
Appendix 7.1.4A
Visual Resources 2013 Baseline Report



Blackwater Gold Project

2013 Baseline Report Visual Resources

Prepared for:
New Gold Inc.
Suite 1800 – 555 Burrard Street
Vancouver, BC

Prepared by:
AMEC Environment & Infrastructure
a division of AMEC Americas Ltd.
Suite 600, 4445 Lougheed Hwy
Burnaby, BC V5C 5A9

April 2015

TABLE OF CONTENTS

ACRONYMS..... I

GLOSSARY..... II

EXECUTIVE SUMMARY..... III

1.0 INTRODUCTION 1

 1.1 Scope of Work 1

 1.2 Objectives 1

2.0 METHODS..... 2

 2.1 Information Sources 2

 2.2 Methods for Data Collection and Data Analysis 3

 2.2.1 Mapping and Analyses 3

 2.2.1.1 Study Area Rationale 3

 2.2.2 Viewshed Analysis..... 6

 2.2.3 Mine Site Study Area..... 6

 2.2.4 Linear Features Study Areas..... 10

 2.2.5 Mapping of Known Recreation Locations and Values..... 13

 2.2.6 Mapping of Known Protected Areas 14

 2.2.7 Photographic Survey 14

 2.2.8 Artificial Light 15

 2.2.9 Airstrip..... 16

 2.2.10 Assumptions and Limitations..... 16

3.0 RESULTS/DISCUSSION 17

 3.1 Local and Regional Land Use Planning 17

 3.1.1 Vanderhoof Land and Resource Management Plan (LRMP)..... 17

 3.1.2 Vanderhoof Vanderhoof Access Management Plan (AMP) 17

 3.1.3 Government Actions Regulation Orders – Scenic Areas and Visual Quality Objectives..... 18

 3.1.4 Government Actions Regulation 2008..... 18

 3.2 Mine Site Study Area..... 21

 3.2.1 Current Land Use and Site Conditions 21

 3.2.2 Recreation Locations and Values..... 22

 3.2.3 Photographic Survey 26

 3.3 Transmission Line Study Area 27

 3.3.1 Current Land Use and Site Conditions 28

 3.3.2 Recreation Locations and Values..... 29

 3.3.3 Photographic Survey 32

 3.4 Kluskus FSR Access Road Study Area..... 33

 3.4.1 Current Land Use and Site Conditions 33

 3.4.2 Recreation Sites 33

 3.4.3 Photographic Survey 35

 3.5 Fresh Water Pipeline Study Area 35

 3.5.1 Current Land Use and Site Conditions 36

 3.5.2 Recreation Locations and Values..... 36

 3.6 Light Pollution – Current Conditions in Southern BC 36

 3.7 Airstrip and Airstrip Access Road Study Areas 38

 3.7.1 Current Land Use and Site Conditions 38

 3.7.2 Recreation Locations and Values..... 38

4.0 CONCLUSIONS 38

REFERENCES 40

List of Tables

Table 2.1-1: Information Sources 2

Table 2.2-1: Total Area, in Hectares, for Each Study Area 11

Table 2.2-2: Visual Sensitivity Class Descriptions 13

Table 2.2-3: Recreation Sensitivity and Significance Ratings 13

Table 3.1-1: Established Visual Quality Objectives for Scenic Areas 19

Table 3.2-1: Photo Viewpoint Baseline Views in the Mine Site Study Areas 26

Table 3.2-2: Landscape Rating for Photo Viewpoints in the Mine Site Study Areas 27

Table 3.3-1: Photo Viewpoint Baseline Views along the Proposed Transmission Line 32

Table 3.3-2: Landscape Rating for Photo Viewpoints along the Proposed Transmission Line 32

Table 3.4-1: Baseline Views of Photo Viewpoints along the Kluskus FSR Access Road 35

Table 3.4-2: Landscape Rating for Photo Viewpoints along the Kluskus FSR Access Road 35

List of Figures

Figure 2.2-1: Topography of the Non-Traditional Land Use Regional Study Area 4

Figure 2.2-2: Topography of the Chedakuz Creek Valley 5

Figure 2.2-3: Viewshed Analyses of Selected Mine Site Facilities 7

Figure 2.2-4: Viewshed Analyses of the Proposed Transmission Line 8

Figure 2.2-5: Viewshed Analyses of the Proposed Fresh Water Pipeline 9

Figure 2.2-6: Graphic Illustration and Specification of the Proposed Transmission Line 10

Figure 2.2-7: Visual Resources Study Areas 12

Figure 2.2-8: Natural and Artificial Lighting 16

Figure 3.1-1: Scenic Areas with Established Visual Quality Objectives 20

Figure 3.2-1: Recreational and Scenic Resources in Mine Site Study Areas 24

Figure 3.2-2: Photograph Viewpoints in the Mine Site Study Areas 25

Figure 3.3-1: Recreation Values Near the Proposed Transmission Line Study Areas 30

Figure 3.3-2: Photograph Viewpoints in the Proposed Transmission Line Study Areas 31

Figure 3.4-1: Photograph Viewpoints in the Kluskus FSR Access Road LSA 34

Figure 3.6-1: Artificial and Natural Sky Brightness 37

List of Annexes

Annex 1: Photographs Taken From Viewpoints in the Visual Resources Study Areas

ACRONYMS

Abbreviations and Units of Measure	Definition
AMP	Access Management Plan
ATV	All-Terrain Vehicles
BC	British Columbia
BC ILMB	British Columbia Integrated Land Management Bureau
BC MCSCD	British Columbia Ministry of Community, Sport, and Cultural Development
BC MFLNRO	British Columbia Ministry of Forests, Lands and Natural Resource Operations
BC MOF	British Columbia Ministry of Forests
CEA	Cumulative Effects Assessment
DEM	Digital Elevation Model
DRA	Digital Road Atlas
EI.	elevation
FSR	Forestry Service Roads
FWA	Freshwater Atlas
GIS	Geographic Information System
GPS	Global Positioning System
ha	hectare
km	kilometre
km ²	square kilometre
LRDW	Land and Resource Data Warehouse
LRMP	Land and Resource Management Plan
LSA	Local Study Area
m	metre
Mm ³ /y)	million cubic metres per year
mags/sq arcsec	magnitudes per square arcsecond
MPB	Mountain Pine Beetle
MTN	Mountain
NRC	United States Nuclear Regulatory Commission (NRC)
NTLU	Non-Traditional Land Use
Project (the)	Proposed New Gold Blackwater Gold Project
RFI	Recreation Features Inventory
RFP	Recreation Features Polygon
RMZ	Resource Management Zone
RRSF	Rejects Rock Storage Facility
RSA	Regional Study Area

Abbreviations and Units of Measure	Definition
SA	Study Area
SMZ	Special Management Zone
TRIM	Terrain Resource Information Management
TSA	Timber Supply Area
TSF	Tailings Storage Facility
UA	Unclassified Area
USDI BLM	United States Department of the Interior, Bureau of Land Management
UTM	Universal Transverse Mercator
VAC	Visual Absorption Capacity
VC	Viewing Condition
VFD	Vanderhoof Forest District
VLI	Visual Landscape Inventory
VQO	Visual Quality Objectives
VR	Viewer Rating
VSC	Visual Sensitivity Class

