha)	(%)		
Nazko Upland	NAU	6,125	100	195	100	373	100	208	100	1,869	44	505	100	0	0	1,625	67	10,900	76
Bulkley Basin	BUB	0	0	0	0	0	0	0	0	2,322	54	0	0	200	100	31	0	2,553	18
Nechako Lowland	NEL	0	0	0	0	0	0	0	0	101	2	0	0	0	0	772	0	873	6
Total Ecosection		**6,125**	**100**	**195**	**100**	**373**	**100**	**208**	**100**	**4,292**	**100**	**505**	**100**	**200**	**100**	**2,428**	**67**	**14,327**	**100**

Note: ha = hectares;% = percent;

Nazko Upland Ecosection

The NAU Ecosection is the most common ecosection across the entire Project area of 10,900 ha (76%) and within all project components with the exception of the transmission line which is predominantly within the BUB (**Table 3.1-4**). The NAU is characterized by rolling upland areas of higher relief, such as Mt. Davidson, and nearby Fawnie Nose, around the proposed mine site. Hybrid white spruce (*Picea engelmannii x glauca*) tends to dominate on moist to wet sites below 1,500 m, while subalpine fir (*Abies lasiocarpa*) and Engelmann spruce (*Picea engelmannii*) are dominant above 1,500 m. Lodgepole pine (*Pinus contorta*) is a major tree species in seral stands on dry, fire-prone sites at most elevations, while whitebark pine (*Pinus albicaulis*) co-dominates at higher elevations. Creeks and rivers flow northward, and include the Davidson Creek, Entiako River, Chedakuz Creek, and Big Bend Creek. The area has a typical sub-continental climate, resulting in long cold winters and warm summers. Maximum precipitation occurs in late spring or early summer. The recent mountain pine beetle (MPB) infestation has affected all lodgepole pine forests within the NAU ecosection. Ranches and logging are common along the Kluskus FSR and proposed transmission line route.

Bulkley Basin Ecosection

A portion of the transmission line and Kluskus FSR lie within the BUB. The BUB Ecosection dips into the Project area slightly, encompassing the transmission line just east of the Nechako Reservoir. A total of 2,553 ha (18%) is represented by the BUB (**Table 3.1-4)**. It is typically characterized as a broad, lowland area with a strong rainshadow effect caused by the Kitimat and Nass ranges of the Coast Mountains. Given the proximity of the study area, the extreme eastern portion of the BUB is further away from the Coast Mountains. Most of the ecosection is dominated by lodgepole pine forest in the Sub-Boreal Spruce (SBS) BGC zone, of which the majority have been affected by the MPB. Trembling aspen (*Populus tremuloides*) stands occur on warm, south-facing slopes in low elevation valleys. Extensive development, farming, and logging has taken place in major transportation corridors along the Kluskus FSR.

Fraser Basin Ecoregion

The northern portion of the Kluskus FSR and transmission line lies within the extreme southern portion of the FAB Ecoregion, and includes Tachik Lake and Nulki Lake, east of the access Road. The FAB covers approximately 4,964 ha (35%) of the Project LSA (**Table 3.1-3**). Typical characteristics of the FAB include broad expanses of lowland and rolling upland area with a sub-continental climate (Demarchi, 2011). The NEL Ecosection occurs within the FAB Ecoregion.

Nechako Lowland Ecosection

The NEL Ecosection includes communities along the Yellowhead Highway, such as Fort Fraser and Engen, and includes the Project area south from the highway to near where the Kluskus FSR crosses Greer Creek and Corkscrew Creek (approximately 25 km), for a total of 873 ha (6%) (**Table 3.1-4**). The landscape of the NEL is characterized by flat or gently-rolling lowlands dissected by major rivers, such as the Nechako, and by past glaciations (Demarchi, 2011). The entire lowland area is dominated by the SBS zone. Hybrid white spruce (*Picea engelmannii x glauca*) is found on moist receiving sites, trembling aspen on dry warm slopes, and seral lodgepole pine on dry sites. The MPB has affected most of the lodgepole pine stands throughout this entire portion of the Project area. Logging is the main resource industry, followed, to a lesser degree, by agriculture.

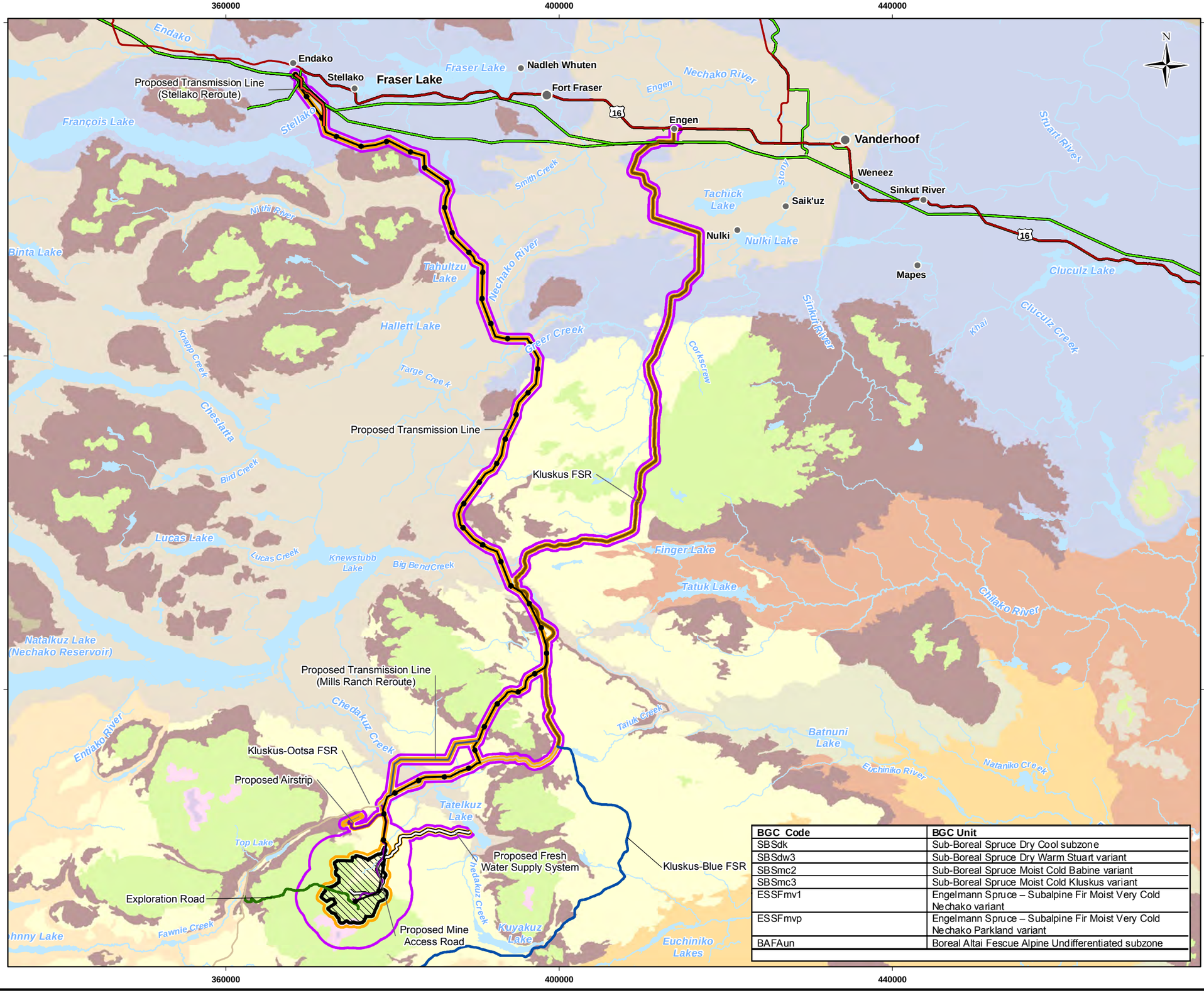
3.1.2.2 Biogeoclimatic Zones

This section describes and quantifies the BGC units (e.g., subzones and variants) occurring within the Project LSA and provides a baseline distribution of these units. The baseline distribution of the BGC units is described in **Table 3.1-5** and shown in **Figure 3.1-3**.

The six BGC units occurring within the LSA area are:

- SBSdk (Dry Cool Sub-Boreal Spruce subzone);
- SBSdw3 (Stuart Dry Warm Sub-Boreal Spruce variant);
- SBSmc2 (Babine Moist Cold Sub-Boreal Spruce variant);
- SBSmc3 (Kluskus Moist Cold Sub-Boreal Spruce variant);
- ESSFmv1 (Nechako Moist Very Cold Engelmann Spruce-Subalpine Fir variant); and
- ESSFmv1p (Nechako Moist Very Cold Engelmann Spruce-Subalpine Fir Parkland variant).

The LSA is approximately 14,000 ha of which the majority is the SBSmc3 with a total of 5,263 ha (37%). The second highest BGC area is represented by the ESSFmv1 which totals approximately 4,443 ha (31%). Followed in decreasing order by the SBSdk, SBSdw3, SBSmc2 and ESSFmv1p.



Legend

- Populated Place
- Highway
- Kluskus FSR
- Kluskus-Blue FSR
- Kluskus-Ootsa FSR
- Exploration Road
- Existing Transmission Line
- Stream (>= 4th Order)
- Waterbody (>= 100 Ha)
- Proposed Mine Access Road
- Proposed Water Pipeline Route
- Proposed Transmission Line
- Proposed Transmission Line (Stellako Reroute)
- Proposed Transmission Line (Mills Ranch Reroute)
- Proposed Airstrip
- Proposed Mine Site

Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area

Biogeoclimatic Zone

- BAFAun
- ESSFmc
- ESSFmv1
- ESSFmvp
- SBPSdc
- SBPSmc
- SBPSmk
- SBSdk
- SBSdw2
- SBSdw3
- SBSmc2
- SBSmc3
- SBSmk1

BGC Code	BGC Unit
SBSdk	Sub-Boreal Spruce Dry Cool subzone
SBSdw3	Sub-Boreal Spruce Dry Warm Stuart variant
SBSmc2	Sub-Boreal Spruce Moist Cold Babine variant
SBSmc3	Sub-Boreal Spruce Moist Cold Kluskus variant
ESSFmv1	Engelmann Spruce – Subalpine Fir Moist Very Cold Nechako variant
ESSFmvp	Engelmann Spruce – Subalpine Fir Moist Very Cold Nechako Parkland variant
BAFAun	Boreal Altai Fescue Alpine Undifferentiated subzone

Reference
BC Government GeoBC Data Distribution

CLIENT: newgold

PROJECT: Blackwater Gold Project

Distribution of Biogeoclimatic Subzones and Variants

DATE: October, 2013	ANALYST: AA	**Figure** 3.1-3
JOB No: VE52277	QA/QC: LR	PDF FILE: 06-100-059_BGC_v2.pdf
GIS FILE: 06-100-059_BGC_v2.mxd		
PROJECTION: UTM Zone 10	DATUM: NAD83	amec

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Table 3.1-5: Distribution of Biogeoclimatic Units in the Project Component LSAs

Project Component BGC	Mine Site		Mine Site Access Road		Fresh Water Supply System		Airstrip		Transmission Line		Mills Ranch		Stellako		Kluskus FSR		Total Area (ha)	Total |Percent (%)
	(ha)	(%)	(ha)	(%)	(ha)	(%)	(h)a	(%)	(ha)	(%)	(ha)	(%)	(ha)	(%)	(ha)	(%)		
SBSdk					34	9			1,690	39	143	28			715	29	2,582	18
SBSdw3									818	19			200	100	238	10	1,256	9
SBSmc2							57	27	339	8					160	7	556	4
SBSmc3	1,788	29	195	100	338	91	151	73	1,286	30	362	72			1,143	47	5,263	37
ESSFmv1	4,115	67							158	4					171	7	4443	31
ESSFmvp	220	4															220	2
Total BGC	**6,123**	**100**	**195**	**100**	**372**	**100**	**208**	**100**	**4,290**	**100**	**505**	**100**	**200**	**100**	**2,427**	**100**	**14,320**	**100**

Note: BGC = Biogeoclimatic, ha = hectares;% = percent; SBSdk = Dry Cool Sub-Boreal Spruce, SBSdw3 = Stuart Dry Warm Sub-Boreal Spruce variant, SBSmc2 = Babine Moist Cold Sub-Boreal Spruce variant; SBSmc3 = Kluskus Moist Cold Sub-Boreal Spruce variant; ESSFmv1 = Nechako Very Cold Engelmann Spruce Subalpine Fir variant; ESSFmv1p = Nechako Very Cold Engelmann Spruce-Subalpine Fir Parkland variant; FSR = Forest Service Road

Source: Data BC (February 2012) and AMEC Ecosystem Map 2013.

Dry Cool Sub-Boreal Spruce Variant

The SBSdk occurs at lower elevations (700 m to 1,050 m) along the transmission line, Kluskus FSR and fresh water supply system. It occurs in three main areas along the transmission line: Chedakuz Creek near Tatelkuz Lake; Big Bend Creek; and Nechako River. Along the Kluskus FSR it is mainly restricted to the most northern portion, approximately the last 15 km of the route as it approaches the community of Engen. Along the fresh water supply system it occurs at the very eastern portion of this LSA where the LSA borders Tatelkuz lake. In total the SBSdk covers approximately 2,582 ha (18%) of the Project LSA (**Table 3.1-5**).

The SBSdk subzone is the driest of the variants described, but is intermediate in temperature (DeLong et al., 1993). Young and mature seral forests predominate, due to recurrent disturbances such as fire and insect outbreaks. Forested areas are often dominated by lodgepole pine and trembling aspen. Currently, all of the lodgepole pine forests have been affected by MPB, and forests of standing dead lodgepole pine are common. Old (>140 years) forests are dominated by hybrid white spruce. Douglas-fir (*Pseudotsuga menziesii*) is restricted to drier sites, while black spruce (*Picea mariana*) is restricted to wetlands. Black cottonwood (*Populus balsamifera* ssp. *trichocarpa*) is found along streams and rivers, and is often associated with active floodplain sites.

Stuart Dry Warm Sub-Boreal Spruce Variant

The SBSdw3 occurs at lower elevations (750 m to 1,100 m) along upper portions of the proposed transmission line and Kluskus FSR. A small arm stretches west toward the Nechako River between the SBSdk, SBSmc2, and SBSmc3. South of Fraser Lake, the transmission line lies entirely within the SBSdw3 for the last 13 km, as the alignment approaches Endako. A small isolated patch occurs across the access road immediately south of the community of Engen. The total area occupied by the SBSdw3 in the Project LSA is approximately 1,256 ha (9%) (**Table 3.1-5**).

The SBSdw3 is relatively warm compared to other BGC units in the Project area (DeLong et al., 1993). Forests tend to be diverse for the region, and include tree species such as Douglas fir, lodgepole pine, and hybrid white spruce on zonal sites, Douglas fir and lodgepole pine on drier sites, and predominantly hybrid white spruce on wetter sites. Currently, all of the lodgepole pine forests have been affected by the MPB, and forests of standing dead lodgepole pine are common. Deciduous forests are commonly dominated by trembling aspen, with localized patches of paper birch (*Betula papyrifera*). Black cottonwood is common along rivers and streams, while black spruce is common in wetlands.

Babine Moist Cold Sub-Boreal Spruce Variant

SBSmc2 occurs at elevations from 900 m to 1,250 m. The SBSmc2 and SBSmc3 meet south of Tsacha Mountain and east of Fawnie Dome. The SBSmc2 occurs within the transmission line, Kluskus FSR and airstrip project components. The SBSmc2 is one of the wettest and snowiest of all the SBS BGC units (DeLong et al., 1993).

On mesic sites, hybrid white spruce, subalpine fir, and lodgepole pine make up the canopy, while black huckleberry (*Vaccinium membranaceum*), sweet coltsfoot (*Petasites frigidus* var. *palmatus*), dwarf red raspberry (*Rubus pubescens*), heart-leaved arnica (*Arnica cordifolia*), and mosses characterize the understory. Plants associated with more xeric site conditions include lodgepole pine, kinnikinnick (*Arctostaphylos uva-ursi*), dwarf blueberry (*Vaccinium caespitosum*), red-stemmed feathermoss (*Pleurozium schreberi*), and lichens. Moist site indicators include common horsetail (*Equisetum arvense*), common mitrewort (*Mitella nuda*), three-leaved foamflower (*Tiarella trifoliata*), and oak fern (*Gymnocarpium dryopteris*) (DeLong et al., 1993). The total area occupied by the SBSmc2 in the Project LSA is approximately 556 ha (4%) (**Table 3.1-5**).

Kluskus Moist Cold Sub-Boreal Spruce Variant

SBSmc3 covers the second largest area of the Project LSA. It occurs below the ESSFmv1, and is bordered by the SBSmc2. In the Project study areas, this unit has an elevation range from 975 m to 1,300 m. The SBSmc3 occurs within all project components with the exception of the Stellako re-route. Lodgepole pine and hybrid white spruce are the dominant canopy species on gentle terrain, and in areas of cool exposure with average moisture availability. Lodgepole pine is prominent in areas of dry, warm exposure. Hybrid white spruce can be dominant on moist to wet seepage sites and flood plains.

Typical SBSmc3 understory vegetation on mesic sites includes regenerating subalpine fir, black huckleberry, one-sided wintergreen (*Orthilia secunda*), bunchberry (*Cornus canadensis*), heart-leaved arnica, and feathermosses. Common juniper (*Juniperus communis*), prickly rose (*Rosa acicularis*), kinnikinnick, black huckleberry, twinflower (*Linnaea borealis*), dwarf blueberry, and lichens are indicative of drier sites. Characteristic species on moist to wet sites include willows (*Salix* sp.), black gooseberry (*Ribes lacustre*), sweet coltsfoot, common mitrewort, and leafy mosses (*Mnium* and *Rhizomnium* spp.). The total area occupied by the SBSmc3 is approximately 5,263 ha (37%) (**Table 3.1-5**).

Nechako Very Cold Engelmann Spruce-Subalpine Fir Variant

ESSFmv1 is the most common variant in the study area, and occurs above the SBSmc3 and SBSmc2 from approximately 1,300 m to 1,620 m, but below the parkland. The ESSFmv1 occurs within the mine site, transmission line and Kluskus FSR. This high-elevation ecosystem is intermediate in precipitation, with a high portion of precipitation falling as snow (DeLong et al., 1993).

Subalpine fir and Engelmann spruce are leading trees in mesic sites. Lodgepole pine gains prominence on submesic sites, and as a seral species in young stands and on warm exposures. Whitebark pine (*Pinus albicaulis*) is a co-dominant species that occurs with lodgepole pine at higher elevations. Characteristic understory species on average moisture sites are black huckleberry, five-leaved bramble (*Rubus pedatus*), heart-leaved arnica, bunchberry, and red-stemmed feathermoss. White-flowered rhododendron (*Rhododendron albiflorum*), black huckleberry, crowberry (*Empetrum nigrum*), and liverworts are dominant in areas of cool exposure, while lichens occur on warm slopes. Moist site indicators include willows, Sitka valerian (*Valeriana sitchensis*), common horsetail, Indian hellebore (*Veratrum viride*), and leafy mosses. The total amount of area occupied by the ESSFmv1 in the Project LSA is approximately 4,443 ha (31%) (**Table 3.1-5**).

Nechako Moist Very Cold Engelmann Spruce-Subalpine Fir Parkland

The ESSFmv1p is transitional with the Engelmann Spruce-Subalpine Fir Very Dry Very Cold Chilcotin Parkland variant (ESSFxvp1). For the purposes of this report and ecosystem mapping, the variant will remain classified as ESSFmv1. The ecosystems have been classified using both the ESSFmv1 and ESSFxvp1 site series where necessary. The ESSFmv1p occurs exclusively in the mine site LSA and lies above the ESSFmv1 variant. The total amount of area occupied by the ESSFmv1p is approximately 220 ha (2%) (**Table 3.1-5**).

The parkland area (ESSFmv1p) is characterized gentle, rolling terrain composed of a mosaic of tree islands, grasslands, scrub birch (*Betula nana*), heather (*Phyllodoce* sp). pockets and wet herbaceous seepage areas. Clumps of stunted and snow-pressed subalpine fir, Engelmann spruce and whitebark pine comprise the tree layer within the tree islands. Grouse-berry (*Vaccinium scoparium*), altai fescue (*Festuca altaica*), and mountain sagewort (*Artemisia norvegica*) are very common, low vascular plants. Heron's-bill moss (*Dicranum* sp.), red-stemmed feather-moss (*Pleurozium schreberi*), and reindeer lichens (*Cladonia* sp.). Sitka valerian *(Valeriana sitchensis*) and globe flower (*Trollius albiflorus*) occur on moist and rich sites.

3.1.2.3 Biogeoclimatic Units by Project Components

Mine Site

The proposed mine site lies on a gentle, north-facing slope of Mt. Davidson. It extends to high elevation terrain and includes areas of ESSFmv1, SBSmc3 and a minor component of the ESSFmv1p. The ESSFmv1 covers the largest area in the mine site LSA with a total of 4,115 ha (67%). The SBSmc3 lies below the ESSFmv1 in elevation and has the second largest coverage with a total of 1788 ha (29%). The subalpine parkland, ESSFmv1p, lies above the ESSFmv1 in elevation and has a total coverage of 220 ha (4%) in the LSA, **Table 3.1-5**.

Mine Site Access Road

The proposed mine access road is a 15 km linear feature that connects the mine site to the Kluskus FSR running north south and lies entirely within the SBSmc3 for a total of 195 ha, **Table 3.1-5**.

Fresh Water Supply System

The proposed fresh water supply system is a 11 km linear feature extending from the mine site LSA and runs east to Tatelkuz Lake. The SBSmc3 covers the largest area in the LSA with a total of 338 ha 91%) and a minor portion of SBSdk with a total of 34 ha (9%) at the eastern end as it approaches Tatelkuz Lake **Table 3.1-5**.

Airstrip

The proposed airstrip and existing airstrip access road occur within the SBSmc3 and SBS mc2; predominantly within the SBSmc3 with a total of 151 ha (73%) and a smaller portion occurs within the SBSmc2 with a total of 57 ha 27%), **Table 3.1-5**.

Transmission Line

The proposed transmission line is a long (133 km) linear feature running from the mine site north towards Endako, crossing several BGC units, including SBSdk, SBSmc3, SBSdw3, SBSmc2, and ESSFmv1. The SBSdk covers the largest area with a total of 1689 ha (39%), followed by the SBSmc3 with a total of 1286 ha (30%), the SBSdw3 has a total of 818 ha (19%), the SBSmc2 has a total of 339 ha (8%) and the ESSFmv1 has a total of 158 ha (4%), **Table 3.1-5**. The SBSdk occurs along the entire transmission line occupying the landbase beside the SBSmc2 and SBSmc3; or in the northern portion it lies beside the SBSdw3. The SBSdw3 is restricted to the northern portion of the transmission line, the area lying within either the Bulkley Basin or Nechako Lowland and outside of the Nazko Upland ecosection. The ESSFmv1 occurs above either the SBSmc2 or SBSmc3.

Mills Ranch Reroute

A portion (361 ha) of the Mills ranch reroute occurs in the SBSmc3 and the remainder occurs within the SBSdk (143 ha).

Stellako Reroute

The Stellako reroute occurs entirely within the SBSdw3 (200 ha).

Kluskus Forest Service Road

The existing Kluskus FSR is a long linear feature that runs from the mine site north towards the town of Vanderhoof crossing several BGC units, including SBSdk, SBSdw3, SBSmc2, SBSmc3, and ESSFmv1 (**Table 3.1-5**). The SBSmc3 covers the largest area with a total of

1,142 ha (47%), the SBSdk covers 715 ha (29%), the SBSdw3 covers 238 ha (10%), the ESSFmv1 covers 171 ha (7%) and the SBSmc2 covers 160 ha (7%). The SBSmc3 occurs in the Nazko Upland ecosection portion of the Kluskus FSR but not along the northern portion of the road where it lies within the Nechako Lowland ecosection. The SBSdk occurrence is limited to narrow areas below the SBSmc3 along the majority of the FSR while towards the northern extent it lies adjacent to the SBSdw3. The SBSmc2 and ESSFmv1 are limited in extent and restricted to higher elevation terrain which only occurs within the Nazko Upland portion of the FSR.

3.1.2.4 Landscape Units

Landscape units are spatially identified areas of land used for long-term planning of resource management activities. Landscape units are important for designing strategies and objectives to maintain landscape level biodiversity and for managing other forest resources. Each LU corresponds to a Biodiversity Emphasis (BE) rating (low, intermediate, high), which is designed to provide direction regarding old growth forest retention by BGC unit. There are nine LUs that occur in the Project LSA, listed in **Table 3.1-6** and shown in **Figure 3.1-4**.

The Tatelkuz LU is the most common with a total area of 8,316 ha (58%) and has an intermediate BE. The Tachick LU occupies a total of 2,143 ha (15%) and has an intermediate BE and the Kluskus occupies a total of 1,339 ha (9%) and has a low BE. There are no landscape units that have a high biodiversity emphasis within the LSA. The total area occupied by LUs with an intermediate BE is approximately 11,154 ha (78%) and by LUs with a low BE is approximately 3,172 ha (22%) (**Table 3.1-6**).

Mine Site

The mine site LSA lies predominantly, 6,107 ha (100%) within the Tatelkuz LU and 19 ha (<1%) within the Blackwater LU, both have intermediate biodiversity emphasis. Based on the 2004 Order and the BGC variant (ESSFmv1 and SBSmc3), the percent old growth forest retention recommended is greater than 9% in the ESSFmv1 and greater than 11% in the SBSmc3 and SBSmc2 (BC ILMB, 2004).

Mine Site Access Road

The proposed mine site access road lies entirely (195 ha) within the Tatelkuz LU. The percent old growth retention for the SBSmc3 is 11% or greater.

Fresh Water Supply System

The Fresh Water Supply System area lies only (372 ha) within the Tatelkuz LU, which has an intermediate biodiversity emphasis. The recommendation is to retain greater than 11% in areas occupied by SBSmc3 and SBSdk.

Airstrip

The airstrip lies entirely (208 ha) within the Tatelkuz LU and has both SBSmc2 and SBSmc3; therefore the recommended biodiversity emphasis is 11%

Transmission Line

The transmission line LSA occurs within seven LUs, three (Halett, Tachick, and Tatelkuz) of which are intermediate, and four (Endako, Jerryboy, Kluskus, and Nithi) are assigned low biodiversity emphasis. For areas within the SBS subzone, the recommended retention is greater than 11% for both low and intermediate assigned LUs. A retention of greater than 9% is recommend for all LUs occurring within the ESSFmv1 variant.

Stellako Reroute

The majority (126 ha) of the Stellako reroute lies within the Endako LU and 75 ha within the NIthi LU, both of which have a low biodiversity emphasis. The entire Stellako LSA is classified as SBSdw3 therefore the recommended retention is greater than 11% old growth.

Mills Ranch Reroute

The Mills Ranch reroute lies entirely (505 ha) within the Tatelkuz LU and is both SBSdk and SBSdw3; therefore the recommended biodiversity emphasis is 11%.

Kluskus FSR

The Kluskus FSR study area lies within five LUs, two (Tachick and Tatelkuz) of which are intermediate, and three (Chilako, Jerryboy, and Kluskus) are assigned low biodiversity emphasis. For areas occurring within the SBS subzone, the recommended retention is greater than 11% for both low and intermediate assigned LUs. Portions of the line occurring within the ESSFmv1 variant, a retention of greater than 9% is recommend for all LUs.

Table 3.1-6: Landscape Units in the LSA by Project Component

	Project Component	Minesite		Mine Site Access Road		Fresh Water Supply System		Airstrip		Transmission Line		Mills Ranch		Stellako		Kluskus FSR		Total Area	Total Percent
Biodiversity Emphasis	**Landscape Unit**	**(ha)**	**(%)**	**(ha)**	**(%)**	**(ha)**	**(%)**	**(ha)**	**(%)**	**(ha)**	**(%)**	**(ha)**	**(%)**	**(ha)**	**(%)**	**(ha)**	**(%)**	**(ha)**	**(%)**
intermediate	Halett									676	16							676	5
intermediate	Blackwater	19	<1															19	0
intermediate	Tachick									942	22					1,202	49	2,143	15
intermediate	Tatelkuz	6,107	100	195	100	373	100	208	100	647	15	505	100			282	12	8,316	58
Total Intermediate		6,125	100	195	100	373	100	208	100	2,265	53	505	100			1,483	61	11,154	78
low	Chilako															416	17	416	3
low	Endako									206	5			126	63			332	2
low	Jerryboy									97	2					163	7	259	2
low	Kluskus									973	23					366	15	1,339	9
low	Nithi									752	18			75	37			826	6
Total Low										2,027	47			200	100	945	39	3,172	22
Total		6,125	100	195	100	373	100	208	100	4,292	100	505	100	200	100	2,428	100	14,327	100

Source: Order 2004 (BC ILMB, 2004)

320000 360000 400000 440000 480000

6000000 5960000 5920000 5880000

N

Endako
Nithi
Tachick
Halett
Kluskus
Chilako
Jerryboy
Tatelkuz
Entiako
Blackwater

Endako
Stellako
Fraser Lake
Nadleh Whuten
Fort Fraser
Engen
Vanderhoof
Weneez
Sinkut River
Saik'uz
Nulki
Mapes
Nazko
Kluskus
François Lake
Cheslatta Carrier
Danskin
Skin Tyee

Proposed Transmission Line (Stellako Reroute)
Proposed Transmission Line
Proposed Transmission Line (Mills Ranch Reroute)
Kluskus FSR
Kluskus-Ootsa FSR
Kluskus-Blue FSR
Proposed Airstrip
Proposed Fresh Water Supply System
Exploration Road
Proposed Mine Access Road

Endako
Fraser Lake
Nechako River
Engen
Stellako
François Lake
Stuart River
Sinkut River
Tachick Lake
Nulki Lake
Tahtulzu Lake
Nechako River
Sinkut River
Cluculz Lake
Cluculz Creek
Khai
Hallett Lake
Fraser Creek
Thuja Creek
Knapp Creek
Cheslatta
Cheslatta River
Bird Creek
Lucas Lake
Lucas Creek
Knewstubb Lake
Big Bend Creek
Finger Lake
Tatuk Lake
Chilako River
Natalkuz Lake (Nechako Reservoir)
Tetachuck River
Entiako River
Chedakuz Creek
Tatelkuz Lake
Top Lake
Entiako Lake
Johnny Lake
Fawnie Creek
Moose Lake
Tsacha Lake
Kushya
West Road (Blackwater)
Kluskus
Batnuni Lake
Euchiniko River
Nataniko Creek
Euchiniko
Euchiniko Lakes
Baezaeko
Nazko
Uncha Lake
Takysie Creek
Binta Lake

Legend

- Populated Place
- Highway
- Kluskus FSR
- Kluskus-Blue FSR
- Kluskus-Ootsa FSR
- Exploration Road
- Existing Transmission Line
- Stream (>= 4th Order)
- Waterbody (>= 100 Ha)
- Proposed Mine Access Road
- Proposed Water Pipeline Route
- Proposed Transmission Line
- Proposed Transmission Line (Stellako Reroute)
- Proposed Transmission Line (Mills Ranch Reroute)
- Proposed Airstrip
- Proposed Mine Site

Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area

Landscape Units

- Blackwater
- Chilako
- Endako
- Entiako
- Halett
- Jerryboy
- Kluskus
- Nithi
- Tachick
- Tatelkuz

0 5 10 20
Kilometres
Scale: 1:600,000

Reference
BC Government GeoBC Data Distribution

CLIENT: newgold

PROJECT: Blackwater Gold Project

Distribution of Landscape units

DATE:	ANALYST:	
October, 2013	MY	**Figure** 3.1-4
JOB No: VE52277	QA/QC: LR	PDF FILE: 06-100-035_LandscapeUnits_v3.pdf
GIS FILE: 06-100-035_LandscapeUnits_v3.mxd		
PROJECTION: UTM Zone 10	DATUM: NAD83	amec

Y:\GIS\Projects\VE\VE52095_Richfield_BlackwaterMapping\06_vegetation\Baseline\06-100-035_LandscapeUnits_v3.mxd

3.1.3 Ecosystem Distribution

This section describes and quantifies the ecosystems (including upland and non-vegetated, sparsely vegetated and anthropogenic units) present within the Project LSA for the baseline case. Wetlands are addressed in the Wetland Baseline Report. In total there are six LSAs each representing a project component. The transmission line has two re-route options: Mills Ranch and Stellako.

In TEM mapping, ecosystem map units are either simple (containing one ecosystem unit) or complex, containing up to three ecosystem units. An ecosystem unit comprises site series (or site associations, non-vegetated, sparsely vegetated, or anthropogenic), site modifiers, and structural stages. Detailed ecosystem descriptions and photographs for all plots are provided in **Annex 3.1**.

A map book is provided in **Annex 3.2** showing the distribution of ecosystems for the mine site, mine site access road, fresh water supply system, airstrip, transmission line and Kluskus forest service road.

3.1.3.1 Mine Site

Upland ecosystems cover approximately 5,132 ha (97%) and non-vegetated, sparsely vegetated and anthropogenic units cover approximately 179 ha (3%). The ESSFmv1 is the most common BGC variant followed by the SBSmc3 and the ESSFmv1p, **Table 3.1-7**.

The ESSFmv1 Subalpine fir-Rhododendron-Feathermoss (01/FR) ecosystem is the typic ecosystem for this variant and is also the most commonly occurring ecosystem within the mine site with a total of 1,829 ha (34%). The second most common is the drier ESSFmv1 Subalpine fir-Huckleberry-Feathermoss (03/FF) ecosystem with a total of 754 ha (14%) in the LSA. Other ecosystems occurring are the moist Subalpine fir-Huckleberry-Gooseberry (04/FG) totalling 537 ha (10%) and the very dry Subalpine fir-huckleberry-Cladonia (02/LC) totalling 363 ha (7%). The latter tends to occur on glaciofluvial terraces and well-drained soils. Anthropogenic features include Exposed Soil (ES) with a total of 112 ha (2%), road surface (RZ) with a total of 26 ha (<1%) and mine (MI) with a total of 9 ha (<1%) at the time of mapping.

The most common ecosystem within the SBSmc3 is a drier than average ecosystem, the Lodgepole pine - Feathermoss - Cladina (03/LF) with a total of 615 ha (12%). The mesic Hybrid white spruce-Huckleberry (01/SB) is the second most common with a total of 570 ha (11%). The moist Hybrid white spruce - Twinberry (07/ST) has a total of 115 ha (2%) of the LSA. Road surface covers a total area of 22 ha (<1%).

Table 3.1-7: Baseline Distribution of Upland Ecosystems in the Mine Site LSA

BGC	Ecosystem	Site Series	Map Code	Area (ha)	Percent (%)
SBSmc3	Hybrid white spruce - Huckleberry	01	SB	570	11
SBSmc3	Lodgepole pine - Juniper - Dwarf huckleberry	02	LJ	31	1
SBSmc3	Lodgepole pine - Feathermoss - Cladina	03	LF	615	12
SBSmc3	Hybrid white spruce - Huckleberry - Soopolallie	04	SS	57	1
SBSmc3	Black spruce - Huckleberry - Spirea	05	BH	36	1
SBSmc3	Black spruce - Lodgepole pine - Feathermoss	06	BF	7	<1
SBSmc3	Hybrid white spruce - Twinberry	07	ST	115	2
Total Upland				**1,431**	**27**
SBSmc3	Pond	00	PD	7	<1
SBSmc3	Road surface	00	RZ	22	<1
Total Non-Vegetated, Sparsely Vegetated, and Anthropogenic				**29**	**1**
Total SBSmc3				**1,460**	**27**
ESSFmv1	Subalpine fir - Rhododendron - Feathermoss	01	FR	1,829	34
ESSFmv1	Lodgepole pine - Huckleberry - Cladonia	02	LC	363	7
ESSFmv1	Subalpine fir - Huckleberry - Feathermoss	03	FF	754	14
ESSFmv1	Subalpine fir - Huckleberry - Gooseberry	04	FG	537	10
Total Upland				**3,483**	**66**
ESSFmv1	River	00	RI	<1	<1
ESSFmv1	Exposed Soil	00	ES	112	2
ESSFmv1	Mine	00	MI	9	<1
ESSFmv1	Rock	00	RO	<1	<1
ESSFmv1	Road surface	00	RZ	26	<1
ESSFmv1	Talus	00	TA	2	<1
Total Non-Vegetated, Sparsely Vegetated, and Anthropogenic				**149**	**3**
Total ESSFmv1				**3,632**	**68**
ESSFmvp1	Subalpine fir - Dwarf blueberry - Dicranum parkland	00	FB	6	<1
ESSFmvp1	Altai fescue - Cladonia grassland	00	FC	10	<1
ESSFmvp1	Subalpine fir - Indian Hellebore	00	FH	36	1
ESSFmvp1	Subalpine fir - Heather parkland	00	FM	2	<1
ESSFmvp1	Kinnikinnick - Cladonia	00	KC	1	<1
ESSFmvp1	Mountain-heather - Slender hawkweed	00	MH	2	<1
ESSFmvp1	Subalpine fir - Whitebark Pine - Crowberry parkland	00	PC	80	2
ESSFmvp1	Scrub birch - Altai fescue shrub steppe	00	SF	17	<1
ESSFmvp1	Sitka valerian - globeflower moist meadow	00	VG	19	<1
ESSFmvp1	Whitebark pine krummholtz	00	WK	16	<1
ESSFmvp1	Whitebark pine - White mountain avens	00	WW	28	1
Total Upland				**218**	**4**
ESSFmvp1	Moraine	00	MN	<1	<1
ESSFmvp1	Talus	00	TA	1	<1
Total Non-Vegetated, Sparsely Vegetated, and Anthropogenic				**1**	<1
Total ESSFmvp1				**220**	**4**
Total Upland				**5,132**	**97**
Total Non-Vegetated, Sparsely Vegetated, and Anthropogenic				**179**	**3**
Total Area				**5,311**	**100**

Note: BGC = Biogeoclimatic, SBSmc3 = Kluskus Moist Cold Sub-Boreal Spruce Kluskus variant; ESSFmv1 = Nechako Moist Very Cold Engelmann Spruce = Subalpine Fir variant; LSA = local study area.

In the higher elevation parkland variant (ESSFmv1p) is the Subalpine fir-Whitebark pine-Crowberry (00/PC) parkland ecosystem, with a total of 80 ha (2%). Other whitebark pine

communities include the Whitebark pine krummholtz (00/WK) and Whitebark pine - White mountain avens (00/WW) ecosystems which have a total of 44 ha (1%). Overall the parkland is drier than average for this variant and whitebark pine ecosystems are common and well distributed across the parkland.

3.1.3.2 Mine Site Access Road

Upland ecosystems cover approximately 187 ha (94%) and non-vegetated, sparsely vegetated and anthropogenic units cover approximately 24 ha (13%), **Table 3.1-8**. The mine site access road occurs entirely within the SBSmc3.

Table 3.1-8: Baseline Distribution of Ecosystems in the Mine Site Access Road LSA

BGC	Ecosystem	Site Series	Map Code	Area (ha)	Percent (%)
SBSmc3	Hybrid white spruce - Huckleberry	01	SB	72	39
SBSmc3	Lodgepole pine - Juniper - Dwarf huckleberry	02	LJ	<1	<1
SBSmc3	Lodgepole pine - Feathermoss - Cladina	03	LF	27	15
SBSmc3	Hybrid white spruce - Huckleberry - Soopolallie	04	SS	2	1
SBSmc3	Black spruce - Huckleberry - Spirea	05	BH	44	24
SBSmc3	Black spruce - Lodgepole pine - Feathermoss	06	BF	7	4
SBSmc3	Hybrid white spruce - Twinberry	07	ST	7	4
Total Upland				**159**	**87**
SBSmc3	River	00	RI	<1	<1
SBSmc3	Road surface	00	RZ	24	13
Total Non-Vegetated, Sparsely Vegetated, and Anthropogenic				**24**	**13**
Total SBSmc3				**183**	**100**
Total Upland				**159**	**87**
Total Non-Vegetated, Sparsely Vegetated, and Anthropogenic				**24**	**13**
Total Area				**183**	**100**

Note: BGC = Biogeoclimatic, SBSmc3 = Kluskus Moist Cold Sub-Boreal Spruce variant; LSA = local study area

The SBSmc3 Hybrid white spruce - Huckleberry (01/SB) ecosystem is the most common and widespread with a total of 72 ha (39%). The Black spruce - Huckleberry - Spirea (05/BH) is the second most common and widespread with a total of 44 ha (24%). Typically the SBSmc3 05/BH is characterized by forests of poor productivity due to compact soils or soils with poor aeration resulting in poor root development. Black spruce mixed with white spruce and lodgepole pine are common in these forests. Receiving sites, Hybrid white spruce - Twinberry (07/ST) and Black spruce - lodgepole pine - Feathermoss (06/BF) occur to a lesser extent with a total of 7 ha (4%) and 7 ha (4%), respectively. The SBSmc3 07/ST is richer with higher soil nutrient availability than the SBSmc3 06/BF ecosystem. Existing logging roads (RZ) occur and total 24 ha (13%).

3.1.3.3 Fresh Water Supply System

Upland ecosystems cover approximately 298 ha (86%) and non-vegetated, sparsely vegetated and anthropogenic units cover approximately 50 ha (14%), (**Table 3.1-9)**. The SBSmc3 covers most of the entire extent of the supply line running from the mine site towards Tatelkuz lake for a total of 313 ha (90%) while only a small portion, 34 ha (10%), at the eastern end occurs in the SBSdk.

Table 3.1-9: Baseline Distribution of Ecosystems in the Fresh Water Supply System LSA

BGC	Ecosystem	Site Series	Map Code	Area (ha)	Percent (%)
SBSdk	Hybrid white spruce – Purple peavine	01	SP	27	8
SBSdk	Hybrid white spruce – Twinberry - Coltsfoot	06	ST	7	2
Total Upland				**34**	**10**
Total SBSdk				**34**	**10**
SBSmc3	Hybrid white spruce – Huckleberry	01	SB	105	30
SBSmc3	Lodgepole pine – Juniper – Dwarf huckleberry	02	LJ	2	1
SBSmc3	Lodgepole pine – Feathermoss – Cladina	03	LF	43	12
SBSmc3	Black spruce – Huckleberry – Spirea	05	BH	70	20
SBSmc3	Black spruce – Lodgepole pine – Feathermoss	06	BF	13	4
SBSmc3	Hybrid white spruce – Twinberry	07	ST	30	9
Total Upland				**263**	**76**
SBSmc3	Road surface	00	RZ	50	14
Total Non-Vegetated, Sparsely Vegetated, and Anthropogenic				**50**	**14**
Total SBSmc3				**313**	**90**
Total Upland				**298**	**86**
Total Non-Vegetated, Sparsely Vegetated, and Anthropogenic				**50**	**14**
Total Area				**347**	**100**

Note: BGC = Biogeoclimatic, SBSdk = Dry Cool Sub-Boreal Spruce, SBSmc3 = Kluskus Moist Cold Sub-Boreal Spruce variant; LSA = local study area.

The SBSmc3 Hybrid white spruce - Huckleberry (01/SB) ecosystem with a total of 105 ha (30%) is the most common ecosystem and represent the typic ecosystem for the SBSmc3. The nutrient poor Black spruce - Huckleberry - Spirea (05/BF) ecosystem occupies 70 ha (20%). The presence and abundance of black spruce is indicative of soil conditions with low nutrient availability. Moist rich sites, the Hybrid white spruce - Twinberry (07/ST), are less common and occupies 30 ha (9%). Existing road surface (RZ) occur and total approximately 50 ha (14%).

In the SBSdk the dominant ecosystem is the Hybrid white spruce - Purple peavine (01/SP) for a total of 27 ha (8%).

3.1.3.4 Airstrip

Upland ecosystems cover approximately 173 ha (90%) and non-vegetated, sparsely vegetated and anthropogenic units cover approximately 19 ha (10%), **Table 3.1-10**. The SBSmc3 covers the largest area (146 ha, 76%) while the SBS mc2 covers 47 ha (24%).

Table 3.1-10: Baseline Distribution of Ecosystems in the Airstrip LSA

BGC	Ecosystem	Site Series	Map Code	Area (ha)	Percent (%)
SBSmc2	Hybrid white spruce - Huckleberry	01	SB	27	14
SBSmc2	Lodgepole pine - Huckleberry - Cladonia	02	PH	2	1
SBSmc2	Hybrid white spruce - Huckleberry - Dwarf blueberry	04	HB	14	7
SBSmc2	Hybrid white spruce - Twinberry - Oak fern	08	ST	4	2
Total Upland				**47**	**24**
Total SBSmc2				**47**	**24**
SBSmc3	Hybrid white spruce - Huckleberry	01	SB	35	18
SBSmc3	Lodgepole pine - Juniper - Dwarf huckleberry	02	LJ	1	<1
SBSmc3	Lodgepole pine - Feathermoss - Cladina	03	LF	41	21
SBSmc3	Black spruce - Huckleberry - Spirea	05	BH	33	17
SBSmc3	Black spruce - Lodgepole pine - Feathermoss	06	BF	1	<1
SBSmc3	Hybrid white spruce - Twinberry	07	ST	16	8
Total Upland				**127**	**66**
SBSmc3	Road surface	00	RZ	19	10
Total Non-Vegetated, Sparsely Vegetated, and Anthropogenic				**19**	**10**
Total SBSmc3				**146**	**76**
Total Upland				**173**	**90**
Total Non-Vegetated, Sparsely Vegetated, and Anthropogenic				**19**	**10**
Total Area				**193**	**100**

Note: BGC = Biogeoclimatic, SBSmc2 = Babine Moist Cold Sub-Boreal Spruce variant; SBSmc3 = Kluskus Moist Cold Sub-Boreal Spruce variant; LSA = local study area.

The most common ecosystem in the SBSmc3 variant is the dry Lodgepole pine-Feathermoss-Cladina (03/LF) with a total of 41 ha (21%); followed by the mesic Hybrid white spruce - Huckleberry (01/SB) with a total of 35 ha (18%). The nutrient poor Black spruce - Huckleberry - Spirea (05/BF) ecosystem occupies a total of 33 ha (17%). Existing logging roads (RZ) occur and total 19 ha (10%).

In the SBSmc2 the mesic Hybrid white spruce - Huckleberry (01/SB) is the most common ecosystem with a total of 27 ha (14%). Hybrid white spruce - Huckleberry - Dwarf blueberry (SBSmc2 04/HB), a mesic to moist ecosystem, occupies 14 ha (7%). The moist and rich

Hybrid white spruce - Twinberry - Oakfern (08/ST) is limited in extent to lower receiving slopes with a total of 4 ha (2%).

3.1.3.5 Transmission Line

Upland ecosystems cover approximately 3,735 ha (94%) and non-vegetated, sparsely vegetated and anthropogenic units cover approximately 257 ha (6%), **Table 3.1-11**. The transmission line being a long (133 km) linear feature from Endako to the mine site traverses five BGC units. The SBSdk covers the greatest (1,525 ha, 38%) amount of area along the transmission line LSA.

Table 3.1-11: Baseline Distribution of Ecosystems in the Transmission Line LSA

BGC	Ecosystem	Site Series	Map Code	Area (ha)	Percent (%)
SBSdk	Saskatoon - Slender wheatgrass	00	SW	1	<1
SBSdk	Hybrid white spruce - Purple peavine	01	SP	685	17
SBSdk	Lodgepole pine - Juniper - Ricegrass	02	LJ	24	1
SBSdk	Lodgepole pine - Feathermoss - Cladina	03	LC	153	4
SBSdk	Douglas fir - Soopolallie - Feathermoss	04	DS	1	<1
SBSdk	Hybrid white spruce - Spirea - Feathermoss	05	SF	125	3
SBSdk	Hybrid white spruce - Twinberry - Coltsfoot	06	ST	430	11
SBSdk	Black cottonwood - Dogwood - Prickly Rose	08	CD	3	<1
SBSdk	Drummond's willow - Bluejoint	00	FI05	1	<1
Total Upland				**1,422**	**36**
SBSdk	Cultivated Field	00	CF	3	<1
SBSdk	Gravel Pit	00	GP	1	<1
SBSdk	Pond	00	PD	2	<1
SBSdk	River	00	RI	8	<1
SBSdk	Road surface	00	RZ	88	2
Total Non-Vegetated, Sparsely Vegetated, and Anthropogenic				**103**	**3**
Total SBSdk				**1,525**	**38**
SBSdw3	Saskatoon - Slender wheatgrass	00	SW	3	0
SBSdw3	Hybrid white spruce - Douglas fir - Pinegrass	01	SP	338	8
SBSdw3	Douglas fir - Lodgepole pine - Cladonia	02	DC	11	<1
SBSdw3	Lodgepole pine - Feathermoss - Cladina	03	LC	36	1
SBSdw3	Hybrid white spruce - Ricegrass	04	SR	69	2
SBSdw3	Lodgepole pine - Black spruce - Feathermoss	05	BF	22	1
SBSdw3	Hybrid white spruce - Pink Spirea - Prickly rose	06	SS	10	<1
SBSdw3	Hybrid white spruce - Twinberry	07	ST	207	5
SBSdw3	Hybrid white spruce - Oakfern	08	SO	29	1
SBSdw3	Drummond's willow - Bluejoint	00	FI05	2	<1
Total Upland				**727**	**18**
SBSdw3	Cultivated Field	00	CF	1	<1
SBSdw3	Gravel Pit	00	GP	<1	<1
SBSdw3	River	00	RI	2	<1
SBSdw3	Rural	00	RR	<1	<1
SBSdw3	Road surface	00	RZ	32	1
SBSdw3	Urban	00	UR	3	<1

BGC	Ecosystem	Site Series	Map Code	Area (ha)	Percent (%)
Total Non-Vegetated, Sparsely Vegetated, and Anthropogenic				**38**	**1**
Total SBSdw3				**765**	**19**
SBSmc2	Hybrid white spruce - Huckleberry	01	SB	218	5
SBSmc2	Lodgepole pine - Huckleberry - Cladonia	02	PH	6	<1
SBSmc2	Black spruce - Lodgepole pine - Feathermoss	03	BM	12	<1
SBSmc2	Hybrid white spruce - Huckleberry - Dwarf blueberry	04	HB	15	<1
SBSmc2	Hybrid white spruce - Twinberry - Coltsfoot	05	TC	4	<1
SBSmc2	Hybrid white spruce - Oak fern	06	SO	34	1
SBSmc2	Hybrid white spruce - Twinberry - Oak fern	08	ST	9	<1
SBSmc2	Hybrid white spruce - Devil's club	09	SD	13	<1
SBSmc2	Hybrid white spruce - Horsetail	10	SH	2	<1
Total Upland				**312**	**8**
SBSmc2	River	00	RI	1	<1
SBSmc2	Road surface	00	RZ	11	<1
Total Non-Vegetated, Sparsely Vegetated, and Anthropogenic				**12**	<1
Total SBSmc2				**324**	**8**
SBSmc3	Hybrid white spruce - Huckleberry	01	SB	506	13
SBSmc3	Lodgepole pine - Juniper - Dwarf huckleberry	02	LJ	8	<1
SBSmc3	Lodgepole pine - Feathermoss - Cladina	03	LF	97	2
SBSmc3	Hybrid white spruce - Huckleberry - Soopolallie	04	SS	43	1
SBSmc3	Black spruce - Huckleberry - Spirea	05	BH	189	5
SBSmc3	Black spruce - Lodgepole pine - Feathermoss	06	BF	36	1
SBSmc3	Hybrid white spruce - Twinberry	07	ST	240	6
Total Upland				**1,120**	**28**
SBSmc3	River	00	RI	<1	<1
SBSmc3	Road surface	0	RZ	100	3
Total Non-Vegetated, Sparsely Vegetated, and Anthropogenic				**101**	**3**
Total SBSmc3				**1,221**	**31**
ESSFmv1	Subalpine fir - Rhododendron - Feathermoss	01	FR	93	2
ESSFmv1	Lodgepole pine - Huckleberry - Cladonia	02	LC	2	<1
ESSFmv1	Subalpine fir - Huckleberry - Feathermoss	03	FF	49	1
ESSFmv1	Subalpine fir - Huckleberry - Gooseberry	04	FG	11	<1
Total Upland				**154**	**4**
ESSFmv1	Road surface	00	RZ	3	<1
Total Non-Vegetated, Sparsely Vegetated, and Anthropogenic				**3**	<1
Total ESSFmv1				**157**	**4**
Total Upland				**3,735**	**94**
Total Non-Vegetated, Sparsely Vegetated, and Anthropogenic				**257**	**6**
Total Area				**3,992**	**100**

Note: BGC = Biogeoclimatic, SBSdk = Dry Cool Sub-Boreal Spruce, SBSdw3 = Stuart Dry Warm Sub-Boreal Spruce variant, SBSmc2 = Babine Moist Cold Sub-Boreal Spruce variant; SBSmc3 = Kluskus Moist Cold Sub-Boreal Spruce variant; ESSFmv1 = Nechako Very Cold Engelmann Spruce Subalpine Fir variant; LSA = Local Study Area.

In the SBSdk, the Hybrid white spruce - Purple peavine (SBSdk 01/SP) occupies 685 ha (17%) of the transmission line LSA. The second most common ecosystem in the moist and rich SBSdk is the Hybrid white spruce - Twinberry - Coltsfoot (SBSdk 06/ST) with a total of 430 ha (11%). The third most common is the dry Lodgepole pine - Feathermoss - Cladina (SBSdk 03/LC) ecosystem with a total of 153 ha (4%).

The SBSmc3 is the second most common (1,221 ha, 31%) BGC unit along the transmission line LSA. The Hybrid white spruce - Huckleberry (SBSmc3 01/SB) represents the typic ecosystem of this variant and is the most widespread and common with a total of 506 ha (13%). The moist Hybrid white spruce - Twinberry (SBSmc3 07/ST) is the second most common with a total of 240 ha (6%). The poorly productive Black spruce - Huckleberry – Spirea (SBSmc3 05/BH) is the third most common with a total of 189 (5%).

The SBSdw3 occurs along the northern portion (765 ha, 19%) of the transmission line around Greer Creek and Stellako River. The typic Hybrid white spruce - Douglas fir – Pinegrass (SBSdw3 01/SP) is the most common with a total of 338 ha (8%). The moist Hybrid white spruce - Twinberry (SBSdw3 07/ST) is the second most common with a total of 207 ha (5%). The well-drained Hybrid white spruce - Ricegrass (SBSdw3 04/SR) which typically occurs on well-drained sites mid to upper slope sites occupy 69 ha (2%).

The SBSmc2 covers a small area (324 ha, 8%) and is scattered along the transmission line. The Hybrid white spruce - Huckleberry - Cladonia (01/SB) is the most common with a total of 218 ha (5%). The moist Hybrid white spruce - Oakfern (06/SO) ecosystem has a total of 34 ha (1%). The slightly richer Hybrid white spruce - Huckleberry - Dwarf blueberry (04/HB) is not relatively abundant with a total of 15 ha (<1%).

The ESSFmv1 occurs above either the SBSmc2 or SBS mc3 and is not common (157 ha, 4%) along the transmission line with the exception of a small height of land south of Big Bend Creek. The typic Subalpine fir - Rhododendron - Feathermoss (01/FR) is the most common with a total of 93 ha (2%). The Subalpine fir - Huckleberry - Feathermoss (03/FF) ecosystem has a total of 49 ha (1%). The moist and rich Subalpine fir - Huckleberry – Gooseberry (04/FG) ecosystem has a total of 11 ha (<1%); typically occurring on lower and receiving sites.

Existing rural and logging roads are relatively common, road surface (RZ) covers 235 ha (6%) of the transmission line LSA. Cultivated fields (CF) are present but not common; 4 ha (<1%); primarily occurring in the SBSdk and SBSdw3 the northern portion of the transmission line LSA.

Mills Ranch Reroute

Upland ecosystems cover approximately 435 ha (99%) and non-vegetated, sparsely vegetated and anthropogenic units cover approximately 4 ha (1%), **Table 3.1-12**. The Mills

Ranch reroute occurs predominantly within the SBSmc3 for a total of 345 ha (79%) and to a lesser extent the SBSdk for a total of 95 ha (21%).

Table 3.1-12: Baseline Distribution of Ecosystems in the Mills Ranch Reroute

BGC	Ecosystem	Site Series	Map Code	Area (ha)	Percent (%)
SBSdk	Hybrid white spruce - Purple peavine	01	SP	38	9
SBSdk	Lodgepole pine - Juniper - Ricegrass	02	LJ	3	1
SBSdk	Lodgepole pine - Feathermoss - Cladina	03	LC	39	9
SBSdk	Hybrid white spruce - Spirea - Feathermoss	05	SF	1	<1
SBSdk	Hybrid white spruce - Twinberry - Coltsfoot	06	ST	11	3
Total Upland				**92**	**21**
SBSdk	River	00	RI	1	<1
SBSdk	Road surface	00	RZ	1	<1
Total Non-Vegetated, Sparsely Vegetated, and Anthropogenic				**2**	**1**
Total SBSdk				**95**	**21**
SBSmc3	Hybrid white spruce - Huckleberry	01	SB	200	45
SBSmc3	Lodgepole pine - Juniper - Dwarf huckleberry	02	LJ	5	1
SBSmc3	Lodgepole pine - Feathermoss - Cladina	03	LF	38	9
SBSmc3	Hybrid white spruce - Huckleberry - Soopolallie	04	SS	13	3
SBSmc3	Black spruce - Huckleberry - Spirea	05	BH	43	10
SBSmc3	Black spruce - Lodgepole pine - Feathermoss	06	BF	1	<1
SBSmc3	Hybrid white spruce - Twinberry	07	ST	43	10
Total Upland				**343**	**78**
SBSmc3	Road surface	0	RZ	2	<1
Total Non-Vegetated, Sparsely Vegetated, and Anthropogenic				**2**	<1
Total SBSmc3				**345**	**79**
Total Upland				**435**	**99**
Total Non-Vegetated, Sparsely Vegetated, and Anthropogenic				**4**	**1**
Total Area				**440**	**100**

Note: BGC = Biogeoclimatic, SBSdk = Dry Cool Sub-Boreal Spruce, SBSmc3 = Kluskus Moist Cold Sub-Boreal Spruce variant

In the SBSmc3, the most common ecosystem is the Hybrid white spruce - Huckleberry (SBSmc3 01/SB) with a total of 200 ha (45%). It represents the typic situation for this variant and is widespread within the Mills Ranch LSA. The second most common ecosystem in the SBSmc3 is the nutrient rich and moist Hybrid white spruce - Twinberry (07/ST) for a total of 43 ha (10%) followed by the nutrient poor Black spruce Huckleberry - Spirea (05/BH) for a total of 43 ha (10%).

In the SBSdk the Lodgepole pine - Feathermoss - Cladina (03/LC) for a total of 39 ha (9%) is the most common upland ecosystem. It is a drier than average site with lodgepole pine that occurs on a variety of slope positions and surficial material. Soils are typically well-drained and coarse. Following closely in abundance is the Hybrid white spruce - Purple peavine (01/SP) with a total of 38 ha (9%).

A small proportion (3 ha, <1%) of the LSA is existing road; primarily logging roads.

Stellako Reroute

Upland ecosystems cover approximately 175 ha (94%) and non-vegetated, sparsely vegetated and anthropogenic units cover approximately 12 ha (6%), **Table 3.1-13**. The entire reroute occurs within the SBSdw3 near the northern end of the main transmission line near Stellako River.

Table 3.1-13: Baseline Distribution of Ecosystems in the Stellako Reroute

BGC	Ecosystem	Site Series	Map Code	Area (ha)	Percent (%)
SBSdw3	Hybrid white spruce - Douglas fir - Pinegrass	01	SP	70	38
SBSdw3	Douglas fir - Lodgepole pine - Cladonia	02	DC	<1	<1
SBSdw3	Lodgepole pine - Feathermoss - Cladina	03	LC	11	6
SBSdw3	Hybrid white spruce - Ricegrass	04	SR	30	16
SBSdw3	Lodgepole pine - Black spruce - Feathermoss	05	BF	<1	<1
SBSdw3	Hybrid white spruce - Pink Spirea - Prickly rose	06	SS	2	1
SBSdw3	Hybrid white spruce - Twinberry	07	ST	61	33
SBSdw3	Hybrid white spruce - Oakfern	08	SO	<1	<1
Total Upland				**175**	**94**
SBSdw3	Cultivated Field	00	CF	9	5
SBSdw3	River	00	RI	1	1
SBSdw3	Road surface	00	RZ	2	1
Total Non-Vegetated, Sparsely Vegetated, and Anthropogenic				**12**	**6**
Total SBSdw3				**187**	**100**
Total Area				**187**	**100**

Note: BGC = Biogeoclimatic, SBSdw3 = Stuart Dry Warm Sub-Boreal Spruce variant, LSA = local study area

In the SBSdw3, the most common ecosystem is the mesic Hybrid white spruce - Douglas fir - Pinegrass (01/SP) with a total of 70 ha (38%). The moist and rich Hybrid white spruce - Twinberry (07/ST) ecosystem has a total of 61 ha (33%). The Hybrid white spruce - Ricegrass (04/SR) ecosystem has a total of 30 ha (16%). Cultivated fields (CF) occur and occupy a total of almost 9 ha (5%) of the LSA. A small proportion is existing road (RZ) totalling approximately 2 ha (1%).

3.1.3.6 Kluskus Forest Service Road

The Kluskus FSR is an existing forest service road. Upland ecosystems cover approximately 1,738 ha (79%) and non-vegetated, sparsely vegetated and anthropogenic units cover approximately 474 ha (21%), **Table 3.1-14**.

Table 3.1-14: Baseline Distribution of Ecosystems in the Kluskus FSR LSA

BGC	BGC Description	Site Series	Map Code	Area (ha)	Percent (%)
SBSdk	Hybrid white spruce - Purple peavine	01	SP	240	11
SBSdk	Lodgepole pine - Juniper - Ricegrass	02	LJ	1	<1
SBSdk	Lodgepole pine - Feathermoss - Cladina	03	LC	29	1
SBSdk	Douglas fir - Soopolallie - Feathermoss	04	DS	4	<1
SBSdk	Hybrid white spruce - Spirea - Feathermoss	05	SF	41	2
SBSdk	Hybrid white spruce - Twinberry - Coltsfoot	06	ST	64	3
SBSdk	Black cottonwood - Dogwood - Prickly Rose	08	CD	1	<1
Total Upland				**381**	**17**
SBSdk	Cultivated Field	00	CF	156	7
SBSdk	Exposed Soils	00	ES	2	<1
SBSdk	Pond	00	PD	<1	<1
SBSdk	Rural	00	RW	6	<1
SBSdk	Road surface	00	RZ	100	5
Total Non-Vegetated, Sparsely Vegetated, and Anthropogenic				**264**	**12**
Total SBSdk				**645**	**29**
SBSdw3	Hybrid white spruce - Douglas fir - Pinegrass	01	SP	97	4
SBSdw3	Douglas fir - Lodgepole pine - Cladonia	02	DC	1	<1
SBSdw3	Lodgepole pine - Feathermoss - Cladina	03	LC	11	<1
SBSdw3	Hybrid white spruce - Ricegrass	04	SR	6	<1
SBSdw3	Lodgepole pine - Black spruce - Feathermoss	05	BF	16	1
SBSdw3	Hybrid white spruce - Pink Spirea - Prickly rose	06	SS	1	<1
SBSdw3	Hybrid white spruce - Twinberry	07	ST	42	2
SBSdw3	Hybrid white spruce - Oakfern	08	SO	1	<1
Total Upland				**174**	**8**
SBSdw3	Gravel Pit	0	GP	7	<1
SBSdw3	Road surface	0	RZ	34	2
Total Non-Vegetated, Sparsely Vegetated, and Anthropogenic				**41**	**2**
Total SBSdw3				**215**	**10**
SBSmc2	Hybrid white spruce - Huckleberry	01	SB	59	3
SBSmc2	Lodgepole pine - Huckleberry - Cladonia	02	PH	45	2
SBSmc2	Black spruce - Lodgepole pine - Feathermoss	03	BM	16	1
SBSmc2	Hybrid white spruce - Twinberry - Coltsfoot	05	TC	4	<1
SBSmc2	Hybrid white spruce - Oakfern	06	SO	10	<1
SBSmc2	Hybrid white spruce - Horsetail	10	SH	1	<1
Total Upland				**135**	**6**
SBSmc2	Road surface	00	RZ	12	1
Total Non-Vegetated, Sparsely Vegetated, and Anthropogenic				**12**	**1**
Total SBSmc2				**147**	**7**
SBSmc3	Hybrid white spruce - Huckleberry	01	SB	493	22
SBSmc3	Lodgepole pine - Juniper - Dwarf huckleberry	02	LJ	2	<1
SBSmc3	Lodgepole pine - Feathermoss - Cladina	03	LF	51	2
SBSmc3	Hybrid white spruce - Huckleberry - Soopolallie	04	SS	64	3
SBSmc3	Black spruce - Huckleberry - Spirea	05	BH	132	6
SBSmc3	Black spruce - Lodgepole pine - Feathermoss	06	BF	30	1
SBSmc3	Hybrid white spruce - Twinberry	07	ST	146	7
Total Upland				**917**	**41**

BGC	BGC Description	Site Series	Map Code	Area (ha)	Percent (%)
SBSmc3	Exposed Soils	00	ES	4	<1
SBSmc3	Gravel Pit	00	GP	3	<1
SBSmc3	Lake	00	LA	1	<1
SBSmc3	Pond	00	PD	2	<1
SBSmc3	Road surface	00	RZ	125	6
SBSmc3	Urban	00	UR	2	<1
Total Non-Vegetated, Sparsely Vegetated, and Anthropogenic				**136**	**6**
Total SBSmc3				**1,053**	**48**
ESSFmv1	Subalpine fir - Rhododendron - Feathermoss	01	FR	88	4
ESSFmv1	Lodgepole pine - Huckleberry - Cladonia	02	LC	1	<1
ESSFmv1	Subalpine fir - Huckleberry - Feathermoss	03	FF	31	1
ESSFmv1	Subalpine fir - Huckleberry - Gooseberry	04	FG	10	<1
Total Upland				**131**	**6**
ESSFmv1	Exposed Soils	00	ES	1	<1
ESSFmv1	Gravel Pit	00	GP	4	<1
ESSFmv1	Road surface	00	RZ	16	1
Total Non-Vegetated, Sparsely Vegetated, and Anthropogenic				**22**	**1**
Total ESSFmv1				**152**	**14**
Total Upland				**1,738**	**79**
Total Non-Vegetated, Sparsely Vegetated, and Anthropogenic				**474**	**21**
Total Area				**2,212**	**100**

Note: BGC = Biogeoclimatic, SBSdk = Dry Cool Sub-Boreal Spruce, SBSdw3 = Stuart Dry Warm Sub-Boreal Spruce variant, SBSmc2 = Babine Moist Cold Sub-Boreal Spruce variant; SBSmc3 = Kluskus Moist Cold Sub-Boreal Spruce variant; ESSFmv1 = Nechako Very Cold Engelmann Spruce Subalpine Fir variant; LSA = Local Study Area.

SBSmc3 covers the largest area in the Kluskus FSR LSA with a total of 1,053 ha (48%) in the LSA. The hybrid white spruce - Huckleberry (01/SB) forest ecosystem is the most common with a total of 493 ha (22%). The moist and productive Hybrid white spruce-Twinberry (07/ST) ecosystem has a total of 146 (7%). The nutrient poor Black spruce - Huckleberry - Spirea (05/BH) ecosystem has a total of 132 ha (6%).

The SBSdk is the second most abundant BGC unit in the Kluskus FSR, with a total of 645 ha (29%) in the LSA. The Hybrid white spruce - Spirea - Purple peavine (SBSdk 01/SP) mesic forest ecosystem is the most common, with a total of 241 ha (11%). The moist and rich Hybrid white spruce - Twinberry - Coltsfoot (06/ST) ecosystem has a total of 64 ha (3%). The nutrient poor Hybrid white spruce - Spirea - Feathermoss (05/SF) has a total of 41 ha (2%).

The SBSdw3 is the third most abundant BGC variant in the Kluskus FSR LSA, with a total of 215 ha (10%) in the LSA. The Hybrid white spruce - Douglas fir - Pinegrass (SBSdw3 01/SP) forested ecosystem is the most common, with a total of 97 ha (4%) in the LSA. The moist Hybrid white spruce - Twinberry (SBSdw3 07/ST) forest occupies a total of 42 ha

(2%). The nutrient poor Lodgepole pine - Black spruce - Feathermoss (05/BF) ecosystem occupies a total of 16 ha (1%).

The ESSFmv1 is the fourth most abundant BGC variant in the Kluskus FSR, with a total of 152 ha (14%) in the LSA. The Subalpine fir - Rhododendron - Feathermoss (ESSFmv1 01/FR) is the most common ecosystem, with a total of 88 ha (4%) in the LSA. The dry forest Subalpine fir - Huckleberry - Feathermoss (ESSFmv1 03/FF) ecosystem is the second most common, with a total of 31 ha (1%) in the LSA. The moist forest unit Subalpine fir-Huckleberry-Gooseberry (ESSFmv1 04/FG) ecosystem, occupies a total of 10 ha (<1%) in the LSA.

The SBSmc2 is the least common BGC variant in the Kluskus FSR, with a total of 147 ha (7%) in the LSA. The mesic forest Hybrid white spruce - Huckleberry (01/SB) ecosystem is the most common, with a total of 59 ha (3%). The very dry Lodgepole pine - Huckleberry - Cladonia (02/PH) ecosystem occupies a total of 45 ha (2%). The nutrient poor Black spruce - Lodgepole pine - Feathermoss (03/BM) ecosystem has a total of 16 ha (1%) in the LSA.

Existing logging road (RZ) covers a total of 286 ha (13%), Cultivate Field (CF) covers a total of 156 ha (7%) and Gravel Pit (GP) covers a total of 14 ha (1%) along the Kluskus FSR LSA.

3.1.4 Ecosystems At Risk

Thirteen upland ecosystems at risk potentially occur in the Project area. Four grassland ecosystems are red-listed, five forested ecosystems are Blue-listed, and four riparian ecosystem occur. The latter are composed of one Red-listed and three Blue-listed (Table 3.1-15).

In total 10 were mapped in the LSA and occur along the transmission line, Stellako reroute, Mills Ranch reroute and Kluskus FSR. All upland ecosystems at risk occur in either the SBSdk or the SBSdw3.

Four were verified by plot data; three plots in the Lodgepole pine - Common juniper - Rough-leaved ricegrass (SBSdk 02/LJ), one in the Drummond's willow - Bluejoint reedgrass (SBSdw3 Fl05), one in the Black cottonwood - Spruce - Red-osier dogwood (SBSdk 08/CD) and one in the Saskatoon - Slender wheatgrass (SBSdw3 81/SW).

Table 3.1-15: Ecosystems At Risk Potentially Occurring Within the Project Area

BGC	Ecosystem Group	Site Series	Map Code	Ecosystem	BC List	Plot Number	Mapped in LSA
SBSdk	Upland - Grassland	82	BW	Sandberg's bluegrass - Slender wheatgrass	Red		✗
SBSdk	Upland - Grassland	81	SW	Saskatoon - Slender wheatgrass	Red		✓
SBSdk	Upland - Forest	02	LJ	Lodgepole pine - Common juniper - Ricegrass	Blue	T-12-G226; T-12-G212; T-12-G026	✓
SBSdk	Upland - Forest	04	DS	Douglas-fir - Soopolallie - Feathermoss	Blue		✓
SBSdk	Upland - Flood	08	CD	Black cottonwood - Dogwood - Prickly Rose	Red	T-12-G208	✓
SBSdk	Terrestrial - Flood	00	FI02	Mountain alder - Red-osier dogwood - Lady fern	Blue		✗
SBSdk	Terrestrial - Flood	00	FI05	Drummond's willow - Bluejoint	Blue		✓
SBSdw3	Terrestrial - Grassland	82	BW	Sandberg's bluegrass - Slender wheatgrass	Red		✗
SBSdw3	Terrestrial - Grassland	81	SW	Saskatoon - Slender wheatgrass	Red	T-12-G214	✓
SBSdw3	Terrestrial - Forest	02	DC	Douglas-fir - Lodgepole pine - Cladonia	Blue		✓
SBSdw3	Terrestrial - Forest	05	BF	Lodgepole pine - Black spruce - Feathermoss	Blue		✓
SBSdw3	Terrestrial - Forest	06	SS	Hybrid white spruce - Pink spirea - Prickly rose	Blue		✓
SBSdw3	Terrestrial - Flood	00	FI05	Drummond's willow -Bluejoint	Blue	T13-020G	✓

Note: BGC = Biogeoclimatic, SBSdk = Dry Cool Sub-Boreal Spruce, SBSdw3 = Dry Warm Stuart Sub-Boreal Spruce variant

There were no Conservation Data Centre element occurrence records for ecological communities for the Project LSA. No upland ecosystems at risk occur at the mine site, mine site access road, fresh water supply system, or airstrip.

3.1.4.1 Transmission Line

The transmission line totals 4,290 ha of which 70 ha (2%) are upland ecosystems at risk.

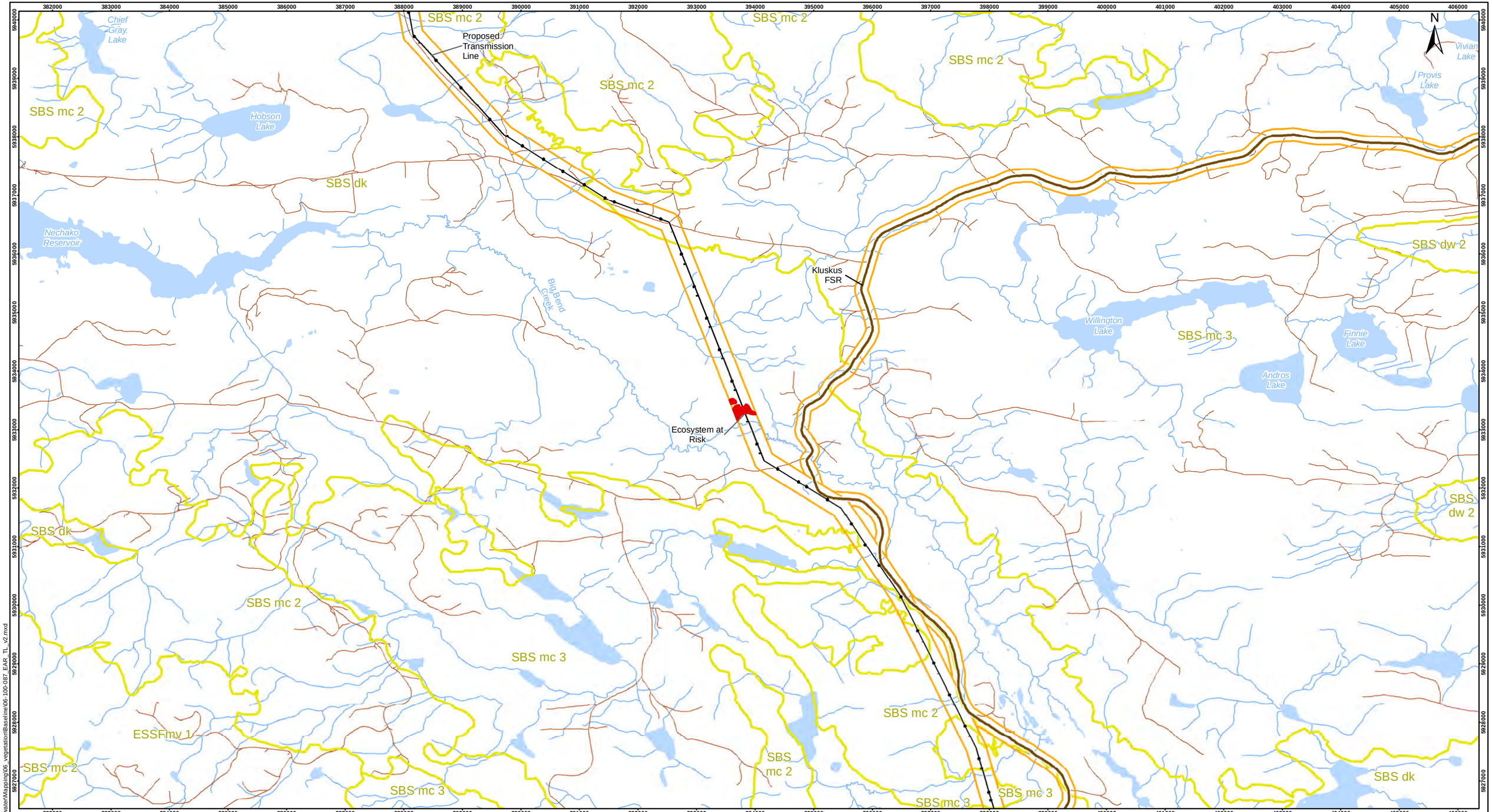
Ten occurrences of ecosystems at risk were mapped along the transmission line; two are the same community but they occur in different BGC units. The Saskatoon - Slender wheatgrass (81/SW) and the Drummond's willow - Bluejoint reedgrass (Fl05) occur in both the SBSdk and SBSdw3. The Saskatoon - Slender wheatgrass is a scrub steppe community that is restricted to steep, south facing slopes and are typically quite small in size. It occurs at six locations along the transmission line LSA between Greer Creek and Stellako River with a total of 4 ha (<1%). The Drummond's willow - Bluejoint reedgrass is a riparian ecosystem that occurs on low bench floodplains sites adjacent to rivers. This ecosystem occurs near Tahultzu Lake and again south of Stellako River with a total of 3 ha (<1%).

The very dry Lodgepole pine - Common juniper - Rough-leaved ricegrass (SBSdk 02/LJ) is the most abundant ecosystem at risk along the transmission line LSA with a total of 24 ha (1%) (**Table 3.1-16**, **Figure 3.1-5)**. It occurs at 19 locations along the transmission line between Tatelkuz Lake and Tahultzu Lake located on or around exposed bedrock.

Table 3.1-16: Distribution of Upland Ecosystems At Risk in the Transmission Line LSA

BGC	BGC Description	Site Series	Map Code	Area (ha)	Percent (%)
SBSdk	Saskatoon - Slender wheatgrass	81	SW	1	<1
SBSdk	Lodgepole pine - common juniper - rough-leaved ricegrass	02	LJ	24	1
SBSdk	Douglas fir - Soopolallie - Feathermoss	04	DS	1	<1
SBSdk	Black cottonwood - spruce - Red-osier dogwood	08	CD	3	<1
SBSdk	Drummond's willow - Bluejoint reedgrass	00	Fl05	1	<1
Total SBSdk				**28**	**1**
SBSdw3	Saskatoon - Slender wheatgrass	81	SW	3	<1
SBSdw3	Douglas fir - Lodgepole pine - Cladonia	02	DC	11	<1
SBSdw3	Lodgepole pine - Black spruce - Feathermoss	05	BF	22	1
SBSdw3	Hybrid white spruce - Pine spirea - Prickly rose	06	SS	10	<1
SBSdw3	Drummond's willow - Bluejoint reedgrass	00	Fl05	2	<1
Total SBSdw3				**43**	**1**
Total Ecosystems at Risk				**70**	**2**
Total Area of Transmission Line LSA				**4,290**	

Note: BGC = Biogeoclimatic, SBSdk = Dry Cool Sub-Boreal Spruce, SBSdw3 = Stuart Dry Warm Sub-Boreal Spruce variant, LSA = Local Study Area.



Legend

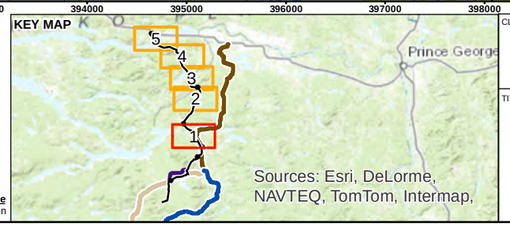
- Proposed Transmission Line
- Kluskus FSR
- Existing Road
- Stream
- Waterbody
- Ecosystem at Risk
- Biogeoclimatic Zone

Terrain, Soils, and Vegetation

- Local Study Area

0 250500 1000
Meters
Scale:1:60,000

Source
BC Government GeoBC Data Distribution



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Upland Ecosystems at Risk
Transmission Line
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DATE: October, 2013	ANALYST: AA	Figure 3.1-5
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-087_EAR_TL_v2.pdf
GIS FILE: 06-100-087_EAR_TL_v2.mxd		
PROJECTION: UTM 10	DATUM: NAD83	

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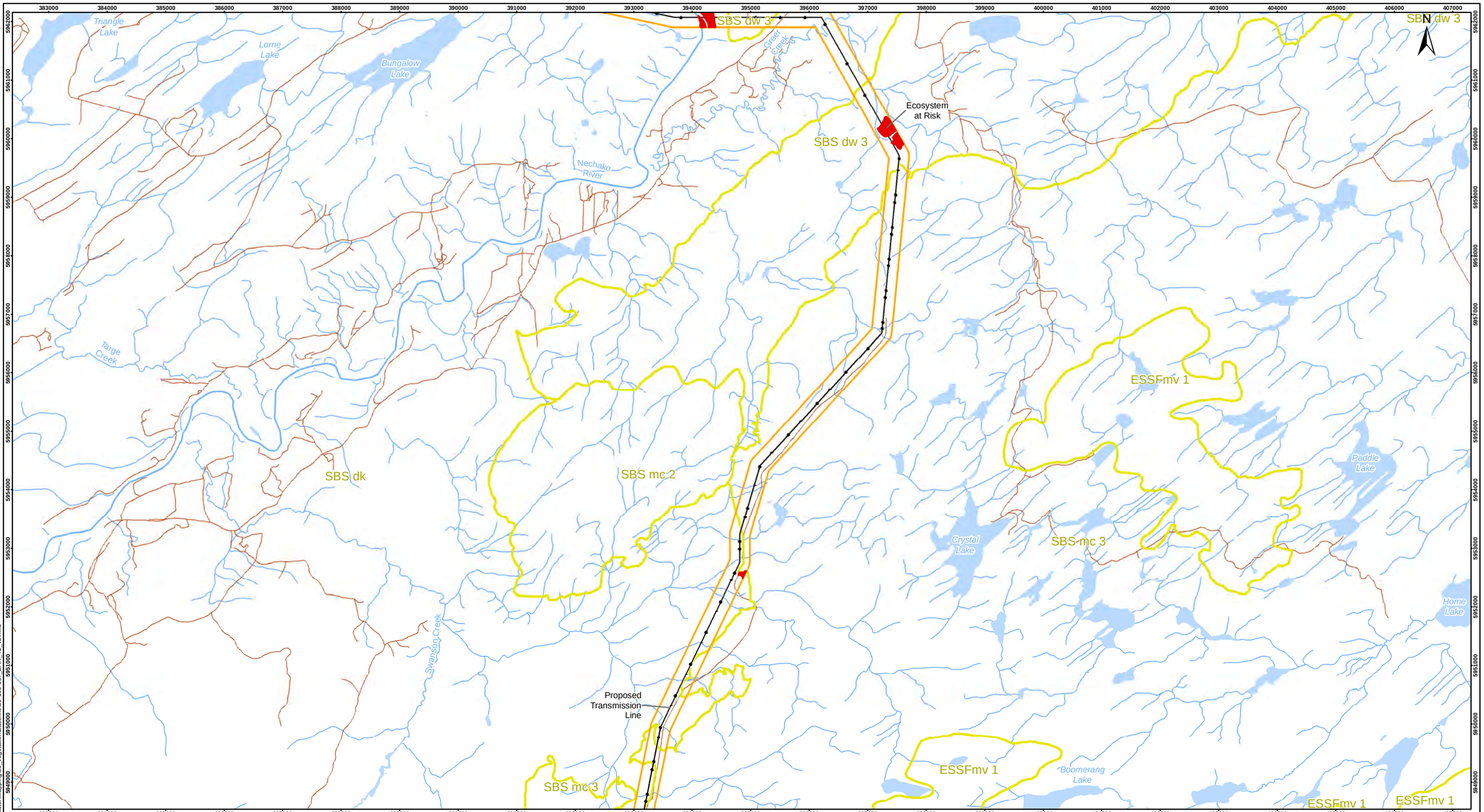


Legend

- Proposed Transmission Line
- Existing Road
- Stream
- Waterbody
- Ecosystem at Risk
- Biogeoclimatic Zone

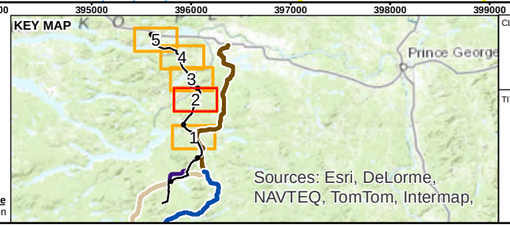
Terrain, Soils, and Vegetation

- Local Study Area

0 250500 1000
Meters
Scale:1:60,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Upland Ecosystems at Risk
Transmission Line
Page 2 of 5

DATE: October, 2013	ANALYST: AA	Figure 3.1-5
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-087_EAR_TL_v2.pdf
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PROJECTION: UTM 10	DATUM: NAD83	amec

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ESSFmv 1

SBS mc 2

SBS mc 2

SBS dw 3

SBS dk

SBS dw 3

SBS mc 2

SBS mc 3

Proposed Transmission Line

Ecosystem at Risk

Dorman Lake

Twentysix Mile Lake

Tahultzu Lake

Nechako River

Greer Creek

Hallett Lake

Targe Creek

Triangle Lake

True Triangle Lake

Lorne Lake

Bungalow Lake

N

381000 382000 383000 384000 385000 386000 387000 388000 389000 390000 391000 392000 393000 394000 395000 396000 397000 398000 399000 400000 401000 402000 403000 404000 405000

5974000 5973000 5972000 5971000 5970000 5969000 5968000 5967000 5966000 5965000 5964000 5963000 5962000 5961000

Legend

- Proposed Transmission Line
- Existing Road
- Stream
- Waterbody
- Ecosystem at Risk
- Biogeoclimatic Zone

Terrain, Soils, and Vegetation

- Local Study Area

0 250500 1000

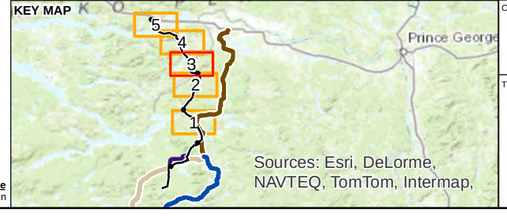
Meters

Scale:1:60,000

Source

BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Upland Ecosystems at Risk
Transmission Line
Page 3 of 5

DATE: October, 2013	ANALYST: AA	Figure 3.1-5
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-087_EAR_TL_v2.pdf
GIS FILE: 06-100-087_EAR_TL_v2.mxd		
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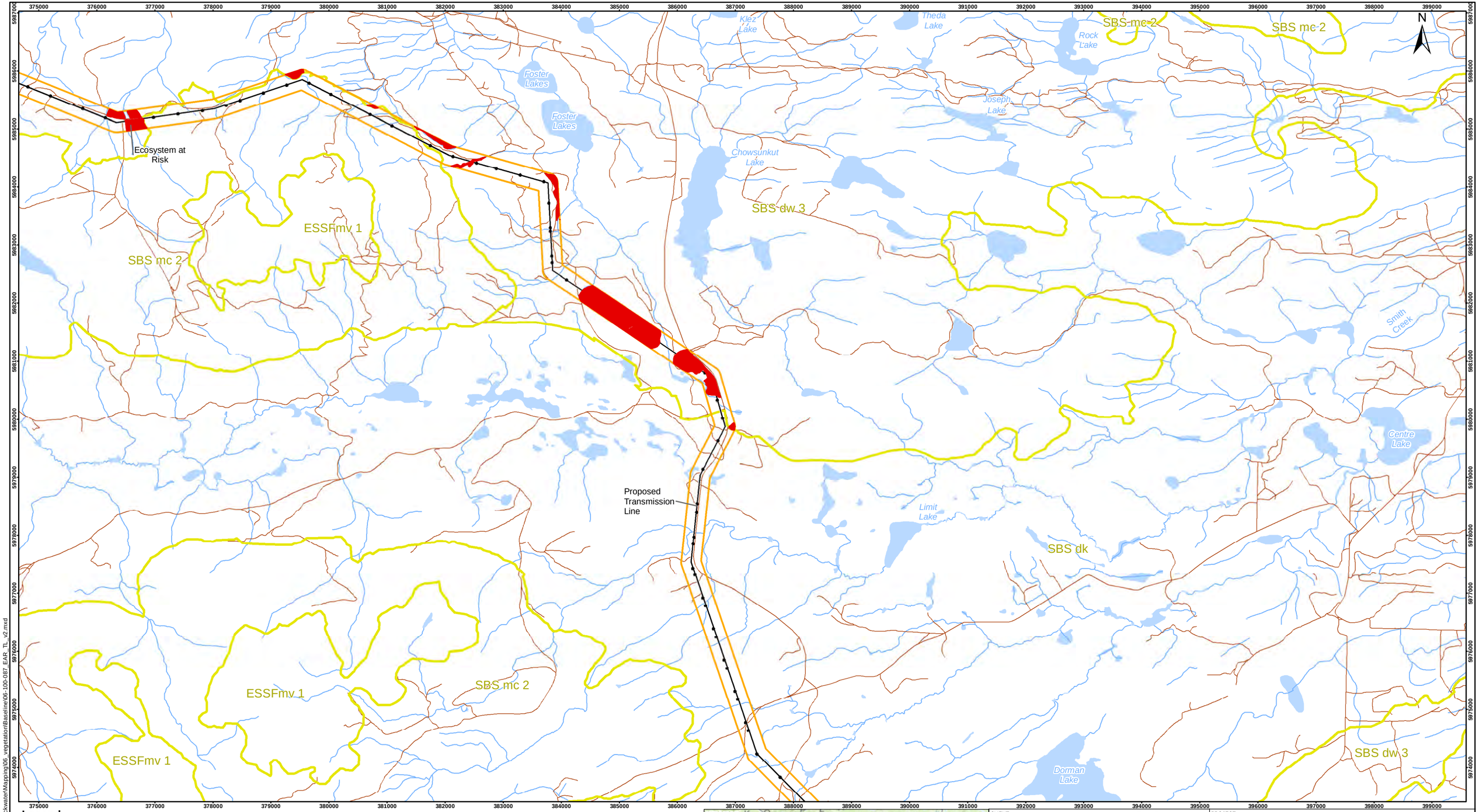


Legend

- Proposed Transmission Line
- Existing Road
- Stream
- Waterbody
- Ecosystem at Risk
- Biogeoclimatic Zone

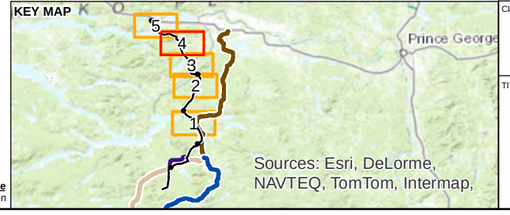
Terrain, Soils, and Vegetation

- Local Study Area

0 250500 1000
Meters
Scale:1:60,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Upland Ecosystems at Risk
Transmission Line
Page 4 of 5

DATE: October, 2013	ANALYST: AA	Figure 3.1-5
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-087_EAR_TL_v2.pdf
GIS FILE: 06-100-087_EAR_TL_v2.mxd		
PROJECTION: UTM 10	DATUM: NAD83	amec

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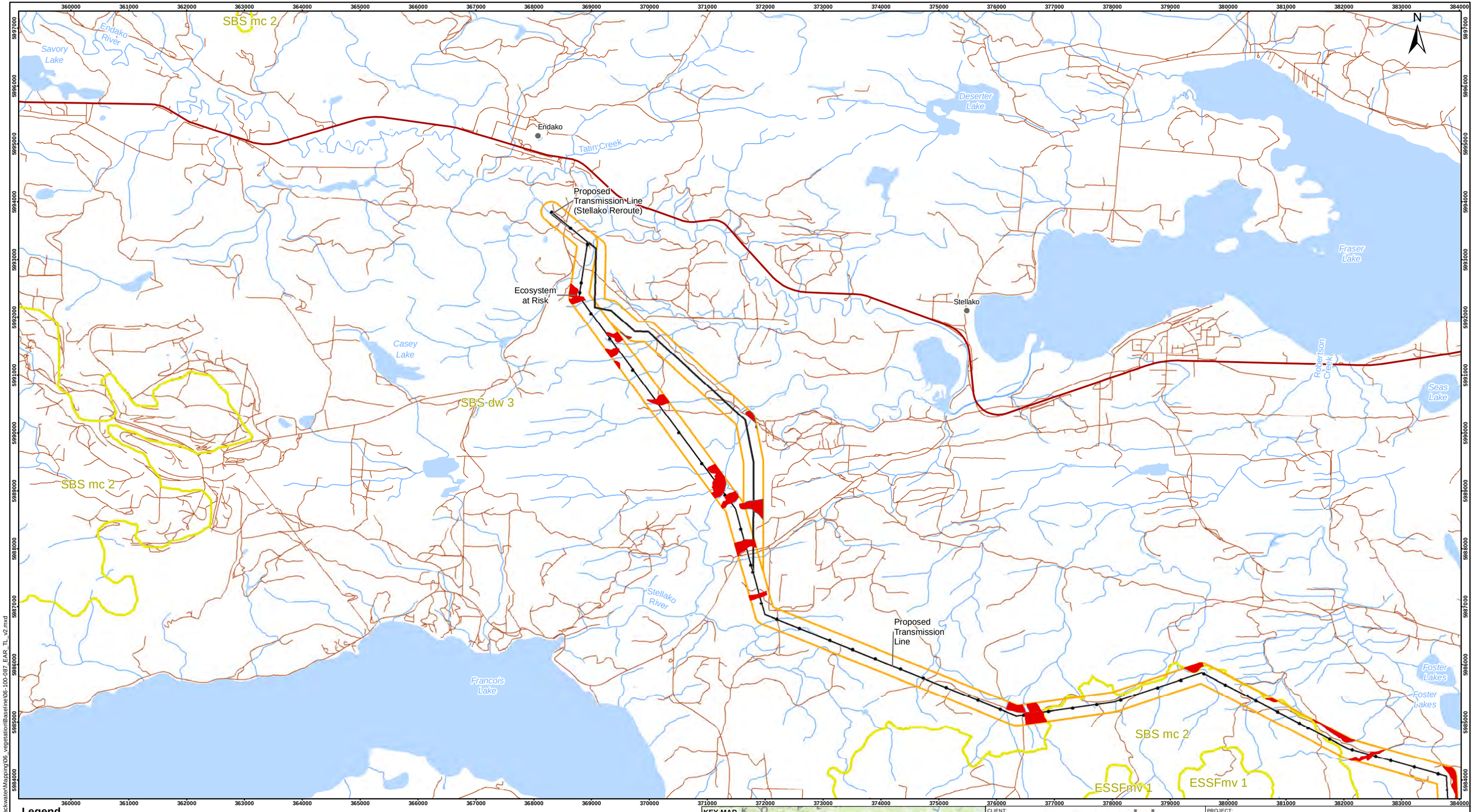


Legend

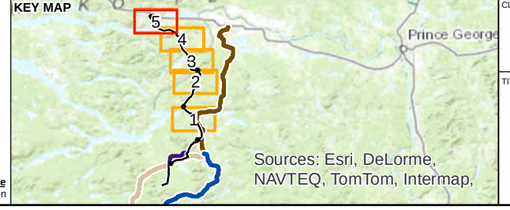
- Proposed Transmission Line
- Proposed Transmission Line (Stellako Reroute)
- Existing Road
- Highway
- Stream
- Waterbody
- Ecosystem at Risk
- Biogeoclimatic Zone

Terrain, Soils, and Vegetation

- Local Study Area

0 250500 1000
Meters
Scale:1:60,000

Source
BC Government GeoBC Data Distribution



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Upland Ecosystems at Risk
Transmission Line
Page 5 of 5

DATE: October, 2013	ANALYST: AA	Figure 3.1-5
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-087_EAR_TL_v2.pdf
GIS FILE: 06-100-087_EAR_TL_v2.mxd		
PROJECTION: UTM 10	DATUM: NAD83	amec

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The poorly productive Lodgepole pine - Black spruce - Feathermoss (SBSdw3 05/BF) is the second most abundant with at total of 22 ha (1%). It occurs at seven locations along the transmission line near Smith Creek, south of Stellako River. This ecosystem is a nutrient poor site as indicated by the presence of black spruce and typically occurs on level terrain with compact soils that are wet during the spring and experience drought during the summer (Delong, 1993).

The third most common ecosystem at risk is the Hybrid white spruce - Spirea - Prickly rose (SBSdw3 06/SS) with a total of 10 ha (<1%). There are nine locations of this site along the very northern portion of the transmission line where it occurs. Sites are often level with fine textured lacustrine soils (Delong, 1993).

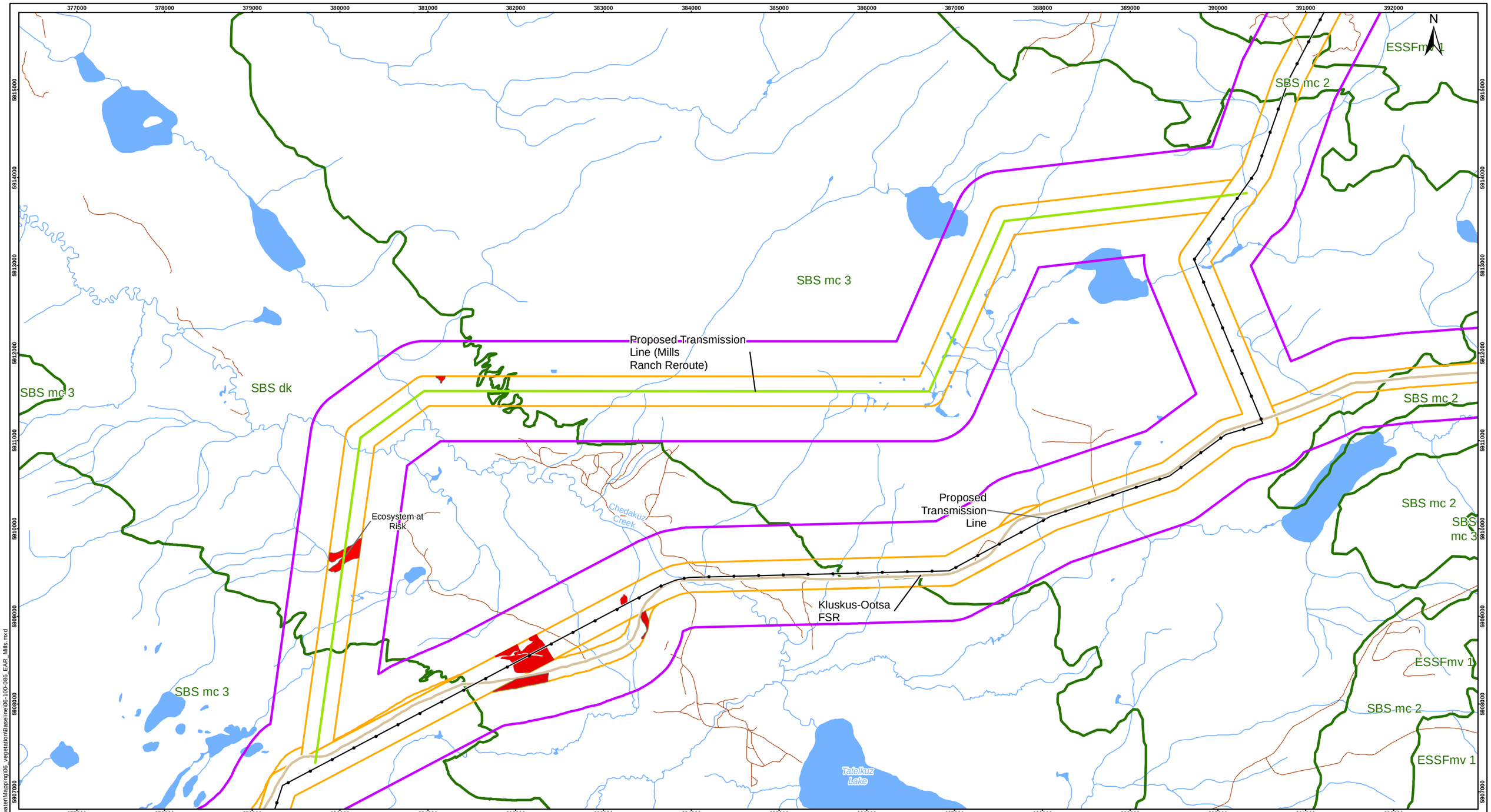
Mills Ranch Reroute

The Mills Ranch reroute is a small segment of 505 ha of which 3 ha (1%) are upland ecosystems at risk. There are two occurrences of one ecosystem at risk, the Lodgepole pine - Common juniper - Rough-leaved ricegrass (SBSdk 02/LJ) **(Table 3.1-17**, **Figure 3.1-6**). This very dry ecosystem typically occurs on crest positions with shallow soils.

Table 3.1-17: Distribution of Upland Ecosystems At Risk in the Mills Ranch Reroute LSA – Baseline Case

BGC	BGC Description	Site Series	Map Code	Area (ha)	Percent (%)
SBSdk	Lodgepole pine - common juniper - rough-leaved ricegrass	02	LJ	3	1
Total Ecosystems at Risk				**3**	**1**
Total Area of Mills Ranch LSA				**505**	

Note: BGC = biogeoclimatic, LSA = local study area, SBSdk = Sub-Boreal Spruce Dry Cool variant.



Legend

- Proposed Transmission Line
- Proposed Transmission Line (Mills Ranch Reroute)
- Kluskus Ootsa FSR
- Existing Road
- Stream
- Waterbody
- Ecosystem at Risk
- Biogeoclimatic Zone

Terrain, Soils, and Vegetation

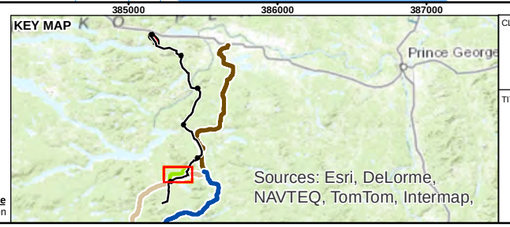
- Regional Study Area
- Local Study Area

0 250 500 1000
Meters

Scale:1:40,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Upland Ecosystems at Risk

Mills Ranch Reroute

DATE: October, 2013	ANALYST: AA	Figure 3.1-6	
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-086_EAR_Mills.pdf	
GIS FILE: 06-100-086_EAR_Mills.mxd			
PROJECTION: UTM 10	DATUM: NAD83		

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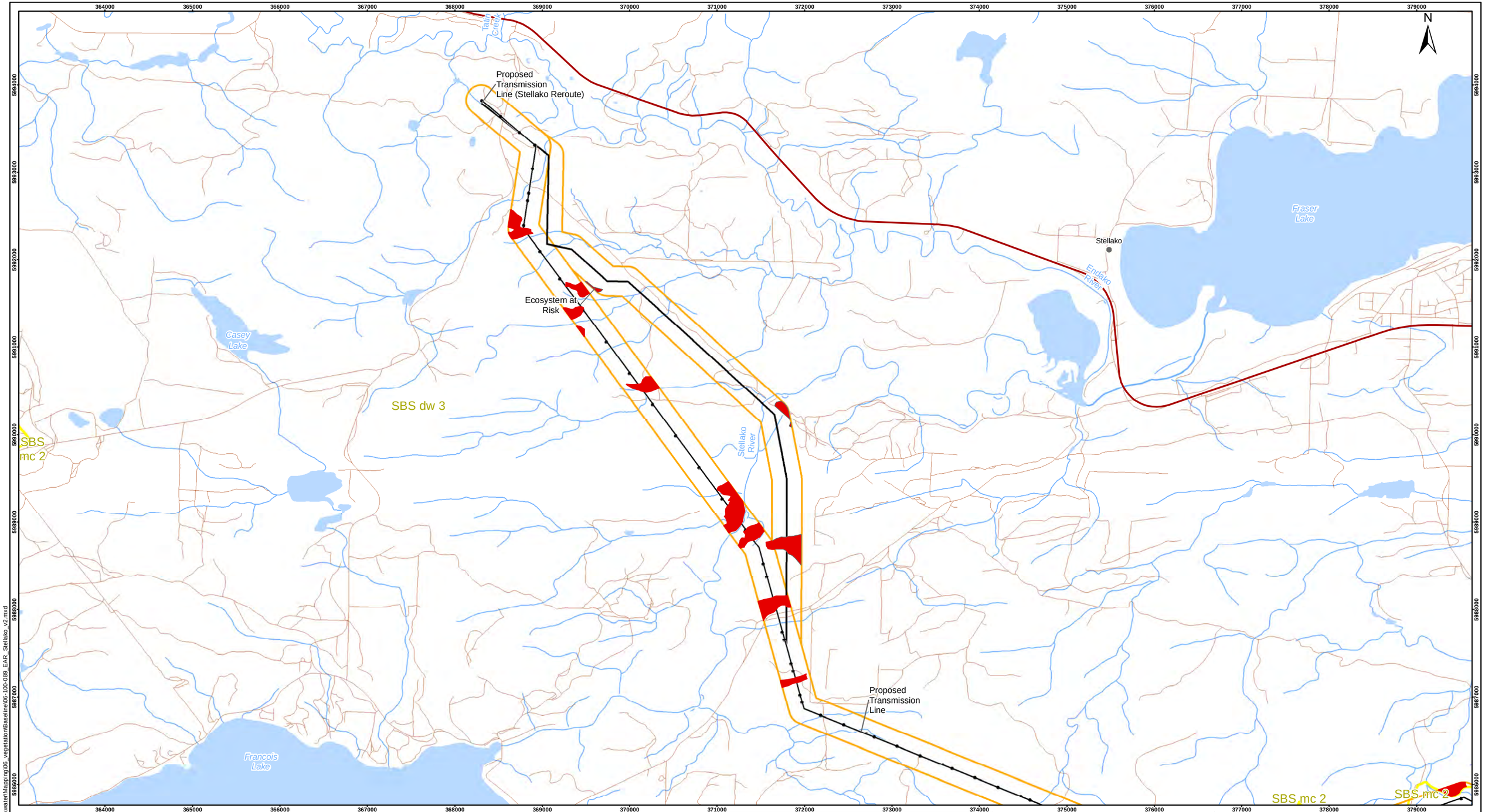
Stellako Reroute

The Stellako reroute is a total of 200 ha of which 2 ha (1%) are occupied by upland ecosystems at risk. The most abundant is the Hybrid white spruce - Pink spirea - Prickly rose ecosystem with a total of 2 ha (1%) of the LSA (**Table 3.1-18, Figure 3.1-7**). The other two ecosystems, Lodgepole pine - Black spruce - Feathermoss and the Douglas-fir - Lodgepole pine - Cladonia ecosystem in total occupy less than 1 ha or 1% of the reroute.

Table 3.1-18: Distribution of Upland Ecosystems At Risk in the Stellako Reroute LSA

BGC	BGC Description	Site Series	Map Code	Area (ha)	Percent (%)
SBSdw3	Douglas fir - Lodgepole pine - Cladonia	02	DC	<1	<1
SBSdw3	Lodgepole pine - Black spruce - Feathermoss	05	BF	<1	<1
SBSdw3	Hybrid white spruce - Pine spirea - Prickly rose	06	SS	2	1
Total SBSdw3				**2**	**1**
Total Ecosystems at Risk				**2**	**1**
Total Area of Stellako LSA				**200**	

Note: BGC = biogeoclimatic, LSA = local study area, SBSdw3 = Sub-Boreal Spruce Dry Warm Stuart variant.



Legend

- Proposed Transmission Line
- Proposed Transmission Line (Stellako Reroute)
- Existing Road
- Highway
- Stream
- Waterbody
- Biogeoclimatic Zone
- Ecosystem at Risk

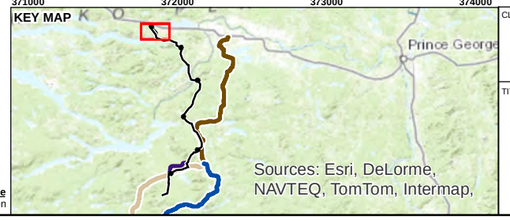
Terrain, Soils, and Vegetation

- Local Study Area

0 250 500 1000
Meters
Scale:1:40,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Upland Ecosystems at Risk
Stellako Reroute

DATE: October, 2013	ANALYST: AA	Figure 3.1-7
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-089_EAR_Stellako_v2.pdf
GIS FILE: 06-100-089_EAR_Stellako_v2.mxd		
PROJECTION: UTM 10	DATUM: NAD83	amec

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3.1.4.2 Kluskus FSR

The Kluskus FSR occupies a total area of 2,428 ha of which 24 (1%) are upland ecosystems at risk. Six upland ecosystems at risk were mapped within the SBSdk and SBSdw3 with a total of 6 ha (<1%) in the SBSdk and 18 ha (1%) occur within the SBSdw3. (**Table 3.1-19**, **Figure 3.1-8**).