GLOSSARY

Geomorphology	The science of surface landforms dealing with the general configuration of the surfaces of the earth and the processes that shaped them
Hillshade	Raster based imagery that simulates cast shadow of the sun upon a raised relief map
Natural Breaks (Jenks)	A data classification method designed to determine the best arrangement of values into different classes
Line-of-sight	An imaginary line representing an unobstructed path between the eye of a potential observer and a perceived object
Topography	Features of the earth comprising relief or terrain, the three-dimensional quality of the surface, and the identification of specific landforms
Scenic Quality	The measure of visual appeal of a tract of land, determined by examining landscape features such as topography, vegetation, and water features
Viewer Sensitivity	A measure of public concern for scenic quality
Visibility	The ability to have a clear and unobstructed view towards prominent objects with the naked eye, taking landscapes, vegetation cover, and climatic conditions into account
Viewshed	An area of land, water, or other environmental element visible to the human eye from a fixed vantage point
Visual Aesthetics	The study of psychological responses to appearances

EXECUTIVE SUMMARY

This Visual Resources Baseline Report presents an overview of the visual resources within the proposed Blackwater Gold Project (the Project) study areas. The information contained in this baseline report will support the social and environmental Cumulative Effects Assessments. To facilitate the review of available visual resources baseline information, Local Study Areas (LSAs) and Regional Study Areas (RSAs) were delineated for the mine site study area, proposed transmission line and fresh water pipeline, and a section of the access road.

The mine site LSA and RSA do not overlap with any defined Special Management Zones (SMZs) falling within the Resource Development Emphases Zone of the Vanderhoof Land and Resource Management Plans (LRMP). The proposed transmission line passes through resource development and multi-value emphasis zones, with the exception of the Nechako River Crossing, which is zoned as a Special Resource with the aim of attracting tourists, encouraging longer stays, and providing opportunities for growth in sustainable recreation.

The Government Actions Regulation (GAR), pursuant to the British Columbia (BC) *Forest and Range Practices Act (FRPA)* (Government of BC, 2002), has established scenic areas and Visual Quality Objectives (VQOs). A desktop-based inventory using a variety of Geographic Information System (GIS) based data sources was used to delineate and record potentially visually sensitive areas, and to map and describe the Visual Landscape Inventory (VLI), Recreation Features Inventory (RFI), and VQOs.

In the mine site RSA, locations with high recreation significance rating are located along the Nechako Range, on Tsacha Mountain, and on the west slopes of Mount Davidson. Areas with high visual sensitivity ratings are located around the major lakes and the west slopes of Tatelkuz and Kuyakuz Mountains, as well as the south slope of Tsacha Mountain. In addition, the Vanderhoof Access Management Plan (AMP) was reviewed to gain an accurate understanding of viewer sensitivity and expectations of scenic quality, as well as the level of access (motorized, non-motorized) to areas with recreation significance.

Following a review of potentially sensitive viewpoints and land uses in the area, photographs were taken from pre-selected locations looking towards the proposed Project during a field visit in March 2012. These photographs were used to record baseline views and rate scenic quality and expected viewer sensitivity. Locations within a natural setting, where water features dominate immediate views, and ridgelines and mountains free of forest cutblocks and clearings framing distant views, were classified as having a high scenic quality (e.g., Kuyakuz Lake and Brewster Lake).

The viewshed surrounding the proposed mine site is predominated by scattered logged areas, forest service roads (FSRs), and remaining second- or third-growth forests. Private land is confined to the north of Tatelkuz Lake, where two cattle ranches are located, with one commercial lodge offering accommodation and outdoor activities. In the northern

sections of the proposed transmission line study area, private land is clustered around major lakes and rivers, with ranches associated with various range tenures, becoming fewer towards the less-populated south.

The topography of the proposed mine site area consists of the Nechako and Fawnie mountain ranges, with ridgelines, hills, and valleys sloping gradually towards the Chedakuz drainage system flowing through Kuyakuz and Tatelkuz Lakes. The boundaries of the Lower Nechako Regional Watershed, located along the skylines of Mount Davidson, immediately west and south of the proposed mine site, limits visibility within the Davidson Creek basin. The proposed transmission line crosses various low mountains (Nithi, Greer, Nulki) and rivers (Stellako, Nechako, Big Bend) and crosses the Nechako Plateau from Endako to the Davidson Creek basin. Viewshed analyses were generated to align study area boundaries and describe visibility conditions, which were generally confined to viewsheds along the main FSRs and open up somewhat when traversing an elevated ridgeline and/or when travelling next to a clear-cut forest block.

There are four recreation sites located within the mine site RSA, where viewsapes are managed to maintain scenic quality. The Messue Wagon Road Heritage Trail crosses through the area along Chedakuz Creek, but is accessed less frequently than the Alexander Mackenzie Trail along the Blackwater River to the south, within the Euchino Lake Regional Watershed. Heritage trails of similar character are located along the transmission line RSA (Telegraph and Holy Cross), with recreation sites associated with water bodies along the proposed alignment also being included in the photographic evaluation (Brewster Lake, Greer Creek). No recreation viewpoints or view lines are located in the study areas.

A description of the baseline visual resources environment is subsequently presented to support the selection of valued components, which will be carried forward into the effects assessment.

1.0 INTRODUCTION

This visual resources baseline report presents an overview of visual resources within the proposed Blackwater Gold Project (the Project) local and regional study areas. The information contained in this baseline report will support the social and environmental Cumulative Effects Assessments for the Project.

1.1 Scope of Work

Visual Resources support a wide range of recreation activities throughout British Columbia (BC) and public acceptance of a proposed project may be strongly influenced by its visual effects. The visual resources baseline information review focuses on current baseline characteristics of the local and regional environment. The scope of this baseline was determined by reviewing available information and by generating viewshed analyses to delineate representative study areas to ensure potential Project effects are adequately captured. Provided below is a description of Local Study Areas (LSAs) where the proposed mine site and linear features may have an effect on existing land uses depending on the current visual resources, and of Regional Study Areas (RSAs) from where specific viewpoints or recreation sites may be affected at a greater distance.

Scenic quality, general visibility and effects of current land uses, are described to create an accurate setting to assess baseline views and landscape ratings. Viewpoints were identified near permanent residents, recreation sites, and landscape features important for First Nations communities and other stakeholders. In addition, selected general locations are described to illustrate the broad character of landscapes to passing viewers.

1.2 Objectives

The goal of compiling the visual resources baseline is to gather sufficient information about current visual resources, to understand the value and determine the location of landscape features supporting recreational and cultural activities in the study areas. This includes such aspects as topography, vegetation cover, current land uses and landscape features attributed with recreational significance and scenic quality by the public. Specific objectives are:

- Identify areas where proposed mine site facilities and linear features may affect the current scenic quality in the area;
- Identify strategic locations and take photographs from viewpoints where visitors and permanent residents are expected to congregate; and
- Document current baseline characteristics, scenic quality, and viewer sensitivity to serve as a baseline condition for the affects assessment.

2.0 METHODS

2.1 Information Sources

This visual resources baseline report was compiled using information provided in baseline reports from other disciplines, such as the Non-Traditional Land Use (NTLU) and Transportation baseline reports, as well as the Project Description (AMEC, 2012). Data was gathered during a field visit to catalogue site conditions affecting visual resources and to take photographs from identified viewpoints.

Table 2.1-1: Information Sources

Backroad Mapbook	Mountain peaks and ranges as well as other local places of interest: Cariboo Chilcotin Coast BC. Backroad Mapbook (Mussio Ventures, 2010). 2 nd Edition
BC Ministry of Forests, Lands and Natural Resource Operations (BC MFLNRO)	Forestry Cut Blocks http://www.gov.bc.ca/for/
British Columbia Ministry of Community, Sport, and Cultural Development (BC MCSCD)	BC Recreation Sites and Trails: Recreational resources located in the backcountry for general enjoyment of nature and outdoor activities British Columbia Ministry of Community, Sport, and Cultural Development (BC MCSCD) http://www.sitesandtrailsbc.ca/about/
BC Hydro	Existing transmission lines and stations http://www.bchydro.com
Draft Application Information Requirements	Project Description: Application for an Environmental Assessment Certificate, New Gold, February 2013
GeoBC Data Distribution	Background information and infrastructure: provincial geographic information and services provided by various ministries and agencies in the natural resource sector http://geobc.gov.bc.ca/ Forestry Service Roads: the Digital Road Atlas (DRA) program exists to provide a single, authoritative source of road data for the province Digital Elevation Model and Hillshade: Terrain Resource Information Management Program (TRIM), BC gridded Digital Elevation Model (30 m resolution) Land Tenures: Integrated Cadastral Fabric (ICF) delineating the extent and nature of land parcels (both Crown and privately held) in British Columbia (Tantalis spatial data) http://archive.ilmb.gov.bc.ca/crgb/products/mapdata/integrated_cadastral_fabric.htm Lakes and rivers of the region: freshwater atlas that defines watershed boundaries and provides a stream and lake network for water management and fisheries information Recreation Locations: Recreation sites, and trails Recreation Features Inventory (RFI): Sensitive and Significant recreation resources Visual Landscape Inventory (VLI): Areas of visual sensitivity near communities and along travel corridors
Vanderhoof Land and Resource Management Plan (LRMP)	Management Zones and Guidelines http://ilmbwww.gov.bc.ca/slrp/lrmp/princegeorge/vanderhf/index.html

2.2 Methods for Data Collection and Data Analysis

2.2.1 Mapping and Analyses

ArcGIS 10 software was used to conduct mapping and create supporting figures. Data used to generate the figures came from a variety of sources, including pre-existing shape files and geo-databases within the local GIS department. Additional shape files were downloaded from the BC Land and Resource Data Warehouse. Photographs were captured from identified viewpoints using a digital camera with built-in GPS receiver.

Spatial layers mapped for extent of the NTLU RSA were interrogated to identify data layers associated with visual resources. A Digital Elevation Model (DEM) was classified using natural breaks (Jenks)¹ to highlight the most prominent features affecting landscape character and visibility. Background information, such as populated places, public roads and FSRs, parks and protected areas, and private land and mountain peaks, were mapped to provide context for the study area.

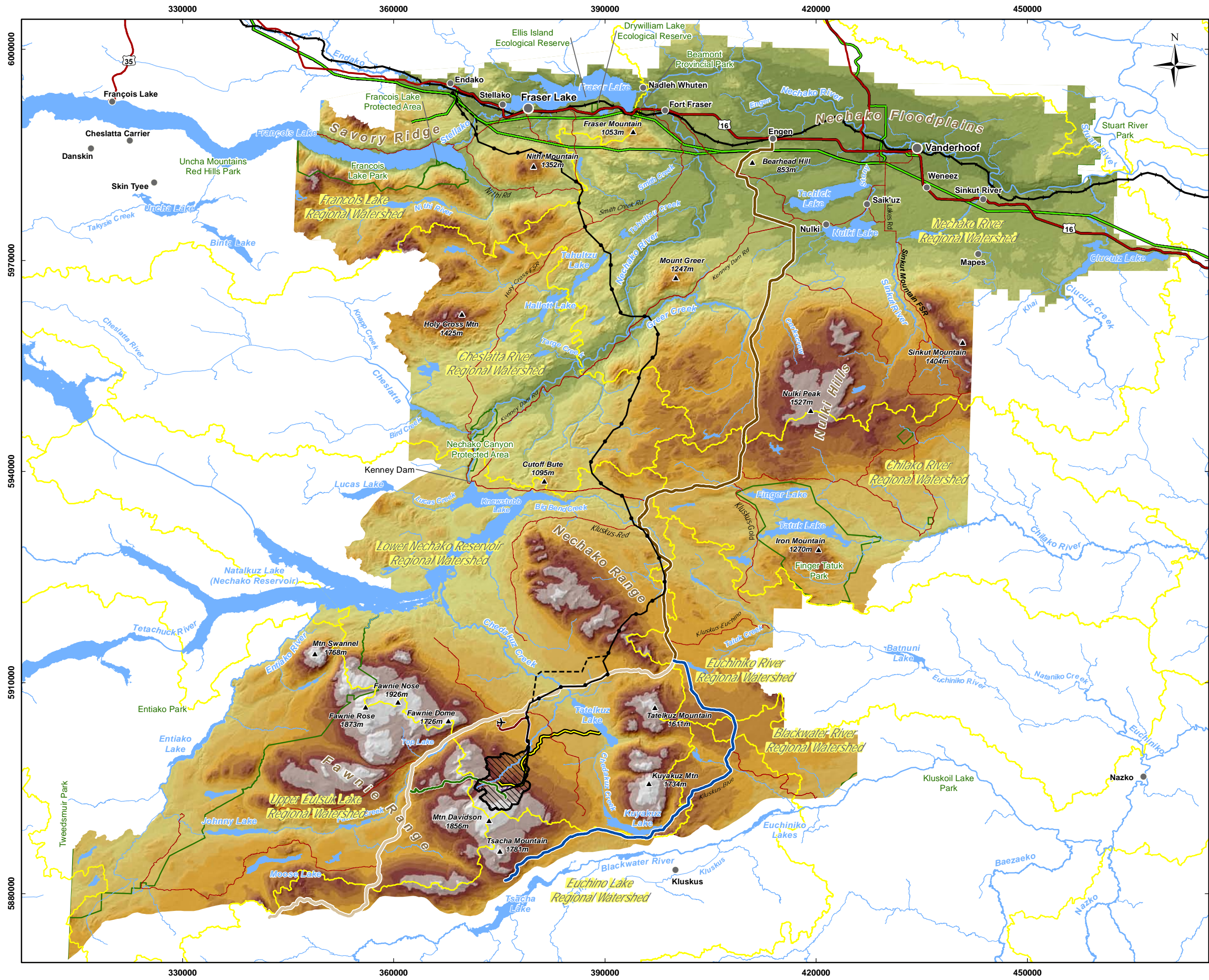
2.2.1.1 *Study Area Rationale*

To facilitate the review of available baseline information, the following distinct study areas were delineated, identifying areas where line of sight may occur with the proposed facilities.

- Proposed mine site LSA and RSA;
- Proposed transmission line LSA and RSA;
- Proposed fresh water pipeline LSA;
- Proposed Kluskus FSR access road LSA;
- Proposed Airstrip LSA and RSA.

Within these study areas, the topography was mapped to highlight landscapes influencing visibility. Private land, rangeland, forest cutblocks, and recreation sites were mapped to identify current land uses and identify stakeholders that may be affected by the Project. Landscapes classified as having recreation significance that supporting leisure activities were mapped as well as scenic areas that will result in public concern if altered.

¹ A data classification method designed to determine the best arrangement of values into different classes.