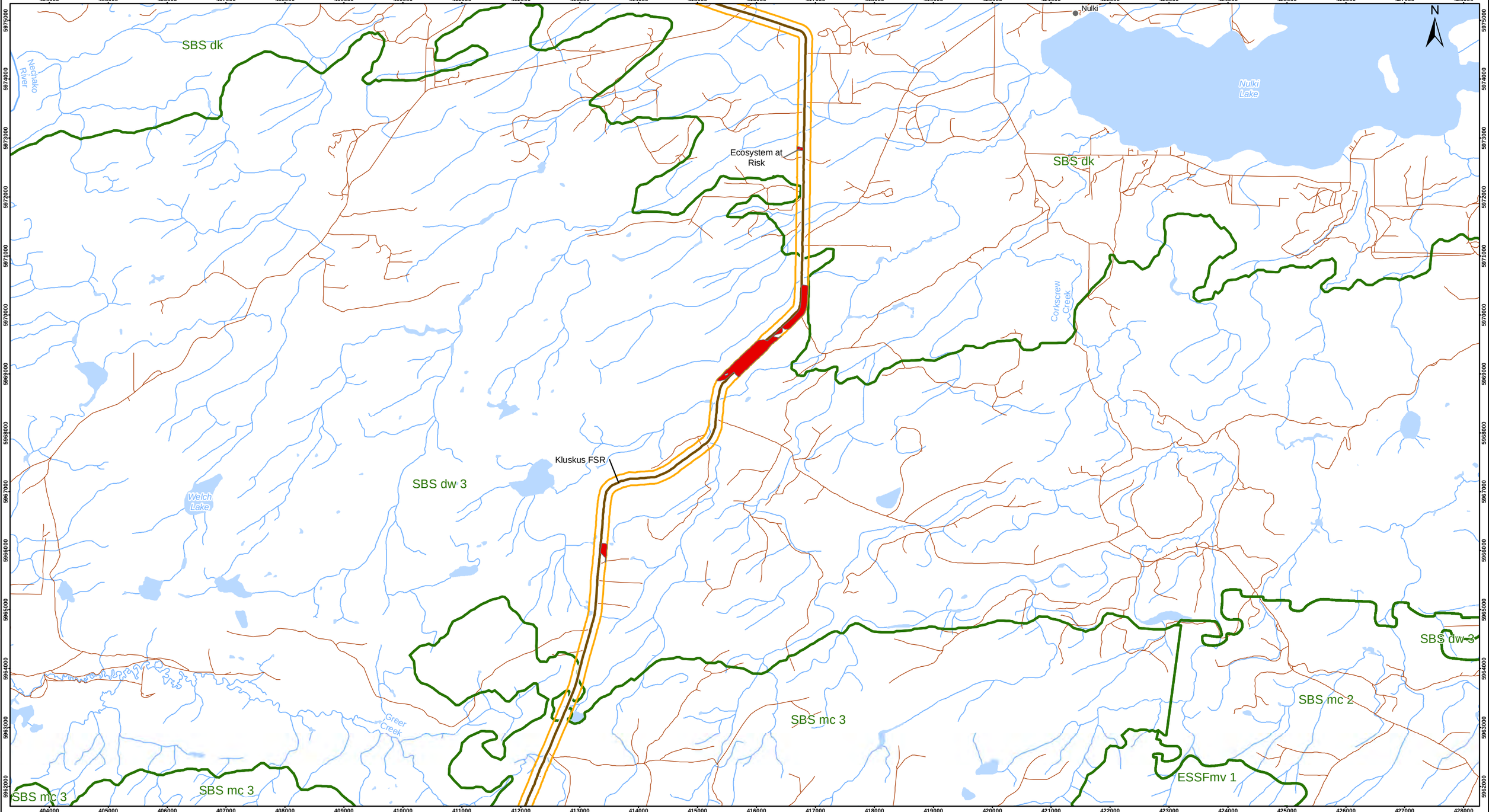
The SBSdw3 Lodgepole pine-Black spruce-Feathermoss (05/BF) was the most common upland ecosystem at risk in the Kluskus FSR LSA with a total of 16 ha (1%). There are two occurrences along the Kluskus FSR between Greer Creek and Nulki Creek.

The SBSdk Douglas fir - Soopolallie - Feathermoss (04/DS) was the second most common with a total of 4 ha (<1%). Six occurrences of this ecosystem are located along the northern portion of the Kluskus FSR between Nulki Lake and community of Engen.

Table 3.1-19: Distribution of Upland Ecosystems At Risk in the Kluskus FSR

BGC	BGC Description	Site Series	Map Code	Area (ha)	Percent (%)
SBSdk	Lodgepole pine - common juniper - rough-leaved ricegrass	02	LJ	1	<1
SBSdk	Douglas fir - Soopolallie - Feathermoss	04	DS	4	<1
SBSdk	Black cottonwood - spruce - Red-osier dogwood	08	CD	1	<1
Total SBSdk				**6**	<1
SBSdw3	Douglas fir - Lodgepole pine - Cladonia	02	DC	1	<1
SBSdw3	Lodgepole pine - Black spruce - Feathermoss	05	BF	16	1
SBSdw3	Hybrid white spruce - Pine spirea - Prickly rose	06	SS	1	<1
Total SBSdw3				**18**	**1**
Total Ecosystems at Risk				**24**	**1**
Total Area of Kluskus FSR LSA				**2,428**	

Note: BGC = biogeoclimatic; LSA = local study area, SBSdk = Sub-Boreal Spruce Dry Cool, and SBSdw3 = Sub-Boreal Spruce Dry Warm Stuart variant.



Legend

- Kluskus FSR
- Existing Road
- Stream
- Waterbody
- Ecosystem at Risk
- Biogeoclimatic Zone

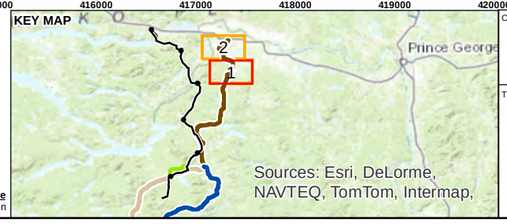
Terrain, Soils, and Vegetation

- Local Study Area

0 250 500 1000
Meters
Scale:1:60,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE:
Upland Ecosystems at Risk
Kluskus Forest Service Road
Page 1 of 2

DATE: October, 2013	ANALYST: AA	Figure 3.1-8
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-088_EAR_FSR_v2.pdf
GIS FILE: 06-100-088_EAR_FSR_v2.mxd		
PROJECTION: UTM 10	DATUM: NAD83	amec

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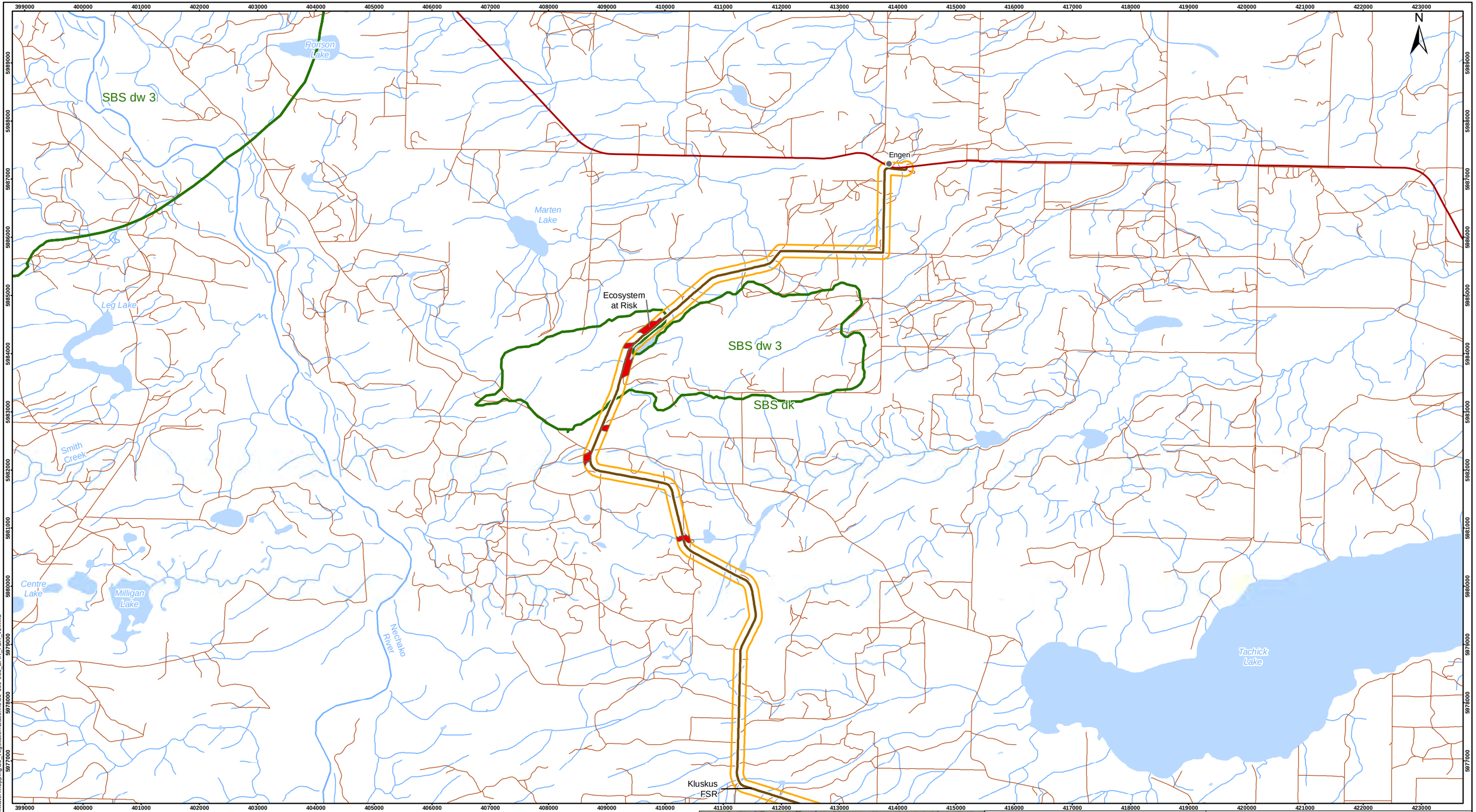


Legend

- Kluskus FSR
- Existing Road
- Highway
- Stream
- Waterbody
- Ecosystem at Risk
- Biogeoclimatic Zone

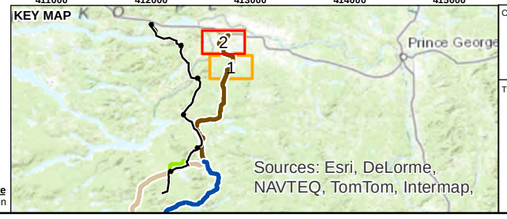
Terrain, Soils, and Vegetation

- Local Study Area

0 250500 1000
Meters
Scale:1:60,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE:
Upland Ecosystems at Risk
Kluskus Forest Service Road
Page 2 of 2

DATE: October, 2013	ANALYST: AA	Figure 3.1-8
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-088_EAR_FSR_v2.pdf
GIS FILE: 06-100-088_EAR_FSR_v2.mxd		
PROJECTION: UTM 10	DATUM: NAD83	amec

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3.1.5 Sensitive Ecosystems

Three types of sensitive ecosystem occur in the Project area: Riparian, Old Growth Forest and Sparsely Vegetated.

3.1.5.1 Riparian

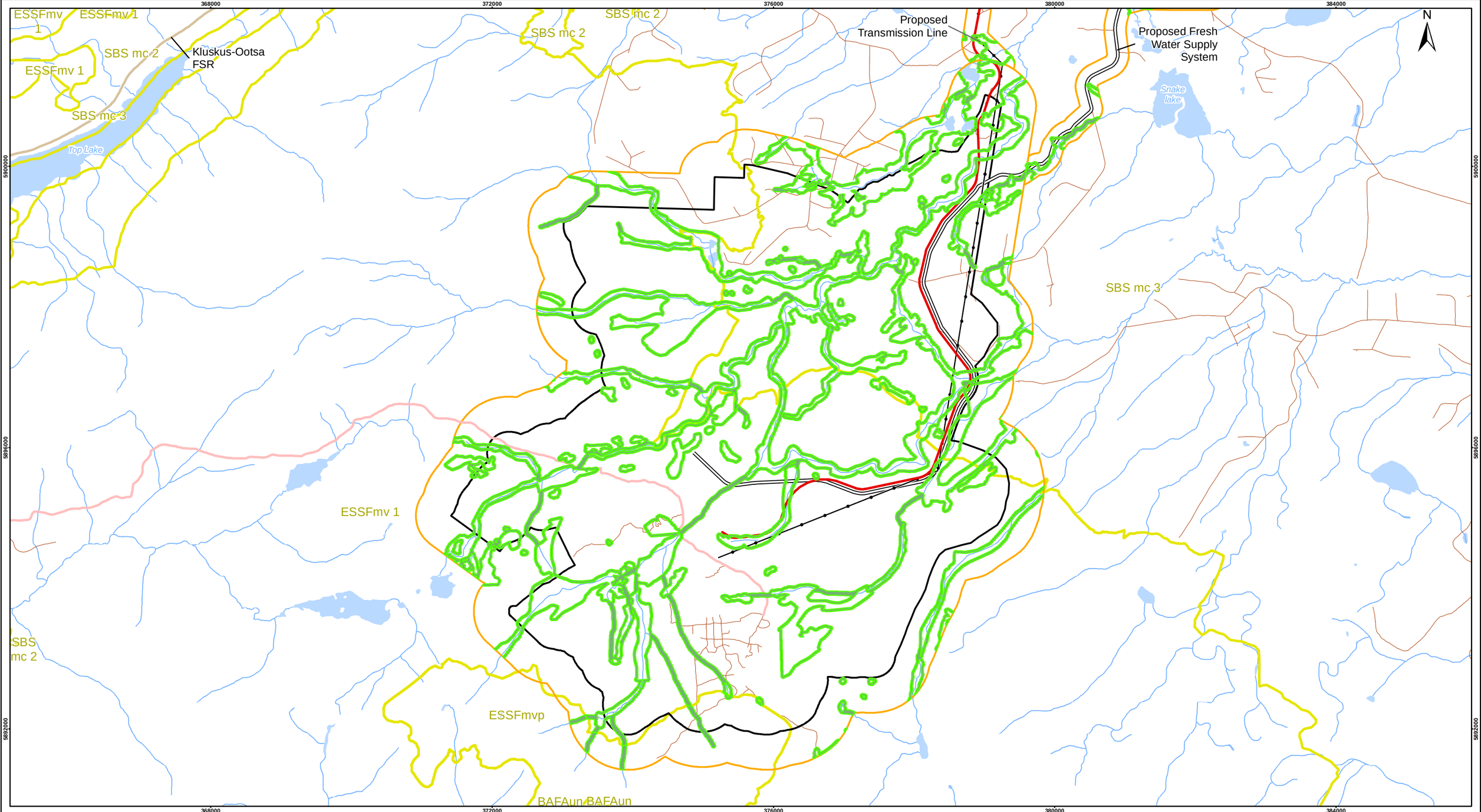
Mine Site

Davidson Creek is a dominant water course in the mine site LSA, consequently a significant amount of riparian area occurs. Various other creeks, subsidiaries and wetlands occur throughout the LSA resulting in adjacent riparian areas. The mine site totals 6,123 ha of which 679 ha (11%) are riparian areas (**Table 3.1-20**, **Figure 3.1-9**). Most of the riparian occurs in the ESSFmv1 which is the most common BGC unit with a total of 406 ha (7%) riparian area. The SBSmc3 has a total of 263 ha (4%) of riparian area and the high elevation parkland unit, ESSFmv1p, has the least amount of riparian area within the mine site LSA with a total of 11 ha (<1%).

Table 3.1-20: Distribution of Riparian in the Mine Site LSA

BGC	Area (ha)	Percent (%)
SBSmc3	263	4
ESSFmv1	406	7
ESSFmvp	11	<1
Total Riparian	**679**	**11**
Total Mine Site LSA	**6,123**	

Note: BGC = Biogeoclimatic, LSA = local study area; SBSmc3 = Sub-Boreal Spruce Moist Cold Kluskus variant; ESSFmv1 = Engelmann Spruce = Subalpine Fir Moist Very Cold Nechako variant; ESSFmvp = Engelmann Spruce-Subalpine Fir Moist Very Cold Nechako Parkland variant; LSA = local study area.



Legend

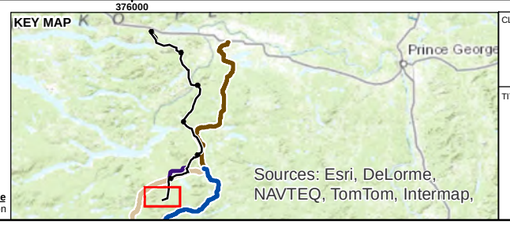
- Exploration Road
- Proposed Mine Site Access Road
- Proposed Transmission Line
- Proposed Fresh Water Supply System
- Kluskus Ootsa FSR
- Existing Road
- Stream
- Waterbody
- Proposed Mine Site
- Biogeoclimatic Zone
- Riparian

Terrain, Soils, and Vegetation

- Local Study Area

0 250 500 1000
Meters
Scale:1:50,000

Source
BC Government GeoBC Data Distribution



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Riparian Mine Site

DATE: October, 2013	ANALYST: AA	Figure 3.1-9
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-095_Riparian_MineSite.pdf
GIS FILE: 06-100-095_Riparian_MineSite.mxd		
PROJECTION: UTM 10	DATUM: NAD83	

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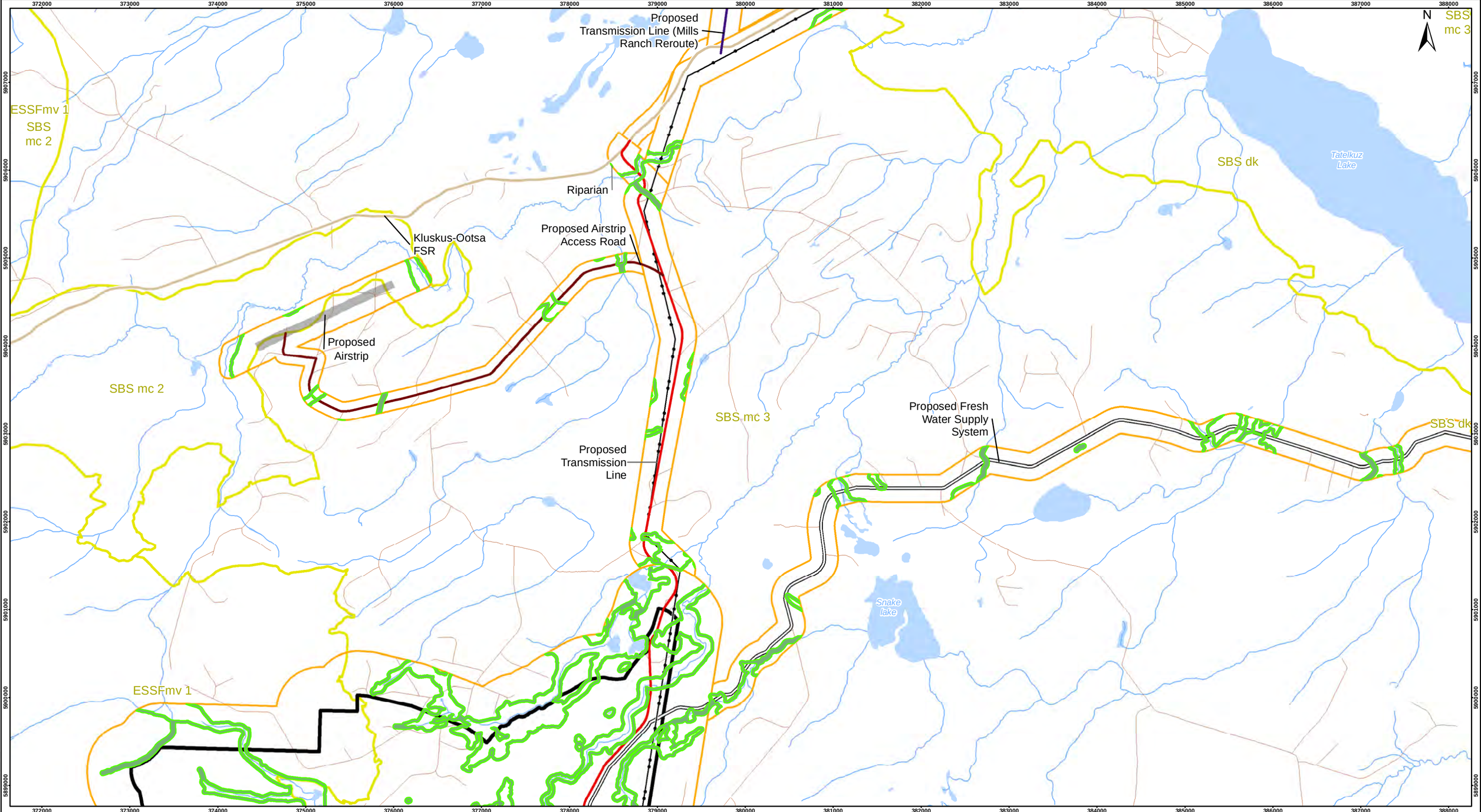
Mine Site Access Road

The mine site access road LSA has a total of 199 ha of which 14 ha (7%) is riparian area (**Table 3.1-21, Figure 3.1-10)**.

Table 3.1-21: Distribution of Riparian in the Mine Site Access Road LSA

BGC	Area (ha)	Percent (%)
SBSmc3	14	7
Total Riparian	**14**	**7**
Total Mine Site Access Road	**199**	

Note: BGC = Biogeoclimatic, LSA = local study area; SBSmc3 = Sub-Boreal Spruce Moist Cold Kluskus variant



Legend

- Proposed Airstrip Access Road
- Proposed Mine Site Access Road
- Proposed Transmission Line
- Proposed Fresh Water Supply System
- Proposed Transmission Line (Mills Ranch Reroute)
- Kluskus Ootsa FSR
- Existing Road
- Stream
- Waterbody
- Proposed Airstrip
- Proposed Mine Site
- Biogeoclimatic Zone
- Riparian

Terrain, Soils, and Vegetation

- Local Study Area

0 250 500 1000

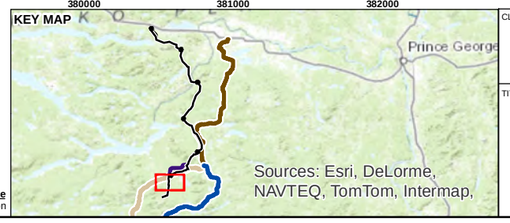
Meters

Scale:1:40,000

Source

BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Riparian
Mine Site Access Road

DATE: October, 2013	ANALYST: AA	Figure 3.1-10
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-095_Riparian_MineAR.pdf
GIS FILE: 06-100-095_Riparian_MineAR.mxd		
PROJECTION: UTM 10	DATUM: NAD83	amec

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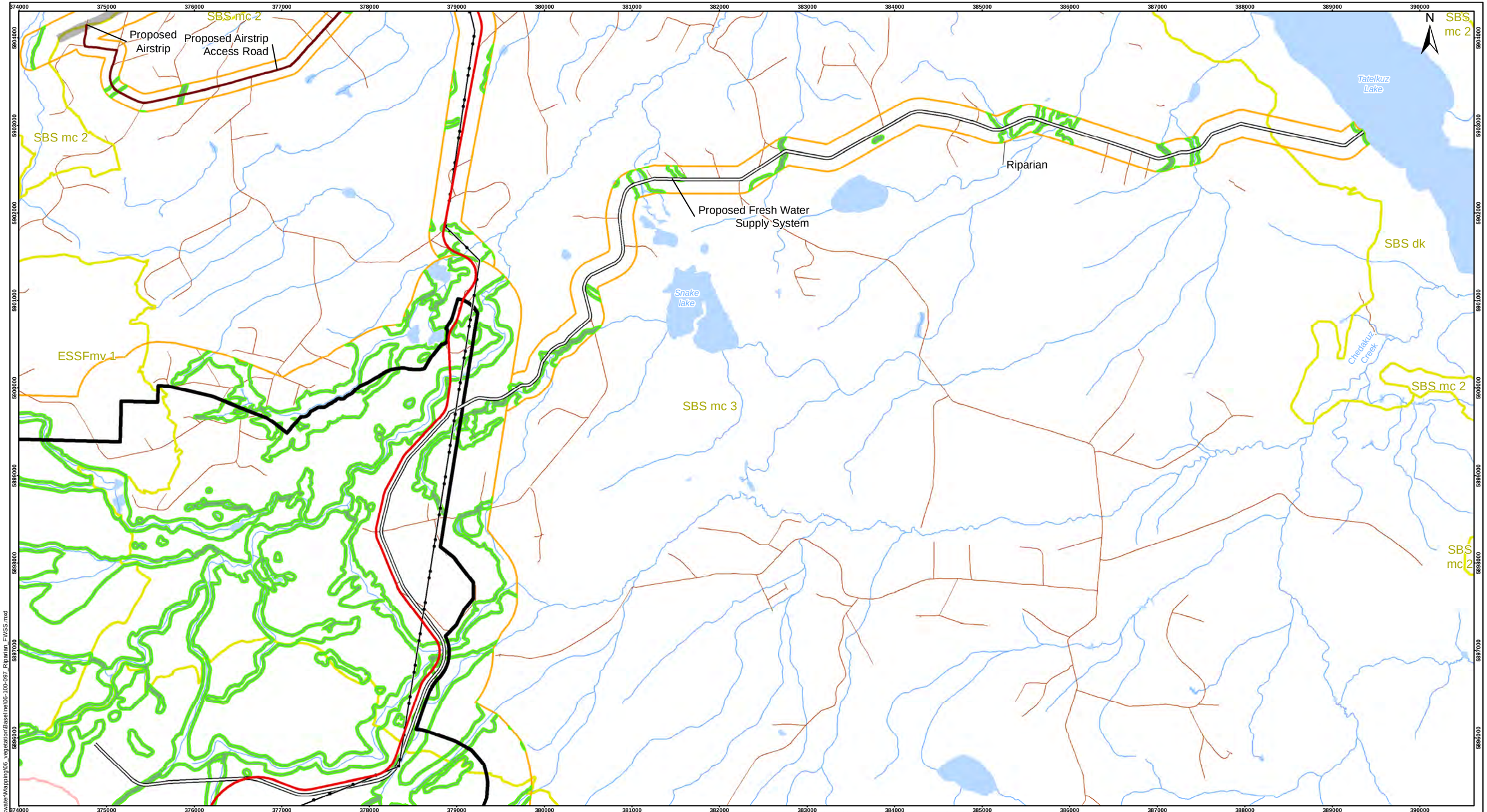
Freshwater Supply System

A total of 372 ha make up the fresh water supply system LSA; 34 ha (9%) of which is riparian area (**Table 3.1-22; Figure 3.1-11**). The SBSmc3 has the largest riparian area with a total of 33 ha (9%). The SBSdk is a small portion of the LSA and has a total of 1 ha (<1%) of riparian area.

Table 3.1-22: Distribution of Riparian in the Fresh Water Supply System LSA

BGC	Area (ha)	Percent (%)
SBSdk	1	<1
SBSmc3	33	9
Total Riparian	**34**	**9**
Total Fresh Water Supply System LSA	**372**	

Note: BGC = Biogeoclimatic, LSA = local study area; SBSdw3 = Sub-Boreal Spruce Dry Warm Stuart variant SBSmc3 = Sub-Boreal Spruce Moist Cold Kluskus variant



Legend

- Proposed Airstrip Access Road
- Exploration Road
- Proposed Mine Site Access Road
- Proposed Transmission Line
- Proposed Fresh Water Supply System
- Existing Road
- Stream
- Waterbody
- Proposed Airstrip
- Proposed Mine Site
- Biogeoclimatic Zone
- Riparian

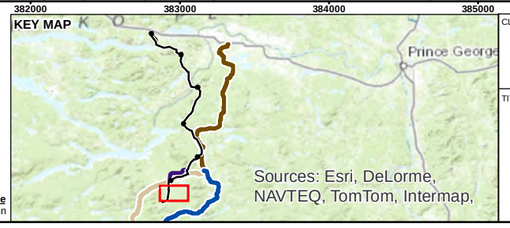
Terrain, Soils, and Vegetation

- Local Study Area

0 250 500 1000
Meters
Scale:1:40,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Riparian
Fresh Water Supply System

DATE: October, 2013	ANALYST: AA	Figure 3.1-11
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-097_Riparian_FWSS.pdf
GIS FILE: 06-100-097_Riparian_FWSS.mxd		
PROJECTION: UTM 10	DATUM: NAD83	

amec

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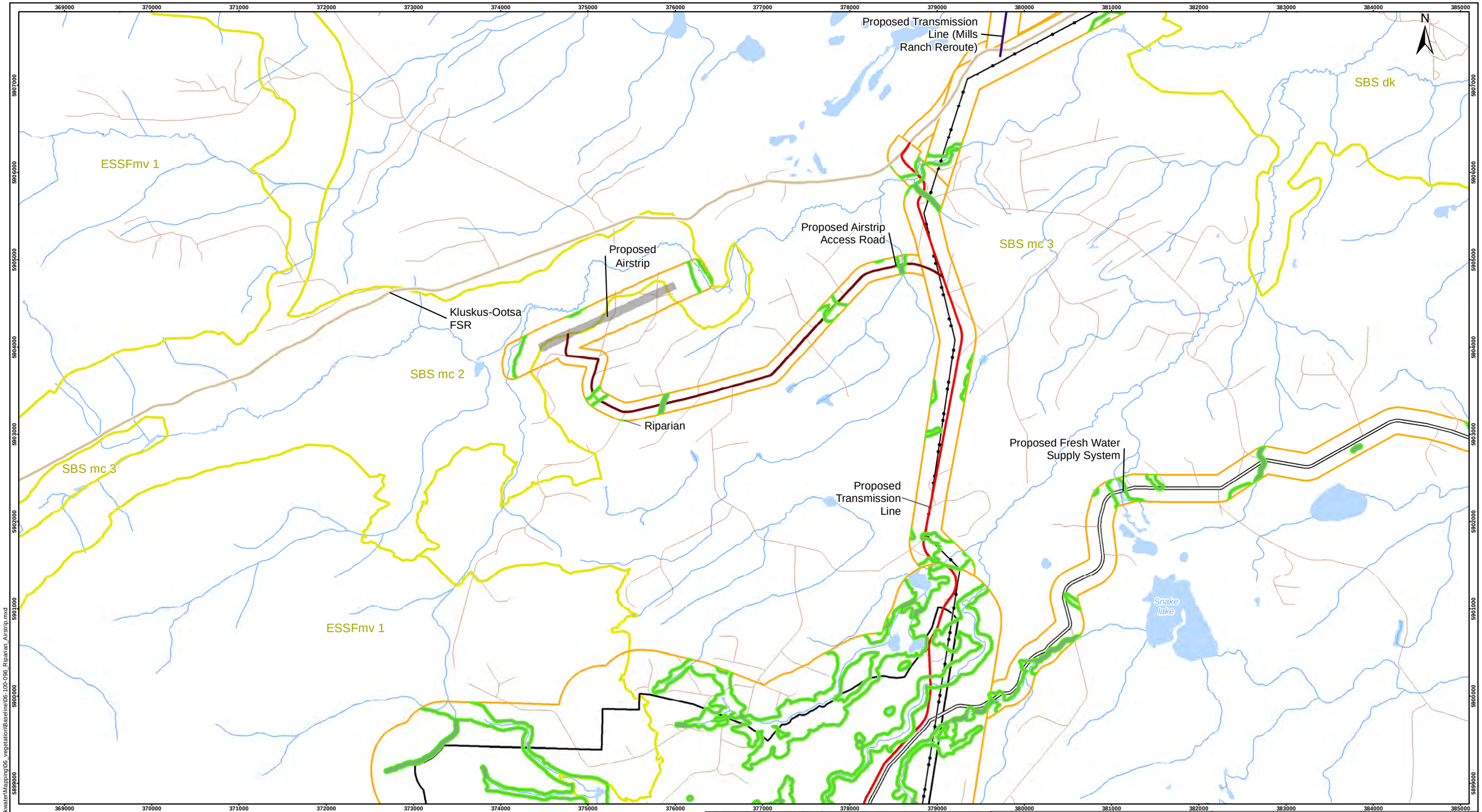
Airstrip

The airstrip includes the airstrip extent and the existing airstrip access road and covers a total of 208 ha; 11 ha (5%) of which are riparian area (**Table 3.1-23**, **Figure 3.1-12**). The majority of the riparian area occurs in the SBSmc3 with a total 7 ha (3%) and a total of 4 ha (2%) occurs in the SBSmc2.

Table 3.1-23: Distribution of Riparian within the Airstrip LSA

BGC	Area (ha)	Percent (%)
SBSmc2	4	2
SBSmc3	7	3
Total Riparian	**11**	**5**
Total Airstrip LSA	**208**	

Note: BGC = Biogeoclimatic, SBSmc2 = Sub-Boreal Spruce Moist Cold Babine variant; SBSmc3 = Sub-Boreal Spruce Moist Cold Kluskus variant; LSA = local study area.



Legend

- Proposed Airstrip Access Road
- Proposed Mine Site Access Road
- Proposed Transmission Line
- Proposed Fresh Water Supply System
- Proposed Transmission Line (Mills Ranch Reroute)
- Kluskus Ootsa FSR
- Existing Road
- Stream
- Waterbody
- Proposed Airstrip
- Proposed Mine Site
- Biogeoclimatic Zone
- Riparian

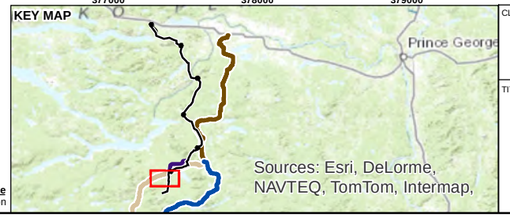
Terrain, Soils, and Vegetation

- Local Study Area

0 250 500 1000
Meters
Scale:1:40,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Riparian
Proposed Airstrip

DATE: October, 2013	ANALYST: AA	Figure 3.1-12
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-096_Riparian_Airstrip.pdf
GIS FILE: 06-100-096_Riparian_Airstrip.mxd		
PROJECTION: UTM 10	DATUM: NAD83	

amec

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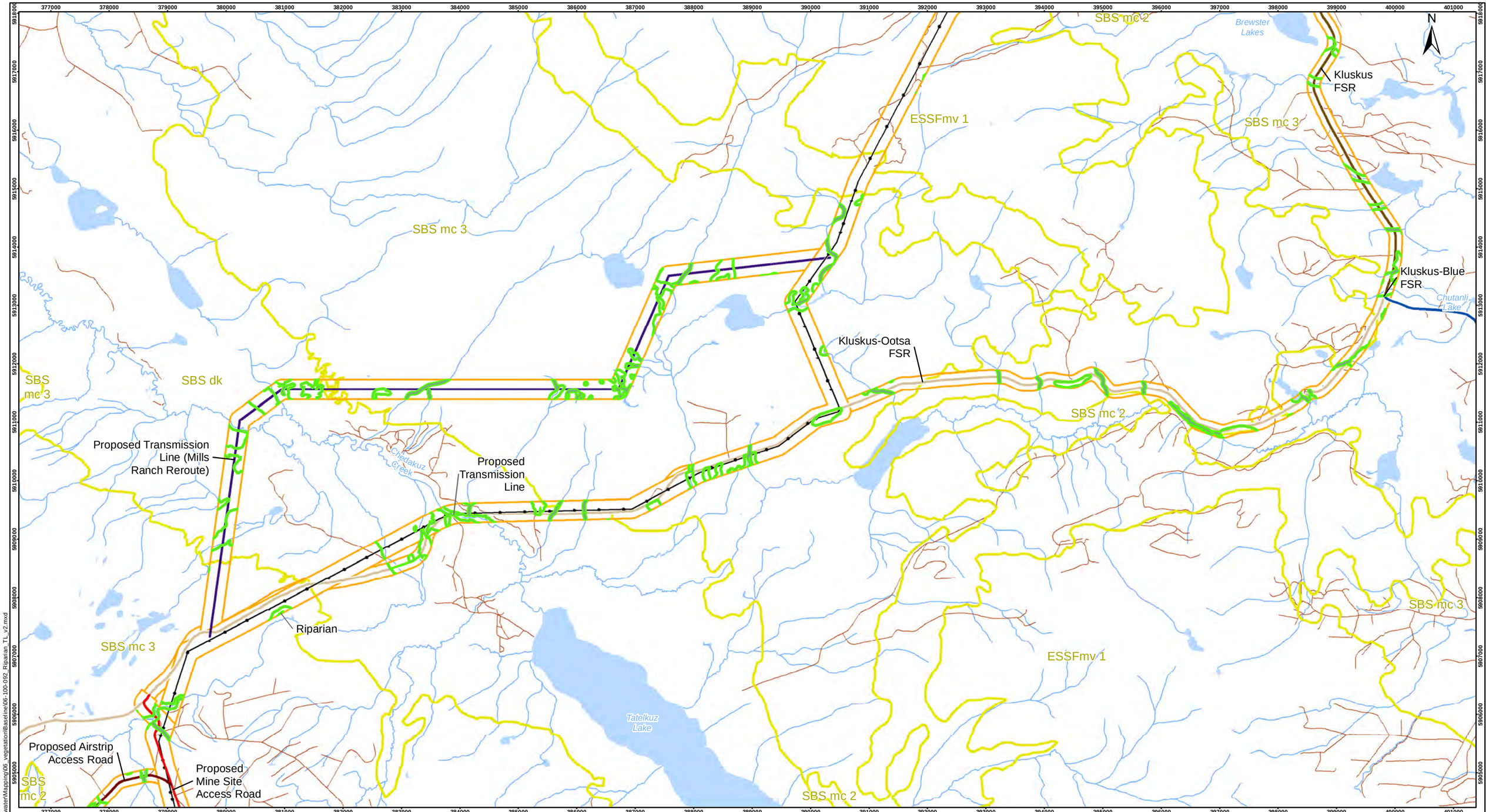
Transmission Line

The transmission line covers a total area of 4,290 ha and intersects numerous creeks, rivers, ponds, lakes and wetlands. Major rivers include Stellako and Nechako River. Major creeks include Greer, Big Bend, and Chedakuz to name but a few. The total riparian are for the transmission line LSA is 507 ha (11.8%) (**Table 3.1-24, Figure 3.1-13)**. The majority occurs in the SBSdk with a total of 225 ha (5%). The SBSmc3 has a total of 129 ha (3%). and the SBSdw2 has a 110 ha (3%).

Table 3.1-24: Distribution of Riparian within the Transmission Line LSA

BGC	Area (ha)	Percent (%)
SBSdk	225	5
SBSdw3	110	3
SBSmc2	43	1
SBSmc3	129	3
ESSFmv1	1	<1
Total Riparian	**507**	**12**
Total Transmission Line Main LSA	**4,290**	

Note: BGC = Biogeoclimatic, SBSdk = Sub-Boreal Spruce Dry Cool, SBSdw3 = Sub-Boreal Spruce Dry Warm Stuart variant, SBSmc2 = Sub-Boreal Spruce Moist Cold Babine variant; SBSmc3 = Sub-Boreal Spruce Moist Cold Kluskus variant; ESSFmv1 = Engelmann Spruce = Subalpine Fir Moist Very Cold Nechako variant; LSA = local study area.



Legend

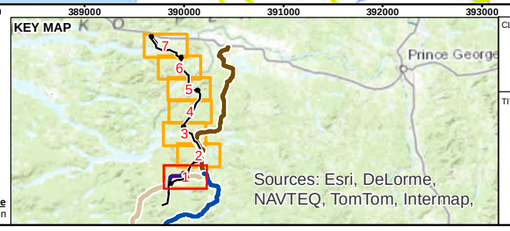
- Proposed Airstrip Access Road
- Proposed Mine Site Access Road
- Proposed Transmission Line
- Proposed Transmission Line (Mills Ranch Reroute)
- Kluskus FSR
- Kluskus Blue FSR
- Kluskus Ootsa FSR
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone
- Riparian

Terrain, Soils, and Vegetation

- Local Study Area

0 250 500 1000
Meters
Scale:1:60,000

Source
BC Government GeoBC Data Distribution



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Riparian
Transmission Line
Page 1 of 7

DATE: October, 2013	ANALYST: AA	Figure 3.1-13
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-092_Riparian_TL_v2.pdf
GIS FILE: 06-100-092_Riparian_TL_v2.mxd		
PROJECTION: UTM 10	DATUM: NAD83	

amec

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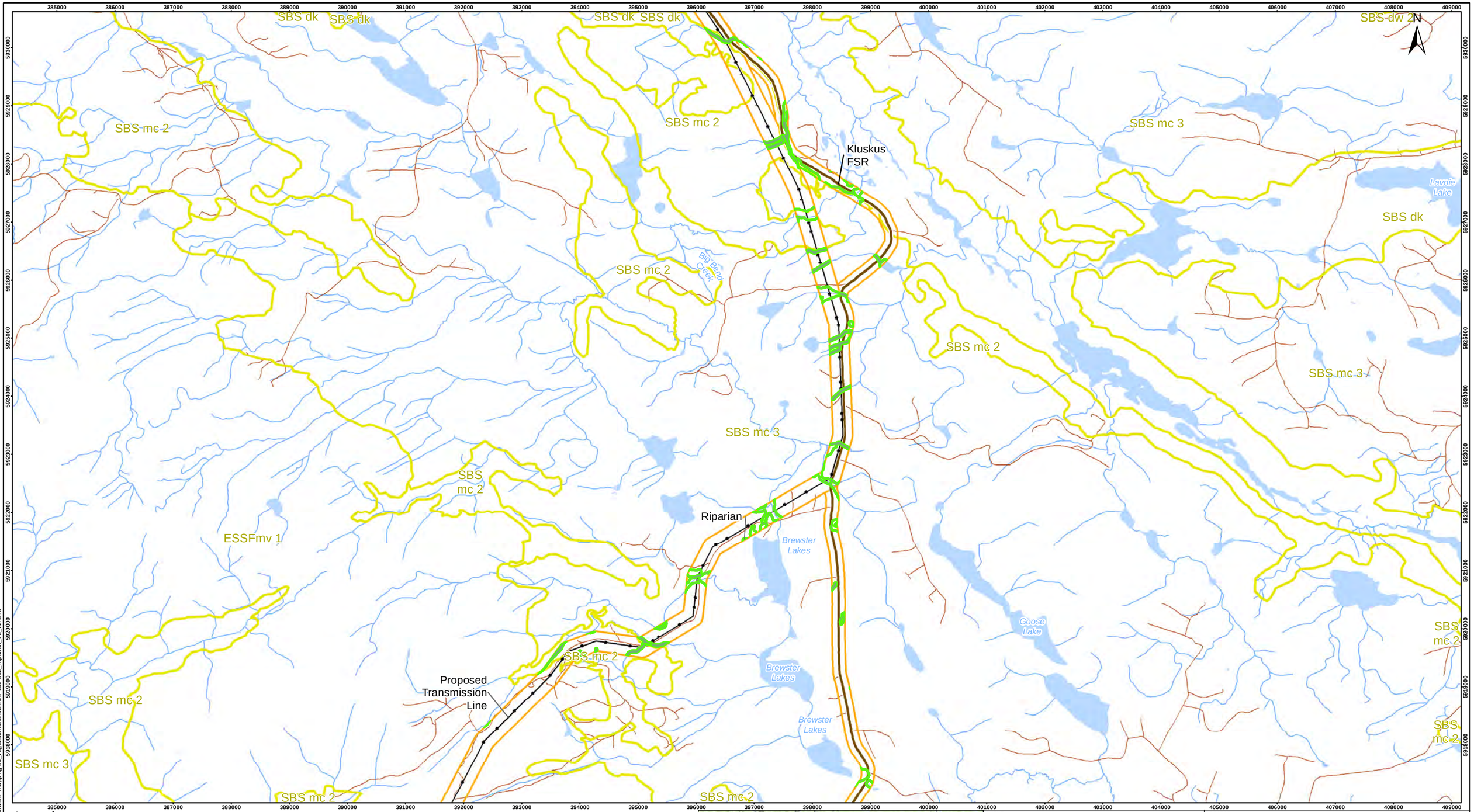


Legend

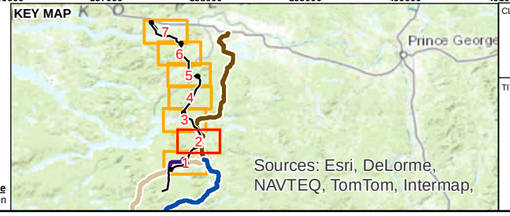
- Proposed Transmission Line
- Kluskus FSR
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone
- Riparian

Terrain, Soils, and Vegetation

- Local Study Area

0 250 500 1000
Meters
Scale:1:60,000

Source
BC Government GeoBC Data Distribution



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Riparian
Transmission Line
Page 2 of 7

DATE: October, 2013	ANALYST: AA	Figure 3.1-13
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-092_Riparian_TL_v2.pdf
GIS FILE: 06-100-092_Riparian_TL_v2.mxd		
PROJECTION: UTM 10	DATUM: NAD83	amec

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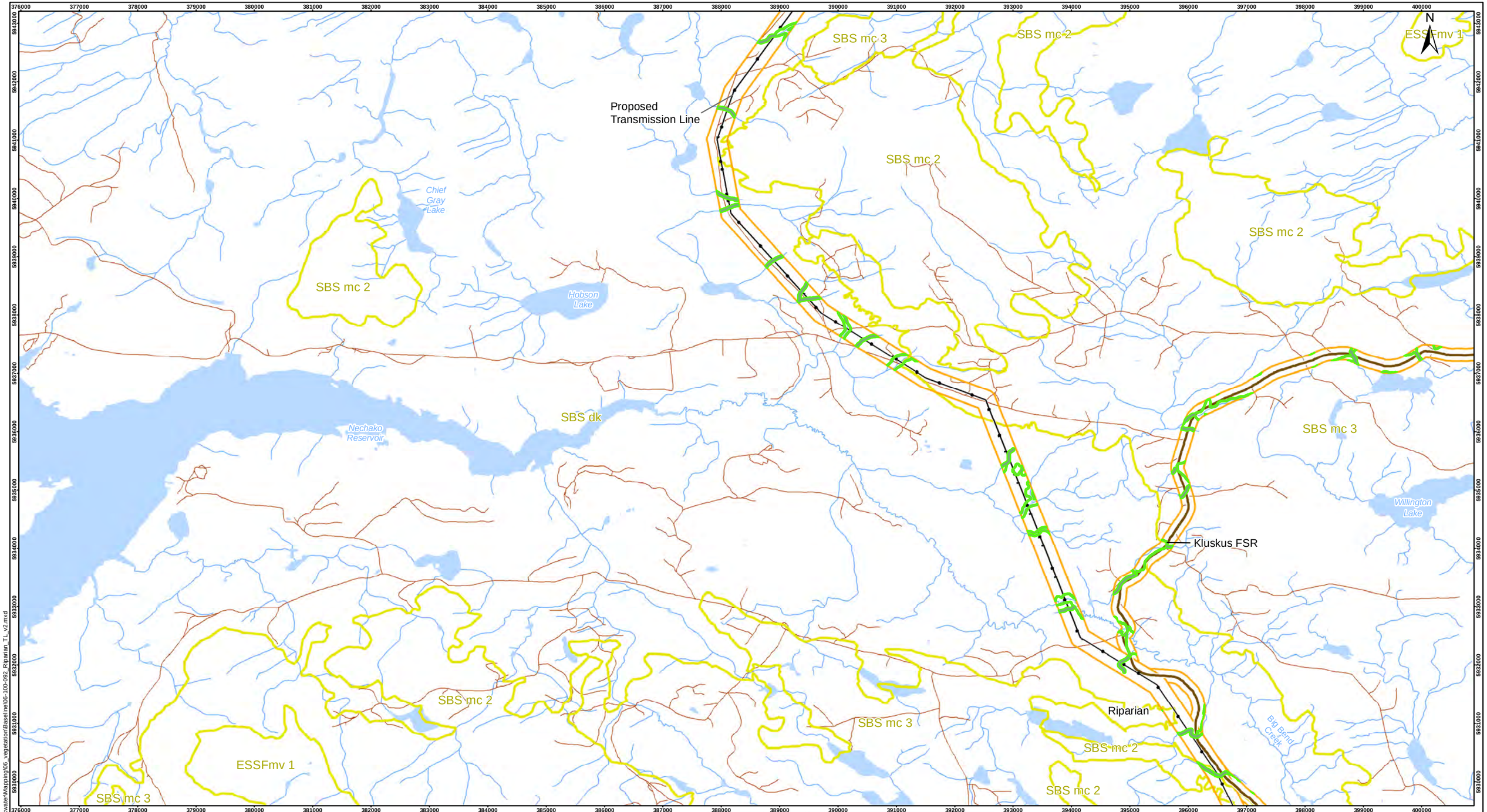


Legend

- Proposed Transmission Line
- Kluskus FSR
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone
- Riparian

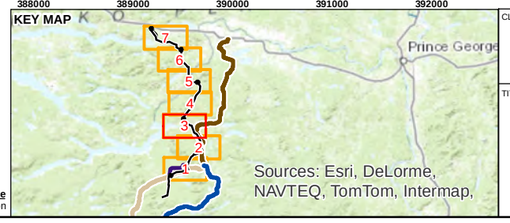
Terrain, Soils, and Vegetation

- Local Study Area

0 250 500 1000
Meters
Scale:1:60,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Riparian
Transmission Line
Page 3 of 7

DATE: October, 2013	ANALYST: AA	Figure 3.1-13
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-092_Riparian_TL_v2.pdf
GIS FILE: 06-100-092_Riparian_TL_v2.mxd		
PROJECTION: UTM 10	DATUM: NAD83	amec

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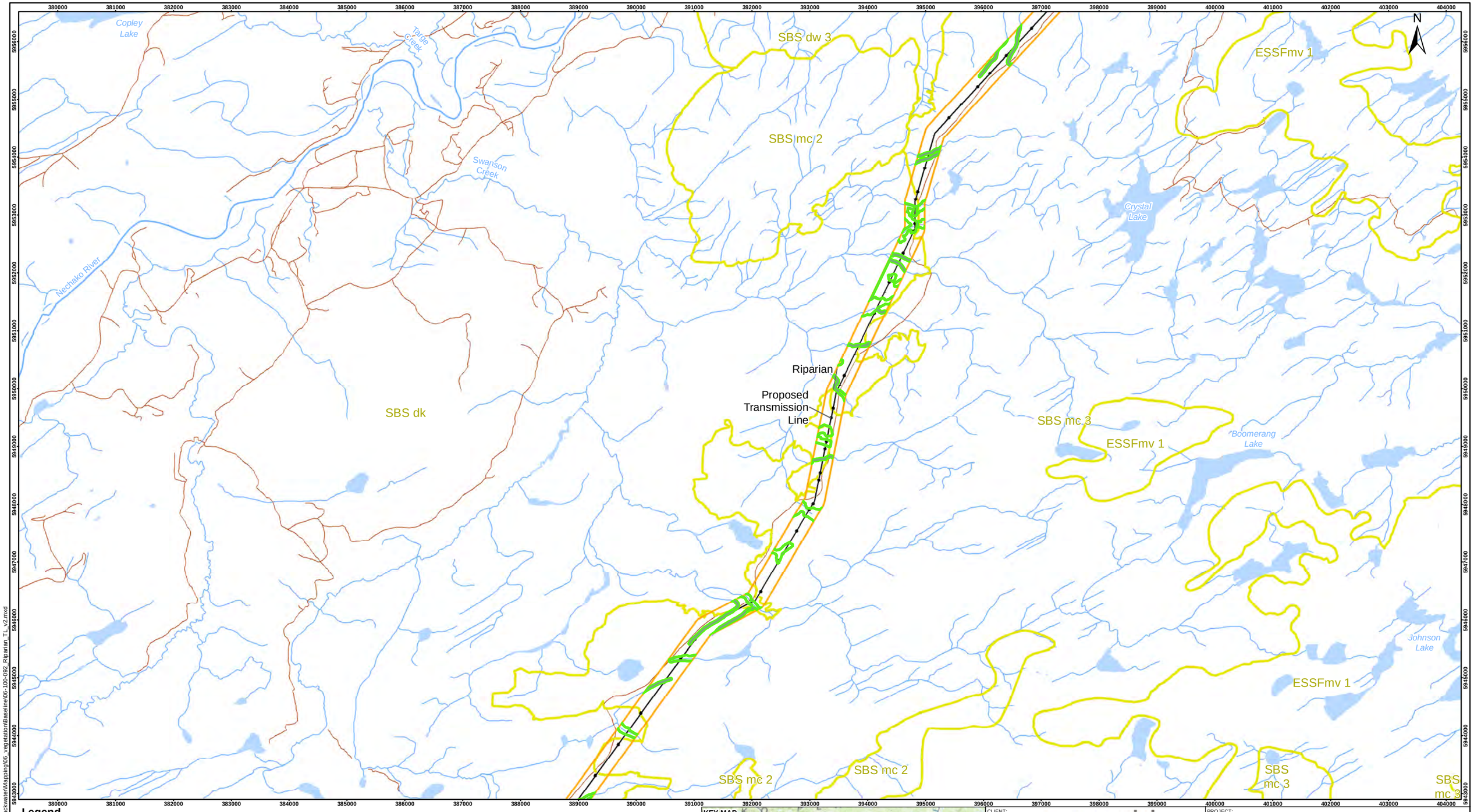


Legend

- Proposed Transmission Line
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone
- Riparian

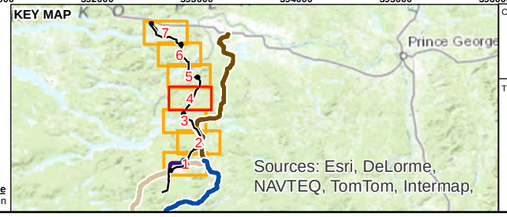
Terrain, Soils, and Vegetation

- Local Study Area

0 250 500 1000
Meters
Scale:1:60,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Riparian
Transmission Line
Page 4 of 7

DATE: October, 2013	ANALYST: AA	Figure 3.1-13
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-092_Riparian_TL_v2.pdf
GIS FILE: 06-100-092_Riparian_TL_v2.mxd		
PROJECTION: UTM 10	DATUM: NAD83	amec

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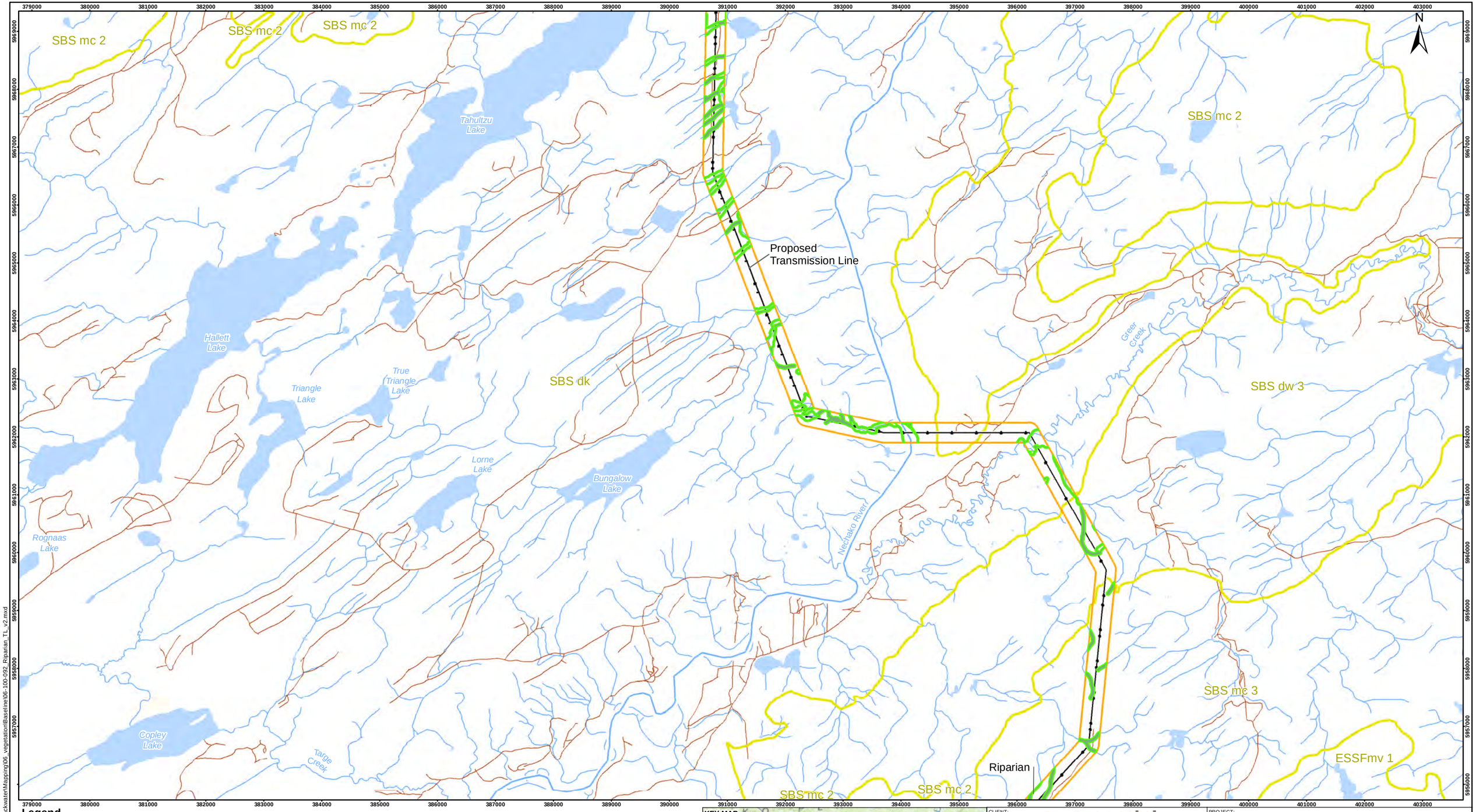


Legend

- Proposed Transmission Line
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone
- Riparian

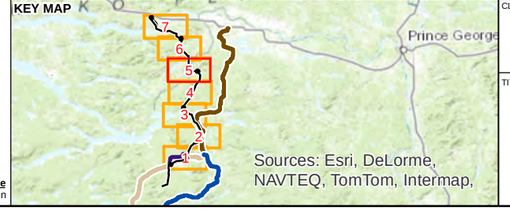
Terrain, Soils, and Vegetation

- Local Study Area

0 250 500 1000
Meters
Scale:1:60,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Riparian Transmission Line Page 5 of 7

DATE: October, 2013	ANALYST: AA	Figure 3.1-13
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-092_Riparian_TL_v2.pdf
GIS FILE: 06-100-092_Riparian_TL_v2.mxd		
PROJECTION: UTM 10	DATUM: NAD83	amec

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ESSFmv 1
SBS mc 2
SBS dw 3
Riparian
Nimi River
Smith Creek
Centre Lake
Limit Lake
ESSFmv 1
SBS dk
ESSFmv 1
SBS mc 2
Dorman Lake
SBS dw 3
Proposed Transmission Line
Nechako River
Laurie Lake
Twentysix Mile Lake
SBS mc 2
SBS dw 3
Tahultzu Lake

N

Legend

- Proposed Transmission Line
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone
- Riparian

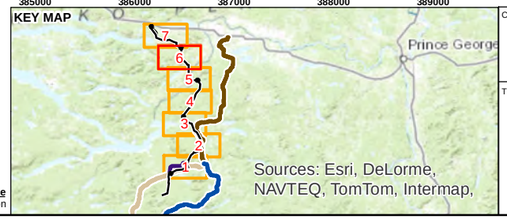
Terrain, Soils, and Vegetation

- Local Study Area

0 250 500 1000
Meters
Scale:1:60,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Riparian
Transmission Line
Page 6 of 7

DATE: October, 2013	ANALYST: AA	Figure 3.1-13
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-092_Riparian_TL_v2.pdf
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PROJECTION: UTM 10	DATUM: NAD83	amec

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Proposed Transmission Line (Stellako Reroute)

Proposed Transmission Line

Riparian

Stellako

Endako River

Fraser Lake

Casey Lake

Francois Lake

Stellako River

Nithi River

Robertson Creek

Seas Lake

Drywilliam Lake

Foster Lakes

Foster Lakes

Klez Lake

Theda Lake

Chowsunkut Lake

SBS dw 3

SBS mc 2

SBS dk

ESSFmv 1

SBS mc 2

SBS dk

ESSFmv 1

SBS dk

SBS dk

SBS dk

N

Legend

- Proposed Transmission Line
- Proposed Transmission Line (Stellako Reroute)
- Existing Road
- Highway
- Stream
- Waterbody
- Biogeoclimatic Zone
- Riparian

Terrain, Soils, and Vegetation

- Local Study Area

0 250 500 1000

Meters

Scale:1:60,000

Source

BC Government GeoBC Data Distribution

KEY MAP

Prince George

Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap,

CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Riparian Transmission Line Page 7 of 7

DATE: October, 2013

ANALYST: AA

Figure 3.1-13

JOB No: VE52277

QA/QC: MY

PDF FILE: 06-100-092_Riparian_TL_v2.pdf

GIS FILE: 06-100-092_Riparian_TL_v2.mxd

PROJECTION: UTM 10

DATUM: NAD83

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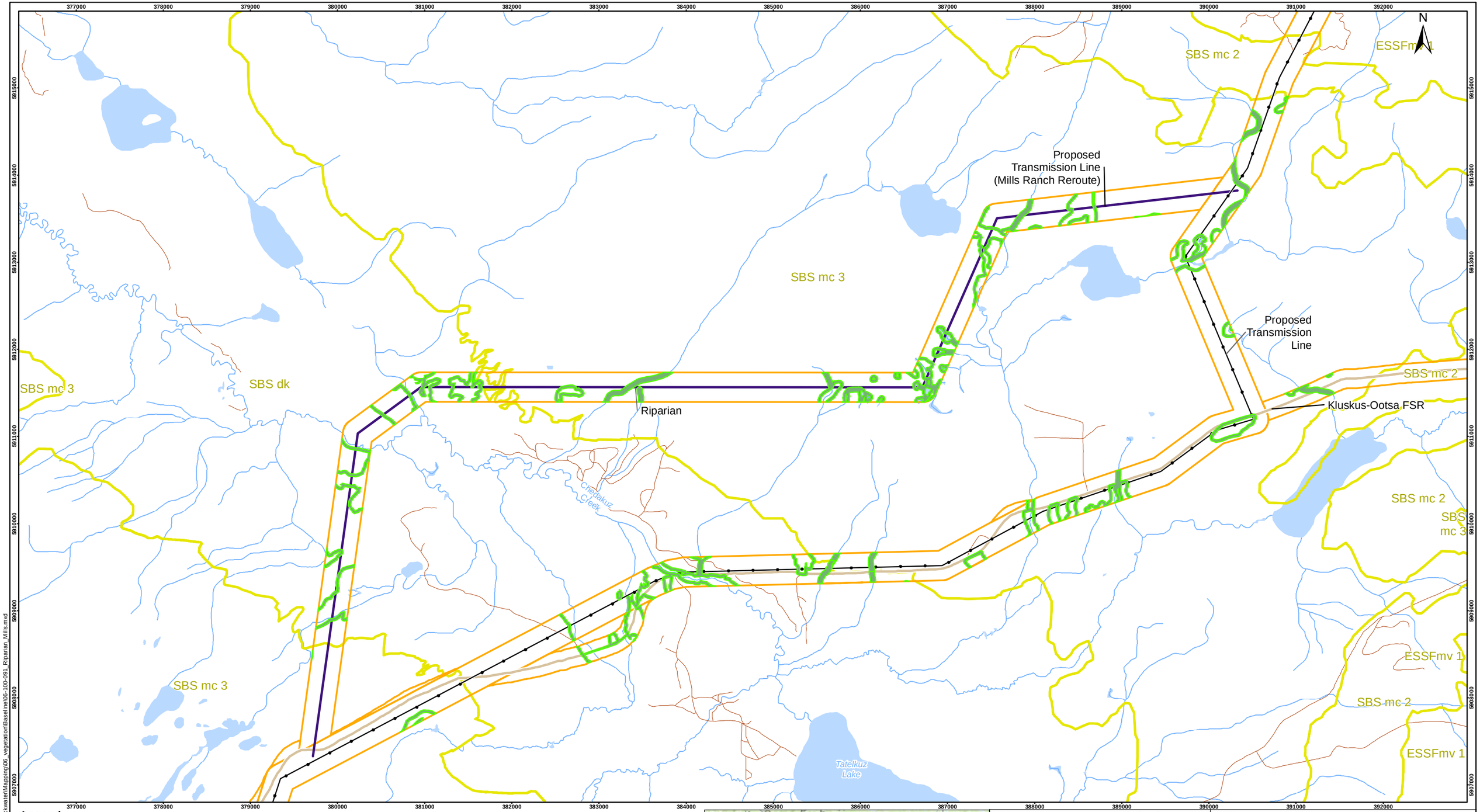
Mills Ranch Reroute

The Mills Ranch reroute covers a total of 505 ha towards the southern end of the main transmission line. Total riparian area is 62 ha (12%) occurring with the LSA. The majority occurs in the SBSmc3 with a total of 42 ha (8%) while the SBSdk has a total of 21 ha (4%) riparian area (**Table 3.1-25**, **Figure 3.1-14**).

Table 3.1-25: Distribution of Riparian within the Mills Ranch Reroute LSA

BGC	Area (ha)	Percent (%)
SBSdk	21	4
SBSdw3	0	0
SBSmc2	0	0
SBSmc3	42	8
ESSFmv1	0	0
ESSFmvp	0	0
Total Riparian	**62**	**12**
Total Mills Ranch LSA	**505**	

Note: BGC = Biogeoclimatic, SBSdk = Sub-Boreal Spruce Dry Cool, SBSmc3 = Sub-Boreal Spruce Moist Cold Kluskus variant; LSA = local study area.



Legend

- Proposed Transmission Line
- Proposed Transmission Line (Mills Ranch Reroute)
- Kluskus Ootsa FSR
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone
- Riparian

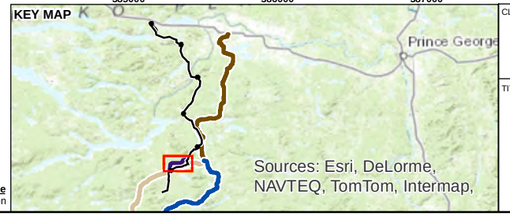
Terrain, Soils, and Vegetation

- Local Study Area

0 250 500 1000
Meters
Scale:1:40,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Riparian
Mills Ranch Reroute

DATE: October, 2013	ANALYST: AA	Figure 3.1-14
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-091_Riparian_Mills.pdf
GIS FILE: 06-100-091_Riparian_Mills.mxd		
PROJECTION: UTM 10	DATUM: NAD83	amec

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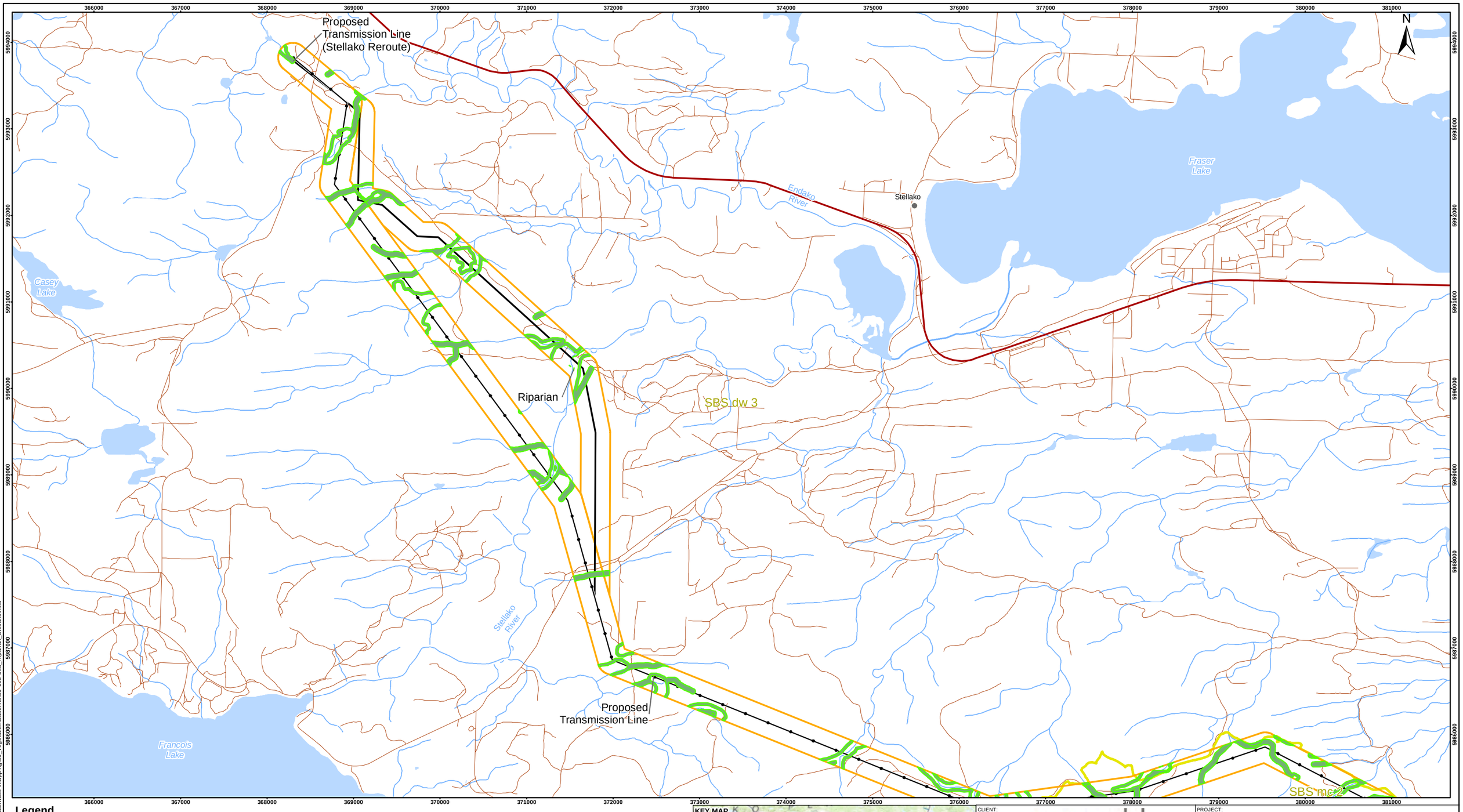
Stellako Reroute

The Stellako reroute occupies 200 hectares at the northern end of the transmission line; where the main transmission line crosses the Stellako River. A total of 21 ha (10%) is riparian area entirely within the SBSdw3 (**Table 3.1-26**, **Figure 3.1-15**).

Table 3.1-26: Distribution of Riparian within the Stellako Reroute LSA

BGC	Area (ha)	Percent (%)
SBSdw3	21	10
Total Riparian	**21**	**10**
Total Stellako LSA	**200**	

Note: BGC = Biogeoclimatic, SBSdw3 = Sub-Boreal Spruce Dry Warm Stuart variant, LSA = local study area.



Legend

- Proposed Transmission Line
- Proposed Transmission Line (Stellako Reroute)
- Existing Road
- Highway
- Stream
- Waterbody
- Biogeoclimatic Zone
- Riparian

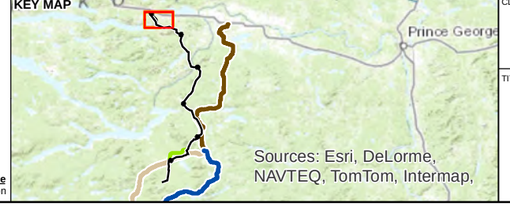
Terrain, Soils, and Vegetation

- Local Study Area

0 250 500 1000
Meters
Scale:1:40,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Riparian
Stellako Reroute

DATE: October, 2013	ANALYST: AA	Figure 3.1-15
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-093_Riparian_Stellako.pdf
GIS FILE: 06-100-093_Riparian_Stellako.mxd		
PROJECTION: UTM 10	DATUM: NAD83	

amec

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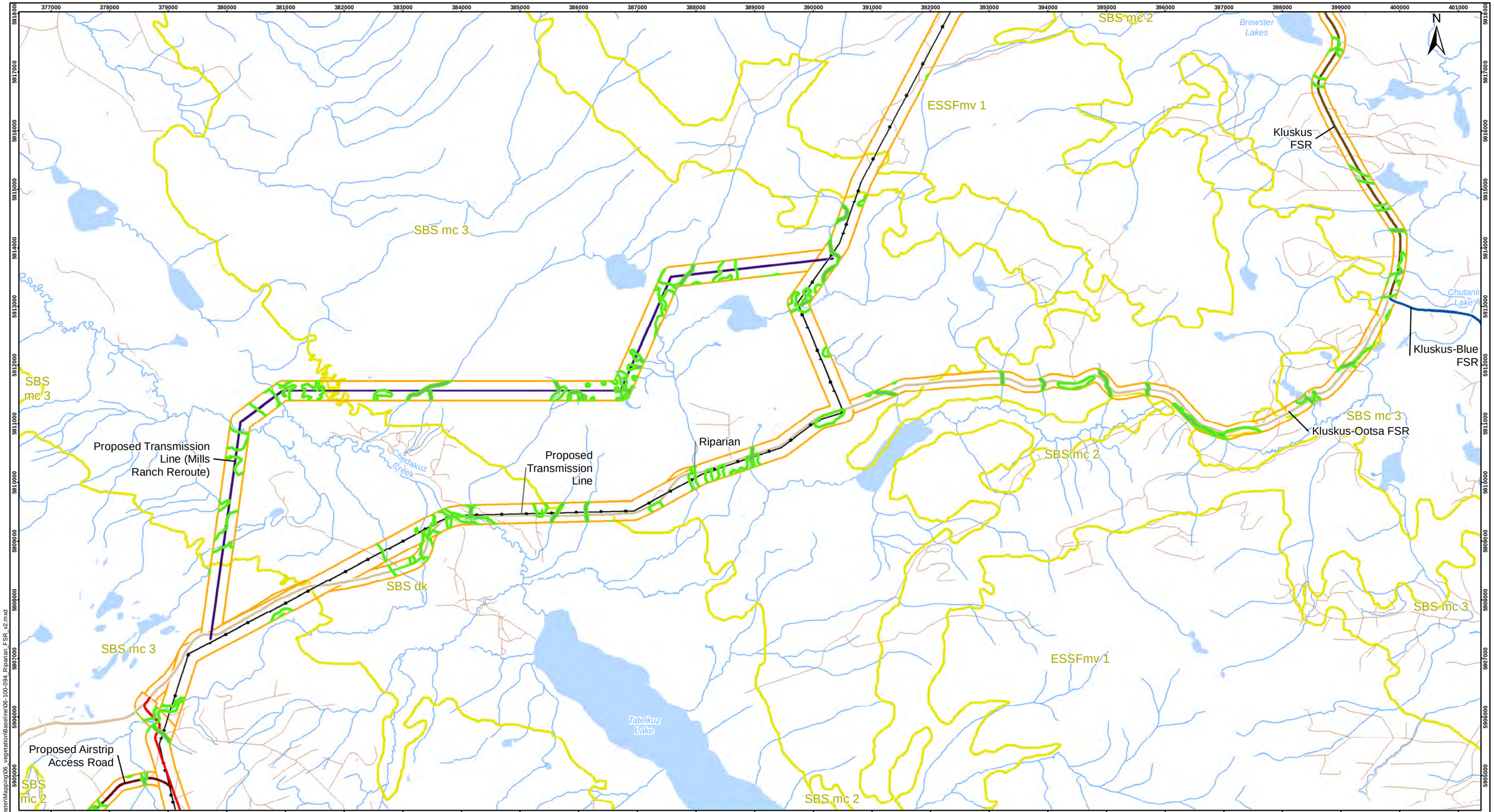
Kluskus FSR

The Kluskus FSR is an existing forestry service road with a total area of 2,426 ha and intersects numerous creeks, rivers, ponds, lakes and wetlands. Major rivers include Stellako and Nechako River. Major creeks include Greer, Big Bend, and Chedakuz to name but a few. Riparian areas total 297 ha (12%), (**Table 3.1-27**, **Figure 3.1-16**). The majority of riparian area occurs in the SBSmc3 with a total of 127 ha (5%). The second highest amount occurs in the SBSdk with a total of 95 ha (4%). The SBSmc3 has a total of 29 ha (1%) and the ESSFmv1 has a total of 24 ha (1%).

Table 3.1-27: Distribution of Riparian within the Kluskus Forest Service Road LSA

BGC	Area (ha)	Percent (%)
SBSdk	95	4
SBSdw3	22	1
SBSmc2	29	1
SBSmc3	127	5
ESSFmv1	24	1
Total Riparian	**297**	**12**
Total Kluskus FSR	**2,426**	

Note: BGC = Biogeoclimatic, SBSdk = Sub-Boreal Spruce Dry Cool, SBSdw3 = Sub-Boreal Spruce Dry Warm Stuart variant, SBSmc2 = Sub-Boreal Spruce Moist Cold Babine variant; SBSmc3 = Sub-Boreal Spruce Moist Cold Kluskus variant; ESSFmv1 = Engelmann Spruce = Subalpine Fir Moist Very Cold Nechako variant; LSA = local study area.



Legend

- Proposed Airstrip Access Road
- Proposed Mine Site Access Road
- Proposed Transmission Line
- Proposed Transmission Line (Mills Ranch Reroute)
- Kluskus FSR
- Kluskus Blue FSR
- Kluskus Ootsa FSR
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone
- Riparian

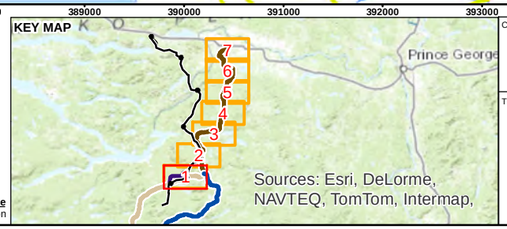
Terrain, Soils, and Vegetation

- Local Study Area

0 250500 1000
Meters
Scale:1:60,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Riparian
Kluskus Forest Service Road
Page 1 of 7

DATE: October, 2013	ANALYST: AA	Figure 3.1-16
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-094_Riparian_FSR_v2.pdf
GIS FILE: 06-100-094_Riparian_FSR_v2.mxd		
PROJECTION: UTM 10	DATUM: NAD83	

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SBS dk
SBS dk
SBS dk
SBS dk
SBS dw 2
SBS mc 2
SBS mc 2
SBS mc 3
Lavoie Lake
Big Bend Creek
SBS dk
SBS mc 2
SBS mc 2
SBS mc 3
SBS mc 3
SBS mc 2
ESSFmv 1
Brewster Lakes
Goose Lake
Kluskus FSR
SBS mc 2
Riparian
Brewster Lakes
Proposed Transmission Line
Brewster Lakes
SBS mc 2
SBS mc 3
SBS mc 2
SBS mc 2
SBS mc 2

N

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Legend

- Proposed Transmission Line
- Kluskus FSR
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone
- Riparian

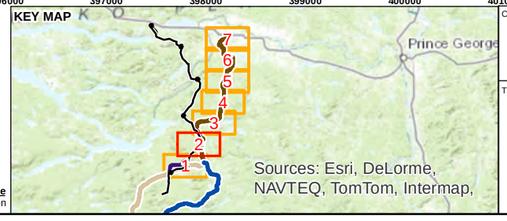
Terrain, Soils, and Vegetation

- Local Study Area

0 250500 1000
Meters
Scale:1:60,000

Source
BC Government GeoBC Data Distribution

KEY MAP

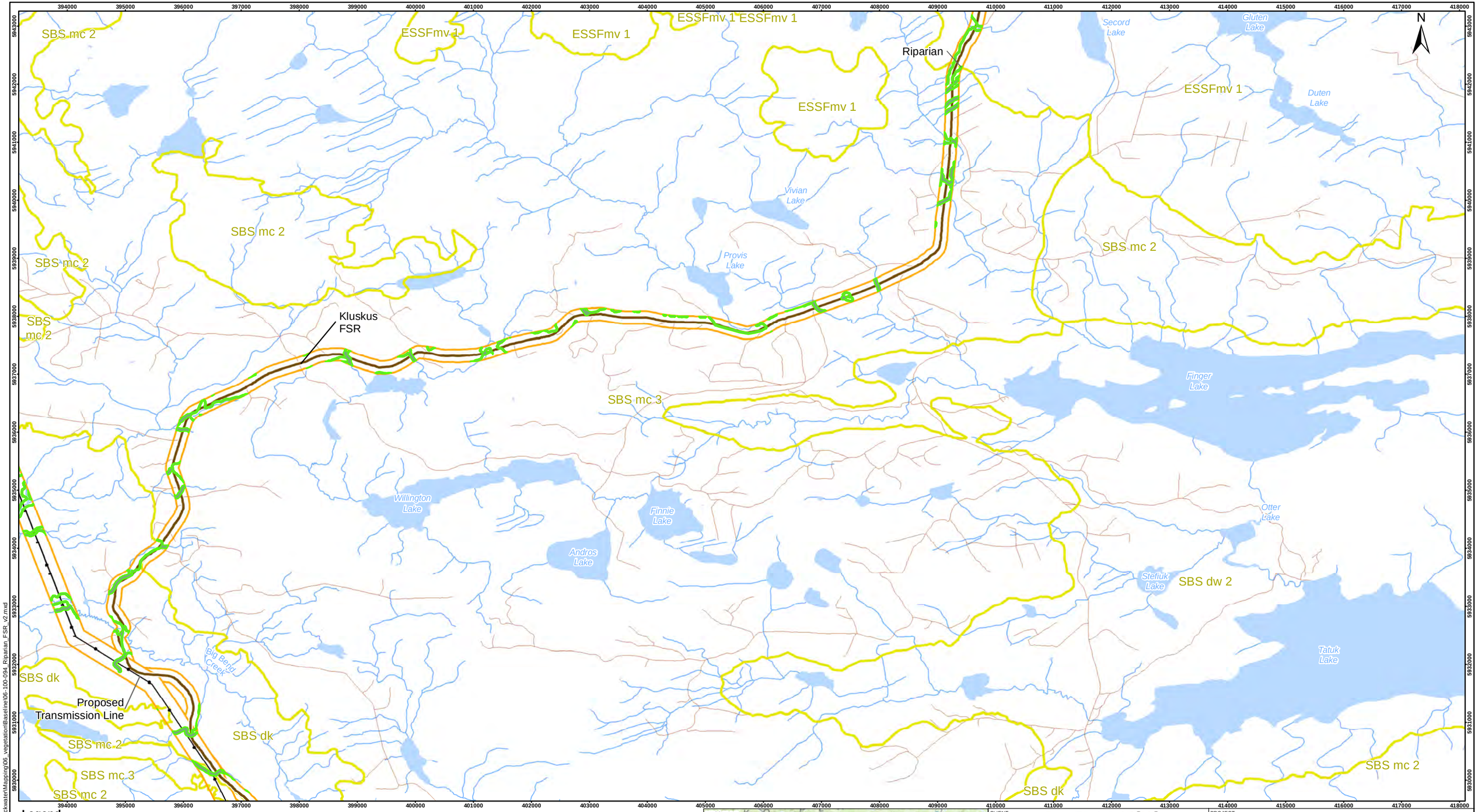


CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE:
Riparian
Kluskus Forest Service Road
Page 2 of 7

DATE: October, 2013	ANALYST: AA	Figure 3.1-16
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-094_Riparian_FSR_v2.pdf
GIS FILE: 06-100-094_Riparian_FSR_v2.mxd		
PROJECTION: UTM 10	DATUM: NAD83	amec



Legend

- Proposed Transmission Line
- Kluskus FSR
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone
- Riparian

Terrain, Soils, and Vegetation

- Local Study Area

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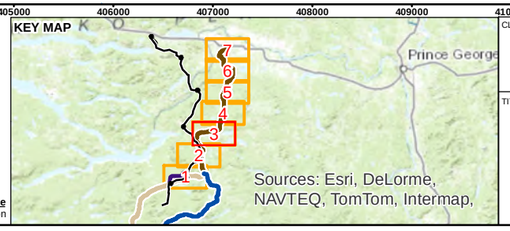
Meters
Scale:1:60,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Riparian
Kluskus Forest Service Road
Page 3 of 7

DATE: October, 2013	ANALYST: AA	Figure 3.1-16
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-094_Riparian_FSR_v2.pdf
GIS FILE: 06-100-094_Riparian_FSR_v2.mxd		
PROJECTION: UTM 10	DATUM: NAD83	amec

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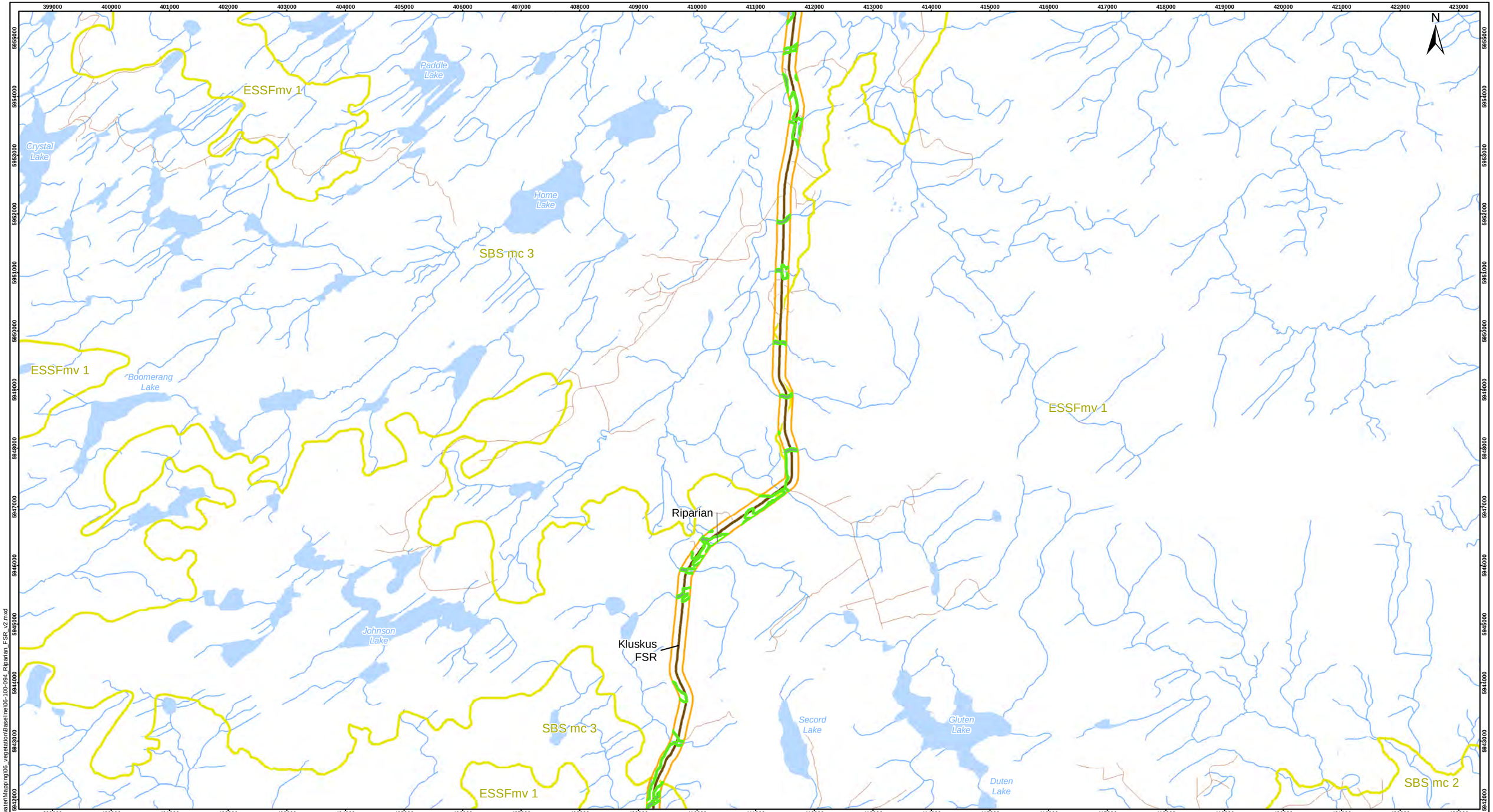


Legend

- Kluskus FSR
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone
- Riparian

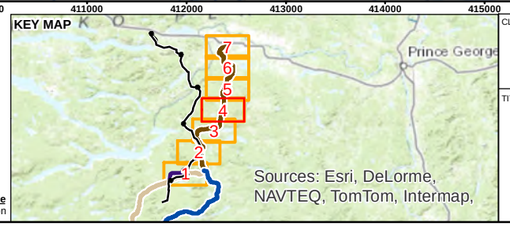
Terrain, Soils, and Vegetation

- Local Study Area

0 250 500 1000
Meters
Scale:1:60,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE:
Riparian
Kluskus Forest Service Road
Page 4 of 7

DATE: October, 2013	ANALYST: AA	Figure 3.1-16
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-094_Riparian_FSR_v2.pdf
GIS FILE: 06-100-094_Riparian_FSR_v2.mxd		
PROJECTION: UTM 10	DATUM: NAD83	amec

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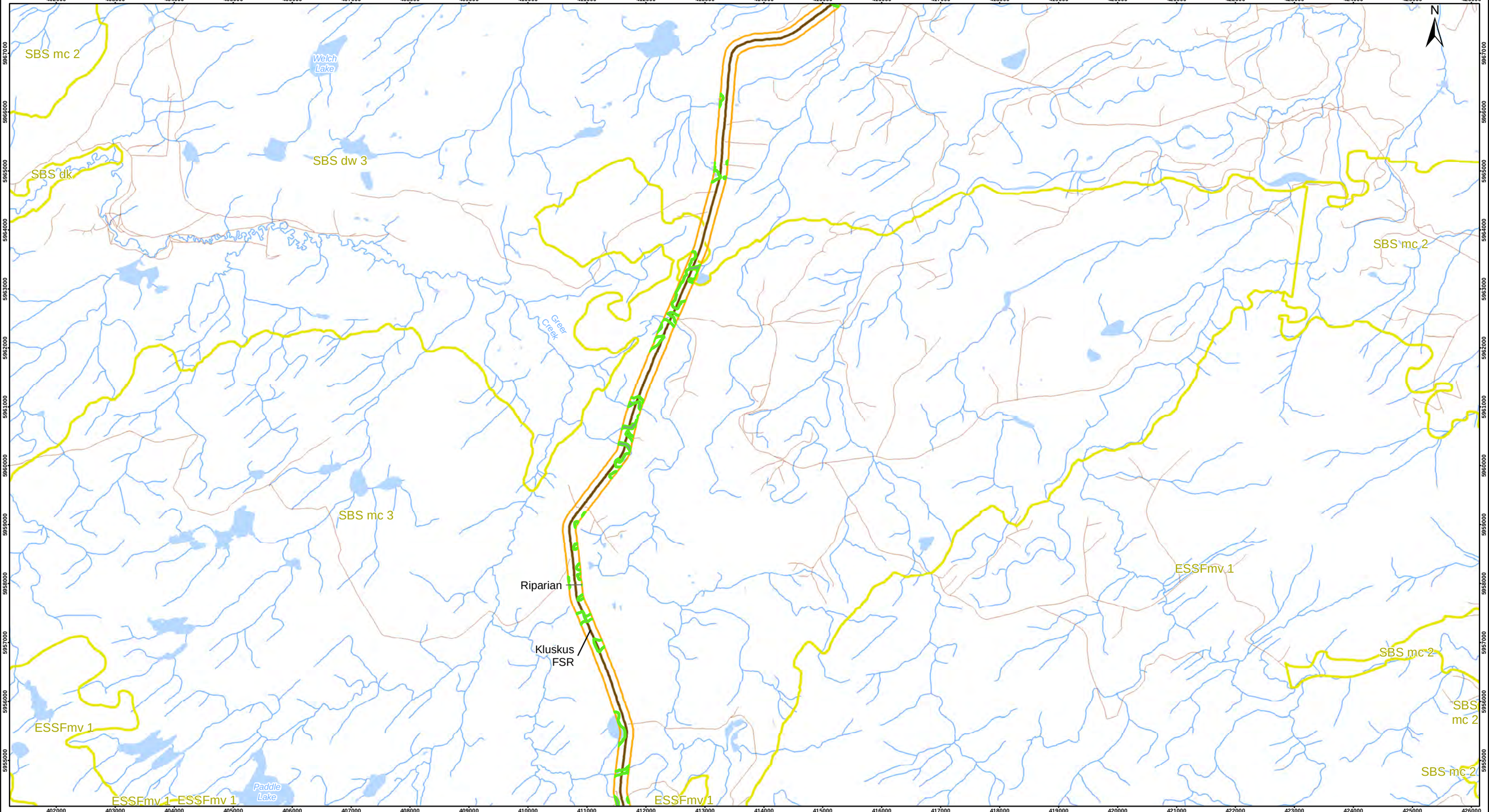


Legend

- Kluskus FSR
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone
- Riparian

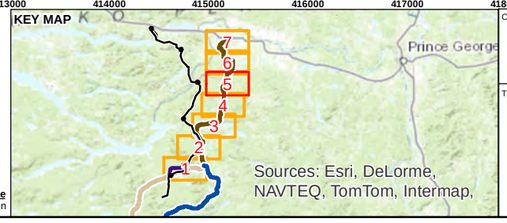
Terrain, Soils, and Vegetation

- Local Study Area

0 250500 1000
Meters
Scale:1:60,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Riparian
Kluskus Forest Service Road
Page 5 of 7

DATE: October, 2013	ANALYST: AA	Figure 3.1-16	
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-094_Riparian_FSR_v2.pdf	
GIS FILE: 06-100-094_Riparian_FSR_v2.mxd		amec	
PROJECTION: UTM 10	DATUM: NAD83		

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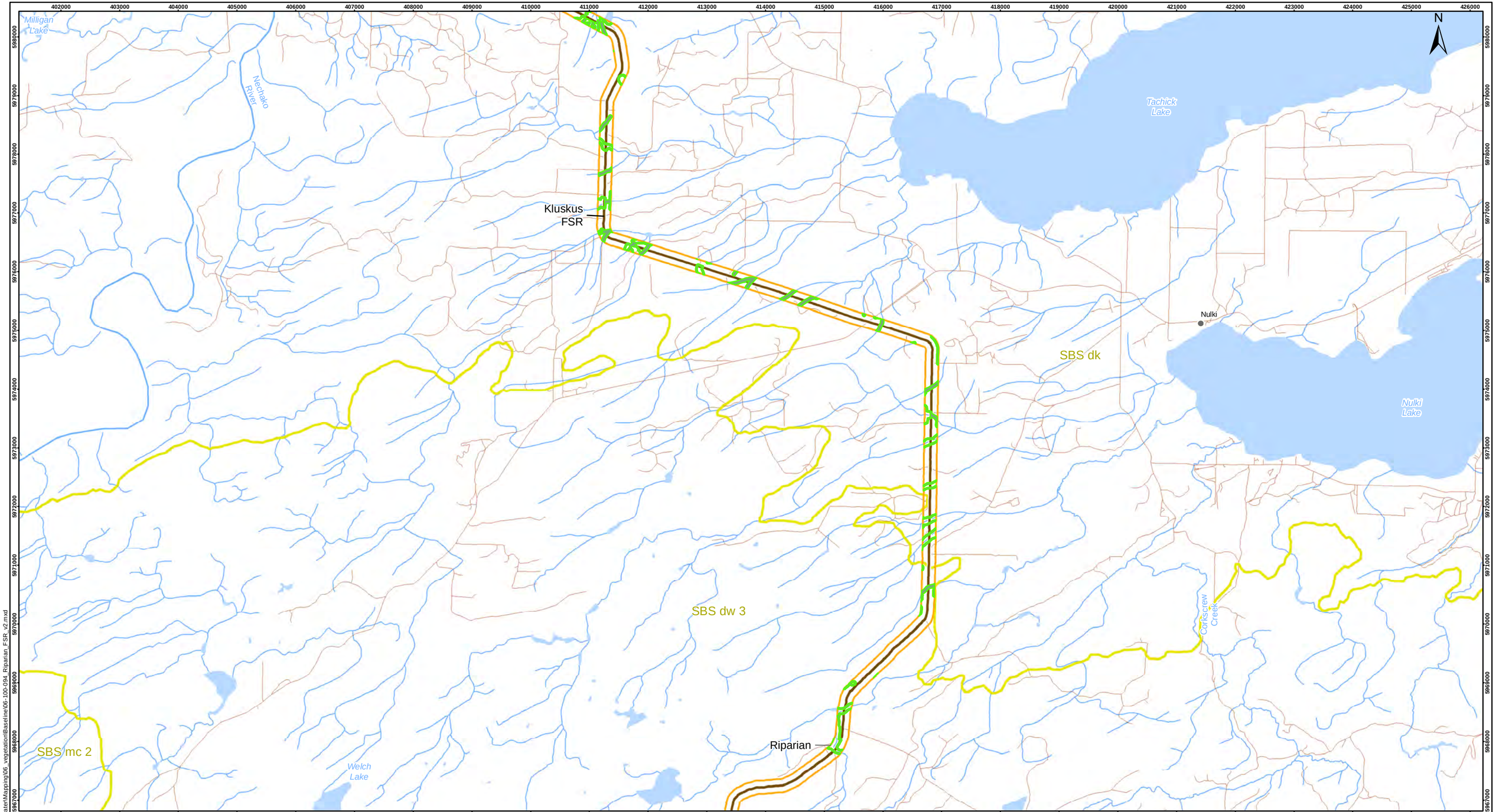


Legend

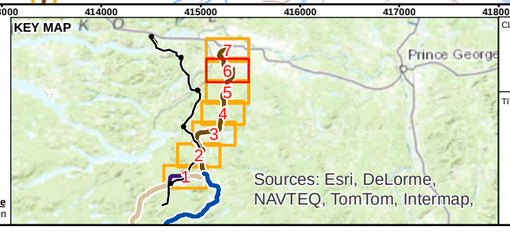
- Kluskus FSR
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone
- Riparian

Terrain, Soils, and Vegetation

- Local Study Area

0 250 500 1000
Meters
Scale:1:60,000

Source
BC Government GeoBC Data Distribution



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Riparian
Kluskus Forest Service Road
Page 6 of 7

DATE: October, 2013	ANALYST: AA	Figure 3.1-16
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-094_Riparian_FSR_v2.pdf
GIS FILE: 06-100-094_Riparian_FSR_v2.mxd		
PROJECTION: UTM 10	DATUM: NAD83	amec

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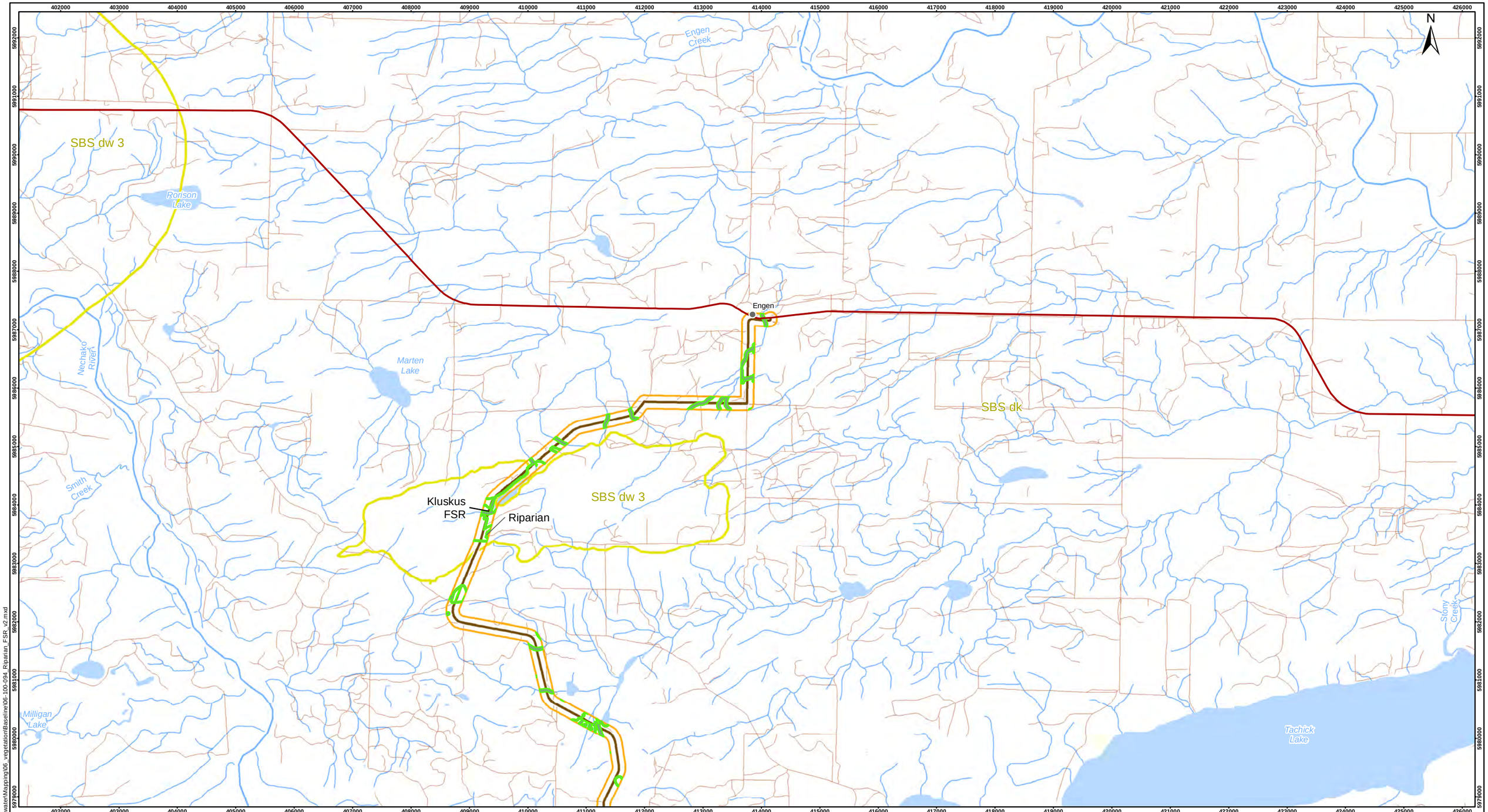


Legend

- Kluskus FSR
- Existing Road
- Highway
- Stream
- Waterbody
- Biogeoclimatic Zone
- Riparian

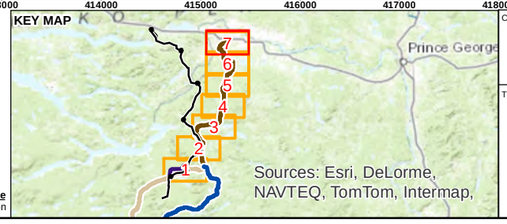
Terrain, Soils, and Vegetation

- Local Study Area

0 250 500 1000
Meters
Scale:1:60,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE:
Riparian
Kluskus Forest Service Road
Page 7 of 7

DATE: October, 2013	ANALYST: AA	Figure 3.1-16
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-094_Riparian_FSR_v2.pdf
GIS FILE: 06-100-094_Riparian_FSR_v2.mxd		
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3.1.5.2 Old Growth Forest

Mine Site

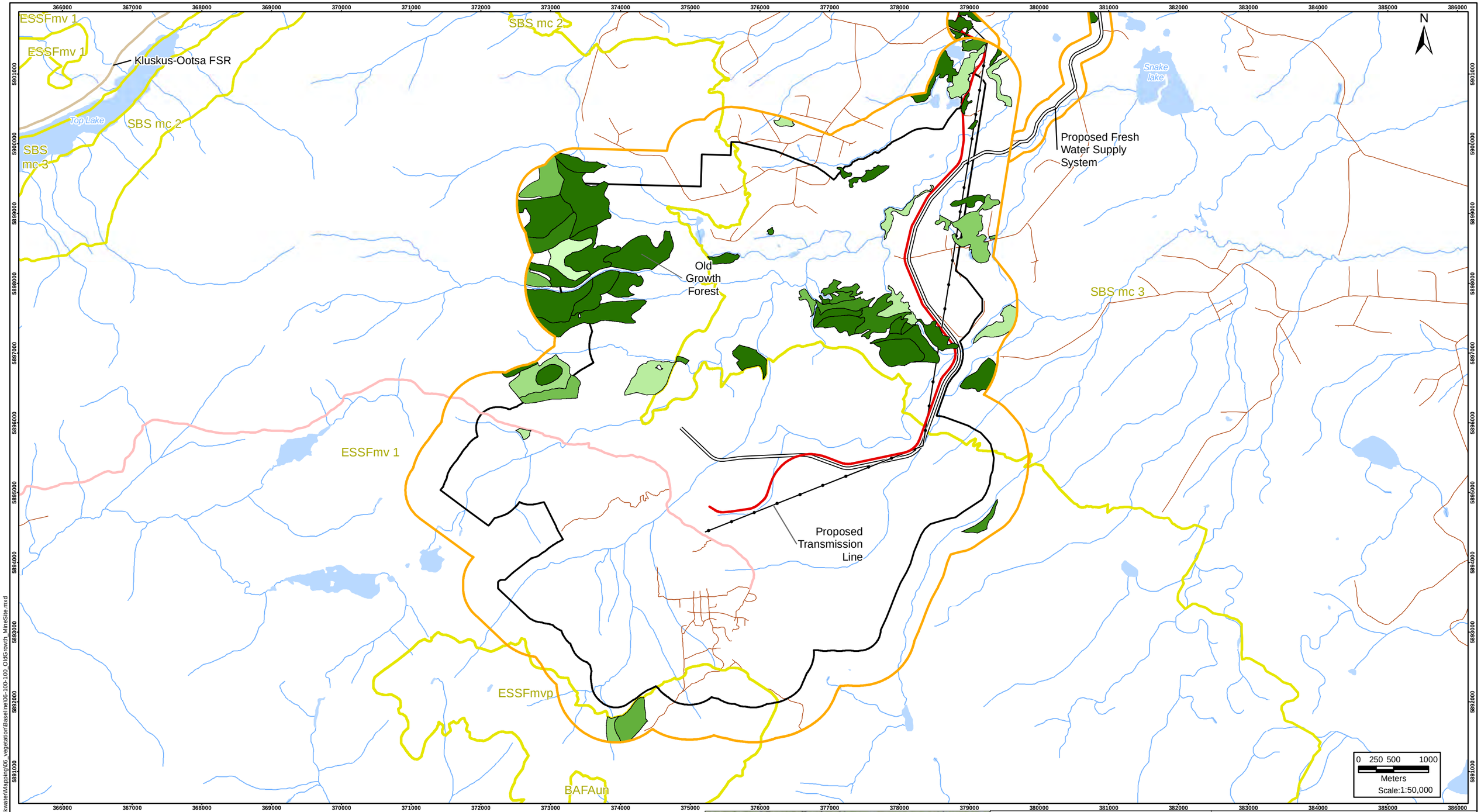
Old growth forest is represented by structural stage 7 in the TEM database. A total of 513 ha (17%) of the mine site LSA is represented by old growth forest. A total of 311 ha (5%) occur in the ESSFmv1, 190 ha (3%) in the SBSmc3 and 12 ha (0.2%) in the ESSFmv1p.

The ESSFmv1 Subalpine fir - Rhododendron - Feathermoss (01/FR) ecosystem has the largest amount of old growth forest with a total of 142 ha (2%). The SBSmc3 dry Lodgepole pine - Feathermoss - Cladina (03/LF) has a total of 105 ha (2%) represented by old growth forest. The ESSFmv1 Subalpine fir - Huckleberry - Cladonia (03/FF) has a total of 79 ha (1%) of old growth forest, (**Table 3.1-28**, **Figure 3.1-17**). Only one ecosystem in the higher elevation parkland unit (ESSFmv1p) occurs in the old growth forest stage, the Subalpine fir - Indian Hellebore (00/FH) ecosystem with a total of 12 ha (<1%).