Legend

- Populated Place
- ▲ Spothight
- ⬮ Highway
- ⬮ Railway
- Existing Transmission Line
- ▭ Parks and Protected Areas
- ▭ Regional Watersheds

Forestry Service Roads (FSR)

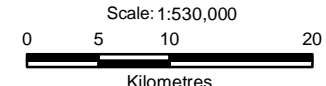
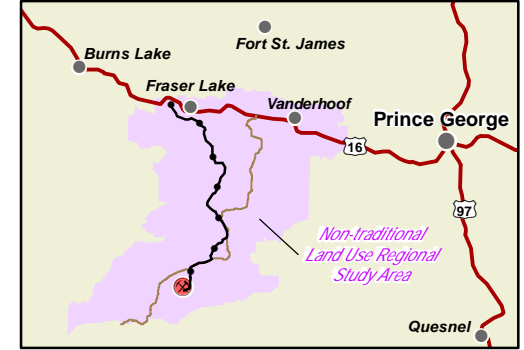
- Kluskus FSR
- Kluskus-Ootsa FSR
- Kluskus-Blue FSR
- Other FSRs

Project Components

- ✚ Proposed Airstrip
- Proposed Airstrip Access Road
- Proposed Transmission Line
- - - Proposed Transmission Line Reroute
- Proposed Mine Access Road
- Proposed Fresh Water Pipeline
- Exploration Road
- ▭ Proposed Mine Site

Elevation (masl)

1,542 - 1,930	1,081 - 1,140
1,381 - 1,541	901 - 1,080
1,321 - 1,380	841 - 900
1,201 - 1,321	721 - 840
1,141 - 1,200	624 - 720



Reference
 BC Government GeoBC Data Distribution
 NRCAN Geobase
 Ministry of Forests, Lands and Natural Resource Operations

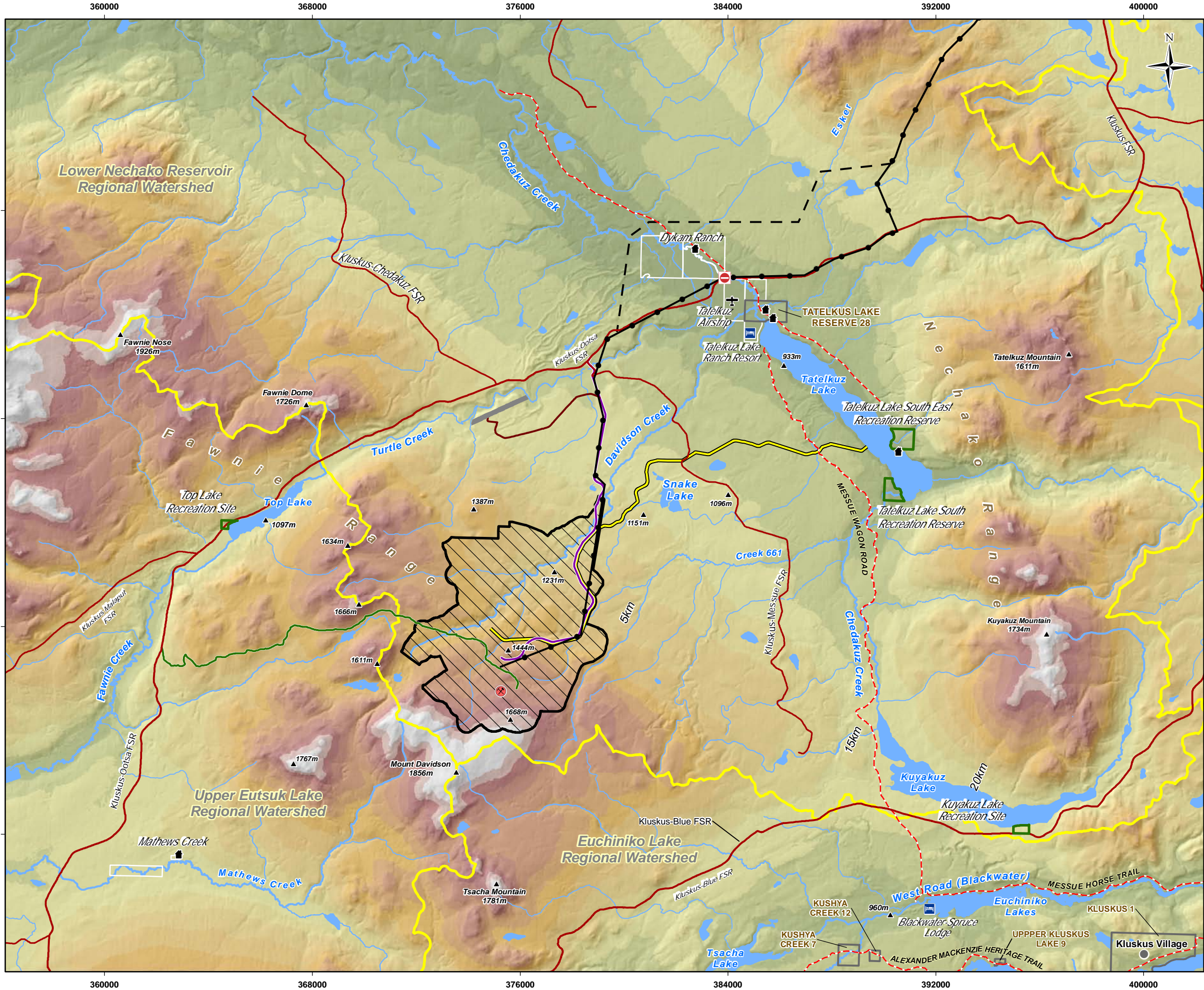
CLIENT: **newgold**

PROJECT: **Blackwater Gold Project**

Topography of the Non-Traditional Landuse Regional Study Area

DATE: December, 2013	ANALYST: AA	Figure 2.2-1
JOB No: VE52277	QA/QC: SB	PDF FILE: 19-04_TopographyPTL_v2.pdf
GIS FILE: 19-04_TopographyPTL_v2.mxd		amec
PROJECTION: UTM Zone 10	DATUM: NAD83	

X:\GIS\Projects\VE\VE52095_Richfield_Blackwater\Mapoin19_Visual_Aesthetics\Baseline19_04_TopographyPTL_v2.mxd



Legend

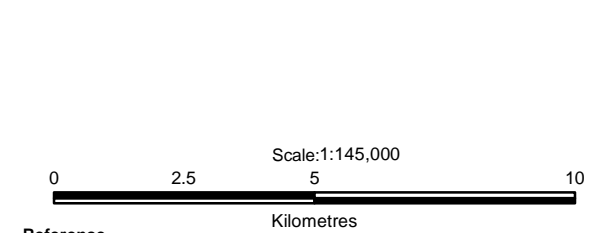
- Populated Place
- ▲ Spothights
- ⊘ Restricted Access
- Forestry Service Roads
- Logging roads
- - - Recreation Trails
- ▭ Recreation Sites
- ▭ Private Land
- ▭ Indian Reserves
- ▭ Regional Watersheds

Project Components

- ⊗ Blackwater Camp
- Exploration Road
- Proposed Mine Access Road
- Proposed Transmission Line
- - - Proposed Transmission Line Reroute
- Proposed Fresh Water Pipeline
- Proposed Airstrip Access Road
- ▭ Proposed Airstrip Extent
- ▭ Proposed Mine Site

Elevation (masl)

- 1,681 - 1,925
- 1,621 - 1,680
- 1,561 - 1,620
- 1,501 - 1,560
- 1,441 - 1,500
- 1,376 - 1,440
- 1,316 - 1,375
- 1,251 - 1,315
- 1,201 - 1,250
- 1,136 - 1,200
- 1,076 - 1,135
- 1,015 - 1,075
- 850 - 950



Reference
 BC Government GeoBC Data Distribution
 BCGOV FLNRO Recreation Sites and Trails Branch

CLIENT:

PROJECT: Blackwater Gold Project

Topography of the Chedakuz Creek Valley

DATE: November, 2013	ANALYST: WR	Figure 2.2-2
JOB No: VE52095	QA/QC: SB	PDF FILE: 19-11_TopographyMineSite_v2.pdf
GIS FILE: 19-11_TopographyMineSite_v2.mxd		
PROJECTION: UTM Zone 10	DATUM: NAD83	

Y:\GIS\Projects\VE\VE52095_Richfield_Blackwater\Mapping\19-11_Topography\MineSite_v2.mxd

2.2.2 Viewshed Analysis

Viewshed modelling was performed using the Spatial Analyst extension of ArcGIS 10, generating viewshed analyses of the most prominent features in the mine site area as well as proposed linear features. This tool identifies locations that can be seen from strategic observation points at specific offset heights and distances.

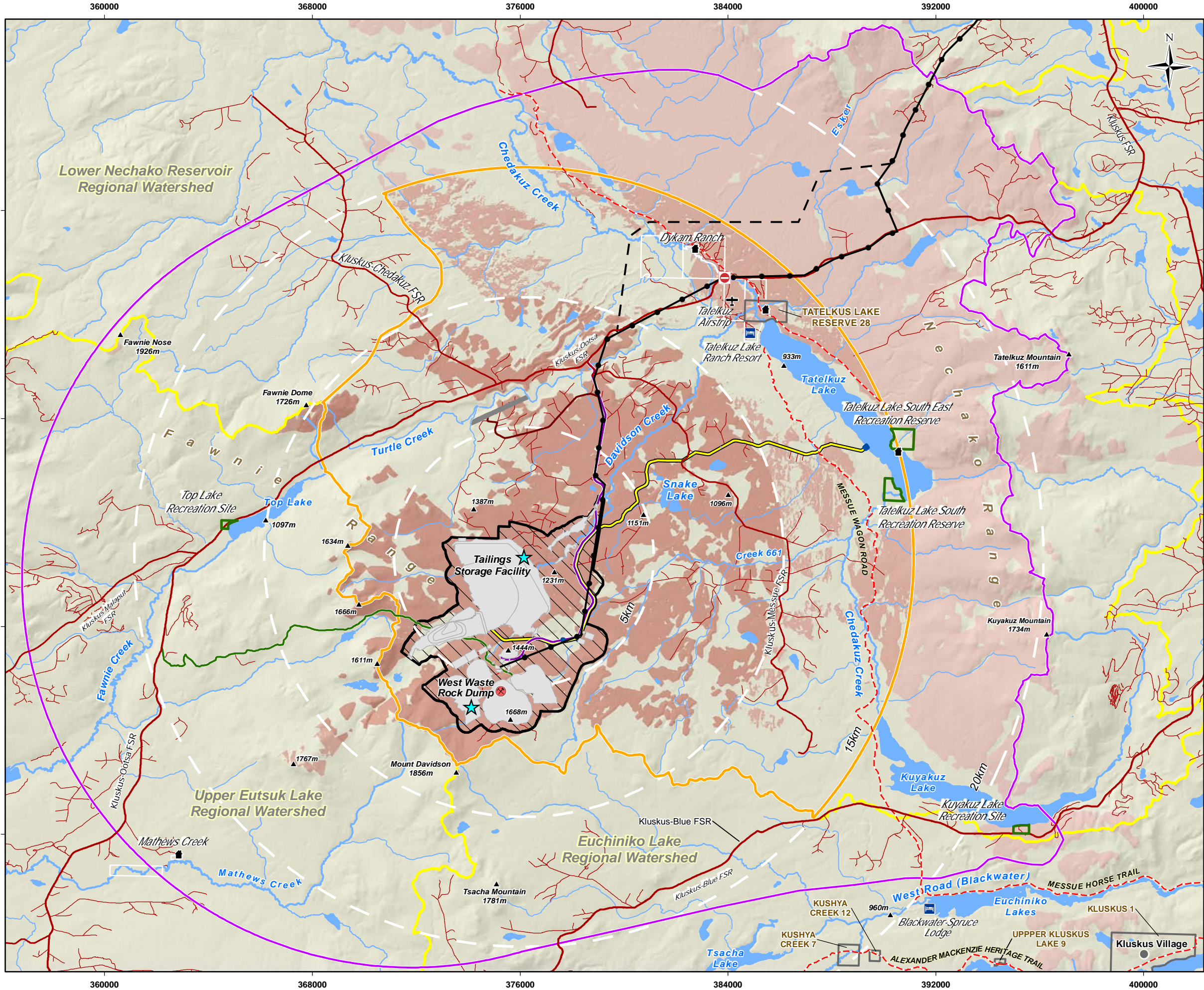
Each cell that has an unobstructed line-of-sight to observer points, is given a value of 1 (visible), while all other cells receive a value of 0 (not visible). In this way the imaginary line representing an unobstructed path between the eye of an observer and a perceived object, is illustrated in a spatial context.

This type of analysis represents a conservative estimate of the visibility of the Project area, as it does not consider vegetation height as a barrier to visibility. As the main objective of the analyses was to delineate study areas, this was deemed sufficient. Viewing conditions will be analysed in more detail as part of the effects assessment. **Figure 2.2-3**, **Figure 2.2-4**, and **Figure 2.2-5** provide a summary of the viewshed analysis for the most visually prominent facilities in the mine site, the transmission line, and the fresh water pipeline.

2.2.3 Mine Site Study Area

The rationale for the mine site LSA is to incorporate an area where direct effects from the Project may affect current land uses, permanent residents, and activities of members of the public and First Nations communities. A viewshed analysis was generated using the maximum height of the Site D Main Dam of the proposed Tailings Storage Facility (TSF) and the West Waste Rock Dump as observer points. Areas located within line-of-sight with these two components were included up to a radius of 15 kilometres (km). Regional Watersheds South and East of the Proposed Mine Site contain visibility, with line of sight occurring mostly to the East towards Tatelkuz Lake.

The mine site RSA includes areas located within line of site beyond 15 km up to the skylines of Kuyakuz and Tatelkuz Mountains in the Nechako Range. Although areas at this distance are unlikely to be influenced, the overall goal was to cover the worst-case scenario to protect important recreation trails and First Nations Reserves along the Blackwater River to the southeast. Areas beyond the regional watersheds to the South and West located within a buffer of 15 km were included where artificial light may be a factor.



Legend

- Populated Place
- ▲ Spothights
- ⊘ Restricted Access
- Forestry Service Roads
- Logging Roads
- - - Recreation Trails
- ▭ Recreation Sites
- ▭ Private Land
- ▭ Indian Reserves
- ▭ Regional Watersheds

Project Components

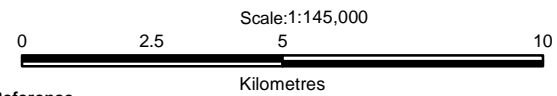
- ⊘ Blackwater Camp
- Exploration Road
- Proposed Mine Access Road
- Proposed Transmission Line
- - - Proposed Transmission Line Reroute
- Proposed Fresh Water Pipeline
- Proposed Airstrip Access Road
- ▭ Proposed Airstrip Extent
- ▭ Proposed Fresh Water Pipeline Intake
- ▭ Proposed Mine Site
- ▭ Mine Site Facilities

Visual Resources

- ▭ Local Study Area (Mine Site)
- ▭ Regional Study Area (Mine Site)

Viewshed Analyses

- ★ Viewshed Observer Points
- ▭ Line-of-site up to 10km
- ▭ Line-of-site up to 15km
- ▭ Line-of-site beyond 15km
- ▭ Screened