Table 3.1-28: Distribution of Old Growth Forests in the Mine Site LSA

BGC	Ecosystem	Site Series	Map Code	Area (ha)	Percent (%)
SBSmc3	Hybrid white spruce - Huckleberry	01	SB	46	1
SBSmc3	Lodgepole pine - Juniper - Dwarf huckleberry	02	LJ	3	<1
SBSmc3	Lodgepole pine - Feathermoss - Cladina	03	LF	105	2
SBSmc3	Hybrid white spruce - Huckleberry - Soopolallie	04	SS	1	<1
SBSmc3	Black spruce - Huckleberry - Spirea	05	BH	12	<1
SBSmc3	Black spruce - Lodgepole pine - Feathermoss	06	BF	5	<1
SBSmc3	Hybrid white spruce - Twinberry	07	ST	19	<1
Total SBSmc3				**190**	**3**
ESSFmv1	Subalpine fir - Rhododendron - Feathermoss	01	FR	142	2
ESSFmv1	Lodgepole pine - Huckleberry - Cladonia	02	LC	41	1
ESSFmv1	Subalpine fir - Huckleberry - Feathermoss	03	FF	79	1
ESSFmv1	Subalpine fir - Huckleberry - Gooseberry	04	FG	49	1
Total ESSFmv1				**311**	**5**
ESSFmvp	Subalpine fir - Indian Hellebore	00	FH	12	<1
Total ESSFmv1p				**12**	<1
Total Old Growth Forest				**513**	**17**
Total Mine Site LSA				**6,123**	

Note: BGC = Biogeoclimatic, SBSmc3 = Sub-Boreal Spruce Moist Cold Kluskus variant; ESSFmv1 = Engelmann Spruce = Subalpine Fir Moist Very Cold Nechako variant; ESSFmvp = Engelmann Spruce-Subalpine Fir Moist Very Cold Nechako Parkland variant; LSA = local study area.



Legend

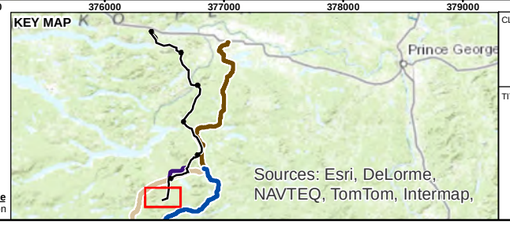
- Exploration Road
- Proposed Mine Site Access Road
- Proposed Transmission Line
- Proposed Fresh Water Supply System
- Kluskus Ootsa FSR
- Existing Road
- Stream
- Waterbody
- Proposed Mine Site
- Biogeoclimatic Zone

Terrain, Soils, and Vegetation Percent Old Growth Forest

- Local Study Area
- 10
- 20
- 30
- 40
- 50
- 60
- 70
- 80
- 90
- 100

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Old Growth Forest
Mine Site

DATE: October, 2013	ANALYST: AA	Figure 3.1-17
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-100_OldGrowth_MineSite.pdf
GIS FILE: 06-100-100_OldGrowth_MineSite.mxd		
PROJECTION: UTM 10	DATUM: NAD83	amec

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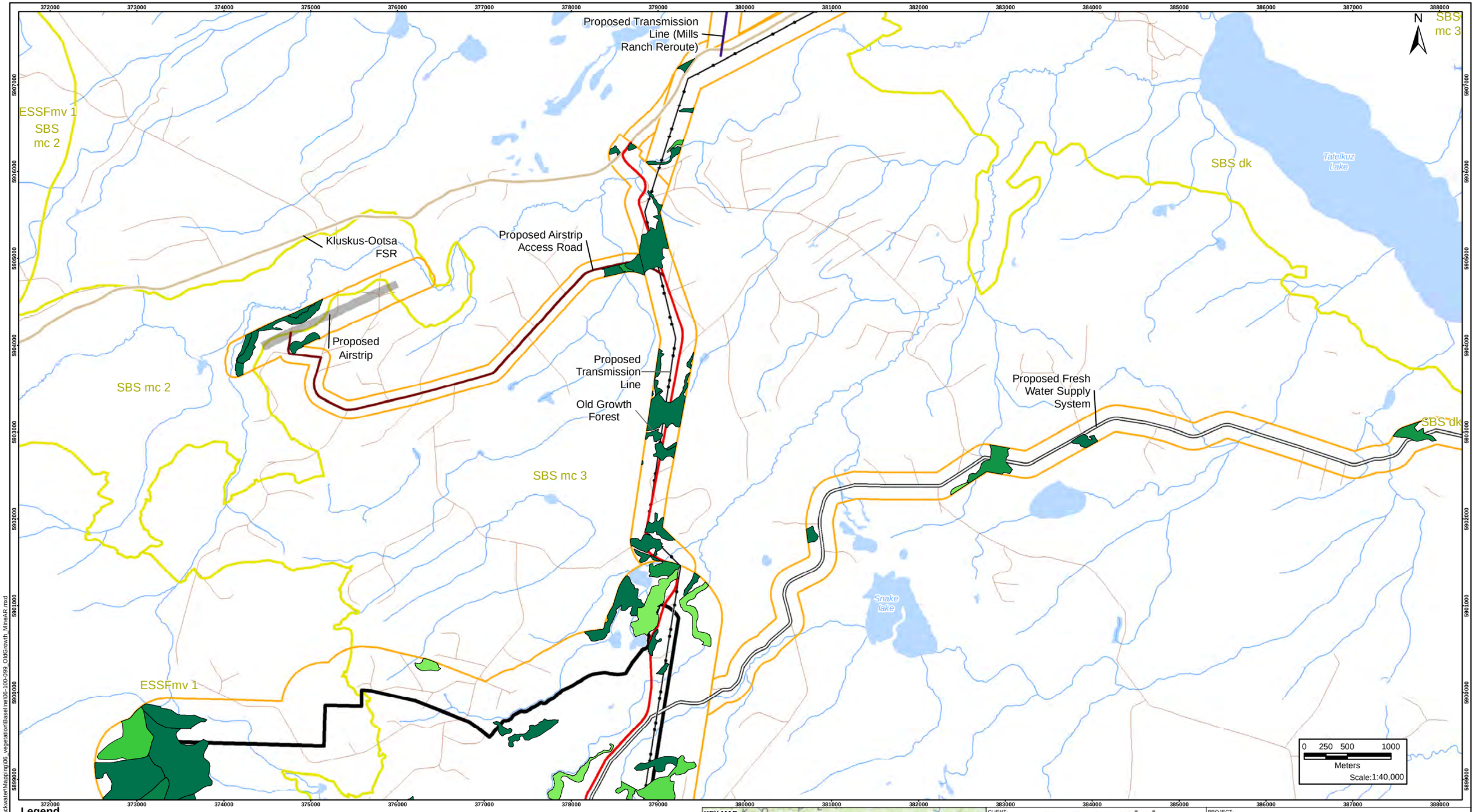
Mine Site Access Road

The mine site access road occurs exclusively in the SBSmc3 and has a total of 47 ha (23%) of old growth forest (**Table 3.1-29**, **Figure 3.1-18**). The ecosystem with the largest area of old growth forest is the Black spruce - Huckleberry - Spirea (05/BH) with a total of 13 ha (7%). The Hybrid white spruce - Huckleberry (01/SB) has a total of 12 ha (6%) and the Lodgepole pine - Feathermoss - Cladina (03/LF) has a total of 10 ha (5%) of old growth forest.

Table 3.1-29: Distribution of Old Growth Forest in the Mine Site Access Road LSA

BGC Unit	Ecosystem	Site Series	Map Code	Area (ha)	Percent (%)
SBSmc3	Hybrid white spruce - Huckleberry	01	SB	12	6
SBSmc3	Lodgepole pine - Feathermoss - Cladina	03	LF	10	5
SBSmc3	Hybrid white spruce - Huckleberry - Soopolallie	04	SS	<1	<1
SBSmc3	Black spruce - Huckleberry - Spirea	05	BH	13	7
SBSmc3	Black spruce - Lodgepole pine - Feathermoss	06	BF	5	2
SBSmc3	Hybrid white spruce - Twinberry	07	ST	6	3
Total SBSmc3				**47**	**23**
Total Old Growth Forest				**47**	**23**
Total Mine Site Access Road LSA				**199**	

Note: BGC = Biogeoclimatic, SBSdk = Sub-Boreal Spruce Dry Cool, SBSdw3 = Sub-Boreal Spruce Dry Warm Stuart variant, SBSmc2 = Sub-Boreal Spruce Moist Cold Babine variant; SBSmc3 = Sub-Boreal Spruce Moist Cold Kluskus variant; ESSFmv1 = Engelmann Spruce = Subalpine Fir Moist Very Cold Nechako variant; ESSFmvp = Engelmann Spruce-Subalpine Fir Moist Very Cold Nechako Parkland variant; LSA = local study area.



Legend

- Proposed Airstrip Access Road
- Proposed Mine Site Access Road
- Proposed Transmission Line
- Proposed Fresh Water Supply System
- Proposed Transmission Line (Mills Ranch Reroute)
- Kluskus Ootsa FSR
- Existing Road
- Stream
- Waterbody
- Proposed Airstrip
- Proposed Mine Site
- Biogeoclimatic Zone

Terrain, Soils, and Vegetation

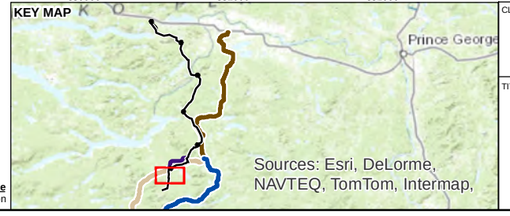
- Local Study Area

Percent Old Growth Forest

10, 20, 40, 50, 60, 70, 80, 90, 100

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Old Growth Forest
Mine Site Access Road

DATE: October, 2013	ANALYST: AA	Figure 3.1-18
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-099_OldGrowth_MineAR.pdf
GIS FILE: 06-100-099_OldGrowth_MineAR.mxd		
PROJECTION: UTM 10	DATUM: NAD83	amec

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Fresh Water Supply System

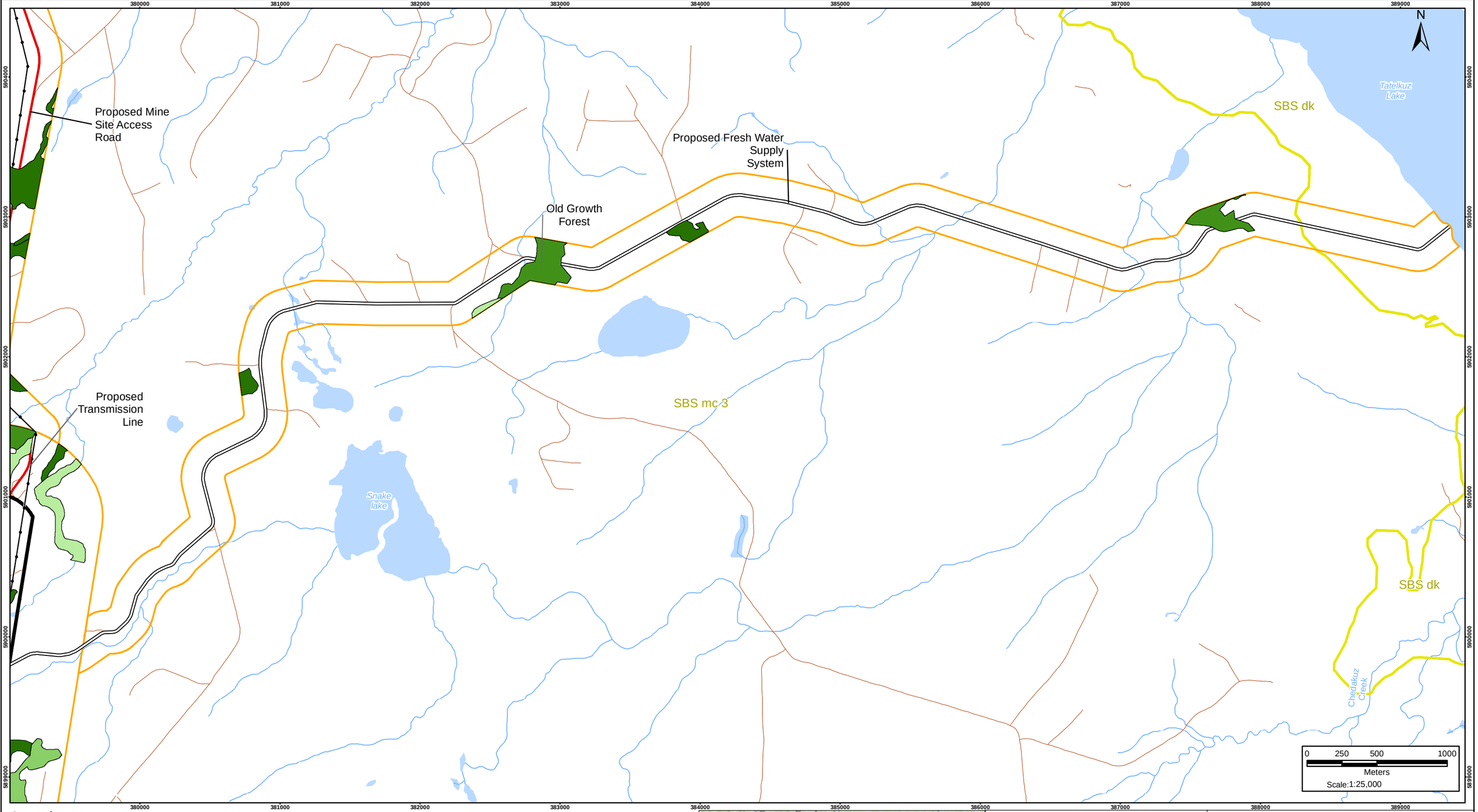
The fresh water supply system LSA occupies a total of 372 ha of which 16 ha (4%) is old growth forest (**Table 3.1-30**, **Figure 3.1-19**) in the SBSmc3, old growth occurs in the SBSdk.

The mesic Hybrid white spruce-Huckleberry (01/SB) ecosystem has the highest abundance of old growth forest, with a total of 8 ha (2%) in the LSA. The moist and rich productive Hybrid white spruce-Twinberry (07/ST) ecosystem has a total of 4 ha (1%) and the nutrient-poor Black spruce-Huckleberry-Spirea (05/BH) ecosystem has a total of 3 ha (1%).

Table 3.1-30: Distribution of Old Growth Forest in the Fresh Water Supply System LSA

BGC Unit	Ecosystem	Site Series	Map Code	Area (ha)	Percent (%)
SBSmc3	Hybrid white spruce - Huckleberry	01	SB	8	2
SBSmc3	Lodgepole pine - Feathermoss - Cladina	03	LF	1	<1
SBSmc3	Black spruce - Huckleberry - Spirea	05	BH	3	1
SBSmc3	Black spruce - Lodgepole pine - Feathermoss	06	BF	<1	<1
SBSmc3	Hybrid white spruce - Twinberry	07	ST	4	1
Total SBSmc3				**16**	**4**
Total Old Growth Forest				**16**	**4**
Total Fresh Water Supply System				**372**	

Note: BGC = Biogeoclimatic, SBSmc3 = Sub-Boreal Spruce Moist Cold Kluskus variant; LSA = local study area



Legend

- Proposed Mine Site Access Road
- Proposed Transmission Line
- Proposed Fresh Water Supply System
- Existing Road
- Stream
- Waterbody
- Proposed Mine Site
- Biogeoclimatic Zone

Terrain, Soils, and Vegetation

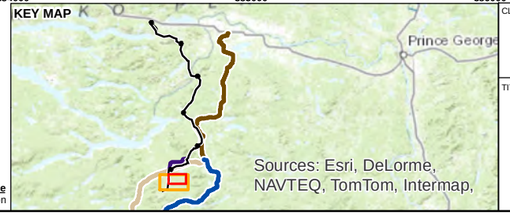
- Local Study Area

Percent Old Growth Forest

10, 20, 30, 40, 50, 60, 70, 80, 90, 100

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Old Growth Forest
Fresh Water Supply System

DATE: October, 2013	ANALYST: AA	Figure 3.1-19	
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-101_OldGrowth_FWSS.pdf	
GIS FILE: 06-100-101_OldGrowth_FWSS.mxd			
PROJECTION: UTM 10	DATUM: NAD83	amec	

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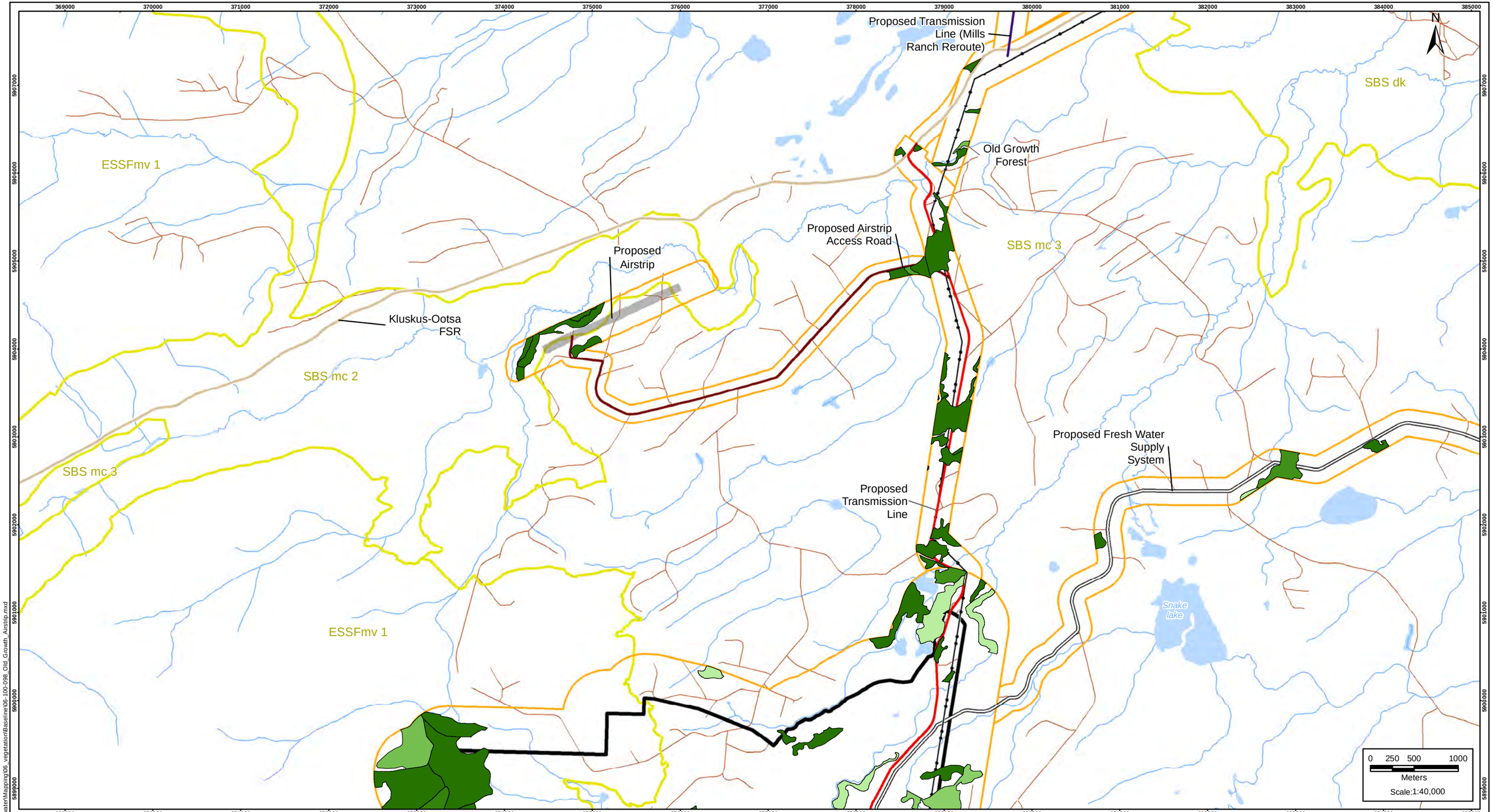
Airstrip

The airstrip LSA occupies a total of 208 ha of which 21 ha (10%) occurs in the old growth forest stage. The SBSmc2 has the highest amount of old growth forest with a total of 13 ha (6%) and the SBSmc3 has a total of 8 ha (4%) (**Table 3.1-31**, **Figure 3.1-20**). The slightly richer than average Hybrid white spruce - Huckleberry - Dwarf blueberry (SBSmc2 04/HB) has the highest representation of old growth forest with a total of 6 ha (3%). The mesic Hybrid white spruce - Huckleberry has a total of 5 ha (2%) and the nutrient poor Black spruce - Huckleberry - Spirea (SBSmc3 05/BH) has a total of 4 ha (2%), (**Table 3.1-31**, **Figure 3.1-20**).

Table 3.1-31: Distribution of Old Growth Forest in the Airstrip LSA

BGC Unit	Ecosystem	Site Series	Map Code	Area (ha)	Percent (%)
SBSmc2	Hybrid white spruce - Huckleberry	01	SB	5	2
SBSmc2	Hybrid white spruce - Huckleberry - Dwarf blueberry	04	HB	5	3
SBSmc2	Hybrid white spruce - Twinberry - Oak fern	08	ST	3	1
Total Old Growth in SBSmc2				**13**	**6**
SBSmc3	Hybrid white spruce - Huckleberry	01	SB	1	<1
SBSmc3	Lodgepole pine - Juniper - Dwarf huckleberry	02	LJ	<1	<1
SBSmc3	Lodgepole pine - Feathermoss - Cladina	03	LF	3	1
SBSmc3	Black spruce - Huckleberry - Spirea	05	BH	4	2
SBSmc3	Black spruce - Lodgepole pine - Feathermoss	06	BF	1	<1
Total SBSmc3				**8**	**4**
Total Old Growth Forest				**21**	**10**
Total Airstrip				**208**	

Note: BGC = Biogeoclimatic, SBSmc2 = Sub-Boreal Spruce Moist Cold Babine variant; SBSmc3 = Sub-Boreal Spruce Moist Cold Kluskus variant; LSA = local study area.



Legend

- Proposed Airstrip Access Road
- Proposed Mine Site Access Road
- Proposed Transmission Line
- Proposed Fresh Water Supply System
- Proposed Transmission Line (Mills Ranch Reroute)
- Kluskus Ootsa FSR
- Existing Road
- Stream
- Waterbody
- Proposed Airstrip
- Proposed Mine Site
- Biogeoclimatic Zone

Terrain, Soils, and Vegetation

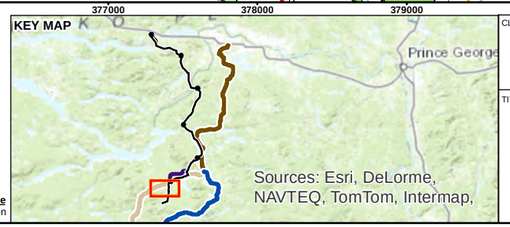
- LSA

Percent Old Growth Forest

10 20 30 40 50 60 70 80 90 100

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Old Growth Forest
Proposed Airstrip

DATE: October, 2013	ANALYST: AA	Figure 3.1-20
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-098_Old_Growth_Airstrip.pdf
GIS FILE: 06-100-098_Old_Growth_Airstrip.mxd		
PROJECTION: UTM 10	DATUM: NAD83	

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Transmission Line

The transmission line covers a total of 4,290 ha of which 603 ha (14%) of old growth forest occurs and is represented by five BGC units: SBSdk, SBSdw3, SBSmc2, SBSmc3 and ESSFmv1 (**Table 3.1-32**, **Figure 3.1-21**). The SBSdk has the highest amount of old growth forest with a total of 198 ha (5%). The SBSmc3 has a total of 159 ha (4%), the SBSdw3 has a total of 130 ha (3%), the SBSmc2 has a total of 59 ha (1%) and the ESSFmv1 has the least amount with a total of 57 ha (1%).

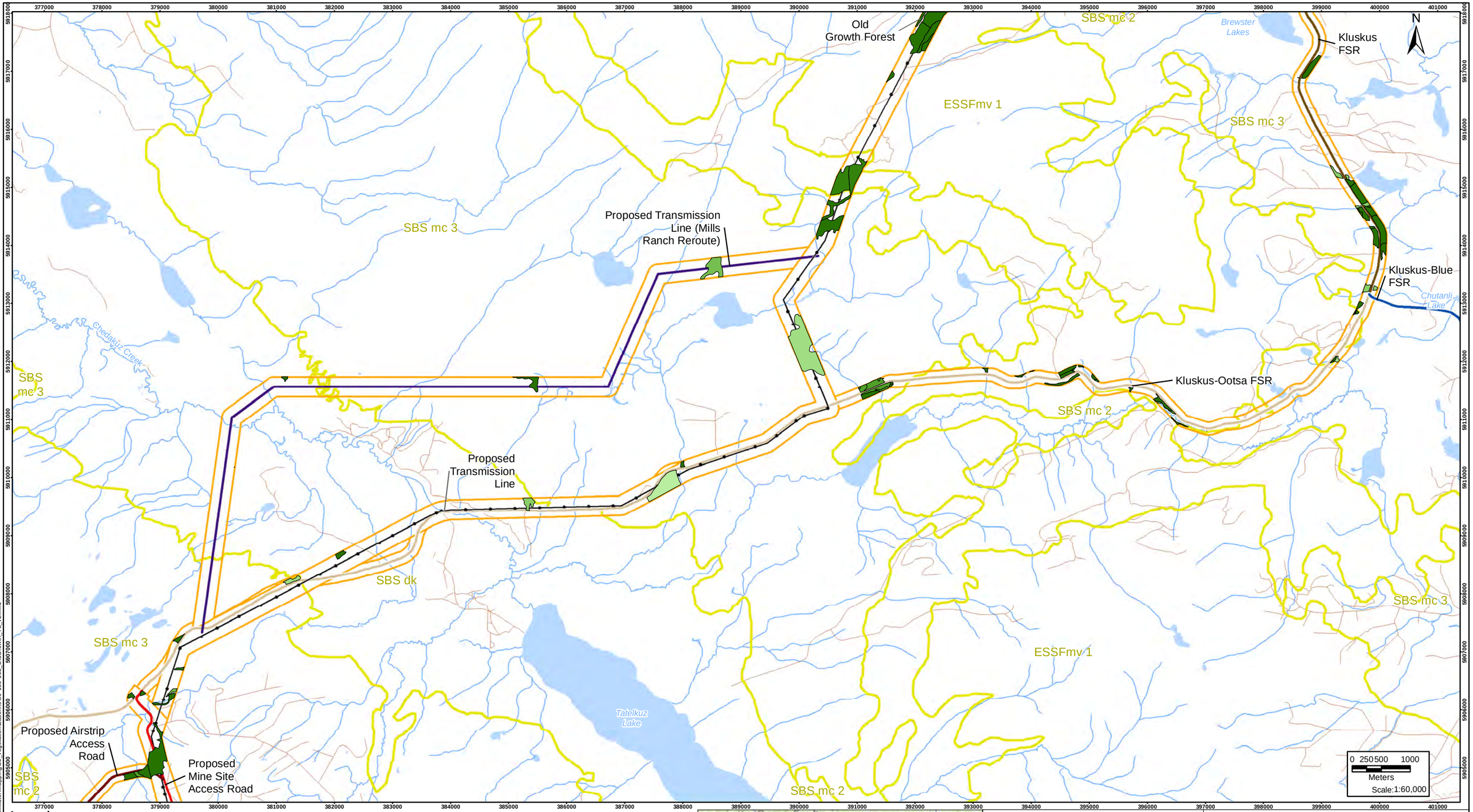
The mesic Hybrid white spruce - Purple peavine (SBSdk 01/SP) represents the largest area of an ecosystem with old growth forest and has a total of 103 ha (2%). The moist and rich Hybrid white spruce - Twinberry (SBSmc3 07/ST) has a total of 78 ha (2%). The moist and rich Hybrid white spruce - Twinberry - Coltsfoot (SBSdk 06/ST) has a total of 79 ha (2%). The moist and rich Hybrid white spruce - Twinberry (SBSdw3 07/ST) has a total of 54 ha (1%) represented in the old growth forest stage.

Table 3.1-32: Distribution of Old Growth Forest in the Transmission Line Main LSA

BGC Unit	Ecosystem	Site Series	Map Code	Area (ha)	Percent (%)
SBSdk	Hybrid white spruce - Purple peavine	01	SP	103	2
SBSdk	Lodgepole pine - Juniper - Ricegrass	02	LJ	<1	<1
SBSdk	Lodgepole pine - Feathermoss - Cladina	03	LC	8	<1
SBSdk	Douglas fir - Soopolallie - Feathermoss	04	DS	<1	<1
SBSdk	Hybrid white spruce - Spirea - Feathermoss	05	SF	9	<1
SBSdk	Hybrid white spruce - Twinberry - Coltsfoot	06	ST	78	2
Total SBSdk				**198**	**5**
SBSdw3	Hybrid white spruce - Douglas fir - Pinegrass	01	SP	51	1
SBSdw3	Douglas fir - Lodgepole pine - Cladonia	02	DC	1	<1
SBSdw3	Lodgepole pine - Feathermoss - Cladina	03	LC	3	<1
SBSdw3	Hybrid white spruce - Ricegrass	04	SR	17	<1
SBSdw3	Hybrid white spruce - Twinberry	07	ST	54	1
SBSdw3	Hybrid white spruce - Oakfern	08	SO	5	<1
Total SBSdw3				**130**	**3**
SBSmc2	Hybrid white spruce - Huckleberry	01	SB	48	1
SBSmc2	Lodgepole pine - Huckleberry - Cladonia	02	PH	<1	<1
SBSmc2	Black spruce - Lodgepole pine - Feathermoss	03	BM	2	<1
SBSmc2	Hybrid white spruce - Huckleberry - Dwarf blueberry	04	HB	1	<1
SBSmc2	Hybrid white spruce - Oak fern	06	SO	1	<1
SBSmc2	Hybrid white spruce - Twinberry - Oak fern	08	ST	1	<1
SBSmc2	Hybrid white spruce - Devil's club	09	SD	4	<1
SBSmc2	Hybrid white spruce - Horsetail	10	SH	2	<1
	Total SBSmc2			59	1

BGC Unit	Ecosystem	Site Series	Map Code	Area (ha)	Percent (%)
SBSmc3	Hybrid white spruce - Huckleberry	01	SB	52	1
SBSmc3	Lodgepole pine - Juniper - Dwarf huckleberry	02	LJ	<1	<1
SBSmc3	Lodgepole pine - Feathermoss - Cladina	03	LF	6	<1
SBSmc3	Hybrid white spruce - Huckleberry - Soopolallie	04	SS	14	<1
SBSmc3	Black spruce - Lodgepole pine - Feathermoss	06	BF	7	<1
SBSmc3	Hybrid white spruce - Twinberry	07	ST	79	2
Total SBSmc3				**159**	**4**
ESSFmv1	Subalpine fir - Rhododendron - Feathermoss	01	FR	36	1
ESSFmv1	Lodgepole pine - Huckleberry - Cladonia	02	LC	<1	<1
ESSFmv1	Subalpine fir - Huckleberry - Feathermoss	03	FF	21	<1
ESSFmv1	Subalpine fir - Huckleberry - Gooseberry	04	FG	1	<1
Total ESSFmv1				**57**	**1**
Total Old Growth Forest				**603**	**14**
Total Transmission Line				**4,290**	

Note: BGC = Biogeoclimatic, SBSdk = Sub-Boreal Spruce Dry Cool, SBSdw3 = Sub-Boreal Spruce Dry Warm Stuart variant, SBSmc2 = Sub-Boreal Spruce Moist Cold Babine variant; SBSmc3 = Sub-Boreal Spruce Moist Cold Kluskus variant; ESSFmv1 = Engelmann Spruce = Subalpine Fir Moist Very Cold Nechako variant; LSA = local study area.



Legend

- Proposed Airstrip Access Road
- Proposed Mine Site Access Road
- Proposed Transmission Line
- Proposed Transmission Line (Mills Ranch Reroute)
- Kluskus FSR
- Kluskus Blue FSR
- Kluskus Ootsa FSR
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone

Terrain, Soils, and Vegetation

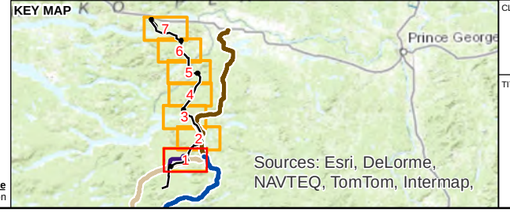
- Local Study Area

Percent Old Growth Forest

10, 20, 30, 40, 50, 60, 70, 80, 90, 100

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Old Growth Forest
Transmission Line
Page 1 of 7

DATE: October, 2013	ANALYST: AA	Figure 3.1-21
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-103_OldGrowth_TL_v2.pdf
GIS FILE: 06-100-103_OldGrowth_TL_v2.mxd		
PROJECTION: UTM 10	DATUM: NAD83	amec

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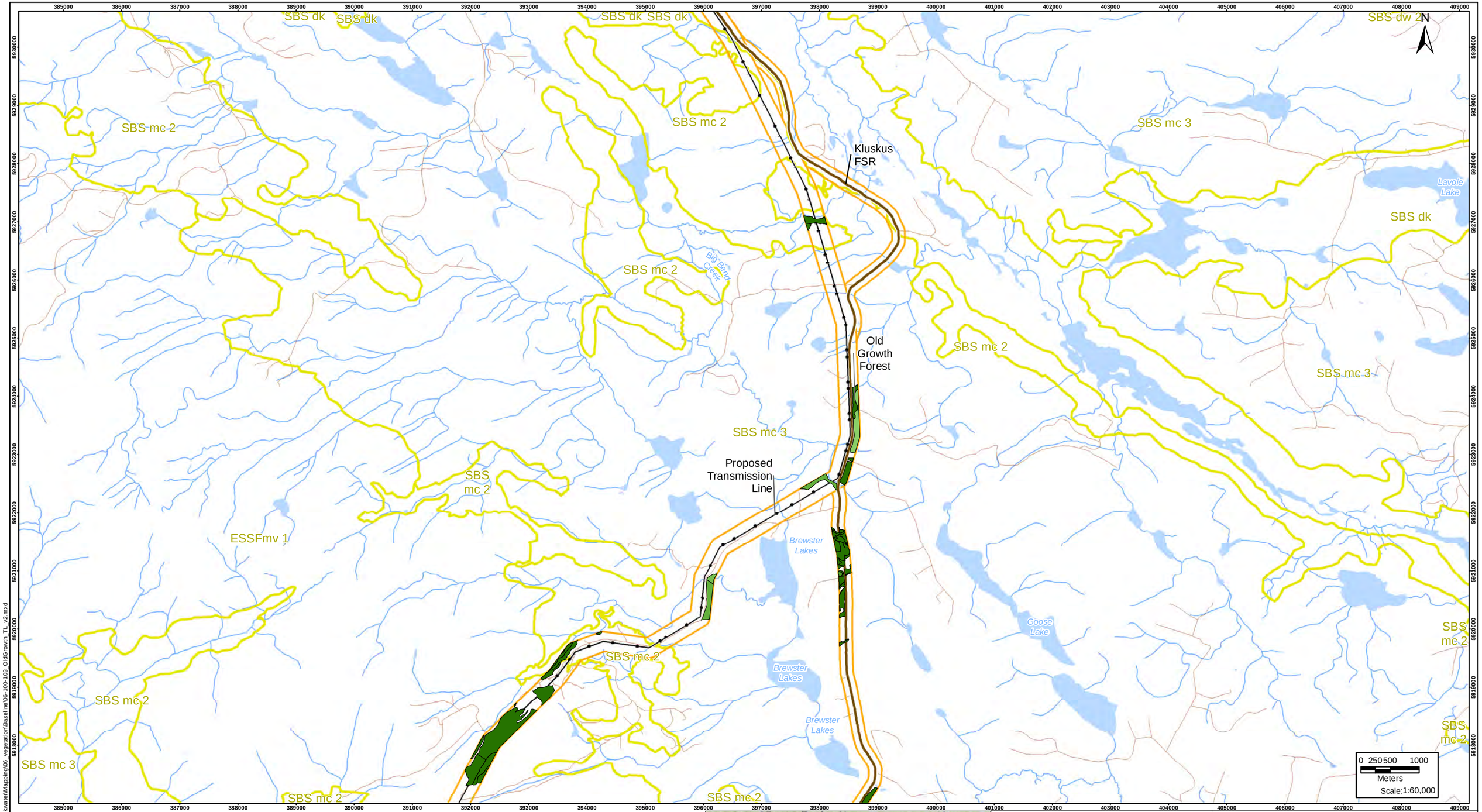


Legend

- Proposed Transmission Line
- Kluskus FSR
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone

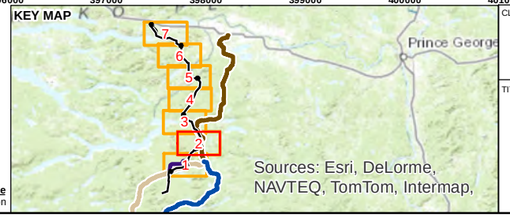
Terrain, Soils, and Vegetation

- Local Study Area

Percent Old Growth Forest

10 20 30 40 50 60 70 80 90 100

Source
BC Government GeoBC Data Distribution



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Old Growth Forest
Transmission Line
Page 2 of 7

DATE: October, 2013	ANALYST: AA	Figure 3.1-21
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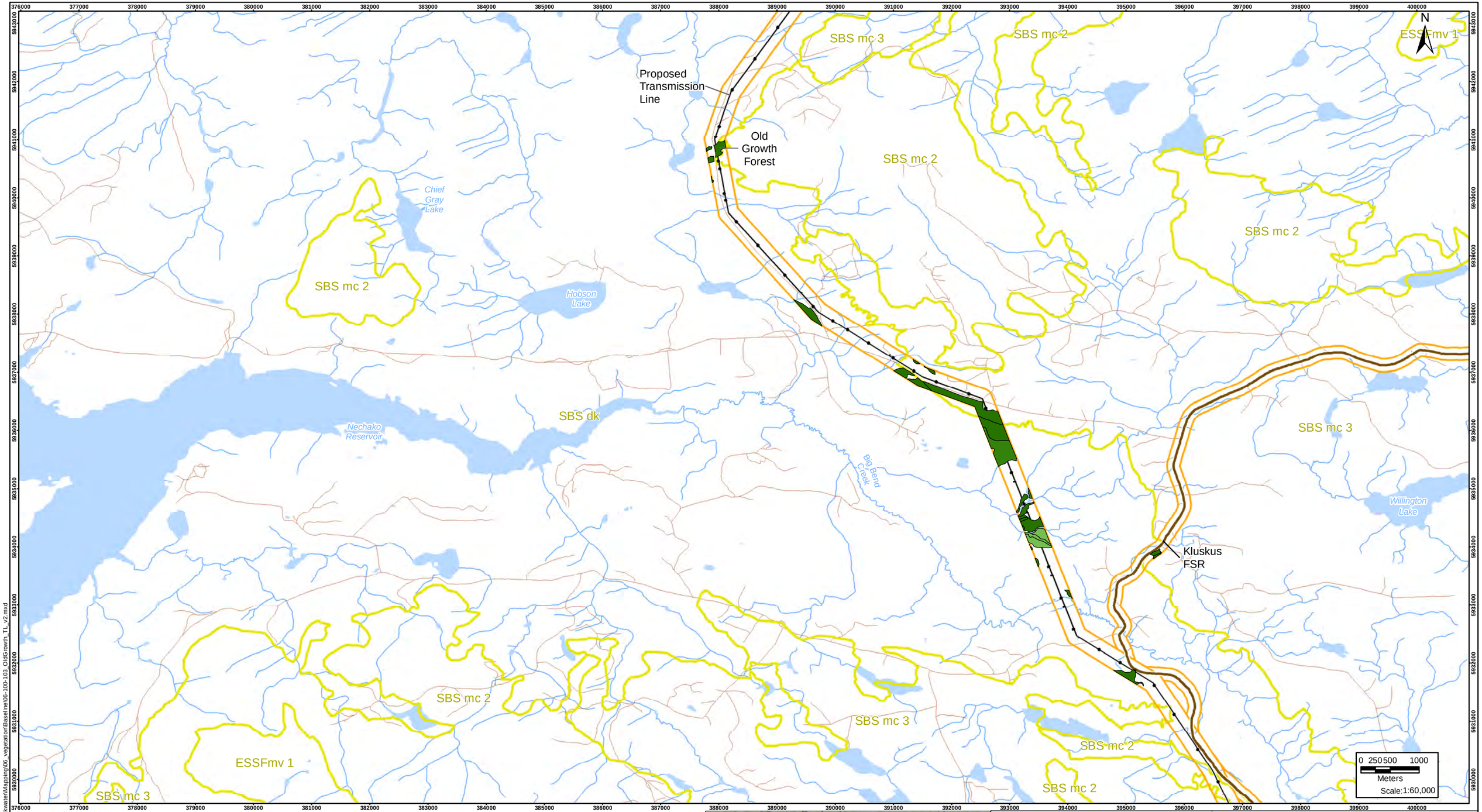


Legend

- Proposed Transmission Line
- Kluskus FSR
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone

Terrain, Soils, and Vegetation

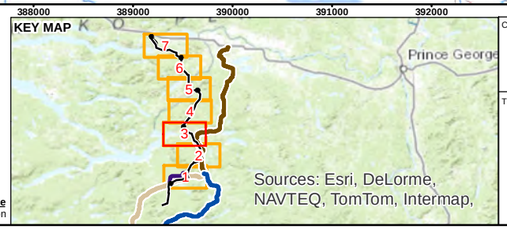
- Local Study Area

Percent Old Growth Forest

10, 20, 30, 40, 50, 60, 70, 80, 90, 100

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Old Growth Forest
Transmission Line
Page 3 of 7

DATE: October, 2013	ANALYST: AA	Figure 3.1-21
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-103_OldGrowth_TL_v2.pdf
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PROJECTION: UTM 10	DATUM: NAD83	amec

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Old Growth Forest

Proposed Transmission Line

SBS dw 3

SBS mc 2

SBS dk

ESSFmv 1

SBS mc 3

Copley Lake

Targe Creek

Nechako River

Swanson Creek

Crystal Lake

Boomerang Lake

Johnson Lake

N

0 250 500 1000
Meters
Scale:1:60,000

Legend

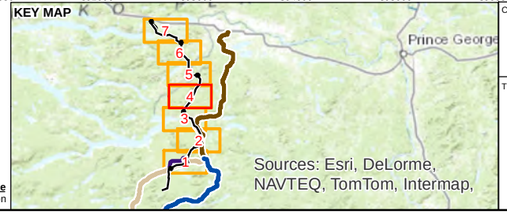
- Proposed Transmission Line
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone

Terrain, Soils, and Vegetation
- Local Study Area

Percent Old Growth Forest
10, 20, 30, 40, 50, 60, 70, 80, 90, 100

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Old Growth Forest
Transmission Line
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DATE: October, 2013	ANALYST: AA	Figure 3.1-21
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PROJECTION: UTM 10	DATUM: NAD83	amec

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SBS mc 2
SBS mc 2
SBS mc 2
Tahultzu Lake
SBS mc 2
Proposed Transmission Line
Hallett Lake
Triangle Lake
True Triangle Lake
SBS dk
Greer Creek
SBS dw 3
Lorne Lake
Bungalow Lake
Nechako River
Old Growth Forest
Rognaas Lake
SBS mc 3
Copley Lake
Targe Creek
SBS mc 2
0 250 500 1000
Meters
Scale:1:60,000
N

379000 380000 381000 382000 383000 384000 385000 386000 387000 388000 389000 390000 391000 392000 393000 394000 395000 396000 397000 398000 399000 400000 401000 402000 403000

5969000 5968000 5967000 5966000 5965000 5964000 5963000 5962000 5961000 5960000 5959000 5958000 5957000 5956000

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Legend

- Proposed Transmission Line
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone

Terrain, Soils, and Vegetation

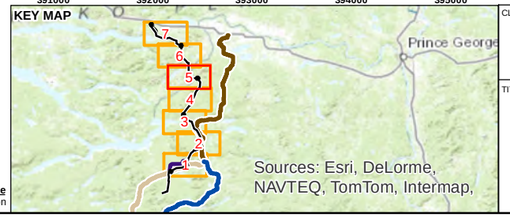
- Local Study Area

Percent Old Growth Forest

10 20 30 40 50 60 70 80 90 100

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Old Growth Forest
Transmission Line
Page 5 of 7

DATE: October, 2013	ANALYST: AA	Figure 3.1-21
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GIS FILE: 06-100-103_OldGrowth_TL_v2.mxd		
PROJECTION: UTM 10	DATUM: NAD83	amec

ESSFmv 1
SBS mc 2
SBS dw 3
ESSFmv 1
ESSFmv 1
SBS mc 2
SBS mc 2
SBS dk
SBS dw 3
SBS dw 3
Old Growth Forest
Proposed Transmission Line
Nilm River
Laurie Lake
Twentysix Mile Lake
Limit Lake
Dorman Lake
Centre Lake
Smith Creek
Nechako River
Tahultzu Lake
N
0 250 500 1000
Meters
Scale:1:60,000

Legend

- Proposed Transmission Line
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone

Terrain, Soils, and Vegetation

- Local Study Area

Percent Old Growth Forest

10 20 30 40 50 60 70 80 90 100

Source
BC Government GeoBC Data Distribution

KEY MAP
Prince George
Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap,

CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Old Growth Forest
Transmission Line
Page 6 of 7

DATE: October, 2013
ANALYST: AA
Figure 3.1-21
JOB No: VE52277
QA/QC: MY
PDF FILE: 06-100-103_OldGrowth_TL_v2.pdf
GIS FILE: 06-100-103_OldGrowth_TL_v2.mxd
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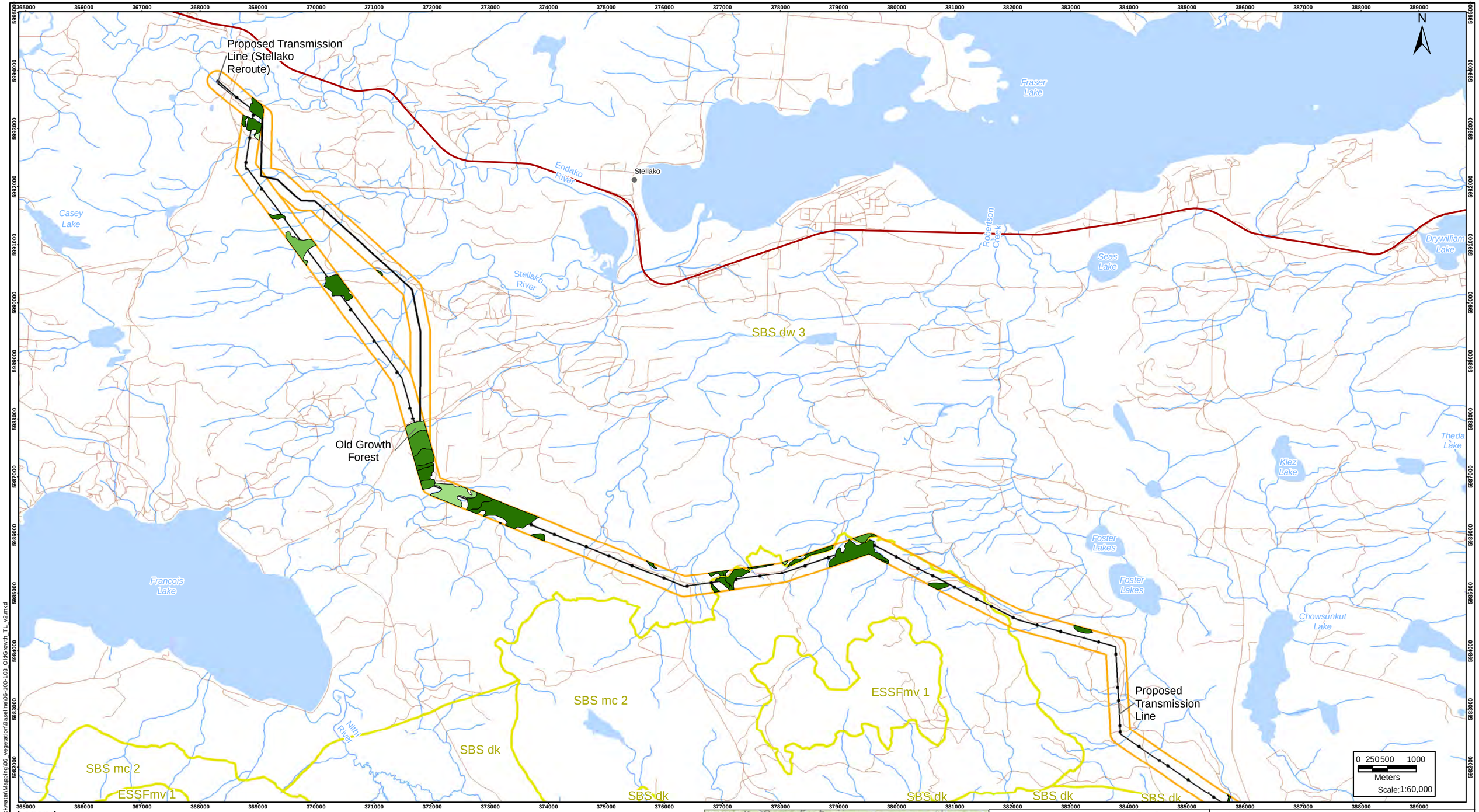


Legend

- Proposed Transmission Line
- Proposed Transmission Line (Stellako Reroute)
- Existing Road
- Highway
- Stream
- Waterbody
- Biogeoclimatic Zone

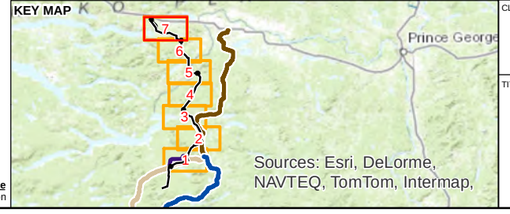
Terrain, Soils, and Vegetation

- Local Study Area

Percent Old Growth Forest

10 20 30 40 50 60 70 80 90 100

Source
BC Government GeoBC Data Distribution



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Old Growth Forest
Transmission Line
Page 7 of 7

DATE: October, 2013	ANALYST: AA	Figure 3.1-21
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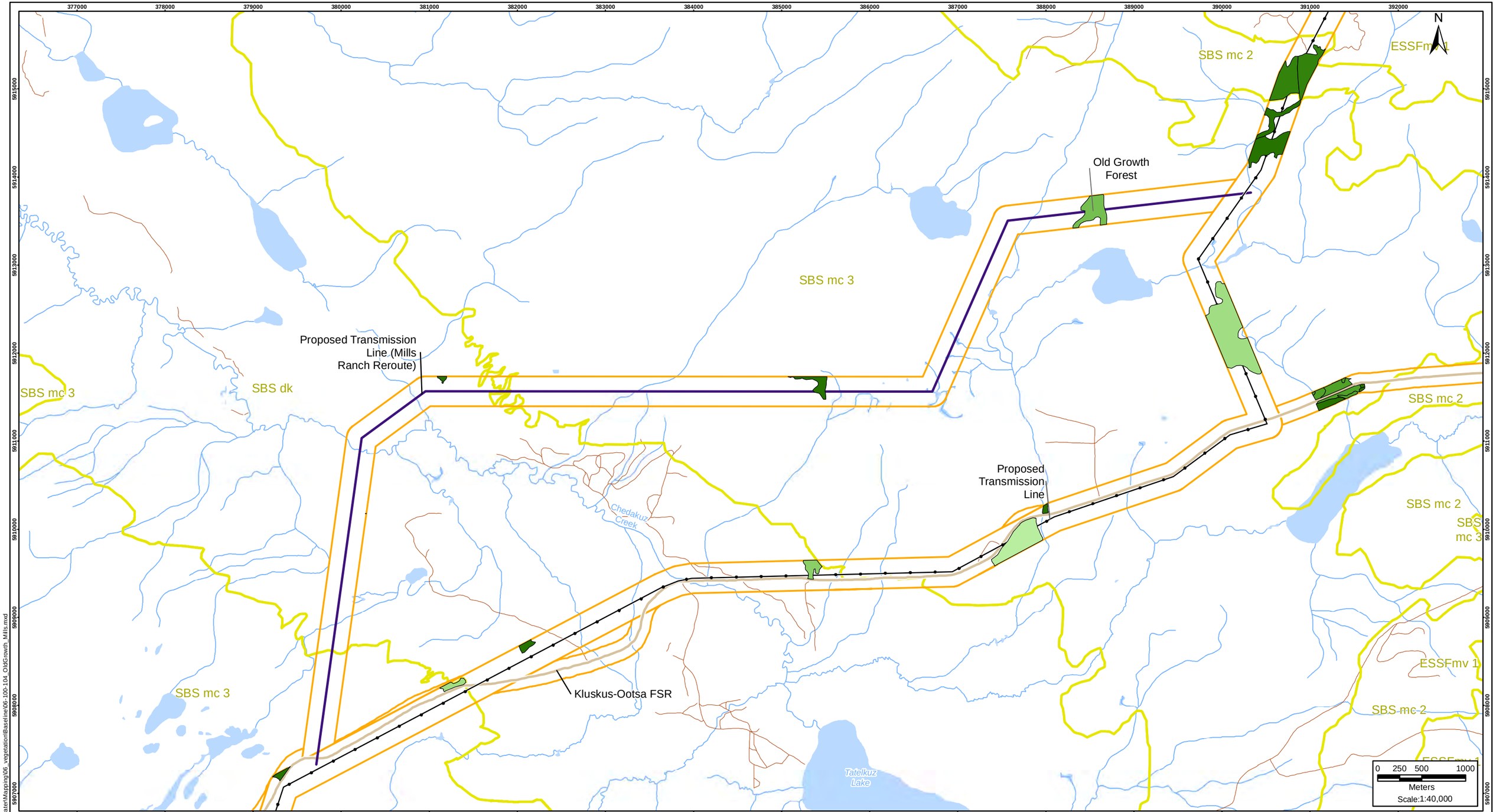
Mills Ranch Reroute

The Mills Ranch reroute occupies a total of 505 ha of which 8 ha (2%) is represented by old growth forest. The majority of the old growth forest occurs in the SBSmc3 with 4 ha (1%) represented by the Hybrid white spruce - Twinberry (07/ST) and 3 ha (1%) represented by the dry Lodgepole pine - Feathermoss - Cladina (03/LF) ecosystem, **(Table 3.1-33**, **Figure 3.1-22**). A small amount of old growth forest occurs in the SBSdk for a total of <1 ha (<1%) represented by the very dry Lodgepole pine - Juniper - Ricegrass (02/LJ) ecosystem.

Table 3.1-33: Distribution of Old Growth Forest in the Mills Ranch Reroute LSA

BGC Unit	Ecosystem	Site Series	Map Code	Area (ha)	Percent (%)
SBSdk	Lodgepole pine - Juniper - Ricegrass	02	LJ	<1	<1
Total SBSdk				<1	<1
SBSmc3	Lodgepole pine - Feathermoss - Cladina	03	LF	3	1
SBSmc3	Hybrid white spruce - Twinberry	07	ST	4	1
Total SBSmc3				**7**	**1**
Total Old Growth Forest				**8**	**2**
Total Mills Ranch				**505**	

Note: BGC = Biogeoclimatic, SBSdk = Sub-Boreal Spruce Dry Cool, SBSmc3 = Sub-Boreal Spruce Moist Cold Kluskus variant; LSA = local study area.



Legend

- Populated Place
- Proposed Transmission Line
- Proposed Transmission Line (Mills Ranch Reroute)
- Kluskus Ootsa FSR
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone

Terrain, Soils, and Vegetation

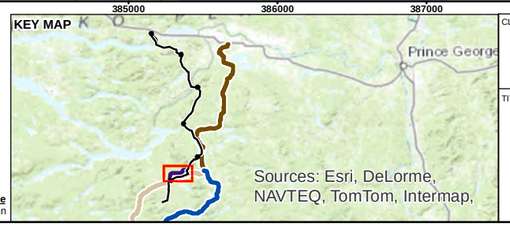
- Local Study Area

Percent Old Growth Forest

10 20 30 40 50 60 70 80 90 100

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Old Growth Forest
Mills Ranch Reroute

DATE: October, 2013	ANALYST: AA	Figure 3.1-22
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-104_OldGrowth_Mills.pdf
GIS FILE: 06-100-104_OldGrowth_Mills.mxd		
PROJECTION: UTM 10	DATUM: NAD83	amec

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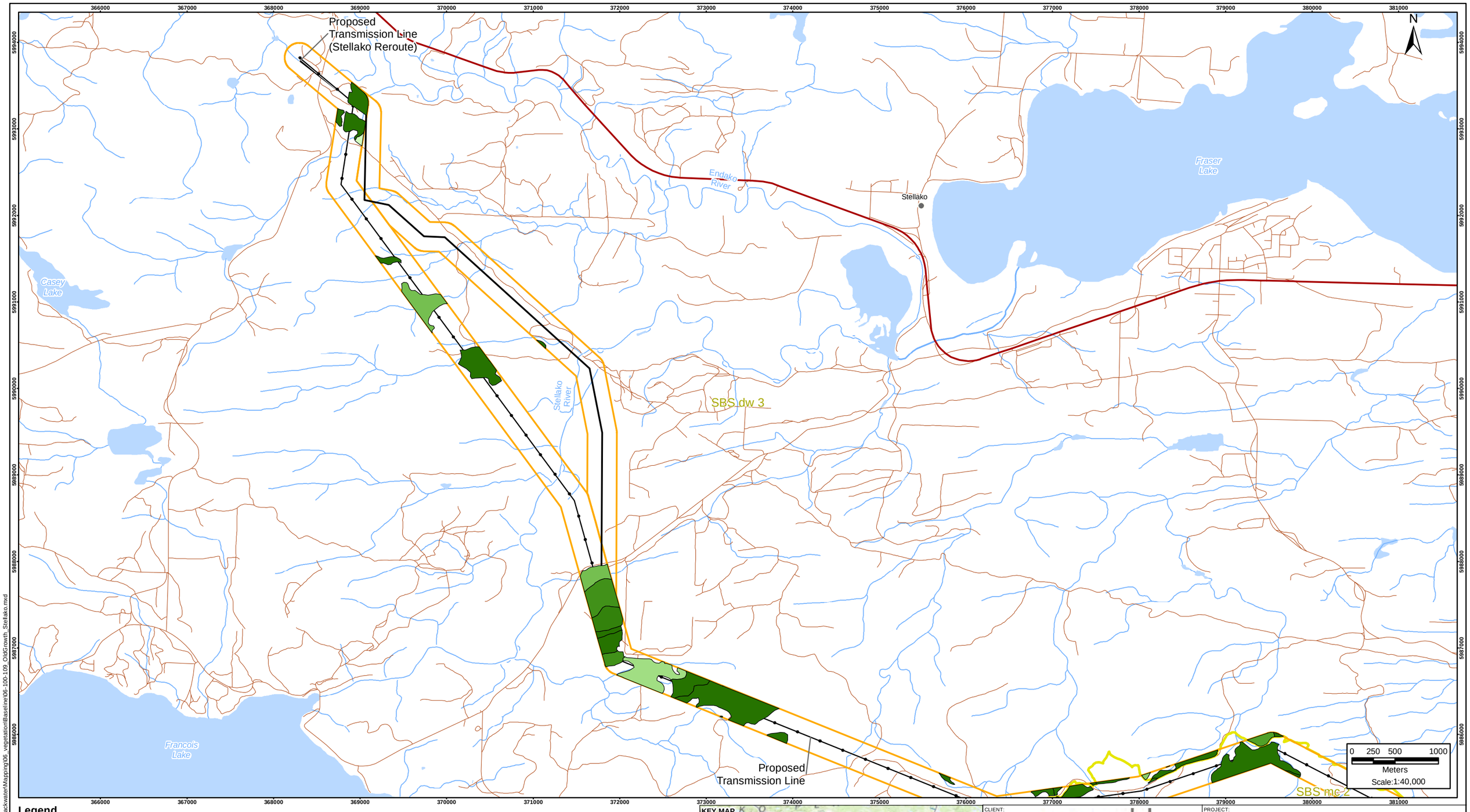
Stellako Reroute

A small amount of old growth forest occurs in the Stellako reroute LSA. The total area of the LSA is 200 ha of which <1 ha (<1%) is represented by old growth forest (**Table 3.1-34, Figure 3.1-23**).

Table 3.1-34: Distribution of Old Growth Forest in the Stellako Reroute LSA

BGC Unit	Ecosystem	Site Series	Map Code	Area (ha)	Percent (%)
SBSdw3	Hybrid white spruce - Douglas fir - Pinegrass	01	SP	<1	<1
SBSdw3	Hybrid white spruce - Twinberry	07	ST	<1	<1
Total Old Growth Forest in SBSdw3				<1	<1
Total Old Growth Forest				<1	<1
Total Stellako Reroute				**200**	

Note: BGC = Biogeoclimatic, SBSdw3 = Sub-Boreal Spruce Dry Warm Stuart variant, LSA = local study area.



Legend

- Proposed Transmission Line
- Proposed Transmission Line (Stellako Reroute)
- Existing Road
- Highway
- Stream
- Waterbody
- Biogeoclimatic Zone

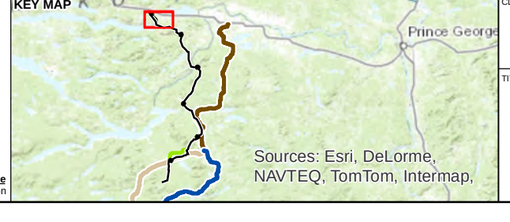
Terrain, Soils, and Vegetation

- Local Study Area

Percent Old Growth Forest

10, 20, 30, 40, 50, 60, 70, 80, 90, 100

Source
BC Government GeoBC Data Distribution



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Old Growth Forest
Stellako Reroute

DATE: October, 2013	ANALYST: AA	Figure 3.1-23	
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-109_OldGrowth_Stellako.pdf	
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Kluskus FSR

The Kluskus FSR occupies a total of 2,784 ha of which 190 ha (7%) occurs in the old growth forest stage (**Table 3.1-35**, **Figure 3.1-24**).

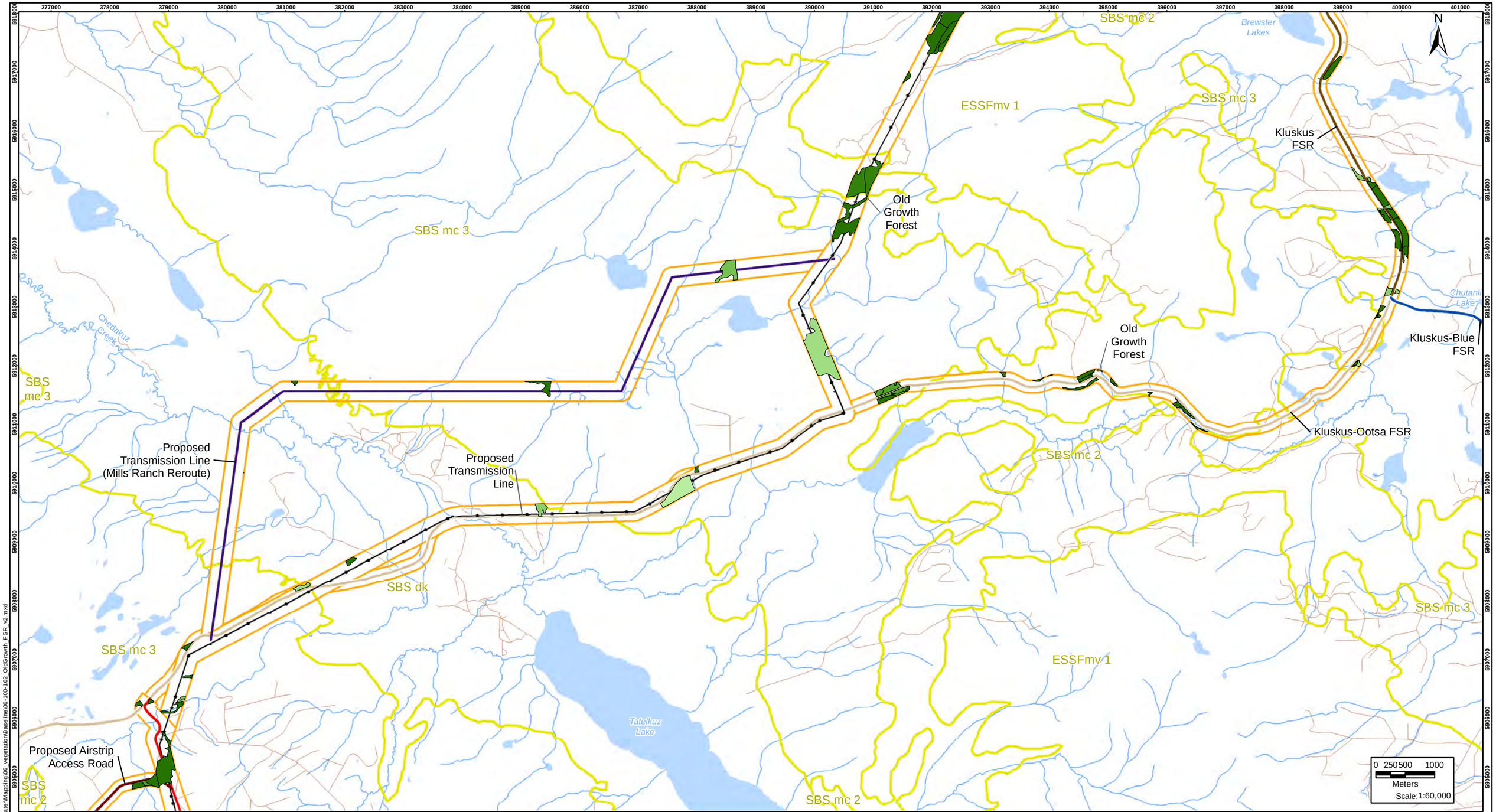
Table 3.1-35: Distribution of Old Growth in the Kluskus FSR LSA

BGC Unit	Ecosystem	Site Series	Map code	Area (ha)	Percent (%)
SBSdk	Hybrid white spruce - Purple peavine	01	SP	17	1
SBSdk	Hybrid white spruce - Twinberry - Coltsfoot	06	ST	2	<1
Total SBSdk				**19**	**1**
SBSdw3	Hybrid white spruce - Douglas fir – Pinegrass	01	SP	1	<1
SBSdw3	Lodgepole pine - Feathermoss - Cladina	03	LC	<1	<1
SBSdw3	Lodgepole pine - Black spruce - Feathermoss	05	BF	1	<1
SBSdw3	Hybrid white spruce - Twinberry	07	ST	2	<1
Total SBSdw3				**3**	<1
SBSmc2	Hybrid white spruce - Huckleberry	01	SB	4	<1
SBSmc2	Lodgepole pine - Huckleberry - Cladonia	02	PH	2	<1
SBSmc2	Black spruce - Lodgepole pine – Feathermoss	03	BM	3	<1
SBSmc2		05	TC	<1	<1
SBSmc2	Hybrid white spruce - Oak fern	06	SO	1	<1
SBSmc2	Hybrid white spruce - Horsetail	10	SH	<1	<1
	Total SBSmc2			10	<1
SBSmc3	Hybrid white spruce - Huckleberry	01	SB	80	3
SBSmc3	Lodgepole pine - Feathermoss - Cladina	03	LF	13	<1
SBSmc3	Hybrid white spruce - Huckleberry - Soopolallie	04	SS	3	<1
SBSmc3	Black spruce - Huckleberry - Spirea	05	BH	19	1
SBSmc3	Black spruce - Lodgepole pine - Feathermoss	06	BF	6	<1
SBSmc3	Hybrid white spruce - Twinberry	07	ST	28	1
Total SBSmc3				**150**	**5**
ESSFmv1	Subalpine fir - Rhododendron - Feathermoss	01	FR	6	<1
ESSFmv1	Lodgepole pine - Huckleberry - Cladonia	02	LC	<1	<1
ESSFmv1	Subalpine fir - Huckleberry - Gooseberry	04	FG	2	<1
Total ESSFmv1				**8**	<1
Total Old Growth Forest				**190**	**7**
Total Kluskus FSR				**2,784**	

Note: BGC = Biogeoclimatic, SBSdk = Sub-Boreal Spruce Dry Cool, SBSdw3 = Sub-Boreal Spruce Dry Warm Stuart variant, SBSmc2 = Sub-Boreal Spruce Moist Cold Babine variant; SBSmc3 = Sub-Boreal Spruce Moist Cold Kluskus variant; ESSFmv1 = Engelmann Spruce = Subalpine Fir Moist Very Cold Nechako variant; LSA = local study area.

The SBSmc3 has the highest amount of old growth forest, with a total of 150 ha (5%). The ecosystem with the largest amount of old growth forest is the Hybrid white spruce-Huckleberry (01/SB) forest, with a total of 80 ha (3%). The Hybrid white spruce-Twinberry (07/ST) ecosystem has a total of 28 ha (1%).

The SBSdk has the second most abundant amount of old growth forest, with a total of 19 ha (1%). The ecosystem representing the largest area of old growth forest is the Hybrid white spruce-Purple pea vine (01/SP), with a total of 17 ha (1%). The SBSmc2 has a total of 10 ha (<1%) with the Hybrid white spruce-Purple pea vine (01/SP), having the highest amount of old growth a total of 4 ha (<1%). The SBSdw3 has the least amount of old growth forest with a total of 3 ha (<1%) occurring primarily in the Hybrid white spruce – Twinberry ecosystem with a total of 2 ha (<1%).



Legend

- Proposed Airstrip Access Road
- Proposed Mine Site Access Road
- Proposed Transmission Line
- Proposed Transmission Line (Mills Ranch Reroute)
- Kluskus FSR
- Kluskus Blue FSR
- Kluskus Ootsa FSR
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone

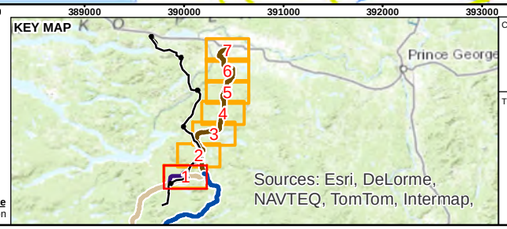
Terrain, Soils, and Vegetation

- Local Study Area

Percent Old Growth Forest

10, 20, 30, 40, 50, 60, 70, 80, 90, 100

Source
BC Government GeoBC Data Distribution



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Old Growth Forest
Kluskus Forest Service Road
Page 1 of 7

DATE: October, 2013	ANALYST: AA	Figure 3.1-24
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-102_OldGrowth_FSR_v2.pdf
GIS FILE: 06-100-102_OldGrowth_FSR_v2.mxd		
PROJECTION: UTM 10	DATUM: NAD83	

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SBS dk
SBS dk
SBS dk
SBS dk
SBS dw 2
N
SBS mc 2
SBS mc 2
SBS mc 3
Lavoie Lake
SBS dk
Old Growth Forest
Big Bend Creek
SBS mc 2
SBS mc 3
SBS mc 2
SBS mc 3
SBS mc 2
ESSFmv 1
Brewster Lakes
Proposed Transmission Line
Old Growth Forest
Kluskus FSR
Goose Lake
SBS mc 2
SBS mc 2
Brewster Lakes
Brewster Lakes
SBS mc 2
SBS mc 3
SBS mc 2
SBS mc 2
0 250500 1000
Meters
Scale:1:60,000

Legend

- Proposed Transmission Line
- Kluskus FSR
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone

Terrain, Soils, and Vegetation

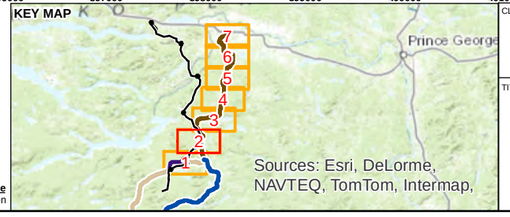
- Local Study Area

Percent Old Growth Forest

10 20 30 40 50 60 70 80 90 100

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Old Growth Forest
Kluskus Forest Service Road
Page 2 of 7

DATE: October, 2013	ANALYST: AA	Figure 3.1-24
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-102_OldGrowth_FSR_v2.pdf
GIS FILE: 06-100-102_OldGrowth_FSR_v2.mxd		
PROJECTION: UTM 10	DATUM: NAD83	amec

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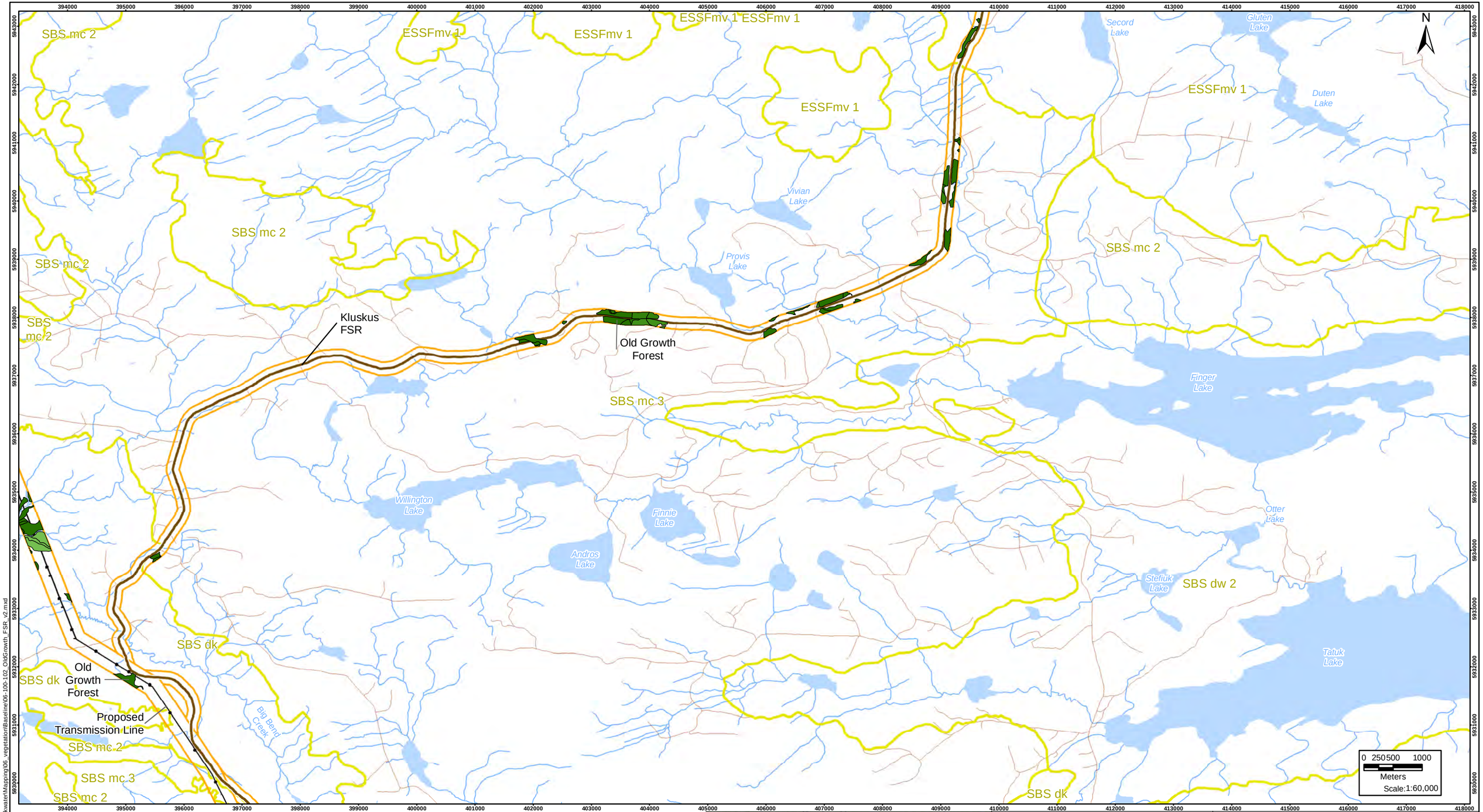


Legend

- Proposed Transmission Line
- Kluskus FSR
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone

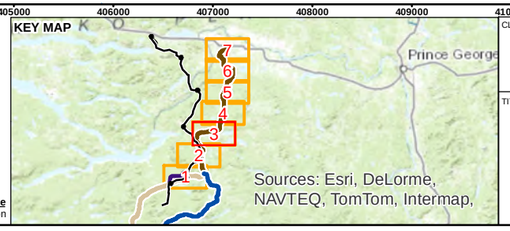
Terrain, Soils, and Vegetation

- Local Study Area

Percent Old Growth Forest

10 20 30 40 50 60 70 80 90 100

Source
BC Government GeoBC Data Distribution



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Old Growth Forest
Kluskus Forest Service Road
Page 3 of 7

DATE: October, 2013	ANALYST: AA	Figure 3.1-24
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-102_OldGrowth_FSR_v2.pdf
GIS FILE: 06-100-102_OldGrowth_FSR_v2.mxd		
PROJECTION: UTM 10	DATUM: NAD83	amec

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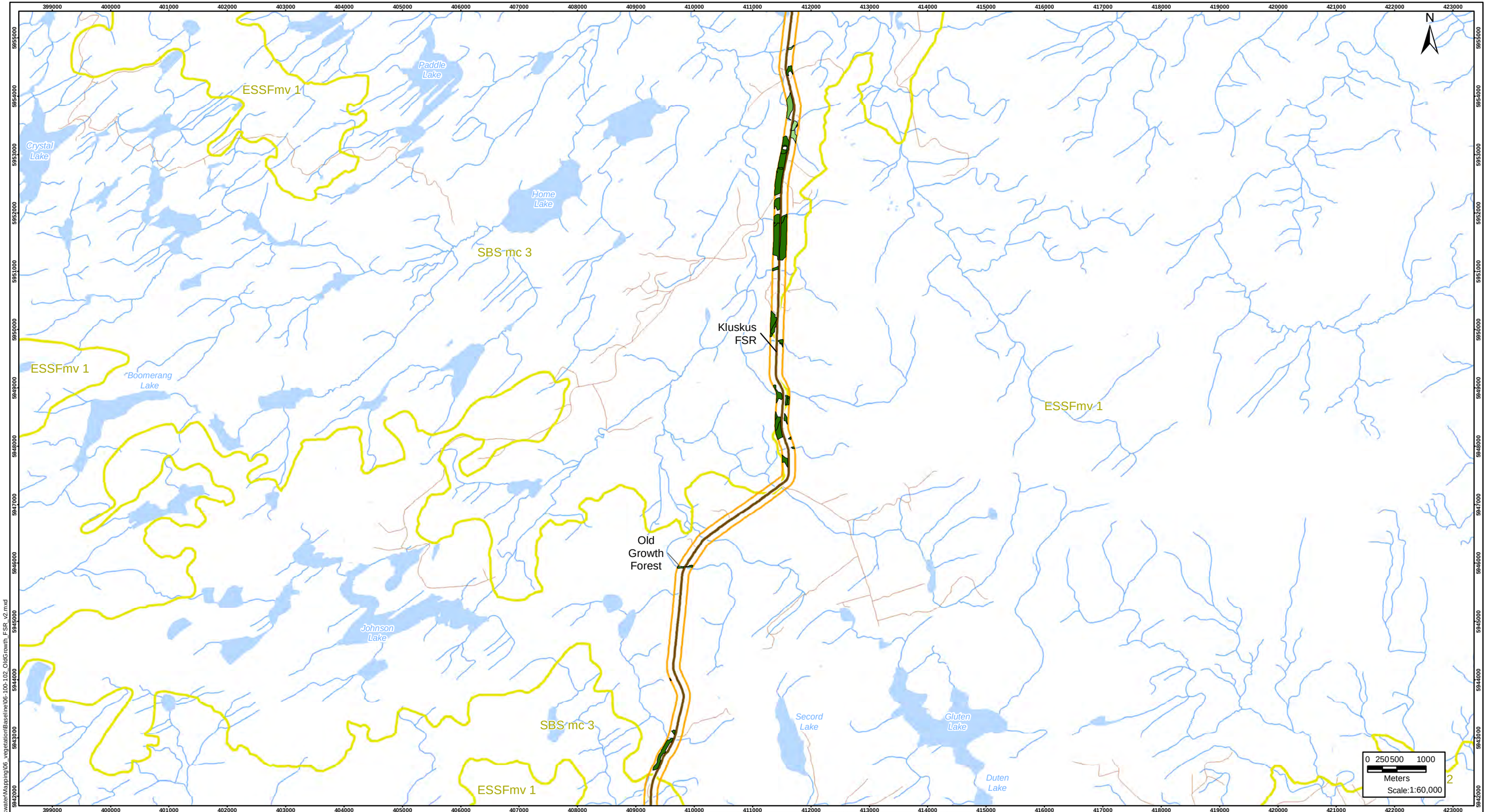


Legend

- Kluskus FSR
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone

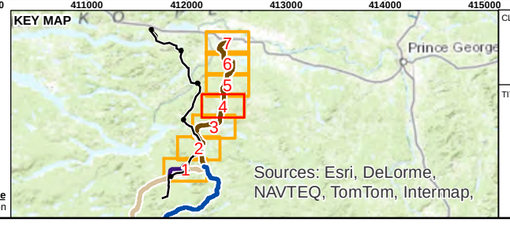
Terrain, Soils, and Vegetation

- Local Study Area

Percent Old Growth Forest

10, 20, 30, 40, 50, 60, 70, 80, 90, 100

Source
BC Government GeoBC Data Distribution



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Old Growth Forest
Kluskus Forest Service Road
Page 4 of 7

DATE: October, 2013	ANALYST: AA	Figure 3.1-24
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GIS FILE: 06-100-102_OldGrowth_FSR_v2.mxd		
PROJECTION: UTM 10	DATUM: NAD83	

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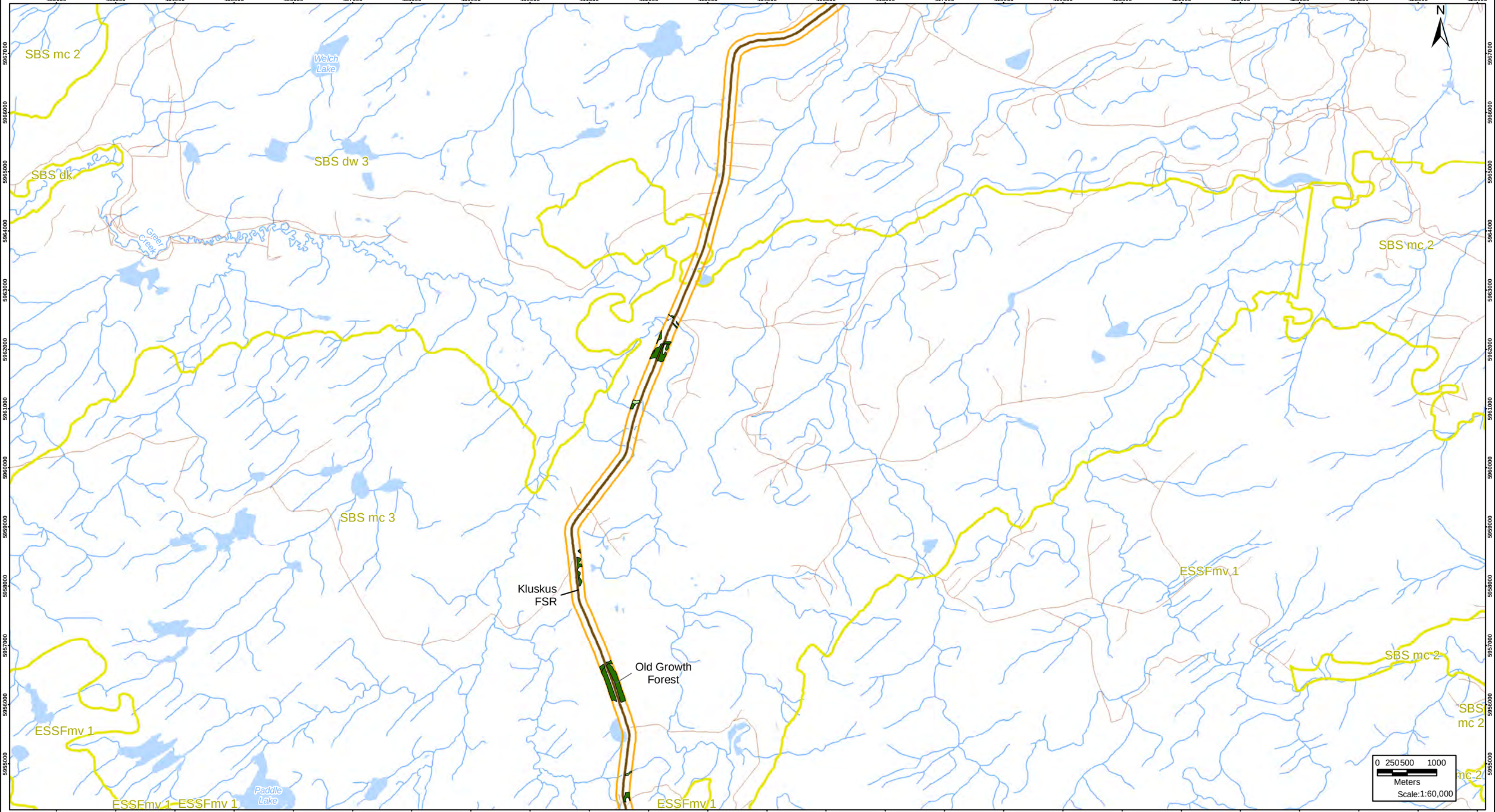


Legend

- Kluskus FSR
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone

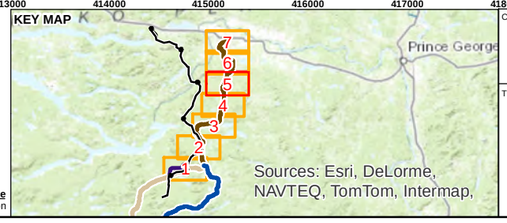
Terrain, Soils, and Vegetation

- Local Study Area

Percent Old Growth Forest

10, 20, 30, 40, 50, 60, 70, 80, 90, 100

Source
BC Government GeoBC Data Distribution



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Old Growth Forest
Kluskus Forest Service Road
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DATE: October, 2013	ANALYST: AA	Figure 3.1-24
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-102_OldGrowth_FSR_v2.pdf
GIS FILE: 06-100-102_OldGrowth_FSR_v2.mxd		
PROJECTION: UTM 10	DATUM: NAD83	

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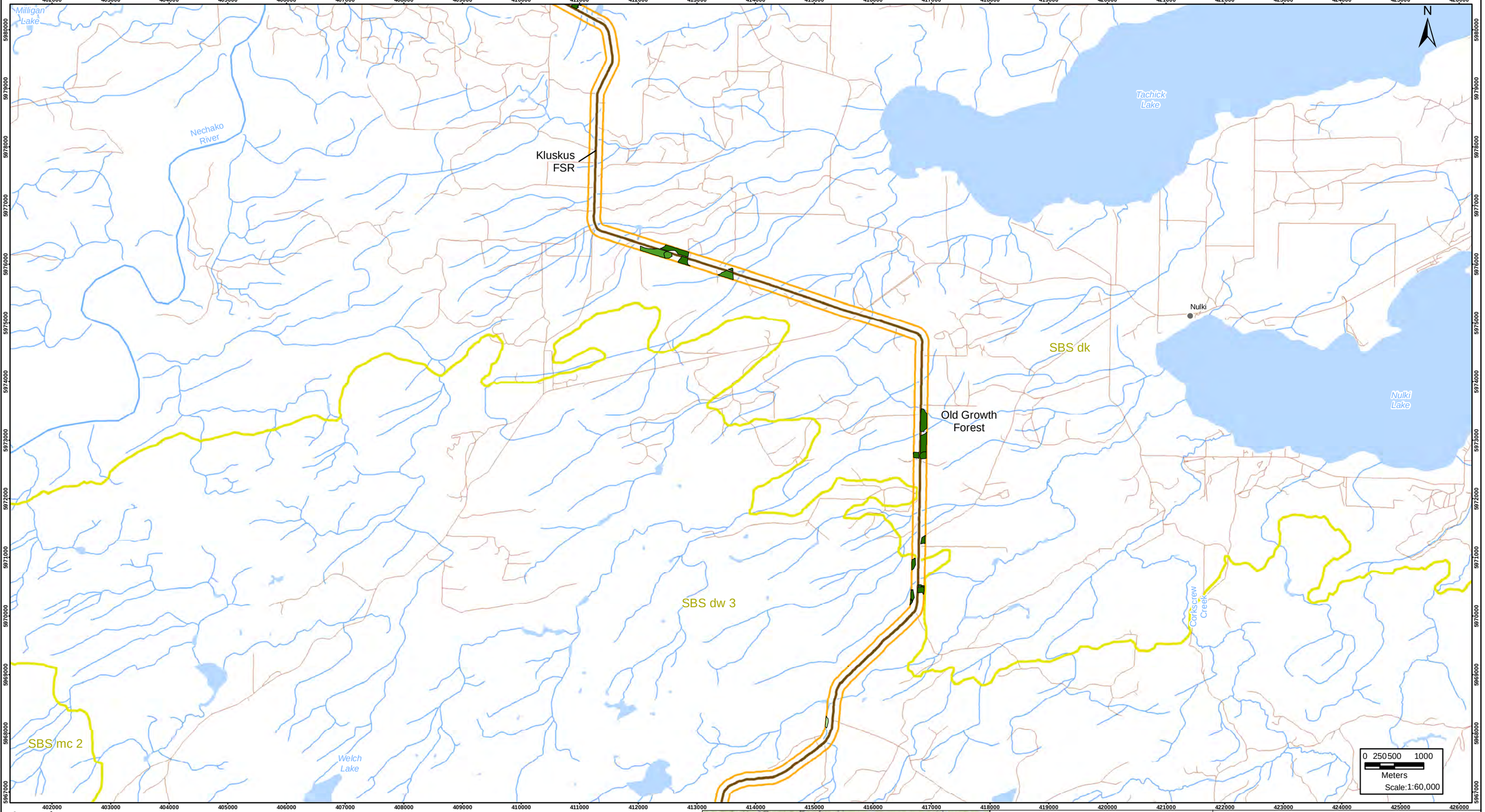


Legend

- Kluskus FSR
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone

Terrain, Soils, and Vegetation

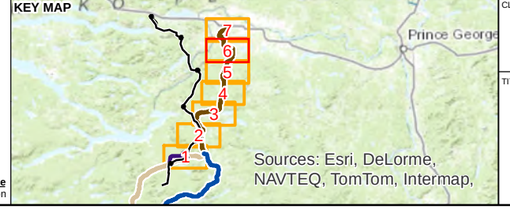
- Local Study Area

Percent Old Growth Forest

10 20 30 40 50 60 70 80 90 100

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE:

Old Growth Forest

Kluskus Forest Service Road
Page 6 of 7

DATE: October, 2013	ANALYST: AA	Figure 3.1-24
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-102_OldGrowth_FSR_v2.pdf
GIS FILE: 06-100-102_OldGrowth_FSR_v2.mxd		
PROJECTION: UTM 10	DATUM: NAD83	amec

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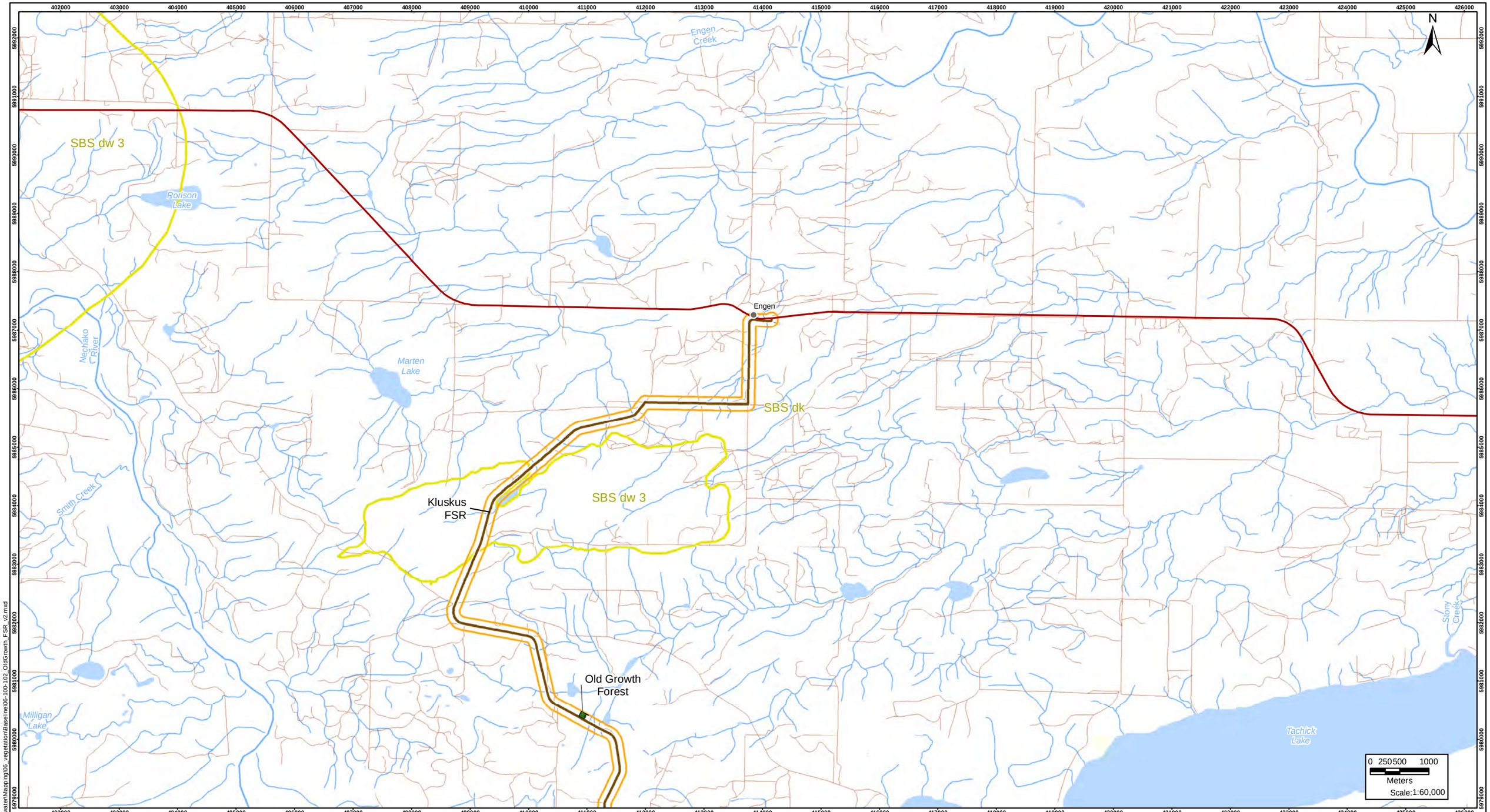


Legend

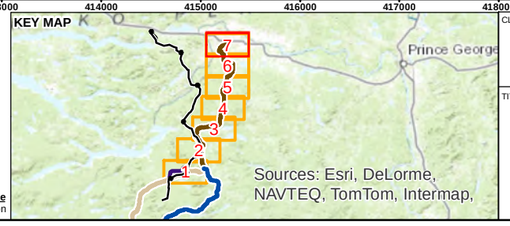
- Kluskus FSR
- Existing Road
- Highway
- Stream
- Waterbody
- Biogeoclimatic Zone
- Local Study Area

Terrain, Soils, and Vegetation

Percent Old Growth Forest

10, 20, 30, 40, 50, 60, 70, 80, 90, 100

Source
BC Government GeoBC Data Distribution



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Old Growth Forest
Kluskus Forest Service Road
Page 7 of 7

DATE: October, 2013	ANALYST: AA	Figure 3.1-24
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-102_OldGrowth_FSR_v2.pdf
GIS FILE: 06-100-102_OldGrowth_FSR_v2.mxd		
PROJECTION: UTM 10	DATUM: NAD83	

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3.1.5.3 Sparsely Vegetated Ecosystems

Sparsely vegetated ecosystem only occur in the mine site LSA.

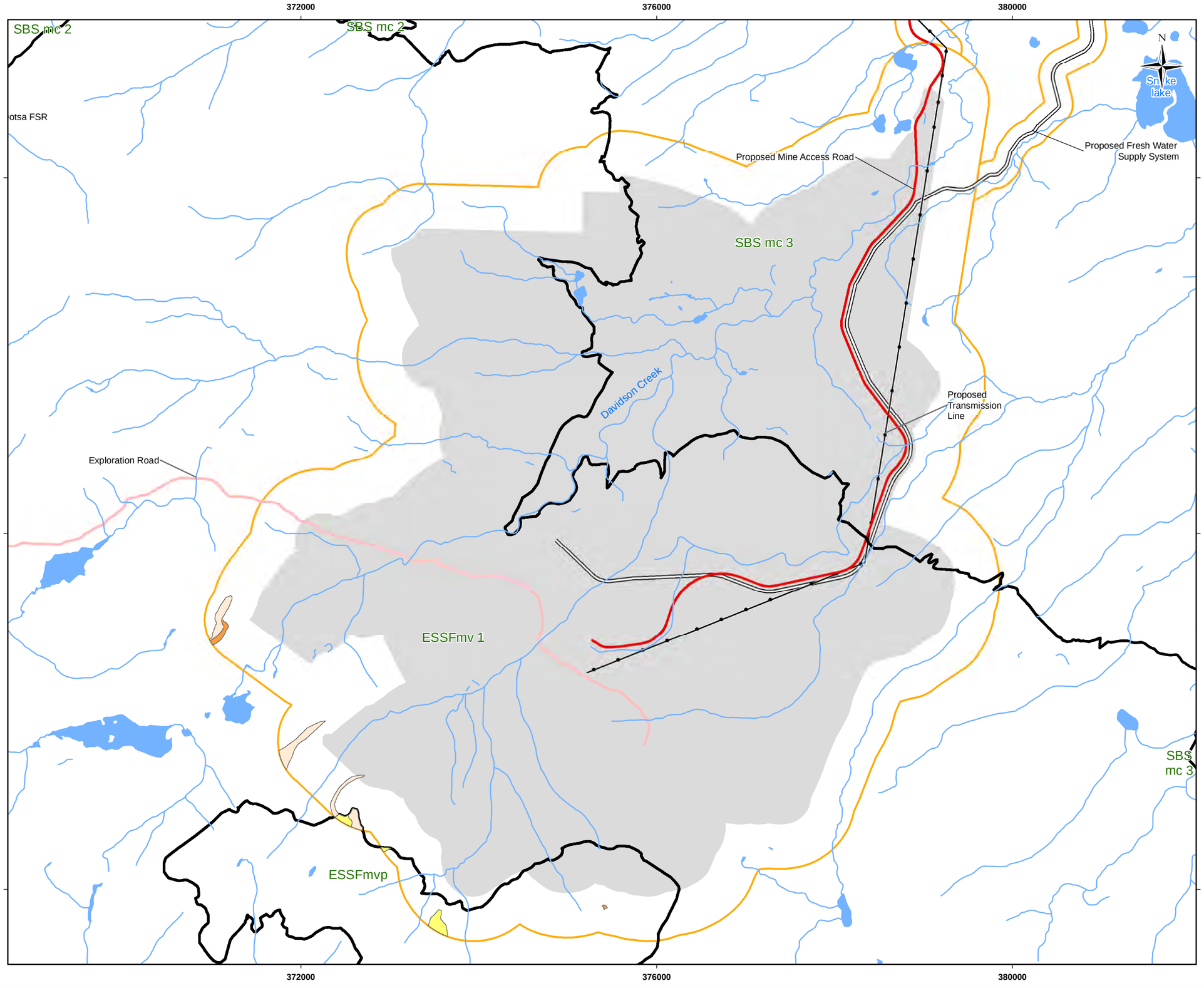
Mine Site

Sparsely vegetated ecosystems (rock and talus) are not common and are restricted to the higher elevation BGC zones of the mine site LSA. The mine site LSA occupies a total area of 6,123 ha of which 3 ha (<1%) occurs as sparsely vegetated ecosystems. In the ESSFmv1, Talus occupies 2 ha (<1%) and rock outcrop occupies <1 ha (<1%). In the higher elevation parkland unit (ESSFmv1p), Talus occupies a total of 1 ha (<1%) of the area (**Table 3.1-36**, **Figure 3.1-25**).

Table 3.1-36: Distribution of Sparsely Vegetated in the Mine Site

BGC Code	Ecosystem	Site Series	Map Code	Area (ha)	Percent (%)
ESSFmv1	Talus	00	TA	2	<1
ESSFmv1	Rock Outcrop	00	RO	<1	<1
Total Sparsely Vegetated ESSFmv1				**2**	<1
ESSFmv1p	Talus	00	TA	1	<1
Total Sparsely Vegetated ESSFmv1p				**1**	<1
Total Sparsely Vegetated				**3**	<1
Total Mine Site				**6,123**	

Note: BGC = Biogeoclimatic



Legend

- Exploration Road
- Proposed Mine Site Access Road
- Proposed Transmission Line
- Proposed Fresh Water Supply System
- Stream
- Waterbody
- Biogeoclimatic Zone
- Proposed Mine Site

Percent of Sparsely Vegetated Ecosystems

- 10
- 20
- 30
- 50
- 60
- 70
- 80
- 100

Terrain, Soils, and Vegetation

- Local Study Area

Scale:1:42,000

0 0.5 1 2

Kilometers

Reference

BC Government GeoBC Data Distribution

CLIENT: newgold

PROJECT: Blackwater Gold Project

Sparsely Vegetated

Mine Site LSA

DATE:	ANALYST:	**Figure** 3.1-25
October, 2013	AA	
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-069_Sensitive Ecosystems_V2_terr_SA.pdf
GIS FILE: 06-100-069_Sensitive Ecosystems_V2.mxd		
PROJECTION: UTM Zone 10	DATUM: NAD83	amec

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3.2 Baseline Condition Regional Study Area

The RSA is one continuous boundary surrounding all the proposed features of the Project and totals approximately 44,969 ha. This section describes and quantifies the regional study area (RSA); the area that lies outside of the LSA which total approximately 31,000 ha.

3.2.1 Ecological Settings

The ecoregions and ecosections are the same as those described for the LSA. They include the Fraser Basin and Fraser Plateau Ecoregions and the Nazko Upland, Bulkley Basin and Nechako Lowland, shown in **Figure 3.1-2**.

3.2.1.1 Biogeoclimatic Zones

There are seven BGC units that occur within the RSA:

- SBSdk (Dry Cool Sub-Boreal Spruce subzone);
- SBSdw3 (Stuart Dry Warm Sub-Boreal Spruce variant);
- SBSmc2 (Babine Moist Cold Sub-Boreal Spruce variant);
- SBSmc3 (Kluskus Moist Cold Sub-Boreal Spruce variant);
- ESSFmv1 (Nechako Moist Very Cold Engelmann Spruce-Subalpine Fir variant);
- ESSFmv1p (Nechako Moist Very Cold Engelmann Spruce-Subalpine Fir Parkland variant); and
- BAFAun (Undifferentiated Boreal Altai Fescue Alpine subzone)

All are described in **Section 3.1.2.2** above with the exception of the BAFAun which is described below.

Undifferentiated Boreal Altai Fescue Alpine Subzone

Winters are very cold and long, and summers are brief and cool, in the BAFAun. A thin, windblown snowpack is typical, but deeper snowpacks occur in some areas. This BGC subzone occurs as an elevational band from approximately 1,800 m to the highest point of the Project area at Mt. Davidson's peak of 1,865 m. The BAFAun occurs only in the RSA south of the mine site.

The terrain is a mosaic of rolling grassland interspersed with boulder fields, exposed soil, talus slopes, mountain heather meadows, scrub birch, and wet seepage meadows. Convex microsites are dry and windblown and dominated by lichens, dwarf willows and moss, while

concave microsites are characterized by a greater accumulation of soil, resulting in a rich assemblage of plant species including grasses, dwarf shrubs, and herbs.

The SBSmc3 covers the most area in the RSA with a total of 12,274 ha (40%), **Table 3.2-1**, The SBSdk and ESSFmv1 are similar in size with a total of 6,595 ha (22%) and 6493 (21%), respectively. The SBSdw3 is the fourth largest area with a total of 3,210 ha (10%). The SBSmc2 is the fifth largest BGC unit with a total of 1,257 ha (4%). The ESSFmv1p is the sixth largest BGC unit with a total of 777 ha (3%) and the BAFAun has the smallest area with a total of 43 ha (<1%). A map book showing Ecosystem Mapping is provided in **Annex 3.2.**

Table 3.2-1: Distribution of Ecosystems in the RSA

BGC Unit	Area (ha)	Percent (%)
SBSdk	6,595	22
SBSdw3	3,210	10
SBSmc2	1,257	4
SBSmc3	12,274	40
ESSFmv1	6,493	21
ESSFmv1p	777	3
BAFAun	43	<1
Total	**30,649**	**100**

Note: BGC = Biogeoclimatic, ha = hectares;% = percent; SBSdk = Dry Cool Sub-Boreal Spruce, SBSdw3 = Stuart Dry Warm Sub-Boreal Spruce variant, SBSmc2 = Babine Moist Cold Sub-Boreal Spruce variant; SBSmc3 = Kluskus Moist Cold Sub-Boreal Spruce variant; ESSFmv1 = Nechako Very Cold Engelmann Spruce Subalpine Fir variant; ESSFmv1p = Nechako Very Cold Engelmann Spruce-Subalpine Fir Parkland variant; BAFAun = Undifferentiated Boreal Altai Fescue Alpine subzone.

3.2.2 Landscape Units

There are ten LUs that occur in the Project RSA, listed in **Table 3.2-2** and shown in **Figure 3.1-4**. A small portion of the RSA has a high rated BE landscape unit with a total of 1,832 ha (6%). Most of the RSA occupies landscape units that have been rated intermediate with a total of 20,956 ha (68%). The low BE rated landscape units have a combined total of 7,860 ha (26%).

The Entiako is the only landscape unit that has a high biodiversity emphasis rating with a total of 1,832 ha (6%) occurring within the RSA; the area occurs southwest of the proposed mine site. Based on the BGC variant, the ESSFmv1 (**Table 3.2-3**), the percent old growth forest retention recommended by the 2004 Order is greater than 11% (BC ILMB, 2004).

Table 3.2-2: Distribution of Landscape Units in the RSA

Biodiversity Emphasis	Landscape Unit	Hectares (ha)	Percent (%)
High	Entiako	1,833	6
Total High		**1,833**	**6**
Intermediate	Blackwater	1,174	4
Intermediate	Halett	1,606	5
Intermediate	Tachick	6,630	22
Intermediate	Tatelkuz	11,546	38
Total Intermediate		**20,956**	**68**
Low	Chilako	1,478	5
Low	Endako	624	2
Low	Jerryboy	758	2
Low	Kluskus	3,195	10
Low	Nithi	1,806	6
Total Low		**7,860**	**26**
Total Area		**30,649**	**100**

Source: *ILMB 2004

Within the Intermediate biodiversity emphasis LUs (Blackwater, Halett, Tachick, and Tatelkuz) the BGC units which occur are: SBSmc3, SBSmc2, SBSdw3 and SBSdk for a total of 16,012 ha (52%) (**Table 3.2-3**). The 2004 Order recommends that the percent old growth retention should be greater than 11% in the SBS units. In areas that are covered by ESSFmv1, a total of 4,504 ha (15 5); the order recommends an old growth retention of greater than 9%.

Within low biodiversity emphasis LUs (Chilako, Endako, Jerryboy, Kluskus, and Nithi). The 2004 Order recommends that the percent old growth retention should be greater than 11% in the SBS units (SBSmc3, SBSmc2, SBSdw3 and SBSdk) which total 7,323 ha (24%) (**Table 3.2-3**). In areas covered by the ESSFmv1, a total of 537 ha (2%); the order recommends an old growth retention of greater than 9%.