Reference
 BC Government GeoBC Data Distribution
 BCGOV FLNRO Recreation Sites and Trails Branch

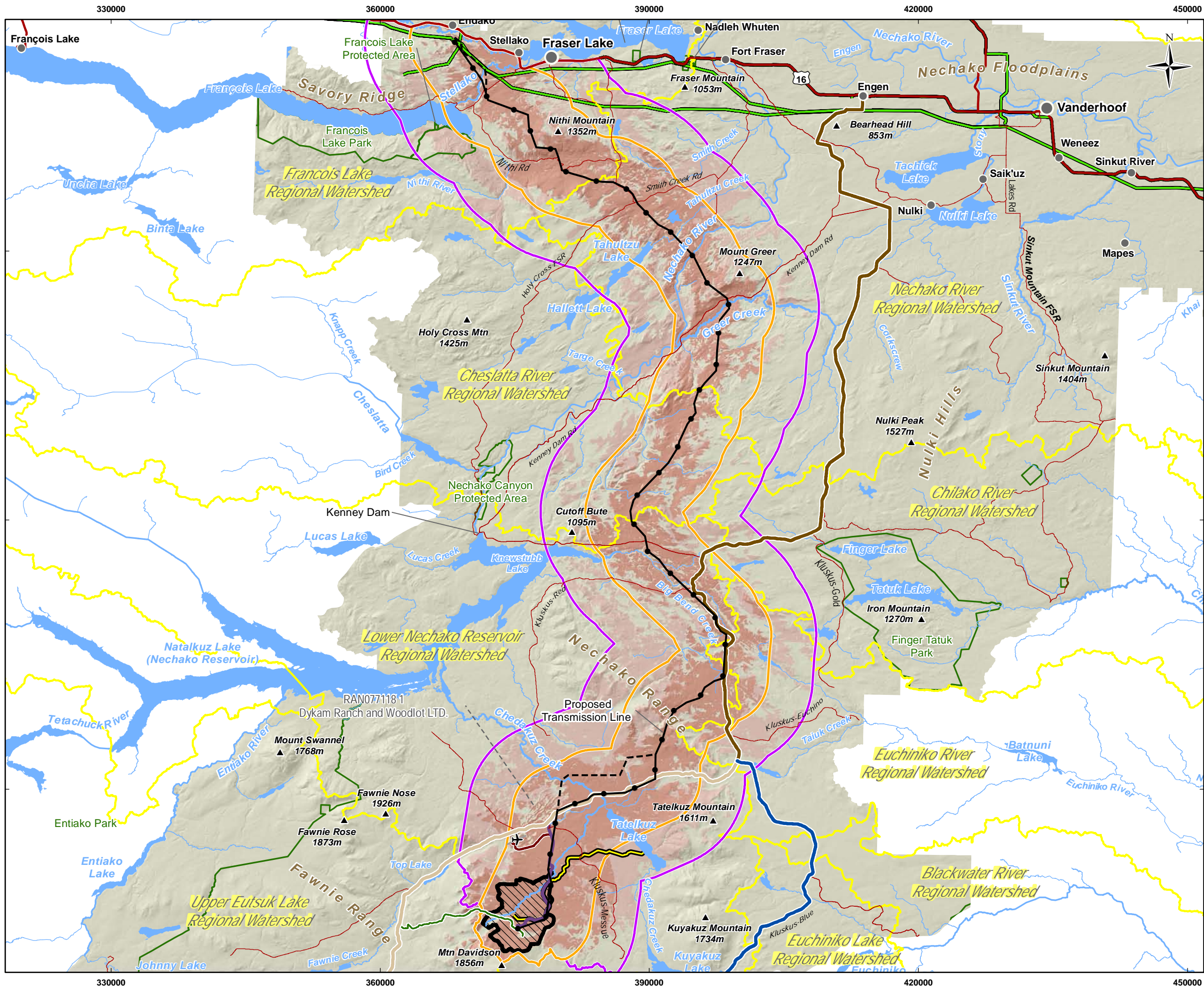
CLIENT: **newgold**

PROJECT: **Blackwater Gold Project**

Viewshed Analyses of Selected Mine Site Facilities

DATE: November, 2013	ANALYST: WR	Figure 2.2-3
JOB No: VE52095	QA/QC: SB	PDF FILE: 19-12_ViewshedMine_VS_v4.pdf
GIS FILE: 19-12_ViewshedMine_VS_v4.mxd		amec
PROJECTION: UTM Zone 10	DATUM: NAD83	

Y:\GIS\Projects\VE\VE52095_Richfield_Blackwater\Mapping\19-12_Viewshed\Mine_VS_v4.mxd



Legend

- Populated Place
- ▲ Spothight
- Ⓜ Highway
- Kluskus FSR
- Kluskus-Blue FSR
- Kluskus-Ootsa FSR
- Existing Transmission Line
- Regional Watersheds
- ▭ Parks and Protected Areas

Project Components

- ✈ Proposed Airstrip
- Proposed Airstrip Access Road
- Proposed Transmission Line
- - - Proposed Transmission Line Reroute
- Proposed Fresh Water Pipeline
- Exploration Road
- ▨ Proposed Mine Site

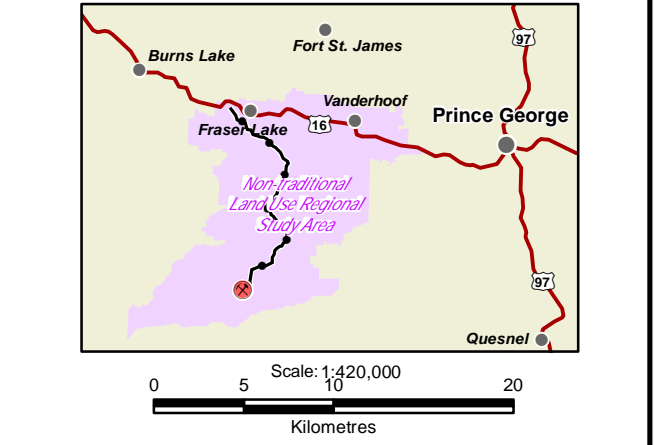
Visual Resources

- ▭ Local Study Area (Transmission Line)
- ▭ Regional Study Area (Transmission Line)

Viewshed Analyses of the Transmission Line

- ▭ Line-of-site up to 5km
- ▭ Line-of-site up to 10km
- ▭ Screened

*Observer height: 2m (Represents human observers)
 Target height: 20m (Represents 230 kV Wood H-frame structure)
 Visible areas represents line-of-sight using 30m elevation grid
 Vegetation height not taken into account*



Reference

BC Government GeoBC Data Distribution
 NRCAN Geobase
 Ministry of Forests, Lands and Natural Resource Operations

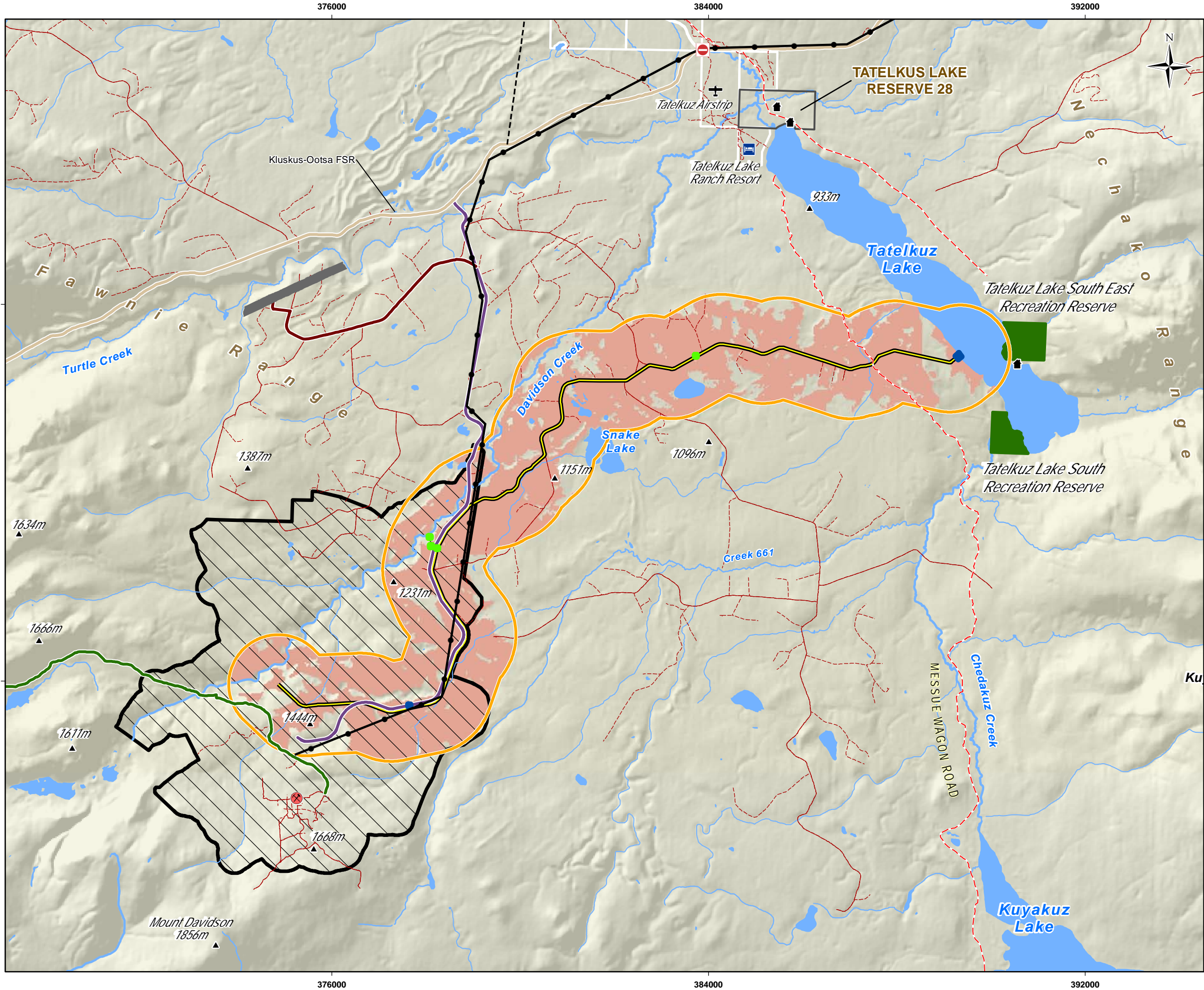
CLIENT: **newgold**

PROJECT: **Blackwater Gold Project**

Viewshed Analyses of the Proposed Transmission Line

DATE: November, 2013	ANALYST: WR	Figure 2.2-4
JOB No: VE52095	QA/QC: SB	PDF FILE: 19-06_ViewShedPTL_v3.pdf
GIS FILE: 19-06_ViewShedPTL_v3.mxd		amec
PROJECTION: UTM Zone 10	DATUM: NAD83	

X:\GIS\Projects\VE\VE52095_Richtfield_Blackwater\Map\19-06_ViewShedPTL_v3.mxd



Legend

- Populated Place
- Homestead / Cabin
- ▲ Spothights
- ✈ Tatelukus Airstrip
- ⊘ Restricted Access
- 🏠 Recreation Lodge
- Recreation Trails
- 🌲 Recreation Sites
- ▨ Private Land
- ▭ Indian Reserves

Forestry Service Roads

- Kluskus FSR
- Kluskus-Ootsa FSR
- Kluskus-Blue FSR
- Other FSRs
- Tracks

Project Components

- Proposed Transmission Line
- Proposed Transmission Line Reroute
- Proposed Fresh Water Pipeline
- Exploration Road
- Proposed Airstrip Access Road
- ▨ Proposed Airstrip Extent
- Proposed Fresh Water Pipeline Intake
- Pump Stations
- ▨ Proposed Mine Site

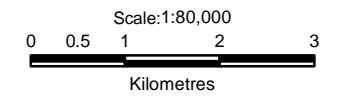
Visual Resources

- ▭ Local Study Areas
- ▭ Regional Study Areas

Viewshed Analyses of the Proposed Fresh Water Pipeline

- ▭ Line-of-site
- ▭ Screened

*Observer height: 2m (Represents human observers)
 Target height: 2m (Represents proposed structure)
 Visible areas represents line-of-sight using 30m elevation grid
 Vegetation height not taken into account*



Reference
 BC Government GeoBC Data Distribution
 BCGOV FLNRO Recreation Sites and Trails Branch

CLIENT: newgold		
PROJECT: Blackwater Gold Project		
Viewshed Analyses of the Proposed Fresh Water Pipeline		
DATE: November, 2013	ANALYST: WR	Figure 2.2-5
JOB No: VE52095	QA/QC: SB	PDF FILE: 19-15_ViewShedPipeline_v3.pdf
GIS FILE: 19-15_ViewShedPipeline_v3.mxd		amec
PROJECTION: UTM Zone 10	DATUM: NAD83	

Y:\GIS\Projects\VE\VE52095_Richfield_Blackwater\Mapping\19-15_ViewShed\Pipeline_v3.mxd

2.2.4 Linear Features Study Areas

The proposed 230 kV transmission line alignment will bring power to the mine from Endako. Routing south to the mine site it traverses significant landscape features that shape the characteristics and scenic quality of the region. After crossing the Stellako River, the alignment traverses Nithi Mountain crossing the Nechako River near Mount Greer. From there, it turns south to the Bigbend Creek east of Knewstubb Lake and follows the Kluskus FSR to Brewster Lake. It then turns southwest to cross the Nechako Range to meet the Kluskus-Ootsa FSR, continuing south to the mine site.

The standard height of a 230 kV wood H-frame structure (21.3 m: BC Hydro 2013) was used as the offset parameter for the viewshed analysis (example provided in **Figure 2.2-6**). Due to the undulating nature of the terrain along the alignment, with various incised river valleys, rolling hills, and low mountains and dense forest cover, the analysis for the transmission line was limited to 5 km for the LSA and 10 km for the RSA (**Figure 2.2-4**).

The fresh water pipeline LSA includes an area within a buffer distance of 1 km focusing on areas with line-of-sight to the proposed route to evaluate potential effects on surrounding land uses during all phases of the proposed Project. As the pipeline itself will be buried, the analysis is focused on the right-of-way created along the alignment (**Figure 2.2-5**).