Table 3.2-3: Distribution of Landscape Units in the RSA by BGC Unit

Landscape Unit	BGC Unit Biodiversity Emphasis	BAFAun		ESSFmv1p		ESSFmv1		SBSmc3		SBSmc2		SBSdw3		SBSdk	
		Area (ha)	Percent (%)	Area (ha)	Percent (%)	Area (ha)	Percent (%)	Area (ha)	Percent (%)	Area (ha)	Percent (%)	Area (ha)	Percent (%)	Area (ha)	Percent (%)
Entiako	high	20	<1	360	1	1452	5								
Total High		**20**	<1	**360**	**1**	**1,452**	**5**								
Blackwater	intermediate	14	<1	232	1	928	3								
Halett	intermediate											19	<1	1,588	5
Tachick	intermediate					347	1	2,272	7	71	<1	1,126	4	2,814	9
Tatelkuz	intermediate	8	19	186	1	3,228	11	6,590	22	695	2			839	3
Total Intermediate		**23**	**19**	**417**	**1**	**4,504**	**15**	**8,862**	**29**	**766**	**2**	**1,145**	**4**	**5,240**	**17**
Chilako	low					254	1	4	<1	1,220	4				
Endako	low											624	2		
Jerryboy	low							703	2	30	<1			25	<1
Kluskus	low					283	1	1,490	5	218	1			1,205	4
Nithi	low									239	1	1441	5	125	<1
Total Low		**0**	**0**	**0**	**0**	**537**	**2**	**2,196**	**7**	**1,707**	**6**	**2,065**	**7**	**1,355**	**4**
Total		**43**	**19**	**777**	**3**	**6,493**	**21**	**11,058**	**36**	**2,473**	**8**	**3,209**	**10**	**6,595**	**22**

Note: BGC = Biogeoclimatic, SBSdk = Dry Cool Sub-Boreal Spruce, SBSdw3 = Stuart Dry Warm Sub-Boreal Spruce variant, SBSmc2 = Babine Moist Cold Sub-Boreal Spruce variant; SBSmc3 = Kluskus Moist Cold Sub-Boreal Spruce variant; ESSFmv1 = Nechako Very Cold Engelmann Spruce Subalpine Fir variant; ESSFmv1p = Nechako Very Cold Engelmann Spruce-Subalpine Fir Parkland variant; BAFAun = undifferentiated Boreal Altai Fescue Alpine subzone.

3.2.3 Ecosystem Distribution

The RSA totals approximately 31,000 ha of which 25,465 ha (94%) are upland ecosystems and 1,664 (6%) are non-vegetated, sparsely vegetated and anthropogenic.

The RSA, being one contiguous unit, is represented by a variety of ecosystems. The most abundant ecosystem across the entire RSA is the Hybrid white spruce - Huckleberry (SBSmc3 01/SB) with a total 4,742 ha (18%). The Subalpine fir - Rhododendron - Feathermoss (ESSFmv1 01/FR) has a total of 3,032 ha (11%) and the Hybrid white spruce - Purple peavine (SBSdk 01/SP) has a total of 2,156 ha (8%).

Cultivated fields are common along linear features such as the transmission line and Kluskus FSR with a total of 786 ha (3%) and existing logging roads (RZ) cover approximately 356 ha (1%).

Table 3.2-4: Distribution of Ecosystems in the RSA

BGC	Ecosystem	Site Series	Map Code	Hectares (ha)	Percent Area of RSA (%)
SBSdk	Saskatoon - Slender Wheat grass	81	SW	7	0
SBSdk	Bluegrass - Slender Wheatgrass	82	BW	3	0
SBSdk	Hybrid white spruce - Purple peavine	01	SP	2,156	8
SBSdk	Lodgepole pine - Juniper - Ricegrass	02	LJ	87	0
SBSdk	Lodgepole pine - Feathermoss - Cladina	03	LC	690	3
SBSdk	Douglas fir - Soopolallie - Feathermoss	04	DS	50	0
SBSdk	Hybrid white spruce - Spirea - Feathermoss	05	SF	439	2
SBSdk	Hybrid white spruce - Twinberry - Coltsfoot	06	ST	1,246	5
SBSdk	Black cottonwood - Dogwood - Prickly rose	08	CD	8	0
SBSdk	Drummond's willow - Bluejoint	FI05	FI05	1	0
Total Upland SBSdk				**4,687**	**17**
SBSdk	Cultivated Field	00	CF	744	3
SBSdk	Cliff	00	CL	0	0
SBSdk	Exposed Soils	00	ES	6	0
SBSdk	Gravel Pit	00	GP	8	0
SBSdk	Lake	00	LA	2	0
SBSdk	Pond	00	PD	50	0
SBSdk	River	00	RI	21	0
SBSdk	Rural	00	RW	66	0
SBSdk	Road surface	00	RZ	83	0
SBSdk	Rock	00	RO	1	0
Total Non-Vegetated, Sparsely Vegetated and Anthropogenic SBSdk				**983**	**4**
Total SBSdk				**5,669**	**21**
SBSdw3	Saskatoon - Slender Wheat grass	81	SW	18	0
SBSdw3	Bluegrass - Slender Wheatgrass	82	BW	5	0
SBSdw3	Hybrid white spruce - Douglas fir - Pinegrass	01	SP	1,386	5
SBSdw3	Douglas fir - Lodgepole pine - Cladonia	02	DC	70	0

BGC	Ecosystem	Site Series	Map Code	Hectares (ha)	Percent Area of RSA (%)
SBSdw3	Lodgepole pine - Feathermoss - Cladina	03	LC	188	1
SBSdw3	Hybrid white spruce - Ricegrass	04	SR	277	1
SBSdw3	Lodgepole pine - Black spruce - Feathermoss	05	BF	76	0
SBSdw3	Hybrid white spruce - Pink Spirea - Prickly rose	06	SS	51	0
SBSdw3	Hybrid white spruce - Twinberry	07	ST	610	2
SBSdw3	Hybrid white spruce - Oakfern	08	SO	104	0
SBSdw3	Drummond's willow - Bluejoint	FI05	FI05	0	0
Total Upland SBSdw3				**2,787**	**10**
SBSdw3	Cultivated Field	0	CF	41	0
SBSdw3	Gravel Pit	0	GP	30	0
SBSdw3	Pond	00	PD	3	0
SBSdw3	Road surface	0	RZ	55	0
SBSdw3	Urban/suburban	00	UR	11	0
SBSdw3	River	00	RI	8	0
SBSdw3	Rural	00	RW	2	0
Total Non-Vegetated, Sparsely Vegetated and Anthropogenic SBSdw3				**150**	**1**
Total SBSdw3				**2,936**	**11**
SBSmc2	Hybrid white spruce - Huckleberry	01	SB	586	2
SBSmc2	Lodgepole pine - Huckleberry - Cladonia	02	PH	244	1
SBSmc2	Black spruce - Lodgepole pine - Feathermoss	03	BM	64	0
SBSmc2	Hybrid white spruce - Twinberry - Coltsfoot	05	TC	27	0
SBSmc2	Hybrid white spruce - Oakfern	06	SO	117	0
SBSmc2	Hybrid white spruce - Scrub birch - Feathermoss	07	BF	6	0
SBSmc2	Hybrid white spruce - Twinberry - Oak fern	08	ST	31	0
SBSmc2	Hybrid white spruce - Devil's club	09	SD	3	0
SBSmc2	Hybrid white spruce - Horsetail	10	SH	18	0
SBSmc2	Hybrid white spruce - Huckleberry - Dwarf blueberry	04	HB	59	0
Total Upland SBSmc2				**1,155**	**4**
SBSmc2	Pond	00	PD	1	0
SBSmc2	Road surface	00	RZ	7	0
Total Non-Vegetated, Sparsely Vegetated, and Anthropogenic SBSmc2				**7**	**0**
Total SBSmc2				**2,325**	**9**
SBSmc3	Hybrid white spruce - Huckleberry	01	SB	4,742	17
SBSmc3	Lodgepole pine - Juniper - Dwarf huckleberry	02	LJ	53	0
SBSmc3	Lodgepole pine - Feathermoss - Cladina	03	LF	1,404	5
SBSmc3	Hybrid white spruce - Huckleberry - Soopolallie	04	SS	549	2
SBSmc3	Black spruce - Huckleberry - Spirea	05	BH	1,588	6
SBSmc3	Black spruce - Lodgepole pine - Feathermoss	06	BF	282	1

BGC	Ecosystem	Site Series	Map Code	Hectares (ha)	Percent Area of RSA (%)
SBSmc3	Hybrid white spruce - Twinberry	07	ST	1,655	6
Total Upland SBSmc3				**10,273**	**38**
SBSmc3	Exposed Soils	00	ES	2	0
SBSmc3	Gravel Pit	00	GP	1	0
SBSmc3	Lake	00	LA	117	0
SBSmc3	Pond	00	PD	67	0
SBSmc3	River	00	RI	4	0
SBSmc3	Road surface	00	RZ	181	1
SBSmc3	Urban	00	UR	1	0
SBSmc3	Talus	00	TA	1	0
Total Non-Vegetated, Sparsely Vegetated and Anthropogenic SBSmc3				**375**	**1**
Total SBSmc3				**12,973**	**48**
ESSFmv1	Subalpine fir - Rhododendron - Feathermoss	01	FR	3,032	11
ESSFmv1	Lodgepole pine - Huckleberry - Cladonia	02	LC	408	2
ESSFmv1	Subalpine fir - Huckleberry - Feathermoss	03	FF	1,540	6
ESSFmv1	Sitka valerian - globeflower moist meadow	00	VG	8	0
ESSFmv1	Subalpine fir - Huckleberry - Gooseberry	04	FG	772	3
Total Upland ESSFmv1				**5,760**	**21**
ESSFmv1	Exposed Soil	00	ES	0	0
ESSFmv1	Lake	00	LA	55	0
ESSFmv1	Pond	00	PD	17	0
ESSFmv1	Rock Outcrop	00	RO	4	0
ESSFmv1	Talus	00	TA	28	0
ESSFmv1	Road surface	00	RZ	30	0
Total Non-Vegetated, Sparsely Vegetated and Anthropogenic ESSFmv1				**135**	**0**
Total ESSFmv1				**5,895**	**22**
ESSFmvp1	Subalpine fir - Dwarf blueberry - Dicranum parkland	00	FB	117	0
ESSFmvp1	Altai fescue - Cladonia grassland	00	FC	102	0
ESSFmvp1	Subalpine fir - Indian Hellebore	00	FH	121	0
ESSFmvp1	Subalpine fir - Heather parkland	00	FM	15	0
ESSFmvp1	Kinnikinnick - Cladonia	00	KC	2	0
ESSFmvp1	Mountain-heather - Slender hawkweed	00	MH	35	0
ESSFmvp1	White mountain-avens - Lichen	00	ML	13	0
ESSFmvp1	Subalpine fir - Whitebark Pine - Crowberry parkland	00	PC	133	0
ESSFmvp1	Scrub birch - Altai fescue shrub steppe	00	SF	69	0
ESSFmvp1	Two-toned sedge - Dwarf snow willow	00	TW	4	0
ESSFmvp1	Sitka valerian - globeflower moist meadow	00	VG	63	0
ESSFmvp1	Whitebark pine krummholtz	00	WK	64	0
ESSFmvp1	Whitebark pine - White mountain avens	00	WW	23	0
Total Upland ESSFmvp				**763**	**3**
ESSFmvp1	Pond	00	PD	0	0
ESSFmvp1	Talus	00	TA	13	0
Total Non-Vegetated, Sparsely Vegetated and Anthropogenic				**13**	**0**

BGC	Ecosystem	Site Series	Map Code	Hectares (ha)	Percent Area of RSA (%)
ESSFmvp					
Total ESSFmvp1				**776**	**3**
BAFAun	Altai fescue - Cladonia grassland	00	FC	10	0
BAFAun	Altai fescue - Dwarf willow	00	FH	1	0
BAFAun	Altai fescue - Dwarf willow	00	FW	11	0
BAFAun	Heather - Lichen meadow	00	HL	7	0
BAFAun	Scrub birch - Altai fescue shrub steppe	00	SF	10	0
BAFAun	Wet seepage meadow	00	WM	3	0
Total Upland BAFAun				**41**	**0**
BAFAun		00	TA	2	0
Total Non-Vegetated, Sparsely Vegetated and Anthropogenic BAFAun				**2**	**0**
Total BAFAun				**43**	**0**
Total Upland				**25,465**	**94**
Total Non-Vegetated, Sparsely Vegetated and Anthropogenic				**1,664**	**6**
Total Area				**27,130**	**100**

Note: BGC = Biogeoclimatic, SBSdk = Sub-Boreal Spruce Dry Cool, SBSdw3 = Sub-Boreal Spruce Dry Warm Stuart variant, SBSmc2 = Sub-Boreal Spruce Moist Cold Babine variant; SBSmc3 = Sub-Boreal Spruce Moist Cold Kluskus variant; ESSFmv1 = Engelmann Spruce = Subalpine Fir Moist Very Cold Nechako variant; LSA = local study area.

3.2.4 Ecosystems at Risk

The RSA surrounding the LSA covers approximately 31,000 ha of which 376 ha (1%) are ecosystems at risk, **Table 3.2-5** and **Figure 3.2-1**. In total 12 out of the 13 potentially occurring ecosystems at risk were mapped in the RSA. Only the mountain alder - red-osier dogwood - lady fern (00/Fl02) ecosystem was not documented or mapped (**Table 3.1-15**).

The SBSdw3 supports the largest ecosystem at risk area with a total of 220 ha (1%). The nutrient poor Lodgepole pine - Black spruce - Feathermoss (SBSdw3 05/BF) has a total of 75 ha (<1%). The very dry Douglas fir - Lodgepole pine - Cladonia (SBSdw3 02/DC) has a total of 70 ha (<1%). And the Hybrid white spruce - Pink spirea - Prickly rose (SBSdw3 06/SS) has a total of 51 ha (<1%).

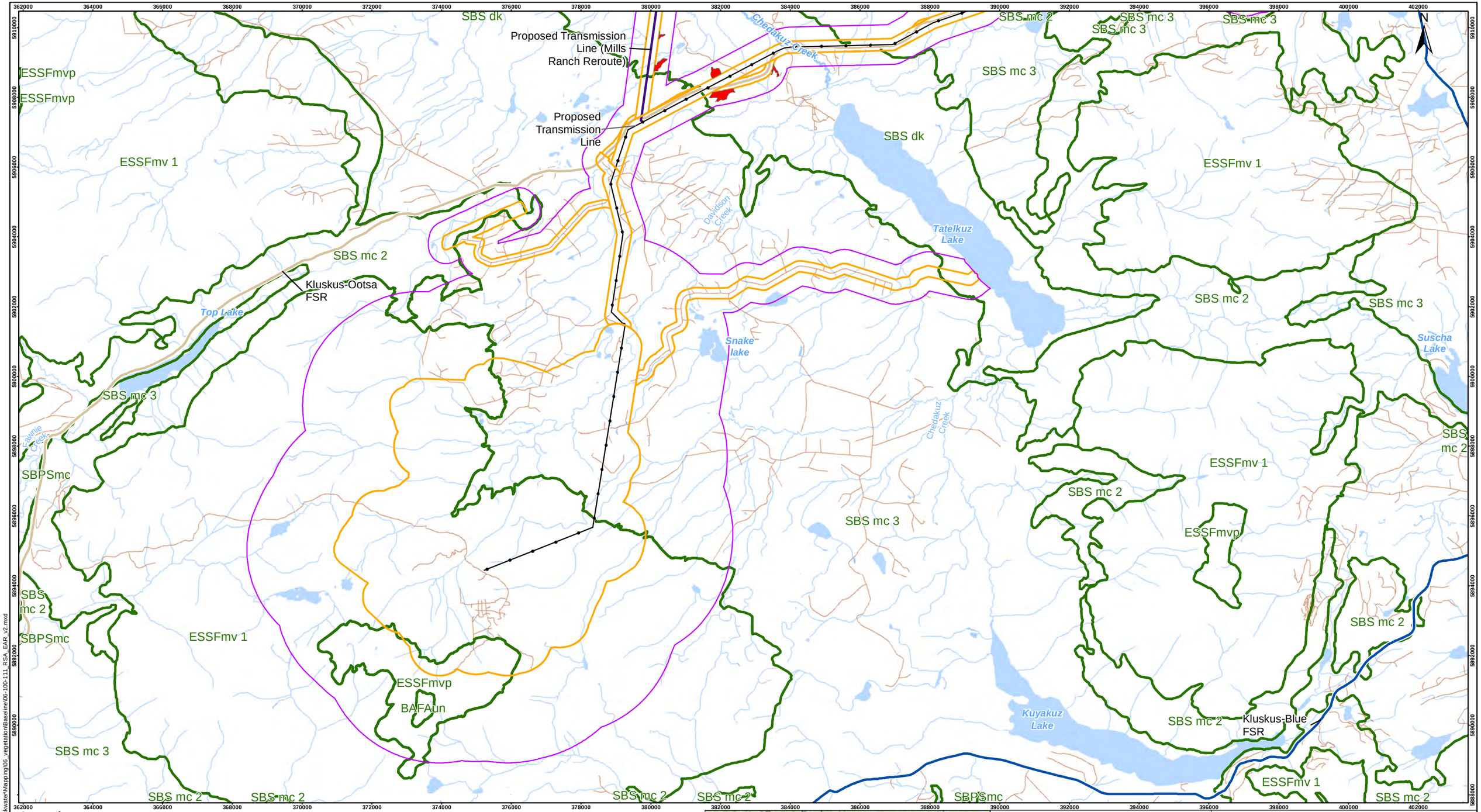
The SBSdk supports a total of 156 ha (1%) ecosystems at risk. The very dry Lodgepole pine - Common juniper - Rough-leaved ricegrass (SBSdk 02/LJ) is the most common with a total of 87 ha (<1%). The Douglas fir - Soopolallie - Feathermoss (SBSdk 04/DS) has a total of 50 ha (<1%). The Black cottonwood - Spruce - Red-osier-dogwood has a total of 8 ha (<1%).

Other ecosystems at risk include the two grassland communities: Saskatoon - Slender wheatgrass and Sandberg's bluegrass - Slender wheatgrass both occur in the SBSdk and the SBSdw3; combined total is approximately 34 ha (<1%).

Table 3.2-5: Distribution of Upland Ecosystems At Risk in the RSA

BGC	BGC Description	Site Series	Map Code	Area (ha)	Percent (%)
SBSdk	Saskatoon - Slender wheatgrass	81	SW	7	<1
SBSdw3	Sandberg's bluegras - Slender wheatgrass	82	BW	3	<1
SBSdk	Lodgepole pine - common juniper - rough-leaved ricegrass	02	LJ	87	<1
SBSdk	Douglas fir - Soopolallie - Feathermoss	04	DS	50	<1
SBSdk	Black cottonwood - spruce - Red-osier dogwood	08	CD	8	<1
SBSdk	Drummond's willow - Bluejoint reedgrass	00	Fl05	1	<1
Total SBSdk				**156**	**1**
SBSdw3	Saskatoon - Slender wheatgrass	81	SW	18	<1
SBSdw3	Sandberg's bluegras - Slender wheatgrass	82	BW	5	<1
SBSdw3	Douglas fir - Lodgepole pine - Cladonia	02	DC	70	<1
SBSdw3	Lodgepole pine - Black spruce - Feathermoss	05	BF	75	<1
SBSdw3	Hybrid white spruce - Pine spirea - Prickly rose	06	SS	51	<1
SBSdw3	Drummond's willow - Bluejoint reedgrass	00	Fl05	<1	<1
Total SBSdw3				**220**	**1**
Total Ecosystems at Risk				**376**	**1**
Total Area of RSA				**30,649**	

Note: BGC = Biogeoclimatic, EAR = Ecosystem At Risk; SBSdk = Dry Cool Sub-Boreal Spruce, SBSdw3 = Stuart Dry Warm Sub-Boreal Spruce variant.



Legend

- Proposed Transmission Line
- Proposed Transmission Line (Mills Ranch Reroute)
- Kluskus Blue FSR
- Kluskus Ootsa FSR
- Existing Road
- Stream
- Waterbody
- Ecosystem at Risk
- Biogeoclimatic Zone

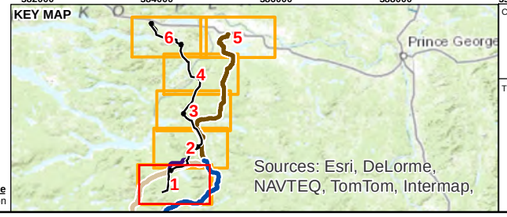
Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area

0 0.5 1 2
Kilometers
Scale:1:100,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Upland Ecosystems at Risk
Regional Study Area
Page 1 of 6

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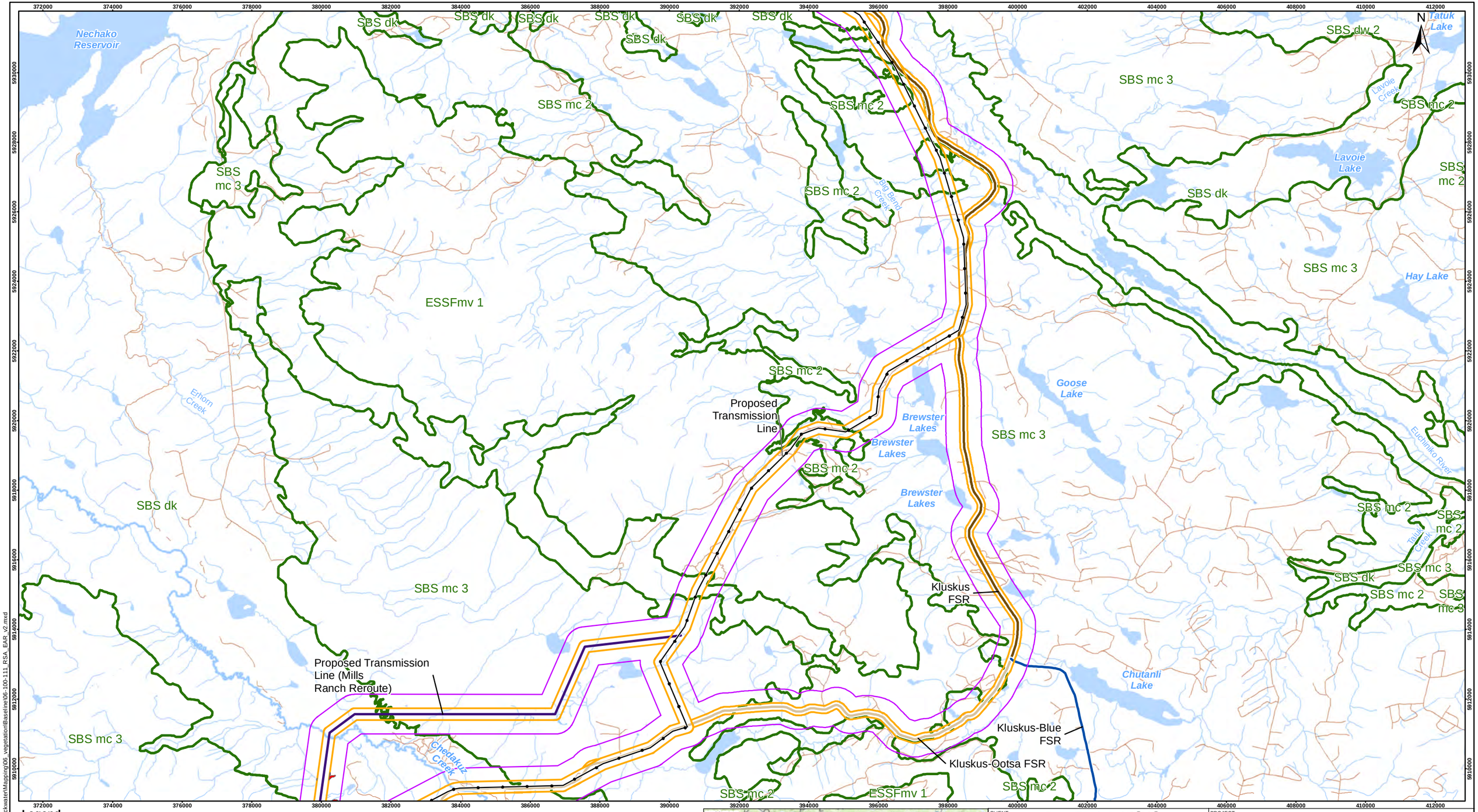


Legend

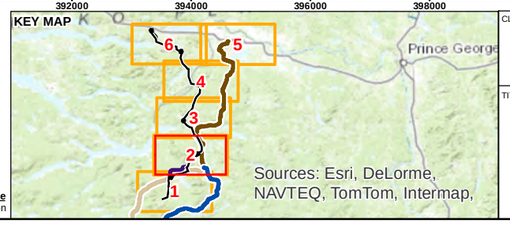
- Proposed Transmission Line
- Proposed Transmission Line (Mills Ranch Reroute)
- Kluskus FSR
- Kluskus Blue FSR
- Kluskus Ootsa FSR
- Existing Road
- Stream
- Waterbody
- Ecosystem at Risk
- Biogeoclimatic Zone

Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area

0 0.5 1 2
Kilometers
Scale:1:100,000

Source
BC Government GeoBC Data Distribution



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PROJECT: Blackwater Gold Project

TITLE: Upland Ecosystems at Risk
Regional Study Area
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DATE: October, 2013	ANALYST: AA	Figure 3.2-1
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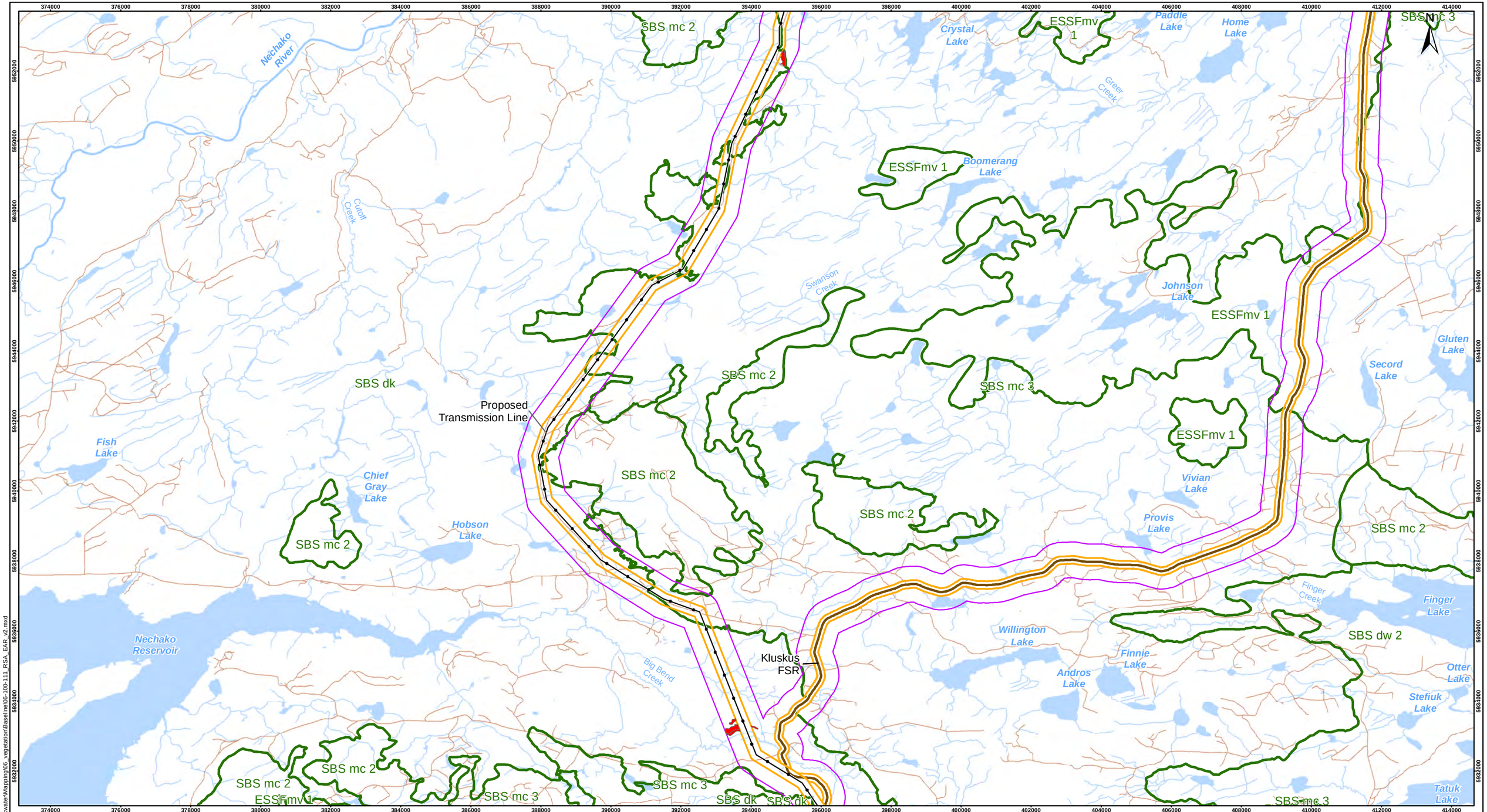


Legend

- Proposed Transmission Line
- Kluskus FSR
- Existing Road
- Stream
- Waterbody
- Ecosystem at Risk
- Biogeoclimatic Zone

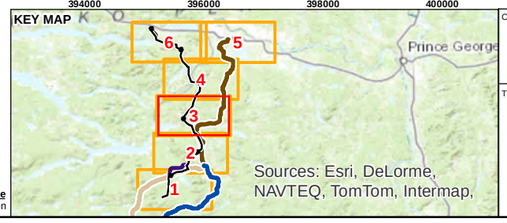
Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area

0 0.5 1 2
Kilometers
Scale:1:100,000

Source
BC Government GeoBC Data Distribution

KEY MAP



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PROJECT: Blackwater Gold Project

TITLE: Upland Ecosystems at Risk
Regional Study Area
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DATE: October, 2013	ANALYST: AA	Figure 3.2-1
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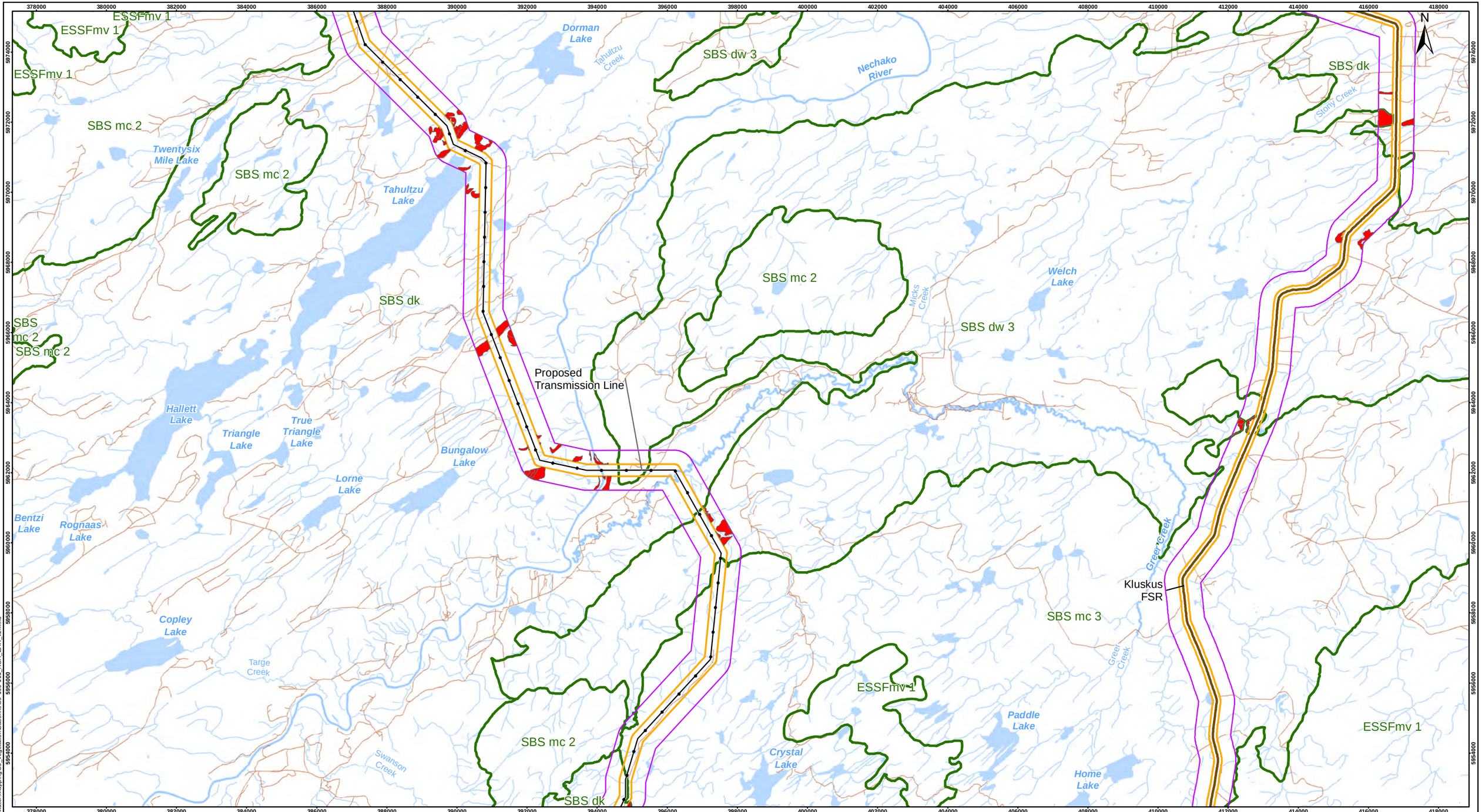


Legend

- Proposed Transmission Line
- Kluskus FSR
- Existing Road
- Stream
- Waterbody
- Ecosystem at Risk
- Biogeoclimatic Zone

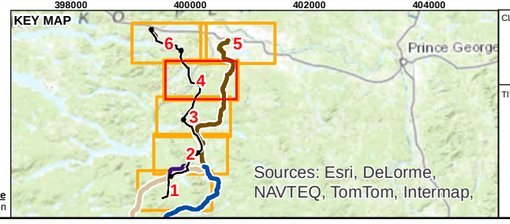
Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area

0 0.5 1 2
Kilometers
Scale:1:100,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE:
Upland Ecosystems at Risk
Regional Study Area
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DATE: October, 2013	ANALYST: AA	Figure 3.2-1
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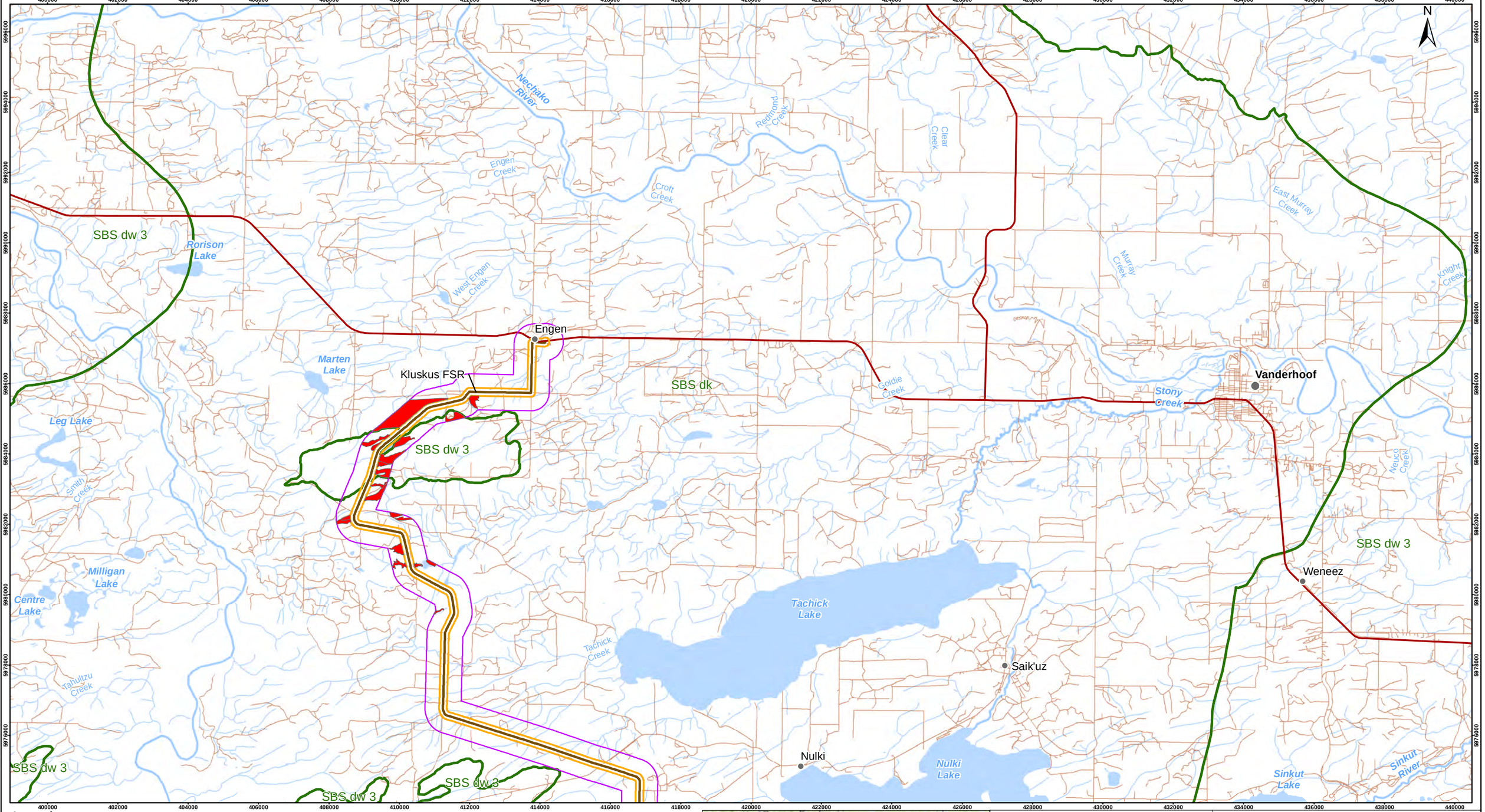


Legend

- Populated Place
- Kluskus FSR
- Existing Road
- Highway
- Stream
- Waterbody
- Ecosystem at Risk
- Biogeoclimatic Zone

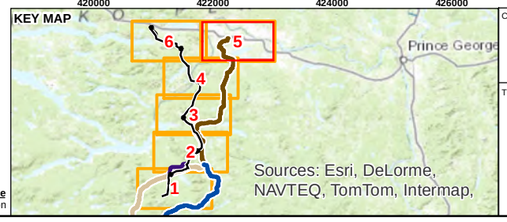
Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area

0 0.5 1 2
Kilometers
Scale:1:100,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Upland Ecosystems at Risk
Regional Study Area
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DATE: October, 2013	ANALYST: AA	Figure 3.2-1
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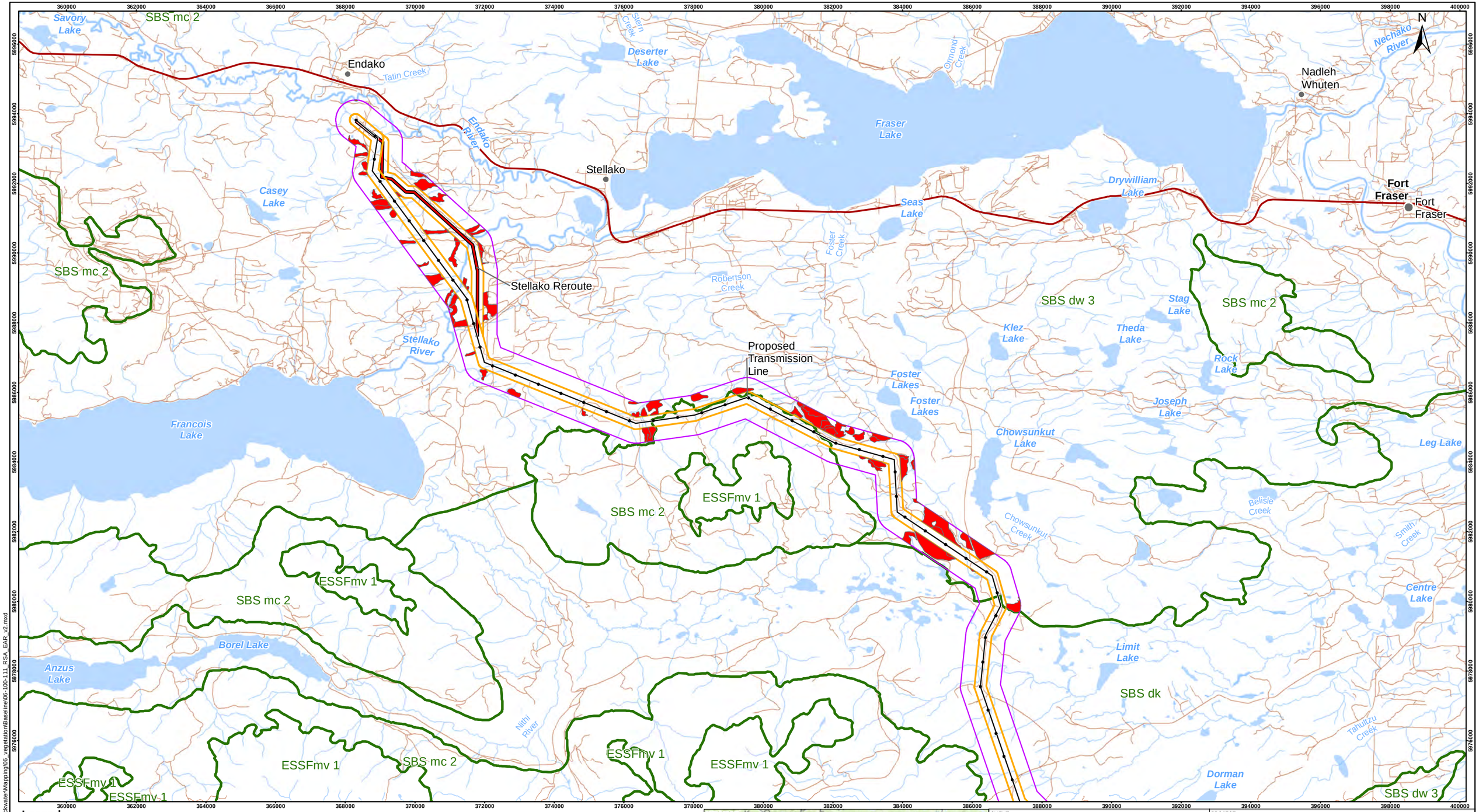


Legend

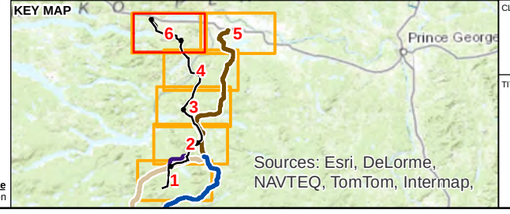
- Populated Place
- Proposed Transmission Line
- Proposed Transmission Line (Stellako Reroute)
- Existing Road
- Highway
- Stream
- Waterbody
- Ecosystem at Risk
- Biogeoclimatic Zone

Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area

0 0.5 1 2
Kilometers
Scale:1:100,000

Source
BC Government GeoBC Data Distribution



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PROJECT: Blackwater Gold Project

TITLE: Upland Ecosystems at Risk
Regional Study Area
Page 6 of 6

DATE: October, 2013	ANALYST: AA	Figure 3.2-1
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3.2.5 Sensitive Ecosystems

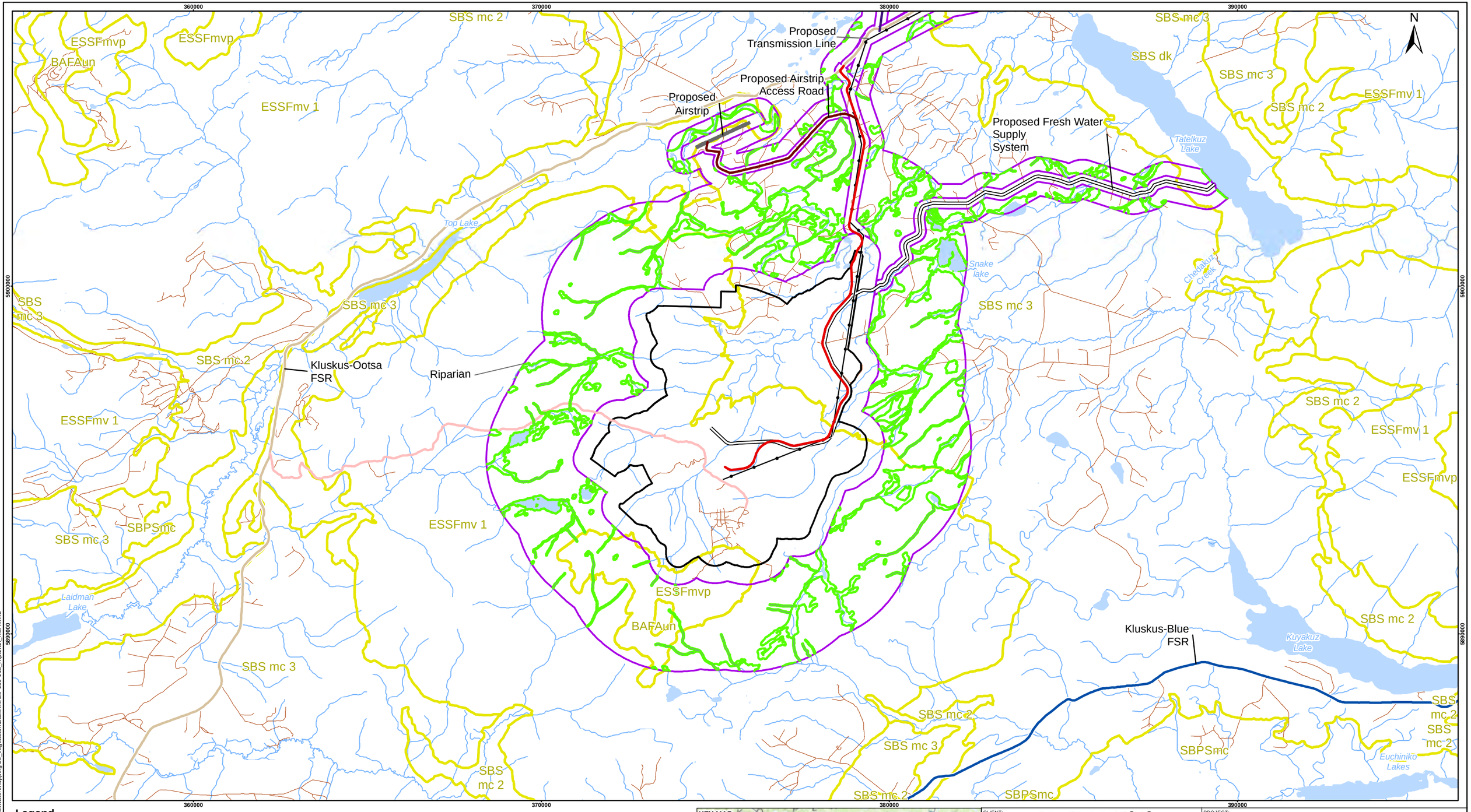
3.2.5.1 Riparian

There is a total of 3,645 ha (12%) of riparian area in the Project RSA (**Table 3.2-6** and **Figure 3.2-2**). The BGC unit with the highest amount of riparian area is the SBSmc3 with a total of 1,575 ha (5%). The second highest occurs in the SBSdk with a total of 876 ha (3%). The ESSFmv1 has a total of 584 ha (2%). The SBSdw3 has a total of 434 ha (1%). The least amount occurs in the SBSmc2, ESSFmv1p and BAFAun with less than 1% riparian area combined.

Table 3.2-6: Distribution of Riparian in the RSA by BGC Unit

BGC Unit	Riparian Area (ha)	Percent Riparian Area (%)
SBSdk	876	3
SBSdw3	434	1
SBSmc2	149	<1
SBSmc3	1,575	5
ESSFmv1	584	2
ESSFmv1p	26	<1
BAFAun	1	<1
Total Riparian	**3,645**	**12**
Total RSA	**30,649**	

Note: BGC = Biogeoclimatic, ha = hectares;% = percent; SBSdk = Dry Cool Sub-Boreal Spruce, SBSdw3 = Stuart Dry Warm Sub-Boreal Spruce variant, SBSmc2 = Babine Moist Cold Sub-Boreal Spruce variant; SBSmc3 = Kluskus Moist Cold Sub-Boreal Spruce variant; ESSFmv1 = Nechako Very Cold Engelmann Spruce Subalpine Fir variant; ESSFmv1p = Nechako Very Cold Engelmann Spruce-Subalpine Fir Parkland variant; FSR = Forest Service Road



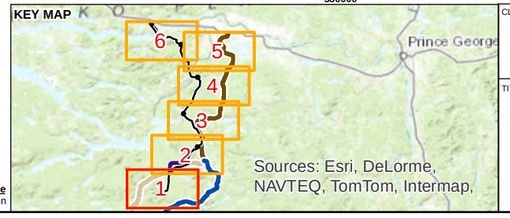
Legend

- Proposed Airstrip Access Road
- Exploration Road
- Proposed Mine Site Access Road
- Proposed Transmission Line
- Proposed Fresh Water Supply System
- Proposed Transmission Line (Mills Ranch Reroute)
- Kluskus Blue FSR
- Kluskus Ootsa FSR
- Existing Road
- Stream
- Waterbody
- Proposed Airstrip
- Proposed Mine Site
- Biogeoclimatic Zone
- Riparian

Terrain, Soils, and Vegetation

- Regional Study Area

0 1 2 4
Kilometers
Scale:1:100,000
Source: BC Government GeoBC Data Distribution



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Riparian
Regional Study Area
1 of 6

DATE: October, 2013	ANALYST: AA	Figure 3.2-2
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370000 380000 390000 400000 410000

5920000 5910000

N

Nechako Reservoir
Ootsa Lake
Big Bend Creek
Hay Lake
Goose Lake
Brewster Lakes
Chedakuz Creek
Tatelkuz Lake
Taluk Creek
Chutanli Lake

SBS mc 2
SBS mc 3
SBS dk
ESSFmv 1

Riparian
Kluskus FSR
Proposed Transmission Line (Mills Ranch Reroute)
Proposed Transmission Line
Kluskus-Ootsa FSR
Kluskus-Blue FSR

Legend

- Proposed Mine Site Access Road
- Proposed Transmission Line
- Proposed Transmission Line (Mills Ranch Reroute)
- Kluskus FSR
- Kluskus Blue FSR
- Kluskus Ootsa FSR
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone
- Riparian

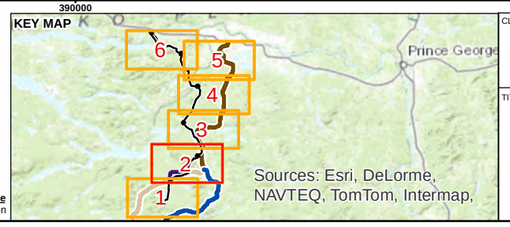
Terrain, Soils, and Vegetation

- Regional Study Area

0 1 2 4
Kilometers
Scale:1:100,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Riparian
Regional Study Area
2 of 6

DATE: October, 2013	ANALYST: AA	**Figure 3.2-2**
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-110_Riparian_RSA.pdf
GIS FILE: 06-100-110_Riparian_RSA.mxd		
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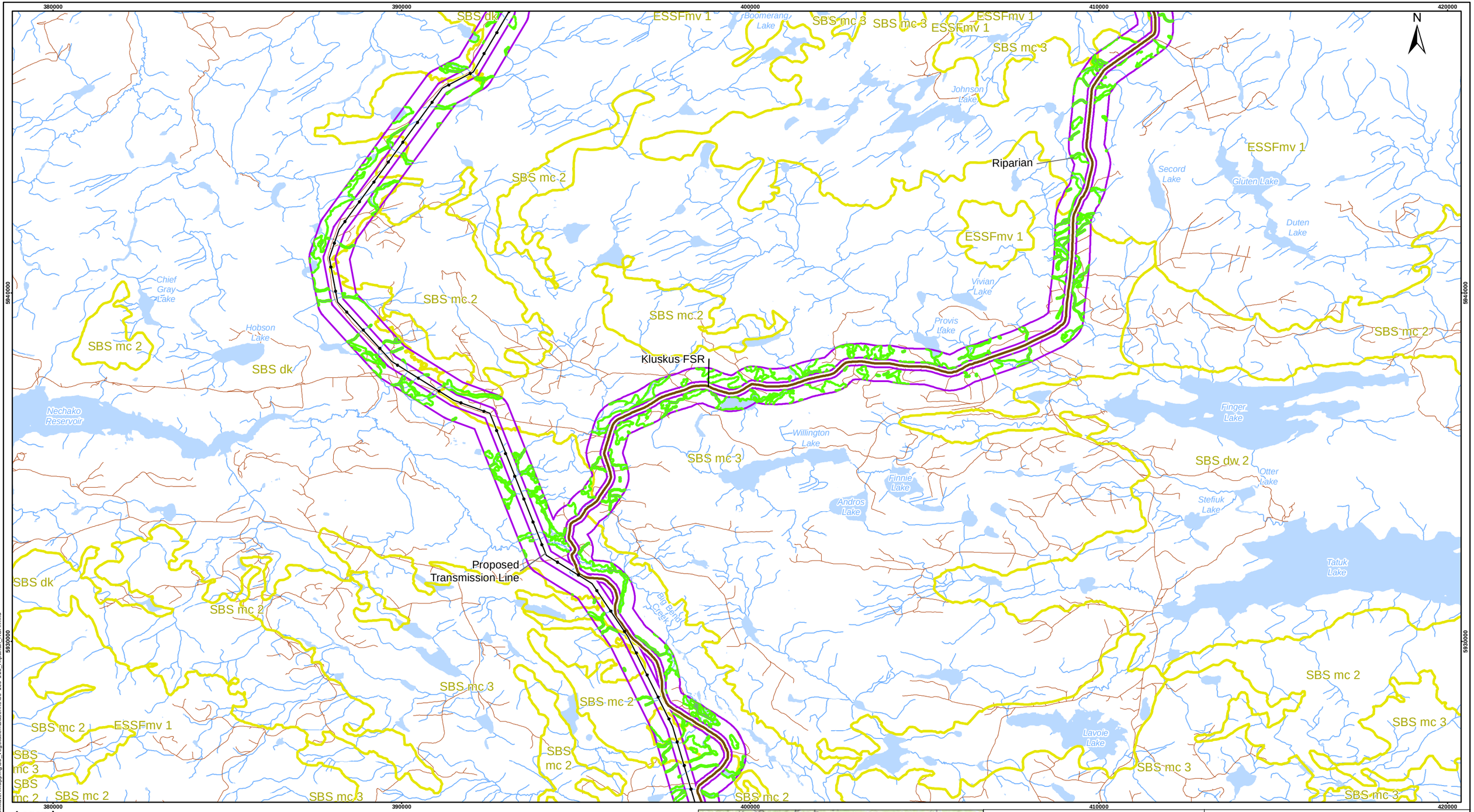


Legend

- Proposed Transmission Line
- Kluskus FSR
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone
- Riparian

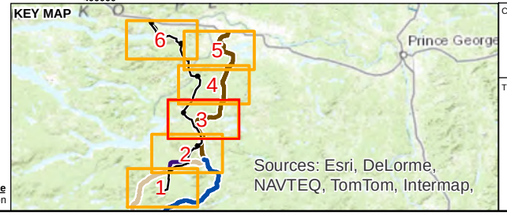
Terrain, Soils, and Vegetation

- Regional Study Area

0 1 2 4
Kilometers
Scale:1:100,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE:
Riparian
Regional Study Area
3 of 6

DATE: October, 2013	ANALYST: AA	**Figure 3.2-2**
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-110_Riparian_RSA.pdf
GIS FILE: 06-100-110_Riparian_RSA.mxd		
PROJECTION: UTM 10	DATUM: NAD83	amec

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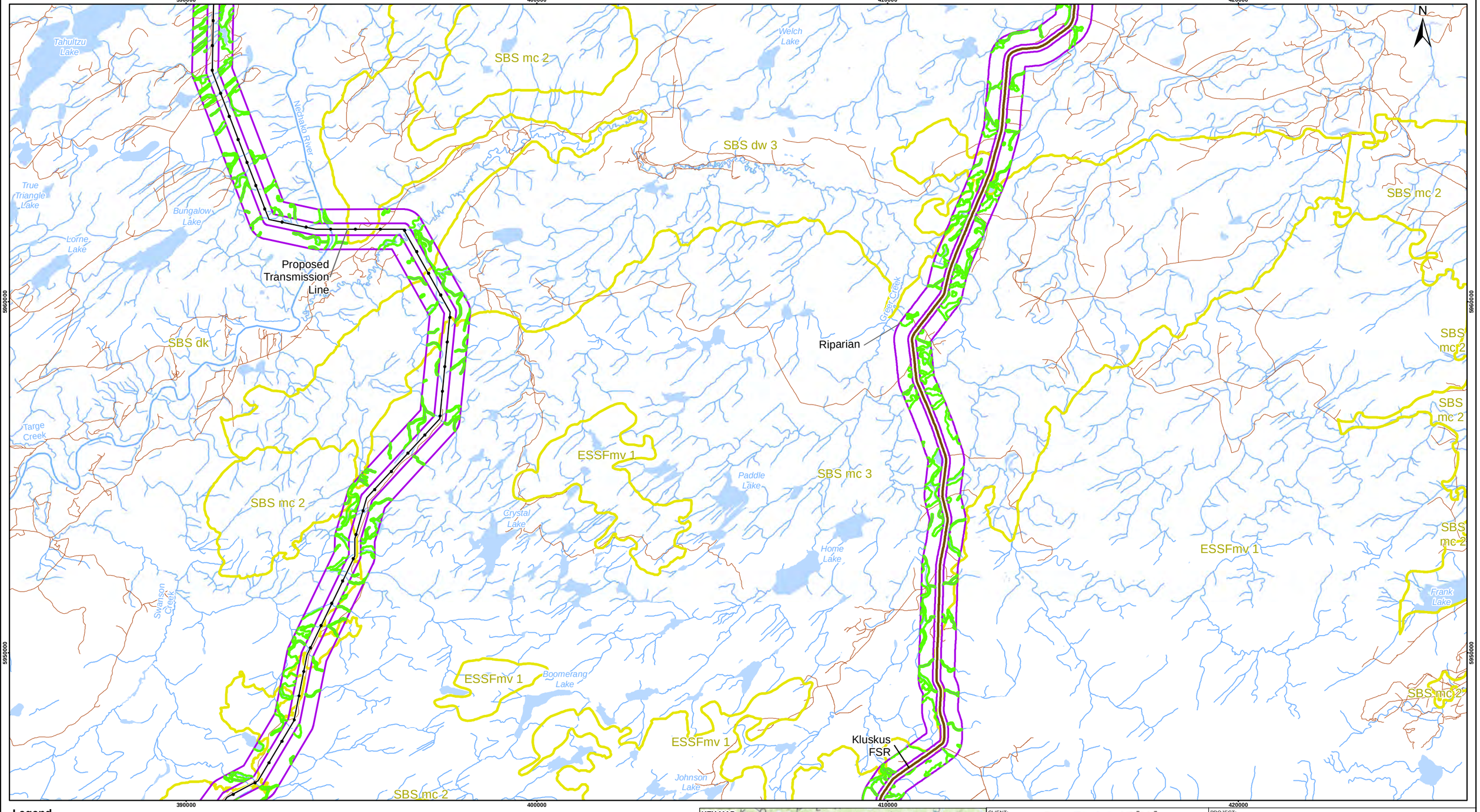


Legend

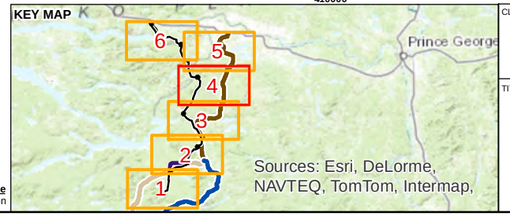
- Proposed Transmission Line
- Kluskus FSR
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone
- Riparian

Terrain, Soils, and Vegetation

- Regional Study Area

0 1 2 4
Kilometers
Scale:1:100,000

Source
BC Government GeoBC Data Distribution



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Riparian
Regional Study Area
4 of 6

DATE: October, 2013	ANALYST: AA	Figure 3.2-2
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-110_Riparian_RSA.pdf
GIS FILE: 06-100-110_Riparian_RSA.mxd		
PROJECTION: UTM 10	DATUM: NAD83	amec

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390000 400000 410000 420000

5980000 5970000

N

Stag Lake
Theda Lake
Rock Lake
Joseph Lake
Leg Lake
Marten Lake
Engen
Kluskus FSR
Stony Creek
Smith Creek
Milligan Lake
Centre Lake
Limit Lake
Tachick Lake
Saik'uz
Nulki
Nulki Lake
Dorman Lake
Nechako River
Tahultzu Lake
Welch Lake
Cluculz Creek

SBS mc 2
SBS dw 3
SBS dk

Riparian

Proposed Transmission Line

390000 400000 410000 420000

Legend

- Proposed Transmission Line
- Kluskus FSR
- Existing Road
- Highway
- Stream
- Waterbody
- Biogeoclimatic Zone
- Riparian

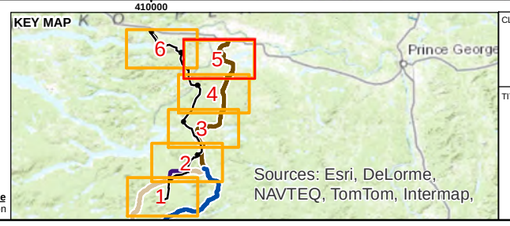
Terrain, Soils, and Vegetation

- Regional Study Area

0 1 2 4
Kilometers
Scale:1:100,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE:
Riparian
Regional Study Area
5 of 6

DATE: October, 2013	ANALYST: AA	**Figure 3.2-2**
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GIS FILE: 06-100-110_Riparian_RSA.mxd		
PROJECTION: UTM 10	DATUM: NAD83	amec

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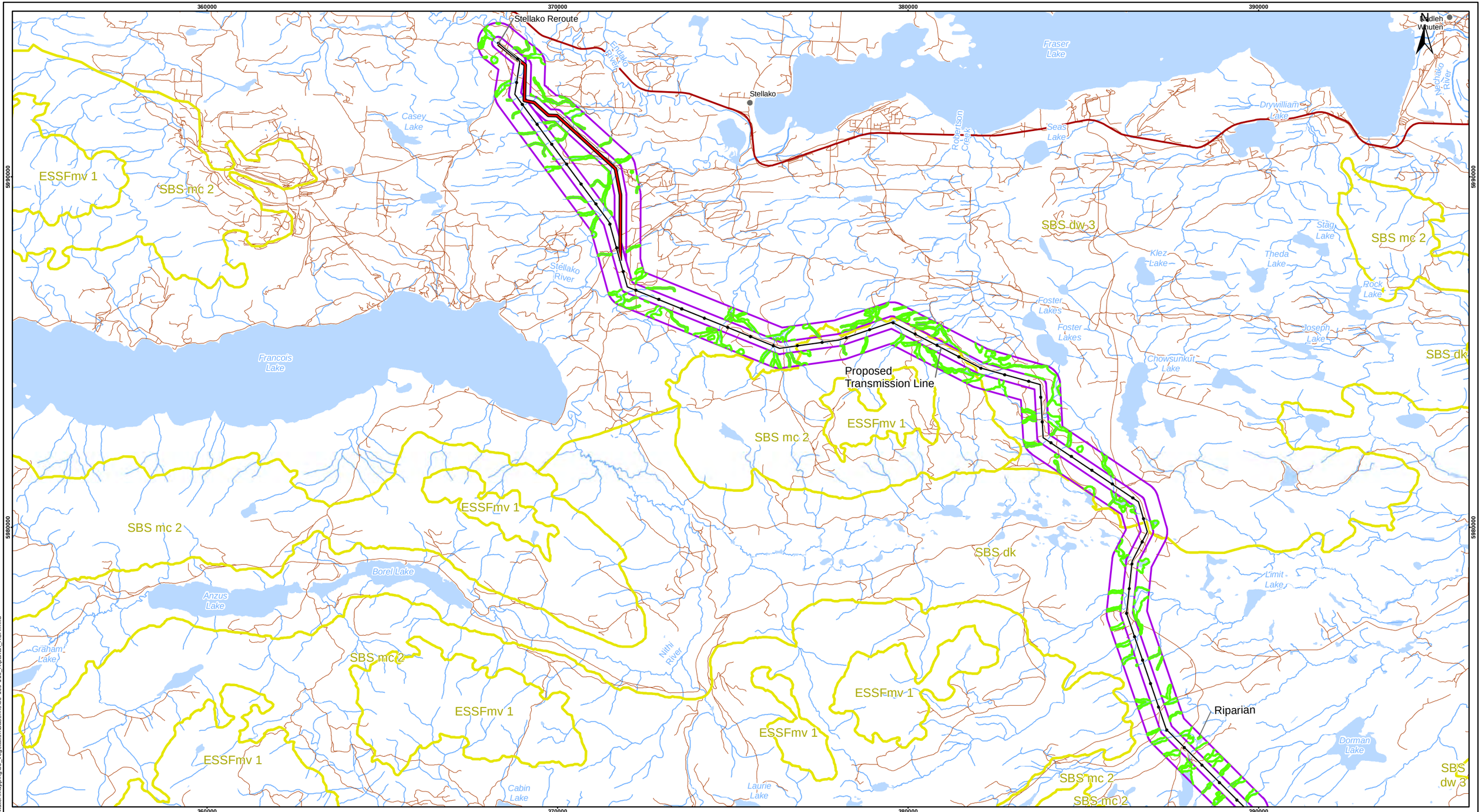
360000
370000
380000
390000
5990000
5980000
Stellako Reroute
Stellako
Fraser Lake
Casey Lake
Stellako River
Endako River
Nechako River
Robertson Creek
Seas Lake
Drywilliam Lake
Stag Lake
Klez Lake
Theda Lake
Rock Lake
Foster Lakes
Joseph Lake
Chowsunkut Lake
Francois Lake
Proposed Transmission Line
Riparian
Borel Lake
Anzus Lake
Graham Lake
Nithi River
Cabin Lake
Laurie Lake
Limit Lake
Dorman Lake
ESSFmv 1
SBS mc 2
SBS dw 3
SBS dk
Legend
Proposed Transmission Line
Proposed Transmission Line (Stellako Reroute)
Existing Road
Highway
Stream
Waterbody
Biogeoclimatic Zone
Riparian
Terrain, Soils, and Vegetation
Regional Study Area
0 1 2 4
Kilometers
Scale:1:100,000
Source
BC Government GeoBC Data Distribution
KEY MAP
Prince George
Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap,
CLIENT:
newgold
PROJECT:
Blackwater Gold Project
TITLE:
Riparian
Regional Study Area
6 of 6
DATE: October, 2013
ANALYST: AA
Figure 3.2-2
JOB No: VE52277
QA/QC: MY
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PROJECTION: UTM 10
DATUM: NAD83
amec
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3.2.5.2 Old Growth Forest

There is a total of 4,857 ha (16%) of old growth forest in the RSA (**Table 3.2-7** and **Figure 3.2-3**). The majority occurs in the SBSmc3 with a total of 2,021 ha (7%). The higher elevation ESSFmv1 has a total of 1,312 ha (4%). The SBSdw3 has a total of 735 ha (2%).

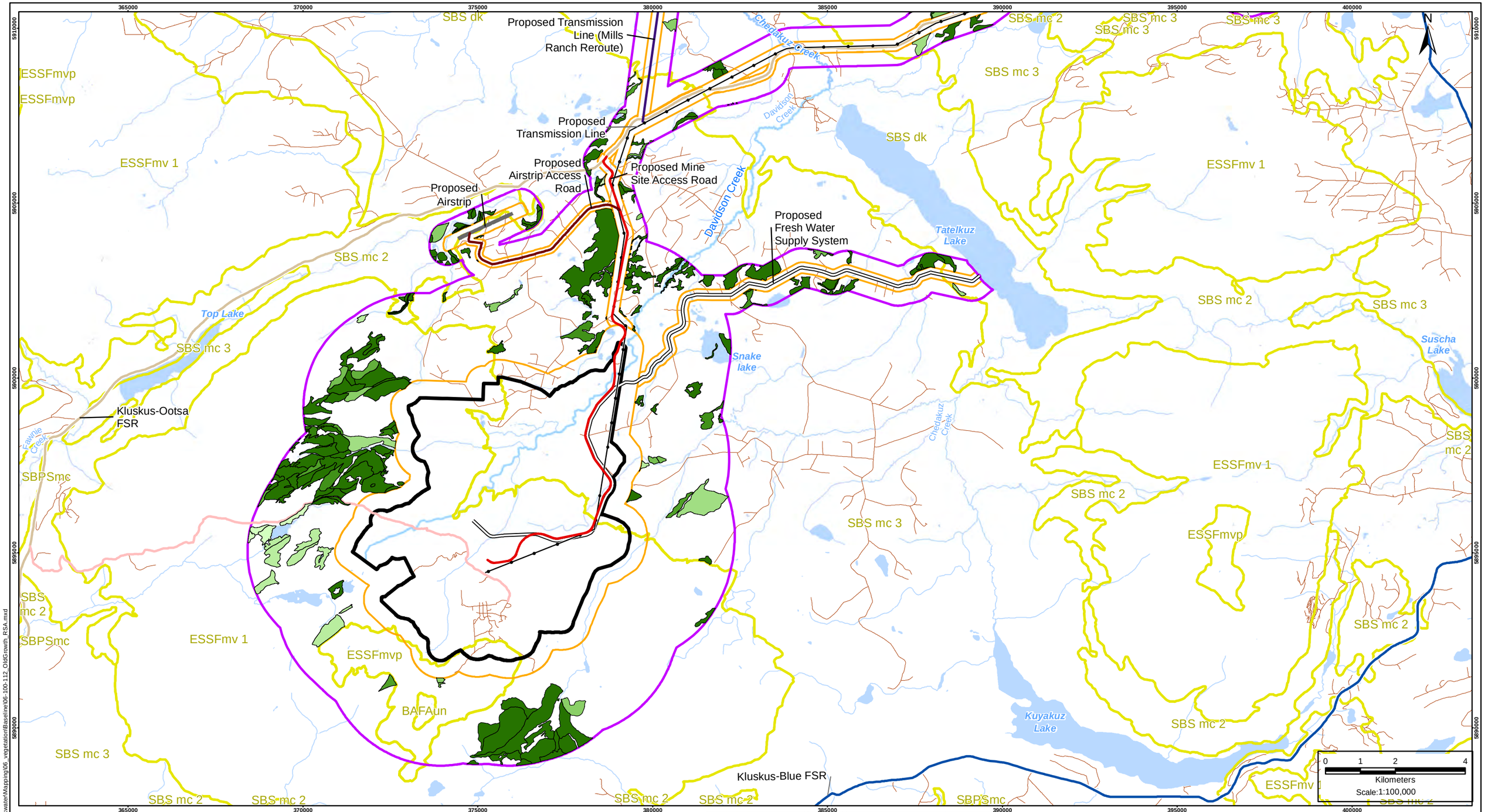
The ecosystem with the largest amount of the old growth forest is the Hybrid white spruce - Huckleberry (SBSmc3 01/SB) with a total of 883 ha (3%). The Subalpine fir - Rhododendron - Feathermoss (ESSFmv1 01/FR) has the second highest with a total of 664 ha (2%) and the Hybrid white spruce - Twinberry (SBSmc3 07/ST) has a total of 434 ha (1%).

Table 3.2-7: Distribution of Old Growth Forest in the RSA

BGC unit	Ecosystem	Site Series	Map Code	Area (ha)	Percent (%)
SBSdk	Hybrid white spruce - Purple peavine	01	SP	309	1
SBSdk	Lodgepole pine - Juniper - Ricegrass	02	LJ	8	<1
SBSdk	Lodgepole pine - Feathermoss - Cladina	03	LC	83	<1
SBSdk	Hybrid white spruce - Spirea - Feathermoss	05	SF	35	<1
SBSdk	Hybrid white spruce - Twinberry - Coltsfoot	06	ST	299	1
SBSdk	Black cottonwood - Dogwood - Prickly Rose	08	CD	1	<1
Total SBSdk				**735**	**2**
SBSdw3	Hybrid white spruce - Douglas fir - Pinegrass	01	SP	229	1
SBSdw3	Douglas fir - Lodgepole pine - Cladonia	02	DC	12	<1
SBSdw3	Lodgepole pine - Feathermoss - Cladina	03	LC	18	<1
SBSdw3	Hybrid white spruce - Ricegrass	04	SR	46	<1
SBSdw3	Lodgepole pine - Black spruce - Feathermoss	05	BF	7	<1
SBSdw3	Hybrid white spruce - Pink Spirea - Prickly rose	06	SS	10	<1
SBSdw3	Hybrid white spruce - Twinberry	07	ST	129	<1
SBSdw3	Hybrid white spruce - Oakfern	08	SO	32	<1
Total SBSdw3				**485**	**2**
SBSmc2	Hybrid white spruce - Huckleberry	01	SB	154	1
SBSmc2	Lodgepole pine - Huckleberry - Cladonia	02	PH	56	<1
SBSmc2	Black spruce - Lodgepole pine - Feathermoss	03	BM	6	<1
SBSmc2	Hybrid white spruce - Huckleberry - Dwarf blueberry	04	HB	25	<1
SBSmc2	Hybrid white spruce - Oak fern	06	SO	34	<1
SBSmc2	Hybrid white spruce - Scrub birch - Feathermoss	07	BF	4	<1
SBSmc2	Hybrid white spruce - Twinberry - Oak fern	08	ST	10	<1
SBSmc2	Hybrid white spruce - Horsetail	10	SH	12	<1
Total SBSmc2				**302**	**1**
SBSmc3	Hybrid white spruce - Huckleberry	01	SB	883	3
SBSmc3	Lodgepole pine - Juniper - Dwarf huckleberry	02	LJ	7	<1

BGC unit	Ecosystem	Site Series	Map Code	Area (ha)	Percent (%)
SBSmc3	Lodgepole pine - Feathermoss - Cladina	03	LF	237	1
SBSmc3	Hybrid white spruce - Huckleberry - Soopolallie	04	SS	115	<1
SBSmc3	Black spruce - Huckleberry - Spirea	05	BH	243	1
SBSmc3	Black spruce - Lodgepole pine - Feathermoss	06	BF	101	<1
SBSmc3	Hybrid white spruce - Twinberry	07	ST	434	1
Total SBSmc3				**2,021**	**7**
ESSFmv1	Subalpine fir - Rhododendron - Feathermoss	01	FR	664	2
ESSFmv1	Lodgepole pine - Huckleberry - Cladonia	02	LC	81	<1
ESSFmv1	Subalpine fir - Huckleberry - Feathermoss	03	FF	382	1
ESSFmv1	Subalpine fir - Huckleberry - Gooseberry	04	FG	185	1
Total ESSFmv1				**1,312**	**4**
ESSFmvp	Subalpine fir - Indian Hellebore	0.00	FH	2	<1
ESSFmvp	Subalpine fir - Whitebark Pine - Crowberry parkland	0.00	PC	1	<1
ESSFmvp	Sitka valerian - globeflower moist meadow	0.00	VG	1	<1
Total ESSFmv1p				**4**	<1
Total Old Growth Forest				**4,858**	**16**
Total RSA				**30,649**	

Note: BGC = Biogeoclimatic, ha = hectares;% = percent; SBSdk = Dry Cool Sub-Boreal Spruce, SBSdw3 = Stuart Dry Warm Sub-Boreal Spruce variant, SBSmc2 = Babine Moist Cold Sub-Boreal Spruce variant; SBSmc3 = Kluskus Moist Cold Sub-Boreal Spruce variant; ESSFmv1 = Nechako Very Cold Engelmann Spruce Subalpine Fir variant; ESSFmv1p = Nechako Very Cold Engelmann Spruce-Subalpine Fir Parkland variant; FSR = Forest Service Road



Legend

- Proposed Airstrip Access Road
- Exploration Road
- Proposed Mine Site Access Road
- Proposed Transmission Line
- Proposed Fresh Water Supply System
- Proposed Transmission Line (Mills Ranch Reroute)
- Kluskus Blue FSR
- Kluskus Ootsa FSR
- Existing Road
- Stream
- Waterbody
- Proposed Airstrip
- Proposed Mine Site
- Biogeoclimatic Zone

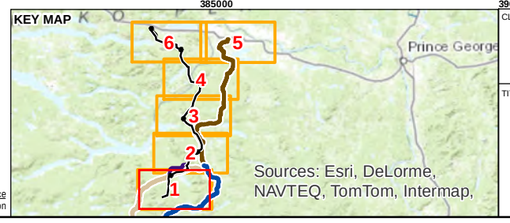
Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area

Percent Old Growth Forest

10, 20, 30, 40, 50, 60, 70, 80, 90, 100

Source
BC Government GeoBC Data Distribution



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Old Growth Forest
RSA
Page 1 of 6

DATE: October, 2013	ANALYST: AA	Figure 3.2-3
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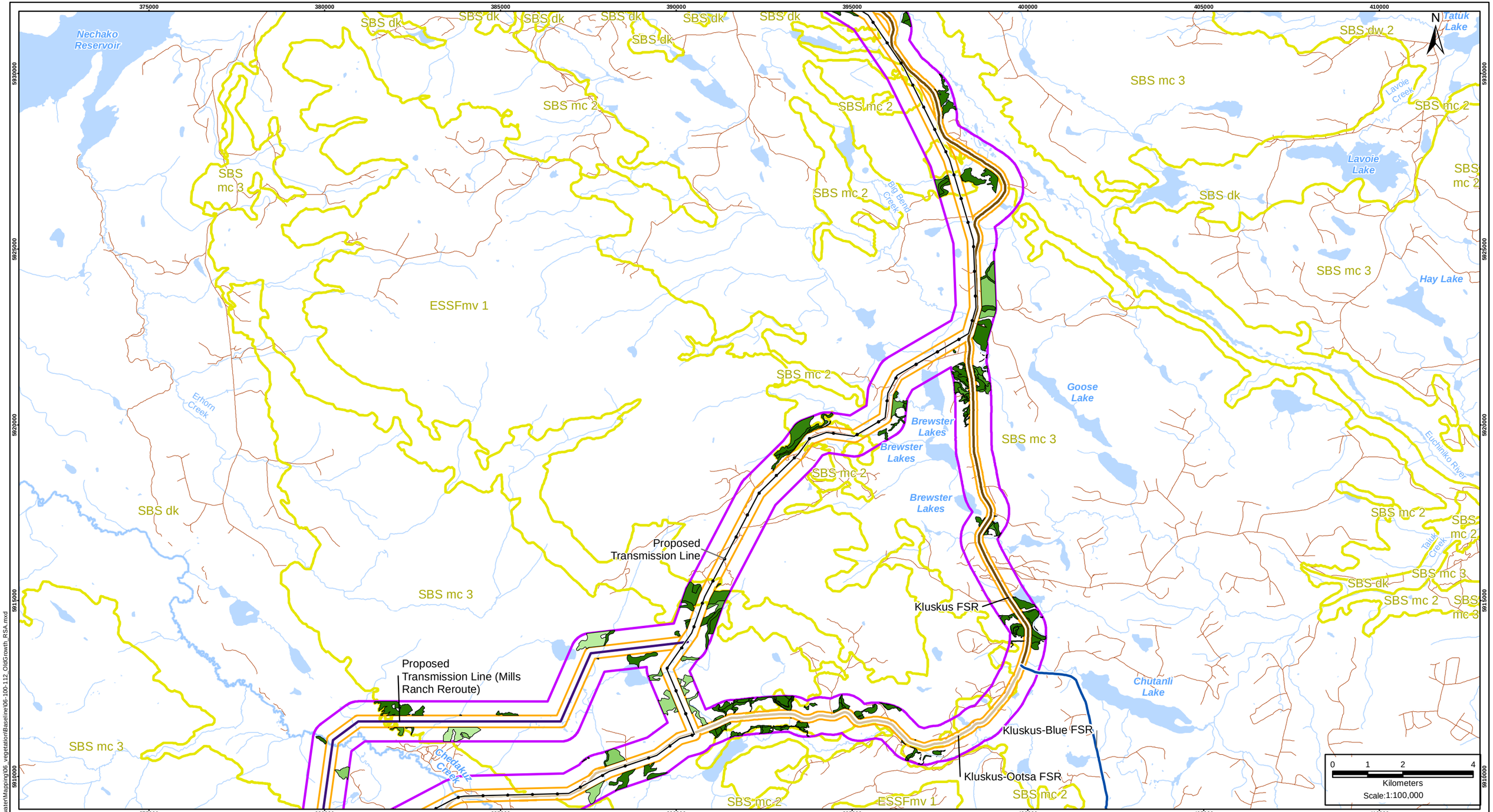


Legend

- Proposed Transmission Line
- Proposed Transmission Line (Mills Ranch Reroute)
- Kluskus FSR
- Kluskus Blue FSR
- Kluskus Ootsa FSR
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone

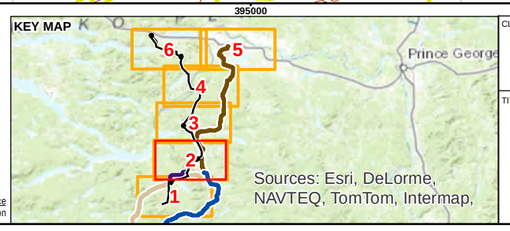
Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area

Percent Old Growth Forest

10, 20, 30, 40, 50, 60, 70, 80, 90, 100

Source
BC Government GeoBC Data Distribution



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Old Growth Forest
RSA
Page 2 of 6

DATE: October, 2013	ANALYST: AA	Figure 3.2-3
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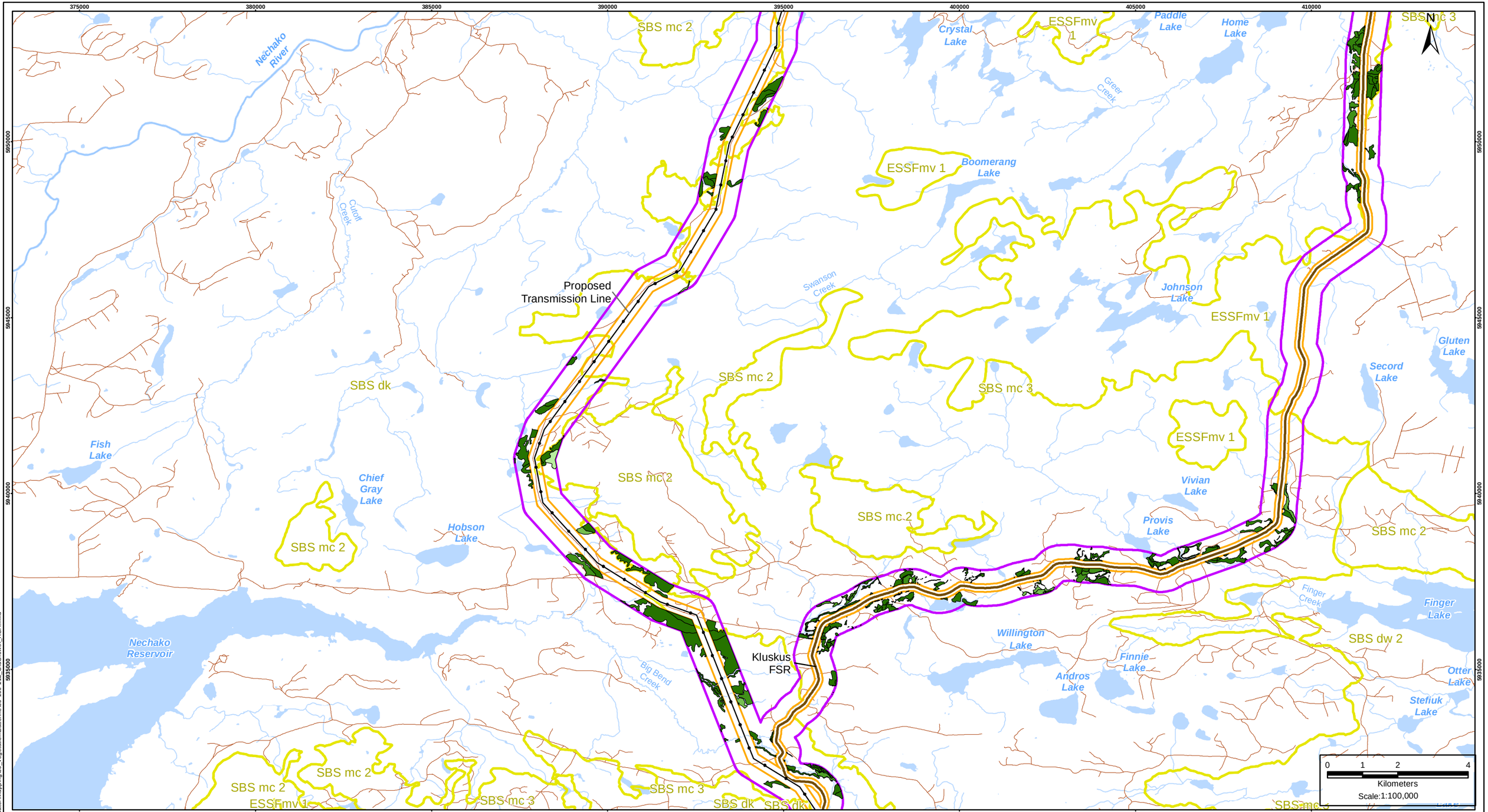


Legend

- Proposed Transmission Line
- Kluskus FSR
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone

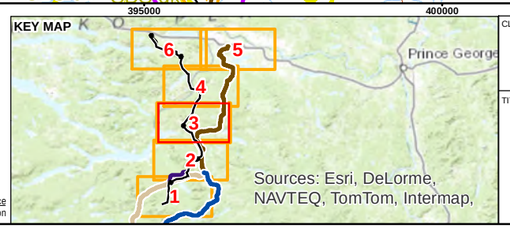
Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area

Percent Old Growth Forest

10, 20, 30, 40, 50, 60, 70, 80, 90, 100

Source
BC Government GeoBC Data Distribution



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Old Growth Forest
RSA
Page 3 of 6

DATE: October, 2013	ANALYST: AA	Figure 3.2-3
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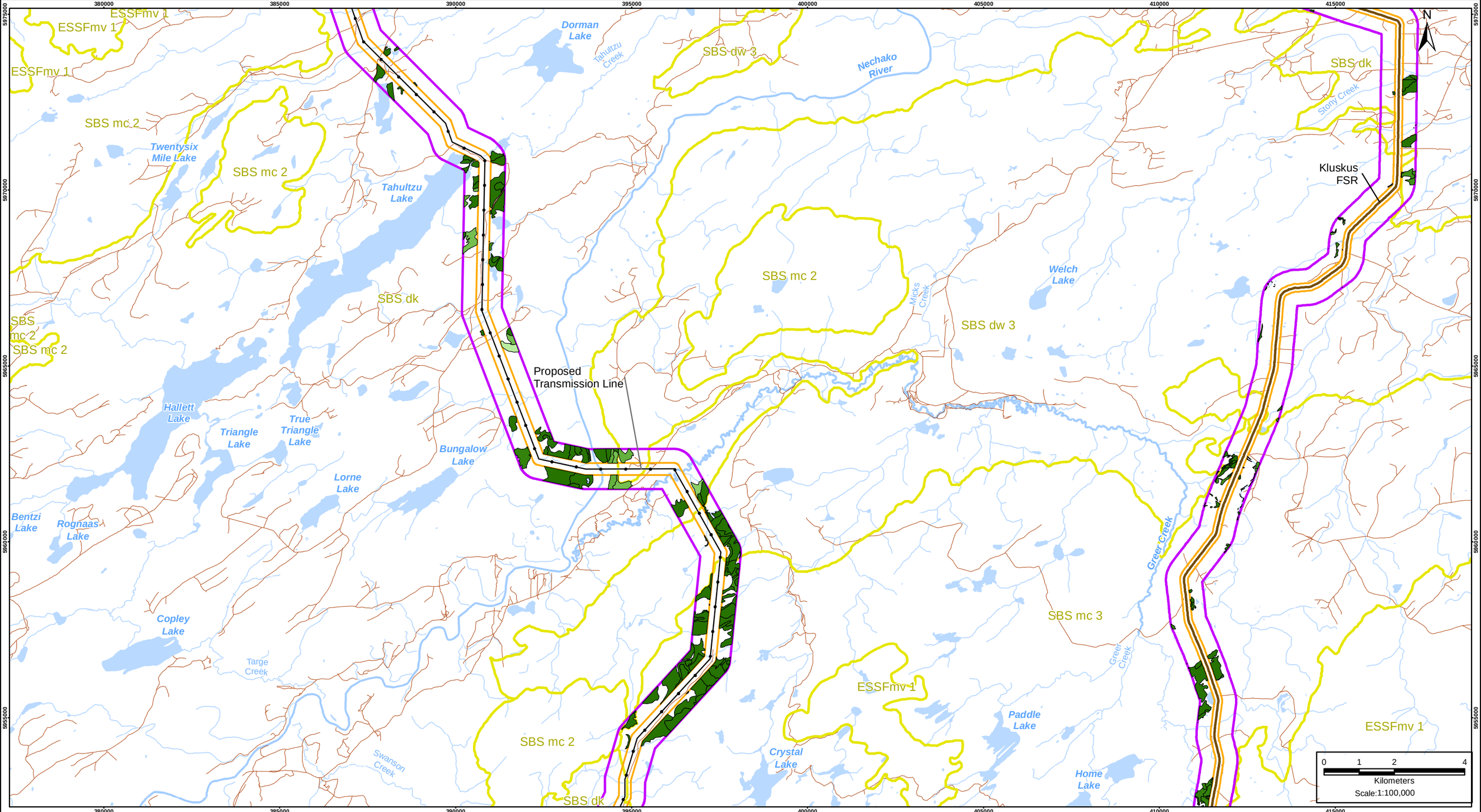


Legend

- Proposed Transmission Line
- Kluskus FSR
- Existing Road
- Stream
- Waterbody
- Biogeoclimatic Zone

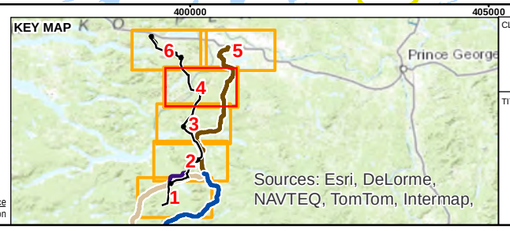
Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area

Percent Old Growth Forest

10 20 30 40 50 60 70 80 90 100

Source
BC Government GeoBC Data Distribution



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Old Growth Forest
RSA
Page 4 of 6

DATE: October, 2013	ANALYST: AA	Figure 3.2-3
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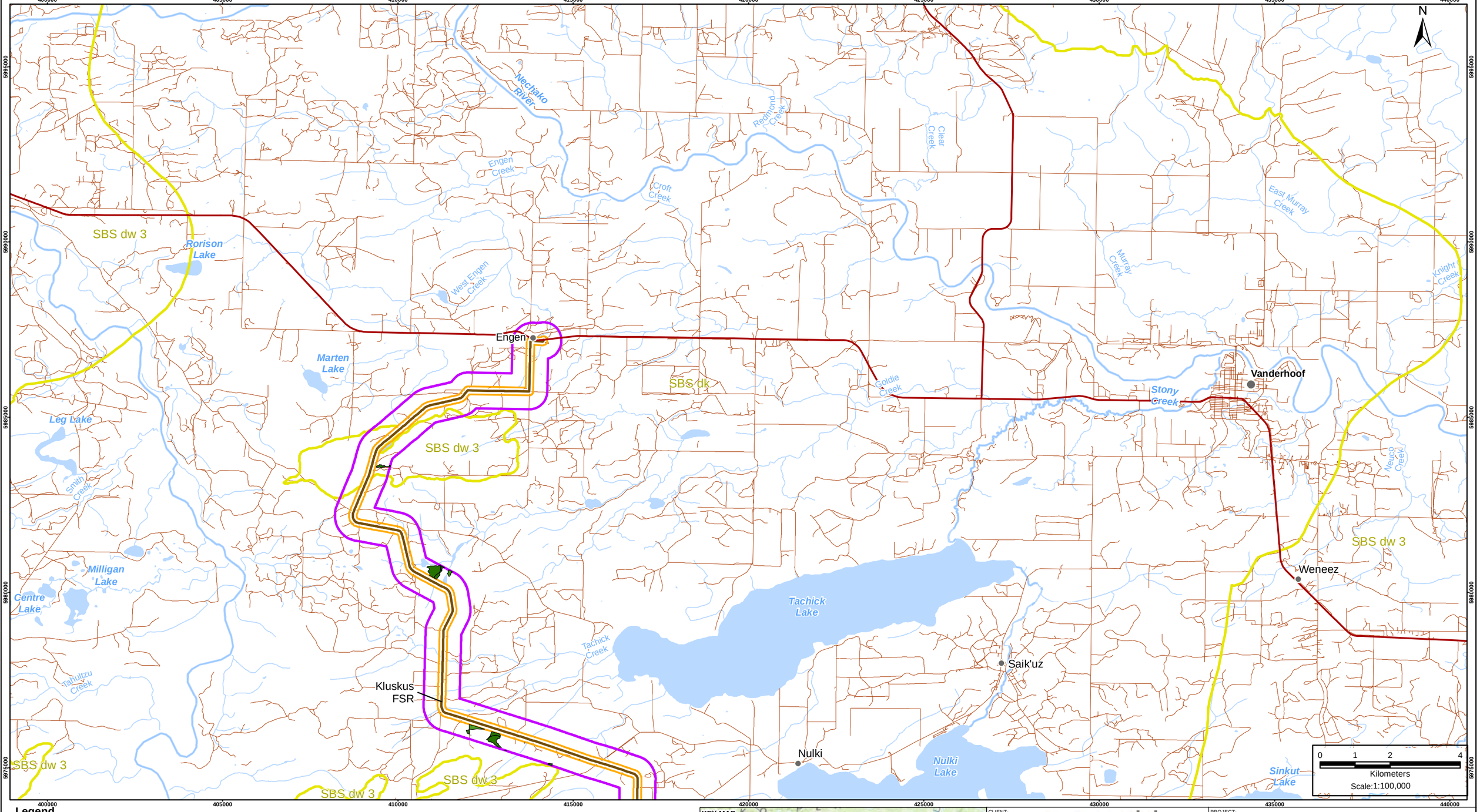


Legend

- Populated Place
- Kluskus FSR
- Existing Road
- Highway
- Stream
- Waterbody
- Biogeoclimatic Zone

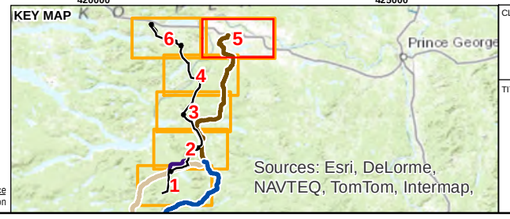
Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area

Percent Old Growth Forest

10, 20, 30, 40, 50, 60, 70, 80, 90, 100

Source
BC Government GeoBC Data Distribution



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Old Growth Forest
RSA
Page 5 of 6

DATE: October, 2013	ANALYST: AA	Figure 3.2-3
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GIS FILE: 06-100-112_OldGrowth_RSA.mxd		
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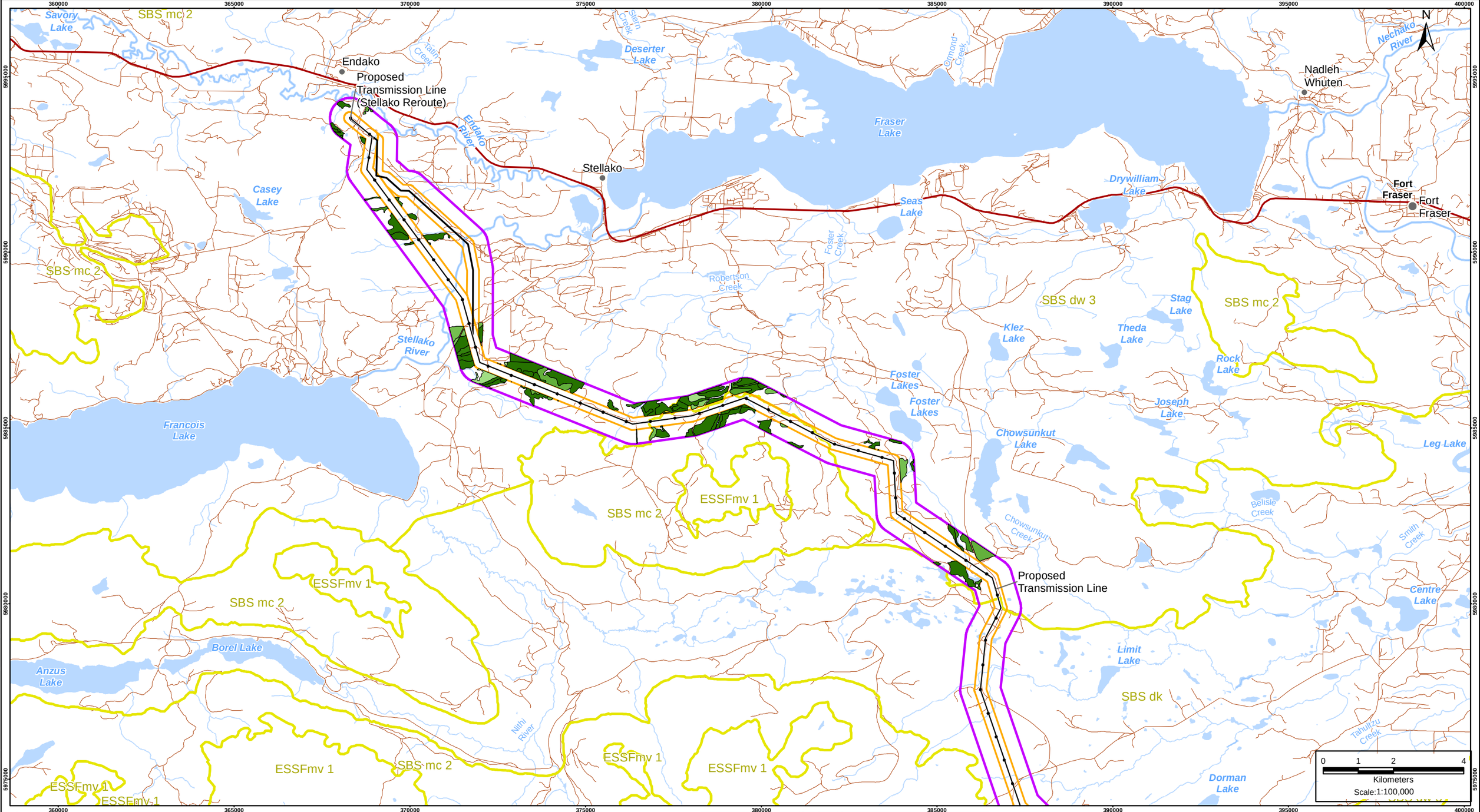


Legend

- Populated Place
- Proposed Transmission Line
- Proposed Transmission Line (Stellako Reroute)
- Existing Road
- Highway
- Stream
- Waterbody
- Biogeoclimatic Zone

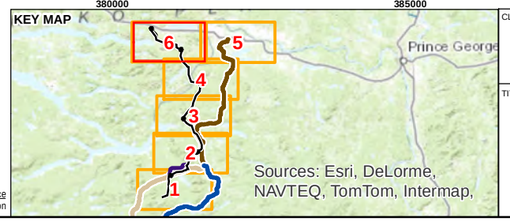
Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area

Percent Old Growth Forest

10, 20, 30, 40, 50, 60, 70, 80, 90, 100

Source
BC Government GeoBC Data Distribution



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Old Growth Forest
RSA
Page 6 of 6

DATE: October, 2013	ANALYST: AA	Figure 3.2-3
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-112_OldGrowth_RSA.pdf
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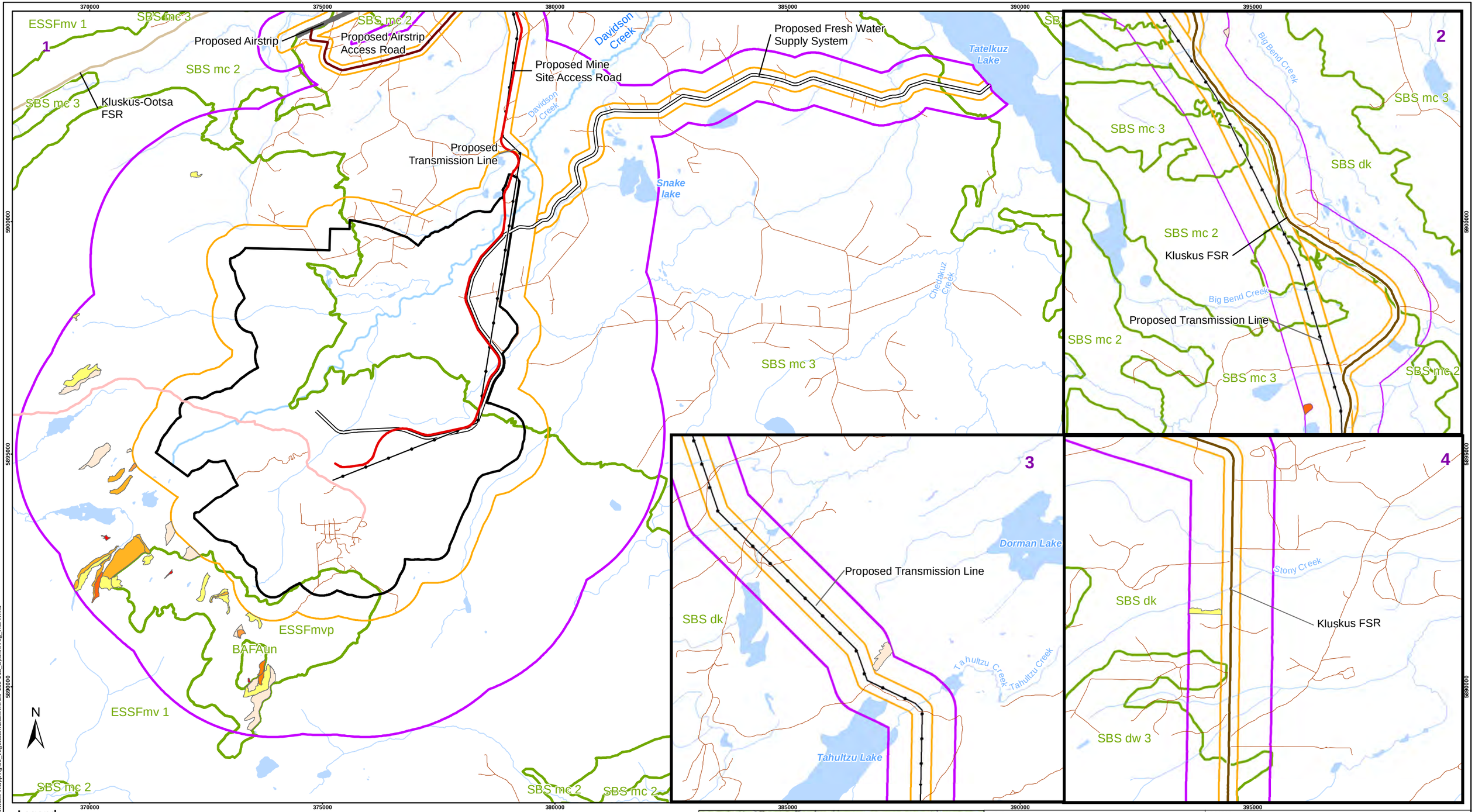
3.2.5.3 Sparsely Vegetated

Sparsely vegetated ecosystems such as cliff, rock outcrops and talus are rare in the RSA. In total they occupy less than 1% of the total RSA area (**Table 3.2-8**) and shown in **Figure 3.2-4**. The majority 32 ha (<1%) occurs in the ESSFmv1 and is composed of rock outcrop and talus. The second highest occurs in the ESSFmv1p with a total of 13 ha (<1%) and is all talus. There is a single occurrence of cliff ecosystem mapped in the RSA and it occurs along the Kluskus FSR in the SBSdk.

Table 3.2-8: Distribution of Sparsely Vegetated in the RSA

BGC Code	Sparsely Vegetated Ecosystem	Site Series	Map Code	Area (ha)	Percent (%)
SBSdk	Cliff	00	CL	<1	<1
SBSdk	Rock Outcrop	00	RO	1	<1
Total Sparsely Vegetated SBSdk				**1**	<1
SBSmc3	Talus	00	TA	1	<1
Total Sparsely Vegetated SBSmc3				**1**	<1
ESSFmv1	Rock Outcrop	00	RO	4	<1
ESSFmv1	Talus	00	TA	28	<1
Total Sparsely Vegetated ESSFmv1				**32**	<1
ESSFmv1p	Talus	00	TA	13	<1
Total Sparsely Vegetated ESSFmv1p				**13**	<1
BAFAun	Talus	00	TA	2	<1
Total Sparsely Vegetated BAFAun				**2**	<1
Total Sparsely Vegetated				**49**	<1
Total RSA				**30,649**	

Note: BGC = Biogeoclimatic, ha = hectares;% = percent; SBSdk = Dry Cool Sub-Boreal Spruce, SBSdw3 = Stuart Dry Warm Sub-Boreal Spruce variant, SBSmc2 = Babine Moist Cold Sub-Boreal Spruce variant; SBSmc3 = Kluskus Moist Cold Sub-Boreal Spruce variant; ESSFmv1 = Nechako Very Cold Engelmann Spruce Subalpine Fir variant; ESSFmv1p = Nechako Very Cold Engelmann Spruce-Subalpine Fir Parkland variant; FSR = Forest Service Road



Legend

- Proposed Airstrip Access Road
- Exploration Road
- Proposed Mine Site Access Road
- Proposed Transmission Line
- Proposed Fresh Water Supply System
- Kluskus Blue FSR
- Kluskus Ootsa FSR
- Existing Road
- Stream
- Waterbody
- Proposed Airstrip
- Proposed Mine Site
- Biogeoclimatic Zone

Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area

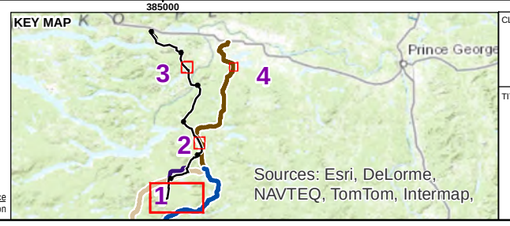
Percent of Sparsely Vegetated Ecosystems

- 10
- 20
- 30
- 40
- 50
- 60
- 70
- 80
- 90
- 100

0 1 2 4
Kilometers
Scale:1:75,000

Source: BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Sparsely Vegetated Ecosystems
RSA

DATE: October, 2013	ANALYST: AA	Figure 3.2-4	
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-113_SparseVeg_RSA.pdf	
GIS FILE: 06-100-113_SparseVeg_RSA.mxd			
PROJECTION: UTM 10	DATUM: NAD83		

amec

Y:\GIS\Projects\VE\VE52095_Richfield_BlackwaterMapping\06_vegetation\Baseline\06-100-113_SparseVeg_RSA.mxd

3.3 Plant Species At Risk

A total of 159 plant species at risk are potentially occurring within the Project area: one conifer, one deciduous shrubs, two ferns or fern allies, 65 forbs, 28 graminoids, and 62 mosses. A detailed list of potentially occurring plant species at risk, including scientific and common names and habitat criteria, is provided in **Annex 4.1**.

Five plant species at risk were documented within the Project area: whitebark pine (*Pinus albicaulis*), meesia moss (*Meesia longiseta*), sickleleaf tomentypnum moss (*Tomentypnum falcifolium*), small-flowered lousewort (*Pedicularis parviflora subsp. parviflora*) and swollen beaked sedge (*Carex rostrata*). Whitebark pine, sickleleaf tomentypnum moss, small-flowered lousewort and meesia moss are found within the mine site LSA. Swollen beaked sedge and meesia moss occur within the mine site access road LSA. All other records, with the exception of the small-flowered lousewort occur within the RSA as well (**Table 3.3-1** and **Figure 3.3-1**).

Table 3.3-1: Plant Species At Risk Documented and Confirmed

Common Name	Scientific Name	BC CDC	SARA	Provincial Rank	Global Rank	Project Component
Meesia moss	*Meesia longiseta*	Blue	Not listed	S3	G4?	Mine Site LSA; Mine Site Access Road LSA; RSA
Sickleleaf tomentypnum moss	*Tomentypnum falcifolium*	Blue	Not listed	S3	G3G5	Mine Site LSA
Small-flowered lousewort	*Pedicularis parviflora subsp. Parviflora*	Blue	Not listed	S3	G4T4	Mine Site LSA; RSA
Swollen beaked sedge	*Carex rostrata*	Blue	Not listed	S2S3	G5	Mine Site Access Road LSA; Transmission Line; RSA
Whitebark pine	*Pinus albicaulis*	Blue	1-E	S3	G3G4	Mine Site LSA; RSA

Note: BC CDC = British Columbia Conservation Data Centre; LSA = Local Study Area, RSA = Regional Study Area; *SARA* = *Species At Risk Act*

All five rare plant species are Blue-listed by the BC CDC. Whitebark pine is on Schedule 1 of the *SARA*. None of these plant species at risk are legally protected within the boundaries of the Project area. Whitebark pine would be protected under the *SARA* (2003) if the Project area was on federal land or occurred on designated critical habitat. The proponent has developed and will implement a whitebark pine management plan (Clason and Moody, 2013) in coordination with provincial regulators.

All five plant species at risk appear in the list of plant species at risk that potentially occur in the Project area (**Annex 4.1**).

Four of the five plant species at risk are found in wetlands and detailed figures are provided in the Wetland Baseline Report. A brief description of each plant species at risk habitat is provided in **Figure 3.3-1**.

370000 372000 374000 376000 378000 380000 382000 384000 386000

5904000 5902000 5900000 5898000 5896000 5894000 5892000 5890000

1

Proposed Airstrip Access Road

Proposed Airstrip

Proposed Airstrip Access Road

Proposed Transmission Line

Proposed Mine Site Access Road

Proposed Fresh Water Supply System

Snake lake

N

2

Proposed Transmission Line (Mills Ranch Reroute)

Proposed Transmission Line

Tatelkuz Creek

Tatelkuz Lake

Legend

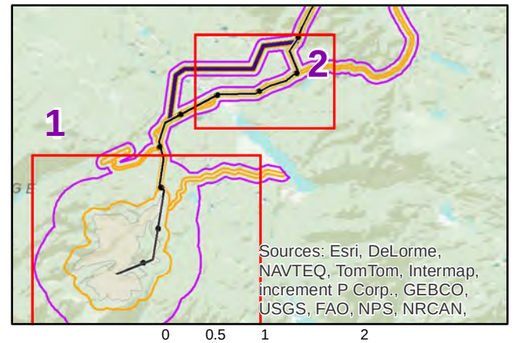
Documented At-risk Plants

- Carex rostrata
- Meesia longiseta
- Pedicularis parviflora ssp. parviflora
- Tomentypnum falcifolium
- Pinus albicaulis
- Proposed Airstrip Access Road
- Proposed Airstrip
- Exploration Road
- Proposed Mine Site Access Road
- Proposed Transmission Line
- Proposed Fresh Water Supply System
- Stream
- Waterbody
- Proposed Mine Site
- Proposed Mine Footprint

Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area

Keymap



0 0.5 1 2

Kilometers

Scale:1:60,000

Note:
Locations of at risk plant species are in some cases cartographic representations to prevent overlap.

Reference
BC Government GeoBC Data Distribution

CLIENT: newgold

PROJECT: Blackwater Gold Project

Documented Plant Species at Risk

DATE:	ANALYST:	
October, 2013	MY	**Figure** 3.3-1
JOB No: VE52095	QA/QC: BO	PDF FILE: 06-100-105_PlantSppAtRisk_terr_SA.pdf
GIS FILE: 06-100-105_PlantSppAtRisk.mxd		
PROJECTION: UTM Zone 10	DATUM: NAD83	amec

Y:\GIS\Projects\VE\VE52095_Richfield_Blackwater\Mapping\06_vegetation\Baseline\06-100-105_PlantSppAtRisk.mxd

3.3.1.1 Whitebark Pine

By combining the site data collected for the Project with that collected by Clason and Moody (2013), an extensive population of whitebark pine (*Pinus albicaulis*) occurs within the mine site LSA and RSA, (**Figure 3.3-3**).

Whitebark pine is a high elevation, moderately shade-tolerant, slow-growing, long-lived plant endemic to the western North American cordillera from northern California to BC (Farrar, 1995). Its distribution does not extend beyond that of the Clark's nutcracker (*Nucifraga columbiana*), because whitebark pine is reliant upon this bird to successfully disperse its seeds. Other vectors, such as grizzly bears, consume whitebark pine cones whole and disperse the seeds at random via their droppings. It is possible that the whitebark pine population in the subalpine parkland of the Project area was established by Clark's nutcrackers shortly after a forest fire (Farrar, 1995; Tomback et al., 2001). Whitebark pine was recorded in the Project area in the SBSmc3, ESSFmv1, ESSFmvp and BAFAun BGC units. The distribution of whitebark pine in forested regions of the Project area is likely the result of historical forest fires.

Figure 3.3-2: Photograph showing Whitebark Pine

368000 372000 376000 380000 384000

ESSFmv 1
ESSFmv 1
SBS mc 2
SBS mc 3
Proposed Transmission Line
Proposed Mine Site Access Road
Proposed Water Supply System
SBS mc 3
ESSFmv 1
ESSFmvp
BAFAun
SBS mc 3
SBS mc 2
SBS mc 2
SBS mc 2

5900000
5896000
5892000
5888000

N

Legend

- Whitebark Pine
- Exploration Road
- Proposed Mine Site Access Road
- Proposed Fresh Water Supply System
- Proposed Transmission Line
- White Bark Pine Distribution
- Biogeoclimatic Zone
- Proposed Mine Site

Terrain, Soils, and Vegetation

- Local Study Area
- Regional Study Area

0 1 2
Kilometres

Scale: 1:60,000

Reference
BC Government GeoBC Data Distribution

CLIENT: newgold

PROJECT: Blackwater Gold Project

Whitebark Pine (Pinus albicaulis)

DATE:	ANALYST:	
October, 2013	AA	**Figure** 3.3-3
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-116_WhiteBarkPine.pdf
GIS FILE: 06-100-116_WhiteBarkPine.mxd		
PROJECTION: UTM Zone 10	DATUM: NAD83	amec

Y:\GIS\Projects\VE\VE52095_Richfield_BlackwaterMapping\06_vegetation\Baseline\06-100-116_WhiteBarkPine.mxd

3.3.1.2 Meesia Moss

Four meesia moss (*Meesia longiseta*) populations were documented; three in wetlands in the proposed Project area and one just outside of it. Two populations occur in the mine site LSA, and a third in the mine site access road LSA. The fourth population is approximately 300 outside of the mine site LSA. Three of the four populations co-occur with small-flowered lousewort. Less than 20 clumps of meesia moss in total were observed at all sites, and all clumps were observed on sphagnum moss hummocks. Meesia moss populations occur in the following ecosystems in the proposed Project area: shore sedge – buckbean – hook-moss fen (wf08); Hudson's Bay club rush-Red hook moss fen (Wf10); and shore sedge – buckbean – peat-moss (Wb13). The Wetlands Baseline Report (AMEC, 2013) provides a detailed description of these wetland ecosystems; shown in **Figure 3.3-4**.

Figure 3.3-4: Photograph showing habitat that supports meesia moss

3.3.1.3 Sickleleaf Moss

Sickleleaf moss (*Tomentypnum falcifolium*) was collected on peat moss hummocks at two sites in the mine site LSA. It was incidentally collected at one site, but comprises about 10% of the ground cover at the second site. The Wetlands Baseline Report (AMEC, 2013) gives a detailed account of the ecosystems in which these populations occur (Wb13; Wf02). This moss is morphologically similar to golden fuzzy fen moss (*Tomentypnum nitens*), but its leaves are sickleshaped instead of straight. The species name *falcifolium* is a Latin compound word meaning "sickle leaf". Sickleleaf moss is widespread but sporadic across boreal and sub-arctic regions of North America; **Figure 3.3-5**.

Figure 3.3-5: Photograph showing habitat that supports Sickleleaf moss

3.3.1.4 Small-Flowered Lousewort

One small-flowered lousewort (*Pedicularis parviflora* subsp. *parviflora*) is located within the mine site LSA and a second within the RSA. A third population occurs just outside of the proposed Project area. There were fewer than 50 individuals recorded from all populations. Populations occur in Wb13, Wf10, and Wf08 wetlands, which are described in detail in the Wetlands Baseline Report (AMEC, 2013).

The identity and relationship of interior populations of small-flowered lousewort to those on the coast of BC is unclear. As currently recognized in BC (Douglas et al., 2000), this species is found in bogs and fens from Haida Gwaii to Hudson's Bay, as well as north to Alaska and northeastern Russia. *P. parviflora* has been recognized by other authors as three different species: *P. macrodonta*, *P. pennellii*, and *P. parviflora.* These taxa divisions are based on the presence or absence of a pair of slender teeth near the apex of the galea, the nature of the bracts, and the height of the plant (Calder and Taylor, 1965; Calder and Taylor, 1968; Hultén, 1968; Porsild and Cody, 1980; Welsh, 1974). The plants collected near the Project do not have a pair of slender teeth near the apex of the galea, and have triangular, pinnate-lobed bracts. This is typical of plants from the interior of BC, but is unlike those from Haida Gwaii. As currently understood, *P. parviflora* is not particularly rare in wetlands in BC. However, future studies may reveal that what is recognized during this baseline study as *P. parviflora* comprises more than one taxon, in which case the entity near the Project may be more rare than currently thought. More scientific work is needed to determine the true identity of *P. parviflora* in BC (Douglas et al., 2009).

3.3.1.5 Swollen Beaked Sedge

Swollen beaked sedge (*Carex rostrata*) was recorded at four locations; one in the mine site access road LSA; a second in the transmission line LSA; a third in the RSA; and a fourth just outside of the proposed Project area.

Swollen beaked sedge was located in Wf01, Wf08, and Wm01 ecosystems. These ecosystems are described in the Wetlands Baseline Report (AMEC, 2013). These wetlands are dominated by beaked sedge (*Carex utriculata)* and swollen beaked sedge. Swollen beaked sedge and beaked sedge often occur together in the proposed Project area, with the former preferring the wetter parts of a wetland, and the latter preferring the drier parts. **Figure 3.3-6** shows the habitat supporting beaked sedge.

Figure 3.3-6: Photograph showing habitat that supports swollen beaked sedge

3.4 Invasive Plants

Using the Invasive Alien Plant Program (IAPP, 2013), a total of 232 records and 24 invasive plant species (**Table 3.4-1**, **Figure 3.4-1**) were recorded within a 20 km buffer of the RSA. Field surveys identified two species: yellow salsify (*Tragopogon dubius*) and orange hawkweed (*Hieracium auriantiacum*). Yellow salsify was found within the mine site LSA while orange hawkweed was identified just outside the RSA near the mine site access road.

3.4.1.1 Mine Site

Field surveys found one invasive plant species within the mine site LSA, Yellow salsify (*Tragopogon dubius*) which is listed as an alien invasive species under Section 1 of the Schedule of the *Community Charter Act* (2004). The relevant regional invasive plant strategy (CCCIPC: MacKenzie, 2012) lists *T. dubius* as a plant that "should be monitored to ensure [it] do[es] not become a serious concern." *T. dubius* is considered invasive in the neighbouring Bulkley-Nechako Regional District (NWIPC, 2012), which is 8.2 km west of the mine site LSA.

3.4.1.2 Transmission Line

Three records and two invasive plant species occur within the transmission line LSA (**Figure 3.4-1**), these are: Canada thistle (CT) and orange hawkweed (OH).

3.4.1.3 Kluskus FSR

There are five records and four invasive plant species within the RSA; the four species are: field scabrous (FS), common tansy (TC), yellow hawkweed (YH) and butter-and-eggs (YT), **Figure 3.4-1**.

This information will be used to develop an Invasive Species Management Plan, and will be presented in the final EA application in the Environmental Management Plan section.

Table 3.4-1: Invasive Plants Documented by IAPP

Map Code	Common Name	Scientific Name with Author	WCA[1]	FRPA[2]	CCA[3]	IAPP[4]	CCCIPC[5]	NWIPC[6]
BK	Brown knapweed	*Centaurea jacea L.*	-	X	-	X	-	X
BT	Bull thistle	*Cirsium vulgare (Savi) Tenore*	-	X	-	X	-	X
CT	Canada thistle	*Cirsium arvense (L.) Scop.*	X	X	X	X	-	X
FS	Field scabious	*Knautia arvensis (L.) Coult.*	Bulkley–nechako	X	X	X	-	X
HB	Annual hawksbeard	*Crepis tectorum L.*	-	-	-	X	-	X
HS	Hawkweed species	*Hieracium spp.*	-	-	-	X	-	-
LS	Leafy spurge	*Euphorbia esula L.*	X	X	X	X	-	X
MH	Meadow hawkweed	*Hieracium caespitosum Dumort.*	-	X	-	X	-	-
MK	Meadow knapweed	*Centaurea debeauxii = Centaurea x moncktonii C.E. Britton*	Columbia–shuswap	-	-	X	X	-
MO	Mountain bluet	*Centaurea montana L.*	-	-	-	X	-	X
MT	Marsh thistle	*Cirsium palustre (L.) Scop.*	Bulkley–nechako	X	X	X	-	X
OD	Oxeye daisy	*Leucanthemum vulgare Lam.*	Cariboo	X	X	X	-	X
OH	Orange hawkweed	*Hieracium aurantiacum L.*	Bulkley–Nechako and Cariboo	X	X	X	-	-
PP	Perennial peppergrass	*Lepidium latifolium L.*	East kootenay, thompson–nicola	X	X	X	-	-
QH	Queen-devil hawkweed	*Hieracium praealtum Vill. ex Gochnat*	-	-	-	X	-	-
SH	Scentless chamomile	*Matricaria perforata = Tripleurospermum inodorum*	X	X	X	X	X	X
SK	Spotted knapweed	*Centaurea biebersteinii [stoebe ssp. micranthos L. (Gugler) Hayek]*	X	X	X	X	X	X
SO	Sowthistle	*Sonchus spp.*	-	-	-	X	-	X
TC	Common tansy	*Tanacetum vulgare L.*	Bulkley–nechako	X	-	X	-	X
TH	Tall hawkweed	*Hieracium piloselloides Vill.*	-	-	-	X	-	-
WC	White cockle	*Lychnis alba = Silene latifolia ssp. alba (P. Mill.) Greuter & Burdet*	-	-	-	X	-	X
YD	Yellow-devil hawkweed	*Hieracium glomeratum Froel.*	-	-	-	X	-	-
YH	Yellow hawkweed	*Hieracium pratense = Hieracium caespitosum Dumort.*	-	-	-	X	-	-
YT	butter-and-eggs	*Linaria vulgaris P. Miller*	X	X	X	X	-	X
WG	yellow salsify	*Tragopogon dubius Scop.*	-	-	X	X	-	X

Notes: 1WCA = Weed Control Act (Part I or II of Schedule A; 1996); 2FRPA = Forest & Range Practices Act (2004); 3CCA = Community Charter Act (Sections 1 or 2; 2004); 4IAPP = Invasive Alien Plant Program (2013); 5CCCIPC = Cariboo Chilcotin Coast Invasive Plant Committee (Annex 1; 2012); 6NWIPC = Northwest Invasive Plant Council (Table 3; 2012).

360000 400000 440000 480000

5960000

5920000

N

Endako
Stellako
Fraser Lake
Nadleh Whuten
Fort Fraser
Engen
Vanderhoof
Weneez
Sinkut River
Saik'uz
Nulki
Mapes
Proposed Transmission Line
(Stellako Reroute)
François Lake
Fraser Lake
Nechako River
Stellako
Smith Creek
Tachick Lake
Nulki Lake
Stuart River
Stony
Ni thi River
Tahultzu Lake
Nechako River
Hallett Lake
Creer Creek
Knapp Creek
Targe Creek
Cheslatta
Bird Creek
Corkscrew
Sinkut River
Cluculz Lake
Cluculz Creek
Khal
16
Proposed Transmission Line
Kluskus FSR
BULKLEY-NECHAKO
FRASER-FORT GEORGE
Lucas Lake
Lucas Creek
Knewstubb Lake
Big Bend Creek
Finger Lake
Tatuk Lake
Chilako River
Proposed Transmission Line
(Mills Ranch Reroute)
Chedakuz Creek
Entiako River
Kluskus-Ootsa FSR
Proposed Airstrip
Taiuk Creek
Batnuni Lake
Euchiniko River
Nataniko Creek
CARIBOO
Tatelkuz Lake
Top Lake
Proposed Fresh
Water Supply System
Kluskus-Blue FSR
Euchiniko
Nazko
Exploration Road
Fawnie Creek
Proposed Mine
Access Road
Kuyakuz Lake
Euchiniko Lakes

Legend

- Populated Place
- Highway
- Kluskus FSR
- Kluskus-Blue FSR
- Kluskus-Ootsa FSR
- Exploration Road
- Existing Transmission Line
- Stream (>= 4th Order)
- Waterbody (>= 100 Ha)
- Parks & Protected Areas
- Proposed Mine Access Road
- Proposed Water Pipeline Route
- Proposed Transmission Line
- Proposed Transmission Line (Stellako Reroute)
- Proposed Transmission Line (Mills Ranch Reroute)
- Proposed Airstrip
- Proposed Mine Site

Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area
- Regional District

Invasive Plants

Centaurea
- Centaurea biebersteinii
- Centaurea debeauxii
- Centaurea jacea
- Centaurea montana

Cirsium
- Cirsium arvense
- Cirsium palustre
- Cirsium vulgare

Hieracium
- Hieracium aurantiacum
- Hieracium caespitosum
- Hieracium glomeratum
- Hieracium piloselloides
- Hieracium praealtum
- Hieracium pratense
- Hieracium spp

Other
- Crepis tectorum
- Euphorbia esula
- Knautia arvensis
- Lepidium latifolium
- Leucanthemum vulgare
- Linaria vulgaris
- Lychnis alba
- Matricaria perforata
- Sonchus spp
- Tanacetum vulgare
- Tragopogon dubius

Scale: 1:450,000

0 5 10 20

Kilometres

Reference

BC Government GeoBC Data Distribution

CLIENT: newgold

PROJECT: Blackwater Gold Project

Invasive Plants Documented by IAPP

DATE: October, 2013	ANALYST: MY	**Figure** 3.4-1
JOB No: VE52277	QA/QC: LR	PDF FILE: 06-100-063_InvasivePlant_2013_v2.pdf
GIS FILE: 06-100-063_InvasivePlant_2013_v2.mxd		
PROJECTION: UTM Zone 10	DATUM: NAD83	amec

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4.0 SUMMARY

The Project LSAs combined are approximately 14,000 ha of which roughly 11,000 ha (85%) consists of upland ecosystems and 1,000 ha (8%) consists of non-vegetated, sparsely vegetated and anthropogenic. The dominant ecosystem is the Subalpine fir - Rhododendron - Feathermoss (ESSFmv1 01/FR) with a total of 2,010 ha (14%). The second most common is the Hybrid white spruce - Huckleberry (SBSmc3 01/SB) with a total of 1,981 ha (14%) and the Hybrid white spruce - Purple peavine (SBSdk 01/SP) has a total of 990 ha (7%).

The RSA is a approximately 31,000 ha of which approximately 25,400 ha (94%) are upland ecosystems and 1,660 (6%) are non-vegetated, sparsely vegetated and anthropogenic. The baseline case confirms the presence of ecosystems at risk, sensitive ecosystems, plant species at risk and invasive plants within the Project LSA and RSA.

In total ten ecosystems at risk were mapped in the Project LSA and twelve in the RSA, all of which occur in either the SBSdk and SBSdw3. As a result the project components that support ecosystems at risk are the: transmission line, Stellako reroute, Mills Ranch reroute and Kluskus FSR LSAs.

Sensitive ecosystems including riparian, old growth forest, and sparsely vegetated areas are present in all project components with the exception of sparsely vegetated which are only present in the mine site.

Five plant species at risk were documented within the Project area: whitebark pine (*Pinus albicaulis*), meesia moss (*Meesia longiseta*), sickleleaf tomentypnum moss (*Tomentypnum falcifolium*), small-flowered lousewort (*Pedicularis parviflora subsp. parviflora*) and swollen beaked sedge (*Carex rostrata*). Whitebark pine, sickleleaf tomentypnum moss, small-flowered lousewort and meesia moss are found within the mine site LSA. Swollen beaked sedge and meesia moss occur within the mine site access road LSA and once location of swollen beaked sedge also occurs in the transmission line LSA. All of the confirmed plant species at risk are found in wetlands with the exception of whitebark pine.

The Invasive Alien Plant Program (IAPP) identified a total of 232 records and 24 invasive plant species that occur within 20 km of the RSA. In addition field surveys recorded both yellow salsify (*Tragopogon dubius*) and orange hawkweed (*Hieracium aurantiacum*).

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ANNEXES

Annex 1
Map Legend

Table 1.1: TEM Map Label

10	FR	k	5	C
Decile	Ecosystem	Site Modifier	Structural Stage	Stand Composition

Table 1.2: TEM Map Legend

Decile Code	***Description***
1	10%
2	20%
3	30%
4	40%
5	50%
6	60%
7	70%
8	80%
9	90%
10	100%
Site Series Code	***Site Series Description***
e.g., FR	Subalpine fir – Rhododendron – Feathermoss
Site Modifiers Code	***Description***
c	coarse-textured soils
d	deep soils (>100 cm to bedrock)
f	fine-textured soils
j	gentle slope (slope <25%)
k	cool aspect (285°–135°, slope >25%)
m	medium – texture soils
p	peaty – material
s	shallow soils (20 – 100 cm to bedrock)
v	very shallow (<20 cm to bedrock)
w	warm aspect (135°–285°, slope >25%)

Decile Code	*Description*
Structural Code	***Structural Stage***
1	Sparse/Bryoid
2a	Forb dominated
2b	Graminoid dominated
2c	Aquatic
2d	Dwarf – shrub dominated
3	Trees or shrubs below 10 m
3a	Low Shrub – less than 2 m
3b	Tall Shrub – between 2 m and 10 m
4	Pole sapling (< 40 years)
5	Young Forest (generally 40 – 80 years)
6	Mature Forest (SBSdk, SBSdw3, SBSmc2, SBSmc3 – 80-140 years & ESSFmv1, ESSFxvp and BAFAun – 80 – 250 years)1, ESSFxvp and).
7	Old Forest (SBSdk, SBSdw3, SBSmc2, SBSmc3 - >140 years & ESSFmv1, ESSFxvp and BAFAun >250 years)
Stand Composition Code	***Description***
C	Conifer dominated forest
B	Deciduous dominated forest
M	Mixed forest

Annex 2
Plot Data

Annex 2.1
Chronological Data Summary

Table 2.1: Chronological Summary of Survey Location and Description of Survey Type

Year	Survey Location *	Survey Type	Description of Data	Date of Survey
2011	Mine Site	Plant Species at Risk	Site data and species list from 27 species at risk survey locations.	July 11 to 14, 2011 And August 9 to 11, 2011
2011	Mine Site	TEM	Site, soil, terrain, species list and percent cover estimates from 130 ecosystem plots (full, ground and visual).	August 10 to 18, 2011
2011	Mine Site	Metals	Collection of soils and vegetation samples from 23 sites	August 10 to 18, 2011
2012	Mine Site	Plant Species at Risk	Site data and species list from 34 species at risk survey locations.	July 9 to 14, 2012
2012	Mine Site	TEM	Site, soil, terrain, species list and percent cover estimates from 31 ecosystem plots (full, ground and visual).	July 24 to 31, 2012
2012	Mine Site	Metals	Collection of soils and vegetation samples from 16 sites	July 24 to 31, 2012
2012	Proposed Gravel Pit	TEM	Site, soil, terrain, species list and percent cover estimates from 11 ecosystem plots (full and GIF).	September 25 to 27, 2012
2012	New Access Road	TEM	Site, soil, terrain, species list and percent cover estimates from 10 ecosystem plots (full, ground and visual).	September 25 to 27, 2012
2012	Kluskus Main	TEM	Site, soil, terrain, species list and percent cover estimates from 8 ecosystem plots (full, ground and visual).	September 25 to 27, 2012
2012	Lower Transmission Line	TEM	Site, soil, terrain, species list and percent cover estimates from 32 ecosystem plots (full, ground and visual).	July 24 to 31, 2012
2012	Upper Transmission Line	TEM	Site, soil, terrain, species list and percent cover estimates from 29 ecosystem plots (full, ground and visual).	September 25 to 27, 2012
2012	Water Pipeline	TEM	Site, soil, terrain, species list and percent cover estimates from 10 ecosystem plots (full, ground and visual).	October 2 to October 3, 2012
2013	Mine Site	TEM	Site, soil, terrain, species list and percent cover estimates from 55 ecosystem plots (full, ground and visual).	July 9 to July 21, 2013

Year	Survey Location *	Survey Type	Description of Data	Date of Survey
2013	Mine Site Access Road	TEM	Site, soil, terrain, species list and percent cover estimates from 9 ecosystem plots (full, ground and visual).	July 9 to July 21, 2013
2013	Fresh Water Supply System	TEM	Site, soil, terrain, species list and percent cover estimates from 14 ecosystem plots (full, ground and visual).	July 9 to July 21, 2013
2013	Airstrip	TEM	Site, soil, terrain, species list and percent cover estimates from 15 ecosystem plots (full, ground and visual).	July 9 to July 21, 2013
2013	TL - main	TEM	Site, soil, terrain, species list and percent cover estimates from 32 ecosystem plots (full, ground and visual).	July 9 to July 21, 2013
2013	TL - Mills Ranch Reroute	TEM	Site, soil, terrain, species list and percent cover estimates from 7 ecosystem plots (full, ground and visual).	July 9 to July 21, 2013
2013	TL- Stellako Reroute	TEM	Site, soil, terrain, species list and percent cover estimates from 6 ecosystem plots (full, ground and visual).	July 9 to July 21, 2013
2013	Kluskus FSR	TEM	Site, soil, terrain, species list and percent cover estimates from 1 ecosystem plots (full, ground and visual).	July 9 to July 21, 2013
2013	Mine Site	Plant Species at Risk	Site data and species list from 2 species at risk survey locations.	July 9 to July 21, 2013
2013	TL - Main	Plant Species at Risk	Site data and species list from 5 species at risk survey locations.	July 9 to July 21, 2013
2013	TL - Mills Ranch	Plant Species at Risk	Site data and species list from 2 species at risk survey locations.	July 9 to July 21, 2013
2013	TL - Stellako	Plant Species at Risk	Site data and species list from 2 species at risk survey locations.	July 9 to July 21, 2013

*__Note__: Survey location corresponds to the project component known at the time of sampling; TEM - Terrestrial Ecosystem Mapping; TL - transmission line; Fresh Water Supply Line previously known as Water Pipeline; Mine Site Access Road previously known as New Mine Access Road; Proposed Gravel Pit no longer a project component in 2013; Airstrip was added in 2013.

Annex 2.2
Database

Map Plot No.	Plot No.	Field No.	Proj ID	FS Reg District	Site Plot Qlty	Veg Plot Qlty	Soil Plot Qlty	Date	Site Surveyor	Location	Ecosection	UTM Zone	UTM Easting	UTM Northing	Zone	Sub Zone	Site Series	Map Unit	Moisture Regime	Nutrient Regime	BC Listing	Structural Stage	Structural Stage Mod	El.	Slope Gradient	Aspect	Meso Slope Position	Surface Shape	Soil Surveyor	Bedrock Geology1	Bedrock Geology2	Bedrock Geology3	Coarse Frag Lith1	Coarse Frag Lith2	Coarse Frag Lith3	Terrain Texture Surf	Surficial Mat Surf	Surface Exp Surf	Geo Mor Pro Surf	Terrain Texture Sub Surf	Surficial Material Sub Surf
T13-149R	T13149R	T149	Blackwater	RNI.DVA	poor	Good	poor	07/10/2013	CS	Minestie LSA		10	371763	5894375	ESSF	mv1								1378													u	O	p			
T13-148G	T13148G	G148	Blackwater	RNI.DVA	Good	good	good	21/07/2013	SEB, CS, PDU	Minesite	NAU	10	371637	5894328	ESSF	mv1	00	Wb13	8	C	Blue	2b		1349	3	308	TO										u	O	p			
T13-147G	T13147G	G147	Blackwater	RNI.DVA	Good	good	good	21/07/2013	CS, PDU, SEB	WPL	NAU	10	385721	5902990	SBS	mc3	00	Wf07	8	D		3a			0	999	DP										m	O	x		z	L
T13-146G	T13146R	G146	Blackwater	RNI.DVA	Good	good	good	21/07/2013	SEB, CS, PDU	WPL	NAU		385575	5902784	SBS	mc3	00	Wf02	8	C	Blue				0	999	DP										m	O	p			
T13-145G	T13145G	G145	Blackwater	RNI.DVA	Good	good	good	21/07/2013	SEB, CS, PDU	Mine Access Road	NAU	10	378726	5905646	SBS	mc3	01	SB	4	C		7a		1040	65	282	UP										szd	M	k			
T13-144G	T13144G	G144	Blackwater	RNI.DVA	Good	good	good	21/07/2013	SEB, CS, PDU	Mine Access Road	NAU	10	378714	5905944	SBS	mc3	00	Ws04	6	D		3b		1023	2	117	DP										u	O	v		szd	MF
T13-143F	T13143F	F143	Blackwater	RNI.DVA	Good	good	good	21/07/2013	SEB, PDU, CS	Mine Access Road	NAU	10	378697	5906318	SBS	mc3	01	SB	4	C		6		1045	65	323	LW	ST	PDU	ea	ei		eb	ia	ii	gs	FG	r			
T13-142G	T13142G	G142	Blackwater	RNI.DVA	Good	good	good	21/07/2013	SEB, CS, PDU	Mine Access Road	NAU	10	378657	5906392	SBS	mc3	03	LF	2	B		3a		1042	40	141	UP	CV									sd	FG	r			
T13-141G	T13141G	G141	Blackwater	RNI.DVA	Good	good	good	21/07/2013	SEB, CS, PDU	Mine Access Road	NAU	10	378854	5905252	SBS	mc3	07	ST	5	C		6		1060		999	LV	ST									msd	M	b	L		
T13-140G	T13140G	G140	Blackwater	RNI.DVA	Good	good	good	21/07/2013	SEB, CS, PDU	Mine Access Road	NAU	10	378978	5901833	SBS	mc3	09	Wb05	7	D		6		1117	999	1	DP	ST									u	O	v	L	smd	M
T13-139V	T13139V	V139	Blackwater	RNI.DVA	fair	poor	poor	20/07/2013	SEB, CS, PDU	Mine Access Road	NAU	10	379314	5903439	SBS	mc3	03	LF	8	D		2b		1078			DP										m	O	v			
T13-139G	T13139G	G139	Blackwater	RNI.DVA	Good	good	good	21/07/2013	SEB, CS, PDU	Mine Access Road	NAU	10	378909	5901919	SBS	mc3	04	Wf01	3	C		6		1118	2	135	LV	ST									zds	FG	p			
T13-138G	T13138G	G138	Blackwater	RNI.DVA	Good	good	good	20/07/2013	SEB, CS, PDU	Mine Access Road	NAU	10	379116	5903256	SBS	mc3	06	BF	5	C		6		1084	2	23	LW	ST									smd	M	b			
T13-137G	T13137G	G137	Blackwater	RNI.DVA	Good	good	good	20/07/2013	SEB, CS, PDU	Mine Access Road	NAU	10	378955	5902415	SBS	mc3	01	SB	4	C		3b		1118			MD	ST									zds	M	b			
T13-136G	T13136G	G136	Blackwater	RNI.DVA	Good	good	good	20/07/2013	SEB, CS, PDU	Minesite	NAU	10	379024	5900448	SBS	mc3	03	LF	3	B		3a		1138	1	999	LV	ST									sg	FG	p			
T13-135G	T13135G	G135	Blackwater	RNI.DVA	Good	good	good	20/07/2013	SEB, CS, PDU	Minesite	NAU	10	379173	5900531	SBS	mc3	09	Wb05	7	D		5		1131	0	999	DP	ST									u	O	v	L	sg	FG
T13-134G	T13134G	G134	Blackwater	RNI.DVA	Good	good	good	20/07/2013	SEB, CS, PDU	Minesite	NAU	10	379500	5900011	SBS	mc3	07	ST	5	D		6		1136	30	30	GU	ST									u	O	v	V	zsg	FG
T13-133G	T13133G	G133	Blackwater	RNI.DVA	Good	good	good	20/07/2013	SEB, CS, PDU	Minesite	NAU	10	379621	5900482	SBS	mc3	03	LF	3	B		3a		1147	0	999	LV	ST									sg	FG	pur			
T13-132G	T13132G	G132	Blackwater	RNI.DVA	Good	good	good	20/07/2013	SEB, CS, PDU	Minesite	NAU	10	379608	5900361	SBS	mc3	03	LF	2	B		7		1146	1	999	LV	ST									ds	FG	pu			
T13-131F	T13131F	F131	Blackwater	RNI.DVA	Good	good	good	20/07/2013	SEB, CS, PDU	Minesite	NAU	10	379386	5900310	SBS	mc3	08	Ws07	7	D		7a		1131	3	18	DP	ST	PDU								u	O	v			F
T13-130G	T13130G	G130	Blackwater	RNI.DVA	Good	good	good	20/07/2013	SEB, CS, PDU	Minesite	NAU	10	379419	5900252	SBS	mc3	01	SB	4	C		7a		1133	38	358	LW	CC									sg	FG	uh	H		
T13-129G	T13129G	G129	Blackwater	RNI.DVA	Good	good	good	20/07/2013	SEB, CS, PDU	Minesite	NAU	10	378976	5900044	SBS	mc3	03	LF	2	B		6		1142	1	999	LV	ST									sg	FG	tj			
T13-128G	T13128G	G128	Blackwater	RNI.DVA	Good	good	good	20/07/2013	SEB, CS, PDU	Minesite	NAU	10	378933	5900160	SBS	mc3	08	Ws07	5	C		7a		1134	1	999	TO	ST									gs	FA	p			
T13-127F	T13127F	F127	Blackwater	RNI.DVA	Good	good	good	20/07/2013	SEB, CS, PDU	Minesite	NAU	10	378912	5900269	SBS	mc3	03	LF	3	B		6		1142	0	999	LV	ST	PDU				ea	ei	ia	ds	FG	p			
T13-126G	T13126G	G126	Blackwater	RNI.DVA	Good	good	good	19/07/2013	SEB, CS, PDU	Minesite	NAU	10	379037	5900683	SBS	mc3	00	Wm01	8	D		2b		1136			DP										u	O	v			
T13-125G	T13125G	G125	Blackwater	RNI.DVA	Good	good	good	19/07/2013	SEB, CS, PDU	Minesite	NAU	10	379192	5900802	SBS	mc3	08	Ws07	6	D		7a		1132			DP										zsd	M	b	L		
T13-124G	T13124G	G124	Blackwater	RNI.DVA	Good	good	good	19/07/2013	SEB, CS, PDU	Minesite	NAU	10	379158	5900894	SBS	mc3	03	LF	2	B		5		1144			MD	ST									ds	FG	ak			
T13-123G	T13123G	G123	Blackwater	RNI.DVA	Good	good	good	19/07/2013	SEB, CS, PDU	Minesite	NAU	10	379162	5901074	SBS	mc3	03	LF	3	B		3a		1139	38	18	UP	ST									ds	FG	r	H		
T13-122G	T13122G	G122	Blackwater	RNI.DVA	Good	good	good	19/07/2013	SEB, CS, PDU	Minesite	NAU	10	379029	5901157	SBS	mc3	03	LF	2	D		5		1128	12	999	CR	CV									ds	FG	u			
T13-121G	T13121G	G121	Blackwater	RNI.DVA	Good	good	good	19/07/2013	SEB, CS, PDU	Minesite	NAU	10	378859	5901193	SBS	mc3	00	Wm01	7	D		2b		1118			DP										u	O	v			MorFG
T13-120G	T13120G	G120	Blackwater	RNI.DVA	Good	good	good	19/07/2013	SEB, CS, PDU	Minesite	NAU	10	378712	5901044	SBS	mc3	05	BH	3	B		6		1133	8	357	UP	CV									ds	FG	ju			
T13-119G	T13119G	G119	Blackwater	RNI.DVA	Good	good	good	19/07/2013	SEB, CS, PDU	Minesite	NAU	10	378620	5900781	SBS	mc3	08	Ws07	6	D		2b		1134	80	999	DP										u	O	v	L	zds	FG
T13-118R	T13118R	T13118R	Blackwater	RNI.DVA	poor	Good	poor	07/10/2013	CS			10	378556	5900525	SBS	mc3								1140																		
T13-117G	T13117G	G117	Blackwater	RNI.DVA	Good	good	good	19/07/2013	SEB, CS, PDU	Minesite	NAU	10	378570	5900436	SBS	mc3	01	SB	4	C				1143	48	355	LW	CC									ds	FG	a			
T13-116G	T13116G	G116	Blackwater	RNI.DVA	Good	good	good	19/07/2013	SEB, CS, PDU	Minesite	NAU	10	378643	5900377	SBS	mc3	00	OW						1147			DP											N				
T13-115G	T13115G	G115	Blackwater	RNI.DVA	Good	good	good	19/07/2013	SEB, PDU, CS	Minesite	NAU	10	378676	5900353	SBS	mc3	01	SB	4	C		6		1156	65	323	UP	ST									cs	FG	k			
T13-114G	T13114G	G114	Blackwater	RNI.DVA	Good	good	good	19/07/2013	SEB, CS, PDU	Minesite	NAU	10	378714	5900356	SBS	mc3	03	LF	2	B				1159	1	120	CR	CV									ds	FG	r			
T13-113G	T13113G	G113	Blackwater	RNI.DVA	Good	good	good	19/07/2013	SEB, CS, PDU	Minesite	NAU	10	378737	5900321	SBS	mc3	01	SB	4	C		6		1145	12	140	LW	CC									zds	FG	j			
T13-112G	T13112G	G112	Blackwater	RNI.DVA	Good	good	good	18/07/2013	SEB, CS, PDU	Minesite	NAU	10	378295	5895154	ESSF	mv1	04	FG	5	C		6		1301	13		MD	CC									dzs	M	b	L		
T13-111G	T13111G	G111	Blackwater	RNI.DVA	Good	good	good	18/07/2013	SEB, CS, PDU	Minesite	NAU	10	378058	5894950	ESSF	mv1	01	FR	4	C		6		1351			MD	ST									zds	M	b			
T13-110G	T13110G	G110	Blackwater	RNI.DVA	Good	good	good	18/07/2013	SEB, CS, PDU	Minesite	NAU	10	377834	5894720	ESSF	mv1	05	Ws08	5	C		6		1333	10	72	TO	CC									ds	F	tp	EV		
T13-109G	T13109G	G109	Blackwater	RNI.DVA	Good	good	good	18/07/2013	SEB, CS, PDU	Minesite	NAU	10	377508	5894546	ESSF	mv1	04	FG	5	C		7a		1386			MD										zsd	M	b	L		
T13-108G	T13108G	G108	Blackwater	RNI.DVA	Good	good	good	18/07/2013	SEB, CS, PDU	Minesite	NAU	10	377380	5894394	ESSF	mv1	04	FG	5	C		6		1411	10	41	MD	ST									zsd	M	b	L		
T13-107G	T13107G	G107	Blackwater	RNI.DVA	Good	good	good	18/07/2013	SEB, CS, PDU	TL - Mills Ck	NAU	10	387546	5913391	SBS	mc3	05	BH	4	B		6		1074			LW										zds	M	b			
T13-106G	T13106G	G106	Blackwater	RNI.DVA	Good	good	good	18/07/2013	SEB, CS, PDU	TL - Mills Ck	NAU	10	387441	5913135	SBS	mc3	03	LF	3	B		6		1074	1	265	CR	CV									zds	M	b			
T13-105R	T13105R	T13105R	Blackwater	RNI.DVA	poor	Good	poor	07/10/2013	CS	Mills Creek reroute		10	387335	5912704										1055																		
T13-104F	T13104F	F104	Blackwater	RNI.DVA	Good	good	good	18/07/2013	SEB, CS, PDU	TL - Mills Ck	NAU	10	387301	5912736	SBS	mc3	05	BH	4	B		6		1060	7	127	UP	CV	PDU				ia	ii	ei	zds	M	b			
T13-103G	T13103G	G103	Blackwater	RNI.DVA	Good	good	good	18/07/2013	SEB, CS, PDU	TL - Mills Ck	NAU	10	387007	5912163	SBS	mc3	00	Wm01	8	C				1059			DP										sdz	M	d			
T13-102G	T13102G	G102	Blackwater	RNI.DVA	Good	good	good	18/07/2013	SEB, CS, PDU	TL - Mills Ck	NAU	10	387003	5912026	SBS	mc3	01	SB	4	C		5		1055			LV	ST									dzs	M	b			
T13-101R	T13101R	T13101R	Blackwater	RNI.DVA	poor	Good	poor	07/10/2013	CS			10	386876	5911973										1051																		
T13-100G	T13100G	G100	Blackwater	RNI.DVA	Good	good	good	18/07/2013	SEB, CS, PDU	TL - Mills Ck	NAU	10	386805	5911958	SBS	mc3	05	BH	4	B		5		1057			LV										sdz	M	b	L		
T13-099G	T13099G	G099	Blackwater	RNI.DVA	Good	good	good	18/07/2013	SEB, CS, PDU	TL - Mills Ck	NAU	10	386731	5911830	SBS	mc3	00	Wf06	8	D	Blue	2b		1052			DP										u	O	pv	U		

Map Plot No.	Surface Exp Sub Surf	Geo Mor Pro Sub Surf	Flooding Regime Freq	Moisture Regime Sub	Flooding Regime Dur	Soil Drainage	Seepage Depth	Root Restricting Type	Root Restricting Depth	Root Zone Particle Size	Rooting Depth	Soil Class Sub Group	Soil Class Group	Humus Form	pH Method Code Mineral	pH Method Code Organic	Strata Cover Tree	Strata Cover Shrub	Strata Cover Herb	Strata Cover Moss	Hydro Geo System	Hydro Geo Sub System
T13-149R																						
T13-148G							2	W	2					MR								
T13-147G	p					p	3	W	3		15			MR				30	60	80		
T13-146G						p	1	W	1					MR								
T13-145G						w					34			R			25	30	20	95		
T13-144G	b					i	25				25			MR				75	60			
T13-143F			X			w		N		S	49	E	B	HR			35	40	30	80	U	
T13-142G						w					31			R				60	15	5		
T13-141G						i	44				23			R			20	25	55	80		
T13-140G	d					i	3	W	3		27			MR			15	55	40	60		
T13-139V						p	3	W	3					MR				30	60	30		
T13-139G						w					32			R			30	25	55	95		
T13-138G						i	28	C	28		28			R			35	50	25	95		
T13-137G						w					23			R				55	40	25		
T13-136G											32			R								
T13-135G	p						2	W	2		23			MR			30	30	40	80		
T13-134G	a					p					32			R			40	40	45	95		
T13-133G						w					25			R				35	55	30		
T13-132G						w					29			R			25	35	30	70		
T13-131F	p					p	6	W	6		30	T	M	MR			35	30	50	80	P	
T13-130G						w					37			R			25	30	45	95		
T13-129G						w					35			R			5	35	40	70		
T13-128G						m					27			R			5	10	80			
T13-127F			X			w		N		SS	30	E	B	HR			35	20	15	75	U	
T13-126G						p								MR					70			
T13-125G						i	31				19			UR			40	30	70	90		
T13-124G						w					32			R			15	45	30	25		
T13-123G						w					30			R				20	40	30		
T13-122G						w					29			R			20	40	15	60		
T13-121G						p	30	W	30					MR				10	70			
T13-120G						w					34			R			5	30	30	65		
T13-119G	p					i	37				37			MR				45	50	15		
T13-118R																						
T13-117G						w					41			R			25	30	40	95		
T13-116G																			10			
T13-115G						w					35			R			20	25	20	95		
T13-114G						w					31			R			15	30	20	30		
T13-113G						w					35			R			25	45	30	90		
T13-112G						i	33				25			R			20	55	40	75		
T13-111G						m					32			R			10	50	60	90		
T13-110G						x					30						10	40	65	90		
T13-109G						i	36				31			R			25	40	45	95		
T13-108G						i	18				27			MR			5			20		
T13-107G						w					20			R			10	20	10	95		
T13-106G						w					29			R			20	45	40	65		
T13-105R																						
T13-104F						w		N		CL	30	E	B	HR			40	30	20	95	U	
T13-103G						v		W						MR					10	20		
T13-102G						w					27			R			35	20	5	95		
T13-101R																						
T13-100G						m	60				28			R			5	30	50			
T13-099G						v		W						MR				15	50	10		

Map Plot No.	Plot No.	Field No.	Proj ID	FS Reg District	Site Plot Qlty	Veg Plot Qlty	Soil Plot Qlty	Date	Site Surveyor	Location	Ecosection	UTM Zone	UTM Easting	UTM Northing	Zone	Sub Zone	Site Series	Map Unit	Moisture Regime	Nutrient Regime	BC Listing	Structural Stage	Structural Stage Mod	El.	Slope Gradient	Aspect	Meso Slope Position	Surface Shape	Soil Surveyor	Bedrock Geology1	Bedrock Geology2	Bedrock Geology3	Coarse Frag Lith1	Coarse Frag Lith2	Coarse Frag Lith3	Terrain Texture Surf	Surficial Mat Surf	Surface Exp Surf	Geo Mor Pro Surf	Terrain Texture Sub Surf	Surficial Material Sub Surf
T13-098G	T13098G	G098	Blackwater	RNI.DVA	Good	good	good	17/07/2013	SEB, CS, PDU	Minesite	NAU	10	377741	5900103	SBS	mc3	01	SB	4	C		3a		1168	999	1	LV										ds	FG	u			
T13-097G	T13097G	G097	Blackwater	RNI.DVA	Good	good	good	17/07/2013	SEB, CS, PDU	Minesite	NAU	10	377987	5900074	SBS	mc3	05	BH	3	B		6		1166			CR										ds	FG	u			
T13-096G	T13096G	G096	Blackwater	RNI.DVA	Good	good	good	17/07/2013	SEB, PDU, CS	Minesite	NAU	10	377998	5899952	SBS	mc3	08	Ws07	6	D		7a		1165			DP										h	O	x		gs	F
T13-095G	T13095G	G095	Blackwater	RNI.DVA	Good	good	good	17/07/2013	SEB, CS, PDU	Minesite	NAU	10	378024	5899872	SBS	mc3	01	SB	4	C		6		1171	33	327	LV	CC									ds	FG	a			
T13-094G	T13094G	G094	Blackwater	RNI.DVA	Good	good	good	17/07/2013	SEB, CS, PDU	Minesite	NAU	10	377711	5899520	SBS	mc3	03	LF	3	B		6		1198	60	311	UP	ST									ds	FG	kv			
T13-093G	T13093G	G093	Blackwater	RNI.DVA	Good	good	good	17/07/2013	SEB, CS, PDU	Minesite	NAU	10	377573	5899576	SBS	mc3	05	BH	4	C		6		1178	27	360	TO	CC									ds	FG	a			
T13-092V	T13092V	V092	Blackwater	RNI.DVA	fair	poor	poor	17/07/2013	SEB, CS, PDU	Minesite	NAU	10	377513	5899688	SBS	mc3	00	Wb05	7	B		3a		1173	0		DP										u	O	p			
T13-091V	T13091V	V091	Blackwater	RNI.DVA	fair	poor	poor	17/07/2013	SEB, CS, PDU	Minesite	NAU	10	377372	5899795	SBS	mc3	00	Wf02	8	D	Blue	2b		1175	0	999	DP										u	O	p	U		
T13-090G	T13090G	G090	Blackwater	RNI.DVA	Good	good	good	17/07/2013	SEB, CS, PDU	Minesite	NAU	10	377281	5899856	SBS	mc3	00	Wb08	6	C		6		1174	1	999	TO	ST									h	O	x		smd	M
T13-089G	T13089G	G089	Blackwater	RNI.DVA	Good	good	good	17/07/2013	SEB, CS, PDU	Minesite	NAU	10	378184	5899366	SBS	mc3	08	Ws07	6	D		7a		1159			DP										h	O	x		ps	F
T13-088F	T13088F	F088	Blackwater	RNI.DVA	Good	good	good	17/07/2013	SEB, CS, PDU	Minesite	NAU	10	378152	5899381	SBS	mc3	03	LF	3	C		6		1163	68	1058	MD	ST	PDU				ii	ia	ea	dsz	M	vk	V	ps	FG
T13-087G	T13087G	G087	Blackwater	RNI.DVA	Good	good	good	17/07/2013	SEB, CS, PDU	Minesite	NAU	10	378017	5899407	SBS	mc3	03	LF	2	B		5		1182	10	110	UP	CV									ds	FG	u			
T13-086G	T13086G	G086	Blackwater	RNI.DVA	Good	good	good	16/07/2013	SEB, CS, PDU	Minesite	NAU	10	378123	5899507	SBS	mc3	00	OW	8	D		2c		1186			DP											N			
T13-085G	T13085G	G085	Blackwater	RNI.DVA	Good	good	good	16/07/2013	SEB, CS, PDU	Minesite	NAU	10	376569	5892339	ESSF	mv1	03	FF	3	C		6		1622	12	76	UP	CV									zsd	M	mr			
T13-084G	T13084G	G084	Blackwater	RNI.DVA	Good	good	good	16/07/2013	SEB, CS, PDU	Minesite	NAU	10	376873	5892569	ESSF	mv1	04	FG	5	C		6		1592	5	7	LW	ST									zds	M	b			
T13-083G	T13083G	G083	Blackwater	RNI.DVA	Good	good	good	16/07/2013	SEB, CS, PDU	Minesite	NAU	10	376986	5892856	ESSF	mv1	01	FR	4	C		5		1560	12	330	UP	CV									zsd	M	b			
T13-082G	T13082G	G082	Blackwater	RNI.DVA	Good	good	good	16/07/2013	SEB, CS, PDU	Minesite	NAU	10	377354	5893018	ESSF	mv1	01	FR	4	C		4		1538			UP	ST									zsd	M	b			
T13-081V	T13081V	V081	Blackwater	RNI.DVA	Good	poor	poor	16/07/2013	SEB, CS, PDU	Minesite	NAU	10	377399	5892723	ESSF	mv1	01	FR	4	C		6		1545	8	119	MD											M	b			
T13-080G	T13080G	G080	Blackwater	RNI.DVA	Good	good	good	16/07/2013	SEB, CS, PDU	Minesite	NAU	10	377378	5892676	ESSF	mv1	00	Wf13	8	D	Blue	2b		1538	0	999	DP	ST									u	O	p			
T13-079G	T13079G	G079	Blackwater	RNI.DVA	Good	good	good	16/07/2013	SEB, CS, PDU	Minesite	NAU	10	377015	5892321	ESSF	mv1	01	FR	4	C				1579	2	999	CR	CV									zds	M	b			
T13-078G	T13078G	G078	Blackwater	RNI.DVA	Good	good	good	16/07/2013	SEB, CS, PDU	Minesite	NAU	10	376957	5892086	ESSF	mv1	01	FR	3	C		6		1577	8	96	MD	ST									zds	M	b			
T13-077G	T13077G	G077	Blackwater	RNI.DVA	Good	good	good	16/07/2013	SEB, CS, PDU	Minesite	NAU	10	376756	5891781	ESSF	mv1	04	FG	5	C		7a		1582	7	113	MD										szd	M	v	L		
T13-076	T13076	G076	Blackwater	RNI.DVA	Good	good	good	16/07/2013	SEB, CS, PDU	Minesite	NAU		376607	5891655	ESSF	mv1	00	Wf13	7	D	Blue	2b		1591			DP	ST									u	O	p			
T13-075G	T13075G	G075	Blackwater	RNI.DVA	Good	good	good	16/07/2013	SEB, CS, PDU	Minesite	NAU	10	376359	5891754	ESSF	mv1	01	FR	4	C				1636			MD														
T13-074F	T13074F	F074	Blackwater	RNI.DVA	Good	good	good	16/07/2013	SEB, CS, PDU	Minesite	NAU	10	376114	5891860	ESSF	xvp	00	PC	4	C		7a		1677	11	74	UP	CV	PDU	rh			rh	ia	li	zsd	M	m			
T13-073G	T13073G	G073	Blackwater	RNI.DVA	Good	good	good	16/07/2013	SEB, CS, PDU	Minesite	NAU	10	376023	5892118	ESSF	xvp	05	Ws07	6	C		7a		1667	5	25	MD	ST									zsd	M	v			
T13-072G	T13072G	G072	Blackwater	RNI.DVA	Good	good	good	15/07/2013	SEB, CS, PDU	Airstrip Access Road	NAU	10	376477	5903471	SBS	mc3	05	BH	3	B		3a		1104	1	999		ST									gs	FG	p			
T13-071V	T13071V	V071	Blackwater	RNI.DVA	Good	poor	poor	15/07/2013	SEB, CS, PDU	Airstrip	NAU	10	375933	5904647	SBS	mc2	01	SB	3	C		3a		1108			LV	ST									gs	FG	u			
T13-070G	T13070G	G070	Blackwater	RNI.DVA	Good	good	good	15/07/2013	SEB, CS, PDU	Airstrip	NAU	10	376110	5904710	SBS	mc2	04	HB	4	C		3a		1058	28	73	LV	CC									gs	C	a			
T13-069F	T13069F	F069	Blackwater	RNI.DVA	Good	good	good	15/07/2013	SEB, CS, PDU	Airstrip	NAU	10	376267	5904762	SBS	mc3	00	Wb05	7	B		3b		1046			DP	ST	PDU								u	O	p			
T13-068G	T13068G	G068	Blackwater	RNI.DVA	Good	good	good	15/07/2013	SEB, CS, PDU	Airstrip	NAU	10	376312	5904809	SBS	mc2	00	Ws04	6	D		3a		1039			DP	ST									h	O	v			F
T13-067G	T13067G	G067	Blackwater	RNI.DVA	Good	good	good	15/07/2013	SEB, CS, PDU	Airstrip	NAU	10	374379	5903933	SBS	mc2	04	HB	3	C		6		1122	10	324	CR	CV									sg	FG	rm			
T13-066G	T13066G	G066	Blackwater	RNI.DVA	Good	good	good	15/07/2013	SEB, CS, PDU	Airstrip	NAU	40	374314	5903943	SBS	mc2	01	SB	4	C		6		1113	72	318	MD	ST									smd	M	s	F		
T13-065G	T13065G	G065	Blackwater	RNI.DVA	Good	good	good	15/07/2013	SEB, CS, PDU	Airstrip	NAU	10	374241	5903966	SBS	mc2	03	BM	4	B				1080	50	325	LW	CC									dzs	C	a	FI		
T13-064G	T13064G	G064	Blackwater	RNI.DVA	Good	good	good	15/07/2013	SEB, CS, PDU	Airstrip	NAU	10	374201	5904006	SBS	mc2	11	Ws07	6	D		7a		1060			DP										h	O	x	-L	z	L
T13-063G	T13062G	G062	Blackwater	RNI.DVA	Good	good	good	15/07/2013	SEB, CS, PDU	Airstrip	NAU	10	375139	5904395	SBS	mc2	04	HB	3	C				1119	0	999	LV	ST									ds	FG	u			
T13-062G	T13063G	G063	Blackwater	RNI.DVA	Good	good	good	15/07/2013	SEB, CS, PDU	Airstrip	NAU	10	375056	5904419	SBS	mc2	01	SB	4	C		6		1107	73	318	UP										gs	FG	s	V		
T13-061G	T13061G	G061	Blackwater	RNI.DVA	Good	good	good	14/07/2013	SEB, CS, PDU	WPL	NAU	10	380570	5901406	SBS	mc3	03	LF	2	B		3a		1120	10	335	UP										gs	FG	u			
T13-060G	T13060G	G060	Blackwater	RNI.DVA	Good	good	good	14/07/2013	SEB, CS, PDU	WPL	NAU	10	380537	5901105	SBS	mc3	00	Wb08	7	C		6		1119			DP										h	O	x	-l	gs	FG
T13-059V	T13059V	V059	Blackwater	RNI.DVA	Good	poor	poor	14/07/2013	SEB, CS, PDU	WPL	NAU	10	380277	5900538	SBS	mc3	03	LF	4	B		3a		1130			UP	CV									gs	FG	urh			
T13-058V	T13058V	V058	Blackwater	RNI.DVA	Good	poor	poor	14/07/2013	SEB, CS, PDU	WPL	NAU	10	380074	5900365	SBS	mc3	08	Ws07	6	D		7a			1	999	DP	ST										O	v			FG
T13-057G	T13057G	G057	Blackwater	RNI.DVA	good	good	good	14/07/2013	SEB, CS, PDU	WPL	NAU	10	379795	5900123	SBS	mc3	03	LF	3	B		5		1138	1	999	CR	CV									zds	FG	uh			
T13-056G	T13056G	G056	Blackwater	RNI.DVA	good	good	good	14/07/2013	SEB, CS, PDU	WPL	NAU	10	384875	5903073	SBS	mc3	01	SB	3	B		3b		1047	3	55	UP	CV									ds	FG	pj			
T13-055G	T13055G	G055	Blackwater	RNI.DVA	good	good	good	14/07/2013	SEB, PDU, CS	WPL	NAU	10	385461	5903006	SBS	mc3	05	BH	4	B		6		1030	7	84	LW	ST									dsz	M	b			
T13-054G	T13054G	G054	Blackwater	RNI.DVA	good	good	good	14/07/2013	SEB, CS, PDU	WPL	NAU	10	385928	5902989	SBS	mc3	03	LF	3	C		3a		4	8		CR	ST									dsm	M	b			
T13-053G	T13053G	G053	Blackwater	RNI.DVA	Good	good	good	14/07/2013	SEB, CS, PDU	WPL	NAU	10	385816	5903060	SBS	mc3	00	Wf01		D		2b		1026	0	999	DP	ST									u	O	p			
T13-052G	T13052G	G052	Blackwater	RNI.DVA	good	good	good	14/07/2013	SEB, CS, PDU	WPL	NAU	10	386112	5902992	SBS	mc3	06	BF	6	C		6		1030	1	999	LV	ST									dsm	M	v	L	xgs	FG
T13-051G	T13051G	G051	Blackwater	RNI.DVA	good	good	good	14/07/2013	SEB, CS, PDU	WPL	NAU	10	386684	5902764	SBS	mc3	05	BH	3	C		3b		1024	7	49	UP	ST									ds	FG	j			
T13-050F	T13050F	F050	Blackwater	RNI.DVA	good	good	good	14/07/2013	SEB, PDU, CS	WPL	NAU	10	387295	5902733	SBS	mc3	05	BH	4	B		6		1011	3	352	LV	ST	PDU				ia	ei		sg	FG	p			

Map Plot No.	Surface Exp Sub Surf	Geo Mor Pro Sub Surf	Flooding Regime Freq	Moisture Regime Sub	Flooding Regime Dur	Soil Drainage	Seepage Depth	Root Restricting Type	Root Restricting Depth	Root Zone Particle Size	Rooting Depth	Soil Class Sub Group	Soil Class Group	Humus Form	pH Method Code Mineral	pH Method Code Organic	Strata Cover Tree	Strata Cover Shrub	Strata Cover Herb	Strata Cover Moss	Hydro Geo System	Hydro Geo Sub System
T13-098G						w					32			R				35	40	50		
T13-097G						w					25			R			40	10	15	80		
T13-096G	t					m					27			UR			30	50	45	80		
T13-095G						w					35			R			35			85		
T13-094G						w					31			R			35	25	15	90		
T13-093G						m					24			R			30	40	30	80		
T13-092V						p												50	20	95		
T13-091V						v		W						MR				25	80	15		
T13-090G	p					i	35				24			UR			30	45	40	95		
T13-089G	t					i	10	W	10		22			UR			35	20	50	80		
T13-088F	k		X			w		N		CL	38	E	B	HR			35	40	30	95	U	
T13-087G						w					30			R			30	40	20	70		
T13-086G																		1	10			
T13-085G						w					22			R			30	40	20	95		
T13-084G						i								RD			35	25	30	95		
T13-083G						w					30			R			10	40	30	60		
T13-082G						m					35			R			20	45	60	50		
T13-081V						w											15	40	60	20		
T13-080G						p	17	W	17		31			MR				10	20	95		
T13-079G						m					30			R			30	55	60	30		
T13-078G						w					32			R			5	75	45	40		
T13-077G						i	37				40						10	55	45	60		
T13-076						p	13							MR				5	75	90		
T13-075G																	5	40	45	60		
T13-074F			X			m		N		CL	22	O	HFP	HR			10	50	65	80	r	h
T13-073G						i	20				24			R			10	30	40	60		
T13-072G						w					35			R				60	45	40		
T13-071V						w												25	45			
T13-070G						m					31			R				65	40	45		
T13-069F			R			p	34	W	34	u	42	m					5	60	30	95	P	bs
T13-068G	p					i	47				40			UR			2	65	50	30		
T13-067G						w					47			R			20	40	35	75		
T13-066G						m					40			R			10	25	80	50		
T13-065G						m					32			R			20	30	30	80		
T13-064G	v					i	56				33			UR			35	45	60	45		
T13-063G						w					35			R				60	45	20		
T13-062G						m					34			R			15	25	50	80		
T13-061G						w					37			R				45	20	20		
T13-060G	p					p	6		6					UR			5	10	20	90		
T13-059V						w								R				45	50			
T13-058V	p					i	25										45	25	60	70		
T13-057G						w					34			R			50	20	15	90		
T13-056G						w					29			R				45	25	20		
T13-055G						w					21			R			5	50	35	90		
T13-054G						w					14			R				40	40	20		
T13-053G						v	2							MR				10	60	70		
T13-052G	p					i	37							R			25	35	20	90		
T13-051G						w					36			R				35	50	65		
T13-050F			X			m				CLS	32	E	B	HR			30	20	10	90	U	

Map Plot No.	Plot No.	Field No.	Proj ID	FS Reg District	Site Plot Qlty	Veg Plot Qlty	Soil Plot Qlty	Date	Site Surveyor	Location	Ecosection	UTM Zone	UTM Easting	UTM Northing	Zone	Sub Zone	Site Series	Map Unit	Moisture Regime	Nutrient Regime	BC Listing	Structural Stage	Structural Stage Mod	El.	Slope Gradient	Aspect	Meso Slope Position	Surface Shape	Soil Surveyor	Bedrock Geology1	Bedrock Geology2	Bedrock Geology3	Coarse Frag Lith1	Coarse Frag Lith2	Coarse Frag Lith3	Terrain Texture Surf	Surficial Mat Surf	Surface Exp Surf	Geo Mor Pro Surf	Terrain Texture Sub Surf	Surficial Material Sub Surf
T13-049G	T13049G	G049	Blackwater	RNI.DVA	Good	good	good	14/07/2013	SEB, CS, PDU	WPL	NAU	10	387436	5902757	SBS	mc3	08	Ws07	6	D		6		1005	3	337	DP	CC									u	O	v	L	d	FG
T13-048F	T13048F	F048	Blackwater	RNI.DVA	Good	good	good	13/07/2013	SEB, CS, PDU	Airstrip Road	NAU	10	378578	5904901	SBS	mc3	08	Ws07	6	D		7a		1055	13	72	LW	CC	PDU				ii	ia		u	O	v	L	dsm	M
T13-047G	T13047G	G047	Blackwater	RNI.DVA	Good	good	good	13/07/2013	SEB, CS, PDU	Airstrip Road	NAU	10	378001	5904587	SBS	mc3	01	SB	3	C		3b		1076	0	999	LV	ST								dsm	M	b			
T13-046G	T13046G	G046	Blackwater	RNI.DVA	Good	good	good	13/07/2013	SEB, CS, PDU	Airstrip Road	NAU	10	377804	5904391	SBS	mc3	08	Ws07	6	D				1085	1	999		CC								h	O	v	L	dsm	M
T13-045G	T13045G	G045	Blackwater	RNI.DVA	Good	good	good	13/07/2013	SEB, CS, PDU	Airstrip Road	NAU	10	377328	5903973	SBS	mc3	01	SB	3	C				1102	1	999	LV	ST								dsz	M	b			
T13-044G	T13044G	G044	Blackwater	RNI.DVA	Good	good	good	13/07/2013	SEB, CS, PDU	TL	NAU	10	389831	5912810	SBS	mc3	01	SB	4	C		3a		1098			UP	CV								zgs	FG	j			
T13-043G	T13043G	G043	Blackwater	RNI.DVA	Good	good	good	13/07/2013	SEB, CS, PDU	TL	NAU	10	389830	5912897	SBS	mc3	06	BF	6	B		5		1083			TO	ST								zsg	F	v	L	dsm	M
T13-042R	T13042R	T13042R	Blackwater	RNI.DVA	poor	Good	poor	07/10/2013	CS	TL		10	389888	5912964										1082																	
T13-041G	T13041G	G041	Blackwater	RNI.DVA	Good	good	good	13/07/2013	SEB, CS, PDU	TL	NAU	10	389958	5913284	SBS	mc3	06	BF	6	B		5		1085	1	999	TO	ST								dms	M	b	L		
T13-040R	T13040R	T13040R	Blackwater	RNI.DVA	poor	Good	poor	07/10/2013	CS			10	389916	5913273										1084																	
T13-039G	T13039G	G039	Blackwater	RNI.DVA	Good	good	good	12/07/2013	SEB, CS, PDU	TL	NAU	10	389983	5913477	SBS	mc3	01	SB	4	C		3a		1099	12	154	LW	CC								dzs	M	b	L		
T13-038G	T13038G	G038	Blackwater	RNI.DVA	Good	good	good	12/07/2013	SEB, CS, PDU	TL	BUB	10	394202	5951483	SBS	dk	07	Ws07	7	D		7a		960			DP	CC								u	O	p			
T13-037G	T13037G	G037	Blackwater	RNI.DVA	Good	good	good	12/07/2013	SEB, CS, PDU	TL	BUB	10	394433	5951931	SBS	dk	00	Wb08	6	C		5		972			LV	ST								smd	M	b	L		
T13-036G	T13036G	G036	Blackwater	RNI.DVA	Good	good	good	12/07/2013	SEB, CS, PDU	TL	BUB	10	394484	5952178	SBS	dk	07	Ws07	5	C		7a		967	3	273	DP	CC								ds	F	tp			
T13-035G	T13035G	G035	Blackwater	RNI.DVA	Good	good	good	12/07/2013	SEB, CS, PDU	TL	BUB	10	394612	5952320	SBS	dk	01	SP	4	C				976			LV	ST								zds	FG	pt			
T13-034G	T13034G	G034	Blackwater	RNI.DVA	Good	good	good	12/07/2013	SEB, CS, PDU	TL	NAU	10	394810	5952617	SBS	mc3	03	LF	2	B		4		986	20	310	CR	CV		gd						x	D	x			R
T13-033G	T13033G	G033	Blackwater	RNI.DVA	Good	good	good	13/07/2013	SEB, CS, PDU	TL	BUB	10	394748	5952664	SBS	dk	01	SP	4	C		5		974	0	999	LV	ST								ds	FG	t			
T13-032G	T13032G	G032	Blackwater	RNI.DVA	Good	good	good	12/07/2013	SEB, CS, PDU	TL	BUB	10	394640	5952845	SBS	dk	03	LC	2	B		6		980	45	153	UP	ST								pS	FG	a	E		
T13-031G	T13031G	G031	Blackwater	RNI.DVA	Good	good	good	12/07/2013	SEB, CS, PDU	TL	BUB	10	394715	5952932	SBS	dk	00	Wb01	7	B	Blue	3b		978	0	999	DP	CC								u	O	p			
T13-030G	T13030G	G030	Blackwater	RNI.DVA	Good	good	good	12/07/2013	SEB, CS, PDU	TL	NAU	10	394880	5953434	SBS	mc3	05	BH	4	C		6		988	6	220	LV	ST								dsz	M	b			
T13-029G	T13029G	G029	Blackwater	RNI.DVA	Good	good	good	12/07/2013	SEB, CS, PDU	TL	NAU	10	395083	5954070	SBS	mc3	07	ST	5	D		6		1009	5	276	DP	CC								zs	F	jp			
T13-028G	T13028G	G028	Blackwater	RNI.DVA	Good	good	good	12/07/2013	SEB, CS, PDU	TL	NAU	10	395126	5954155	SBS	mc3	01	SB	4	C				1014	10	258	MD	ST								zs	FG	j			
T13-027G	T13027G	G027	Blackwater	RNI.DVA	good	good	good	11/07/2013	SEB, CS, PDU	TL	BUB	10	383747	5983280	SBS	dw3	08	SO	6	D		3b		819	5	80	DP	CV								h	O	x		sz	FA
T13-026G	T13026G	G026	Blackwater	RNI.DVA	good	good	good	11/07/2013	SEB, PDU, CS	TL	BUB	10	383757	5983204	SBS	dw3	01	SP	4	C		4		820	8	94	LV	CV								s	FG	pj			
T13-025R	T13025R	T13025R	Blackwater	RNI.DVA	poor	Good	poor	07/10/2013	CS	TL		10	383962	5983200	SBS	ms2								809																	
T13-024F	T13024F	F024	Blackwater	RNI.DVA	good	good	good	11/07/2013	SEB, CS, PDU	TL	BUB	10	383662	5984164	SBS	dw3	04	SR	4	C		6		818	15	21	MD	CV	PDU	gr	ia	ii	ia	ii		gs	FG	j			
T13-023G	T13023G	G023	Blackwater	RNI.DVA	good	good	good	11/07/2013	SEB, CS, PDU	TL	BUB	10	382836	5984258	SBS	dw3	03	LC	1	A		3b		932	20	347	CR	CV		gr							D	x			R
T13-022R	T13022R	T13022R	Blackwater	RNI.DVA	poor	Good	poor	07/10/2013	CS			10	371613	5990431	SBS	mc2								700																	
T13-021G	T13021G	G021	Blackwater	RNI.DVA	good	good	good	11/07/2013	SEB, CS, PDU	TL	BUB	10	382640	5984287	SBS	dw3	04	SR	4	C		6		915	20	145	LW	CC								s	FG	u			
T13-020G	T13020G	G020	Blackwater	RNI.DVA	good	good	good	11/07/2013	SEB, CS, PDU	TL	BUB	10	382446	5984408	SBS	dw3	00	Fl05	6	D		3b		914	3	64	DP	CC								u	O	x	L	sdm	M
T13-019G	T13019G	G019	Blackwater	RNI.DVA	good	good	good	11/07/2013	SEB, CS, PDU	TL	BUB	10	379378	5985793	SBS	mc2	09	SD	5	C		7a		918			LW	ST								dsm	M	b	L		
T13-018G	T13018G	G018	Blackwater	RNI.DVA	good	good	good	11/07/2013	SEB, PDU, CS	TL	BUB	10	379903	5985850	SBS	mc2	09	SD	5	C		3b		942			LW	CC								dzs	M	b			
T13-017G	T13017G	G017	Blackwater	RNI.DVA	good	good	good	11/07/2013	SEB, CS, PDU	TL	BUB	10	378757	5985630	SBS	mc2	01	SB	4	C		5		955	20	82	MD	ST								ps	FG	j			
T13-016G	T13016G	G016	Blackwater	RNI.DVA	good	good	good	10/07/2013	SEB, CS, PDU	TL	BUB	10	377257	5985413	SBS	mc2	01	SB	3	B		6		989	30	315	LW	CV								zsx	D	v			R
T13-015G	T13015G	G015	Blackwater	RNI.DVA	good	good	good	10/07/2013	SEB, PDU, CS	TL	BUB	10	376917	5985205	SBS	mc2	01	SB	4	C		7a		968	10	315	MD	ST								dsz	M	b			
T13-014G	T13014G	G014	Blackwater	RNI.DVA	good	good	good	10/07/2013	SEB, PDU, CS	TL	BUB	10	376370	5985113	SBS	dw3	01	SP	4	C		4		944	18	350	MD	ST								dsz	M	b			
T13-013R	T13013R	T13013R	Blackwater	RNI.DVA	poor	Good	poor	07/10/2013	CS	Stellako re-rout		10	371579	5990376										705																	
T13-012G	T13012G	G012	Blackwater	RNI.DVA	good	good	good	10/07/2013	SEB, PDU, CS	TL - Stellako Reroute	BUB	10	371625	5990315	SBS	dw3	04	SR	4	C		7a		709	70	284	UP	ST								dsz	M	ks	V		
T13-011G	T13011G	G011	Blackwater	RNI.DVA	good	good	good	10/07/2013	SEB, CS, PDU	TL - Stellako Reroute	BUB	10	371697	5990045	SBS	dw3	04	SR	3	B		4		730	1	999	LV	ST								sd	FG	p			
T13-010G	T13010G	G010	Blackwater	RNI.DVA	good	good	good	10/07/2013	SEB, PDU, CS	TL - Stellako Reroute	BUB	10	371721	5989810	SBS	dw3	04	SR	3	B		5		745	66	12	LV	ST								sd	FG	k			
T13-009F	T13009F	F009	Blackwater	RNI.DVA	good	good	good	10/07/2013	SEB, CS, PDU	TL- Stellako Reroute	BUB	10	371757	5989567	SBS	dw3	04	SR	4	B		7a		750	8	321	LV		PU, SB, MB				ia	ii		zds	FG	u			
T13-008G	T13008G	G008	Blackwater	RNI.DVA	good	good	good	10/07/2013	SEB, PDU, CS	TL - Stellako Rerout	BUB	10	371798	5989190	SBS	dw3	07	ST	5	D				768	5	45	LV	ST								cz	LG	pj			
T13-007G	T13007G	G007	Blackwater	RNI.DVA	good	good	good	10/07/2013	SEB, CS, PDU	TL - Stellako Reroute	BUB	10	371813	5988976	SBS	dw3	07	ST	5	D		6		771	2.5	310	LV	ST								cz	LG	p			
T13-006V	T13006V	V006	Blackwater	RNI.DVA	fair	poor	poor	09/07/2013	SEB, CS, PDU	TL	BUB	10	389627	5971923	SBS	dk	05	SF	4	C		6		984	19	7	MD	ST								szd	M	b			
T13-005G	T13005G	G005	Blackwater	RNI.DVA	Good	good	good	09/07/2013	SEB, CS, PDU	TL	BUB	10	389050	5972523	SBS	dk	00	Wm02	7	D		2b		915	0	999	DP	ST									O	x	-u	smd	M
T13-004G	T13004G	G004	Blackwater	RNI.DVA	good	good	good	09/07/2013	SEB, CS, PDU	TL	BUB	10	388597	5972994	SBS	dk	05	SF	3	C		6		916	8	317	UP	CV								szd	M	b			
T13-003G	T13003G	G003	Blackwater	RNI.DVA	good	good	good	09/07/2013	SEB, CS, PDU	TL	BUB	10	388371	5973205	SBS	dk	06	ST	4	C		5		891	6	283	UP	CV								dsz	M	b			
T13-002R	T13002R	T13002R	Blackwater	RNI.DVA	poor	Good	poor	07/10/2013	CS	Marsh 19km SE of Fraser Lake		10	388135	5973859	SBS	bk								838																	
T13-002G	T13002G	G002	Blackwater	RNI.DVA	good	good	good	09/07/2013	SEB, CS, PDU	TL	BUB	10	387988	5973422	SBS	dk	01	SP	4	C		4		844	1	60	LW	CV								sdz	M	b			
T13-001R	T13001R	T13001R	Blackwater	RNI.DVA	poor	Good	poor	07/10/2013	CS	Meadow 19 km SE of Fraser Lake		10	388075	5973632										832																	
T13-001G	T13001G	G001	Blackwater	RNI.DVA	good	good	good	09/07/2013	SEB, CS, PDU	TL	BUB	10	387946	5973593	SBS	dk	05	SF	4	C		4		852	10	334	MD	CV								zds	M1	hu			
T-12-V092	b12-092	V-092	Blackwater	RNI.DVA	fair	Fair	Fair	31/07/2012	CH/KT/PU	Kluskus M/L 42 km Road	NAU	10	411585	5955542	SBS	mc3												PU												
T-12-V087	b12-087	V-087	Blackwater	RNI.DVA	fair	Fair	Fair	31/07/2012	CH/KT/PU	Brewster Lake by Trans Line	NAU	10	397163	5921551	SBS	mc3									0	999	DP	CC	PU												
T-12-V083	b12-083	V-083	Blackwater	RNI.DVA	fair	Fair	Fair	30/07/2012	CH/KT/PU	WL 33	NAU	10	382132	5898972	SBS	mc3	03	LF	3	B		5		1131	5	218	MD		PU									FG	uh		
T-12-V081	b12-081	V-081	Blackwater	RNI.DVA	fair	Fair	Fair	29/07/2012	CH/KT/PU	Trans 2 / T/L	NAU	10	378176	5897508	SBS	mc3	08	SH	6	D		6		1233	2	333	LW		PU							h	O	xv			
T-12-V078	b12-078	V-078	Blackwater	RNI.DVA	fair	Fair	Fair	29/07/2012	CH/KT/PU	Transet 2 Haul Road	NAU	10	378286	5896150	ESSF	mv1	02	LC	2	B		4		1261	5	999			PU							sg	FG	u			
T-12-V076	b12-076	V-076	Blackwater	RNI.DVA	fair	Fair	Fair	29/07/2012	CH/KT/PU	Transect 2 Haul Road	NAU	10	377756	5895495	ESSF	mv1	03	FF	3	B		5		1300	10	85	MD		PU							zsd	FG	ju			

Map Plot No.	Surface Exp Sub Surf	Geo Mor Pro Sub Surf	Flooding Regime Freq	Moisture Regime Sub	Flooding Regime Dur	Soil Drainage	Seepage Depth	Root Restricting Type	Root Restricting Depth	Root Zone Particle Size	Rooting Depth	Soil Class Sub Group	Soil Class Group	Humus Form	pH Method Code Mineral	pH Method Code Organic	Strata Cover Tree	Strata Cover Shrub	Strata Cover Herb	Strata Cover Moss	Hydro Geo System	Hydro Geo Sub System
T13-049G	b					i	30				30			MR			15	40	60	50		
T13-048F	b		X			i	28	N		Me	28	R	G				25	30	40	90	U	
T13-047G						w					2			R				75	20	40		
T13-046G	b					i	28				28			UR			25	35	40	80		
T13-045G						w					31			R				50	40	15		
T13-044G						w					32			R				50	40	10		
T13-043G	b					i	31				20			R			30	20	20	80		
T13-042R																						
T13-041G						i	48				41			R			35	40	20	80		
T13-040R																						
T13-039G						i	32				30			R				25	40	35		
T13-038G						p	12							MR			30	50	50	90		
T13-037G						i	45				35			R			60	30	20	90		
T13-036G						m					50			R			50	35	25	60		
T13-035G											40			R			10	60	40	80		
T13-034G	h					x		L	3					R			20	10	5	50		
T13-033G						w					32			R			20	45	60	80		
T13-032G						w					35			R			2	25	60	30		
T13-031G						p	16							MR			20	70	30	90		
T13-030G						m					21			R			5	55	60	80		
T13-029G						i					51			R			5	70	30	80		
T13-028G						w					40			R			5	50	20	70		
T13-027G	v					i	0				41			UR				70	30	5		
T13-026G						w					26			R			30	50	80	50		
T13-025R																						
T13-024F			X			w		N		S	41	E	EB	HR			30	50	30	70	U	
T13-023G	h					x		L	4					L				45	2	15		
T13-022R																						
T13-021G						m					44			R			75	80	50	5		
T13-020G	b					i	41				33			D				50	80	10		
T13-019G						i					38			R			50	80	30	60		
T13-018G						m					32			R			15	50	80	30		
T13-017G						w					34			R			30	25	40	60		
T13-016G						w		L	30		30			R			30	80	2	60		
T13-015G						w			7		20						80	30	10	60		
T13-014G						w			5		38			R			60	40	30	30		
T13-013R																						
T13-012G						w			9		43			R			30	70	40	5		
T13-011G						w			7					R			30	75	10	80		
T13-010G						w			11		45			R			40	25	10	80		
T13-009F			X			w				SS	39		EB	HR			55	65	20	80	U	
T13-008G						m			7		25			D			30	50	60	5		
T13-007G						m			8		32			R			65	20	80			
T13-006V						w											30	20	25	20		
T13-005G	b					p	36	W			25			FR				20	50	30		
T13-004G						w					38			R			50	20	20	10		
T13-003G						w					360			R			60	30	8	2		
T13-002R																						
T13-002G						w		K			29			R			45	30	15	5		
T13-001R																						
T13-001G						w	0		0		46			R			45	40	15	10		
T-12-V092																						
T-12-V087																						
T-12-V083						w											25	19	35	80		
T-12-V081						p											45	13	85	20	P	lh
T-12-V078										LS				D					15	60		
T-12-V076						w								D			20	30	20	55		

Map Plot No.	Plot No.	Field No.	Proj ID	FS Reg District	Site Plot Qlty	Veg Plot Qlty	Soil Plot Qlty	Date	Site Surveyor	Location	Ecosection	UTM Zone	UTM Easting	UTM Northing	Zone	Sub Zone	Site Series	Map Unit	Moisture Regime	Nutrient Regime	BC Listing	Structural Stage	Structural Stage Mod	El.	Slope Gradient	Aspect	Meso Slope Position	Surface Shape	Soil Surveyor	Bedrock Geology1	Bedrock Geology2	Bedrock Geology3	Coarse Frag Lith1	Coarse Frag Lith2	Coarse Frag Lith3	Terrain Texture Surf	Surficial Mat Surf	Surface Exp Surf	Geo Mor Pro Surf	Terrain Texture Sub Surf	Surficial Material Sub Surf
T-12-V074	b12-074	V-074	Blackwater	RNI.DVA	fair	Fair	Fair	29/07/2012	CH/KT/PU	Transect 2 Haul Road	NAU	10	376691	5895439	ESSF	mv1	01	FR	3C			5		1359	15	30	MD	ST	PU							gs	FG	ju			
T-12-V072	b12-072	V-072	Blackwater	RNI.DVA	fair	Fair	Fair	29/07/2012	CH/KT/PU	Transect 2 Haul Road drill pad near site	NAU	10	376002	5894991	ESSF	mv1	01	FR	4	C		5		1419	12	62	MD	ST	PU							dzs	M	bu			
T-12-V061	b12-061	V-061	Blackwater	RNI.DVA	fair	Fair	Fair	28/07/2012	CH/KT/PU	WL 13	NAU	10	373575	5899813	SBS	mc3	00	Wf10	7	D	Red	2b		1293			DP		PU												
T-12-V059	b12-059	V-059	Blackwater	RNI.DVA	fair	Fair	Fair	28/07/2012	CH/KT/PU	WL 12	NAU	10	375093	5898906	SBS	mc3	00	Wf08	8	B	Blue			1256	0	999	DP	CC	PU							eo	PB				
T-12-V055	b12-055	V-055	Blackwater	RNI.DVA	fair	Fair	Fair	28/07/2012	CH/KT/PU	WL 28 beside	NAU	10	371594	5896070	ESSF	mv1	02	LC	2	A		5		1365	10	124		CV	PU							zds	FG	hu	H		
T-12-V052	b12-052	V-052	Blackwater	RNI.DVA	fair	Fair	Fair	27/07/2012	CH/KT/PU		NAU	10	385390	5914412	SBS	mc3	00	Wf05	8	D	Blue			1063	0	999	LV		PU								O	b			
T-12-V050	b12-050	V-050	Blackwater	RNI.DVA	fair	Fair	Fair	27/07/2012	CH/KT/PU		NAU	10	385475	5914639	SBS	mc3	08	SH	7	C		5		1065	0	999	LV		PU								O	hbv			
T-12-V049	b12-049	V-049	Blackwater	RNI.DVA	fair	Fair	Fair	24/07/2012	CH/KT/PU	TL between 12 & 13	NAU	10	386358	5914958	SBS	mc3	03	LF	2	C		5		1118	3	999			PU							s	LG	pj			
T-12-V045	b12-045	V-045	Blackwater	RNI.DVA	fair	Fair	Fair	27/07/2012	CH/KT/PU	TL between trans 12 & 13	NAU	10	387486	5915368	SBS	mc2	01	SB	4	C		2a		1190	10	235	MD	ST	PU							dsm	M	b		zs	FG
T-12-V044	b12-044	V-044	Blackwater	RNI.DVA	fair	Fair	Fair	27/07/2012	CH/KT/PU	TL between 12 & 13	NAU	10	387737	5915528	ESSF	mv1	00	RO	2	A					80		CR		PU												
T-12-V041	b12-041	V-041	Blackwater	RNI.DVA	fair	Fair	Fair	27/07/2012	CH/KT/PU	TL between 12 & 13	NAU	10	389031	5916525	ESSF	mv1	01/03	FR/FF				6			45	100			PU								C	vx				R
T-12-V039	b12-039	V-039	Blackwater	RNI.DVA	fair	Fair	Fair	27/07/2012	CH/KT/PU	WL 19	NAU	10	379555	5903851	SBS	mc3	00	Wf08	8	B	Blue	2a		1077	0	999	DP		PU												
T-12-V037	b12-037	V-037	Blackwater	RNI.DVA	fair	Fair	Fair	27/07/2012	CH/KT/PU	WL 16	NAU	10	378399	5900592	SBS	mc3	00	Wf01	7	D				1144	0	999	LV	ST	PU								O	p			
T-12-V028	b12-028	V-028	Blackwater	RNI.DVA	fair	Fair	Fair	26/07/2012	CH/KT/PU	Trans 12 T/L 1st cutblock 2nd soil	NAU	10	381706	5912169	SBS	dk	01	SP	4	C		3		992	10	212	MD		PU							dms	M	b			
T-12-V013	b12-013	V-013	Blackwater	RNI.DVA	fair	Fair	Fair	25/07/2012	CH/KT/PU	C-Road ~ 6km side road	NAU	10	385569	5898059	ESSF	mv1	02	LC	2	B		4		1245	0	999	LV	ST	PU												
T-12-V007	b12-007	V-007	Blackwater	RNI.DVA	fair	Fair	Fair	24/07/2012	CH/KT/PU	South of Snake Lake	NAU	10	382559	5899812	SBS	mc3	00	Wb08	7	A		3b		1108	0	999	DP	CC	PU							e	O	p	U		
T-12-V005	b12-005	V-005	Blackwater	RNI.DVA	fair	Fair	Fair	14/07/2012	CH/KT/PU	South of Snake Lake	NAU	10	382371	5899783	SBS	mc3	00	PD						1107					PU							zgs	FG	hu	H		
T-12-V004	b12-004	V-004	Blackwater	RNI.DVA	fair	Fair	Fair	24/07/2012	CH/KT/PU	South of Snake Lake	NAU	10	382171	5899694	SBS	mc3	01	SB	3	B		4		1118	12	82			PU								M	b			
T-12-G240	PL-240	240	Blackwater	RNI.DVA	fair	poor	fair	03/10/2012	MB/KT/PU	Water Pipeline	NAU	10	382906	5902714	SBS	mc3	01	SB	4	C		6		1052	1	999	7	1													
T-12-G239	PL-239	239	Blackwater	RNI.DVA	fair	poor	fair	03/10/2012	MB/KT/PU	Water Pipeline	NAU	10	385249	5902980	SBS	mc3	09	Wb05	7	C		4		1035	0	999	6										e	O	x		z	C
T-12-G238	PL-238	238	Blackwater	RNI.DVA	fair	poor	fair	03/10/2012	MB/KT/PU	Water Pipeline	NAU	10	385631	5903050	SBS	mc3	00	Wf01	6	D		2	b	1036													e	O	v			
T-12-G237	PL-237	237	Blackwater	RNI.DVA	fair	poor	fair	03/10/2012	MB/KT/PU	Water Pipeline	NAU	10	387563	5902867	SBS	mc3	09	Wb05	6	D		5		1005	1	999	6	1									u	O	x		d	M
T-12-G236	PL-236	236	Blackwater	RNI.DVA	fair	poor	fair	03/10/2012	MB/KT/PU	Water Pipeline	NAU	10	389247	5902876	SBS	dk	06	ST	4	C		6		952	23	47	3	1									s	M	b			
T-12-G235	PL-235	235	Blackwater	RNI.DVA	fair	poor	fair	03/10/2012	MB/KT/PU	Water Pipeline	NAU	10	389320	5902952	SBS	dk	06	ST	5	C		6					5	2									d	M	b			
T-12-G234	PL-234	234	Blackwater	RNI.DVA	fair	poor	fair	02/10/2012	MB/KT/PU	Water Pipeline	NAU	10	379434	5899913	SBS	mc3	03	LF	3	B		4		1148	4	308	1										d	FG	u			
T-12-G233	PL-233	233	Blackwater	RNI.DVA	fair	poor	fair	02/10/2012	MB/KT/PU	Water Pipeline	NAU	10	379992	5900282	SBS	mc3	04	SS	2	B		5					7										d	FG	u			
T-12-G232	PL-232	232	Blackwater	RNI.DVA	fair	poor	fair	02/10/2012	MB/KT/PU	Water Pipeline	NAU	10	380545	5900888	SBS	mc3	03	LF	2	B		4		1130	15	999	1										d	FG	u			
T-12-G231	PL-231	231	Blackwater	RNI.DVA	fair	poor	fair	02/10/2012	MB/KT/PU	Water Pipeline	NAU	10	380913	5901523	SBS	mc3	06	BF	4	B		5		1115	2	999	7										d	F	u			
T-12-G230	PL-230	230	Blackwater	RNI.DVA	fair	poor	fair	02/10/2012	MB/KT/PU	Water Pipeline	NAU	10	380979	5902274	SBS	mc3	06	BF	5	C		5		1088	10	30	4	1									d	M	b			
T-12-G229	bwt-229	bwt-229	Blackwater	RNI.DVA	Good	Good	Good	12/05/2012	STB, PU, KT	north half trans line	BUB	10	378617	5981203	SBS	mc2	05	TC	5			6		1079	20	160											d	M	b			
T-12-G228	bwt-228	bwt-226	Blackwater	RNI.DVA	Good	Good	Good	12/05/2012	STB, PU, KT	north half trans line	NAU	10	392631	5933778	SBS	dk	06	ST	4	B				954			LW										s	E	r			
T-12-G226	bwt-226	bwt-226	Blackwater	RNI.DVA	Good	Good	Good	28/09/2012	STB, PU, KT	Northern Transmission line for Blackwater mine	NAU	10	392934	5933504	SBS	dk	02	LJ	3	C				963	55	157											s	LG	k			
T-12-G225	bwt-225	bwt-225	Blackwater	RNI.DVA	Good	Good	Good	28/09/2012	STB, KT, PU	N. end of Tatelkuz Lk. Outlet wet marsh	NAU	10	385446	5907788	SBS	dk	00	Wf01	8	D		2b		930	0	999	DP	ST	PU, STB							c	O	x		z	L
T-12-G224	bwt-224	bwt-224	Blackwater	RNI.DVA	Good	Good	Good	27/09/2012	STB, PU, KT	north half trans line	NAU	10	397503	5958773	SBS	mc3	03	LF	2	B				1038	22	299	UP	ST									x	D	x			R
T-12-G223	bwt-223	bwt-223	Blackwater	RNI.DVA	Good	Good	Good	27/09/2012	STB, PU, KT	north half trans line	NAU	10	397468	5958127	SBS	mc3	01?	SB	3	C		6		1035	27	143	LV	CC									s	M	b			
T-12-G222	bwt-222	bwt-222	Blackwater	RNI.DVA	Good	Good	Good	27/09/2012	STB, PU, KT	north half trans line	NAU	10	397489	5958015	SBS	mc3	00	Ws07	7	D		7		1010	1	999	DP	CC									e	O	v			M
T-12-G221	bwt-221	bwt-221	Blackwater	RNI.DVA	Good	Good	Good	27/09/2012	STB, PU, KT	north half trans line	NAU	10	397442	5957597	SBS	mc3	04	SS	3	C				1073	18	280	UP										s	M	v			
T-12-G220	bwt-220	bwt-220	Blackwater	RNI.DVA	Good	Good	Good	27/09/2012	STB, PU, KT	north half trans line	NAU	10	397452	5957533	SBS	mc3	03	LF	0	A				1103	55		CR	CV									s	M	v			R
T-12-G219	bwt-219	bwt-219	Blackwater	RNI.DVA	Good	Good	Good	27/09/2012	STB, PU, KT	north half trans line	NEL	10	396249	5966781	SBS	dw3	?		3	C		5		888	25	320	MD	ST									s	M	b			
T-12-G218	bwt-218	bwt-218	Blackwater	RNI.DVA	Good	Good	Good	27/09/2012	STB, PU, KT	Blackwater Tranmission Line	NEL	10	396400	5966455	SBS	dw3	07	ST						928	1	999											dms	M	b	L		
T-12-G217	bwt-217	bwt-217	Blackwater	RNI.DVA	Good	Good	Good	27/09/2012	STB, PU, KT	Northern section of Transmission line.	NEL	10	396423	5965852	SBS	dw3	00	Wb05	6	B		7		947	0	999	DP	CC									e	O	b			
T-12-G216	bwt-216	bwt-216	Blackwater	RNI.DVA	Good	Good	Good	27/09/2012	STB, PU, KT	north half trans line	NEL	10	397049	5964745	SBS	dk	05	SF	3	B				1034	24	135	UP	ST									s	M	b			
T-12-G215	bwt-215	bwt-215	Blackwater	RNI.DVA	Good	Good	Good	27/09/2012	STB, PU, KT	north half trans line	NEL	10	397122	5964622	SBS	mc2	02	PH	3	C				982	42	163	MD	ST									s	M	v			
T-12-G214	bwt-214	bwt-214	Blackwater	RNI.DVA	Good	Good	Good	27/09/2012	STB, PU, KT	north half trans line	NEL	10	397119	5964551	SBS	dw3	81	SW	1	B	Red	3		944	60	151	MD	ST									z	C	x			R
T-12-G213	bwt-213	bwt-213	Blackwater	RNI.DVA	Good	Good	Good	26/09/2012	STB, PU, KT	north half trans line	BUB	10	374184	5986005	SBS	dw3	?		4	C		4		945	5	29		CV									z	M	b			
T-12-G212	bwt-212	bwt-211	Blackwater	RNI.DVA	Good	Good	Good	26/09/2012	STB, PU, KT	north half trans line	BUB	10	379606	5980589	SBS	dk	02	LJ	3	B		6		850	25	155	MD										d	FG	j			
T-12-G211	bwt-211	bwt-211	Blackwater	RNI.DVA	Good	Good	Good	26/09/2012	STB, PU, KT	north half trans line	BUB	10	379830	5980398	SBS	dk	05	SF	4	C		6		815	10	156	CR	ST									z	LG	u			
T-12-G210	bwt-210	bwt-210	Blackwater	RNI.DVA	Good	Good	Good	26/09/2012	STB, PU, KT	north half trans line	BUB	10	380033	5979710	SBS	dk	07	SH	5	C				797	55	314	LW	ST									z	LG	k	V		
T-12-G209	bwt-209	bwt-209	Blackwater	RNI.DVA	Good	Good	Good	26/09/2012	STB, PU, KT	north half trans line	BUB	10	380107	5979413	SBS	dk	05	SF	4	C				830	6	30	UP	CV									z	LG	p			
T-12-G208	bwt-208	bwt-208	Blackwater	RNI.DVA	Good	Good	Good	26/09/2012	STB, PU, KT	HolycroSs Binta FSR	BUB	10	380168	5979160	SBS	dk	08	CD	6	D				818	5	349	LW	ST									s	F	t			
T-12-G207	bwt-207	bwt-207	Blackwater	RNI.DVA	Good	Good	Good	25/09/2012	STB, PU, KT	north half trans line	BUB	10	369194	5991870	SBS	dw3	04	SR	3	C				799	11	285	MD	CC									m	M	b			
T-12-G206	bwt-206	bwt-206	Blackwater	RNI.DVA	Good	Good	Good	25/09/2012	STB, PU, KT	north half trans line	BUB	10	369000	5992020	SBS	dw3	08	SO	6	D				789	8	80	GU										h	O	x		s	F
T-12-G205	bwt-205	bwt-205	Blackwater	RNI.DVA	Good	Good	Good	25/09/2012	STB, PU, KT	north half trans line	BUB	10	369004	5992082	SBS	dw3	04	SR	4	C		6		769	20	102	MD		PU									M	b				
T-12-G204	bwt-204	bwt-204	Blackwater	RNI.DVA	Good	Good	Good	25/09/2012	STB, PU, KT	north half trans line	BUB	10	371802	5987307	SBS	dw3	04	SR	4	C				825	8	355												M	b				
T-12-G203	bwt-203	bwt-203	Blackwater	RNI.DVA	Good	Good	Good	25/09/2012	STB, PU, KT	north half trans line	BUB	10	371660	5987671	SBS	dw3	07	ST	4	C				782	15	333	MD											M	b				
T-12-G202	bwt-202	bwt-202	Blackwater	RNI.DVA	Good	Good	Good	25/09/2012	STB, PU, KT	north half trans line	BUB	10	371275	5988750	SBS	dw3	03	LC	2	A				778	75	158	CR										a	C	x			R
T-12-G201	bwt-201	bwt-201	Blackwater	RNI.DVA	Good	Good	Good	25/09/2012	STB, PU, KT	west of Fraser lake	BUB	10	371520	5988089	SBS	dw3	07	ST						796	20	180	UP	CV										LG	b				
T-12-G200	bwt-200	bwt-200	Blackwater	RNI.DVA	Good	Good	Good	25/09/2012	STB, PU, KT	just off francois rd	BUB	10	371562	5987957	SBS	dw3	?		4	C				774	15	155	UP	CV									d	M	b			
T-12-G091	b12-091	G-091	Blackwater	RNI.DVA	Good	Good	Good	31/07/2012	CH/KT/PU	Kluskus M/L ~50km; Road Transect	NAU	10	411674	5947465	ESSF	mv1	01	SB	4	C				1207	10	230	MD	ST	PU							zds	M	b			
T-12-G090	b12-090	G-090	Blackwater	RNI.DVA	Good	Good	Good	31/07/2012	CH/KT/PU	Kluskus Main Road Transect	NAU	10	401262	5937307	SBS	mc3	00	Wf01	8	B		2b		1045	0	999		CC	PU							e	O	bp			
T-12-G089	b12-089	G-089	Blackwater	RNI.DVA	Good	Good	Good	31/07/2012	CH/KT/PU	Kluskus M/L T/L	NAU	10	398402	5927545	SBS	dk	06	ST	4	D		2a		925	0	999	LW		PU							sz	L	p			
T-12-G088	b12-088	G-088	Blackwater	RNI.DVA	Good	Good	Good	31/07/2012	CH/KT/PU	Marten Road (T/L)	NAU	10	396498	5921577	SBS	mc3	06	BF	5	B		5		1111	5	333	LW		PU							zsd	FG	jp			
T-12-G086	b12-086	G-086	Blackwater	RNI.DVA	Good	Good	Good	31/07/2012	CH/KT/PU	Kluskos M/L - Road day	NAU	10	399853	5913478	SBS	mc2	00	Wb05	7	B		6		1109	0	999			PU							e	O	p			
T-12-G085	b12-085	G-085	Blackwater	RNI.DVA	Good	Good	Good	31/07/2012	CH/KT/PU	Kluskus Main - Road Day	NAU	10	382867	5908593	SBS	dk	00	Ws04	6	D		3b		926	0	999	LV	ST	PU							e	O	x		sz	F
T-12-G084	b12-084	G-084	Blackwater	RNI.DVA	Good	Good	WL34	30/07/2012	CH/KT/PU	WL 34	NAU	10	381324	5899166	SBS	mc3	00	Wf01	8	B		2b		1133	0	999	DP	CC	PU							e	O	pb			
T-12-G082	b12-082	G-082	Blackwater	RNI.DVA	Good	Good	WL33	30/07/2012	CH/KT/PU	WL33	NAU	10	382111	5898963	SBS	mc3	00	Wm01	8	C		2a		1136	0	999	TO		PU							zsd	FG	d			
T-12-G080	b12-080	G-080	Blackwater	RNI.DVA	Good	Good	Good	29/07/2012	CH/KT/PU	Transect 2 T/L	NAU	10	378159	5897222	ESSF	mv1	03	FF	3	B		5		1266	2	999	LV		PU							zds	FG	pu			
T-12-G079	b12-079	G-079	Blackwater	RNI.DVA	Good	Good	Good	29/07/2012	CH/KT/PU	Trans 8 - T/L	NAU	10	378033	5896644	ESSF	mv1	03	FF	3	B		5		1271	45	330	MD	ST	PU							zsd	FG	a	H		
T-12-G077	b12-077	G-077	Blackwater	RNI.DVA	Good	Good	Good	29/07/2012	CH/KT/PU	Trans 2 Haul Road	NAU	10	378327	5895980	ESSF	mv1	01	FR	4	C		5		1269	9	18			PU							zs	FG	v		sg	FG
T-12-G075	b12-075	G-075	Blackwater	RNI.DVA	Good	Good	Good	29/07/2012	CH/KT/PU	Transect 2 Haul Road	NAU	10	377415	5895456	ESSF	mv1	04	FG	5	D		6		1314	0	999	LW	CC	PU							dzs	M	b			
T-12-G073	b12-073	G-073	Blackwater	RNI.DVA	Good	Good	Good	29/07/2012	CH/KT/PU	Transect 2 Haul Road	NAU	10	376164	5895223	ESSF	mv1	05	FH	5	D		6		1368	4	345	LW	CC	PU							u	O	xv		sz	F
T-12-G071	b12-071	G-071	Blackwater	RNI.DVA	Good	Good	Good	29/07/2012	CH/KT/PU	Trans 2 Haul Road	NAU	10	375954	5894868	ESSF	mv1	03	FF	2	B		5		1415	40	140	MD	ST	PU							zsd	FG	a			
T-12-G070	b12-070	G-070	Blackwater	RNI.DVA	Good	Good	Good	29/07/2012	CH/KT/PU	Transect 2 Haul Road	NAU	10	375932	5894788	ESSF	mv1	01	FR	4	B		5		1402	10	128	TO	ST	PU							zsd	FG	j			
T-12-G069	b12-069	G-069	Blackwater	RNI.DVA	Good	Good	Good	29/07/2012	CH/KT/PU	Transect 2 Haul Road laving WL8	NAU	10	375808	5894689	ESSF	mv1	05	FH	7	B		6		1405	3	85	DP		PU							u	O	vx			
T-12-G068	b12-068	G-068	Blackwater	RNI.DVA	Good	Good	WL8	29/07/2012	CH/KT/PU	WL8	NAU	10	375547	5894675	ESSF	mv1	00	Wf11	8	B	Blue	2b		1416	0	999	DP	CC	PU							e	O	pb			
T-12-G067b	b12067b	067b			Fair	Fair	Poor	21/07/2012	CH	BlackWater	NAU	10	376344	5895935	ESSF	mv1	00	Wm01	8	D				1315	0	999	DP		PU												

Map Plot No.	Surface Exp Sub Surf	Geo Mor Pro Sub Surf	Flooding Regime Freq	Moisture Regime Sub	Flooding Regime Dur	Soil Drainage	Seepage Depth	Root Restricting Type	Root Restricting Depth	Root Zone Particle Size	Rooting Depth	Soil Class Sub Group	Soil Class Group	Humus Form	pH Method Code Mineral	pH Method Code Organic	Strata Cover Tree	Strata Cover Shrub	Strata Cover Herb	Strata Cover Moss	Hydro Geo System	Hydro Geo Sub System
T-12-V074						w				LS	40			D			5	75	9	80		
T-12-V072						m				L				D			18	75	15	60		
T-12-V061																			60	40	P	lb
T-12-V059																		3	50	15	P	lb
T-12-V055						w				LS				D			45	13	48	72		
T-12-V052																		10	75	80	P	tb
T-12-V050																	45	5	35	10	P	tb
T-12-V049						w				S	20			D			45	9	14	66		
T-12-V045	r					m											1	35	40			
T-12-V044																						
T-12-V041	s					x																
T-12-V039															W19				45	40	P	ob
T-12-V037															W16				55	10	P	lb
T-12-V028						w																
T-12-V013																						
T-12-V007						p															P	lb
T-12-V005																					P	lb
T-12-V004																						
T-12-G240						4				L	30			2			10	50	20	85		
T-12-G239	v					6				SIL				4			20	55	80	10	P	lb
T-12-G238														4					45	10	P	lb
T-12-G237	b					5				L	32			5			20	70	25	90	P	lb
T-12-G236						4				S:L	40			1			10	60	15	95		
T-12-G235						4				SIL	40			1			5	35	15	90		
T-12-G234						3				LS				1			15	30	25	50		
T-12-G233						3				LS				1			10	50	35	60		
T-12-G232						3				S				1			10	37	25	70		
T-12-G231						3				S				1			30	25	10	80		
T-12-G230						4				Sil	35			2			25	15	20	90		
T-12-G229						m				L	40			D								
T-12-G228										FSI	25			R			40	20	20	45		
T-12-G226						w				FLS	25			R								
T-12-G225	p				E	p	85			F	21	GL	HG	FR					90	1	P	lb
T-12-G224	u					r		L		CL	15			D								
T-12-G223						w				CL												
T-12-G222	b					p	40							FR			60	25	40	75	P	lh
T-12-G221								L		L												
T-12-G220	r					r				CL												
T-12-G219						w				CL				D								
T-12-G218						i	40			FL				R			0	40	50	7		
T-12-G217						p				Fi				FR			55	60	16	40	P	ob
T-12-G216						w				CL	1			D								
T-12-G215						w				CL				D			20	30	30	35		
T-12-G214	k					r					25			L								
T-12-G213						m		K	20	L	20			R								
T-12-G212						w				CL	25			R								
T-12-G211						m				FL	40			D								
T-12-G210									35	FL				R			55	30	25	60	P	cb
T-12-G209						m				FL	25			D								
T-12-G208										CL												
T-12-G207						w		K		CL				R								
T-12-G206	v					i				L				UR								
T-12-G205			X			w				CL	32	O	MB	TD							U	
T-12-G204										FL	25											
T-12-G203						m		K	22	FL	22			D								
T-12-G202	r					r		L		CL	20			D								
T-12-G201						m			25	FSI				D								
T-12-G200						m				FSI												
T-12-G091						m				SL	20			D			49	30	55	65		
T-12-G090						p												35	85	5	P	lb
T-12-G089						m				FSL	42			L					100	15		
T-12-G088						m	35			SL	25			D			60	8	75	85		
T-12-G086						p											20	50	65	70	P	lb
T-12-G085	p					i	36			FSL	40							80	55	55	P	lb
T-12-G084						p	2											10	90	25	P	ob
T-12-G082						p								D				2	70	45	P	cb
T-12-G080						w				SL				D			15	55	24	50		
T-12-G079						w				LS							25	50	7	81		
T-12-G077	ju					w				SL	30			D			35	70	20	33		
T-12-G075						m				L				D			3	35	70	45		
T-12-G073	vb						40			L	30						50	14	85	70	P	lh
T-12-G071						w				SL				D			20	35	10	55		
T-12-G070						m	25			LS	20			D			35	20	60	70		
T-12-G069						p	30										22	40	88	55	P	ob
T-12-G068						p	4										0	14	70	85	P	ob
T-12-G067b															W24			30	15	2	P	lb

Map Plot No.	Plot No.	Field No.	Proj ID	FS Reg District	Site Plot Qlty	Veg Plot Qlty	Soil Plot Qlty	Date	Site Surveyor	Location	Ecosection	UTM Zone	UTM Easting	UTM Northing	Zone	Sub Zone	Site Series	Map Unit	Moisture Regime	Nutrient Regime	BC Listing	Structural Stage	Structural Stage Mod	El.	Slope Gradient	Aspect	Meso Slope Position	Surface Shape	Soil Surveyor	Bedrock Geology1	Bedrock Geology2	Bedrock Geology3	Coarse Frag Lith1	Coarse Frag Lith2	Coarse Frag Lith3	Terrain Texture Surf	Surficial Mat Surf	Surface Exp Surf	Geo Mor Pro Surf	Terrain Texture Sub Surf	Surficial Material Sub Surf
T-12-G067	b12-067	G-067	Blackwater	RNI.DVA	Good	Good	WL24	29/07/2012	CH/KT/PU	WL 24	NAU	10	376277	5895958	ESSF	mv1	00	VG	5	D		2a		1315	0	999	DP	CC	PU							sz	L	v		zs	F
T-12-G066	b12-066	G-066	Blackwater	RNI.DVA	Good	Good	Good	28/07/2012	CH/KT/PU	T/L Trans 7	NAU	10	379065	5899685	SBS	mc3	02	LJ	1	A		3		1165	50	152	UP	ST	PU							sd	FG	ak			
T-12-G065	b12-065	G-065	Blackwater	RNI.DVA	Good	Good	Good	28/07/2012	CH/KT/PU	T/L Trans 7	NAU	10	378544	5899331	SBS	mc3	03	LF	2	B		5		1179	5	999	LV		PU							zsd	FG	u			
T-12-G064	b12-064	G-064	Blackwater	RNI.DVA	Good	Good	Good	28/07/2012	CH/KT/PU	T/L Trans 7	NAU	10	378352	5899039	SBS	mc3	03	LF	1	A		5		1191	2	286	CR	CV	PU							zsd	FG	r			
T-12-G063	b12-063	G-063	Blackwater	RNI.DVA	Good	Good	Good	28/07/2012	CH/KT/PU	T/L Trans 7	NAU	10	378080	5898834	SBS	mc3	08	SH	7	D		3a		1192			DP		PU							h	O	xv		sz	F
T-12-G062	b12-062	G-062	Blackwater	RNI.DVA	Good	Good	Good	28/07/2012	CH/KT/PU	T/L Trans 7	NAU	10	378118	5898525	SBS	mc3	03	LF	2	B		5		1206	10	313	MD	ST	PU							zsd	FG	ju			
T-12-G060	b12-060	G-060	Blackwater	RNI.DVA	Good	Good	WL13	28/07/2012	CH/KT/PU	WL 13	NAU	10	373522	5899817	SBS	mc3	00	Wf02	7	B	Blue	2b		1300	0	999	DP	CC	PU							e	O	pb			
T-12-G058	b12-058	G-058	Blackwater	RNI.DVA	Good	Good	WL12	28/07/2012	CH/KT/PU	WL12	NAU	10	375025	5898926	SBS	mc3	00	Wf02	8	B	Blue	2b		1266	0	999			PU							e	O	pb			
T-12-G057	b12-057	G-057	Blackwater	RNI.DVA	Good	Good	C4	28/07/2012	CH/KT/PU	C4 wetland	NAU	10	348880	5902925	SBS	mc3	00	Wf02	7	B	Blue	2b		1160	0	999	LV		PU							e	O	pb			
T-12-G056	b12-056	G-056	Blackwater	RNI.DVA	Good	Good	C1	28/07/2012	CH/KT/PU	CI Subalpine wetland	NAU	10	358155	5901839	ESSF	mv1	00	GW	6	D		2a		1575	2	999	TO		PU							u	O	xv		szd	M
T-12-G054	b12-054	G-054	Blackwater	RNI.DVA	Good	Good	WL28	28/07/2012	CH/KT/PU	WL 28	NAU	10	371611	5896084	ESSF	mv1	00	Wb05	8	C		2b		1362	0	999	DP	CC	PU							e	O	pb			
T-12-G053	b12-053	G-053	Blackwater	RNI.DVA	Good	Good	WL4	28/07/2012	CH/KT/PU	WL 4	NAU	10	371740	5894362	ESSF	mv1	00	Wf08	8	C	Blue	2b		1346	0	999	DP		PU							eo	PB				
T-12-G051	b12-051	G-051	Blackwater	RNI.DVA	Good	Good	Good	27/07/2012	CH/KT/PU	TL between 12 & 13	NAU	10	385390	5914412	SBS	mc3	00	Wf02	7	C	Blue			1062	0	999	LV		PU							u	O	b			
T-12-G048	b12-048	G-048	Blackwater	RNI.DVA	Good	Good	Good	27/07/2012	CH/KT/PU	TL between trans 12 & 13	NAU	10	386627	5914888	SBS	mc3	08	SH	6	D		5		1117	8	150	TO	CC	PU							h	O	x		sz	LG
T-12-G047	b12-047	G-047	Blackwater	RNI.DVA	Good	Good	Good	27/07/2012	CH/KT/PU	TL between trans 12 & 13	NAU	10	386844	5914902	SBS	mc2	01	SB	4	C		5		1131	7	220			PU							sz	LG	ujp			
T-12-G046	b12-046	G-046	Blackwater	RNI.DVA	Good	Good	Good	27/07/2012	CH/KT/PU	TL between 12 & 13	NAU	10	387067	5915133	SBS	mc2	01	SB	4	C		5		1151	10	215	MD	ST	PU							sz	LG	j			
T-12-G043	b12-043	G-043	Blackwater	RNI.DVA	Good	Good	Good	27/07/2012	CH/KT/PU	T/L between trans 12 & 13	NAU	10	388411	5915987	ESSF	mv1	01	FR	4	C		5		1241	10	100	MD		PU							dzs	M	b			
T-12-G042	b12-042	G-042	Blackwater	RNI.DVA	Good	Good	Good	27/07/2012	CH/KT/PU	TL between Trans 12 & 13	NAU	10	388880	5916591	ESSF	mv1	05	FH	6	D		6		1240	7	150		ST	PU							h	O	x		sz	F
T-12-G040	b12-040	G-040	Blackwater	RNI.DVA	Good	Good	Good	27/07/2012	CH/KT/PU	T/L between Trans 12 & 13	NAU	10	389222	5916781	ESSF	mv1	01	FR	4	C		6		1262	24	127			PU							dzs	M	b			
T-12-G038	b12-038	G-038	Blackwater	RNI.DVA	Good	Good	WL19	27/07/2012	CH/KT/PU	WL19	NAU	10	379555	5903851	SBS	mc3	00	Wb11	8	B	Blue	3a		1084	0	999	TO	ST	PU							e	O	p			
T-12-G036	b12-036	G-036	Blackwater	RNI.DVA	Good	Good	WL16	27/07/2012	CH/KT/PU	WL 16	NAU	10	378399	5900592	SBS	mc3	00	Wf02	7	B	Blue	3a		1145	0	999	LV	ST	PU							u	O	p			
T-12-G035	b12-035	G-035	Blackwater	RNI.DVA	Good	Good	WL15	27/07/2012	CH/KT/PU	W15	NAU	10	379497	5898073	SBS	mc3	00	Ws04	8	D		3a		1196	0	999	TO	ST	PU							h	O	p			
T-12-G034	b12-034	G-034	Blackwater	RNI.DVA	Good	Good	Good	14/07/2012	CH/KT/PU	Trans 12 / T/L	NAU	10	383790	5913681	SBS	mc3	00	Wf02	8	E	Blue			1056	0	999	DP		PU							u	O	x		dns	M
T-12-G033	b12-033	G-033	Blackwater	RNI.DVA	Good	Good	Good	26/07/2012	CH/KT/PU	Trans 12 T/L	NAU	10	383832	5913522	SBS	mc3	08	SH	7	D		5		1054	0	999	LV	ST	PU							u	O	x		dsm	M
T-12-G032	b12-032	G-032	Blackwater	RNI.DVA	Good	Good	Good	26/07/2012	CH/KT/PU	Trans 12 T/L	NAU	10	383546	5913261	SBS	mc3	01	SB	4	C		4		1060	1	999	LV		PU							dms	M	b			
T-12-G031	b12-031	G-031	Blackwater	RNI.DVA	Good	Good	Good	26/07/2012	CH/KT/PU	Trans 12 T/L	NAU	10	382876	5913020	SBS	mc3	03	LF	5	C		5		1057	1	999	LV		PU							dms	M	b			
T-12-G030	b12-030	G-030	Blackwater	RNI.DVA	Good	Good	Good	24/07/2012	CH/KT/PU	Trans 12 T/L	NAU	10	382801	5912804	SBS	mc3	06	BF	5	C		5		1051	5	244	MD	ST	PU							dsm	M	b	L		
T-12-G027	b12-027	G-027	Blackwater	RNI.DVA	Good	Good	Good	26/07/2012	CH/KT/PU	Trans 12 T/L	NAU	10	381427	5911871	SBS	dk	01	SP	4	C		5		978	5	210	MD	ST	PU							sm	LG	u			
T-12-G026	b12-026	G-026	Blackwater	RNI.DVA	Good	Good	Good	26/07/2012	CH/KT/PU	Trans 12 / T/L	NAU	10	381131	5911717	SBS	dk	02	LJ	1	B		3a		951	40	200	UP	ST	PU							dzs	M	b			
T-12-G025	b12-025	G-025	Blackwater	RNI.DVA	Good	Good	Good	26/07/2012	CH/KT/PU	Tran 12 T/L	NAU	10	381073	5911741	SBS	dk	07	SH	6	D		5		944	17	217	LW	CC	PU							dsm	M	b	L		
T-12-G024	b12-024	G-024	Blackwater	RNI.DVA	Good	Good	Good	26/07/2012	CH/KT/PU	Trans 12 / t/L	NAU	10	380953	5911506	SBS	dk	06	ST	4	D		5		931	1	999	TO		PU							dsm	M	b			
T-12-G023	b12-023	G-023	Blackwater	RNI.DVA	Good	Good	Good	26/07/2012	CH/KT/PU	Transect 12 - T/L	NAU	10	381167	5911261	SBS	dk	00	Wf04	7	C		3a		924	1	999	TO		PU							u	O	vb			
T-12-G022	b12-022	G-022	Blackwater	RNI.DVA	Good	Good	Good	25/07/2012	CH/KT/PU	C-Road ~3 km side road	NAU	10	373324	5897015	ESSF	mv1	05	FH	6	D		6		1393	4		TO		PU							h	O	xv	L		M
T-12-G021	b12-021	G-021	Blackwater	RNI.DVA	Good	Good	Good	25/07/2012	CH/KT/PU	C-road ~3km side road	NAU	10	373241	5896763	ESSF	mv1	03	FF	3	B		5		1411	5	999	CR		PU							zds	M	b			
T-12-G020	b12-020	G-020	Blackwater	RNI.DVA	Good	Good	Good	25/07/2012	CH/KT/PU	C road ~ 4km side road	NAU	10	373309	5897611	ESSF	mv1	01	FR	4	C		6		1400	15	18	MD	CV	PU							zds	M	b			
T-12-G019	b12-019	G-019	Blackwater	RNI.DVA	Good	Good	Good	27/07/2012	CH/KT/PU	C-road ~4 km side road	NAU	10	373367	5897497	ESSF	mv1	04	FG	5	D		6		1398	17	70	LW		PU							dsz	M	b	L		
T-12-G018	b12-018	G-018	Blackwater	RNI.DVA	Good	Good	Good	25/07/2012	CH/KT/PU	C-Road ~4km side road	NAU	10	373418	5897520	ESSF	mv1	00	Wb10	8	D	Blue	2b		1389	0	999	LV	ST	PU							e	O	vb			
T-12-G017	b12-017	G-017	Blackwater	RNI.DVA	Good	Good	Good	25/07/2012	CH/KT/PU	C-Road ~5.5km side road	NAU	10	373557	5898055	ESSF	mv1	05	FH	6	D		6		1345	6	60	TO		PU							u	O	x		msd	M
T-12-G016	b12-016	G-016	Blackwater	RNI.DVA	Good	Good	Good	25/07/2012	CH/KT/PU	C-Road ~5km - side road	NAU	10	373375	5898442	ESSF	mv1	03	FF	3	B		6		1378	12	80	MD	ST	PU							zds	M	b			
T-12-G015	b12-015	G-015	Blackwater	RNI.DVA	Good	Good	Good	25/07/2012	CH/KT/PU	C Road ~ 5.5km pull out	NAU	10	374510	5898626	ESSF	mv1	01	FR	3	B		5		1306	10	10	MD	ST	PU							zgs	FG	j			
T-12-G014	b12-014	G-014	Blackwater	RNI.DVA	Good	Good	Good	25/07/2012	CH/KT/PU	C-Road ~ 5.5km Large Pull Out	NAU	10	374541	5898845	ESSF	mv1	05	FH	6	D				1286	2	60	TO		PU							u	O	x		zsd	M
T-12-G012	b12-012	G-012	Blackwater	RNI.DVA	Good	Good	Good	25/07/2012	CH/KT/PU	C-Road ~ 6km / Side Road	NAU	10	375414	5898022	ESSF	mv1	05	FH	6	D		4		1259	2	999	LW	ST	PU							dzs	F	pt			
T-12-G011	b12-011	G-011	Blackwater	RNI.DVA	Good	Good	Good	24/07/2012	CH/KT/PU	South of Snake Lake	NAU	10	382281	5899129	SBS	mc3	00	Wf02	7	D	Blue			1129	0	999	DP	CC	PU								O	x		Mds	M
T-12-G010	b12-010	G-010	Blackwater	RNI.DVA	Good	Good	Good	24/07/2012	CH/KT/PU	South of Snake Lake	NAU	10	382339	5899587	SBS	mc3	04	SS	3	C				1125	2	999		CC	PU							zgs	FG	uj	H		
T-12-G009	b12-009	G-009	Blackwater	RNI.DVA	Good	Good	Good	24/07/2012	CH/KT/PU	Ridge south of Snake Lake	NAU	10	382623	5899642	SBS	mc3	03	LF	2	A				1110	0	999	CR		PU							zgs	FG	r			
T-12-G008	b12-008	G-008	Blackwater	RNI.DVA	Good	Good	Good	24/07/2012	CH/KT/PU	South of Snake Lake Forested wetland SE of Snake Lake	NAU	10	382730	5899834	SBS	mc3	08	Ws07	7	C		5		1107	0	999	DP	ST	PU							u	O	b			
T-12-G006	b12-006	G-006	Blackwater	RNI.DVA	Good	Good	Good	24/07/2012	CH/KT/PU	South of Snake Lake Kettled terrain SE of Snake Lake	NAU	10	382477	5899766	SBS	mc3	03	LF	3	C		4		1114	44	90	MD	ST	PU							sgz	FG	a	H		
T-12-G002	b12-002	G-002	Blackwater	RNI.DVA	Good	Good	Good	24/07/2012	CH/KT/PU	South of Snake Lake	NAU	10	381556	5899223	SBS	mc3	09	Wb05	7	B				1134	0	999	DP	ST	PU							c	O	p			
T-12-G001	b12-001	G-001	Blackwater	RNI.DVA	Good	Good	Good	24/07/2012	CH/KT/PU	South of Snake Lake	NAU	10	381539	5898957	SBS	mc3	03	LF	1	A		4		1150	43	186	UP		PU							gs	FG	h	H		
T-12-F029	b12-029	F-029	Blackwater	RNI.DVA	Good	Good	Good	26/07/2012	CH/KT/PU	Trans 12 T/L	NAU	10	382131	5912440	SBS	dk	01	SP	5	D		5		1015	6	232	MD	ST	PU							csz	LG	uj			
T-12-F003	b12-003	F-003	Blackwater	RNI.DVA	Good	Good	Good	24/07/2012	CH/KT/PU	South of Snake Lake	NAU	10	381699	5899439	SBS	mc3	01	SB	4	C		5		1140	0	999	LV	ST	PU	an			an	ii		mds	M	b			
T-11-V041	BWVIS41	V-41	Blackwater	RNI.DVA	Fair	Fair	Fair	17/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	374507	5891337	ESSF	xvp	00	SF	3	B		3a		1788	5	9	MD													
T-11-V040	BWVIS40	V-40	Blackwater	RNI.DVA	Fair	Fair	Fair	17/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	372577.9063	5895501.5	ESSF	mv1	00	Wf03	7	D		2b		1314	0	999	LV										O	b				
T-11-V039	BWVIS39	V-39	Blackwater	RNI.DVA	Fair	Fair	Fair	17/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	372882.25	5895915	ESSF	mv1	05	FH	6	D		6		1331	16	160	LW														
T-11-V038	BWVIS38	V-38	Blackwater	RNI.DVA	Fair	Fair	Fair	17/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	373797.6875	5893890.5	ESSF	mv1	00	Wf01	8	D				1433	0	999	LV										O					
T-11-V037	BWVIS37	V-37	Blackwater	RNI.DVA	Fair	Fair	Fair	17/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	373880.2813	5893734	ESSF	mv1	01	FR	4	C		6		1451	16	4	MD										M					
T-11-V036	BWVIS36	V-36	Blackwater	RNI.DVA	Fair	Fair	Fair	17/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	373944.2188	5893519	ESSF	mv1	05	FH	6	D		6		1474													M	u				
T-11-V035	BWVIS35	V-35	Blackwater	RNI.DVA	Fair	Fair	Fair	17/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	374135.625	5893164.5	ESSF	mv1	05	FH	5	d		7		1501	10	2	LW														
T-11-V034	BWVIS34	V-34	Blackwater	RNI.DVA	Fair	Fair	Fair	17/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	374290.5	5892987	ESSF	mv1	04	FG	5	C		6		1533	12	330	LW										M	b	L			
T-11-V033	BWVIS33	V-33	Blackwater	RNI.DVA	Fair	Fair	Fair	17/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	374473.5	5892583.5	ESSF	mv1	04	FG	5	D				1592	20	330	MD										M	v				
T-11-V032	BWVIS32	V-32	Blackwater	RNI.DVA	Fair	Fair	Fair	17/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	374884.1563	5891751	ESSF	xvp	00	HT	4	B		2d		1731	10	24	LW	CC														
T-11-V031	BWVIS31	V-31	Blackwater	RNI.DVA	Fair	Fair	Fair	15/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	371901	5893587	ESSF	mv1	n/a	n/a																								
T-11-V030	BWVIS30	V-30	Blackwater	RNI.DVA	Fair	Fair	Fair	15/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	371901	5893587	ESSF	mv1	03	FF	2	A		6		1544	74	320	UP										C	b				
T-11-V029	BWVIS29	V-29	Blackwater	RNI.DVA	Fair	Fair	Fair	15/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	371269	5892456	ESSF	xvp	00	TW				2d		1766			CR															
T-11-V028	BWVIS28	V-28	Blackwater	RNI.DVA	Fair	Fair	Fair	15/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	371648.2188	5894304	ESSF	mv1	00	Wb05	7	D		2b		1355	2	302	LW										O	b				
T-11-V027	BWVIS27	V-27	Blackwater	RNI.DVA	Fair	Fair	Fair	14/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	376472.4375	5898773.5	SBS	mc3	03	LF	2	B		4		1243	10	120	LV										FG	u				
T-11-V026	BWVIS26	V-26	Blackwater	RNI.DVA	Fair	Fair	Fair	13/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	376220.125	5898118	SBS	mc3	01	SB	3	B		5		1239	24	65	MD										FG					
T-11-V025	BWVIS25	V-25	Blackwater	RNI.DVA	Fair	Fair	Fair	13/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	376209.6875	5898065.5	SBS	mc3	02	LJ	1	B		5		1234	64	160																
T-11-V024	BWVIS24	V-24	Blackwater	RNI.DVA	Fair	Fair	Fair	13/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	375864	5897956.5	SBS	mc3	03	LF	1	B		3		1244	0	999	LV										FG	v				
T-11-V023	BWVIS23	V-23	Blackwater	RNI.DVA	Fair	Fair	Fair	13/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	374867.4375	5896798.5	SBS	mc3	07	ST	5	D		5		1294	14	75	LW															
T-11-V022	BWVIS22	V-22	Blackwater	RNI.DVA	Fair	Fair	Fair	13/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	374586.8438	5896419	SBS	mc3	02	LJ	3	B				1326	55	140	UP															
T-11-V021	BWVIS21	V-21	Blackwater	RNI.DVA	Fair	Fair	Fair	13/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	372463.5625	5894499	ESSF	mv1	00	Wb08	7	D		2b/3		1414	0	999	DP										O	v				
T-11-V020	BWVIS20	V-20	Blackwater	RNI.DVA	Fair	Fair	Fair	13/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	377155.25	5898122.5	SBS	mc3	01	SB						1224																		
T-11-V019	BWVIS19	V-19	Blackwater	RNI.DVA	Fair	Fair	Fair	13/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	376901.4688	5897785	SBS	mc3	00	Wm01	8	E		2b		1234	0	999	DP															
T-11-V018	BWVIS18	V-18	Blackwater	RNI.DVA	Fair	Fair	Fair	13/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	376757.4375	5897702	SBS	mc3	02	LJ	3	B		3		1243	4	30	UP										M	v				
T-11-V017	BWVIS17	V-17	Blackwater	RNI.DVA	Fair	Fair	Fair	12/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	376530.4063	5897421.5	SBS	mc3	03	LF	3	C		4		1262																		
T-11-V016	BWVIS16	V-16	Blackwater	RNI.DVA	Fair	Fair	Fair	12/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	375226.4375	5896288	ESSF	mv1	01	FR				3		1288	30	330	MD															
T-11-V015	BWVIS15	V-15	Blackwater	RNI.DVA	Fair	Fair	Fair	12/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	357362	5895897	ESSF	mv1	00	Wf11	8	d	Blue	2b		1343			DP										O	v				
T-11-V014	BWVIS14	V-14	Blackwater	RNI.DVA	Fair	Fair	Fair	12/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	375282	5895380	ESSF	mv1	05	FH	6	D		3		1360	5	40	LW															
T-11-V013	BWVIS13	V-13	Blackwater	RNI.DVA	Fair	Fair	Fair	12/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	375319	5895274	ESSF	mv1	01	FR	4	C		5		1398	18	330	MD															
T-11-V012	BWVIS12	V-12	Blackwater	RNI.DVA	Fair	Fair	Fair	12/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	375435	5894699	ESSF	mv1	00	Wf10	7	D	Red	2b		1402	0	999	LV										O	b				
T-11-V011	BWVIS11	V-11	Blackwater	RNI.DVA	Fair	Fair	Fair	12/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	373813	5892993	ESSF	mv1	01	FR	4	C		6		1536	22	40	MD															

Map Plot No.	Surface Exp Sub Surf	Geo Mor Pro Sub Surf	Flooding Regime Freq	Moisture Regime Sub	Flooding Regime Dur	Soil Drainage	Seepage Depth	Root Restricting Type	Root Restricting Depth	Root Zone Particle Size	Rooting Depth	Soil Class Sub Group	Soil Class Group	Humus Form	pH Method Code Mineral	pH Method Code Organic	Strata Cover Tree	Strata Cover Shrub	Strata Cover Herb	Strata Cover Moss	Hydro Geo System	Hydro Geo Sub System
T-12-G067	b					i	35			LS	12			L				15	100	65		
T-12-G066						w				S							2	50	35	30		
T-12-G065						w				LS												
T-12-G064						w				LS	20			D			26	6	7	52		
T-12-G063	v					i	25			FSL	25						7	60	40	20	P	oh
T-12-G062						w				LS	20			D			50	20	38	57		
T-12-G060						p	2								W13			35	50	70	P	lb
T-12-G058						p												55	45	75	P	lb
T-12-G057						p	20				30				C4			36	55	55	P	lb
T-12-G056	vb					i					33						4	10	90	50		
T-12-G054						p		W	0						W28			50	47	55	P	lb
T-12-G053						p	2	W	2									10	80	22	P	ob
T-12-G051						p		W	3									55	55	75	P	tb
T-12-G048	ja					i	25			FSL							30	50	50	25	P	lh
T-12-G047						m				FSL	25			D			50	25	60	12		
T-12-G046						m				FSL	20			D			51	35	65	55		
T-12-G043						m				SiL	20			D			50	35	70	70		
T-12-G042	v					i				FSL							50	20	60	50	F	a
T-12-G040						m				L	20						60	43	75	85		
T-12-G038							5								W19			55	40	75	P	ob
T-12-G036						p	25								W16			60	33	62	P	lb
T-12-G035						p									W15			89	20	15	P	lb
T-12-G034	b					p												10	80	55	P	lb
T-12-G033	b					p	3			SiL				D			26	14	65	50	P	ts
T-12-G032						m				SiL				D			70	10	15	90		
T-12-G031						i	25				20			D			47	35	40	65		
T-12-G030						i	25			SiL	25			D			50	25	25	70		
T-12-G027						m					25			R			15	45	40	60		
T-12-G026						w					20						5	35	25	40		
T-12-G025						i	20			L				D			60	5	55	70	P	ts
T-12-G024						m					25			R			65	33	30	55		
T-12-G023						p	30										0	85	25	80	P	lb
T-12-G022	b					p	10										50	30	65	60	P	lh
T-12-G021						w					30			D								
T-12-G020						m					20			D			60	80	15	73		
T-12-G019						i	15							D			60	3	85	80		
T-12-G018						p	2											52	60	90	P	cb
T-12-G017	b					m											40	33	55	25	P	lh
T-12-G016						w				L	25			D			50	40	34	85		
T-12-G015						w								R			45	75	30	70		
T-12-G014	b					i								D			55	11	45	70	P	lh
T-12-G012						m								D			25	65	55	15	F	a
T-12-G011	b						2										0	35	65	0	P	ob
T-12-G010																	40	17	25	71		
T-12-G009						w								D			15	20	20	40		
T-12-G008						p											50	6	60	80	P	lb
T-12-G006						w				L				D			15	60	60	30		
T-12-G002	p					p											0	55	50	70	P	ob
T-12-G001						r		N		S	30			R			21	20	40	36		
T-12-F029			X			w	60	N		CL	32			D			24	45	65	55	U	
T-12-F003			X			m	42	N		CL	32	EB		RD			25	52	55	60	U	
T-11-V041						w																
T-11-V040						v												12	55	25	P	lh
T-11-V039																	40	35	30	10	P	ob
T-11-V038						v											4	41	75	80	P	ob
T-11-V037						w											15	70	4	79		
T-11-V036						i											35	15	35	10	F	a
T-11-V035																	17	15	35	25	F	a
T-11-V034						i																
T-11-V033						w																
T-11-V032																						
T-11-V031																						
T-11-V030						r																
T-11-V029																						
T-11-V028						v											2	15	35	25	P	lb
T-11-V027						r				S												
T-11-V026										S												
T-11-V025																						
T-11-V024						x				S												
T-11-V023																	15	20	25	10		
T-11-V022																						
T-11-V021						v												18	80	65	P	ob
T-11-V020																						
T-11-V019																			10		P	oh
T-11-V018						w								D								
T-11-V017																	40	50	40	50		
T-11-V016																						
T-11-V015						v											2	5	30	60	P	lb
T-11-V014																	20	45	35		F	a
T-11-V013																						
T-11-V012						v													45	10	P	ob
T-11-V011						i																

Map Plot No.	Plot No.	Field No.	Proj ID	FS Reg District	Site Plot Qlty	Veg Plot Qlty	Soil Plot Qlty	Date	Site Surveyor	Location	Ecosection	UTM Zone	UTM Easting	UTM Northing	Zone	Sub Zone	Site Series	Map Unit	Moisture Regime	Nutrient Regime	BC Listing	Structural Stage	Structural Stage Mod	El.	Slope Gradient	Aspect	Meso Slope Position	Surface Shape	Soil Surveyor	Bedrock Geology1	Bedrock Geology2	Bedrock Geology3	Coarse Frag Lith1	Coarse Frag Lith2	Coarse Frag Lith3	Terrain Texture Surf	Surficial Mat Surf	Surface Exp Surf	Geo Mor Pro Surf	Terrain Texture Sub Surf	Surficial Material Sub Surf
T-11-V010	BWVIS10	V-10	Blackwater	RNI.DVA	Fair	Fair	Fair	11/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	374344	5891434	ESSF	xvp	00	SF				3a		1762			MD															
T-11-V009	BWVIS09	V-9	Blackwater	RNI.DVA	Fair	Fair	Fair	11/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	373720	5890764	BAFA	un	00	FH						1834														M	x			
T-11-V008	BWVIS08	V-8	Blackwater	RNI.DVA	Fair	Fair	Fair	11/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	373549	5890631	BAFA	un	00	SF	2	B		2d		1836	2	42	CR	CV														
T-11-V007	BWVIS07	V-7	Blackwater	RNI.DVA	Fair	Fair	Fair	11/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	373310	5890708	BAFA	un	00	SF	4	B		3a		1805	6	254	MD															
T-11-V005	BWVIS05	V-5	Blackwater	RNI.DVA	Fair	Fair	Fair	10/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	371898	5895587	ESSF	mv1	01	FR				7		1377																		
T-11-V004	BWVIS04	V-4	Blackwater	RNI.DVA	Fair	Fair	Fair	10/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	371872	5895138	ESSF	mv1	00	Wm01	7	E		2b		1345	4	35	LW															
T-11-V003	BWVIS03	V-3	Blackwater	RNI.DVA	Fair	Fair	Fair	10/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	371540	5895481	ESSF	mv1	01	FR				7		1404														M	h			
T-11-V002	BWVIS02	V-2	Blackwater	RNI.DVA	Fair	Fair	Fair	10/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	371456	5895843	ESSF	mv1	02	LC	2	B		3b		1387	0	999	CR											M	v			
T-11-V001	BWVIS01	V-1	Blackwater	RNI.DVA	Fair	Fair	Fair	10/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	371485	5896314	ESSF	mv1	01	FR	4	C		4		1379																		
T-11-G081	BWG-081	G-081	Blackwater	RNI.DVA	Good	Good	Good	18/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	375563	5892273	ESSF	xvp1	00	PC	4	C		3		1673	14	340	MD											M	b			
T-11-G080	BWG-080	G-080	Blackwater	RNI.DVA	Good	Good	Good	18/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	375313	5891731	ESSF	xvp1	00	KC	0	A		2d		1759	17	250	UP											M	v			R
T-11-G079	BWG-079	G-079	Blackwater	RNI.DVA	Good	Good	Good	18/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	374754	5891399	ESSF	xvp1	00	MH	5	D		2d		1764	18	70	MD											M				R
T-11-G078	BWG-078	G-078	Blackwater	RNI.DVA	Good	Good	Good	18/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	374896	5898928	ESSF	mv1	00	Wb05	7	A		2b		1263	0	999												O	b			
T-11-G077	BWG-077	G-077	Blackwater	RNI.DVA	Good	Good	Good	18/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	374427	5899269	ESSF	mv1	05	FH	6	D		5		1278	4	120	LW											F	p			
T-11-G076	BWG-076	G-076	Blackwater	RNI.DVA	Good	Good	Good	18/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	374132	5899439	ESSF	mv1	01	FR	4	C		5		1283	28	110	UP											FG	v			M
T-11-G075	BWG-075	G-075	Blackwater	RNI.DVA	Good	Good	Good	18/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	373906	5899566	ESSF	mv1	03	FF	3	B		4		1306	15	360	MD											FG	v			M
T-11-G074	BWG-074	G-074	Blackwater	RNI.DVA	Good	Good	Good	18/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	373727	5899700	ESSF	mv1	03	FF	3	B		6		1298	10	30	CR											FG	u			
T-11-G073	BWG-073	G-073	Blackwater	RNI.DVA	Good	Good	Good	18/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	373583	5899804	ESSF	mv1	00	Wf05	8	A	Blue	2b		1288	0	999	DP											O	b			
T-11-G072	BWG-072	G-072	Blackwater	RNI.DVA	Good	Good	Good	13/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	372724	5895618	ESSF	mv1	02	LC	2	B		3		1318	0	999	LV											FG	t			
T-11-G071	BWG-071	G-071	Blackwater	RNI.DVA	Good	Good	Good	17/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	373162	5896426	ESSF	mv1	03	FF	3	C				1391	13	210	MD															
T-11-G070	BWG-070	G-070	Blackwater	RNI.DVA	Good	Good	Good	17/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	373814	5893871	ESSF	mv1	02	LC	2	B		3		1438	5	4												FG	v			M
T-11-G069	BWG-069	G-069	Blackwater	RNI.DVA	Good	Good	Good	17/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	374031	5893303	ESSF	mv1	02	LC	2	B		3		1495	0	999	CR											FG	v			M
T-11-G068	BWG-068	G-068	Blackwater	RNI.DVA	Good	Good	Good	17/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	374549	5892372	ESSF	mv1	04	FG	5	D		7		1628	20	340	MD															
T-11-G067	BWG-067	G-067	Blackwater	RNI.DVA	Good	Good	Good	17/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	374604	5892259	ESSF	xvp1	00	FH	6	D		7		1646	20	330	MD											M	b			
T-11-G066	BWG-066	G-066	Blackwater	RNI.DVA	Good	Good	Good	17/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	374678	5892086	ESSF	xvp1	00	FS	4	D		3		1678	17	330												M	b			
T-11-G065	BWG-065	G-065	Blackwater	RNI.DVA	Good	Good	Good	17/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	374949	5891650	ESSF	xvp1	00	SF	3	B		3a		1741	13	320	MD											M	x			
T-11-G064	BWG-064	G-064	Blackwater	RNI.DVA	Good	Good	Good	16/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	370173	5896315	ESSF	mv1	00	Wf02	7	D	Blue	2b		1364	5	140	LW											O	v			F
T-11-G063	BWG-063	G-063	Blackwater	RNI.DVA	Good	Good	Good	16/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	379120	5898877	SBS	mc3	01	SB	4	C		4		1193	2	20	MD											M	u			
T-11-G062	BWG-062	G-062	Blackwater	RNI.DVA	Good	Good	Good	16/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	378456	5898136	SBS	mc3	01	SB	4	C		5		1220	6	330	MD											FG	v			M
T-11-G061	BWG-061	G-061	Blackwater	RNI.DVA	Good	Good	Good	15/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	372086	5894600	ESSF	mv1	03	FF	3	C		5		1383	5	80	MD											M	u			
T-11-G060	BWG-060	G-060	Blackwater	RNI.DVA	Good	Good	Good	15/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	371930	5894366	ESSF	mv1	05	FH	6	D		7		1378	5	310	TO											M	u			
T-11-G059	BWG-059	G-059	Blackwater	RNI.DVA	Good	Good	Good	15/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	371854	5893917	ESSF	mv1	01	FRk	4	C		7		1423	35	330	MD											C	x			M
T-11-G058	BWG-058	G-058	Blackwater	RNI.DVA	Good	Good	Good	15/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	371896	5893680	ESSF	mv1	03	FF	3	B		6		1494	57	310	MD											C	b			
T-11-G057	BWG-057	G-057	Blackwater	RNI.DVA	Good	Good	Good	15/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	371846	5893250	ESSF	mv1	03	FF	2	B		6		1636	16	50	CR											C	x			
T-11-G056	BWG-056	G-056	Blackwater	RNI.DVA	Good	Good	Good	15/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	371616	5892958	ESSF	mv1	00	FR	4	C		7		1646	38	340	MD											C	v			M
T-11-G055	BWG-055	G-055	Blackwater	RNI.DVA	Good	Good	Good	15/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	371428	5892733	ESSF	xvp	00	VG	4	D		2a		1703	15	70	MD															
T-11-G054	BWG-054	G-054	Blackwater	RNI.DVA	Good	Good	Good	15/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	371495	5894301	ESSF	mv1	02	LC	2	B		6		1355	0		CR															
T-11-G053	BWG-053	G-053	Blackwater	RNI.DVA	Good	Good	Good	15/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	371764	5894371	ESSF	mv1	00	Wf03	7	D		2b		1347	0	999	DP															
T-11-G052	BWG-052	G-052	Blackwater	RNI.DVA	Good	Good	Good	14/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	376321	5898355	SBS	mc3	08	Ws07	6	D		7		1235	3	30	LV											M				
T-11-G051	BWG-051	G-051	Blackwater	RNI.DVA	Good	Good	Good	14/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	372272	5898204	SBS	mc3	03	LF	1	B		4		1243	7	30	UP											FG				
T-11-G050	BWG-050	G-050	Blackwater	RNI.DVA	Good	Good	Good	14/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	376168	5897956	SBS	mc3	08	Ws07	7	D		6		1213	0	999	LW											O				F
T-11-G049	BWG-049	G-049	Blackwater	RNI.DVA	Good	Good	Good	14/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	375681	5897694	SBS	mc3	03	LF	2	D		4		1251	0	999	LV											FG	u			
T-11-G048	BWG-048	G-048	Blackwater	RNI.DVA	Good	Good	Good	14/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	375183	5897250	SBS	mc3	01	SB	4	C		5		1288	15	170	MD											C	v			M
T-11-G047	BWG-047	G-047	Blackwater	RNI.DVA	Good	Good	Good	14/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	374884	5896890	ESSF	mv1	04	FG	6	D		6		1287	15	90	LW															
T-11-G046	BWG-046	G-046	Blackwater	RNI.DVA	Good	Good	Good	14/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	374816	5896528	SBS	mc3	03	LF	2	B		3		1296	26	110	UP											M	v			
T-11-G045	BWG-045	G-045	Blackwater	RNI.DVA	Good	Good	Good	14/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	374732	5896440	SBS	mc3	02	LJ	1	B		5		1298	55	160	UP											F				
T-11-G044	BWG-044	G-044	Blackwater	RNI.DVA	Good	Good	Good	14/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	374320	5896513	ESSF	mv1	04	FG	5	D		6		1351	16	110	LW											M	u			
T-11-G043	BWG-043	G-043	Blackwater	RNI.DVA	Good	Good	Good	14/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	373950	5896635	ESSF	mv1	01	FR	4	C		5		1381	9	50	MD											M	v			
T-11-G042	BWG-042	G-042	Blackwater	RNI.DVA	Good	Good	Good	14/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	373681	5896748	ESSF	mv1	00	Wb05	7	A		2b		1383	0	999	LV											O	b			
T-11-G041	BWG-041	G-041	Blackwater	RNI.DVA	Good	Good	Good	13/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	372192	5894520	ESSF	mv1	01	FR	4	C		6		1398	15	342	MD											M	u			
T-11-G040	BWG-040	G-040	Blackwater	RNI.DVA	Good	Good	Good	13/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	372730	5894430	ESSF	mv1	05	FH	6	D		6		1427	11	340	LW											F	j			
T-11-G039	BWG-039	G-039	Blackwater	RNI.DVA	Good	Good	Good	13/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	373092	5894367	ESSF	mv1	01	FR	4	C		6		1459	6	300												M	v			
T-11-G038	BWG-038	G-038	Blackwater	RNI.DVA	Good	Good	Good	13/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	373290	5894298	ESSF	mv1	01	FR	4	C		6		1465	12	175	MD											M	v			
T-11-G037	BWG-037	G-037	Blackwater	RNI.DVA	Good	Good	Good	13/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	373529	5894134	ESSF	mv1	00	Wf03	7	D		2b		1443	0	999	LV											O	b			
T-11-G036	BWG-036	G-036	Blackwater	RNI.DVA	Good	Good	Good	13/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	377641	5898646	SBS	mc3	08	SH	5	D		5		1177	0	999	LW											F	p			
T-11-G035	BWG-035	G-035	Blackwater	RNI.DVA	Good	Good	Good	13/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	376835	5897757	SBS	mc3	07	ST	5	D		6		1234	6	330	LW											M	u	L		
T-11-G034	BWG-034	G-034	Blackwater	RNI.DVA	Good	Good	Good	13/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	376182	5897218	ESSF	mv1	02	LC	2	B		3		1272	18	340	CR											F				
T-11-G033	BWG-033	G-033	Blackwater	RNI.DVA	Good	Good	Good	13/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	375977	5897038	SBS	mc3	08	SH	5	D		5		1263	8	340	LW											F	p			
T-11-G032	BWG-032	G-032	Blackwater	RNI.DVA	Good	Good	Good	13/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	375633	5896809	SBS	mc3	01	SB	4	C		5		1279	9	270	MD											M	u			
T-11-G031	BWG-031	G-031	Blackwater	RNI.DVA	Good	Good	Good	13/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	375368	5896505	ESSF	mv1	00	Wb05	7	B		7		1285	0	999	LV											O	v			
T-11-G030	BWG-030	G-030	Blackwater	RNI.DVA	Good	Good	Good	12/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	375383	5896060	ESSF	mv1	02	LC	2	B		3		1344	7	360	CR											M	u			
T-11-G029	BWG-029	G-029	Blackwater	RNI.DVA	Good	Good	Good	12/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	375210	5895634	ESSF	mv1	01	FR	4	C		4		1376	8	60	MD											M	u			
T-11-G028	BWG-028	G-028	Blackwater	RNI.DVA	Good	Good	Good	12/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	375506	5894986	ESSF	mv1	01	FR	4	C		4		1450	9	340	MD											M	h			
T-11-G027	BWG-027	G-027	Blackwater	RNI.DVA	Good	Good	Good	12/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	375460	5894781	ESSF	mv1	03	FF	3	B		3		1439	26	190	MD											M	h			
T-11-G026	BWG-026	G-026	Blackwater	RNI.DVA	Good	Good	Good	12/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	373756	5892958	ESSF	mv1	00	Wf11	7	D	Blue	2b		1538	0	999	LW											O	b			

Map Plot No.	Surface Exp Sub Surf	Geo Mor Pro Sub Surf	Flooding Regime Freq	Moisture Regime Sub	Flooding Regime Dur	Soil Drainage	Seepage Depth	Root Restricting Type	Root Restricting Depth	Root Zone Particle Size	Rooting Depth	Soil Class Sub Group	Soil Class Group	Humus Form	pH Method Code Mineral	pH Method Code Organic	Strata Cover Tree	Strata Cover Shrub	Strata Cover Herb	Strata Cover Moss	Hydro Geo System	Hydro Geo Sub System
T-11-V010													FO				0	85	3	70		
T-11-V009																						
T-11-V008																	0	55	15	45		
T-11-V007						r											0	87	5	88		
T-11-V005																						
T-11-V004																		5	80		F	a
T-11-V003																						
T-11-V002						r											2	40	32	35		
T-11-V001																						
T-11-G081						m				L							10	84	20	75		
T-11-G080	u					r				S							0	24	18	25		
T-11-G079						m				L								8	73	20		
T-11-G078						v				L								20	45	80	P	lb
T-11-G077						p				C							65	22	45	85	F	a
T-11-G076						w				S							35	30	56	55		
T-11-G075						w				S							49	65	19	79		
T-11-G074						r				S							20	65	37	83		
T-11-G073						v												1	65	85	P	lb
T-11-G072						r				S							6	60	32	69		
T-11-G071						w				L							5	85	12	75		
T-11-G070	b					w				L							16	60	42	60		
T-11-G069	b					w				L							17	65	43	51		
T-11-G068						i				L							65	30	50	65		
T-11-G067						i				L							55	10	80	50		
T-11-G066						w				L							5	65	30	50		
T-11-G065						w												84	2	65		
T-11-G064	a					v											5	50	70	90	P	ts
T-11-G063						w				FL							50	18	47	81		
T-11-G062	v					m				L							50	45	65	88		
T-11-G061						w				L							23	38	22	73		
T-11-G060						p				L							45	9	40	75	P	bs
T-11-G059	b					w				FL							64	35	3	90		
T-11-G058						r											62	40	1	90		
T-11-G057						w				L							10	70	2	73		
T-11-G056	a					w				L							55	25	4	80		
T-11-G055						w				L				L			5	6	90	15		
T-11-G054						w				L				D			4	16	22	65		
T-11-G053										Fi					W4			10	78	45	P	ob
T-11-G052						p				L				L			25	27	56	55	P	lh
T-11-G051						r				S							10	17	10	50		
T-11-G050						v											35	25	70	60	P	lh
T-11-G049						x				S				R			5	40	26	46		
T-11-G048	h					w				L				D			10	37	40	29		
T-11-G047						i				L				L			30	19	40	55		
T-11-G046						r				L				D			15	40	10	70		
T-11-G045						r				S				R			30	27	32	50		
T-11-G044						i				L				L			10	35	55	45		
T-11-G043						w				L				D			15	85	8			
T-11-G042						v				Me								50	37	90	P	cb
T-11-G041						w				L				D			20	40	40	75		
T-11-G040						i				C				D			65	23	40	65	P	bs
T-11-G039						w				C				D			15	32	33	70		
T-11-G038						w				L				D			25	60	19	75		
T-11-G037						v				L								15	60	90	P	lb
T-11-G036						w				S							17	45	85	10	P	lh
T-11-G035						i				L				R			60	15	80	29		
T-11-G034						r				L				D				38	15	52		
T-11-G033						w				S				D			34	20	45	40	P	oh
T-11-G032						m				L				D			16	45	55	63		
T-11-G031						v				Me				D			6	55	21	87	P	ob
T-11-G030						w				L				R				60	2	40		
T-11-G029						w				L				R				75	13	40		
T-11-G028						w				L				D				80	10	56		
T-11-G027						r				L				D			65	21	13	37		
T-11-G026						v				Me								2	53	35	P	cb

Map Plot No.	Plot No.	Field No.	Proj ID	FS Reg District	Site Plot Qlty	Veg Plot Qlty	Soil Plot Qlty	Date	Site Surveyor	Location	Ecosection	UTM Zone	UTM Easting	UTM Northing	Zone	Sub Zone	Site Series	Map Unit	Moisture Regime	Nutrient Regime	BC Listing	Structural Stage	Structural Stage Mod	El.	Slope Gradient	Aspect	Meso Slope Position	Surface Shape	Soil Surveyor	Bedrock Geology1	Bedrock Geology2	Bedrock Geology3	Coarse Frag Lith1	Coarse Frag Lith2	Coarse Frag Lith3	Terrain Texture Surf	Surficial Mat Surf	Surface Exp Surf	Geo Mor Pro Surf	Terrain Texture Sub Surf	Surficial Material Sub Surf
T-11-G025	BWG-025	G-025	Blackwater	RNI.DVA	Good	Good	Good	12/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	373491	5892813	ESSF	mv1	04	FG	5	C		6		1570	11	24	MD											C	b	L		
T-11-G024	BWG-024	G-024	Blackwater	RNI.DVA	Good	Good	Good	12/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	373184	5892692	ESSF	mv1	01	FR	4	C		7		1605	17	15	MD											C	b	L		
T-11-G023	BWG-023	G-023	Blackwater	RNI.DVA	Good	Good	Good	12/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	372759	5892627	ESSF	xvp	00	FH	5	D		7		1642	15	50	MD													L		
T-11-G022	BWG-022	G-022	Blackwater	RNI.DVA	Good	Good	Good	12/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	372637	5892650	ESSF	xvp	00	PC	4	C		7		1657	27	45	MD											C	v			
T-11-G021	BWG-021	G-021	Blackwater	RNI.DVA	Good	Good	Good	20/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	372573	5892491	ESSF	xvp	00	VG	2	C		2	a	1686	35	60	MD											C	v	R		
T-11-G020	BWG-020	G-020	Blackwater	RNI.DVA	Good	Good	Good	12/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	372454	5892603	ESSF	xvp	00	FM	4	C		3		1702	20	60	MD											M	b			
T-11-G019	BWG-019	G-019	Blackwater	RNI.DVA	Good	Good	Good	12/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	372381	5892449	ESSF	xvp	00	WD	4	C		3		1736	20	80	MD											M	v			
T-11-G018	BWG-018	G-018	Blackwater	RNI.DVA	Good	Good	Good	11/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	374367	5891102	ESSF	xvp	00	FC	4	C		2b		1780			MD											M	vb			
T-11-G017	BWG-017	G-017	Blackwater	RNI.DVA	Good	Good	Good	11/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	373902	5890819	ESSF	xvp	00	FM	4	C		3		1806	2	120	MD											M	v			
T-11-G016	BWG-016	G-016	Blackwater	RNI.DVA	Good	Good	Good	11/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	373685	5891025	BAFA	un	00	MH	4	B		2d		1792	22	20	MD											M	vb			
T-11-G015	BWG-015	G-015	Blackwater	RNI.DVA	Good	Good	Good	10/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	373729	5890952	BAFA	un	00	FC	4	B		2b		1808	22	24	MD											M	b			
T-11-G014	BWG-014	G-014	Blackwater	RNI.DVA	Good	Good	Good	11/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	373697	5890640	BAFA	un	00	WM	6	D		2b		1822	8	130	LW											M	x			
T-11-G013	BWG-013	G-013	Blackwater	RNI.DVA	Good	Good	Good	11/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	373578	5890564	BAFA	un	00	FW	3	B		2b		1834	12	42	MD											M	x			
T-11-G012	BWG-012	G-012	Blackwater	RNI.DVA	Good	Good	Good	11/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	373335	5890657	BAFA	un	00	WM	6	D		2a		1807	6	254												M	x			
T-11-G011	BWG-011	G-011	Blackwater	RNI.DVA	Good	Good	Good	11/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	373661	5890281	BAFA	un	00	HL	2	B		2d		1831	55	125	MD											C	x	Rb		
T-11-G010	BWG-010	G-010	Blackwater	RNI.DVA	Good	Good	Good	10/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	375995	5893917	ESSF	mv1	00	Wf02	6	D	Blue	3a		1463	0	999	LV											M	b			
T-11-G009	BWG-009	G-009	Blackwater	RNI.DVA	Good	Good	Good	10/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	371908	5895761	ESSF	mv1	00	Wb05	7	B		3b		1377	0	999																
T-11-G008	BWG-008	G-008	Blackwater	RNI.DVA	Good	Good	Good	10/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	371529	5895018	ESSF	mv1	01	FR	4	C		7		1389	24	120	MD											M	b			
T-11-G007	BWG-007	G-007	Blackwater	RNI.DVA	Good	Good	Good	10/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	371367	5895186	SBS	mc3	02	LJ	1	B		3b		1442	50	137	UP											C	v			
T-11-G006	BWG-006	G-006	Blackwater	RNI.DVA	Good	Good	Good	10/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	371560	5895765	ESSF	mv1	05	FH	7	D		7		1337	4	60	LV											O	v			M
T-11-G005	BWG-005	G-005	Blackwater	RNI.DVA	Good	Good	Good	10/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	371488	5895974	ESSF	mv1	01	FR	4	C		7		1381	20	320	MD											M	r			
T-11-G004	BWG-004	G-004	Blackwater	RNI.DVA	Good	Good	Good	10/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	371526	5896099	ESSF	mv1	00	Wf03	7	D		2b		1368	0	999	DP											O	v			
T-11-G003	BWG-003	G-003	Blackwater	RNI.DVA	Good	Good	Good	10/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	371401	5896771	ESSF	mv1	05	FH	6	D		7		1449	3	100	LW											M	v			
T-11-G002	BWG-002	G-002	Blackwater	RNI.DVA	Good	Good	Good	10/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	371419	5896695	ESSF	mv1	02	LC	2	B		7		1448	3	140	CR											M	v			
T-11-G001	BWG-001	G-001	Blackwater	RNI.DVA	Good	Good	Good	10/08/2011	CH/KT/SC	Davidson Mtn area	NAU	10	371438	5896534	ESSF	mv1	03	FF	3	B		7		1426	40	120	UP											M	b			
T-11-7114	b117114	F-007	Blackwater	RNI.DVA	Good	Good	Good	16/08/2011	CH/KT/SC	NE Corner of RSA km 124.5	NAU	10	379066	5897985	SBS	mc3	01	SB	4	C		5		1211	9	20	MD	ST	PU														
T-11-7113	b117113	F-006	Blackwater	RNI.DVA	Good	Good	Good	16/08/2011	CH/KT/SC	NE corner of RSA (km 124.5 jnc)	NAU	10	378953	5897912	SBS	mc3	05	BH	4	B		6		1215	6	350	MD	ST	PU										FG	v			M
T-11-7112	b117112	F-005	Blackwater	RNI.DVA	Good	Good	Good	15/08/2011	CH/KT/SC	Near Long Lake; just E of small lake	NAU	10	371856	5894426	ESSF	mv1	03	FF	3	C		5		1369	12	230	MD	ST	PU														
T-11-7111	b117111	F-004	Blackwater	RNI.DVA	Good	Good	Good	13/08/2011	CH/KT/SC	Blackwater near Davidson Creek	NAU	10	375819	5896921	ESSF	mv1	01	FR	4	C		6		1276			MD	ST	PU														
T-11-7110	b117110	F-003	Blackwater	RNI.DVA	Good	Good	Good	12/08/2011	CH/KT/SC		NAU	10	375299	5896432	ESSF	mv1	00	Wf02	7	D	Blue	2b		1277	0	999	LW	ST	PU														
T-11-7107	b117107	F-002	Blackwater	RNI.DVA	Good	Good	Good	11/08/2011	CH/KT/SC	Alpine Tundra PEM poly 1075	NAU	10	373548	5890398	BAFA	un	00	FW	3	C		2d		1856	6	220	MD	CC	PU														
T-11-7106	b117106	F-001	Blackwater	RNI.DVA	Good	Good	Good	11/08/2011	CH/KT/SC	Upslope from main access road	NAU	10	371476	5896473	ESSF	mv1	01	FR	4	C		7		1400	22	170	MD	ST	PU										M	v			
R-12-G106	RPW106	RPW106	Blackwater	RNI.DVA	Good	Good	poor	12/07/2012	CH/KT/PU	N. of Blackwater camp	NAU	10	375497	5894651	ESSF	mv1	00	Wf11	7	B	Blue			1406	1	75	DP	CC															
R-12-G105	RPW105	RPW	Blackwater	RNI.DVA	Good	Good	poor	13/07/2012	STB/TT		NAU	10	373870	5894268	ESSF	mv1	00	Wf02	7	C	Blue			1426																			
R-12-G104	RPW104	RPW	Blackwater	RNI.DVA	Good	Good	poor	13/07/2012	STB/TT	N end of tailings pond, blackwater LSA	NAU	10	375500	5899831	ESSF	mv1	00	Wf08	7	C	Blue			1294																			
R-12-G103	RPW103	RPW	Blackwater	RNI.DVA	Good	Good	poor	13/07/2012	STB/TT	N end of tailings pond blackwater LSA	NAU	10	373726	5899875	ESSF	mv1	00	Wf10	8	C	Red			1289	0	999																	
R-12-G102	RPW102	RPW	Blackwater	RNI.DVA	Good	Good	poor	12/07/2012	STB/TT	N of blackwater on transline	NAU	10	401522	5933531	SBS	mc3	00	Wf08	8	C	Blue			1034																			
R-12-G101	RPW101	RPW	Blackwater	RNI.DVA	Good	Good	poor	12/07/2012	STB/TT	N of blackwater on Trans line	NAU	10	401896	5933697	SBS	mc3	09	Wb05	6	B				1031																			
R-12-G100	RPW100	RPW	Blackwater	RNI.DVA	Good	Good	poor	12/07/2012	STB/TT	V. wet meadow with open water nearby	NAU	10	399178	5928383	SBS	dk	00	Wf02	7	C	Blue			966																			
R-12-G071	RPW071	RPW	Blackwater	RNI.DVA	Good	Good	poor	11/07/2012	STB/TT	Blackwater s. of snake lake	NAU	10	379267	5898307	SBS	mc3	00	Wf01	7	C		2b		1184	0	999	DP	CC															
R-12-G068	RPW068	RPW	Blackwater	RNI.DVA	Good	Good	poor	13/07/2012	STB/TT	wet Depression	NAU	10	373668	5894655	ESSF	mv1	00	Wf03	7	B				1438					STS, TT							m	O	x				FG
R-12-G061	RPW061	RPW	Blackwater	RNI.DVA	Good	Good	poor	11/07/2012	STB/TT	South of Snake lk Blackwater LSA	NAU	10	381292	5899154	SBS	mc3	00	Wf01	7	C		2b		1125	0	999	DP	CC															
R-12-G060	RPW060	RPW	Blackwater	RNI.DVA	Good	Good	poor	11/07/2012	STB/TT	Blackwater s. of Snake Lk	NAU	10	379317	5898522	SBS	mc3	08	Ws07	6	D		2b		1177	3	340	LW																
R-12-G059	RPW059	RPW059	Backwater	RNI.DVA	Good	Good	poor	11/07/2012	STB, TT	Backwater LSA	NAU	10	379002	5898448	SBS	mc3	00	Wm01	7	D				1184	0	999	DP	CC															
R-12-G049	RPW049	RPW	Blackwater	RNI.DVA	Good	Good	poor	11/07/2012	STB/TT	Blackwater LSA south of snake lake	NAU	10	381640	5899144	SBS	mc3	00	Wf02	8	C	Blue	2b		1138			DP																
R-12-G044	RPW044	RPW	Blackwater	RNI.DVA	Good	Good	poor	10/07/2012	STB/TT	Blackwater LSA	NAU	10	375627	5898239	SBS	mc3	00		6	B		1b		1234	0	999	DP	CC															
R-12-G043	RPW043	RPW	Blackwater	RNI.DVA	Good	Good	poor	13/07/2012	STS, TT		NAU	10	374366	5897653	ESSF	mv1	00	Wb02	7	B				1303	0	999		CC										O	v			FG
R-12-G033B	RPW033B	RPW	Blackwater	RNI.DVA	Good	Good	poor	12/07/2012	STB/TT		NAU	10	382109	5898923	SBS	mc3	00	Wb13	7	B	Blue			1142																			
R-12-G033	RPW033	RPW	Blackwater	RNI.DVA	Good	Good	poor	12/07/2012	STB/TT	4 hours south of Vanderhoof in a small wetland with open water on edges. 1.5 km South of Snake Lake	NAU	10	382044	5898898	SBS	mc3	00	Wb13	7	B	Blue			1142																			
R-12-G028B	RPW028B	RPW	Blackwater	RNI.DVA	Good	Good	poor	12/07/2012	STB/TT	Down from W28 this is 28B on the edge of the TMF.	NAU	10	372022	5895970	ESSF	mv1	00	Wf03	7	C				1348																			
R-12-G028	RPW028	RPW	Blackwater	RNI.DVA	Good	Good	poor	12/07/2012	STB/TT		NAU	10	371612	5896090	ESSF	mv1	00	Wf02	7	C	Blue			1357			DP	CC															
R-12-G024	RPW024	RPW	Blackwater	RNI.DVA	Good	Good	poor	12/07/2012	STB/TT	wet meadow herb/ graminoid mix	NAU	10	376279	5895964	ESSF	mv1	05	VG	6	D		2a		1301																			
R-12-G023	RPW023	RPW	Blackwater	RNI.DVA	Good	Good	poor	14/07/2012	STB/TT	S of blackwater camp	NAU	10	376346	5893991	ESSF	mv1	00	Wf02	7	C	Blue			1454																			
R-12-G021	RPW021	RPW	Blackwater	RNI.DVA	Good	Good	poor	10/07/2012	STB/TT	Blackwater LSA Davidson Crk	NAU	10	374582	5896768	ESSF	mv1	00	Wb10	8	B	Blue			1313	0	999		CC															
R-12-G017C	RPW017C	RPW	Blackwater	RNI.DVA	Good	Good	poor	10/07/2012	STB/TT	Carelim fen	NAU	10	375100	5898671	SBS	mc3	00	Wf08	7	D	Blue			1246	0	999	DP																
R-12-G017B	RPW017B	RPW	Blackwater	RNI.DVA	Good	Good	poor	10/07/2012	STB/TT	Blackwater LSA	NAU	10	375037	5898916	SBS	mc3	00	Wf02	8	C	Blue	3a		1249	0	999	DP	CC															
R-12-G017	RPW017	RPW	Blackwater	RNI.DVA	Good	Good	poor	12/07/2012	STB/TT	Blackwater LSA	NAU	10	375138	5898949	SBS	mc3	00	Wf11	8	D	Blue	2b		1247	0	999	DP	CC															
R-12-G014	RPW014	RPW	Blackwater	RNI.DVA	Good	Good	poor	10/07/2012	STB/TT	Blackwater LSA	NAU	10	377106	5898451	SBS	mc3	08	Ws07	6	C		2b		1184	25	150	TO	ST															
R-12-G013	RPW013	RPW	Blackwater	RNI.DVA	Good	Good	poor	12/07/2012	STB/TT	Blackwater LSA	NAU	10	377296	5898688	SBS	mc3	09	Wb05	6	B		2b		1188	0	969		ST															
R-12-G011	RPW011	RPW	Blackwater	RNI.DVA	Good	Good	poor	12/07/2012	STB/TT		NAU	10	376386	5898394	SBS	mc3	00	Wm01	8	C				1214	0	999	DP	CC															
R-12-G007	RPW007	RPW	Blackwater	RNI.DVA	Good	Good	poor	11/07/2012	STB/TT	South of snake lk in BW LSA	NAU	10	382275	5899095	SBS	mc3	00	Wf01	7	C		2b		1121	0	999	DP	CC															
R-12-G006	RPW006	RPW006	Backwater	RNI.DVA	Good	Good	poor	11/07/2012	STB TT	Backwater LSA	NAU	10	382005	5898990	SBS	mc3	00	Wm01	7	D		2b		1126	0	999	DP	CC									e	O			g	FG
R-12-G003	RPW003	RPW	Blackwater	RNI.DVA	Good	Good	poor	11/07/2012	STB, TT	BLACKWATER LSA, SOUTH OF SNAKE LK	NAU	10	382079	5898753	SBS	mc3	00	Wm01	6	D		2b		1127	2	120	LV	ST									m	F			g	FG
R-12-G002	RPW002	RPW	Blackwater	RNI.DVA	Good	Good	poor	12/07/2012	STB/TT	S of Snake lake	NAU	10	382269	5898712	SBS	mc3	00	Wm01	7	D				1134	0	999																	
R-12-G001	RPW001	RPW002*	Blackwater	RNI.DVA	Good	Good	poor	13/07/2012	STB TT	Tailings facility	NAU	10	373580	5894149	ESSF	mv1	00	Wf07	6	C				1439																			
R-11-G027	GIFT127	TT-27	Blackwater	RNI.DVA	Fair	Good	poor	11/08/2011	JA/TT	Davidson Mtn area	NAU	10	373207	5891183	ESSF	xvp	00	TA	1	A		1	a	1764	27	270	MD										a	C	k	R		
R-11-G026	GIFT126	TT-26	Blackwater	RNI.DVA	Fair	Good	poor	11/08/2011	JA/TT	Davidson Mtn area	NAU	10	372825	5891710	ESSF	xvp	00	ML	1	A		1	b	1739	4	180	CR										x	D	c	C		
R-11-G025	GIFT125	TT-25	Blackwater	RNI.DVA	Fair	Good	poor	11/08/2011	JA/TT	Davidson Mtn area	NAU	10	371319	5892261	ESSF	xvp	00	MH	2	B		2	d	1761	3	338	DP										d	D	d	C		
R-11-G024	GIFT124	TT-24	Blackwater	RNI.DVA	Fair	Good	poor	10/08/2011	JA/TT	Davidson Mtn area	NAU	10	373725	5892954	ESSF	mv1	00	Wf11	7	D	Blue	2		1536	5	23	TO										z	O	t	F		
R-11-G023	GIFT123	TT-23	Blackwater	RNI.DVA	Fair	Good	poor	10/08/2011	JA/TT	Davidson Mtn area	NAU	10	373651	5896762	ESSF	mv1	00	Wb05	7	C		3		1375	0	999	LV										m	LG	p			
R-11-G022	GIFT122	TT-22	Blackwater	RNI.DVA	Fair	Good	poor	10/08/2011	JA/TT	Davidson Mtn area	NAU	10	374444	5896137	SBS	mc3	00	Wm01	7	D		2	b	1266	3	0	TO										g	F	t	E		
R-11-G021	GIFT121	TT-21	Blackwater	RNI.DVA	Fair	Good	poor	09/08/2011	JA/TT	Davidson Mtn area	NAU	10	375683	5897409	SBS	mc3	00	Ws04	7	D		3	b	1223	3	23	TO										g	F	t	E		
R-11-G020	GIFT120	TT-20	Blackwater	RNI.DVA	Fair	Good	poor	09/08/2011	JA/TT	Davidson Mtn area	NAU	10	374686	5894793	ESSF	mv1	05	FH	6	D		6		1430	5	45	LW										g	F	t	E		
R-11-G019	GIFT119	TT-19	Blackwater	RNI.DVA	Fair	Good	poor	09/08/2011	JA/TT	Davidson Mtn area	NAU	10	373200	5895665	ESSF	mv1	05	FH	6	D		6		1314	5	45	LW										g	F	t	E		
R-11-G018	GIFT118	TT-18	Blackwater	RNI.DVA	Fair	Good	poor	14/07/2011	JA/TT	Davidson Mtn area	NAU	10	375243	5896398	ESSF	mv1	00	Wf03	7	B		2	b	1275	3	338	LV										e	LG	t	U		

Map Plot No.	Surface Exp Sub Surf	Geo Mor Pro Sub Surf	Flooding Regime Freq	Moisture Regime Sub	Flooding Regime Dur	Soil Drainage	Seepage Depth	Root Restricting Type	Root Restricting Depth	Root Zone Particle Size	Rooting Depth	Soil Class Sub Group	Soil Class Group	Humus Form	pH Method Code Mineral	pH Method Code Organic	Strata Cover Tree	Strata Cover Shrub	Strata Cover Herb	Strata Cover Moss	Hydro Geo System	Hydro Geo Sub System
T-11-G025						i				S							55	40	20	75		
T-11-G024						i				S				D			55	35	16	85		
T-11-G023						i				L				D			35		10	60		
T-11-G022						w				FL				D			15	85	15	60		
T-11-G021						w												7	80	12		
T-11-G020						w				FL				D				55	30	45		
T-11-G019						w				FL				L				30	35	40		
T-11-G018						w				L				L				1	50	45		
T-11-G017						w				L				R				70	15	60		
T-11-G016						w				L									76	15		
T-11-G015						w				FL				D					65	30		
T-11-G014						p				FL									90			
T-11-G013						w				L								1	45	37		
T-11-G012						p				L								3		45		
T-11-G011						r				L								6	55			
T-11-G010										L							20	40	30	65	P	lb
T-11-G009						v				Fi							35	60	26	95	P	ob
T-11-G008						w				L				D			57	32	14	80		
T-11-G007						r				L				R			2	85	12	7		
T-11-G006						v												9	45	65	P	oh
T-11-G005						w				FL				D			40	45	2	73		
T-11-G004						v				Me								19	70	90	P	lb
T-11-G003						p				C				L			62	10	70	45	P	bs
T-11-G002						w				FL				D			13	7	40	75		
T-11-G001						w				FL				D			50	20	6	80		
T-11-7114																	50	38	55	85		
T-11-7113	b																41	40	48	80		
T-11-7112																	12	56	45	90		
T-11-7111																	45	30	17	60		
T-11-7110													1				0	35	22	70	P	ob
T-11-7107																						
T-11-7106														D			65	30	43	70		
R-12-G106													2		W8			9	75	30	P	ob
R-12-G105													2					12	40	43	P	ob
R-12-G104													2					6	46	38	P	lb
R-12-G103													2		W13			1	65	20	P	lb
R-12-G102													2				0	2	23	33	P	lb
R-12-G101													2				7	30	40	50	P	lb
R-12-G100													2					3	55	6	P	lh
R-12-G071													2		W15			10	65		P	lb
R-12-G068	b		F		E								2					3	18	76	P	cb
R-12-G061													2					9	75	2	P	ob
R-12-G060													2				10	14	75	7	P	lb
R-12-G059						v	0						2				0	2	62	1	P	ob
R-12-G049													2		W34			3	63	25	P	ob
R-12-G044						i	7	P	30								0	7	25	35		
R-12-G043	b					v	0						2				0	25	45	35	P	bs
R-12-G033B													2						38	4	P	cb
R-12-G033													2		W33		0	1	25	55	P	cb
R-12-G028B													2					15	37	52	P	lb
R-12-G028													2		W28			40	40	15	P	lb
R-12-G024																						
R-12-G023													2		W23			22	70	30	P	lb
R-12-G021													2					15	32	70	P	cb
R-12-G017C													2		W12			1	35	7	P	lb
R-12-G017B													2		W12			30	25	30	P	lb
R-12-G017													2		W12			0.5	55	13	P	lb
R-12-G014													2				5	10	90	39	P	lh
R-12-G013													2					30	39	80	P	lb
R-12-G011													2					2	65	3	P	lb
R-12-G007													2					1	40	10	P	ob
R-12-G006			A		E	v							2				0	0	18	5	P	cb
R-12-G003			F		M		2						2				0	9	37	3	P	lb
R-12-G002													2				0	0	40	5	P	lb
R-12-G001															W2			10	75	53	P	lb
R-11-G027						x				S				R			0	20	2	15		
R-11-G026						x				S				R								
R-11-G025						r		W	15	S				R			0	5	18	4		
R-11-G024						v		W	12	CSI				R			1	3	35	25	P	cb
R-11-G023						v		W	6	CSI				R			3	5	45	18	P	cb
R-11-G022						v				CSI				R				2	90	5	F	a
R-11-G021						v		W	7	CSI				R			4	30	47	5	P	lh
R-11-G020						w		W	60	S				R			7	50	35	10	F	a
R-11-G019						i		W	40	CL				R				18	4		F	a
R-11-G018						v		W	8	CSI				R			0	2	40	50	P	ob

Map Plot No.	Plot No.	Field No.	Proj ID	FS Reg District	Site Plot Qlty	Veg Plot Qlty	Soil Plot Qlty	Date	Site Surveyor	Location	Ecosection	UTM Zone	UTM Easting	UTM Northing	Zone	Sub Zone	Site Series	Map Unit	Moisture Regime	Nutrient Regime	BC Listing	Structural Stage	Structural Stage Mod	El.	Slope Gradient	Aspect	Meso Slope Position	Surface Shape	Soil Surveyor	Bedrock Geology1	Bedrock Geology2	Bedrock Geology3	Coarse Frag Lith1	Coarse Frag Lith2	Coarse Frag Lith3	Terrain Texture Surf	Surficial Mat Surf	Surface Exp Surf	Geo Mor Pro Surf	Terrain Texture Sub Surf	Surficial Material Sub Surf
R-11-G017	GIFTT17	TT-17	Blackwater	RNI.DVA	Fair	Good	poor	14/07/2011	JA/TT	Davidson Mtn area	NAU	10	370833	5893621	ESSF	mv1	00	Wf01	7	E		2	b	1352	2	315	LW									h	O	b	U		
R-11-G016	GIFTT16	TT-16	Blackwater	RNI.DVA	Fair	Good	poor	14/07/2011	JA/TT	Davidson Mtn area	NAU	10	371748	5894388	ESSF	mv1	00	Wf03	7	E		2	b	1348	0	999	LV									e	O	b	L		
R-11-G015	GIFTT15	TT-15	Blackwater	RNI.DVA	Fair	Good	poor	14/07/2011	JA/TT	Davidson Mtn area	NAU	10	373597	5894140	ESSF	mv1	00	Wf02	7	C	Blue	2	b	1450	0	999	LV									e	O	b	L		
R-11-G014	GIFTT14	TT-14	Blackwater	RNI.DVA	Fair	Good	poor	13/07/2011	JA/TT	Davidson Mtn area	NAU	10	372744	5891825	ESSF	xvp	00	WJ	1	B		3		1731	15	225	MD									x	D	m	C		
R-11-G013	GIFTT13	TT-13	Blackwater	RNI.DVA	Fair	Good	poor	13/07/2011	JA/TT	Davidson Mtn area	NAU	10	372381	5892075	ESSF	xvp	00	WW/FC	1	B		3/2b		1766	18	90	UP									x	D	a	C		
R-11-G012	GIFTT12	TT-12	Blackwater	RNI.DVA	Fair	Good	poor	13/07/2011	JA/TT	Davidson Mtn area	NAU	10	372247	5892051	ESSF	xvp	00	FC	1	B		2	b	1781		999	CR									x	D	c	Z		
R-11-G011	GIFTT11	TT-11	Blackwater	RNI.DVA	Fair	Good	poor	12/07/2011	JA/TT	Davidson Mtn area	NAU	10	376111	5893930	ESSF	mv1	00	Wf02	7	C	Blue	2b/3a		1453			LV									e	L	b	U		
R-11-G010	GIFTT10	TT-10	Blackwater	RNI.DVA	Fair	Good	poor	12/07/2011	JA/TT	Davidson Mtn area	NAU	10	375407	5892445	ESSF	xvp	00	PC	2	B		5		1643	0	999	CR									d	M	r	C		
R-11-G009	GIFTT09	TT-09	Blackwater	RNI.DVA	Fair	Good	poor	12/07/2011	JA/TT	Davidson Mtn area	NAU	10	375354	5892508	ESSF	mv1	05	FH	7	D		2	b	1633	3	0	TO									h	F	j	L		
R-11-G008	GIFTT08	TT-08	Blackwater	RNI.DVA	Fair	Good	poor	12/07/2011	JA/TT	Davidson Mtn area	NAU	10	375392	5894658	ESSF	mv1	00	Wf11	7	D	Blue	2	b	1406	0	68	LV									e	LG	b	U		
R-11-G007	GIFTT07	TT-07	Blackwater	RNI.DVA	Fair	Good	poor	12/07/2011	JA/TT	Davidson Mtn area	NAU	10	370887	5896231	ESSF	mv1	00	Wf01	7	C		2	b	1370	0	270	LV									e	LG	b	U		
R-11-G006	GIFTT06	TT-06	Blackwater	RNI.DVA	Fair	Good	poor	11/07/2011	JA/TT	Davidson Mtn area	NAU	10	374534	5891761	ESSF	xvp	00	PC	5	C		3		1712	18	338	MD									x	D	a	C		
R-11-G005	GIFTT05	TT-05	Blackwater	RNI.DVA	Fair	Good	poor	11/07/2011	JA/TT	Davidson Mtn area	NAU	10	374276	5891196	ESSF	xvp	00	FC	3	C		2	b	1766	15	293	MD									x	D	j	C		
R-11-G004	GIFTT04	TT-04	Blackwater	RNI.DVA	Fair	Good	poor	11/07/2011	JA/TT	Davidson Mtn area	NAU	10	374053	5891038	ESSF	xvp	00	FM	2	B		3/2d		1775	15	315	UP									x	D	j	C		
R-11-G003	GIFTT03	TT-03	Blackwater	RNI.DVA	Fair	Good	poor	11/07/2001	JA/TT	Davidson Mtn area	NAU	10	373649	5890876	BAFA	un	00	SF	2	B		3		1818	12	315	UP									x	D	j	C		
R-11-G002	GIFTT02	TT-02	Blackwater	RNI.DVA	Fair	Good	poor	11/07/2001	JA/TT	Davidson Mtn area	NAU	10	373687	5890636	BAFA	un	00	WM	6	D		2	b	1819	3	135	UP									x	D	h	C		
R-11-G001	GIFTT01	TT-01	Blackwater	RNI.DVA	Fair	Good	poor	11/07/2011	JA/TT	Davidson Mtn area	NAU	10	373438	5890196	BAFA	un	00	FC	2	B		2	b	1834	10	113	CR									x	D	j	C		
B13060A	B13060A	B13060A	Blackwater	RNI.DVA	Good			15/07/2013	STB, DM	Above enlargement lake and upper dam and tailings		10	371714	5894391			00	Wf10	8	D	Red	2b		1341	2	999	DP	ST														
B13053A	B13053A	B13053A	Blackwater	RNI.DVA	Good	Good	Good	14/07/2013	STB, DM, RC	Headwaters of Davidson Crk		10	372827	5897060			00	Wf10	8	D	Red	2b		1403	0	999	DP	CC														
B13043B	B13043B	B13043B	Blackwater	RNI.DVA	Good			12/07/2013	STB, DM	North of snake lake		10	381797	5901633			00	Wf08	8	D	Blue			1088	0	999	DP	CC														
B13043A	B13043A	B13043A	Blackwater	RNI.DVA	Good			12/07/2013	STB, DM	North of snake lake		10	381647	5901732			00	Wf08	8	D	Blue	2b		1084	0	999	DP	ST														
B13041A	B13041A	B13041A	Blackwater	RNI.DVA	Good	Good	Good	12/07/2013	STB, DM	south east pit site		10	376983	5892353			00	Wf12	8	C		2b		1572	0	999	DP	CC														
B13038B	B13038B	B13038B	Blackwater	RNI.DVA	Good			12/07/2013	STB, DM	a little further south east of pit		10	377594	5891405			00	Wf04	8	C		2b		1465	0	999	DP	ST														
B13038A	B13038A	B13038A	Blackwater	RNI.DVA	Good	Good	Good	12/07/2013	STB, DM	Even more SE of minesite		10	378131	5891994			00	Wf11	8	C	Blue	2b		1454	2	220	DP	ST														
B13036D	B13036D	B13036D	Blackwater	RNI.DVA	Good			09/07/2013	STB, DM	North of snake lake		10	379664	5897699			00	Ws07	6	C				1186	1	10			STB, DM													
B13036C	B13036C	B13036C	Blackwater	RNI.DVA	Good			09/07/2013	STB, DM	north of snake lake		10	379749	5897741			00	Ww	8	D				1185	0	999														
B13036A	B13036A	B13036A	Blackwater	RNI.DVA	Good	Good	Good	09/07/2013	STB, DM	North of snake lake		10	379761	5897668			00	Wm01	6	D				1187	0	999	DP	ST														
B13031B	B13031B	B13031B	Blackwater	RNI.DVA	Good			10/07/2013	STB, DM	Davidson just south of mine foot print		10	379212	5901533			00	Ws07	7	D				1103	1	20	DP	CV	STM, DM													
B13031A	B13031A	B13031A	Blackwater	RNI.DVA	Good	Good	Good	10/07/2013	STB, DM	Davidson creek just south of mine footprint		10	379291	5901569			00	Wf08	8	D	Blue			1108	0	0														
B13027A	B13027A	B13027A	Blackwater	RNI.DVA	Good			09/07/2013	STB	north of snake lake		10	378454	5897119			00	Wf02	8	C	Blue			1234	0	999	DP		STB, DM													
B13023A	B13023A	B13023A	Blackwater	RNI.DVA	Good			12/07/2013	DSTM, SATB	east of mine, just outside footprint		10	378468	5895420			00	Wf04	8	D		2b		1272	0	999	DP	ST														
B13020B	B13020B	B13020B	Blackwater	RNI.DVA	Good			12/07/2013	STB	snake lake		10	381389	5900711			00	Ww	8	D				1099	0	999	DP	CC														
B13020A	B13020A	B13020A	Blackwater	RNI.DVA	Good	Good	Good	12/07/2013	STB, DM	south end of snake lake		10	381412	5900584			00	Wf02	8	D	Blue	2b		1100	0	999	LV	ST														
B13018B	B13018B	B13018B	Blackwater	RNI.DVA	Good			12/07/2013	SB, DM	east edge of mine site footprint		10	377554	5899728			00	Wb05	8	D		7		1168	0	999	DP	CV														
B13018A	B13018A	B13018A	Blackwater	RNI.DVA	Good			12/07/2013	STB, DM	snake lake area east of mine site		10	377515	5899755			00	Wf02	8	D	Blue	2b		1165	0	999	DP	ST														
B13017A	B13017A	B13017A	Blackwater	RNI.DVA	Good	Good	Good	10/07/2013	STB, DM	Davidson creek south of minesite		10	379921	5902439			00	Wm01	7	D				1085	0	999	DP	CC	STB, DM, MC													

Map Plot No.	Surface Exp Sub Surf	Geo Mor Pro Sub Surf	Flooding Regime Freq	Moisture Regime Sub	Flooding Regime Dur	Soil Drainage	Seepage Depth	Root Restricting Type	Root Restricting Depth	Root Zone Particle Size	Rooting Depth	Soil Class Sub Group	Soil Class Group	Humus Form	pH Method Code Mineral	pH Method Code Organic	Strata Cover Tree	Strata Cover Shrub	Strata Cover Herb	Strata Cover Moss	Hydro Geo System	Hydro Geo Sub System
R-11-G017						v		W	20	CSI				D			4	1	90	2	P	cb
R-11-G016						v				CSI				R	W4		1	1	40	5	P	ob
R-11-G015						v		W	0	CSI				R	W2		3	30	30	18	P	lb
R-11-G014						r		L	10					R			5	20	3	10		
R-11-G013						r				CL				R			3	0	30	50		
R-11-G012						x		L	0	S							0	0	50	20		
R-11-G011								W	0	FSl							5	65	20	7	P	lb
R-11-G010						x				S				R			18	5	8	18		
R-11-G009						p		W	2	L				D			2	5	85	5	P	bs
R-11-G008								W	0	CSI					W8		0	3	55	15	P	ob
R-11-G007						v		W	0	CSI				R			3	5	60	20	P	lb
R-11-G006						w		L	15	CL				R			10	15	2	4		
R-11-G005						w		L	15	CL				R			4	15	55	9		
R-11-G004						r		L	15	CL				R			5	20	3	10		
R-11-G003								L	5					R			0	40	40	10		
R-11-G002						i		L	10	CSI				R			0	1	50	24		
R-11-G001						x		L	7	CL				R			0	5	51	8		
B13060A			F			v	4				40		1	FR				2	45	60	P	ob
B13053A					S	v	0				35		1	SD	53A			1	60	65	P	lb
B13043B													1				0	0	15	15	P	ob
B13043A			A			v	0				50		1	SD				7	60	45	P	ob
B13041A			A			v					35		1	SD	41A		0	7	20	30	P	cb
B13038B			F		E	v	0				25		1	SD				20	25	50	P	ob
B13038A			A			v	0				40		1	SD	38A			4	42	65	P	lb
B13036D			R			i	7						1				60	14	50	35	P	lb
B13036C													1				0	8	3	2	P	lb
B13036A													1		36A		0	0	82	5	P	lb
B13031B			R			i	7			FSL	30		1				25	42	40	40	P	bs
B13031A			R			p	0						1		31A			5	60	25	P	ob
B13027A			R			p	3	W	45	OF	45	HU	1	SD			0	51	47	40	P	ob
B13023A			F			v	1				50		1	SD				37	43	45	P	ob
B13020B													1				0	0	20	0	L	lb
B13020A			A			v	5				55		1	FR	20A		0	20	40	43	L	lb
B13018B			A			v	20				25		1				5	30	25	75	P	lb
B13018A			A			v	3				50		1	SD			0	35	35	55	P	lb
B13017A			A			p	30						1		17A		0	1	35	5	P	cb

Annex 3
Ecosystems Descriptions and Ecosystem Map

Annex 3.1
Ecosystems Descriptions

1.0 ECOSYSTEM DESCRIPTIONS

Table 1-1: Biogeoclimatic (BGC) Units in the Project Area

BGC Code	BGC Name
SBSdk	Dry Cool Sub-Boreal Spruce subzone
SBSdw3	Stuart Dry Warm Sub-Boreal Spruce variant
SBSmc2	Babine Moist Cold Sub-Boreal Spruce variant
SBSmc3	Kluskus Moist Cold Sub-Boreal Spruce variant
ESSFmv1	Nechako Moist Very Cold Engelmann Spruce-Subalpine Fir variant
ESSFmv1p*	Nechako Moist Very Cold Engelmann Spruce-Subalpine Fir Parkland variant
BAFAun	Undifferentiated Boreal Altai Fescue Alpine Subzone

Note: *The ESSFmv1p is transitional to the West Chilcotin Very Dry Very Cold Engelmann Spruce = Subalpine Fir Parkland variant (ESSFxv1p). As a result, the parkland (ESSFmv1p) unit was described using the ESSFxv1p ecosystem codes; BGC = Biogeoclimatic

1.1 Dry Cool Sub-Boreal Spruce subzone

SBSdk/81/SW Saskatoon – Slender wheatgrass (n=0)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSdk	81	SW	Saskatoon – Slender wheatgrass
Assumed Modifiers: m, s, w			
Mapped Modifiers: c, ch, ck, ct, f, fk, ft, fw, g, h, k, ks, s, sw, t, w			
Mapped Structural Stages: 3, 4, 5, 6, 7			

This at risk (red-listed) non-forested ecosystem is restricted to the middle and upper portions of steep south-facing slopes. These sites have a xeric to subxeric soil moisture regime (SMR) and are subject to frequent drought. Soil nutrient regime (SNR) ranges from medium to very rich. Soils are shallow with a medium to moderately course texture. Surficial material is morainal, colluvial or morainal over bedrock. The calcareous-loving Rocky Mountain juniper (*Juniperus scopulorum*) is one of the few sprawling shrubs in the ecosystem, along with the occasional prickly rose (*Rosa acicularis*) and Saskatoon berry (*Amelanchier alnifolia*). The grassland comprises mostly slender wheatgrass (*Elymus trachycaulus*), junegrass (*Koeleria macrantha*), and timothy (*Phleum pratense*) along with kinnikinnick (*Arctostaphylos uva-ursi*), showy aster (*Eurybia conspicua*), and purple peavine (*Lathyrus nevadensis*). Red-stemmed feather-moss (*Pleurozium schreberi*) is the most commonly encountered bryophyte in this ecosystem.

SBSdk/82/BW Sandberg's bluegrass – Slender wheatgrass (n= 0)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSdk	82	BW	Sandberg's bluegrass - Slender wheatgrass
Assumed modifiers: d, m, w		**Mapped Modifiers**: n/a	

These red- listed grasslands are generally restricted to south-facing slopes. They are subjected to seasonal droughts, and are known to provide critical wildlife range. Soils are deep, fine to medium textured, with a SMR ranging from subxeric to submesic, and a SNR from rich to very rich. The surficial material is morainal or lacustrine. Common snowberry (*Symphoricarpos albus*) sometimes contributes to a very sparse shrub layer. These grasslands are primarily composed of Kentucky, Pacific, and interior bluegrass (*Poa pratensis*; *Poa gracillima*; *Poa interior*). Slender wheatgrass (*Elymus trachycaulus*), blue wildrye (*Elymus glaucus*), and spreading needlegrass (*Achnatherum richardsonii*) are other commonly encountered graminoids in this ecosystem. Eudicots include western meadowrue (*Thalictrum occidentale*), purple peavine (*Lathyrus nevadensis*), and fireweed (*Epilobium angustifolium*).

SBSdk/01/SP *Hybrid white spruce - Purple peavine (n=6)*

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSdk	01	SP	Hybrid white spruce - Purple peavine
Assumed Modifiers: d, j, m			
Mapped Modifiers: c, ch, ck, ct, f, fk, ft, fw, g, h, k, ks, s, sf, sw, t, w			
Mapped Structural Stages: 3, 4, 5, 6, 7			

This ecosystem was documented from the mid-slopes of gentle inclines to level ground. Sites comprise glaciolacustrine, glaciofluvial or morainal deposits with a soil moisture regime (SMR) ranging from mesic to sub-hygric, and a soil nutrient regime (SNR) from medium to rich. Drainage is moderately well to well. The tree canopy is populated primarily by lodgepole pine (*Pinus contorta* var. *latifolia*) and white spruce (*Picea glauca*), and a few trembling aspen (*Populus tremuloides*). The shrub layer can be poorly developed and somewhat variable in composition among sites, but Sitaka alder (*Alnus viridis* subsp. *sinuata*), prickly rose (*Rosa acicularis*), soopolallie (*Shepherdia canadensis*), and white spruce (*Picea glauca*) are major contributors. The herb layer comprises mostly twinflower (*Linnaea borealis*), bunchberry (*Cornus canadensis*), dwarf blueberry (*Vaccinium caespitosum*), and showy aster (*Eurybia conspicua*). Step moss (*Hylocomium splendens*), and red-stemmed feather-moss (*Pleurozium schreberi*) are the most commonly encountered forest floor mosses.

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-12-G027		×	✓	×
T-12-V028		×	×	✓
T-12-F029		×	×	✓
T-13-002G	TL-main	✓	×	×
T-13-033G	TL-main	✓	×	×
T-13-035G	TL-main	✓	×	×

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

SBSdk/02/LJ *Lodgepole pine - Juniper – Ricegrass (n= 3)*

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSdk	02	LJ	*Lodgepole pine - Juniper – Ricegrass*
Assumed Modifiers: j, r, s			
Mapped Modifiers: c, ch, sk, sw, v, vs, vw, w, ws, wv			
Mapped Structural Stages: 3, 5, 6, 7			

The LJ site series occurs on the upper to mid portions of moderate slopes. The soils are coarse-textured, shallow, rapidly drained, and have a xeric SMR and a poor SNR. Surfical material is typically morainal or glaciofluvial. Lodgepole pine (*Pinus contorta* var. *latifolia*) was the only tree documented in the tree layer. Common snowberry (*Symphoricarpos albus*), prickly rose (*Rosa acicularis*), Saskatoon berry (*Amelanchier alnifolia*), common juniper (*Juniperus communis*), paper birch (*Betula papyrifera*), and trembling aspen (*Populus tremuloides*) are significant components of the shrub layer. The sparse herb layer comprises kinnikinnick (*Arctostaphylos uva-ursi*), creamy peavine (*Lathyrus ochroleucus*), and blue wildrye (*Elymus glaucus*). Clad lichens (*Cladonia* sp.) or red-stemmed feather-moss (*Pleurozium schreberi*) cover up to 35% of the forest floor at some sites. Lesser amounts of pelt lichens (*Peltigera* sp.), haircap moss (*Polytrichum* sp.), and Iceland-moss lichens (*Cetraria* sp.) were recorded in the moss layer at most sites.

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-12-G026	TL-Mills	✓	×	×
T-12-G212		×	×	✓
T-12-G226		×	×	✓

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

SBSdk/03/LC Lodgepole pine-Feather-moss–Cladina (n=1)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSdk	03	LC	*Lodgepole pine-Feather-moss–Cladina*
Assumed Modifiers: c, d, j			
Mapped Modifiers: c, cw, f, h, k, kf, ks, m, r, s, sw, v, w, ws, wv			
Mapped Structural Stages: 3, 4, 5, 6, 7			

The SBSdk/03/LC ecosystem occurs on level ground, as well as on the upper portions and crests of gentle slopes on glaciofluvial deposits. The soils are generally deep, coarse-textured, the SMR is sub-xeric, and SNR very poor to poor. Unlike the 02 site series in this BDG subzone, the moss layer of the 03 site series is dominated by mosses, not lichens. The tree layer is primarily lodgepole pine (*Pinus contorta* var. *latifolia*) with some hybrid white spruce (*Picea glauca* x *engelmanni*), and trembling aspen (*Populus tremuloides*). Soopolallie (*Shepherdia canadensis*), prickly rose (*Rosa acicularis*), and lodgepole pine (*Pinus contorta* var. *latifolia*) occupy the shrub layer, and kinnikinnick (*Arctostaphylos uva-ursi*), and twinflower (*Linnaea borealis*) the herb layer.

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-13-032G	TL-main	✓	×	×

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

SBSdk/04/DS Douglas fir - Soopolallie – Feather-moss (n= 0)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSdk	04	DS	*Douglas fir-Soopolallie-Feather-moss*
Assumed Modifiers: m, s, w			
Mapped Modifiers: nil			
Mapped Structural Stages: 3, 6			
This ecosystem occurs on warm aspects with a gentle to significant incline. Sites have medium-textured, well draining soils, and shallow morainal or colluvial deposits over bedrock. The soils have a sub-xeric to sub-mesic SMR, and a medium SNR. The canopy is dominated by Douglas fir (*Pseudotsuga menziesii*) with lesser amounts of hybrid white spruce (*Picea glauca* x *engelmannii*), and subalpine fir (*Abies lasiocarpa*). The shrub layer comprises mostly soopolallie (*Shepherdia canadensis*), birch-leaved spirea (*Spiraea betulifolia*), prickly rose (*Rosa acicularis*), and Douglas fir (*Pseudotsuga menziesii*). The poorly developed herb layer lacks (*Arctostaphylos uva-ursi*) but has some grasses such as blue wildrye (*Elymus glaucus*), western fescue (*Festuca occidentalis*), and forbs like twinflower (*Linnaea borealis*).			

SBSdk/05/SF Hybrid white spruce – Spirea – Feather-moss (n=6)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSdk	05	SF	*Hybrid white spruce – Spirea – Feather-moss*
Assumed Modifiers: d, j, m			
Mapped Modifiers: c, f, h, k, m, s			
Mapped Structural Stages: 3, 4, 5, 6, 7			

In this portion of the SBSdk subzone the white spruce – Spirea – Feather-moss site association occurs from mid slope to crests of shallow to moderately sloped inclines with various aspects. Surficial material is glaciolacustrine or morainal. Soils are moderately well to well drained with a sub-mesic to mesic SMR, and a poor to medium SNR. White spruce (*Picea glauca*) and lodgepole pine (*Pinus contorta* var. *latifolia*) are the largest contributors to the tree canopy, with small amounts of trembling aspen (*Populus tremuloides*), hybrid white spruce (*Picea engelmannii* x *glauca*), and paper birch (*Betula papyrifera*). The shrub layer is poorly to moderately developed with soopolallie (*Shepherdia canadensis*), Sitka alder (*Alnus viridis* subsp. *sinuata*), and prickly rose (*Rosa acicularis*) being the primary components. The herbaceous layer comprises bunchberry (*Cornus canadensis*), pine-grass (*Calamagrostis rubescens*), blue wildrye (*Elymus glaucus*), wild sarsaparilla (*Aralia nudicaulis*), and showy aster (*Eurybia conspicua*). Red-stemmed feather-moss (*Pleurozium schreberi*) covers up to 35% of the forest floor at some plots.

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-12-G209		×	×	✓
T-12-G211		×	×	✓
T-12-G216		×	×	✓
T-13-001G	TL-main	✓	×	×
T-13-004G	TL-main	✓	×	×
T-13-006V	TL-main	✓	×	×

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

SBSdk/06/ST *Hybrid white spruce – Twinberry - Coltsfoot (n=6)*

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSdk	06	ST	*Hybrid white spruce– Twinberry - Coltsfoot*
Assumed Modifiers: d, j, m			
Mapped Modifiers: c, ch, f, fs, ft, fw, g, h, m, s, sf, t			
Mapped Structural Stages: 3, 4, 5, 6, 7			

This common and widespread ecosystem occurs on a wide range of gradients and aspects on upland sites with morainal, lacustrine or eolian surficial material. Soils are moderately fine to moderately coarse with mesic to sub-hygric SMR, and medium to very rich SNR. White spruce (*Picea glauca*) and trembling aspen (*Populus tremuloides*) are the largest contributors to the tree canopy. The well developed shrub layer comprises a mixture of prickly rose (*Rosa acicularis*), highbush-cranberry (*Viburnum edule*), black twinberry (*Lonicera involucrata*), trembling aspen (*Populus tremuloides*), spruce (*Picea* spp.), soopolallie (*Shepherdia canadensis*), and Sitka alder (*Alnus viridis* subsp. *sinuata*). A large diversity of plants can be found in the herb layer in this wide-ranging ecosystem including twinflower (*Linnaea borealis*), fireweed (*Epilobium angustifolium*), showy aster (*Eurybia conspicua*), bunchberry (*Cornus canadensis*), yarrow (*Achillea millefolium*), spreading needlegrass (*Achnatherum richardsonii*), fringed brome (*Bromus ciliatus*), great northern aster (*Canadanthus modestus*), and Sitka columbine (*Aquilegia formosa*). Red-stemmed feather-moss (*Pleurozium schreberi*), and ragged-moss (*Brachythecium* sp.) are but a few of the mosses encountered in the well developed moss layer at these sites.

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-12-G024	TL-Mills	✓	×	×
T-12-G089		×	✓	×
T-12-G228		×	×	✓
T-12-G235	FWSS	✓	×	×
T-12-G236	FWSS	✓	×	×
T-13-003G	TL-main	✓	×	×

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

SBSdk/08/CD Black cottonwood - Dogwood - Prickly rose (n= 1)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSdk	08	CD	*Black cottonwood - Dogwood - Prickly rose*
Assumed Modifiers: a, c, d, j			
Mapped Modifiers: t			
Mapped Structural Stages: 5, 6, 7			

This black cottonwood (*Populus trichocarpa*) ecosystem is found on active lower fluvial terraces adjacent to large watercourses. Soils are coarse and well drained but active flooding results in a hygric SMR, and rich to very rich SNR. In addition to black cottonwood, Engelmann spruce (*Picea engelmannii*) can be found in the tree canopy. The well-developed shrub layer comprises black twinberry (*Lonicera involucrata*), thimbleberry (*Rubus parviflorus*), red-osier dogwood (*Cornus stolonifera*), highbush-cranberry (*Viburnum edule*), and prickly rose (*Rosa acicularis*). The sparse herbaceous layer consists of oak fern (*Gymnocarpium dryopteris*), cow-parsnip (*Heracleum maximum*), violets (*Viola* sp.), western meadowrue (*Thalictrum occidentale*), and stinging nettle (*Urtica dioica*). The moss layer is absent in these ecosystems.

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-12-G208		×	×	✓

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

1.2 Stuart Dry Warm Sub-Boreal Spruce variant

SBSdw3/81/SW Saskatoon – Slender wheatgrass (n= 1)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSdw3	81	SW	*Saskatoon – Slender wheatgrass*
Assumed Modifiers: m, s, w			
Mapped Modifiers: c, w, sw, w, ws, wv			
Mapped Structural Stages: 3			

This ecosystem occurs on significant slope with warm aspects with a thin veneer of colluviums over bedrock. The soils are silty-textured, shallow, with a xeric SMR, and a poor SNR. Saskatoon berry (*Amelanchier alnifolia*), common juniper (*Juniperus communis*), some low-growing trembling aspen (*Populus tremuloides*), and prickly rose (*Rosa acicularis*) each contribute to a weakly well developed shrub layer. Needlegrass (*Achnatherum* sp.) is the dominate graminoids in this ecosystem, followed closely by brome (*Bromus* sp.), bluegrass (*Poa* sp.), slender wheatgrass (*Elymus trachycaulus*), and spike trisetum (*Trisetum spicatum*). The most common eudicot contributor to the herbaceous layer is yarrow (*Achillea millefolium*), and small bedstraw (*Galium trifidum*).

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-12-G214		×	×	✓

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

SBSdw3/82/BW Bluegrass – Slender wheatgrass (n= 0)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSdw3	82	BW	*Bluegrass – Slender wheatgrass*
Assumed Modifiers: none			
Mapped Modifiers: none			
Mapped Structural Stages: null			
The SBSdw3/82 is a grassland community typically occurring on south or south-west facing slopes. Site conditions are such that grasses out-compete regenerating trees resulting in a non-forested graminoid-dominated community. Soils are deep, fine to medium texture, and well-drained with a SMR ranging from subxeric to submesic, and a SNR from rich to very rich. The surficial material is morainal or lacustrine. Common snowberry (*Symphoricarpos albus*) sometimes contributes to a very sparse shrub layer. These grasslands are primarily composed of Kentucky, Pacific, and interior bluegrass (*Poa pratensis*; *Poa gracillima*; *Poa interior*). Slender wheatgrass (*Elymus trachycaulus*), blue wildrye (*Elymus glaucus*), and spreading needlegrass (*Achnatherum richardsonii*) are other commonly encountered graminoids in this ecosystem. Eudicots include western meadowrue (*Thalictrum occidentale*), purple peavine (*Lathyrus nevadensis*), and fireweed (*Epilobium angustifolium*).			

SBSdw3/01/SP Hybrid white spruce - Douglas-fir – Pinegrass (n= 2)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSdw3	01	SP	*Hybrid white spruce - Douglas-fir – Pinegrass*
Assumed Modifiers: d, j, m			
Mapped Modifiers: c, ck, ct, f, fk, h, k, kg, s, w			
Mapped Structural Stages: 3, 4, 5, 6, 7			

This ecosystem occurs on deep soils, at the mid- to lower slope position of gentle inclines, or on level ground. The soils are medium-textured and moderately well drained with a mesic SMR, and medium SNR. Surficial material is morainal or glaciofluvial. Lodgepole pine (*Pinus contorta* subsp. *longifolia*), and subalpine fire (*Abies lasiocarpa*) dominate the forest canopy. Prickly rose (*Rosa acicularis*), birch-leaved spirea (*Spiraea betulifolia* subsp. *lucida*), highbush-cranberry (*Viburnum edule*), Sitka alder (*Alnus viridis* subsp. *sinuata*), black twinberry (*Lonicera involucrata*), and thimbleberry (*Rubus parviflorus*) are important contributors to the shrub layer. Bunchberry (*Cornus canadensis*), twinflower (*Linnaea borealis*), heat-leaved arnica (*Arnica cordifolia*), queen's cup (*Clintonia uniflora*), and strawberry (*Fragaria virginiana*) comprise much of the herb layer. Much of the forest floor at these sites are often covered in red-stemmed feather-moss (*Pleurozium schreberi*), and knight's plume (Ptilium *crista-castrensis*).

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-13-014G	TL-main	✓	×	×
T-13-026G	TL-main	✓	×	×

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

SBSdw3/02/DC Douglas-fir - Lodgepole pine – Cladonia (n= 0)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSdw3	02	DC	*Douglas-fir - Lodgepole pine – Cladonia*
Assumed Modifiers: c, d, w			
Mapped Modifiers: cw, s, sw, v, w			
Mapped Structural Stages: 3, 4, 5, 6, 7			
This ecosystem occurs on the upper slopes, and crests of significant inclines with a warm southerly aspect. The coarse-textured soils are rapidly draineing and have a sub-xeric SMR, and a poor SNR. Sites have shallow colluvial veneers. Douglas fir (*Pseudotsuga menziesii*) dominates the sparse tree canopy, with lesser amounts of hybrid white spruce (*Picea glauca* x *engelmannii*). Birch-leaved spirea (*Spiraea betulifolia* subsp. *lucida*), prickly rose (*Rosa acicularis*), and Saskatoon berry (*Amelanchier alnifolia*) fill-out a sparse shrub layer. The forest floor has a moderate cover of kinnikinnick (>5%; *Arctostaphylos uva-ursi*), and a moderate to well-developed lichen layer comprising grey reindeer lichen (*Cladina rangiferina*), and apple pelt (*Peltigera malacea*).			

SBSdw3/03/LC Lodgepole pine - Feather-moss – Cladina (n= 2)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSdw3	03	LC	*Lodgepole pine - Feather-moss – Cladina*
Assumed Modifiers: c, d, j			
Mapped Modifiers: cs, ct, f, h, ks, s, sw, t, v, w			
Mapped Structural Stages: 3, 4, 5, 6, 7			

This ecosystem occurs at the crests of moderate to steep slopes with weathered bedrock or colluvial surficial material. The coarse-textured soils have a sub-xeric SMR, and a very poor SNR. The tree canopy is of pure lodgepole pine (*Pinus contorta* var. *latifolia*). The shrub layer comprises mostly soopolallie (*Shepherdia canadensis*), birch-leaved spirea (*Spiraea betulifolia*), lodgepole pine (*Pinus contorta* var. *latifolia*), and prickly rose (*Rosa acicularis*). Kinnikinnick (*Artostaphylos uva-ursi*) is a common element of the herbaceous layer along with bunchberry (*Cornus canadensis*), twinflower (*Linnaea borealis*), and dwarf blueberry (*Vaccinium caespitosum*). The well-developed moss layer comprises grey reindeer lichen (*Cladina rangiferina*), Red-stemmed feather-moss (*Pleurozium schreberi*), and wavy-leaved moss (*Dicranum polysetum*).

Plot Number	Project Component	LSA	RSA	outside RSA
T-12-G202	TL-main	✓	×	×
T-13-023G	TL-main	✓	×	×

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

SBSdw3/04/SR Hybrid white spruce - Douglas-fir – Ricegrass (n= 9)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSdw3	04	SR	*Hybrid white spruce - Douglas-fir – Ricegrass*
Assumed Modifiers: c, d, j			
Mapped Modifiers: c, k, ks, mw, s, sw, t, vk, w			
Mapped Structural Stages: 3, 4, 5, 6, 7			

The hybrid white spruce – Douglas-fir – Ricegrass ecosystem occurs on a wide variety of slope positions and gradients in the project area as well as on level ground. The sites comprise a blanket of morainal or glaciofluvial material. Soils have a sub-mesic to mesic SMR, and poor to medium SNR. Hybrid white spruce (*Picea engelmannii* x *glauca*) or trembling aspen (*Populus tremuloides*) can dominate the tree canopy layer, with lesser amounts of lodgepole pine (*Pinus contorta* var. *latifolia*), subalpine fir (*Abies lasiocarpa*) and Douglas-fir (*Pseudotsuga menziesii*). The shrub layer is very well developed with Saskatoon berry (*Amelanchier alnifolia*), soopolallie (*Shepherdia canadensis*), prickly rose (*Rosa acicularis*), highbush cranberry (*Viburnum edule*), Mountain alder (*Alnus incana*), and various tree species being important elements. Bilberry (*Vaccinium caespitosum*), wild sarsaparilla (*Aralia nudicaulis*), kinnikinnick (*Arctostaphylos uva-ursi*), Queen's cup (*Clintonia uniflora*), bunchberry (*Cornus canadensis*), showy aster (*Eurybia conspicua*), and American vetch (*Vicia americana*) contribute to a species rich herb layer. Red-stemmed feather-moss (*Pleurozium schreberi*) or (*Hylocomium splendens*) carpet over half of the forest floor at some plots.

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-12-G204	TL-main	✓	×	×
T-12-G205	TL-main	✓	×	×
T-12-G207	TL-main	✓	×	×
T-13-009F	TL-Stellako	✓	×	×
T-13-010G	TL-Stellako	✓	×	×
T-13-011G	TL-Stellako	✓	×	×
T-13-012G	TL-Stellako	✓	×	×
T-13-021G	TL-main	✓	×	×

T-13-024F	TL-main	✓	×	×

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BSdw3/05/BF Lodgepole pine - Black spruce – Feather-moss (n= 0)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSdw3	05	BF	*Lodgepole pine - Black spruce – Feather-moss*
Assumed Modifiers: d, j, m			
Mapped Modifiers: ct, f			
Mapped Structural Stages: 3, 4, 5, 6, 7			
This ecosystem can be found on gentle slopes or on level ground, with deep coarse- to fine-textured soils on morainal, fluvial, or lacustrine deposits. The SMR is sub-mesic to sub-hygric, and the SNR is usually very poor. The forest canopy is predominantly lodgepole pine (*Picea contorta* subsp. *latifolia*), and black spruce (*Picea mariana*). The shrub layer comprises prickly rose (*Rosa acicularis*), kinnikinnick (*Shepherdia canadensis*), black twinberry (*Lonicera involucrata*), birch-leaved spirea (*Spiraea betulifolia*), and Saskatoon berry (*Amelanchier alnifolia*). Bunchberry (*Cornus canadensis*), twinflower (*Linnaea borealis*), dwarf blueberry (*Vaccinium caespitosum*), and fireweed (*Epilobium angustifolium*) are common herbaceous plants. The well-developed moss layer comprises red-stemmed feather-moss (*Pleurozium schreberi*), and wavy-leaved moss (*Dicranum polysetum*).			

SBSdw3/06/SS Hybrid white spruce - Pink spirea - Prickly rose (n= 0)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSdw3	06	SS	*Hybrid white spruce - Pink spirea - Prickly rose*
Assumed Modifiers: d, f, j			
Mapped Modifiers: c, f, g, kc, t, w			
Mapped Structural Stages: 3, 4, 5, 6, 7			
The hybrid white spruce – pink spirea – prickly rose site series occurs on gentle slopes or on level ground with deep, moderately fine to fine textured soils, and lacustrine surficial material. The SMR is sub-hygric, and the SNR is medium. The forest canopy is a mix of lodgepole pine (*Pinus contorta* var. *latifolia*), and trembling aspen (*Populus tremuloides*). The shrub layer is occupied by pink spirea (*Spiraea douglasii* subsp. *menziesii*), prickly rose (*Rosa acicularis*), and Sitka alder (*Alnus viridis* subsp. *sinuata*), while the herb layer consists mostly of bunchberry (*Cornus canadensis*), twinflower (*Linnaea borealis*), and dwarf blueberry (*Vaccinium caespitosum*). Like the 05 site series above, the 06 site series has a well-developed moss layer. Bryophytes include red-stemmed feather-moss (*Pleurozium schreberi*), knight's plume (*Ptilium crista-castrensis*), and silver-edge pelt (*Peltigera aphthosa*).			

SBSdw3/07/ST Hybrid white spruce – Twinberry (n= 5)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSdw3	07	ST	*Hybrid white spruce – Twinberry*
Assumed Modifiers: d, f, g			
Mapped Modifiers: c, f, fk, k, kc, ms, s, t, w			
Mapped Structural Stages: 3, 4, 5, 6, 7			

This site series occurs on the upper to middle portions of gentle to moderately steep slopes, and on flat ground. The soil is deep, fine-textured and has a mesic to sub-hygric SMR, and a medium to rich SNR. Hybrid white spruce (*Picea engelmannii* x *glauca*), and trembling aspen (*Populus tremuloides*) fill-out the tree canopy. Pink spirea (*Spiraea douglasii* subsp. *menziesii*) is noticeably absent from the shrub layer, which is occupied by the seemingly ubiquitous black twinberry (*Lonicera involucrata*), Sitka alder (*Alnus viridis*), highbush-cranberry (*Viburnum edule*), common snowberry (*Symphoricarpos albus*), Saskatoon berry (*Amelanchier alnifolia*), and spruce (*Picea engelmanni* x *glauca*). Bluejoint reedgrass (*Calamagrostis canadensis*), cow-parsnip (*Heracleum maximum*), showy aster (*Eurybia conspicua*), Queen's cup (*Clintonia uniflora*), bunchberry (*Cornus canadensis*), palmate coltsfoot (*Petasites frigidus* var. *palmatus*), twinflower (*Linnaea borealis*), trailing raspberry (*Rubus pubescens*), and fringed aster (*Symphyotrichum ciliolatum*) are found in the robust herb layer. The moss layer includes step moss (*Hylocomium splendens*), knight's plume (*Ptilium crista-castrensis*), red-stemmed feather-moss (*Pleurozium schreberi*), and leafy mosses (*Mnium* spp.).

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-12-G201	TL-main	✓	×	×
T-12-G203	TL-main	✓	×	×
T-12-G218		×	×	✓
T-13-007G	TL-Stellako	✓	×	×
T-13-008G	TL-Stellako	✓	×	×

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

SBSdw3/08/SO Hybrid white spruce - Oak fern (n= 2)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSdw3	08	SO	*Hybrid white spruce - Oak fern*
Assumed Modifiers: c, d, j			
Mapped Modifiers: c, f, k, s, t			
Mapped Structural Stages: 2, 3, 4, 5, 6, 7			

This ecosystem is distributed at the base of moderate to steep north-facing aspects in depressions or gullies with fluvial surficial material. The soils are coarse, imperfectly to poorly drained and have a sub-hygric/hygric SMR, and a medium to very rich SNR. The tree layer consists of hybrid white spruce (*Picea engelmannii* x *glauca*), Douglas-fir (*Pseudotsuga menziesii*), and balsam poplar (*Populus balsamifera*). The shrub layer has mountain alder (*Alnus incana*), highbush-cranberry (*Viburnum edule*), black twinberry (*Lonicera involucrata*), and prickly rose (*Rosa acicularis*). The herb layer supports extensive oak fern (*Gymnocarpium dryopteris*) populations, in addition to lesser amounts of wild sarsaparilla (*Aralia nudicaulis*), field horsetail (*Equisetum arvense*), and common miterwort (*Mitella nuda*). Red-stemmed feather-moss (*Pleurozium schreberi*), knight's plume (*Ptilium crista-castrensis*), electrified cat's-tail moss (*Rhytidiadelphus triquetrus*), and leafy mosses (*Mnium* spp.) carpet much of the forest floor.

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-12-G206	TL-main	✓	×	×
T13-027G	TL-main	✓	×	×

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

1.3 Babine Moist Cold Sub-Boreal Spruce variant

SBSmc2/01/SB Hybrid white spruce – Huckleberry Sub-mesic (n=9)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSmc2	01	SB	*Hybrid white spruce – Huckleberry Sub-mesic*
Assumed Modifiers: d, j, m			
Mapped Modifiers: c, ch, ck, ct, cw, f, k, ks, r, s, sw, w			
Mapped Structural Stages: 3, 4, 5, 6, 7			

The sandy loamy soils of these ecosystems have a sub-mesic to mesic SMR, and a medium to rich SNR. This ecosystem tends to have a south-westerly exposure in the project area on a variety of grades and slope positions. Lodgepole pine (*Pinus contorta* var. *latifolia*), hybrid white spruce (*Picea galuca* x *engelmannii*), and trembling aspen (*Populus tremuloides*), and subalpine fire (*Abies lasiocarpa*) dominate the forest canopy. Black huckleberry (*Vaccinium membranaceum*), subalpine fire (*Abies lasiocarpa*), Sitka alder (*Alnus viridis* subsp. *sinuata*), and prickly rose (*Rosa acicularis*) are some common elements of the shrub layer while fireweed (*Epilobium angustifolium*), showy aster (*Eurybia conspicua*), Canada dogwood (*Cornus Canadensis*), and twinflower (*Linnaea borealis*) dominate the herbaceous layer. Knight's plume (*Ptilium crista-castrensis*) and red-stemmed feather-moss (*Pleurozium schreberi*) occupy much of the moss layer.

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-12-V045		×	×	✓
T-12-G046		×	×	✓
T-12-G047		×	×	✓
T-13-015G	TL-Main	✓	×	×
T-13-016G		×	✓	×
T-13-017G	TL-Main	✓	×	×
T-13-062G	AIR	✓	×	×
T-13-066G	AIR	✓	×	×
T-13-071V	AIR	✓	×	×

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

SBSmc2/02/PH Lodgepole pine - Huckleberry – Cladonia (n= 1)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSmc2	02	PH	*Lodgepole pine - Huckleberry – Cladonia*
Assumed Modifiers: c, d, j			
Mapped Modifiers: ct, cw, k, kg, r, s, sw, t, w			
Mapped Structural Stages: 3, 4, 5, 6, 7			
This ecosystem occurs on level sites with deep, well-draining, coarse–textured, glaciofluvial terraces, and on upper to crest positions with shallow soils on colluvial or morainal veneers over bedrock. This ecosystem experiences significant moisture deficits throughout the growing seasons. Sites are typically well-drained or water-shedding resulting in very dry and nutrient poor conditions. The sparse tree canopy almost exclusively comprises lodgepole pine (*Pinus contorta* var. *latifolia*). The list of plant in the shrub layer includes lodgepole pine (*Pinus contorta* var. *latifolia*), hybrid white spruce (*Picea engelmannii* x *glauca*), and black huckleberry (*Vaccinium membranaceum*). The moss layer is dominated by lichens (*Cladonia* spp.; *Cladina* spp.) and red-stemmed feather moss (*Pleurozium schreberi*).			

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-12-G215		×	×	✓

SBSmc2/03/BM Black spruce - Lodgepole pine – Feather-moss (n= 1)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSmc2	03	BM	*Black spruce - Lodgepole pine – Feather-moss*
Assumed Modifiers: d, j, m			
Mapped Modifiers: c, ck, s, w			
Mapped Structural Stages: 3, 4, 5, 6, 7			

This site association occurs on mid, lower or level site positions on cool aspects. Parental material is morainal or rarely fluvial veneers. Soils have a very poor to poor SNR, and submesic to mesic SMR. Unlike most other variants in this BGC variant, black spruce (*Picea mariana*) is always present in this ecosystem, although these trees are often stunted. Lodgepole pine (*Pinus contorta* var. *latifolia*), and hybrid white spruce (*Picea glauca* x *engelmannii*) complete the tree canopy. Lodgepole pine (*Pinus contorta* subsp. *longifolia*), subalpine fire (*Abies lasiocarpa*), soopolallie (*Shepherdia canadensis*), and common juniper (*Juniperus communis*) are found in the shrub layer. Canada dogwood (*Canada dogwood*), fireweed (*Epilobium angustifolium*), dwarf blueberry (*Vaccinium caespitosum*), and creeping-snowberry (*Gaultheria hispidula*) occupy the herb layer. Over half of the forest floor can be carpeted with one species, feather-mosses (*Pleurozium schreberi*).

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-13-065G	AIR	✓	×	×

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

SBSmc2/04/HB Hybrid white spruce - Huckleberry -Dwarf blueberry (n= 3)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSmc2	04	HB	*Hybrid white spruce - Huckleberry -Dwarf blueberry*
Assumed Modifiers: d, j, m			
Mapped Modifiers: c, ch, ck, k, ks, r, s, w			
Mapped Structural Stages: 2, 3, 4, 5, 6, 7			

This ecosystem was documented on level ground and crests with colluvial or glaciofluvial surficial material. The soils are medium- to coarse-textured with a submesic to mesic SMR, and a medium SNR. The canopy is dominated by hybrid white spruce (*Picea glauca* x *engelmannii*) and lodgepole pine (*Pinus contorta* var. *latifolia*). Lodgepole pine (*Pinus contorta* var. *latifolia*) also filled out much of the shrub layer along with Sitka alder (*Alnus viridis* subsp. *sinuata*), soopolallie (*Shepherdia canadensis*), and raspberries (*Rubus idaeus*). Purple reedgrass (*Calamagrostis purpurascens*), twinflower (*Linnaea borealis*), and bilberry (*Vaccinium caespitosum*) significantly contribute to the herb layer. The well-developed moss layer comprises red-stemmed feather-moss (*Pleurozium schreberi*), knight's plum (*Ptilium crista-castrensis*), and step moss (*Hylocomium splendens*).

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-13-063G	AIR	✓	×	×
T-13-067G	AIR	✓	×	×
T-13-070G	AIR	✓	×	×

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

SBSmc2/05/TC Hybrid white spruce - Twinberry – Coltsfoot (n= 1)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSmc2	05	TC	*Hybrid white spruce - Twinberry – Coltsfoot*
Assumed Modifiers: d, j, m			
Mapped Modifiers: ct, ck			
Mapped Structural Stages: 5, 6, 7			

The 05 site series in this BGC variant is known to occur on gentle slopes at the mid to lower slope position as well as at the toe of the slope. The landform is typically morainal, fluvial, or colluvial. Soils are variable in texture with a sub-hygric SMR, and a medium to rich SNR. The tree canopy is dominate by white spruce (*Picea glauca*), trembling aspen (*Populus tremuloides*), lodgepole pine (*Pinus contorta* var. *latifolia*), with a few subalpine fir (*Abies lasiocarpa*) individuals occurring at some sites. The shrub layer is dominated by thimbleberry (*Rubus parviflorus*), highbush-cranberry (*Viburnum edule*), and black twinberry (*Lonicera involucrata*). Trailing raspberry (*Rubus pubescens*), bunchberry (*Cornus canadensis*), fireweed (*Epilobium angustifolium*), heart-leaved arnica (*Arnica cordifolia*), and mountain sweet-cicely (*Osmorhiza berteroi*) are commonly encountered plants of the herbaceous layer. Common bryophytes in this ecosystem include red-stemmed feather-moss (*Pleurozium schreberi*), knight's plum (*Ptilium crista-castrensis*), and step moss (*Hylocomium splendens*).

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-12-G229		×	×	✓

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

SBSmc2/06/SO Hybrid white spruce - Oak fern (n= 0)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSmc3	06	SO	*Hybrid white spruce - Oak fern*
Assumed Modifiers: d, j, m			
Mapped Modifiers: c, k, ks, s			
Mapped Structural Stages: 3, 4, 5, 6, 7			
This ecosystem is distributed on cool northerly aspects in the study area, typically on morainal, lacustrine, or colluvial landforms. Soils are moderately well-drained with a mesic SMR, and a rich to very rich SNR. The tree canopy is dominate by hybrid white spruce (*Picea glauca* x *engelmannii*), and lesser amounts of subalpine fir (*Abies lasiocarpa*). Black gooseberry (*Ribes lacustre*), thimbleberry (*Rubus parviflorus*), black huckleberry (*Vaccinium membranaceum*), and devil's (*Oplopanax horridus*) can be found in the shrub layer. Oak fern (*Gymnocarpium dryopteris*) is an abundant and diagnostic fern for this ecosystem. Red-stemmed feather-moss (*Pleurozium schreberi*), knight's plum (*Ptilium crista-castrensis*), common leafy liverwort (*Barbilophozia lycopodioides*), and step moss (*Hylocomium splendens*) contribute to a well-developed moss layer.			

SBSmc2/07/BF Hybrid white spruce - Scrub birch – Feather-moss (n= 0)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSmc2	07	BF	*Hybrid white spruce - Scrub birch – Feather-moss*
Assumed Modifiers: d, j, m			
Mapped Modifiers: none			
Mapped Structural Stages: 7			
This uncommon ecosystem often occurs along the edges of wetlands on flat ground or on the lower slopes and toes of gentle slopes. The landform is typically morainal. Soils are imperfectly drained with a sub-hygric to hygric SMR, and a poor SNR. The tree layer comprises a mixture of white spruce (*Picea glauca*), hybrid white spruce (*Picea engelmannii* x *glauca*), and lodgepole pine (*Pinus contorta* var. *latifolia*). Black huckleberry (*Vaccinium membranaceum*), and black twinberry (*Lonicera involucrata*) help to fill in a sparse shrub layer, while bunchberry (*Cornus canadensis*), purple peavine (*Lathyrus nevadensis*), bluejoint (*Calamagrostis canadensis*), heart-leaved arnica (*Arnica cordifolia*), and Indian hellebore (*Veratrum viride*) populate a well-developed herbaceous layer. Glow moss (*Aulacomnium palustre*), leafy mosses (*Mnium* spp.), and (*Pleurozium schreberi*) are reportedly commonly encountered in the moss layer.			

SBSmc2/08/ST Hybrid white spruce - Twinberry - Oak fern (n= 0)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSmc2	08	ST	*Hybrid white spruce - Twinberry - Oak fern*
Assumed Modifiers: d, j, m			
Mapped Modifiers: c, ck			
Mapped Structural Stages: 3, 4, 5, 6, 7			
This ecosystem occurs on the lower portions of gentle slopes or in depressions on fluvial landforms. The soil is deep, medium–textured, and of a medium SNR, but is poorly aerated because of water saturation. The canopy is dominated by hybrid white spruce (*Picea glauca* x *engelmannii*). Bearberry honeysuckle (*Lonicera involucrata*) dominates the shrub layer, and western oak fern (*Gymnocarpium dryopteris*), and horsetail fern (*Equisetum* spp.) the herbaceous layer. Red-stemmed feather-moss (*Pleurozium schreberi*), and step-moss (*Hylocomium splendens*) are common mosses in this ecosystem.			

SBSmc2/09/SD *Hybrid white spruce – Devil's club (n=2)*

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSmc2	09	SD	*Hybrid white spruce – Devil's club*
Assumed Modifiers: d, j, m			
Mapped Modifiers: none			
Mapped Structural Stages: 6, 7			

The SBSmc2/09/SD ecosystem was documented on the lower portions of gentle slopes. Soils are deep (>1m), medium textured and poorly aerated with subhygric SMR and rich to very rich SNR. Subalpine fir (*Abies lasiocarpa*) is the dominate component of the tree canopy, but shares the understory with Devil's club (*Oplopanax horridus*), and green alder (*Alnus viridis*). The herb layer comprises mostly ferns (*Gymnocarpium dryopteris*; Athyrium filix-femina), but a diversity of other plants were recorded at these plots including Canada dogwood (*Cornus canadensis*), kidney-leaved violoet (*Viola renifolia*), and false Solomon's seal (*Maianthemum racemosum*). The bryophyte layer ranges from almost lacking to covering over half of the forest floor. Red-stemmed feather-moss (*Pleurozium schreberi*) and knight's plum (*Ptilium crista-castrensis*) are the most abundant bryophytes.

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-13-018G	TL-main	✓	×	×
T-13-019G	TL-main	✓	×	×

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

SBSmc2/10/SH Hybrid white spruce – Horsetail (n=0)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSmc2	10	SH	*Hybrid white spruce – Horsetail*
Assumed Modifiers: d, j, m			
Mapped Modifiers: ct, g			
Mapped Structural Stages: 5, 6, 7			
This heavily vegetated ecosystem occurs on flat ground or in depressions next to water courses or wetlands in the SBSmc2 BGC variant. The soils are deep, of a medium texture, and of a moderate to rich SNR. Like the above ecosystem, the soil is often saturated and poorly aerated. The forest canopy is dominated by hybrid white spruce (*Picea glauca* x *engelmannii*). The diverse shrub layer comprises bearberry honeysuckle (*Lonicera involucrata*), and devil's club (*Oplopanax horridus*), and the herbaceous layer five-leaved bramble (*Rubus pedatus*), western oak-fern (*Gymnocarpium dryopteris*), and common horsetail (*Equisetum arvense*). Red-stemmed feather-moss (*Pleurozium schreberi*), and knight's plume (*Ptilium crista-castrensis*) are commonly encountered bryophytes in this ecosystem.			

1.4 Kluskus Moist Cold Sub-Boreal Spruce variant

SBSmc3/01/SB Spruce Engelmann x white – Huckleberry (n=12)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSmc3	01	SB	*Spruce Engelmann x white – Huckleberry*
Assumed Modifiers: d, j, m			
Mapped Modifiers: c, ch, ck, cr, cs, ct, cw, f, g, h, k, ks, r, sf, t, w			
Mapped Structural Stages: 3, 4, 5, 6, 7			

The SBSmc3/01/SB generally occurs on gentle mid to level slope site positions. The parental material is variable and occurs on morainal, colluvial and glaciofluvial. Soils are moderately - well to well drained. The SMR is mesic, and the SNR medium. The dominant tree species are lodgepole pine (*Pinus contorta* var. *latifolia*), hybrid white spruce (*Picea engelmanni* x *glauca*), and subalpine fir (*Abies lasiocarpa*). Black huckleberry (*Vaccinium membranaceum*), and prickly rose (*Rosa acicularis*) are common in the shrub layer, while bunchberry (*Cornus canadensis*), twinflower (*Linnaea borealis*) are common elements of the herbaceous layer. Red-stemmed feather-moss (*Pleurozium schreberi*), knight's plume (*Ptilium crista-castrensis*), step moss (*Hylocomium splendens*), and pelt lichens (*Peltigera* sp.) cover large portions of the forest floor.

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-11-7114	MS	✓	×	×
T-11-G032	MS	✓	×	×
T-11-G048	MS	✓	×	×
T-11-G062	MS	✓	×	×
T-11-G063	MS	✓	×	×
T-11-V020	MS	✓	×	×
T-11-V026	MS	✓	×	×
T-12-F003		×	✓	×

T-12-G032		×	×	✓
T-12-G223	TL-Main	✓	×	×
T-12-G240	FWSS	✓	×	×
T-12-V004		×	×	✓

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

SBSmc3/02/LJ Lodgepole pine - Juniper - Dwarf Blueberry (n= 6)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSmc3	02	LJ	*Lodgepole pine - Juniper - Dwarf Blueberry*
Assumed Modifiers: c, j, s			
Mapped Modifiers: ct, h, hs, k, r, s, sw, t, vw, w			
Mapped Structural Stages: 33, 5, 6, 7			

This ecosystem occurs on the upper slopes of moderate inclines with shallow, rapidly drained soils over bedrock that have xeric SMR, and poor SNR. Plots are dominated by lodgepole pine (*Pinus contorta* var. *latifolia*) in the tree layer, and common juniper (*Juniperus communis*), prickly rose (*Rosa acicularis*) and buffalo-berry (*Shepherdia canadensis*) in the shrub layer. Common understorey herbs include Canada dogwood (*Cornus canadensis*), heart-leaved arnica (*Arnica cordifolia*), and crowberry (*Empetrum nigrum*). Common mosses include red-stemmed feather-moss and heron's-bill moss. Frequently encountered lichens include cladonia lichens (*Cladonia* spp.), foam lichens (*Stereocaulon* spp.), and pelt lichens (*Peltigera* spp.).

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-12-G066	MS	✓	×	×
T-11-G045	MS	✓	×	×

T-11-V022	MS	✓	×	×
T-11-G007	MS	✓	×	×
T-11-V025	MS	✓	×	×
T-11-V018	MS	✓	×	×

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

SBSmc3/03/LF Lodgepole pine - Feather-moss – Cladina (n=39)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSmc3	03	LF	*Lodgepole pine - Feather-moss – Cladina*
Assumed Modifiers: c, d, j			
Mapped Modifiers: c, ch, ck, cr, ct, g, h, k, kg, ks, r, s, sw, t, w			
Mapped Structural Stages: 3, 4, 5, 6, 7			

The 03 site series occurs on various site positions (crest, upper, mid and level) of gentle to moderately steep slopes with generally poor SNR, and xeric to sub-xeric SMR. Rapidly drained undulating, hummocky and ridged glaciofluvial and morainal veneers are most common. Lodgepole pine (*Pinus contorta* var. *latifolia*) dominates the tree canopy, although percent cover at some plots is low. Buffalo-berry (*Shepherdia canadensis*), lodgepole pine (*Pinus contorta* var. *latifolia*), and prickly rose (*Rosa acicularis*) are common elements of the shrub layer. These sites are typified by the presence of kinnikinnick (*Arctostaphylos uva-ursi*) in the herb layer, but Canada dogwood (*Cornus canadensis*), twinflower (*Linnaea borealis*), and dwarf blueberry (*Vaccinium caespitosum*) are also common in the herb layer. Lesser gren reindeer lichen (*Cladina* mitis), red-stemmed feather-moss (*Pleurozium schreberi*), step moss (*Hylocomium splendens*), and heron's-bill moss (*Dicranum* spp.) are common ground-cover lichens and bryophytes.

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-12-G062	MS	✓	×	×
T-12-G064	MS	✓	×	×

T-12-G065	MS	✓	×	×
T-11-G046	MS	✓	×	×
T-11-G049	MS	✓	×	×
T-11-G051		×	✓	×
T-11-V017	MS	✓	×	×
T-11-V024	MS	✓	×	×
T-11-V027	MS	✓	×	×
T-12-G232	FWSS	✓	×	×
T-12-G234	MS	✓	×	×
T-12-G001		×	✓	×
T-12-G006		×	×	✓
T-12-G009		×	×	✓
T-12-G031		×	×	✓
T-12-V049		×	×	✓
T-12-V083		×	×	✓
T-12-G220	TL-Main	✓	×	×
T-12-G224	TL-Main	✓	×	×
T-13-034G	TL-Main	✓	×	×
T-13-054G	FWSS	✓	×	×
T-13-057G	FWSS	✓	×	×
T-13-059V	FWSS	✓	×	×
T-13-061G	FWSS	✓	×	×
T-13-087G	MS	✓	×	×
T-13-088F	MS	✓	×	×
T-13-094G	MS	✓	×	×
T-13-106G	TL-Mills	✓	×	×
T-13-114G	MS	✓	×	×
T-13-122G	MS	✓	×	×
T-13-123G	MS	✓	×	×
T-13-124G	MS	✓	×	×
T-13-127F	MS	✓	×	×
T-13-129G	MS	✓	×	×

T-13-132G	MS	✓	×	×
T-13-133G	MS	✓	×	×
T-13-136G	MS	✓	×	×
T-13-139V	MSAR	✓	×	×
T-13-142G	FSR	✓	×	×

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SBSmc3/04/SS Hybrid white spruce - Huckleberry – Soopolallie (n= 3)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSmc3			
Assumed Modifiers: d, m			
Mapped Modifiers: c, ch, ck, cr, cs, cw, g, h, hr, k, ks, s, sw, w			
Mapped Structural Stages: 3, 5, 6, 7			

This ecosystem occurs on typically occurs on steep slopes with either warm or a cool aspects at mid to upper slope positions but can also occur on gentle slopes on upper site positions. The soil is well drained with a submesic SMR, and a poor to medium SNR. The surficial material is either undulating glaciofluvial or morainal veneers. Lodgepole pine (*Pinus contorta* var. *latifolia*) dominates the forest canopy, but shares it with black (Picea mariana), and white spruce (*Picea glauca*). As the ecosystem name implies, soopolallie (*Shepherdia canadensis*) is a common component of the shrub layer. Canada dogwood (*Cornus canadensis*), and twinflower (*Linnaea borealis*) are frequently encountered herbaceous plants. The forest floor is covered primarily in step moss (*Hylocomium splendens*), red-stemmed feather-moss (*Pleurozium schreberi*), and pelt lichen (Peltigera sp.).

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-12-G010		×	×	✓
T-12-G221	TL-Main	✓	×	×
T-12-G233	FWSS	✓	×	×

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

SBSmc3/05/BH Black spruce - Huckleberry – Spirea (n=11)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSmc3	05	BH	*Black spruce - Huckleberry – Spirea*
Assumed Modifiers: d, j, m			
Mapped Modifiers: c, ch, ck, ct, cw, h, k, s, t, w, x			
Mapped Structural Stages: 3, 4, 5, 6, 7			

This site association occurs on moderate to gentle inclines and a multiple positions on slopes. It is associated with medium-textured moderately-well drained soils with submesic to mesic SMR and a poor to medium SNR. The surficial material is a morainal or glaciofluvial veneer. Lodgepole pine (*Pinus contorta* subsp. *longifolia*), hybrid white spruce (*Picea engelmanni* x *glauca*) and subalpine fir (*Abies lasiocarpa*) account for most of the tree layer. Labrador tea (*Rhododendron groenlandicum*), lodgepole pine (*Pinus contorta* subsp. *longifolia*), spruce (*Pinus* spp.), and soopolallie (*Shepherdia canadensis*) are common in the shrub layer. In the herb layer, common species include bunchberry (*Cornus canadensis*), one-sided wintergreen (*Orthilia secunda*), five-leaved bramble (*Rubus pedatus*), the ubiquitously boreal twinflower (*Linnaea borealis*), and crowberry (*Empetrum nigrum*). The well-developed moss layer is dominated by red-stemmed feather-moss (*Pleurozium schreberi*), knight's plume (*Ptilium crista-castrensis*), and step moss (*Hylocomium splendens*). Black spruce (*Picea mariana*), and peat-moss (*Sphagnum* spp.) are notably absent, indicating low nutrient inputs to this site.

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-11-7113	MS	✓	×	×
T-13-030G	TL-main	✓	×	×
T-13-050F	FWSS	✓	×	×
T-13-051G	FWSS	✓	×	×
T-13-055G	FWSS	✓	×	×
T-13-072G	AIR	✓	×	×
T-13-093G	MS	✓	×	×
T-13-097G	MS	✓	×	×
T-13-104F	TL-Mills	✓	×	×

T-13-107G	TL-Mills	✓	×	×
T-13-120G	MS	✓	×	×

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

SBSmc3/06/BF Black spruce - Lodgepole pine – Feather-moss (n= 8)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSmc3	06	BF	*Black spruce - Lodgepole pine – Feather-moss*
Assumed Modifiers:			
Mapped Modifiers:			
Mapped Structural Stages:			

This ecosystem occurs on gentle inclines at mid to lower slope positions. The surficial material is undulating morainal, fluvial, or glaciofluvial, and the soils are deep, imperfectly drained and of a medium-texture. The soil is seasonally moist with a sub-hygric to hygric SMR, and a poor to medium SNR. Lodgepole pine (*Pinus contorta* var. *latifolia*) is an omnipresent component of the tree canopy, and spruce (*Picea mariana*; *Picea glauca* x *engelmannii*) are present at most sites. Labrador tea (*Rhododendron groenlandicum*) is a component of the shrub layer at most sites, but tree species such as black spruce (*Picea mariana*), and subalpine fir (*Abies lasiocarpa*) are also significant components of this layer at many plots . The herbaceous layer comprises primarily bilberry (*Vaccinium caespitosum*), twinflower (*Linnaea borrealis*), crow berry (*Empetrum nigrum*), and Canada dogwood (*Cornus canadensis*). Red-stemmed feather moss (*Pleurozium schreberi*), and step moss (*Hylocomium splendens*) are common bryophytes that carpet the forest floor.

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-12-G030		×	×	✓
T-12-G088	TL-Main	✓	×	×
T-12-G230	FWSS	✓	×	×
T-12-G231	FWSS	✓	×	×

T13-041G	TL-main	✓	×	×
T13-043G	TL-main	✓	×	×
T13-052G	FWSS	✓	×	×
T13-138G	MSAR	✓	×	×

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

SBSmc3/07/ST Spruce Engelmann x white – Twinberry (n= 4)

Biogeoclimatic Unit	Site Series	Map Code	Name
SBSmc3			
Assumed Modifiers: d, j, m			
Mapped Modifiers: 6, c, cg, ck, ct, cw, f, g, gk, h, s, t, w			
Mapped Structural Stages: 2, 3, 4, 5, 6, 7			

This diverse ecosystem is generally found on the lower slopes of gentle inclines with morainal surficial material. The soils are imperfectly drained and have a hygric to sub-hygric SMR, and a rich SNR. Hybrid white spruce (*Picea glauca* x *engelmannii*) is the dominant tree in the canopy and shrub layers. Twinberry honeysuckle (*Lonicera involucrata*), and black gooseberry (*Ribes lacustre*) are also found in the moderately well developed shrub layer. Interestingly, oak fern (*Gymnocarpium dryopteris*) has a very high cover at one of these sites. Mitrewort (*Mitella nuda*), palmate coltsfoot (*Petasites frigidus* var. *palmatus*), clasping twistedstalk (*Streptopus amplexifolius*), stiff clubmoss (*Lycopodium annotinum*), and heart-leaved arnica (*Arnica cordata*) are prominent components of the herbaceous layer, while step moss (*Hylocomium splendens*) and knight's plume (*Ptilium crista-castrensis*) account for the majority of the moss layer.

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-11-G035	MS	✓	×	×
T-11-V023	MS	✓	×	×

T13-134G	TL-main	✓	×	×
T13-141G	TL-main	✓	×	×

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

1.5 Nechako Moist Very Cold Englemann Spruce-Subalpine Fir Variant

ESSFmv1/01/FR Subalpine Fir - Rhododendron – Feather-moss (n=33)

Biogeoclimatic Unit	Site Series	Map Code	Name
ESSFmv1	01	FR	*Subalpine Fir - Rhododendron – Feather-moss*
Assumed Modifiers: d, j, m			
Mapped Modifiers: c, ch, ck, cs, ct, cw, g, gk, h, hs, k, ks, s, sw, w			
Mapped Structural Stages: 3, 4, 5, 6, 7			

This ecosystem is found from mid-slope to crests of gentle to moderate gradients. Soils are mostly morainal, but some glaciofluvial terrain was documented at this ecosystem. The soils are medium-textured and well-drained with a submesic to mesic SMR, and a poor to medium SNR. Subalpine fir (*Abies lasiocarpa*) is by far the most abundant tree species in the canopy at most sites. Engelmann spruce (*Picea engelmannii*), and lodgepole pine (*Pinus contorta* var. *latifolia*) are also present at most sites. White-flowered rhododendron (*Rhododendron albiflorum*) is the most common shrub at most sites followed by black huckleberry (*Vaccinium membranaceum*), and subalpine fire (*Abies lasiocarpa*). Five-leaved bramble (*Rubus pedatus*), and blueberries (*Vaccinium scoparium*, *V. caespitosum*) are consistently the most common forest floor forb. This ecosystem is often carpeted with red-stemmed feather-moss (*Pleurozium schreberi*), and heron's-bill moss (*Dicranum* sp.).

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-11-7106		×	✓	×
T-11-7111	MS	✓	×	×

T-11-G005	MS	✓	×	×
T-11-G008	MS	✓	×	×
T-11-G024	MS	✓	×	×
T-11-G028	MS	✓	×	×
T-11-G029	MS	✓	×	×
T-11-G038	MS	✓	×	×
T-11-G039	MS	✓	×	×
T-11-G041	MS	✓	×	×
T-11-G043	MS	✓	×	×
T-11-G076	MS	✓	×	×
T-11-V001		×	✓	×
T-11-V003	MS	✓	×	×
T-11-V005	MS	✓	×	×
T-11-V011	MS	✓	×	×
T-11-V013	MS	✓	×	×
T-11-V016	MS	✓	×	×
T-11-V037	MS	✓	×	×
T-12-G015	MS	✓	×	×
T-12-G020	MS	✓	×	×
T-12-G040		×	×	✓
T-12-G043		×	×	✓
T-12-G077	MS	✓	×	×
T-12-V072	MS	✓	×	×
T-12-V074	MS	✓	×	×
T-13-075G	MS	✓	×	×
T-13-078G	MS	✓	×	×
T-13-079G	MS	✓	×	×
T-13-081V	MS	✓	×	×
T-13-082G	MS	✓	×	×
T-13-083G	MS	✓	×	×
T-13-111G	MS	✓	×	×

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

ESSFmv1/02/LC Lodgepole pine - Huckleberry – Cladina (n=10)

Biogeoclimatic Unit	Site Series	Map Code	Name
ESSFmv1	02	LC	*Lodgepole pine - Huckleberry – Cladina*
Assumed Modifiers: c, d, j			
Mapped Modifiers: h, hs, hv, k, ks, r, rs, s, sw, t, v, vw, w			
Mapped Structural Stages: 3, 5, 6, 7			

This site series is found on the crests site positions on shallow, morainal veneers, and on level glaciofluvial terraces and hummocks. Soils are rapidly drained with poor to very poor SNR. Lodgepole pine dominates the forest canopy. The mountain pine beetle has killed all but a few pine trees resulting in stands of dead trees. Subalpine fir (*Abies lasiocarpa*), lodgepole pine (*Pinus contorta* var. *latifolia*), and Engelmann spruce (*Picea engelmannii*) create a sparse to moderate canopy. Regenerating trees make up a large part of the shrub layer along with lesser amounts of white-flowered rhododendron (*Rhododendron albiflorum*), black huckleberry (*Vaccinium membranaceum*), and dwarf blueberry (*Vaccinium caespitosum*). Crowberry (*Empetrum nigrum*) is the most common plant in the herb layer followed by bunchberry (*Cornus canadensis*). Reindeer lichen (*Cladina* sp.) carpets significant portions of the forest floor, with lesser amounts of heron's-bill moss (*Dicranum* sp.), and red-stemmed feather-moss (*Pleurozium schreberi*).

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-11-G002		×	✓	×
T-11-G030		✓	×	×
T-11-G034	MS	✓		
T-11-G054		×	✓	×
T-11-G069	MS	✓	×	×
T-11-G070	MS	✓	×	×
T-11-G072	MS	✓	×	×
T-11-V002	MS	✓	×	×
T-12-V013		×	×	✓
T-12-V055	MS	✓	×	×
T-12-V078	MS	✓	×	×

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ESSFmv1/03/FF Subalpine Fir - Huckleberry – Feather-moss (n=16)

Biogeoclimatic Unit	Site Series	Map Code	Name
ESSFmv1	03	FF	*Subalpine Fir - Huckleberry – Feather-moss*
Assumed Modifiers: d, j, m			
Mapped Modifiers: c, ch, ck, cs, ct, cw, f, gk, h, hs, k, ks, r, s, sw, w			
Mapped Structural Stages: 3, 4, 5, 6, 7			

This ecosystem was documented on a wide variety of sites on mid-, and upper-slopes as well as on crests, and on level ground. Most of the sites are on gentle slopes while 6 occur on moderately steep slopes with south-east or north-west aspects. Most of the surficial material is glaciofluvial or morainal, but some colluvium was documented. Soils are mostly well drained and sub-mesic, and of poor SNR. The canopy at most sites largely comprises subalpine fir (*Abies lasiocarpa*). Lodgepole pine (*Pinus contorta* var. *latifolia*), and some Engelmann spruce (*Picea engelmannii*) are found at many sites. Lodgepole pine is more common in young or mature seral stages. The mountain pine beetle has devastated the pine forests in the Project area leaving vast stands of standing dead pine. The result is open canopy forests with dense regeneration of subalpine fir and various shrubs. Lodgepole pine, and subalpine fir share the understorey among white-flowered rhododendron (*Rhododendron albiflorum*), and black huckleberry (*Vaccinium membranaceum*). Crowberry (*Empetrum nigrum*), and bunchberry (*Cornus canadensis*) are the most prolific components of the herb layer. The forest floor is often carpeted with large populations of red-stemmed feather-moss (*Pleurozium schreberi*), heron's-bill moss (*Dicranum* sp.), and some common leafy liverwort (*Barbilophozia lycopodioides*).

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-11-7112	MS	✓	×	×
T-12-G016	MS	✓	×	×
T-12-G021	MS	✓	×	×

T-12-G071	MS	✓	×	×
T-12-V076	MS	✓	×	×
T-12-G079	MS	✓	×	×
T-12-G080	MS	✓	×	×
T-11-G001		×	✓	×
T-11-G027	MS	✓	×	×
T-11-G057		×	✓	×
T-11-G058	MS	✓	×	×
T-11-G061	MS	✓	×	×
T-11-G071	MS	✓	×	×
T-11-G074	MS	✓	×	×
T-11-G075	MS	✓	×	×
T-11-V030	MS	✓	×	×

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ESSFmv1/04/FG Subalpine Fir - Huckleberry – Gooseberry (n=12)

Biogeoclimatic Unit	Site Series	Map Code	Name
ESSFmv1	04	FG	*Subalpine Fir - Huckleberry – Gooseberry*
Assumed Modifiers: d, j, m			
Mapped Modifiers: c, ch, ck, cs, ct, g, gk, h, hs, k, ks, s, sw, w			
Mapped Structural Stages: 2, 3, 5, 6, 7			

ESSFmv1/04 sites occur on the lower to middle parts of moderate to gentle slopes. Soils are moderately well to imperfectly drained with sub-hygric to hygric SMR and medium to rich SNR. The canopy is predominately composed of subalpine fir (*Abies lasiocarpa*) and Engelmann spruce (*Picea engelmannii*). The former shares the shrub layer with white rhododendron (*Rhododendron albiflorum*), black gooseberry (*Ribes lacustre*), and black huckleberry (*Vaccinium membranaceum*). Oak ferns (*Gymnocarpium dryopteris*) cover up to 30% of the forest floor at many sites, while Sitka valerian (*Valeriana sitchensis*), or three-leaved foam flower (*Tiarella trifoliate*) are dominant component of the herbaceous layer at other sites. The most common mosses are step moss (*Hylocomium splendens*), red-stemmed feather-moss (*Pleurozium schreberi*), heron's-bill moss (*Dicranum* sp.), knight's plume (*Ptilium crista-castrensis*), and leafy moss (*Mnium* sp.).

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-12-G019	MS	✓	×	×
T-12-G075	MS	✓	×	×
T-11-G025	MS	✓	×	×
T-11-G044	MS	✓	×	×
T-11-G047	MS	✓	×	×
T-11-G068	MS	✓	×	×
T-11-V033	MS	✓	×	×
T-11-V034	MS	✓	×	×
T13077G	MS	✓	×	×
T13108G	MS	✓	×	×
T13109G	MS	✓	×	×

T13112G	MS	✓	×	×

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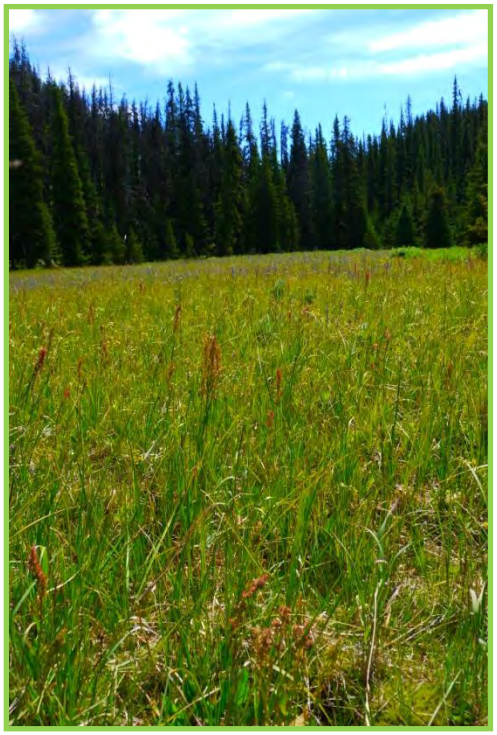
ESSFmv1/00/VG Sitka valerian - globeflower moist meadow (n= 1)

Biogeoclimatic Unit	Site Series	Map Code	Name
ESSFmv1	00	VG	*Sitka valerian - globeflower moist meadow*
Assumed Modifiers: dm			
Mapped Modifiers: none			
Mapped Structural Stages: 2a			



The VG ecosystem is a diverse spring seepage herbaceous meadow with imperfectly drained and nutrient rich soils. They have sandy/silty soils on lacustrine surfical material. Spring-seepage ecosystems occur on mineral seeps, but do not meet the criteria of the Canadian Wetland Classification System (NWWG 1988). Mountain monkshood (*Aconitum delphiniifolium*), large-leaved avens (*Geum macrophyllum*), and green sorrel (*Rumex acetosa*) are common herbaceous forbs, and common haircap moss (*Polytrichum commune*), glow moss (*Aulacomnium palustre*) andapple-moss (*Philonotis* sp.) contribute to a well-developed bryophyte layer.

Plot Number	LSA Project Component	LSA	RSA	outside RSA
R-12-G024	MS	✓	×	×

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

1.6 Nechako Moist Very Cold Englemann Spruce - Subalpine Fir Parkland / West Chilcotin Very Dry Very Cold Englenmann Spruce - Subalpine Fir ParklandTransition

ESSFxvp1/00/FB Subalpine fir - Dwarf blueberry - Dicranum parkland (n=0)

Biogeoclimatic Unit	Site Series	Map Code	Name
ESSFmv1p / ESSFxvp1	00	FB	*Subalpine fir - Dwarf blueberry - Dicranum parkland*
Assumed Modifiers: d, j, m			
Mapped Modifiers: hs, s, sw, w			
Mapped Structural Stages: 3, 6			
This FB ecosystem typically occurs on warm aspects, and is characterised by intermittent clumps of subalpine fir (*Abies lasiocarpa*), and whitebark pine (*Picea albicaulis*). Grouse-berry (*Vaccinium scoparium*), altai fescue (*Festuca altaica*), and mountain sagewort (*Artemisia norvegica*) are very common, low vascular plants. Heron's-bill moss (*Dicranum* sp.), red-stemmed feather-moss (*Pleurozium schreberi*), and reindeer lichens (*Cladonia* sp.) occupy the gaps in the patches of vascular plants in this parkland community.			

ESSFxvp1/00/FC Altai fescue - Cladonia lichen grassland (n=0)

Biogeoclimatic Unit	Site Series	Map Code	Name
ESSFmv1p / ESSFxvp1	00	FC	*Altai fescue - Cladonia lichen grassland*
Assumed Modifiers: d, j, m			
Mapped Modifiers: cs, cw, hs, k, s, w			
Mapped Structural Stages: 2b			
This ecosystem is found on gentle slopes with sub-mesic to mesic, deep, medium textured soils. Altai fescue (*Festuca altaica*) and lichens dominate this tree-less ecosystem. Mountain sagewort (*Artemisia norvegica*), and alpine bistort (*Bistorta vivipara*) are common herbs. The lycopod (*Diphasiastrum alpinum*), bryophyte (*Dicranum* sp), and lichen (*Cladonia* sp.) layer is very well developed.			

ESSFxvp1/00/FH Subalpine fir - Indian hellebore (n= 2)

Biogeoclimatic Unit	Site Series	Map Code	Name
ESSFmv1p / ESSFxvp1	00	FH	*Subalpine fir - Indian hellebore*
Assumed Modifiers: none			
Mapped Modifiers: k, s			
Mapped Structural Stages: 3, 6, 7			

The subalpine fir - Indian hellebore ecosystem occurs gentle mid slope positions where the soils are hygric, poorly draining, with a rich SNR. Surficial material is typically morainal. Subalpine fir (*Abies lasiocarpa*) skirts the perimeter of small Indian hellebore (*Veratrum viride*) / Sitka valerian (*Valeriana sitchensis*) glades. The moss layer is moderately well developed with a diverse assemblage of species including leafy moss (*Rhizomnium* sp.), glow moss (*Aulacomnium palustre*), hook-moss (*Drepanocladus* sp.), and green-tongue liverwort (*Marchantia polymorpha*).

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-11-G023		×	✓	×
T-11-G067	MS	✓	×	×

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

ESSFxvp1/00/FM Subalpine fir - Heather parkland (n= 1)

Biogeoclimatic Unit	Site Series	Map Code	Name
ESSFmv1p / ESSFxvp1	00	FM	*Subalpine fir - Heather parkland*
Assumed Modifiers: d, j, m			
Mapped Modifiers: ks, s			
Mapped Structural Stages: 3, 6			

This parkland like ecosystem was documented mid-slope on fairly level ground. Surficial material comprises a morainal veneer, and the thin and patchy soil has a mesic SMR and medium SNR. The site is characterized by krumholtz islands of subalpine fire (*Abies lasiocarpa*) that provide some shelter for a few hardy crowberry (*Empetrum nigrum*), and yellow mountain-heather (*Phyllodoce glanduliflora*). Dicranum moss (*Dicranum* sp.) and common leafy liverwort (*Barbilophozia lycopodioides*) together cover almost half the site.

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-11-G017		×	✓	×

This ecosystem occurs on cool aspects, of gentle slopes with a complex micro-topography. The soil is medium-textured, and deep. Stunted subalpine firs (*Abies lasiocarpa*) are skirted by a heather (*Phyllodoce* spp.) understory. Altai fescue (*Fescue altaica*) and dwarf blueberry (*Vaccinium caespitosum*) are often present along with a significant cover of heron's-bill moss (*Dicranum* sp.), and reindeer lichen (*Cladonia* sp.).

ESSFxvp1/00/KC Kinnikinnick – Cladonia (n=1)

Biogeoclimatic Unit	Site Series	Map Code	Name
ESSFmv1p / ESSFxvp1	00	KC	*Kinnikinnick – Cladonia*
Assumed Modifiers: m, s			
Mapped Modifiers: none			
Mapped Structural Stages: 2d			

This ecosystem occurs on upper slopes with shallow and rapidly drained soils resulting in very xeric and very poor SNR. Sites occur on morainal veneers and with are. Vegetation at these sites comprise mostly a low cover of scrub birch (*Betula nana*), and kinnikinnick (*Arctostaphylos uva-ursi*). Exposed rocks are covered in foam lichens (*Stereocaulon* sp.), ballroom dervish (*Cetraria nivalis*), and reindeer lichen (*Cladonia* sp.).

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-11-G080	MS	✓	×	×

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

ESSFxvp1/00/MH Mountain-heather - Slender hawkweed (n=2)

Biogeoclimatic Unit	Site Series	Map Code	Name
ESSFmv1p / ESSFxvp1	00	MH	*Mountain-heather - Slender hawkweed*
Assumed Modifiers: none			
Mapped Modifiers: gs, k, ks, s			
Mapped Structural Stages: 2d			

This cool, north-easterly facing heather-meadow is found mid-slope on gentle topography where late snow melt occurs. Soils are deep, with 35-70% coarse fragments, and have a variable moisture regime from submesic to sub-hygric SMR, and a medium to rich SNR. Surficial material is morainal. Most of these sites are carpeted in yellow mountain-heather, (*Phyllodoce glanduliflora*), heron's-bill moss (*Dicranum* sp.), arctic willow (*Salix arctica*), or pink mountain-heather (*Phyllodoce empetriformis*). However, some hardy subalpine firs (*Abies lasiocarpa*) persist in these ecosystems.

Plot Number	LSA Project Component	LSA	RSA	outside RSA
R-11-G025		×	✓	×
T-11-G079		×	✓	×

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ESSFxvp1/00/ ML White mountain-avens – Lichen (n=0)

Biogeoclimatic Unit	Site Series	Map Code	Name
ESSFmv1p / ESSFxvp1	00	ML	*White mountain-avens – Lichen*
Assumed Modifiers: none			
Mapped Modifiers: none			
Mapped Structural Stages: 1b, 2a			
This windswept ecosystem occurs on dry, exposed rounded ridge-tops at high elevation. The site comprises a thin morainal veneer over rock, and is acted upon by frost. A limited winter snowpack drains rapidly when melted. The xeric soils support a low cover of white mountain-avens (*Dryas integrifolia*), arctic willow (*Salix arctica*), alpine bistort (*Bistorta vivipara*), spiked wood-rush (*Luzula spicata*), and reindeer lichen (*Cladonia* sp.).			

ESSFxvp1/00/PC Subalpine fir / whitebark pine - Crowberry parkland (n=4; Mine site)

Biogeoclimatic Unit	Site Series	Map Code	Name
ESSFmv1p / ESSFxvp1	00	PC	*Subalpine fir / whitebark pine - Crowberry parkland*
Assumed Modifiers: d, j, m			
Mapped Modifiers: c, cs, g, k, ks, r, s, sw, v, w			
Mapped Structural Stages: 3, 6			

This site series is distinguished from the FM site association by the presence of whitebark pine (*Pinus albicaulis*) in the tree layer, and crowberry (*Empetrum nigrum*) in the herb layer. It is distributed on deep medium-textured soils often on cool aspects and, on gentle slopes. Subalpine fir (*Abies lasiocarpa*) covers just over half of the ecosystem, with lesser amounts of lodgepole pine (*Pinus contorta* var. *latifolia*), Engelmann spruce (*Picea engelmannii*), and white bark pine (*Abies lasiocarpa*). Dwarf blueberry (*Vaccinium caespitosum*), common juniper (*Juniperus communis*), and scrub birch (*Betula nana*) are present in the shrub layer. Heron's-bill moss (*Dicranum* sp.) carpet much of the glades, along with common leafy liverwort (*Barbilophozia lycopodioides*), and red-stemmed feather-moss (*Pleurozium schreberi*).

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-11-G022		×	✓	×
T-11-G081	MS	✓	×	×
R-11-G006	MS	✓	×	×
R-11-G010	MS	✓	×	×

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ESSFxvp1/00/SF Scrub birch - Altai fescue shrub steppe (n=3)

Biogeoclimatic Unit	Site Series	Map Code	Name
ESSFmv1p / ESSFxvp1	00	SF	*Scrub birch - Altai fescue shrub steppe*
Assumed Modifiers: d, j, m			
Mapped Modifiers: cs, ks, s, v, w			
Mapped Structural Stages: 3a			

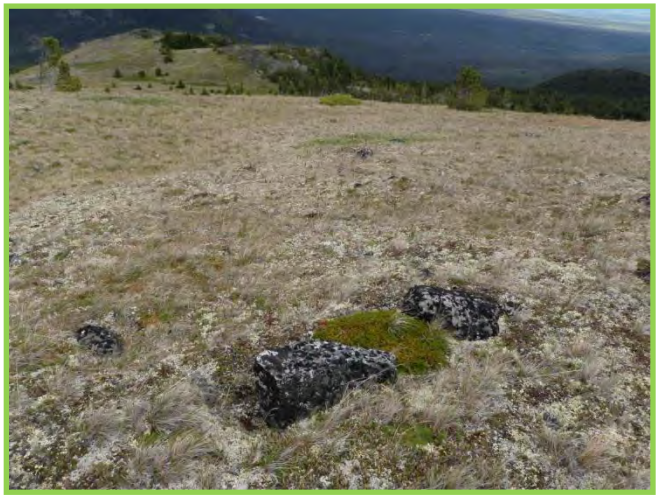
About 80% of this scrub-steppe ecosystem is covered with one species, scrub birch (*Betula nana*). This ecosystem occupies a variety of slope positions from gentle mid slopes to moderately steep slopes. The surficial material consists of a thin veneer of coarse well-draining morainal deposits. The SMR is sub-mesic, and SNR is poor. The well-developed moss layer predominantly comprises heron's-bill moss (*Dicranum* sp.), but the seemingly ubiquitous red-stemmed feather-moss (*Pleurozium schreberi*), and common leafy liverwort (*Barbilophozia lycopodioides*) are also present. A few subalpine fir (*Abies lasiocarpa*), and lodgepole pine (*Pinus contorta* var. *latifolia*) are present in the shrub layer.

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-11-G065	MS	✓	×	×
T-11-V010		×	✓	×
T-11-V041		×	✓	×

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

ESSFxvp1/00/TW Two-toned sedge - Dwarf snow willow (n=1)

Biogeoclimatic Unit	Site Series	Map Code	Name
ESSFmv1p / ESSFxvp1	00	TW	*Two-toned sedge - Dwarf snow willow*
Assumed Modifiers: d, j, m			
Mapped Modifiers: none			
Mapped Structural Stages: 2d			



This high-elevation low-shrub tundra community occurs on sub-mesic, crest positions. Aspects are gentle, and the soils are deep, medium-textured, and moderately well-draining. The predominant shrub is (*Salix nivalis*). Black-and-white sedge (*Carex albonigra*), spiked wood-rush (*Luzula spicata*), mountain sagewort (*Artemisia norvegica*), and alpine bistort (*Bistorta vivipara*) emerge though a moderately well-developed bryophyte, lichen, and lycopod layer.

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-11-V029		×	✓	×

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

ESSFxvp1/00/VG Sitka valerian - globeflower moist meadow (n=2)

Biogeoclimatic Unit	Site Series	Map Code	Name
ESSFmv1p / ESSFxvp1	00	VG	*Sitka valerian - globeflower moist meadow*
Assumed Modifiers: none			
Mapped Modifiers: gs, s, w			
Mapped Structural Stages: 2d			

The "Sitka valerian - globeflower moist meadow" site association occurs on seepages at mid to lower portions of concave slopes. The parental material is often a lacustrine veneer over morainal deposits. The SMR are often sub-hygric, and the SNR medium to rich. Globeflower (*Trollius albiflorus*), Sitka valerian (*Valeriana sitchensis*), and arrow-leaved groundsel (*Senecio triangularis*) are common components of the herbaceous layer.

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-11-G021		×	✓	×
T-11-G005		×	✓	×

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

ESSFxvp1/00/WK Whitebark pine krummholz (n=0)

Biogeoclimatic Unit	Site Series	Map Code	Name
ESSFmv1p / ESSFxvp1	00	WK	*Whitebark pine krummholz*
Assumed Modifiers: none			
Mapped Modifiers: k, kv, s, w			
Mapped Structural Stages: 3			
The "whitebark pine krummholz" site association occurs on moderate to steep slopes with a southeast to western aspects and on ridge-tops. The soil is dry, shallow, and coarse-textured. The vegetation comprises mostly a shrub layer of stunted whitebark pine (*Pinus albicaulis*), and a continuous cover of subalpine fir (*Abies lasiocarpa*), disrupted by a mosaic of small alpine meadows.			

ESSFxvp1/00/WW Whitebark pine - white mountain-avens (n= 0)

Biogeoclimatic Unit	Site Series	Map Code	Name
ESSFmv1p / ESSFxvp1	00	WW	*Whitebark pine - white mountain-avens*
Assumed Modifiers: none			
Mapped Modifiers: ck, cw, h, hs, k, ks, rs, s, v			
Mapped Structural Stages: 3, 6			
This ridge-crest ecosystem is found on morainal veneers over rock. Xeric SMR conditions persist due to shallow, coarse-textured soils. Whitebark pine (*Pinus albicaulis*) is the main tree species, while Altai fescue (*Fescue altaica*) and white mountain-avens (*Dryas octopetala*) dominate the herb layer. Lesser green reindeer lichen (*Cladina mitis*) and foam lichen (*Stereocaulon* sp.) are very common elements of the moss layer in this WW site type.			

1.7 Undifferentiated Boreal Altai Fescue Alpine

BAFAun/00/FC Altai fescue - Cladonia grassland (n=2)

Biogeoclimatic Unit	Site Series	Map Code	Name
BAFAun	00	FC	*Altai fescue - Cladonia grassland*
Assumed Modifiers:			
Mapped Modifiers: none			
Mapped Structural Stages: 2b			

This high-elevation gently sloping alpine grassland occurs mid-slope on deep soils. The soils have a poor SNR, mesic SMR, and comprise 35-70% coarse fragments. The ecosystem is dominated by Altai fescue (*Festuca altaica*), pink mountain heather (*Phyllodoce empetriformis*), yellow-mountain-heather (*Phyllodoce glanduliflora*), and four-angled mountain-heather (*Cassiope tetragona*). A rich humus layer is covered by a well-developed bryophyte and lycopod layer comprising heron's-bill moss (*Dicranum* sp.), foam lichens (*Stereocaulon* sp.), and alpine club-moss (*Diphasiastrum alpinum*).

Plot Number	LSA Project Component	LSA	RSA	outside RSA
R-11-G001		×	✓	×
T-11-G015		×	✓	×

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BAFAun/00/FH Subalpine Fir - Heather krummholz (n=1)

Biogeoclimatic Unit	Site Series	Map Code	Name
BAFAun	00	FH	*Subalpine Fir - Heather krummholz*
Assumed Modifiers:			
Mapped Modifiers: none			
Mapped Structural Stages: 3			

This sub-xeric to mesic high-elevation *Fescue* grassland occurs on shallow morainal surficial material consisting of 35-70% coarse fragments. The grassland is interrupted by exposed rocks, and small islands of scrub birch (*Betula nana*), and heather (e.g. *Phyllodoce empetriformis*; and *Phyllodoce glanduliflora*). It has a well-developed lichen, bryophyte, and lycopod layer comprising reindeer lichen (*Cladina* sp.), dicranum moss (*Dicranum* sp.), and alpine club-moss (*Diphasiastrum alpinum*).

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-11-V009		×	✓	×

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

BAFAun/00/FW Altai fescue - dwarf snow willow (n=2)

Biogeoclimatic Unit	Site Series	Map Code	Name
BAFAun	00	FW	*Altai fescue - dwarf snow willow*
Assumed Modifiers:			
Mapped Modifiers: none			
Mapped Structural Stages: 2			

The FW site association was found on gentle to moderate slopes, over somewhat dry, poor to medium soils with 35-70% coarse fragments. Altai fescue (*Festuca altaica*) and dwarf snow willow (*Salix nivalis*) dominate, along with Iceland-moss lichens (*Cetraria nivalis*), and haircap moss (*Polytrichum* sp.). The surface tends to be a complex of concave and convex areas. Convex areas are sparsely vegetated with lichens and willow. Subalpine fir (*Abies lasiocarpa*) and heath (*Phyllodoce* sp.) tree islands as well as rock outcrops interrupt the grassland.

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-11-7107		×	✓	×
T-11-G013		×	✓	×

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

BAFAun/00/HL Heather - Lichen meadow (Dry heath meadow) (n=1)

Biogeoclimatic Unit	Site Series	Map Code	Name
BAFAun	00	HL	*Heather - Lichen meadow (Dry heath meadow)*
Assumed Modifiers:			
Mapped Modifiers: k			
Mapped Structural Stages: 2			

The HL site association occurs on poor well-drained soil comprises more than 70% coarse fragments. Late lingering snow provides plants with much needed soil moisture during the summer months on these steeply sloped, south-easterly facing communities. The vegetation is dominated by yellow mountain-heather (*Phyllodoce glanduliflora*), which covers 55% of some sites. A few krummholz whitebark pine (*Pinus albicaulis*), and subalpine fir (*Abies lasiocarpa*) can become established in this ecosystem.

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-11-G011		×	✓	×

Note: S = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

BAFAun/00/HM Mountain-heather (n=1)

Biogeoclimatic Unit	Site Series	Map Code	Name
BAFAun	00	HM	*Mountain-heather*
Assumed Modifiers:			
Mapped Modifiers: none			
Mapped Structural Stages: none identified			

This ecosystem occurs at the crest of gentle slopes with a south-easterly aspect. The soils are course, well draining with a sub-xeric SMR, and a poor SNR. The surficial material is weathered bedrock and shows signs of cryoturbation. There is a high cover of four-angled mountain-heather (*Cassiope tetragona*), and fescue (*Fescue* sp.). Alpine club-moss (*Diphasiastrum alpinum*), crowberry (*Empetrum nigrum*), and scrub birch (*Betula nana*) hug the wind-swept soil.

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-11-G016		×	✓	×

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

BAFAun/00/SF Scrub birch - Altai fescue shrub steppe (n=3)

Biogeoclimatic Unit	Site Series	Map Code	Name
BAFAun	00	SF	*Scrub birch - Altai fescue shrub steppe*
Assumed Modifiers:			
Mapped Modifiers: none			
Mapped Structural Stages: 3			

This ecosystem occurs from mid-slope to crest on gentle inclines. The SMR is sub-xeric to mesic, and the SNR is poor. Vascular plant diversity is quite low, with scrub birch (*Betula nana*) covering up to 85% of some sites. Altai fescue (*Festuca altaica*), is by far the most common herbaceous vascular plant. Red-stemmed feather-moss (*Pleurozium schreberi*), heron's-bill moss (*Dicranum* sp.), clad lichens (*Cladonia* sp.), foam lichens (*Stereocaulon* sp.), haircap moss (*Polytrichum* sp.), and ragged paperdoll (*Cetraria nivalis*) represent most of the non-vascular plants occurring in the ecosystem.

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-11-V006		×	✓	×
T-11-V007		×	✓	×
R-11-G003		×	✓	×

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

BAFAun/00/WM Wet seepage meadows (n=3)

Biogeoclimatic Unit	Site Series	Map Code	Name
BAFAun	00	WM	
Assumed Modifiers:			
Mapped Modifiers: none			
Mapped Structural Stages: 2			

These wet seepage meadows occur on the lower-slopes of gentle inclines. Surficial material is a thin veneer of imperfectly draining morainal deposits. The SMR is hygric, and the SNR is rich. Seepage from late snowmelt and a hummocky micro-topography have a large effect on the composition of the plant community. Altai fescue (*Festuca altaica*), mountain sagewort (*Artemisia norvegica*), arctic willow (*Salix arctica*), dwarf snow willow (Salix nivalis), and small-flowered wood-rush (*Luzula piperi*) occur on the dry hummocks, and subalpine daisy (*Erigeron peregrinus*) and glow moss (*Aulacomnium palustre*) occupy much of the wet hollows in between the hummocks.

Plot Number	LSA Project Component	LSA	RSA	outside RSA
T-11-G012		×	✓	×
T-11-G014		×	✓	×
R-11-G002		×	✓	×

Note: MS = Mine Site; MSAR: Minesite Access Road; TL-main = Transmission Line main; TL-Mills = Transmission Line Mills Ranch Re-route; TL-Stellako = Transmission Line Stellako Re-route; FSR = Kluskus Forest Service Road; AIR = Airstrip; and FWSS = Fresh Water Supply System

1.8 Non-Vegetated, Sparsely Vegetated and Anthropogenic

Cliff/00/CL

A steep, vertical or overhanging rock face.

Cultivate Field/00/CF

A flat or gently rolling, non-forested, open area that is subject to human agricultural practices which often result in long-term soil and vegetation changes.

Exposed soils/00/ES

This classification applies to any area of recently exposed soil caused by mud slides, debris torrents, avalanches, and anthropogenic disturbances from water pipeline, road, or transmission line construction.

Gravel Pit/00/GP

An area exposed through the removal of sand and gravel.

Lake/00/LA

A naturally occurring static body of water, greater than 2 m deep in some portion and larger than 50 ha. The boundary for the lake is the natural high water mark.

Mine/00/MI

This polygon circumscribes the limits of areas that are un-vegetated because of the extraction of mineral ore from the proposed Blackwater Mine.

Moraine/00/MN

This un-vegetated landform consists of un-stratified glacial till. It takes a variety of shapes on the landscape including plains, mounds, and ridges.

Pond/00/PD

A small body of water greater than 2 m deep, but not large enough to be classified as a lake (e.g. less than 50 ha).

River/00/RI

A watercourse formed when water flows between continuous, definable banks. The flow may be intermittent or perennial.

Rock/00/RO

These units delineate the boundaries of gentle to steep bedrock escarpments, and bedrock outcrops. They have very little to no soil, and a sparse vegetative cover comprising very little vascular plants.

Rural/00/RW

Any area in which residences and other human developments are scattered and intermingled with forest, range, farmland, and native vegetation or cultivated crops.

Road surface/00/RZ

A road surface is defined as any area cleared and compacted for the purpose of transporting goods and services by vehicles.

Talus/00/TA

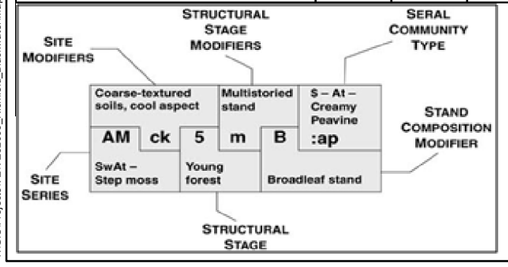
Talus occurs at the base of steep, rocky slopes, and comprises colluvial angular rock fragments of any size.

Urban/00/UR

An area in which residences and other human development form an almost continuous covering of the landscape. These areas include cities, towns, subdivisions, commercial and industrial parks, and similar developments both inside and outside city limits.

Annex 3.2
Ecosystem Map

BGC Unit	Site Series	Map Code	Site Series Name
SBSdk	81	SW	Saskatoon - Slender Wheatgrass
SBSdk	82	BW	Bluegrass - Slender Wheatgrass
SBSdk	01	SP	Hybrid white spruce - Purple peavine
SBSdk	02	LJ	Lodgepole pine - Juniper - Ricegrass
SBSdk	03	LC	Lodgepole pine - Feathermoss - Cladina
SBSdk	04	DS	Douglas fir - Soopolallie - Feathermoss
SBSdk	05	SF	Hybrid white spruce - Spirea - Feathermoss
SBSdk	06	ST	Hybrid white spruce - Twinberry - Coltsfoot
SBSdk	08	CD	Black cottonwood - Dogwood - Prickly rose
SBSdk	00	Fl05	Drummond's willow - Bluejoint
SBSdw 3	81	SW	Saskatoon - Slender Wheatgrass
SBSdw 3	82	BW	Bluegrass - Slender Wheatgrass
SBSdw 3	01	SP	Hybrid white spruce - Douglas-fir - Pinegrass
SBSdw 3	02	DC	Douglas-fir - Lodgepole pine - Cladonia
SBSdw 3	03	LC	Lodgepole pine - Feathermoss - Cladina
SBSdw 3	04	SR	Hybrid white spruce - Douglas-fir - Ricegrass
SBSdw 3	05	BF	Lodgepole pine - Black spruce - Feathermoss
SBSdw 3	06	SS	Hybrid white spruce - Pink spirea - Prickly rose
SBSdw 3	07	ST	Hybrid white spruce - Twinberry
SBSdw 3	08	SO	Hybrid white spruce - Oak fern
SBSmc2	01	SB	Hybrid white spruce - Huckleberry
SBSmc2	02	PH	Lodgepole pine - Huckleberry - Cladonia
SBSmc2	03	BM	Black spruce - Lodgepole pine - Feathermoss
SBSmc2	04	HB	Hybrid white spruce - Huckleberry - Dwarf blueberry
SBSmc2	05	TC	Hybrid white spruce - Twinberry - Coltsfoot
SBSmc2	06	SO	Hybrid white spruce - Oak fern
SBSmc2	07	BF	Hybrid white spruce - Scrub birch - Feathermoss
SBSmc2	08	ST	Hybrid white spruce - Twinberry - Oak fern
SBSmc2	09	SD	Hybrid white spruce - Devil's club
SBSmc2	10	SH	Hybrid white spruce - Horsetail
SBSmc3	01	SB	Hybrid white spruce - Huckleberry
SBSmc3	02	LJ	Lodgepole pine - Juniper - Dwarf huckleberry
SBSmc3	03	LF	Lodgepole pine - Feathermoss - Cladina
SBSmc3	04	SS	Hybrid white spruce - Huckleberry - Soopolallie
SBSmc3	05	BH	Black spruce - Huckleberry - Spirea
SBSmc3	06	BF	Black spruce - Lodgepole pine - Feathermoss
SBSmc3	07	ST	Hybrid white spruce - Twinberry
ESSFmv1	01	FR	Subalpine fir - Rhododendron - Feathermoss
ESSFmv1	02	LC	Lodgepole pine - Huckleberry - Cladonia
ESSFmv1	03	FF	Subalpine fir - Huckleberry - Feathermoss
ESSFmv1	04	FG	Subalpine fir - Huckleberry - Gooseberry
ESSFmv1	00	VG	Sitka valerian - globeflower moist meadow
ESSFmvp1	00	FB	Subalpine fir - Dwarf blueberry - Dicranum parkland
ESSFmvp1	00	FC	Altai fescue - Cladonia grassland
ESSFmvp1	00	FH	Subalpine fir - Indian Hellebore
ESSFmvp1	00	FM	Subalpine fir - Heather parkland
ESSFmvp1	00	KC	Kinnikinnick - Cladonia
ESSFmvp1	00	MH	Mountain-heather - Slender hawkweed
ESSFmvp1	00	ML	White mountain-avens - Lichen
ESSFmvp1	00	PC	Subalpine fir - Whitebark Pine - Crowberry parkland
ESSFmvp1	00	SF	Scrub birch - Altai fescue shrub steppe
ESSFmvp1	00	TW	Two-toned sedge - Dwarf snow willow
ESSFmvp1	00	VG	Sitka valerian - globeflower moist meadow
ESSFmvp1	00	WK	Whitebark pine krummholtz
ESSFmvp1	00	WW	Whitebark pine - White mountain avens
BAFAun	00	FC	Altai fescue - Cladonia grassland
BAFAun	00	FH	Altai fescue - Dwarf willow
BAFAun	00	FW	Altai fescue - Dwarf willow
BAFAun	00	HL	Heather - Lichen meadow
BAFAun	00	SF	Scrub birch - Altai fescue shrub steppe
BAFAun	00	WM	Wet seepage meadow
Anthropogenic, Sparsely Vegetated, Nonvegetated	00	CF	Cultivated Field
Anthropogenic, Sparsely Vegetated, Nonvegetated	00	ES	Exposed Soil
Anthropogenic, Sparsely Vegetated, Nonvegetated	00	GP	Gravel Pit
Anthropogenic, Sparsely Vegetated, Nonvegetated	00	LA	Lake
Anthropogenic, Sparsely Vegetated, Nonvegetated	00	MI	Mine
Anthropogenic, Sparsely Vegetated, Nonvegetated	00	MN	Moraine
Anthropogenic, Sparsely Vegetated, Nonvegetated	00	PD	Pond
Anthropogenic, Sparsely Vegetated, Nonvegetated	00	RI	River
Anthropogenic, Sparsely Vegetated, Nonvegetated	00	RO	Rock Outcrop
Anthropogenic, Sparsely Vegetated, Nonvegetated	00	RW	Rural



10	FR	k	5	C
Decile	Ecosystem	Site Modifier	Structural Stage	Stand Composition

BGC	Biogeoclimatic Zone (BGC) Description
SBSdk	Sub-Boreal Spruce Dry cool
SBSmc2	Sub-Boreal Spruce Moist Cold Babine variant
SBSmc3	Sub-Boreal Spruce Moist Cold Kluskus variant
ESSFmv1	Engelmann Spruce – Subalpine Fir Moist Very Cold Nechako variant
ESSFmvp	Engelmann Spruce – Subalpine Fir Moist Very Cold Nechako Parkland variant
BAFAun	Boreal Altai Fescue Alpine Undifferentiated subzone

Decile Code	Deciles (percentage of polygon)
1	10%
2	20%
3	30%
4	40%
5	50%
6	60%
7	70%
8	80%
9	90%
10	100%
Site Modifiers Code	**Site Modifiers**
c	coarse-textured soils
d	deep soils (>100 cm to bedrock)
f	fine-textured soils
j	gentle slope (slope <25%)
k	cool aspect (285°–135°, slope >25%)
m	medium – texture soils
p	peaty – material
s	shallow soils (20 – 100 cm to bedrock)
v	very shallow (<20 cm to bedrock)
w	warm aspect (135°–285°, slope >25%)
Structural Code	**Structural Stage**
1	Sparse/Bryoid
2a	Forb dominated
2b	Graminoid dominated
2c	Aquatic
2d	Dwarf – shrub dominated
3	Trees or shrubs below 10 m
3a	Low Shrub – less than 2 m
3b	Tall Shrub – between 2 m and 10 m
4	Pole sapling (< 40 years)
5	Young Forest (generally 40 – 80 years)
6	Mature Forest (SBSdk, SBSdw3, SBSmc2, SBSmc3 – 80-140 years & ESSFmv1, ESSFxvp and BAFAun – 80 – 250 years)1, ESSFxvp and).
7	Old Forest (SBSdk, SBSdw3, SBSmc2, SBSmc3 - >140 years & ESSFmv1, ESSFxvp and BAFAun >250 years)
Stand Composition Code	**Stand Composition**
C	Conifer dominated forest
B	Deciduous dominated forest
M	Mixed forest

CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map Legend

DATE: October, 2013 | ANALYST: AA

JOB No: VE52277 | QA/QC: MY | PDF FILE: 06-100-083_TEM_pg1.pdf

GIS FILE: 06-100-083_TEM_pg1.mxd

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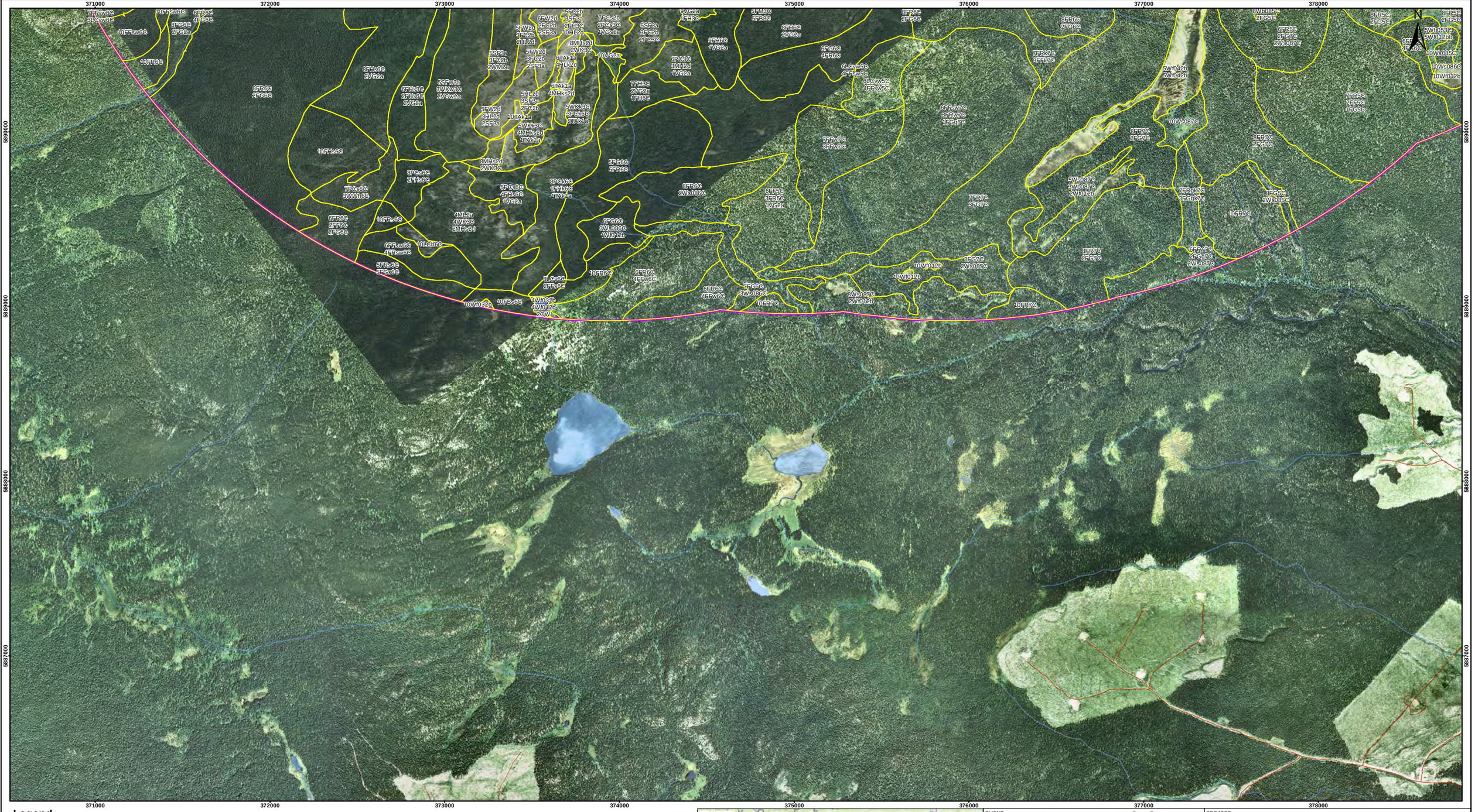

Legend

- Existing Road
- Stream
- Waterbody

Terrain, Soils, and Vegetation

- Regional Study Area
- Ecosystem Polygon

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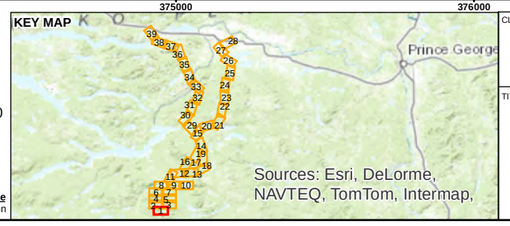
Source
BC Government GeoBC Data Distribution



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map

Mine Site

DATE: October, 2013	ANALYST: AA	**Appendix 3.2** Page 1 of 39	
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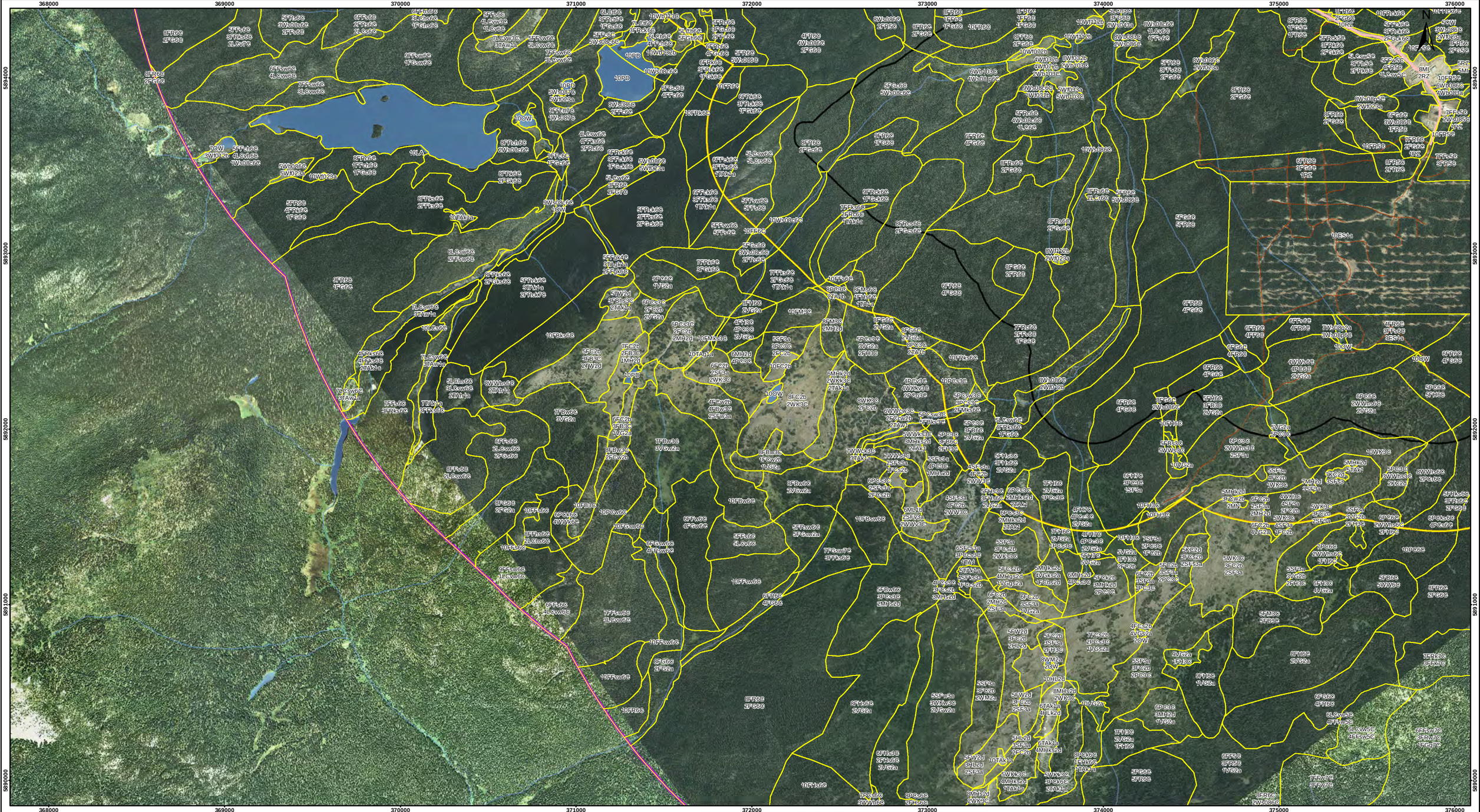
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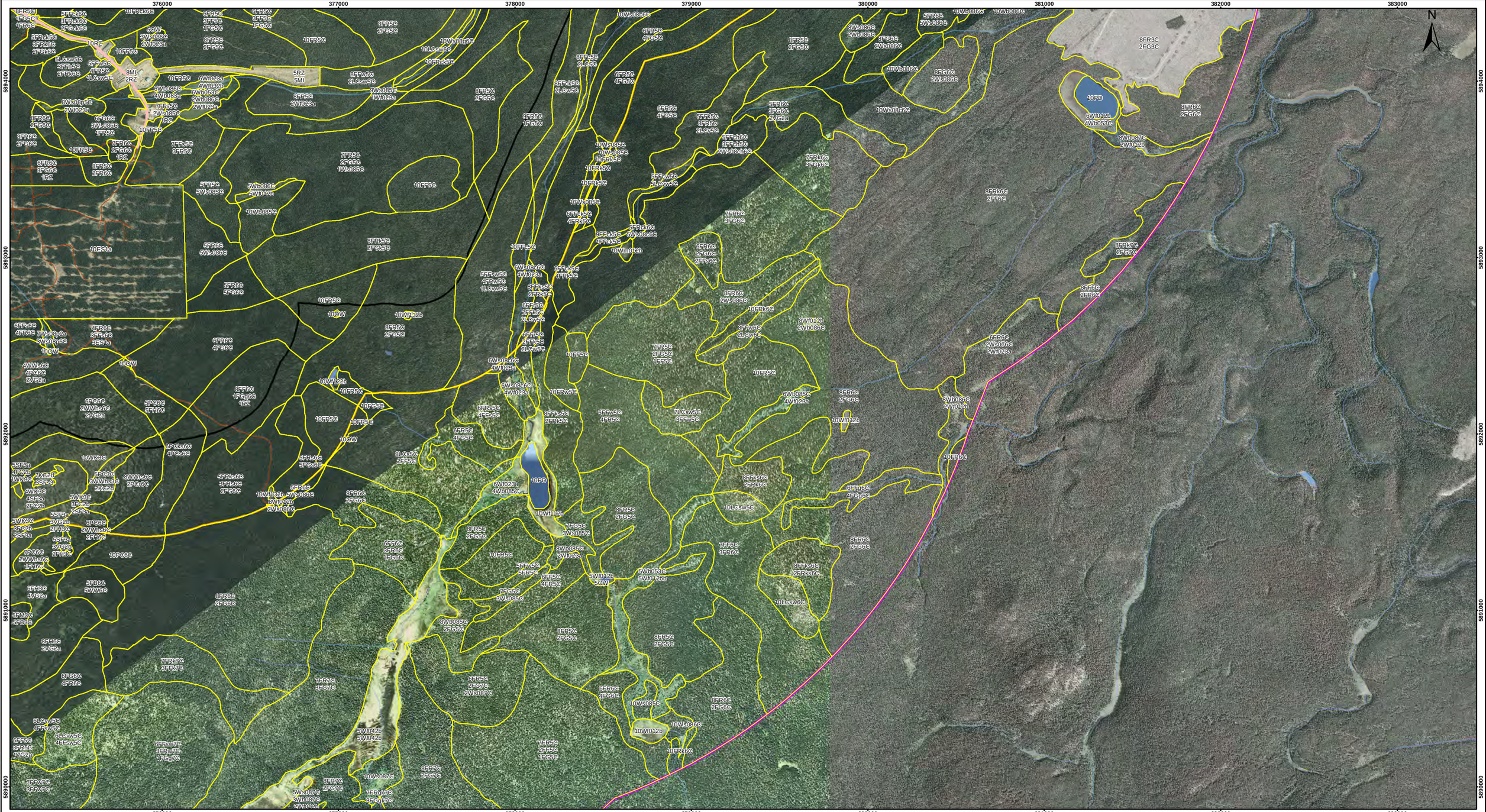
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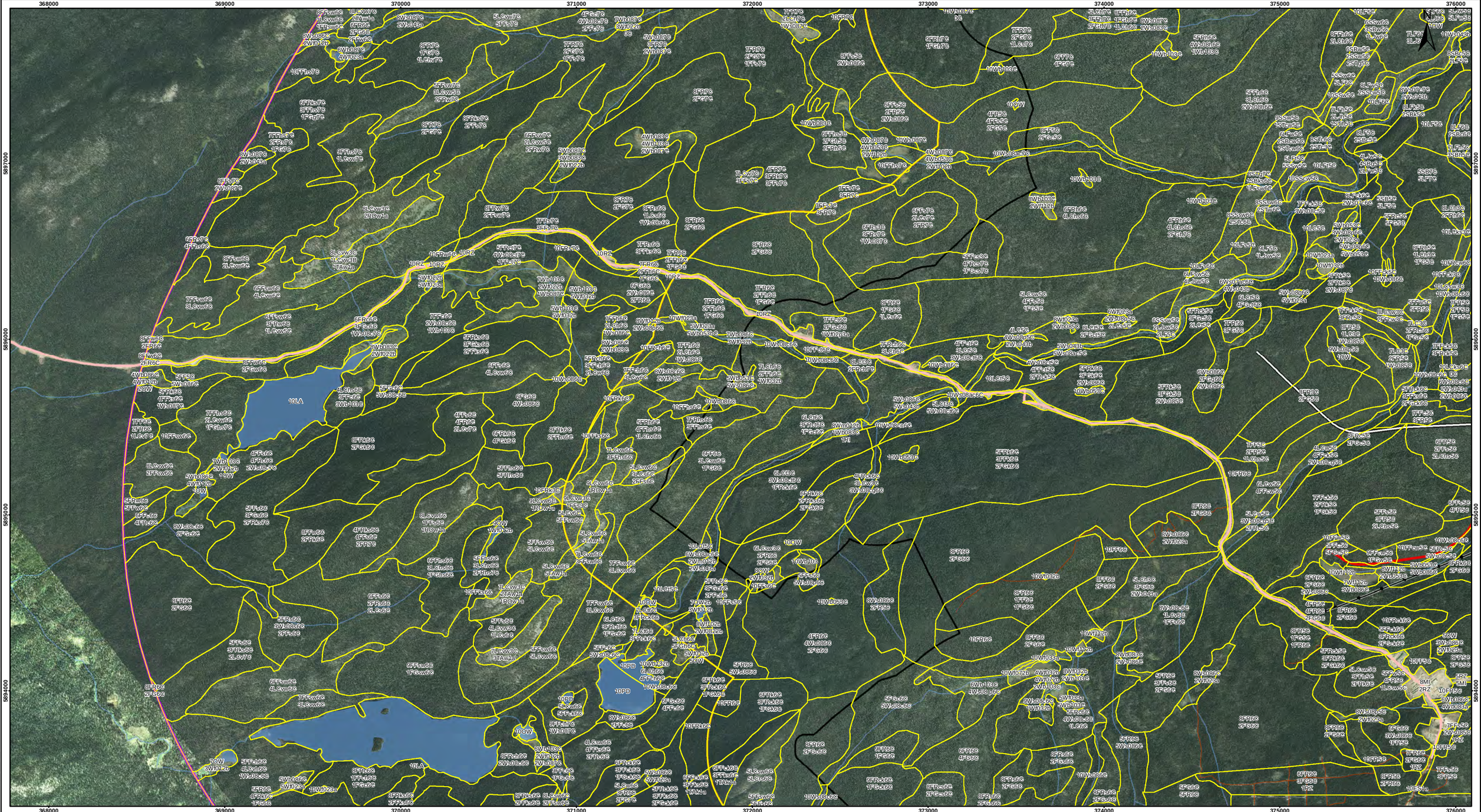

Legend

- Exploration Road
- Proposed Mine Site Access Road
- Proposed Transmission Line
- Fresh Water Supply System
- Existing Road
- Stream
- Waterbody
- Proposed Mine Site

Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area
- Ecosystem Polygon

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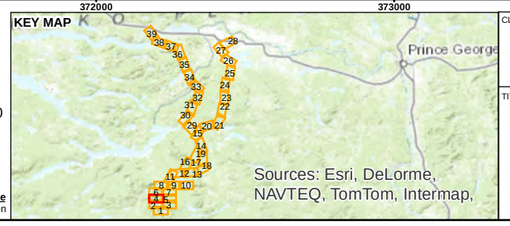
Meters
Scale:1:20,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map

Mine Site

DATE: October, 2013	ANALYST: AA	**Appendix 3.2** Page 4 of 39
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Legend

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Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area
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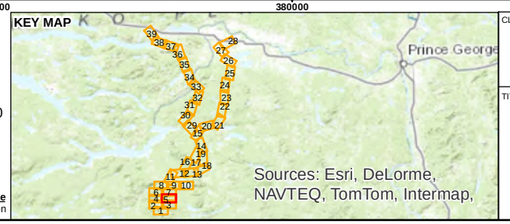
Meters
Scale:1:20,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map

Mine Site

DATE: October, 2013	ANALYST: AA	**Appendix 3.2** Page 5 of 39
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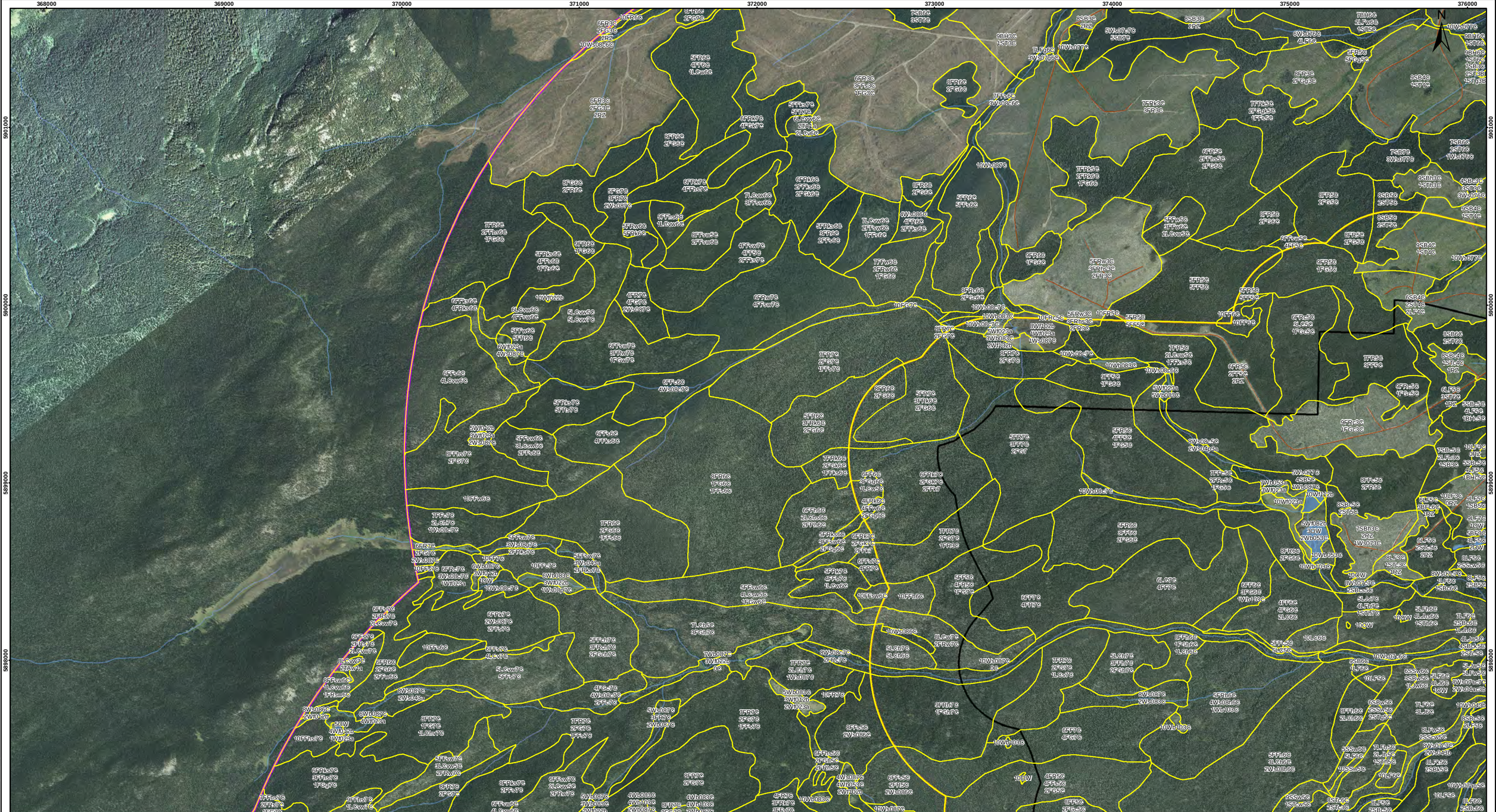

Legend

- Existing Road
- Stream
- Waterbody
- Proposed Mine Site

Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area
- Ecosystem Polygon

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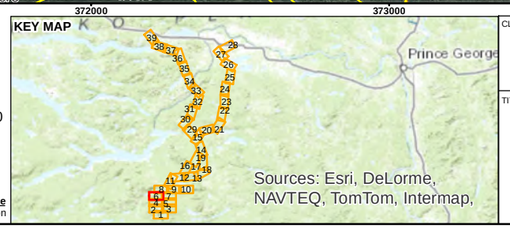
Scale:1:20,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map

Mine Site

DATE: October, 2013	ANALYST: AA	**Appendix 3.2** Page 6 of 39
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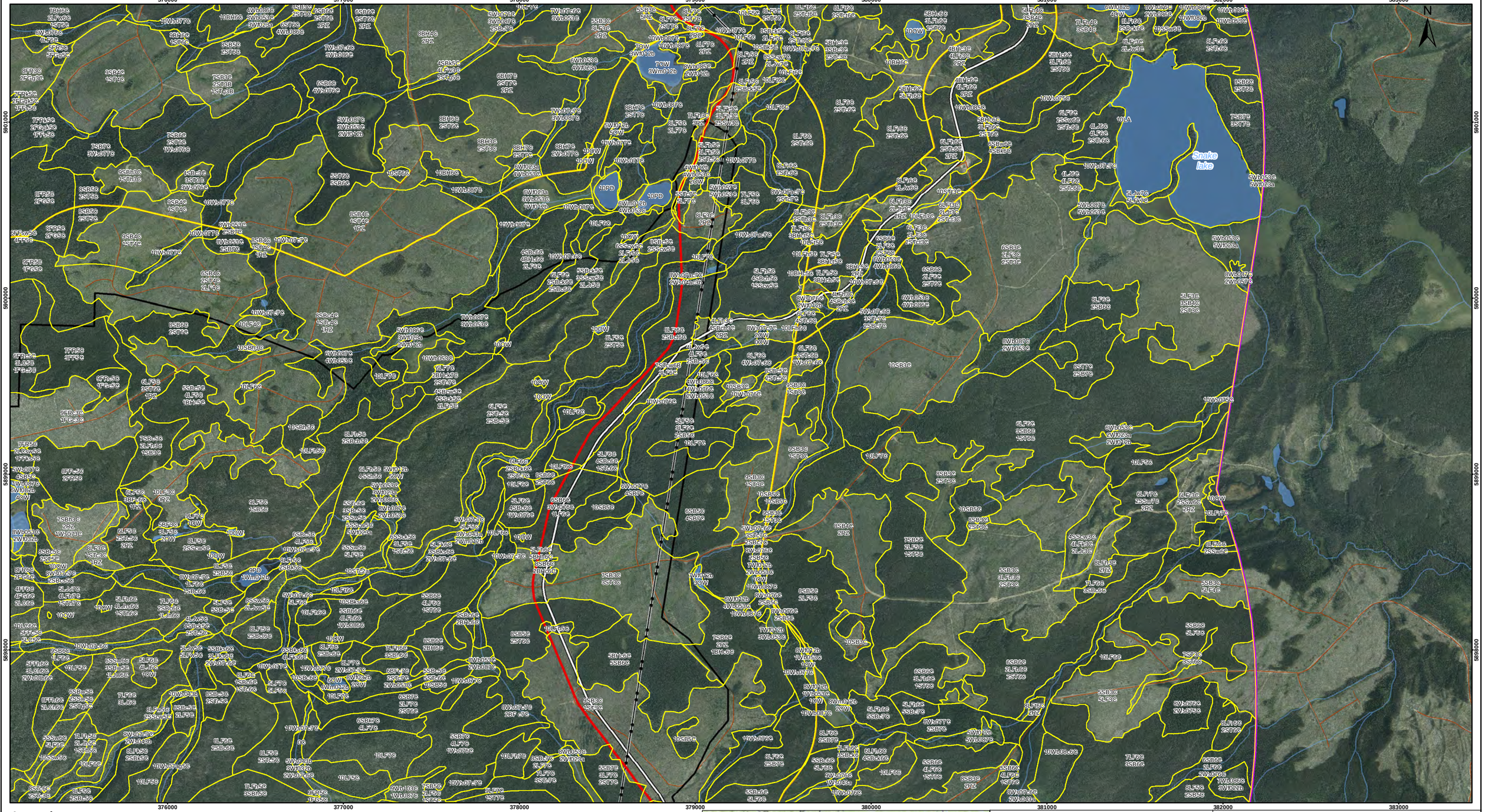

Legend

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- Proposed Mine Site

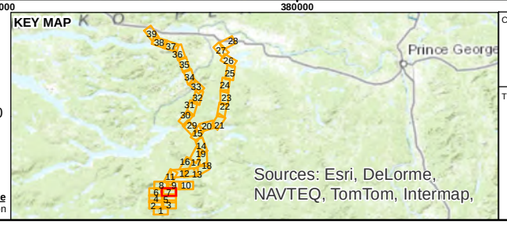
Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area
- Ecosystem Polygon

0 250 500 1000
Meters
Scale:1:20,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map

Mine Site

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JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-082_TEM.pdf
GIS FILE: 06-100-082_TEM.mxd		
PROJECTION: UTM 10	DATUM: NAD83	amec

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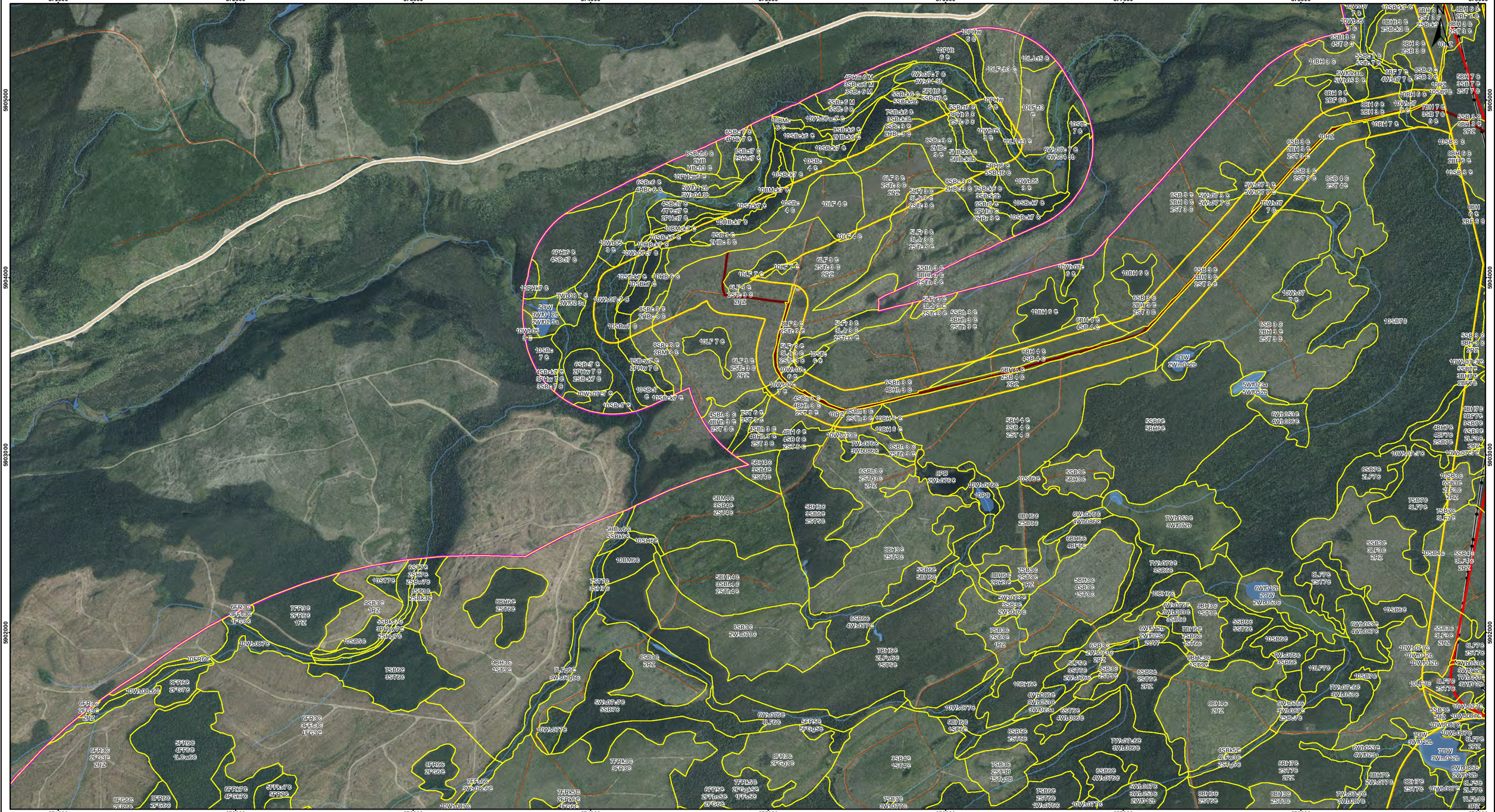


Legend

- Proposed Airstrip Access Road
- Proposed Mine Site Access Road
- Proposed Transmission Line
- Kluskus Ootsa FSR
- Existing Road
- Stream
- Waterbody
- Proposed Airstrip
- Proposed Mine Site

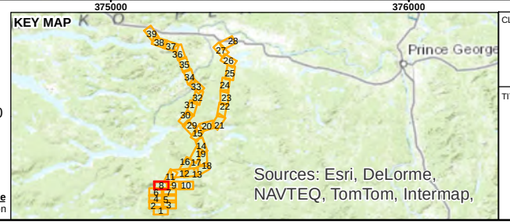
Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area
- Ecosystem Polygon

0 250 500 1000
Meters
Scale:1:20,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map

Air Strip

DATE: October, 2013	ANALYST: AA	**Appendix 3.2** Page 8 of 39	
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GIS FILE: 06-100-082_TEM.mxd			
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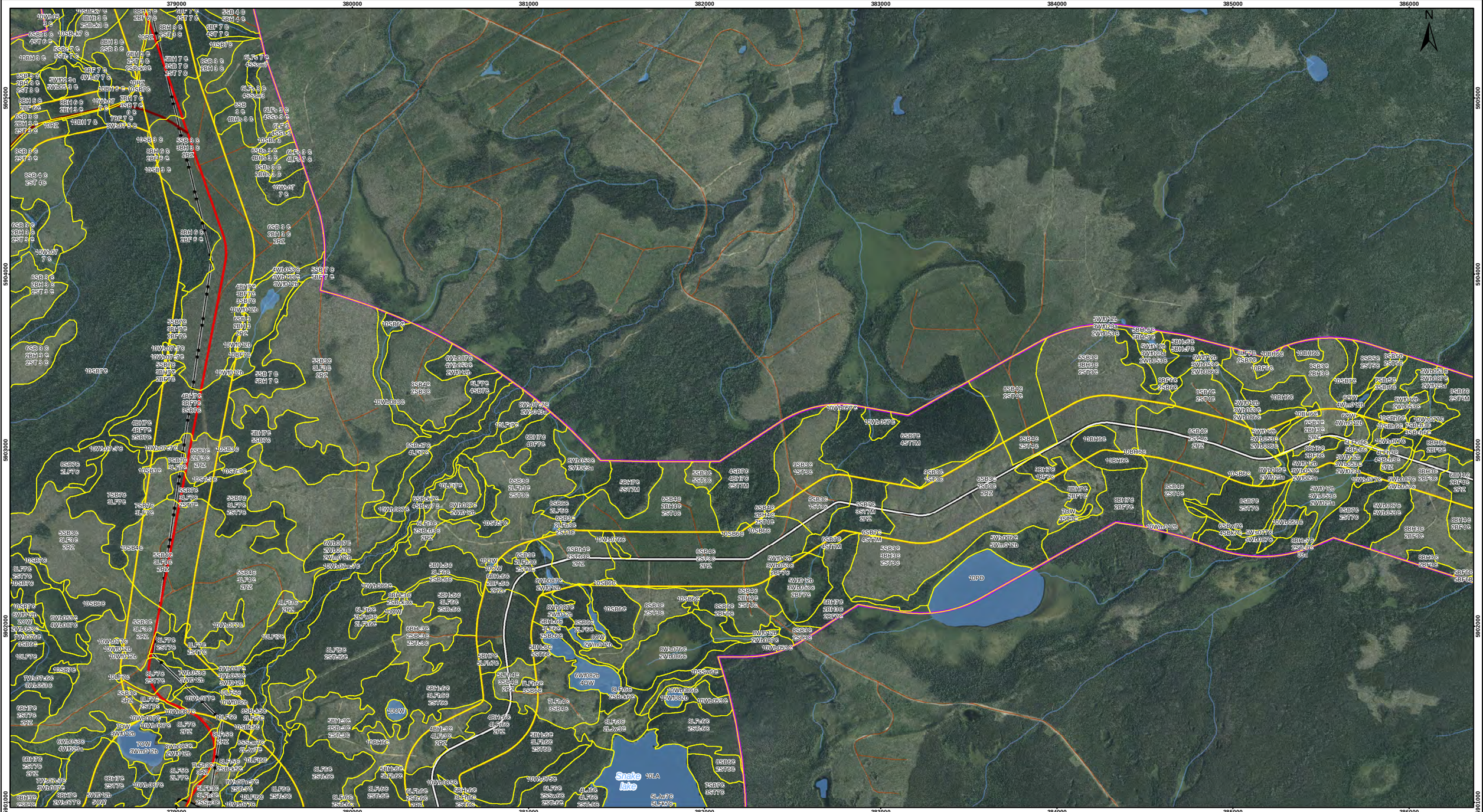

Legend

- Proposed Airstrip Access Road
- Proposed Mine Site Access Road
- Proposed Transmission Line
- Fresh Water Supply System
- Existing Road
- Stream
- Waterbody
- Proposed Mine Site

Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area
- Ecosystem Polygon

0 250 500 1000
Meters
Scale:1:20,000

Source
BC Government GeoBC Data Distribution

KEY MAP

Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap,

CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map

Fresh Water Supply System

DATE: October, 2013	ANALYST: AA	**Appendix 3.2** Page 9 of 39	
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PROJECTION: UTM 10	DATUM: NAD83	amec	

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5905000 5904000 5903000 5902000 5901000

N

Tatelkuz Lake

Chechinz Creek

Legend

Fresh Water Supply System
Existing Road
Stream
Waterbody

Terrain, Soils, and Vegetation

Regional Study Area
Local Study Area
Ecosystem Polygon

0 250 500 1000
Meters
Scale:1:20,000

Source
BC Government GeoBC Data Distribution

KEY MAP

Prince George

Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap,

CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map

Fresh Water Supply System

DATE: October, 2013
ANALYST: AA
JOB No: VE52277
QA/QC: MY
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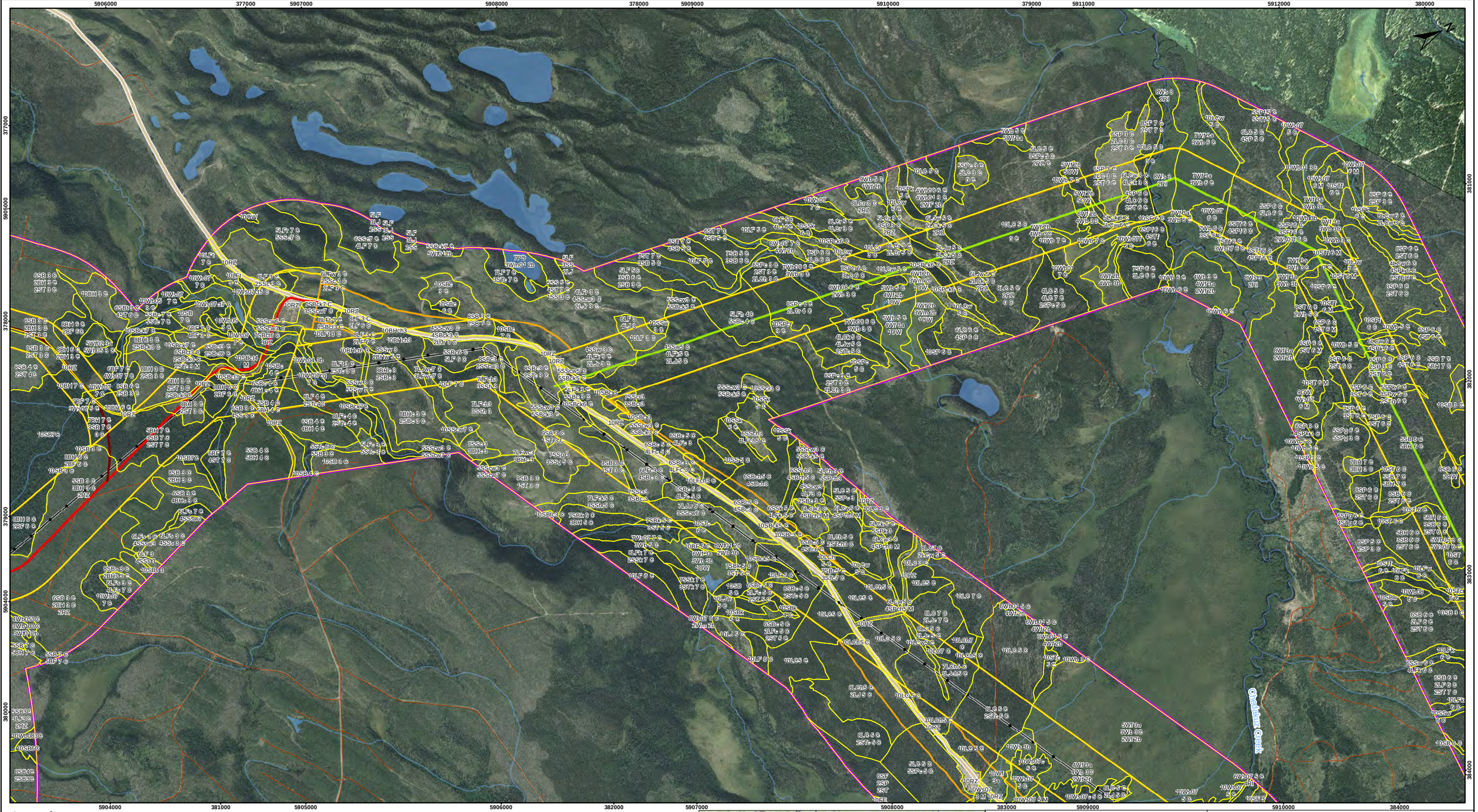


Legend

- Proposed Airstrip Access Road
- Proposed Mine Site Access Road
- Proposed Transmission Line
- Proposed Transmission Line (Mills Ranch Reroute)
- Kluskus Ootsa FSR
- Existing Road
- Stream
- Waterbody

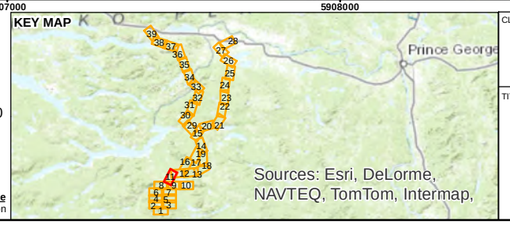
Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area
- Ecosystem Polygon

0 250 500 1000
Meters
Scale:1:20,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map

Mills Ranch Re-route and Transmission Line

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GIS FILE: 06-100-082_TEM.mxd		
PROJECTION: UTM 10	DATUM: NAD83	amec

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Legend

- Proposed Transmission Line
- Proposed Transmission Line (Mills Ranch Reroute)
- Kluskus Ootsa FSR
- Existing Road
- Stream
- Waterbody

Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area
- Ecosystem Polygon

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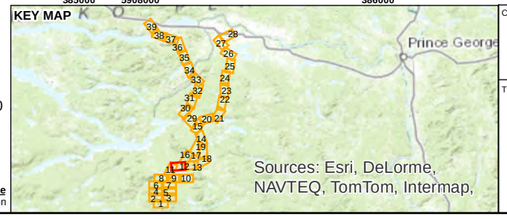
Meters
Scale:1:20,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map

Mills Ranch Re-route and Transmission Line

DATE: October, 2013	ANALYST: AA	**Appendix 3.2** Page 12 of 39
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-082_TEM.pdf
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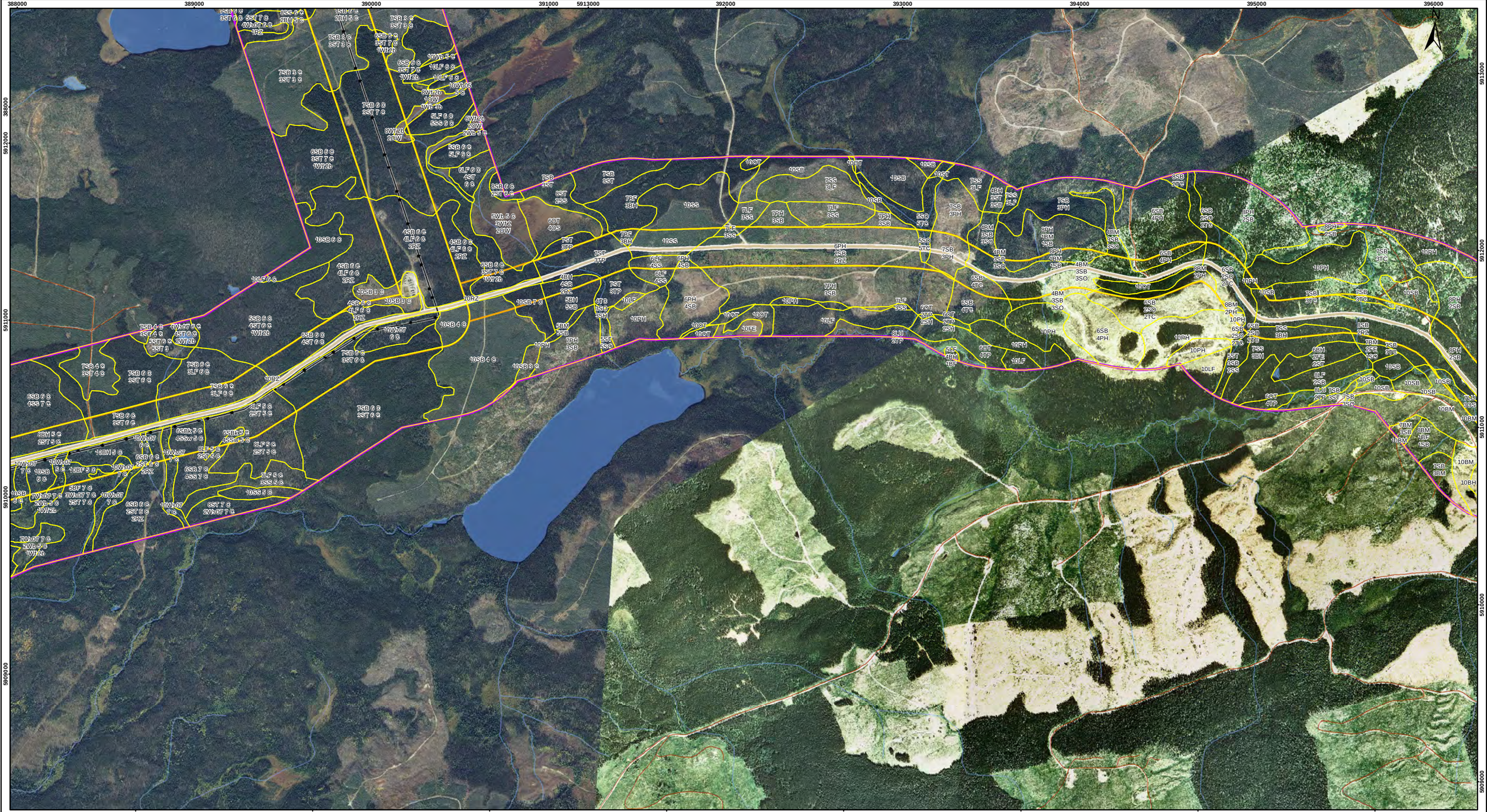


Legend

- Proposed Transmission Line
- Existing Road
- Stream
- Waterbody
- Kluskus Ootsa FSR

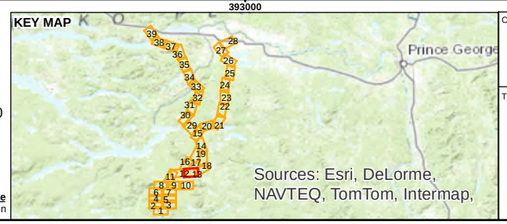
Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area
- Ecosystem Polygon

0 250 500 1000
Meters
Scale:1:20,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map

Kluskus FSR

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JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-082_TEM.pdf	
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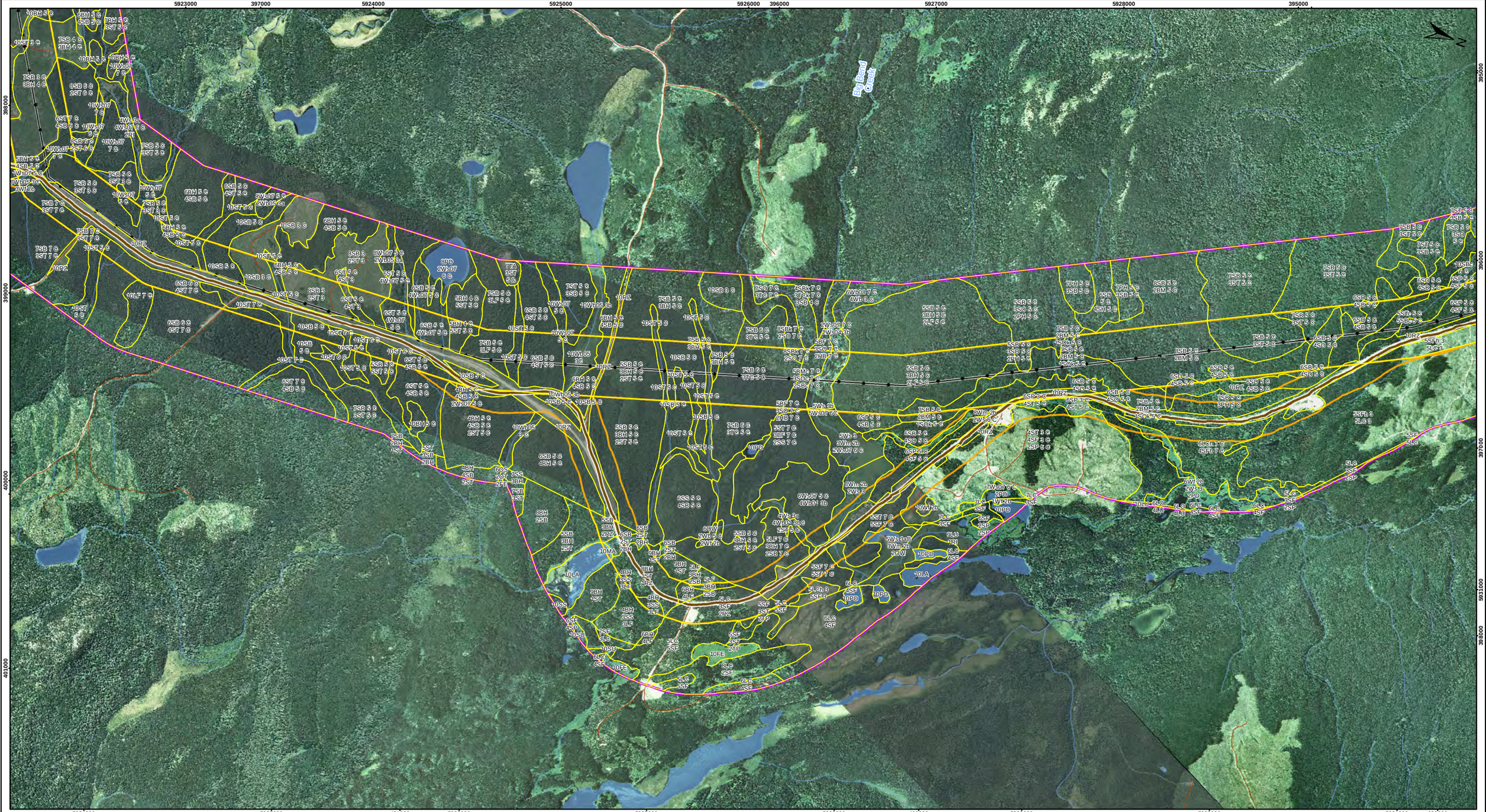


Legend

- Proposed Transmission Line
- Existing Road
- Stream
- Waterbody
- Kluskus FSR

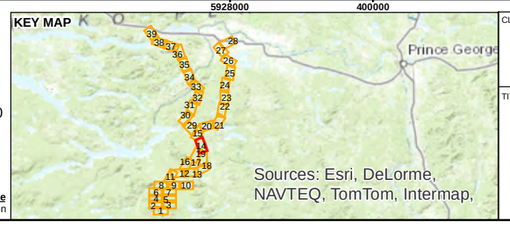
Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area
- Ecosystem Polygon

0 250 500 1000
Meters
Scale:1:20,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map

Transmission Line and Kluskus FSR

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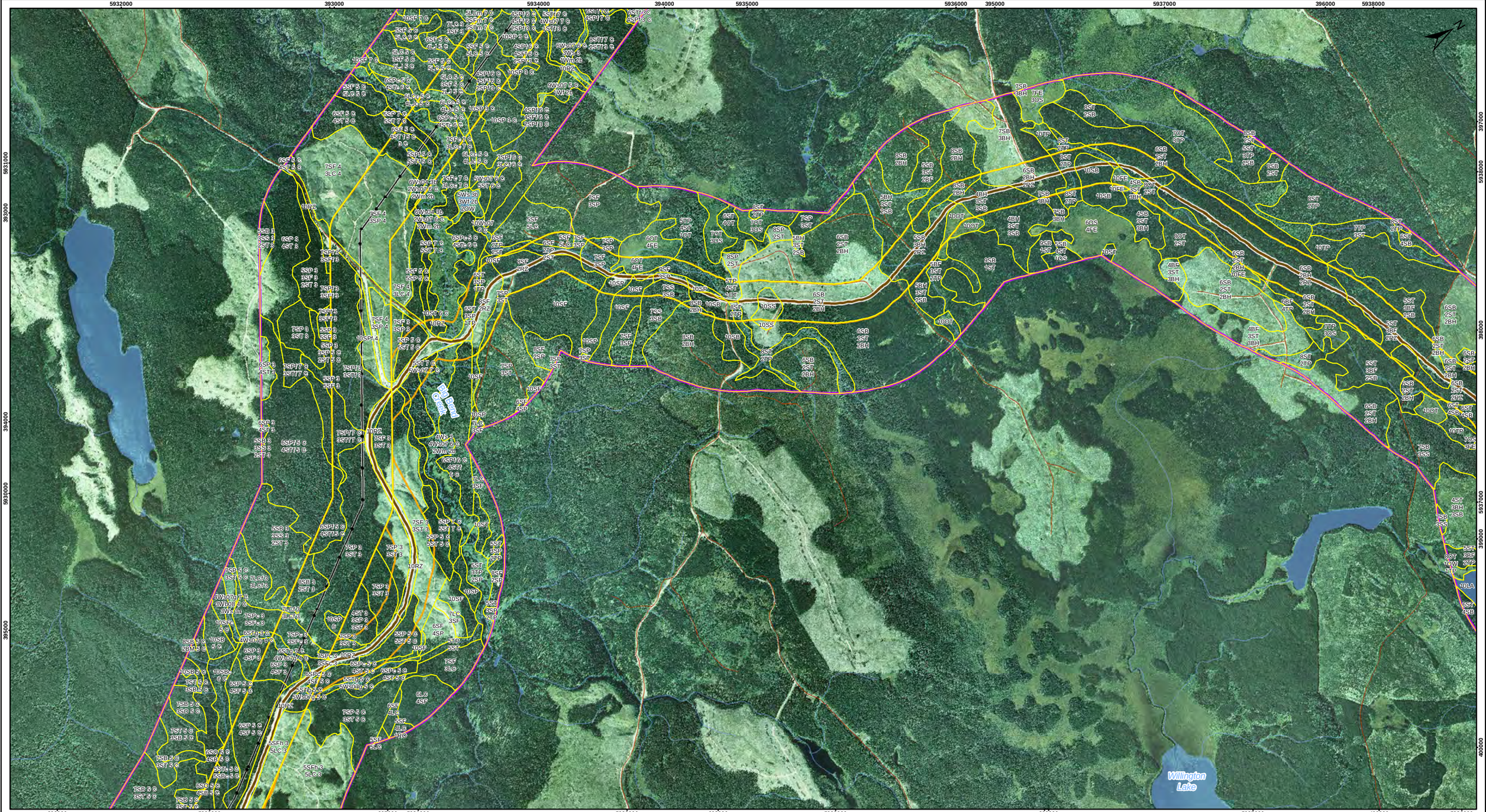

Legend

- Proposed Transmission Line
- Kluskus FSR
- Existing Road
- Stream
- Waterbody

Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area
- Ecosystem Polygon

0 250 500 1000
Meters
Scale:1:20,000

Source
BC Government GeoBC Data Distribution

KEY MAP

Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap,

CLIENT: newgold	PROJECT: Blackwater Gold Project		
TITLE: Ecosystem Map Transmission Line and Kluskus FSR	DATE: October, 2013	ANALYST: AA	**Appendix 3.2** Page 15 of 39
	JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-082_TEM.pdf
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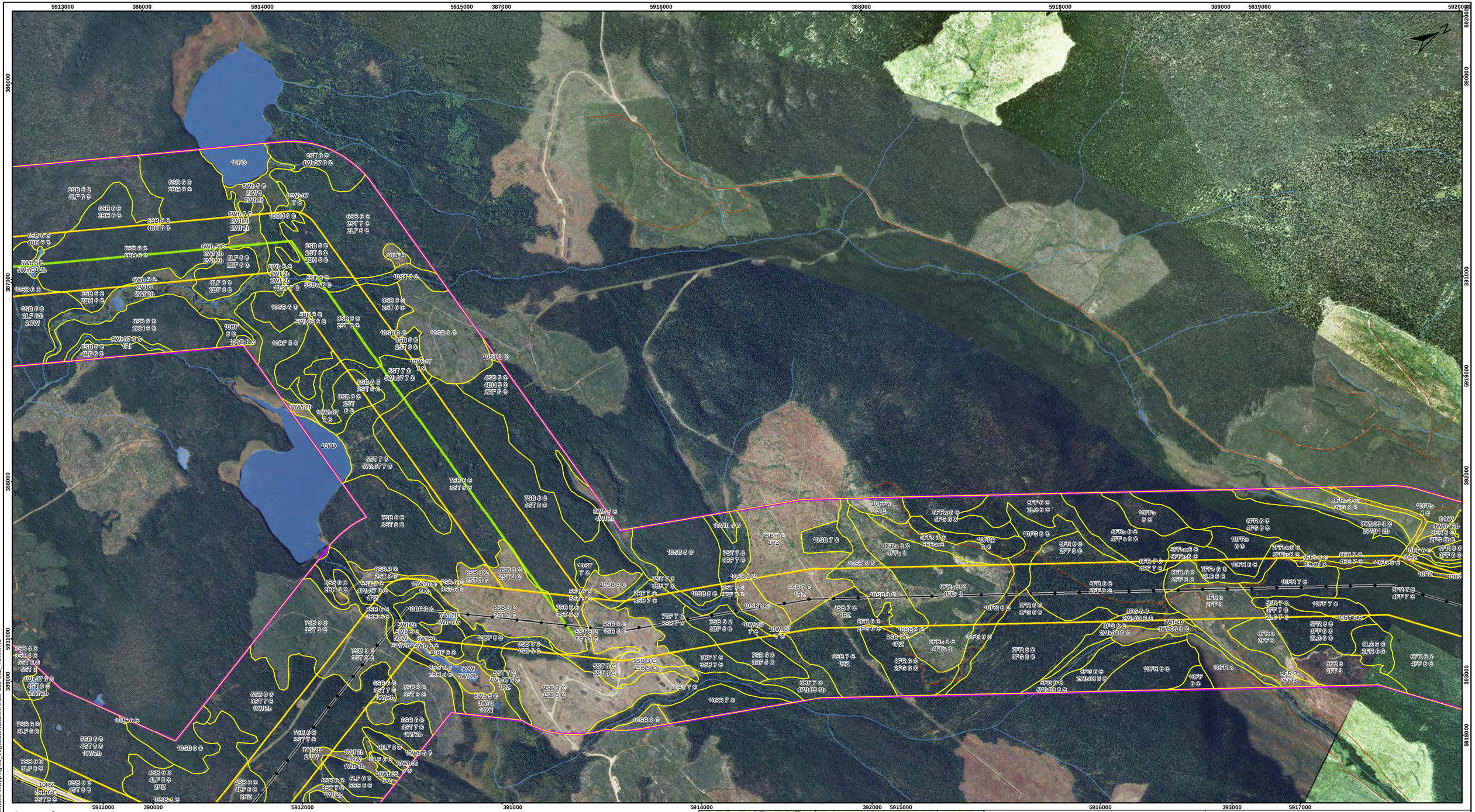
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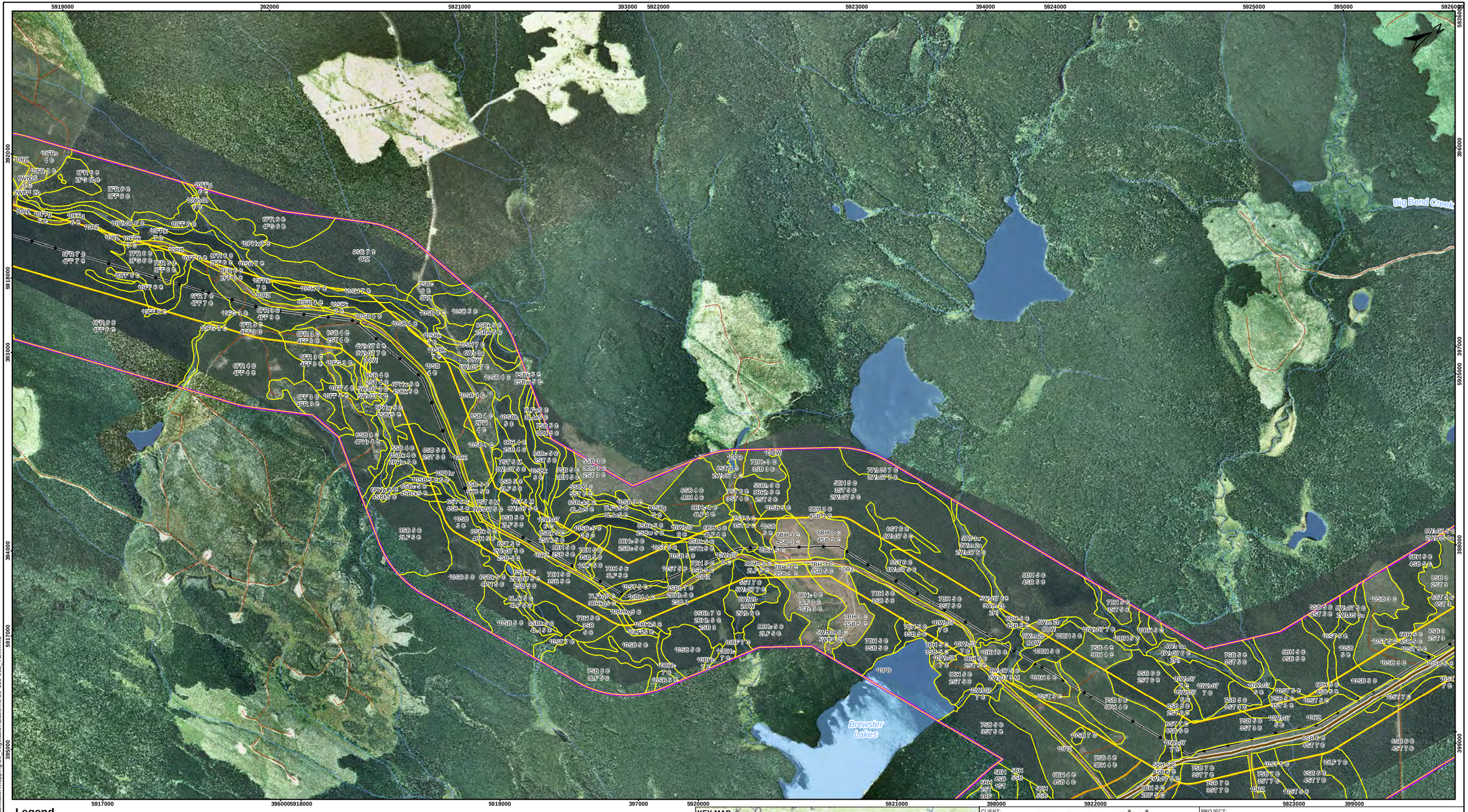

Legend

- Proposed Transmission Line
- Kluskus FSR
- Existing Road
- Stream
- Waterbody

Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area
- Ecosystem Polygon

0 250 500 1000
Meters
Scale:1:20,000

Source
BC Government GeoBC Data Distribution

KEY MAP

Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap,

CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map

Transmission Line

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PROJECTION: UTM 10	DATUM: NAD83	amec

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Legend

- Kluskus FSR
- Kluskus Blue FSR
- Kluskus Ootsa FSR
- Existing Road
- Stream
- Waterbody

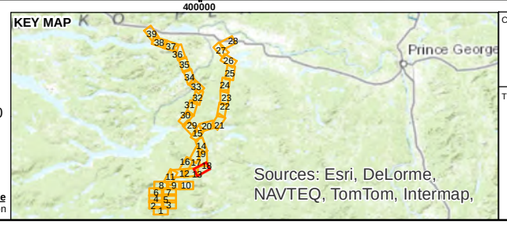
Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area
- Ecosystem Polygon

0 250 500 1000
Meters
Scale:1:20,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map

Kluskus FSR

DATE: October, 2013	ANALYST: AA	**Appendix 3.2** Page 18 of 39	
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-082_TEM.pdf	
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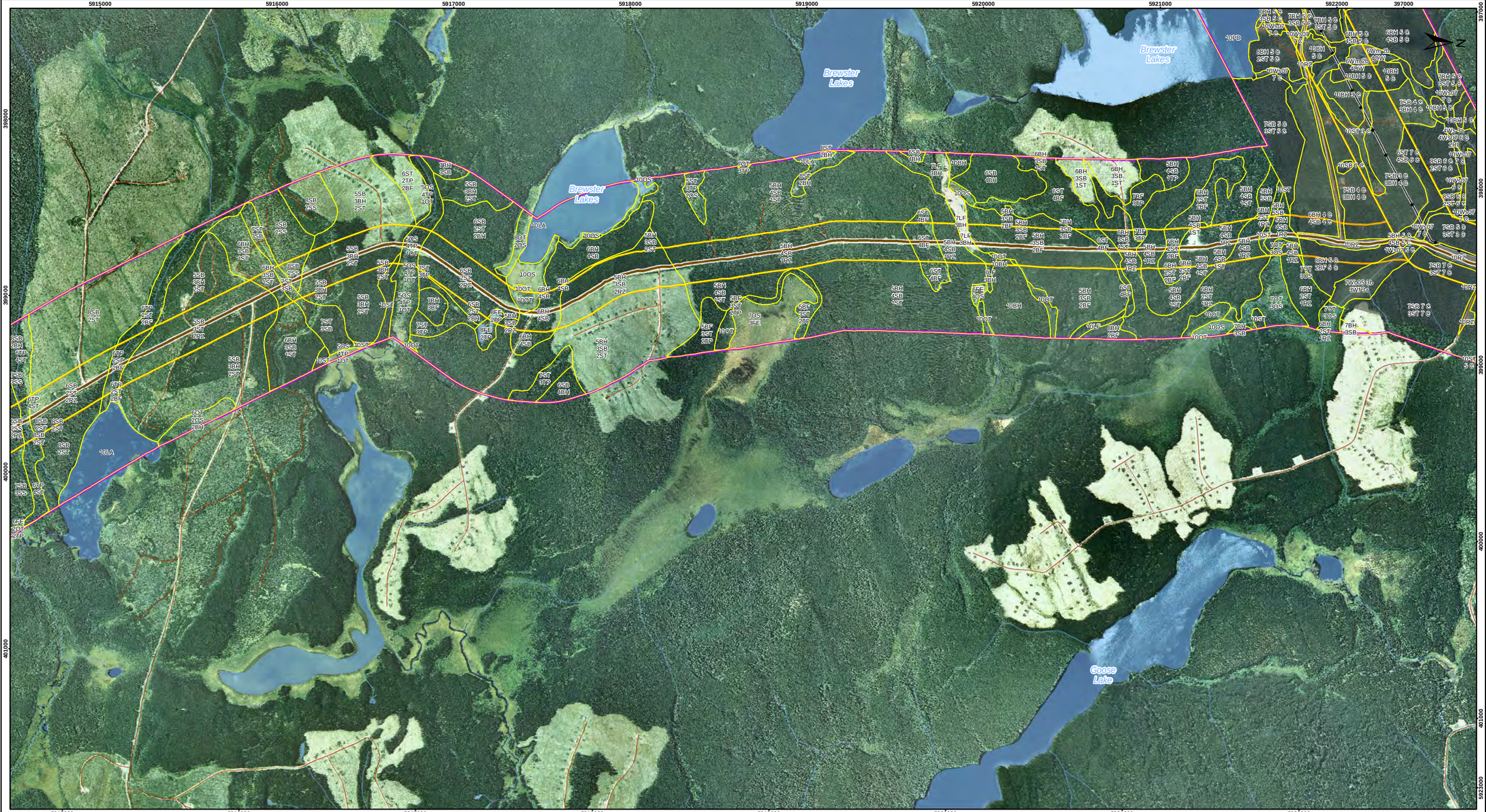
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Brewster Lake
Brewster Lake
Goose Lake
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10LA
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N

Provis Lake

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Legend

- Kluskus FSR
- Existing Road
- Stream
- Waterbody

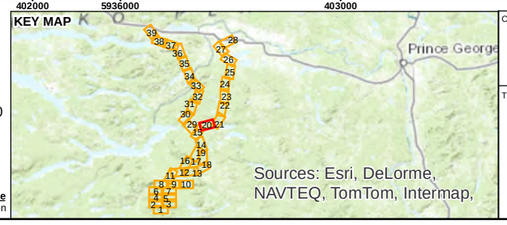
Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area
- Ecosystem Polygon

0 250 500 1000
Meters
Scale:1:20,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map

Kluskus FSR

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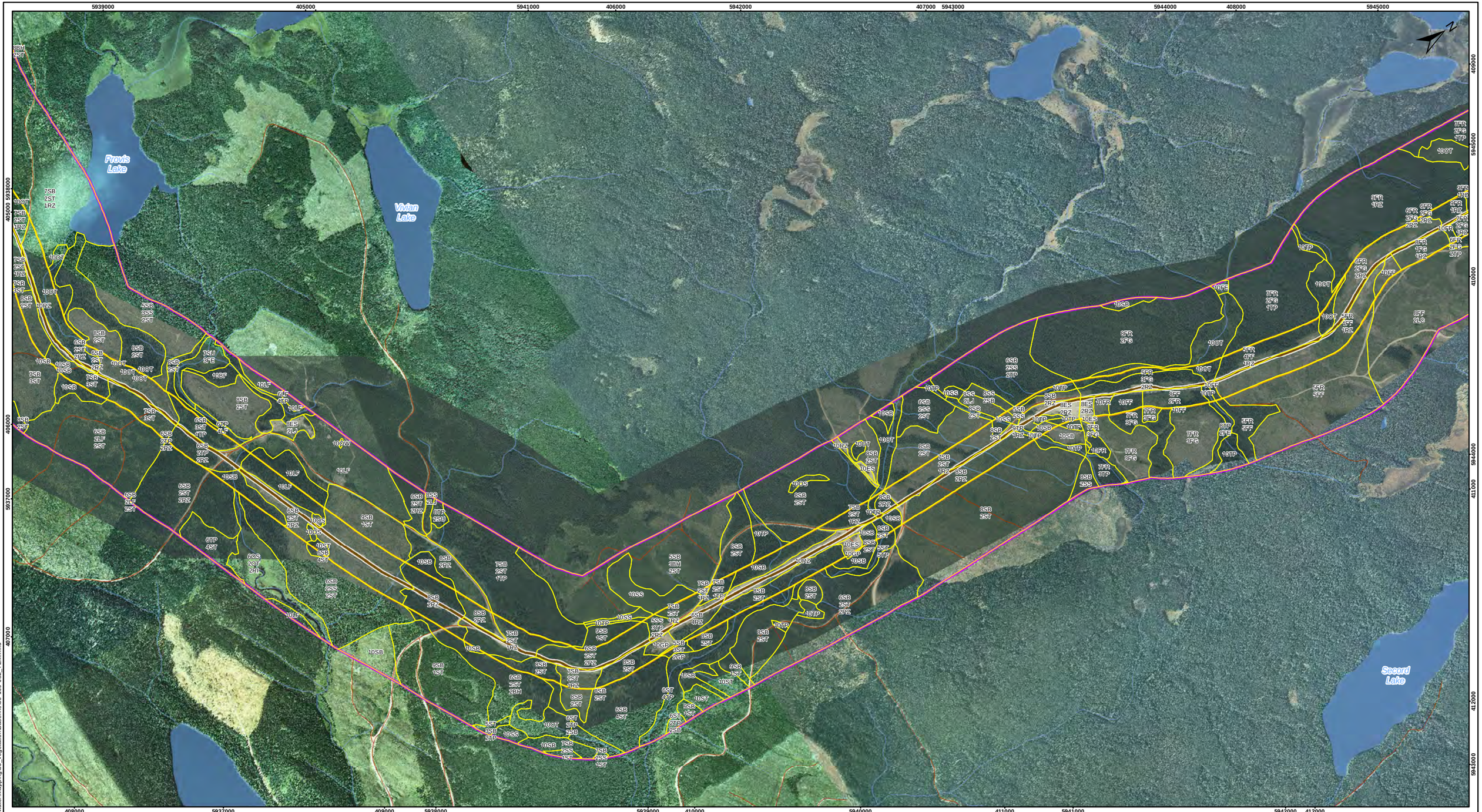


Legend

- Kluskus FSR
- Existing Road
- Stream
- Waterbody

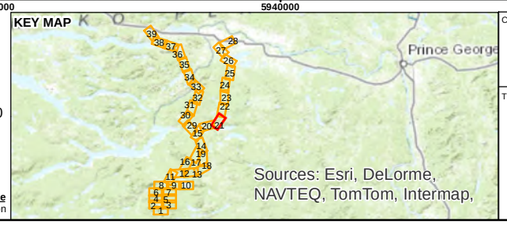
Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area
- Ecosystem Polygon

0 250 500 1000
Meters
Scale:1:20,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map

Kluskus FSR

DATE: October, 2013	ANALYST: AA	**Appendix 3.2** Page 21 of 39	
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PROJECTION: UTM 10	DATUM: NAD83	amec	

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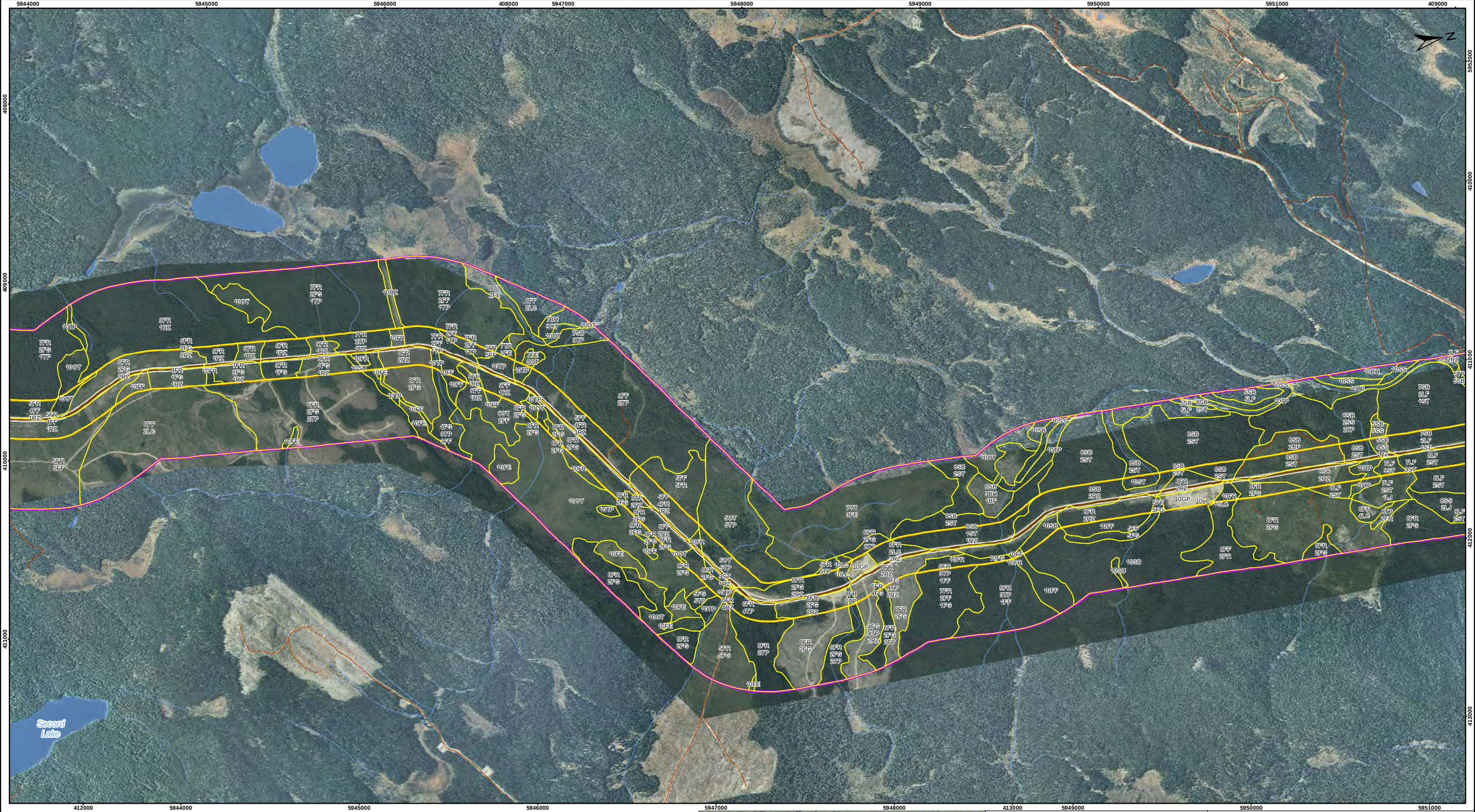


Legend

- Kluskus FSR
- Existing Road
- Stream
- Waterbody

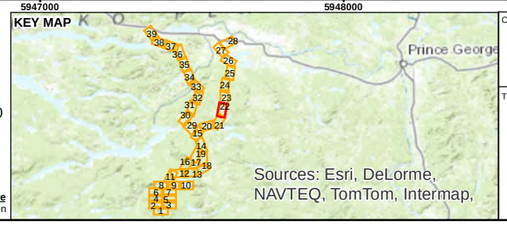
Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area
- Ecosystem Polygon

0 250 500 1000
Meters
Scale:1:20,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map

Kluskus FSR

DATE: October, 2013	ANALYST: AA	**Appendix 3.2** Page 22 of 39
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410000 411000 412000 413000 414000

Green Creek

N

Legend

- Kluskus FSR
- Existing Road
- Stream
- Waterbody

Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area
- Ecosystem Polygon

0 250 500 1000

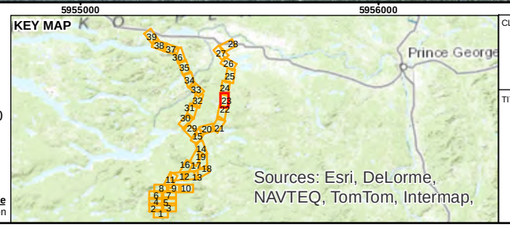
Meters

Scale:1:20,000

Source

BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map

Kluskus FSR

DATE: October, 2013	ANALYST: AA	**Appendix 3.2** Page 23 of 39	
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Legend

- Kluskus FSR
- Existing Road
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Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area
- Ecosystem Polygon

0 250 500 1000
Meters
Scale:1:20,000

Source
BC Government GeoBC Data Distribution

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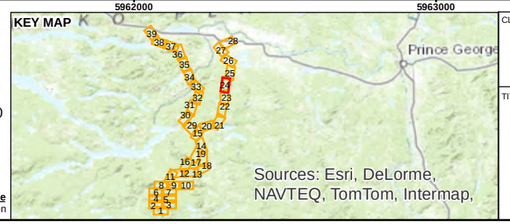

CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map

Kluskus FSR

DATE: October, 2013	ANALYST: AA	**Appendix 3.2** Page 24 of 39	
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Legend

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- Existing Road
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Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area
- Ecosystem Polygon

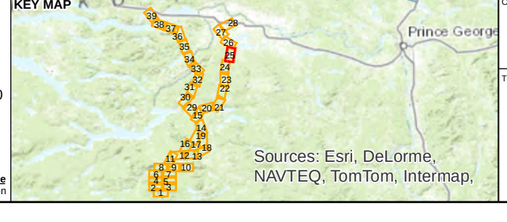
0 250 500 1000

Meters

Scale:1:20,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map

Kluskus FSR

DATE: October, 2013	ANALYST: AA	**Appendix 3.2** Page 25 of 39	
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Legend

- Kluskus FSR
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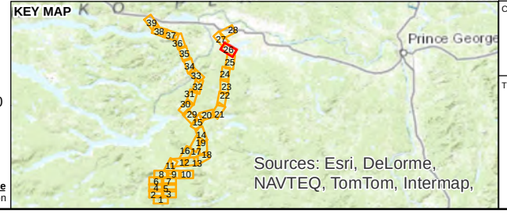
0 250 500 1000
Meters
Scale:1:20,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map

Kluskus FSR

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Legend

- Kluskus FSR
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- Ecosystem Polygon

0 250 500 1000
Meters
Scale:1:20,000

Source
BC Government GeoBC Data Distribution

KEY MAP

Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap,

CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map

Kluskus FSR

DATE: October, 2013	ANALYST: AA	**Appendix 3.2** Page 27 of 39	
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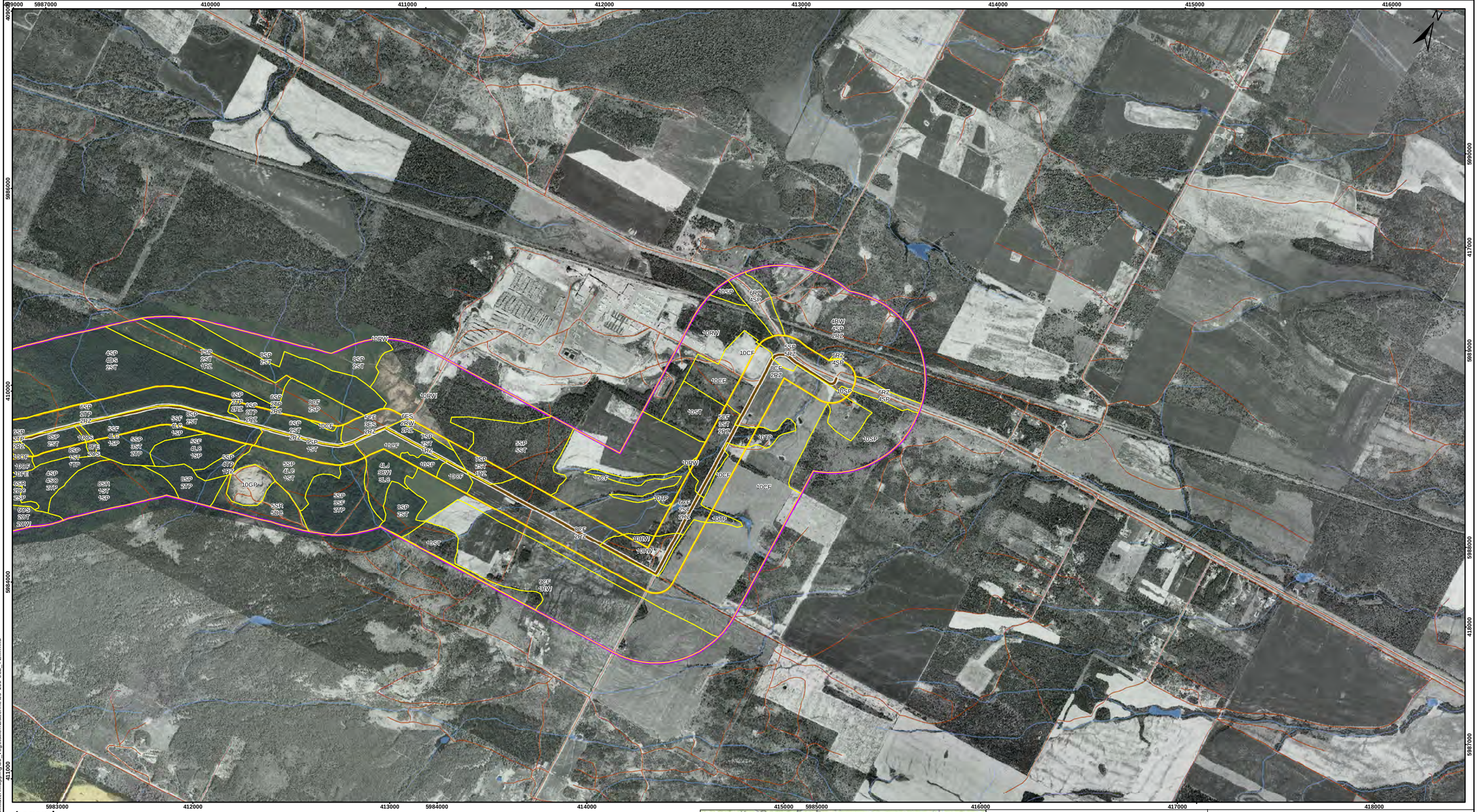

Legend

- Kluskus FSR
- Existing Road
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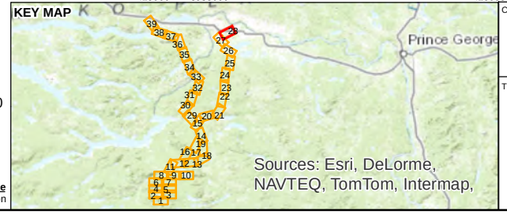
0 250 500 1000
Meters
Scale:1:20,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map

Kluskus FSR

DATE: October, 2013	ANALYST: AA	**Appendix 3.2** Page 28 of 39	
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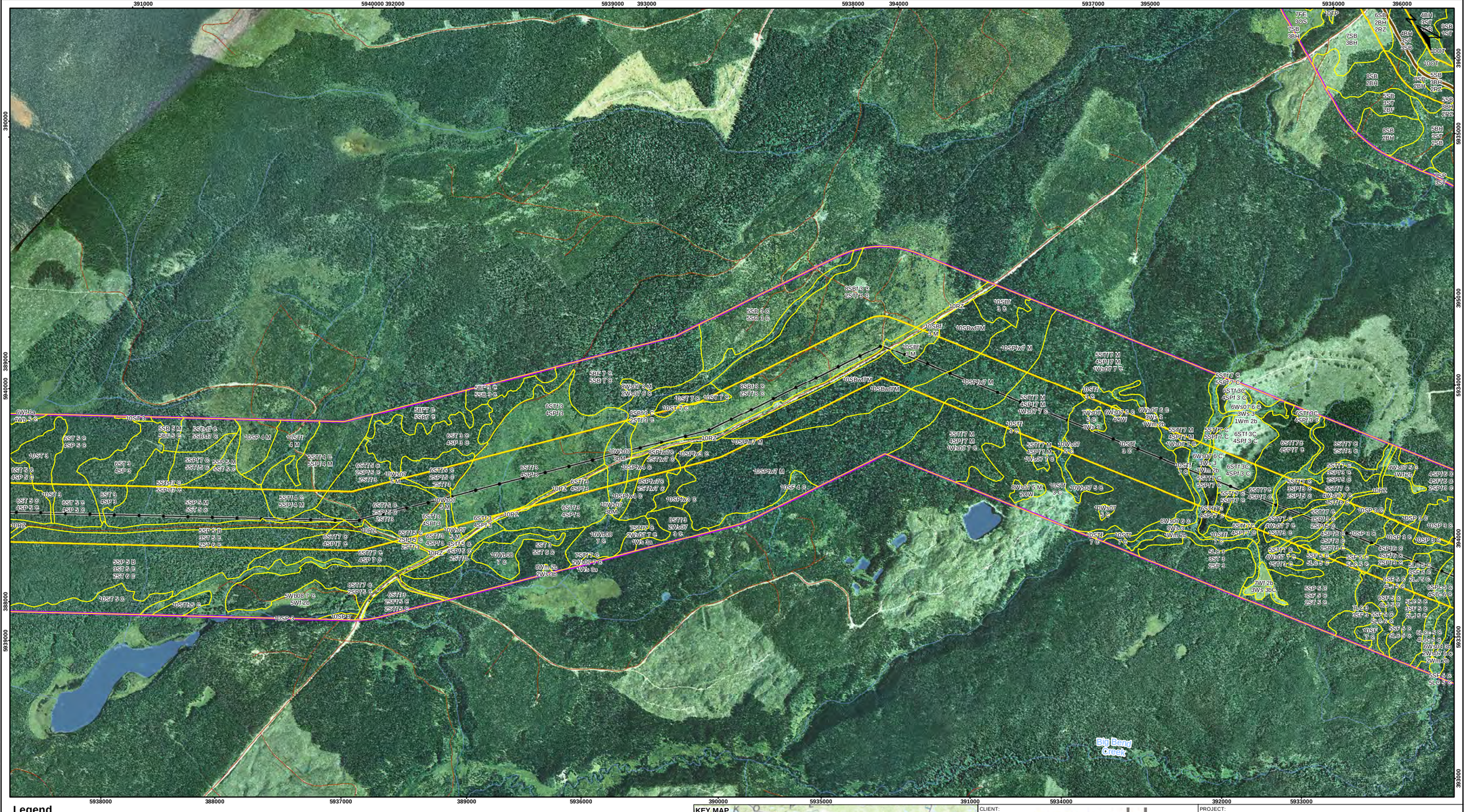


Legend

- Proposed Transmission Line
- Kluskus FSR
- Existing Road
- Stream
- Waterbody

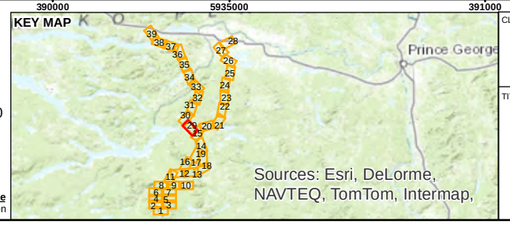
Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area
- Ecosystem Polygon

0 250 500 1000
Meters
Scale:1:20,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map

Transmission Line

DATE: October, 2013	ANALYST: AA	**Appendix 3.2** Page 29 of 39
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PROJECTION: UTM 10	DATUM: NAD83	amec

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Legend

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Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area
- Ecosystem Polygon

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Meters
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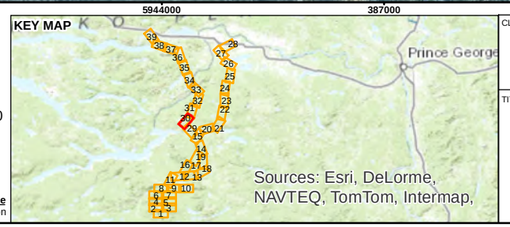
Source
BC Government GeoBC Data Distribution



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map

Transmission Line

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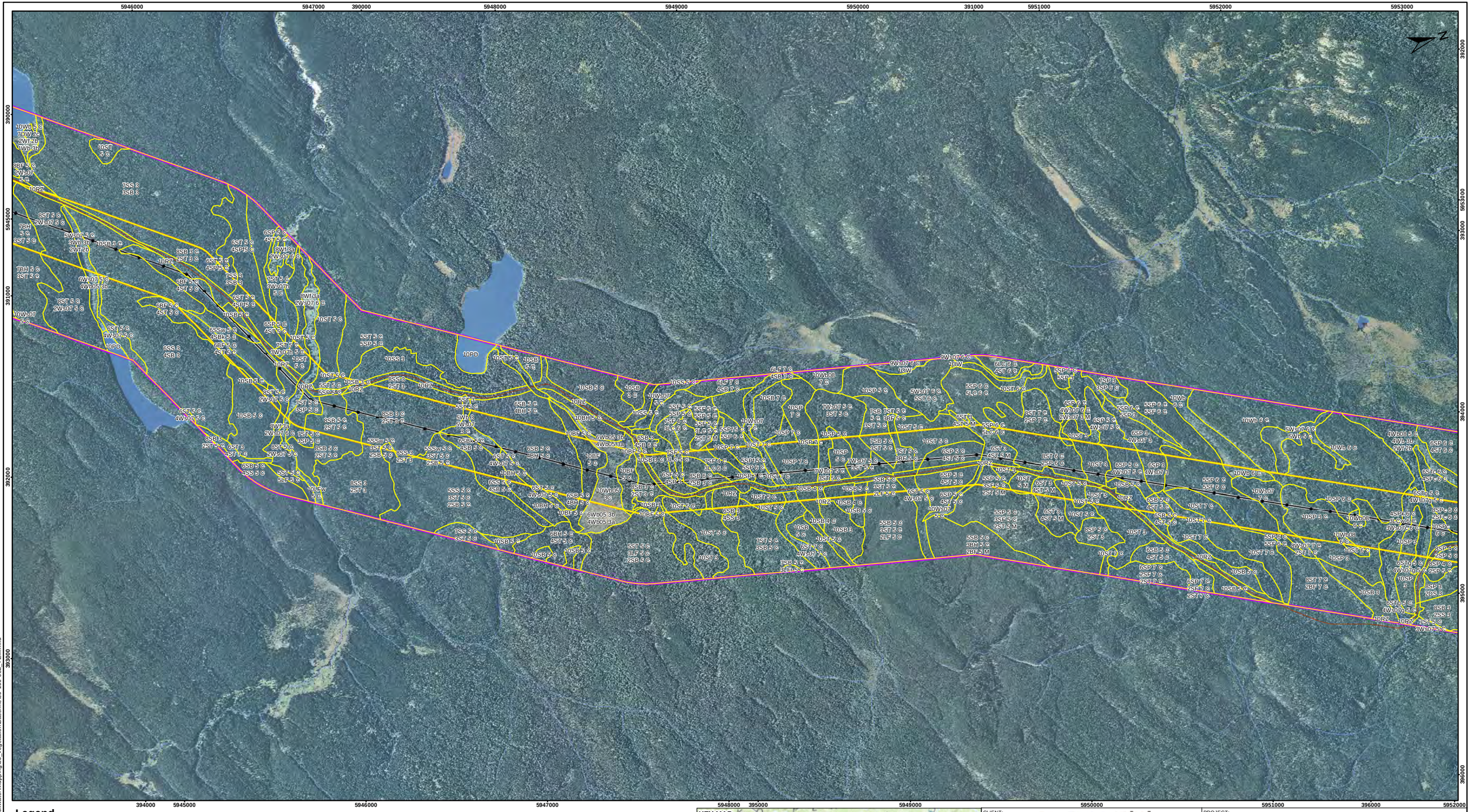
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7GW 2a
2Wi 2b
1Wb 3b
10ST 5 G
8BF 5 G
2Ws 07 5 G
10PZ
7SS 3
3SB 3
8ST 3 G
2Ws 07 5 G
7BH 5 G
8ST 3 G
6Ws 07 5 G
4Wb 3b
2Wi 2b
10SB 3 G
6SP 5 G
4ST 5 G
8Wi 3a
2Ws 07 5 G
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4SP 5 G
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3SB 3
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2ST 3
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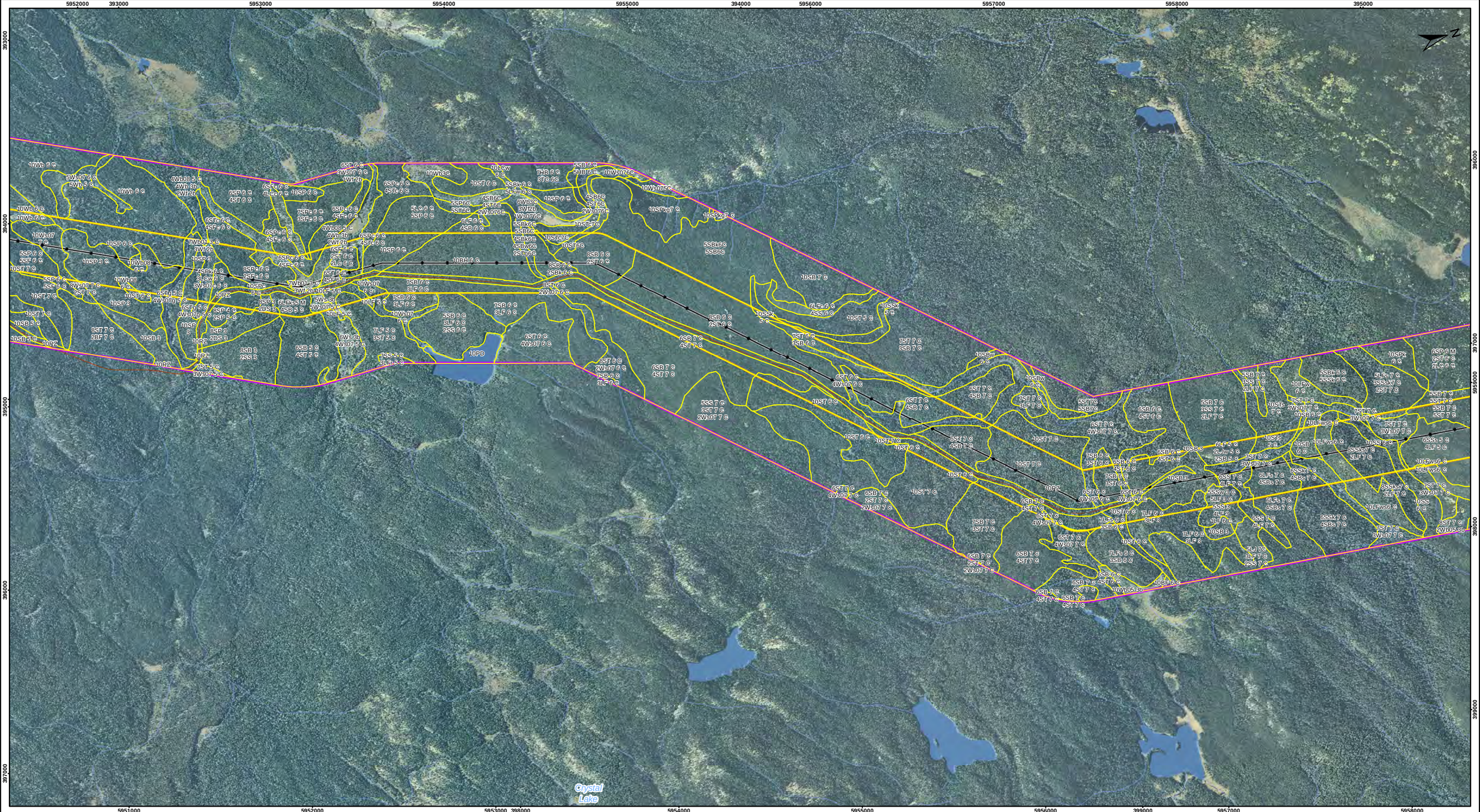


Legend

- Proposed Transmission Line
- Existing Road
- Stream
- Waterbody

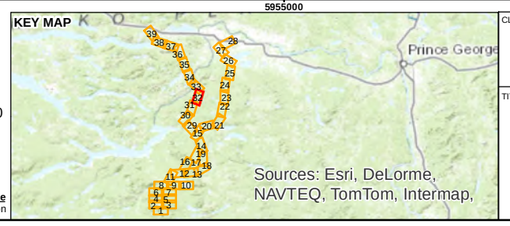
Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area
- Ecosystem Polygon

0 250 500 1000
Meters
Scale:1:20,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map

Transmission Line

DATE: October, 2013
ANALYST: AA
JOB No: VE52277
QA/QC: MY
GIS FILE: 06-100-082_TEM.mxd
PROJECTION: UTM 10
DATUM: NAD83

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PDF FILE: 06-100-082_TEM.pdf

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Legend

- Proposed Transmission Line
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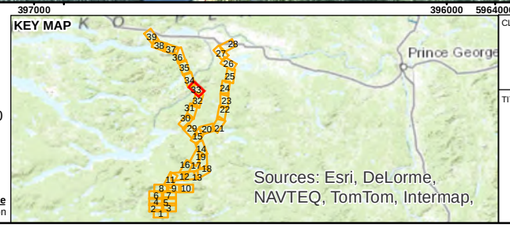
0 250 500 1000
Meters
Scale:1:20,000

Source
BC Government GeoBC Data Distribution

KEY MAP



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PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map

Transmission Line

DATE: October, 2013	ANALYST: AA	**Appendix 3.2** Page 33 of 39
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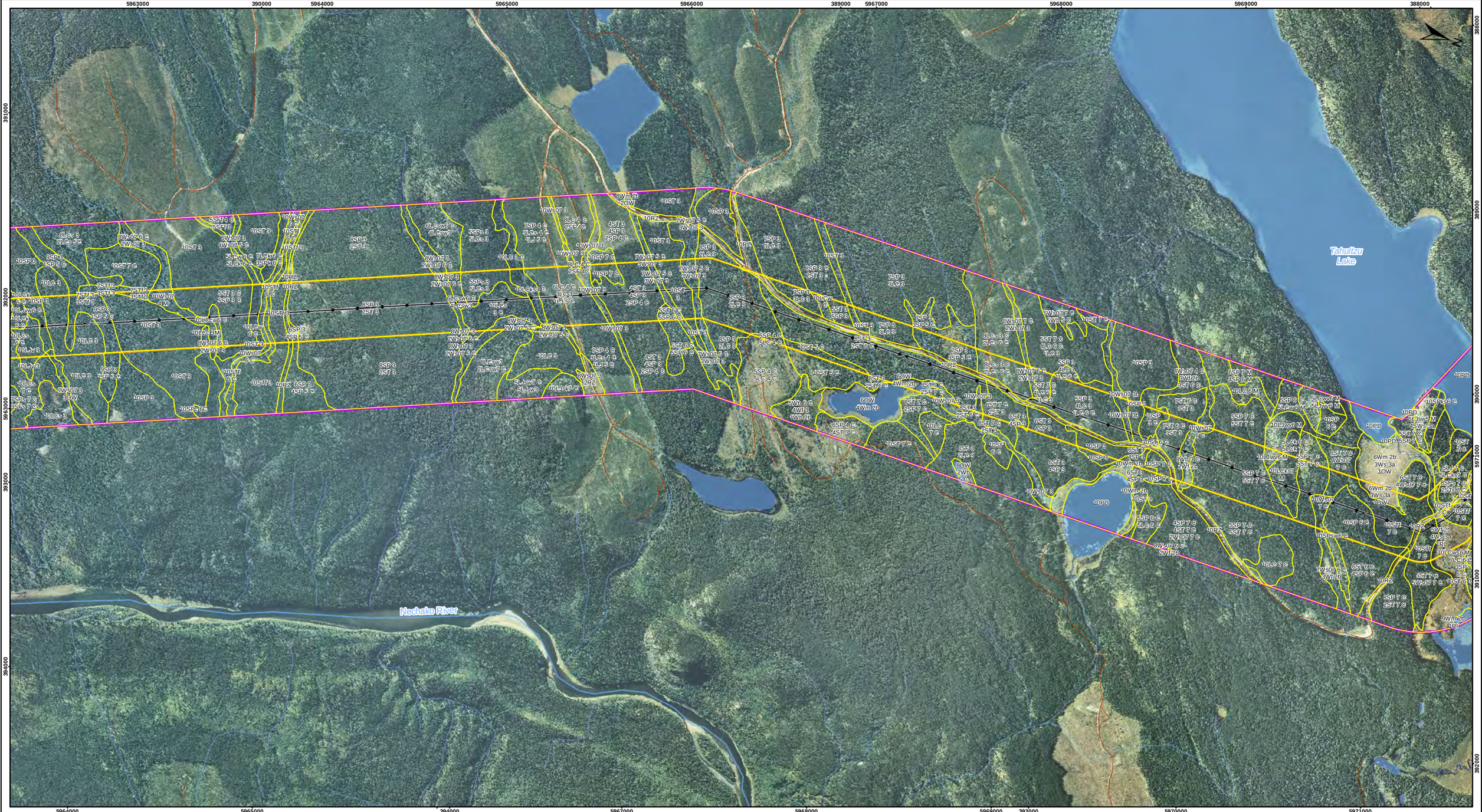

Legend

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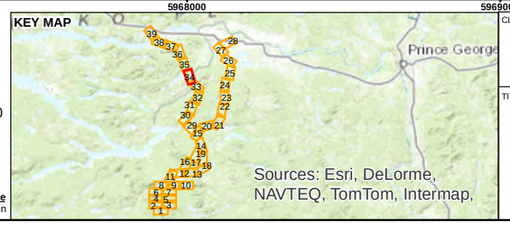
0 250 500 1000
Meters
Scale:1:20,000

Source
BC Government GeoBC Data Distribution

KEY MAP



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PROJECT: Blackwater Gold Project

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Transmission Line

DATE: October, 2013	ANALYST: AA	**Appendix 3.2** Page 34 of 39	
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388000 389000 390000 391000 386000 387000 388000 389000

Tahultzu Lake

Limit Lake

5971000 5972000 5973000 391000 5974000 5975000 5976000 390000 5977000 5978000

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Legend

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- Local Study Area
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0 250 500 1000

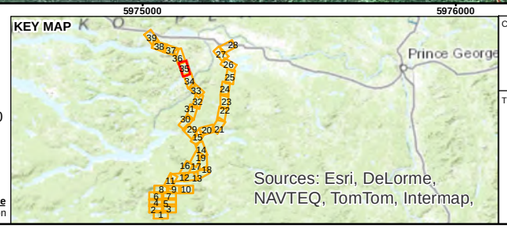
Meters

Scale:1:20,000

Source

BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

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Transmission Line

DATE:	ANALYST:	
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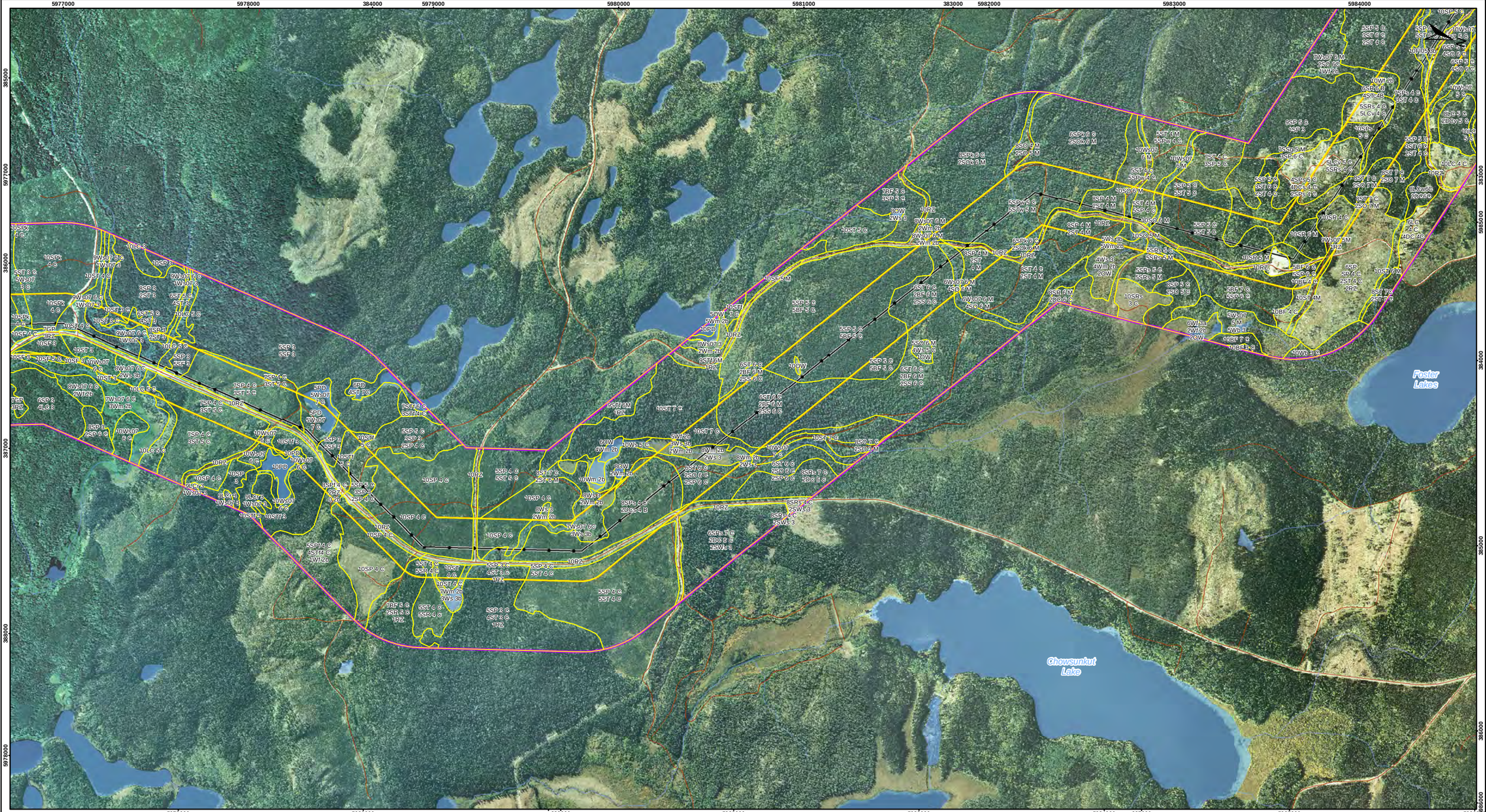
385000 386000 387000 388000 5978000 5977000



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Legend

- Proposed Transmission Line
- Existing Road
- Stream
- Waterbody

Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area
- Ecosystem Polygon

0 250 500 1000
Meters
Scale:1:20,000

Source
BC Government GeoBC Data Distribution

KEY MAP

Sources: Esri, DeLorme, NAVTEQ, TomTom, Intermap,

CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map

Transmission Line

DATE: October, 2013	ANALYST: AA	**Appendix 3.2** Page 36 of 39
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-082_TEM.pdf
GIS FILE: 06-100-082_TEM.mxd		
PROJECTION: UTM 10	DATUM: NAD83	amec

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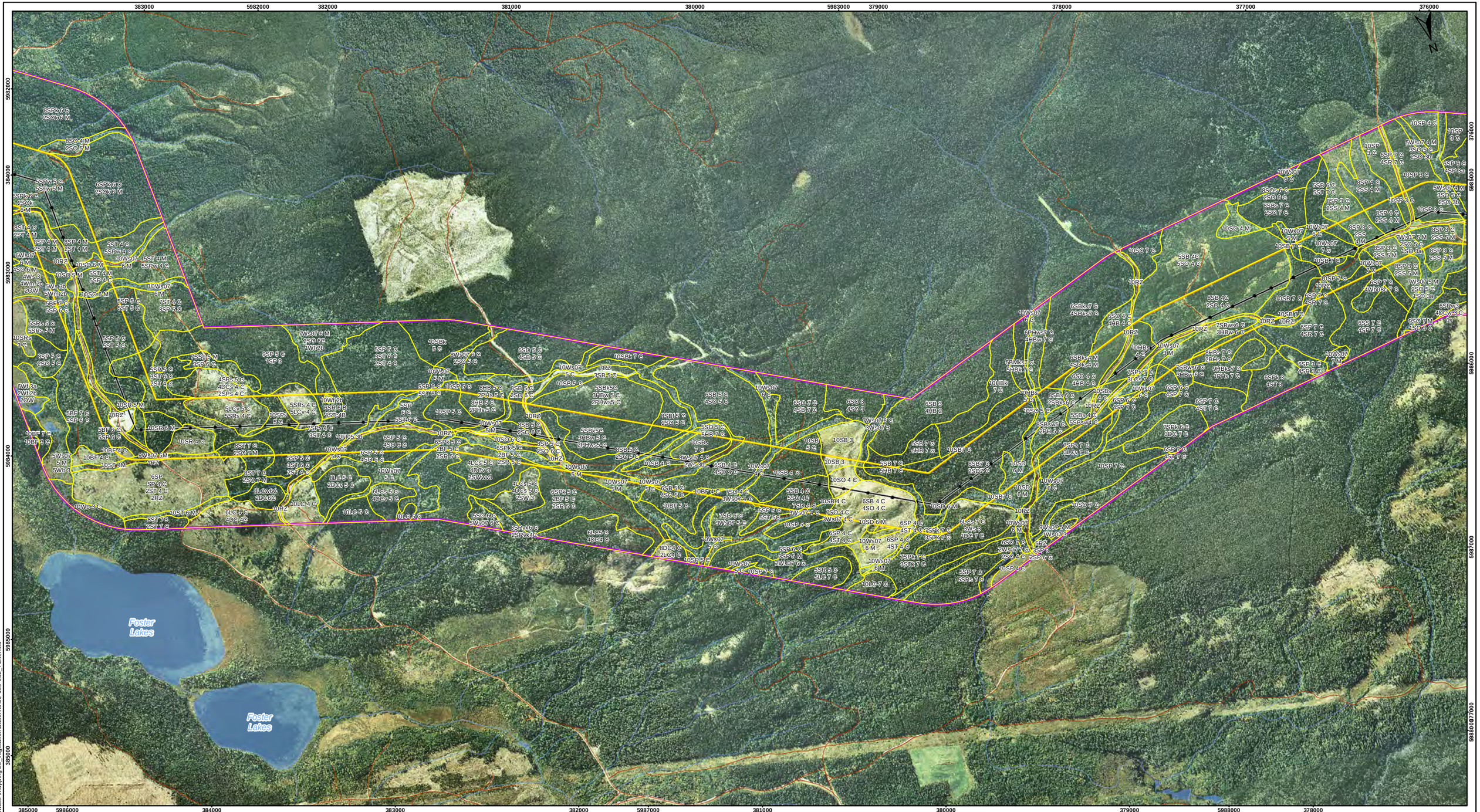


Legend

- Proposed Transmission Line
- Existing Road
- Stream
- Waterbody

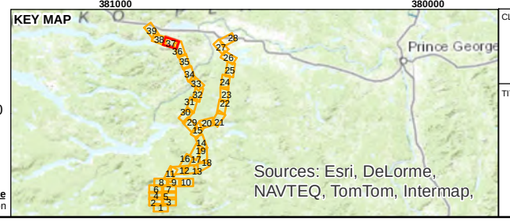
Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area
- Ecosystem Polygon

0 250 500 1000
Meters
Scale:1:20,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map

Transmission Line

DATE: October, 2013	ANALYST: AA	**Appendix 3.2** Page 37 of 39
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GIS FILE: 06-100-082_TEM.mxd		
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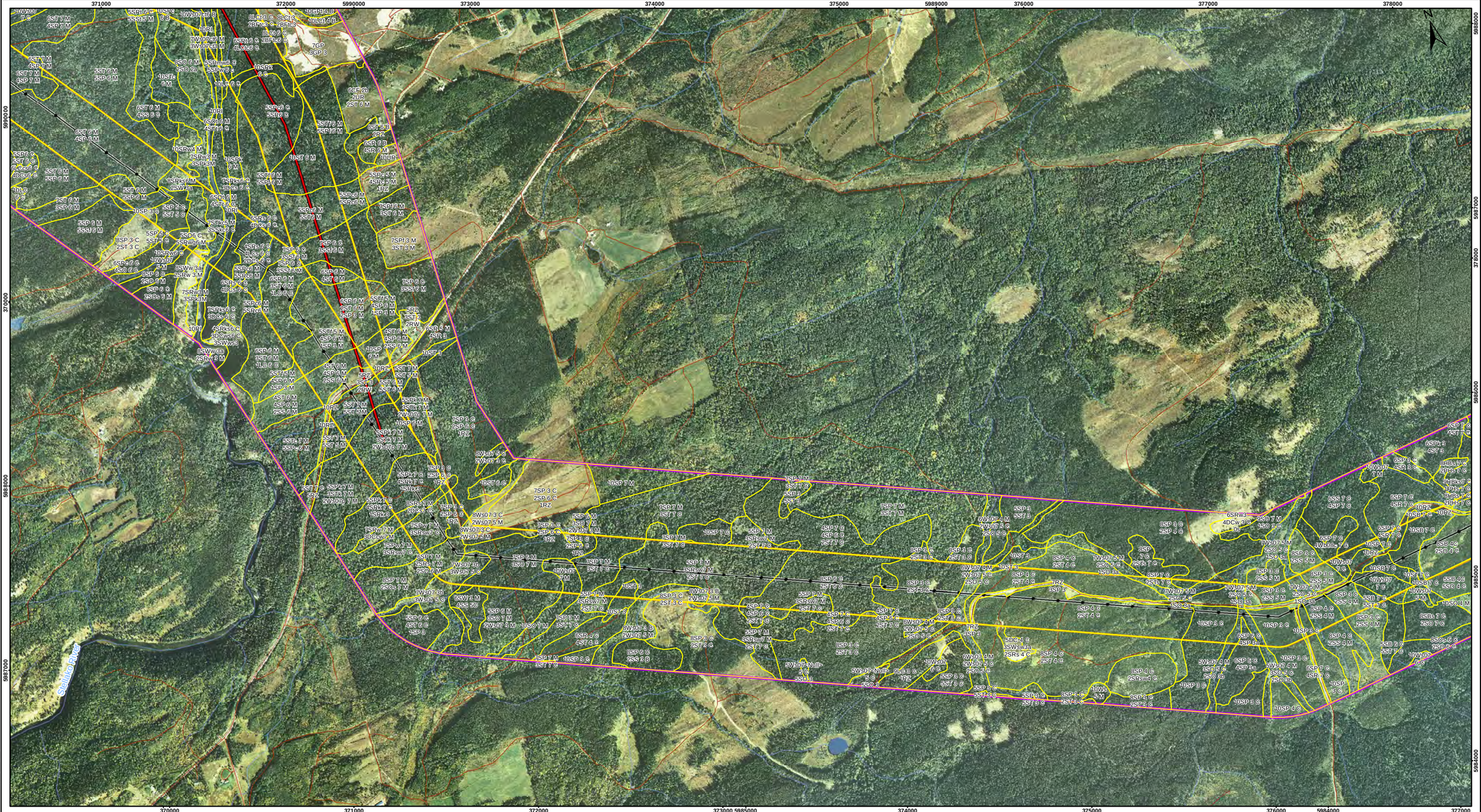


Legend

- Proposed Transmission Line
- Proposed Transmission Line (Stellako Reroute)
- Existing Road
- Stream
- Waterbody

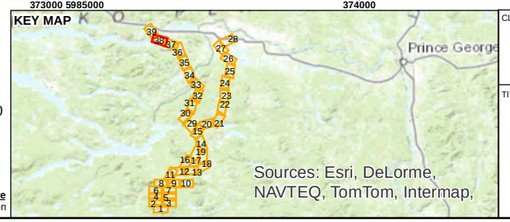
Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area
- Ecosystem Polygon

0 250 500 1000
Meters
Scale:1:20,000

Source
BC Government GeoBC Data Distribution

KEY MAP



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map

Transmission Line

DATE: October, 2013
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JOB No: VE52277
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GIS FILE: 06-100-082_TEM.mxd
PROJECTION: UTM 10
DATUM: NAD83

PDF FILE: 06-100-082_TEM.pdf

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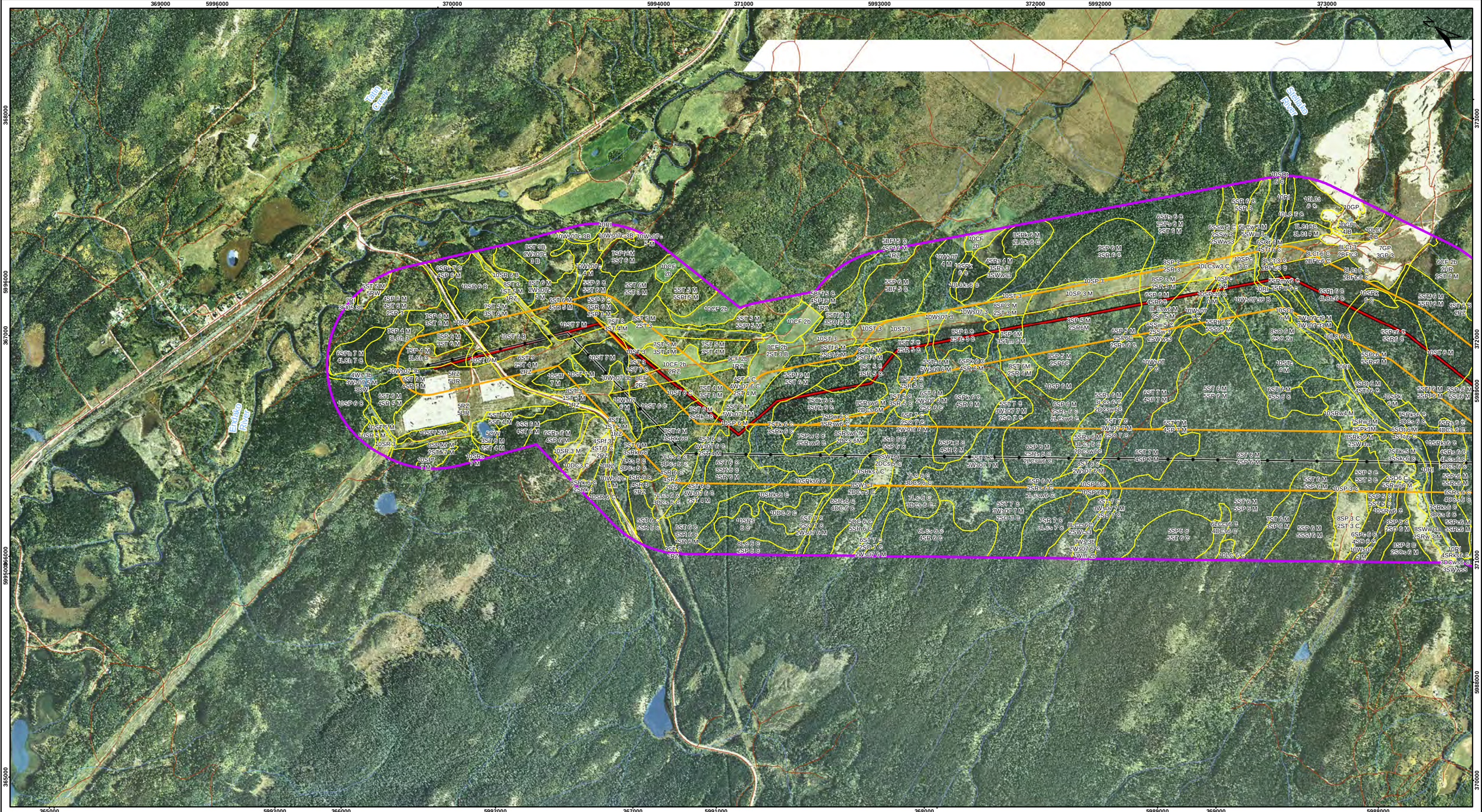


Legend

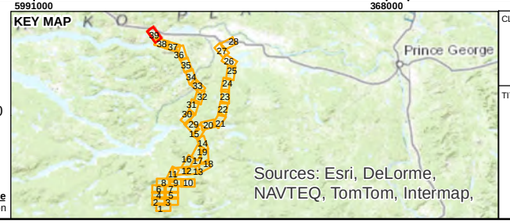
- Proposed Transmission Line
- Proposed Transmission Line (Stellako Reroute)
- Existing Road
- Stream
- Waterbody

Terrain, Soils, and Vegetation

- Regional Study Area
- Local Study Area
- Ecosystem Polygon

0 250 500 1000
Meters
Scale:1:20,000

Source
BC Government GeoBC Data Distribution



CLIENT: newgold

PROJECT: Blackwater Gold Project

TITLE: Ecosystem Map

Transmission Line and Stellako Re-route

DATE: October, 2013	ANALYST: AA	**Appendix 3.2** Page 39 of 39
JOB No: VE52277	QA/QC: MY	PDF FILE: 06-100-082_TEM.pdf
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PROJECTION: UTM 10	DATUM: NAD83	amec

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Annex 4
Plant Species at Risk

Blackwater Gold Project
Vegetation Baseline Report
Annex 4- Plant Species at Risk

Lifeform	Scientific Name	EnglishName	Status	Status	List	COSEWIC	Habitat Type
coniferous tree	*Pinus albicaulis*	whitebark pine	G3G4	S3	Blue	E (Apr 2010)	No BC CDC data available
deciduous shrub	*Salix boothii*	Booth's willow	G5	S2S3	Blue		Wet subalpine meadows, seepages, streams, lakeshores; 1500-3200 m
fern or fern-ally	*Botrychium crenulatum*	dainty moonwort	G3	S2S3	Blue		
fern or fern-ally	*Woodsia alpina* *	alpine cliff fern	G4	S2S3	Blue		Alpine/Tundra;Rock/Sparsely Vegetated Rock
forb	*Acorus americanus* *	American sweet-flag	G5	S2S3	Blue		Lakes
forb	*Agoseris lackschewitzii*	pink agoseris	G4	S2S3	Blue		Alpine/Tundra;Grassland/Shrub Steppe;Wetland;Rock/Sparsely Vegetated Rock
forb	*Chenopodium atrovirens*	dark lamb's-quarters	G5	S1	Red		Forest;Grassland/Shrub Steppe;Rock/Sparsely Vegetated Rock;Sand/Dune
forb	*Delphinium bicolor* subsp. *bicolor*	Montana larkspur	G4G5T4T5	S2S3	Blue		
forb	*Draba corymbosa* *	Baffin Bay draba	G4G5	S2S3	Blue		Alpine/Tundra;Grassland/Shrub Steppe;Stream/River;Rock/Sparsely Vegetated
forb	*Draba densifolia*	Nuttall's draba	G5	S2S3	Blue		Alpine/Tundra;Rock/Sparsely Vegetated Rock
forb	*Draba glabella* var. *glabella*	smooth draba	G4G5T4	S2S3	Blue		Alpine/Tundra;Forest;Grassland/Shrub Steppe;Wetland;Rock/Sparsely
forb	*Draba lactea* *	milky draba	G4	S2S3	Blue		Alpine/Tundra;Forest;Stream/River;Rock/Sparsely Vegetated Rock
forb	*Draba ruaxes* *	coast mountain draba	G4	S2S3	Blue		Alpine/Tundra;Grassland/Shrub Steppe;Rock/Sparsely Vegetated Rock
forb	*Draba stenopetala*	star-flowered draba	G3G4	S1	Red		Alpine/Tundra;Grassland/Shrub Steppe;Rock/Sparsely Vegetated Rock
forb	*Epilobium halleanum*	glandular willowherb	G5	S2S3	Blue		
forb	*Hedysarum occidentale*	western hedysarum	G5	S3	Blue		Alpine/Tundra;Forest;Grassland/Shrub Steppe;Rock/Sparsely Vegetated
forb	*Hulteniella integrifolia*	entire-leaved daisy	G5	S2S3	Blue		Alpine/Tundra;Grassland/Shrub Steppe;Wetland;Stream/River;Rock/Sparsely
forb	*Lomatogonium rotatum*	marsh felwort	G5	S2S3	Blue		Alpine/Tundra;Grassland/Shrub Steppe;Wetland;Rock/Sparsely Vegetated Rock
forb	*Lupinus kuschei*	Yukon lupine	G3G4	S2S3	Blue		Alpine/Tundra;Forest;Wetland;Rock/Sparsely Vegetated
forb	*Malaxis paludosa*	bog adder's-mouth orchid	G4	S2S3	Blue		Wetland
forb	*Micranthes hieraciifolia*	hawkweed-leaved saxifrage	G4	S1S3	Red		Alpine/Tundra;Grassland/Shrub Steppe;Stream/River;Rock/Sparsely Vegetated
forb	*Micranthes nelsoniana* var. *carlottae*	dotted saxifrage	G5T3?	S3	Blue		Alpine/Tundra;Wetland;Rock/Sparsely Vegetated Rock
forb	*Micranthes razshivinii*	large-petalled saxifrage	G4G5	S1S3	Red		Alpine/Tundra;Stream/River;Rock/Sparsely Vegetated Rock
forb	*Micranthes tenuis*	slender saxifrage	G4?	S1S3	Red		No BC CDC data available
forb	*Minuartia arctica*	arctic sandwort	G4	S1S3	Red		Alpine/Tundra;Grassland/Shrub Steppe;Rock/Sparsely Vegetated Rock
forb	*Minuartia austromontana*	Rocky Mountain sandwort	G4	S2S3	Blue		Alpine/Tundra;Grassland/Shrub Steppe;Rock/Sparsely Vegetated Rock
forb	*Minuartia elegans*	northern sandwort	G4G5	S2S3	Blue		Alpine/Tundra;Grassland/Shrub Steppe;Rock/Sparsely Vegetated Rock
forb	*Minuartia stricta*	rock sandwort	G5	S2S3	Blue		Alpine/Tundra;Grassland/Shrub Steppe;Wetland;Rock/Sparsely Vegetated Rock
forb	*Montia bostockii*	Bostock's montia	G3	S2S3	Blue		Alpine/Tundra;Grassland/Shrub Steppe;Rock/Sparsely Vegetated Rock
forb	*Oxytropis campestris* var. *davisii*	Davis' oxytrope	G5T3	S3	Blue		Alpine/Tundra;Forest;Grassland/Shrub Steppe;Wetland;Rock/Sparsely
forb	*Oxytropis campestris* var. *jordalii*	Jordal's oxytrope	G5T4	S2S3	Blue		Alpine/Tundra;Wetland;Rock/Sparsely Vegetated Rock;Shrubland
forb	*Oxytropis maydelliana*	Maydell's locoweed	G5	S2S3	Blue		Alpine/Tundra;Grassland/Shrub Steppe;Wetland;Rock/Sparsely Vegetated Rock
forb	*Oxytropis nigrescens* var. *uniflora*	one-flower oxytrope	G5TNR	S2S3	Blue		Alpine/Tundra;Grassland/Shrub Steppe;Rock/Sparsely Vegetated Rock
forb	*Packera ogotorukensis*	Ogotoruk Creek butterweed	G3G5	S1S3	Red		Alpine/Tundra;Wetland;Rock/Sparsely Vegetated Rock
forb	*Papaver alboroseum*	pale poppy	G3G4	S2S3	Blue		Alpine/Tundra;Grassland/Shrub Steppe;Rock/Sparsely Vegetated Rock
forb	*Parrya nudicaulis*	northern parrya	G5	SH	Red		Alpine/Tundra;Grassland/Shrub Steppe;Rock/Sparsely Vegetated Rock
forb	*Pedicularis parviflora* subsp.	small-flowered lousewort	G4T4	S3	Blue		Grassland/Shrub Steppe;Wetland;Stream/River;Rock/Sparsely Vegetated
forb	*Pedicularis verticillata*	whorled lousewort	G4	S2S3	Blue		Alpine/Tundra;Grassland/Shrub Steppe;Lakes;Wetland;Rock/Sparsely
forb	*Physaria arctica*	arctic bladderpod	G4	S2S3	Blue		Alpine/Tundra;Forest;Wetland;Rock/Sparsely Vegetated Rock
forb	*Polemonium boreale*	northern Jacob's-ladder	G5	S2S3	Blue		Alpine/Tundra;Grassland/Shrub Steppe;Rock/Sparsely Vegetated Rock
forb	*Polemonium elegans* *	elegant Jacob's-ladder	G4	S2S3	Blue		Alpine/Tundra;Forest;Grassland/Shrub Steppe;Rock/Sparsely Vegetated Rock
forb	*Potentilla biflora*	two-flowered cinquefoil	G4G5	S2S3	Blue		Alpine/Tundra;Grassland/Shrub Steppe;Rock/Sparsely Vegetated Rock
forb	*Potentilla diversifolia* var. *perdissecta*	diverse-leaved cinquefoil	G5T4	S2S3	Blue		Alpine/Tundra;Forest;Grassland/Shrub Steppe;Rock/Sparsely Vegetated Rock
forb	*Potentilla elegans*	elegant cinquefoil	G4	S1S3	Red		Alpine/Tundra;Rock/Sparsely Vegetated Rock
forb	*Potentilla ovina* var. *ovina*	sheep cinquefoil	G5?T5?	S2S3	Blue		Alpine/Tundra;Grassland/Shrub Steppe;Rock/Sparsely Vegetated Rock
forb	*Primula cuneifolia* subsp.	wedge-leaf primrose	G5TNR	S2S3	Blue		Alpine/Tundra;Grassland/Shrub Steppe;Rock/Sparsely Vegetated Rock

Lifeform	Scientific Name	EnglishName	Status	Status	List	COSEWIC	Habitat Type
forb	*Pyrola elliptica*	white wintergreen	G5	S2S3	Blue		Forest;Wetland;Rock/Sparsely Vegetated Rock
forb	*Ranunculus pedatifidus* subsp. *affinis*	birdfoot buttercup	G5T5	S2S3	Blue		Alpine/Tundra;Forest;Grassland/Shrub Steppe;Wetland;Rock/Sparsely
forb	*Ranunculus sulphureus*	sulphur buttercup	G5	S2S3	Blue		Alpine/Tundra;Grassland/Shrub Steppe;Stream/River;Rock/Sparsely Vegetated
forb	*Rumex arcticus*	arctic dock	G5	S3	Blue		Alpine/Tundra;Forest;Grassland/Shrub Steppe;Lakes;Wetland;Rock/Sparsely
forb	*Rumex paucifolius*	alpine sorrel	G5	S2S3	Blue		Alpine/Tundra;Grassland/Shrub Steppe;Wetland;Rock/Sparsely Vegetated Rock
forb	*Sagina nivalis*	snow pearlwort	G5	S2S3	Blue		Alpine/Tundra;Forest;Wetland;Rock/Sparsely Vegetated Rock
forb	*Saxifraga hirculus*	yellow marsh saxifrage	G5	S1S3	Red		No BC CDC data available
forb	*Saxifraga serpyllifolia*	thyme-leaved saxifrage	G5	S2S3	Blue		Alpine/Tundra;Stream/River;Rock/Sparsely Vegetated Rock
forb	*Senecio sheldonensis*	Mount Sheldon butterweed	G2G3	S2S3	Blue		Alpine/Tundra;Forest;Wetland;Stream/River;Rock/Sparsely Vegetated Rock
forb	*Silene drummondii* var. *drummondii*	Drummond's campion	G5T5	S3	Blue		Alpine/Tundra;Forest;Grassland/Shrub Steppe;Rock/Sparsely Vegetated
forb	*Silene involucrata* subsp. *involucrata*	arctic campion	G5T5	S2S3	Blue		Alpine/Tundra;Forest;Rock/Sparsely Vegetated Rock
forb	*Silene ostenfeldii*	Taimyr campion	G4?	S2S3	Blue		Alpine/Tundra;Grassland/Shrub Steppe;Rock/Sparsely Vegetated Rock
forb	*Silene repens*	pink campion	G5	S1S3	Red		Alpine/Tundra;Forest;Grassland/Shrub Steppe;Rock/Sparsely Vegetated Rock
forb	*Sparganium fluctuans*	water bur-reed	G5	S2S3	Blue		Lakes;Stream/River
forb	*Stuckenia vaginata* *	sheathing pondweed	G5	S2S3	Blue		Lakes;Stream/River
forb	*Symphyotrichum ascendens*	long-leaved aster	G5	S1S3	Red		Forest;Rock/Sparsely Vegetated Rock
forb	*Taraxacum hyparcticum*	high-arctic dandelion	GNR	S2?	Red		Alpine/Tundra;Rock/Sparsely Vegetated Rock
forb	*Tephroseris frigida*	purple-haired groundsel	G5	S2S3	Blue		Alpine/Tundra;Grassland/Shrub Steppe;Wetland;Rock/Sparsely Vegetated Rock
forb	*Tephroseris lindstroemii*	northern groundsel	G4	S2S3	Blue		Alpine/Tundra;Grassland/Shrub Steppe;Rock/Sparsely Vegetated Rock
forb	*Tephroseris yukonensis*	Yukon groundsel	G4G5Q	S2S3	Blue		Alpine/Tundra;Wetland;Rock/Sparsely Vegetated Rock
forb	*Tofieldia coccinea*	northern false asphodel	G5	S2S3	Blue		Alpine/Tundra;Grassland/Shrub Steppe;Rock/Sparsely Vegetated Rock
forb	*Utricularia ochroleuca*	ochroleucous bladderwort	G4?	S2S3	Blue		Lakes
forb	*Viola biflora* subsp. *carlottae*	Queen Charlotte twinflower violet	G5T3	S3	Blue		Alpine/Tundra;Grassland/Shrub Steppe;Wetland;Stream/River;Rock/Sparsely
graminoid	*Arctophila fulva*	pendantgrass	G5	S2S3	Blue		Wetland;Stream/River
graminoid	*Carex backii* *	Back's sedge	G4	S2S3	Blue		Forest;Grassland/Shrub Steppe;Lakes;Wetland;Rock/Sparsely Vegetated Rock
graminoid	*Carex bicolor**	two-coloured sedge	G5	S2S3	Blue		Alkali Pond/Salt flat;Alpine/Tundra;Grassland/Shrub
graminoid	*Carex enanderi*	Enander's sedge	GNR	S2S3	Blue		Alpine/Tundra;Grassland/Shrub
graminoid	*Carex fuliginosa* subsp. *misandra*	short-leaved sedge	G5	S2S3	Blue		Alpine/Tundra;Rock/Sparsely Vegetated Rock
graminoid	*Carex incurviformis* var. *incurviformis*	curved-spiked sedge	G4G5T4T5	S2S3	Blue		Alpine/Tundra;Forest;Grassland/Shrub Steppe;Rock/Sparsely Vegetated Rock
graminoid	*Carex membranacea*	fragile sedge	G5	S2S3	Blue		Alpine/Tundra;Forest;Lakes;Wetland;Stream/River;Rock/Sparsely Vegetated
graminoid	*Carex petricosa*	rock-dwelling sedge	G4	S2S3	Blue		Alpine/Tundra;Wetland;Rock/Sparsely Vegetated Rock
graminoid	*Carex rostrata**	swollen beaked sedge	G5	S2S3	Blue		Wetland
graminoid	*Carex rupestris* subsp.	curly sedge	G5T5	S2S3	Blue		Alpine/Tundra;Grassland/Shrub Steppe;Rock/Sparsely Vegetated Rock
graminoid	*Carex rupestris* subsp. *rupestris*	curly sedge	G5T5?	S2S3	Blue		Alpine/Tundra;Grassland/Shrub Steppe;Rock/Sparsely Vegetated
graminoid	*Carex sychnocephala*	many-headed sedge	G4	S3	Blue		Grassland/Shrub Steppe;Lakes;Wetland;Rock/Sparsely Vegetated Rock
graminoid	*Carex tenera**	tender sedge	G5	S2S3	Blue		Alpine/Tundra;Forest;Lakes;Wetland;Rock/Sparsely Vegetated Rock
graminoid	*Carex tonsa* var. *tonsa*	bald sedge	G5T5	S2S3	Blue		Forest;Rock/Sparsely Vegetated Rock;Sand/Dune;Shrubland
graminoid	*Eleocharis elliptica*	elliptic spike-rush	G5	S2S3	Blue		Lakes;Wetland
graminoid	*Festuca minutiflora*	little fescue	G5	S2S3	Blue		Alpine/Tundra;Rock/Sparsely Vegetated Rock
graminoid	*Glyceria pulchella*	slender mannagrass	G5	S2S3	Blue		Lakes;Wetland
graminoid	*Juncus albescens*	whitish rush	G5	S2S3	Blue		Alpine/Tundra;Forest;Grassland/Shrub
graminoid	*Juncus stygius**	bog rush	G5	S2S3	Blue		Lakes;Wetland
graminoid	*Kobresia sibirica*	Siberian kobresia	G5	S2S3	Blue		Alpine/Tundra;Wetland;Stream/River;Rock/Sparsely Vegetated Rock
graminoid	*Luzula confusa*	northern wood-rush	G5	S2S3	Blue		Alpine/Tundra;Grassland/Shrub Steppe;Rock/Sparsely Vegetated Rock
graminoid	*Luzula groenlandica*	Greenland wood-rush	G4	S2S3	Blue		Alpine/Tundra;Grassland/Shrub Steppe;Rock/Sparsely Vegetated Rock
graminoid	*Luzula kjellmaniana*	Kjellman's wood-rush	GNR	S2S3	Blue		Alpine/Tundra;Grassland/Shrub Steppe;Rock/Sparsely Vegetated Rock

Lifeform	Scientific Name	EnglishName	Status	Status	List	COSEWIC	Habitat Type
graminoid	*Luzula nivalis*	arctic wood-rush	G5	S2S3	Blue		Alpine/Tundra;Grassland/Shrub Steppe;Wetland;Rock/Sparsely Vegetated Rock
graminoid	*Melica spectabilis*	purple oniongrass	G5	S2S3	Blue		Alpine/Tundra;Forest;Grassland/Shrub
graminoid	*Phippsia algida*	frigid phippsia	G5	S3?	Blue		Alpine/Tundra;Wetland;Stream/River;Rock/Sparsely Vegetated Rock
graminoid	*Poa abbreviata* subsp. *pattersonii*	abbreviated bluegrass	G5T5	S2S3	Blue		Alpine/Tundra;Grassland/Shrub Steppe;Rock/Sparsely Vegetated Rock
graminoid	*Torreyochloa pallida**	Fernald's false manna	G5	S1	Red		Lakes;Wetland
moss	*Amblystegium varium*	willow feathermoss	G5	S2S4	Blue		Forests; anthropogenic
moss	*Andreaea rupestris* var. *papillosa*	rough rock-moss	G5TNR	S1	Red		Neutral to acidic boulders, cliffs and walls, generally wet sites
moss	*Atrichum tenellum*	slender smoothcap	G4G5	S2S3	Blue		Clay or sandy soil, especially in exposed habitats, beside streams, in roadside
moss	*Aulacomnium acuminatum*	acutetip aulacomnium moss	G3?	S2S3	Blue		Dry to moist Arctic tundra meadows, hummocks, polygon edges, organic or
moss	*Brachythecium calcareum*	calcareous brachythecium moss	G3G4	S3	Blue		Calcareous cliffs in forest; Calcareous wetland; Calcareous barrens
moss	*Brachythecium campestre*	brachythecium moss	G4G5Q	S2S3	Blue		On rocks, especially calcareous, in mesic to wet places, often near waterfalls,
moss	*Brachythecium holzingeri*	Holzinger's brachythecium moss	GU	S2S3	Blue		Forest, on decaying wood
moss	*Brachythecium reflexum* var.	reflexed ragged-moss	G4G5TNR	S1	Red		Forest, alder and willow thickets
moss	*Brachythecium trachypodium*	Lawer's ragged-moss	GU	S2S3	Blue		No BC CDC data available
moss	*Bryoerythrophyllum ferruginascens*	rufous beard-moss	G3G4	S1S2	Red		No BC CDC data available
moss	*Bryum calobryoides*	bryum moss	G3	S1S2	Red		No BC CDC data available
moss	*Bryum calophyllum*	blunt thread-moss	G5?	S1S2	Red		No BC CDC data available
moss	*Bryum gemmiparum*	Welsh thread-moss	G3G5	S3	Blue		No BC CDC data available
moss	*Campylium radicale*	campylium moss	G3G5	S2S3	Blue		No BC CDC data available
moss	*Cinclidium arcticum*	arctic cinclidium moss	G4G5	S2S3	Blue		No BC CDC data available
moss	*Didymodon rigidulus* var.	rigid didymodon moss	G5TNR	S2S3	Blue		No BC CDC data available
moss	*Encalypta brevicolla*	white-mouthed extinguisher-moss	G4	S2S3	Blue		No BC CDC data available
moss	*Encalypta brevipes*	candle snuffer moss	G3	S2S3	Blue		No BC CDC data available
moss	*Encalypta longicolla*	candle snuffer moss	G3	S2S3	Blue		No BC CDC data available
moss	*Encalypta spathulata*	spathulate candle snuffer moss	G4	S2S3	Blue		No BC CDC data available
moss	*Funaria muhlenbergii*	Muhlenberg's cord-moss	G4	S3?	Blue		No BC CDC data available
moss	*Grimmia mollis*	grimmia dry rock moss	G3G5	S2S3	Blue		No BC CDC data available
moss	*Hygrohypnum alpestre*	hygrohypmum moss	G3G5	S3	Blue		No BC CDC data available
moss	*Hygrohypnum alpinum*	alpine hygrohypnum moss	G4G5	S3	Blue		No BC CDC data available
moss	*Hygrohypnum polare*	polar brook-moss	G5?	S1S2	Red		No BC CDC data available
moss	*Lescuraea saxicola*	lescuraea moss	G4G5	S3	Blue		No BC CDC data available
moss	*Meesia longiseta*	meesia moss	G4?	S3	Blue		No BC CDC data available
moss	*Mnium arizonicum*	Arizona calcareous moss	G5?	S2S3	Blue		No BC CDC data available
moss	*Molendoa sendtneriana*	Sendtner's molendoa moss	G3G4	S2S3	Blue		No BC CDC data available
moss	*Oreas martiana*	oreas moss	G5?	S2	Red		No BC CDC data available
moss	*Orthothecium strictum*	orthothecium moss	G5?	S2S3	Blue		No BC CDC data available
moss	*Orthotrichum cupulatum*	hooded bristle-moss	G4G5	S2S3	Blue		No BC CDC data available
moss	*Orthotrichum pallens*	pale bristle-moss	G5	S3	Blue		No BC CDC data available
moss	*Philonotis yezoana*	philonotis moss	G2G3	S2S3	Blue		No BC CDC data available
moss	*Physcomitrium pyriforme*	common bladder-moss	G5	S3	Blue		No BC CDC data available
moss	*Plagiobryum demissum*	alpine hump-moss	G3G5	S1S2	Red		No BC CDC data available
moss	*Platyhypnidium riparioides*	riparian beaked-moss	G4	S3?	Blue		No BC CDC data available
moss	*Pohlia bulbifera*	blunt-bud thread-moss	G4G5	S2	Blue		No BC CDC data available
moss	*Pohlia crudoides*	red thread-moss	G2G4	S2S3	Blue		In tundra, on banks and in depressions
moss	*Pohlia elongata*	long-fruited thread-moss	G4G5	S3	Blue		No BC CDC data available
moss	*Pohlia sphagnicola*	pohlia moss	G2G3	S2S3	Blue		No BC CDC data available

Lifeform	Scientific Name	EnglishName	Status	Status	List	COSEWIC	Habitat Type
moss	*Pohlia vexans*	pohlia moss	G3G5	S2S3	Blue		No BC CDC data available
moss	*Pseudobryum cinclidioides*	river thyme-moss	G5	S2	Red		No BC CDC data available
moss	*Pseudocalliergon turgescens*	turgid scorpion-moss	G3G5	S3	Blue		No BC CDC data available
moss	*Psilopilum cavifolium*	psilopilum moss	G3G5	S1S2	Red		No BC CDC data available
moss	*Racomitrium panschii*	Pansch's racomitrium moss	GU	S1	Red		No BC CDC data available
moss	*Racomitrium pygmaeum*	pygmy racomitrium moss	GU	S3?	Blue		No BC CDC data available
moss	*Schistidium atrichum*	no common name	GNR	S1S3	Red		No BC CDC data available
moss	*Schistidium boreale*	no common name	GNR	S2S3	Blue		No BC CDC data available
moss	*Schistidium trichodon*	stook grimmia	G2G4	S3	Blue		No BC CDC data available
moss	*Sphagnum jensenii*	Jensen's sphagnum	GU	S1S2	Red		No BC CDC data available
moss	*Splachnum vasculosum*	rugged collar-moss	G3G5	S2S4	Blue		No BC CDC data available
moss	*Steerecleus serrulatus*	steerecleus moss	G5	S1S2	Red		No BC CDC data available
moss	*Stegonia pilifera*	stegonia moss	G5T5?	S1S2	Red		No BC CDC data available
moss	*Tayloria froelichiana*	Froelich's dung moss	G3G5	S2S3	Blue		No BC CDC data available
moss	*Tetraplodon pallidus*	pale nitrogen moss	GU	S1S2	Red		No BC CDC data available
moss	*Timmia norvegica*	Norway timmia	G4	S3	Blue		No BC CDC data available
moss	*Tomentypnum falcifolium*	sickleleaf tomentypnum moss	G3G5	S3	Blue		No BC CDC data available
moss	*Tortula leucostoma*	desmatodon moss	G2G4	S3	Blue		No BC CDC data available
moss	*Tortula systylia*	desmatodon moss	G4G5	S2	Red		No BC CDC data available
moss	*Ulota curvifolia*		G3G5	S3	Blue		No BC CDC data available
moss	*Warnstorfia tundrae*	tundra warnstorfia moss	GU	S2	Red		No BC CDC data available