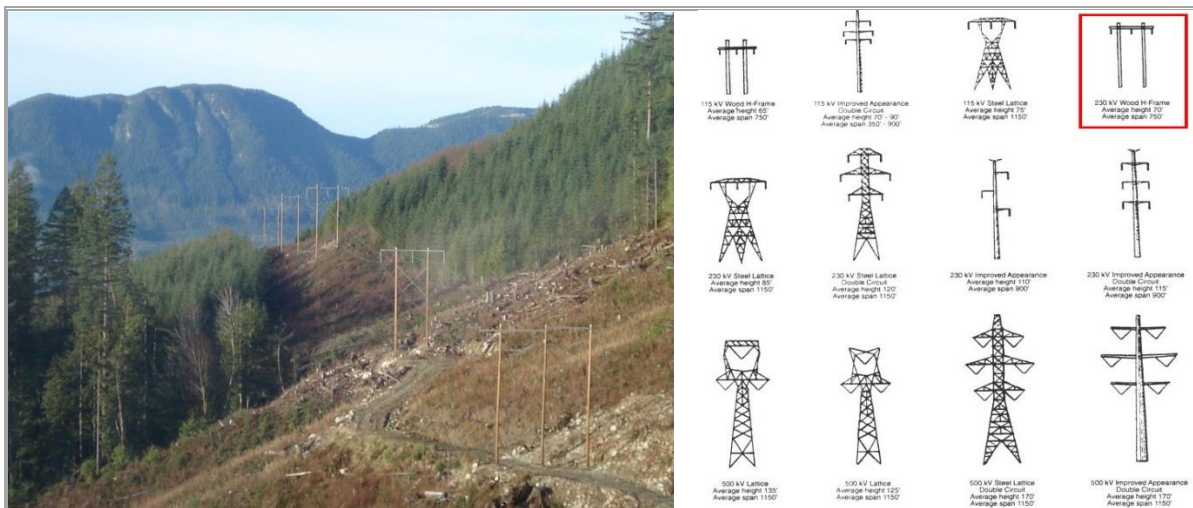


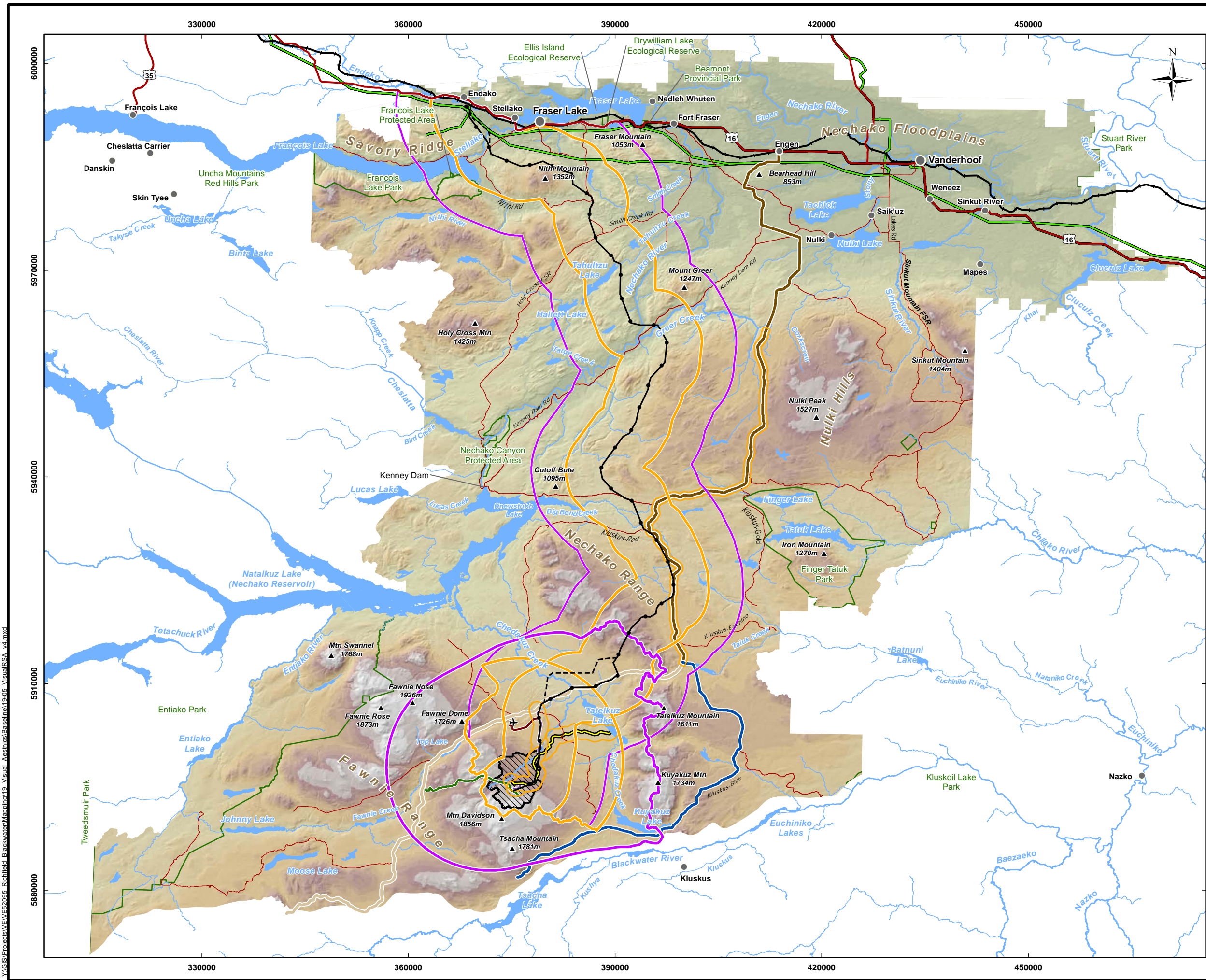
Figure 2.2-6: Graphic Illustration and Specification of the Proposed Transmission Line

The Kluskus FSR access road LSA is defined by a 500 m buffer either side of the road, to address impacts associated with increased traffic, such as movement and dust. The road traffic survey will be used to quantify the variance between current and expected traffic. The study area focuses on the section between the Greer Creek Falls and Chutanli Lake, where a number of trailheads are located next to the FSR from where trails lead to recreation sites within hiking distance (**Figure 3.2-2**).

The rationale and total area for each of the study areas are described in **Table 2.2-1**. **Figure 2.2-7** delineates the boundaries of these study areas.

Table 2.2-1: Total Area, in Hectares, for Each Study Area

Study Area	Rationale	Total (ha)
Kluskus FSR Access Road LSA	Including trailheads along the Kluskus FSR leading to BC MCSCD Recreation Sites within a 500 m buffer	6,666
Airstrip Access Road LSA	Including areas within a 1 km buffer around the proposed road linking the proposed airstrip with the proposed mine access road	1,410
Airstrip LSA	Including areas within a 1 km buffer around the footprint of the proposed airstrip	873
Airstrip RSA	Including areas within a 3 km buffer around the footprint of the proposed airstrip	4,411
Mine Access Road LSA	Including areas within a 1 km buffer around the proposed right of way	3,520
Mine Site LSA	Including areas delineated by a viewshed analyses of the most prominent mine site components that incorporates permanent residents, recreation sites and natural features important to First Nations communities located within line-of-sight up to 15 km.	42,000
Mine Site RSA	Including areas beyond 15 km located within line-of-sight up to the skylines formed by regional watersheds as well as areas in adjacent watersheds where artificial light may be a factor.	111,127
Transmission Line LSA	Including areas along the proposed alignment within a buffer distance of 5 km, focusing on areas falling within the viewshed of the proposed structure	141,467
Transmission Line RSA	Including areas at a greater distance up to 10 km along the proposed alignment, focusing on areas falling within the viewshed of the proposed structure	265,949
Fresh Water Pipeline LSA	Including areas within a 1 km buffer around the proposed right of way along the fresh water pipeline focusing on areas falling within the viewshed	4,739



Legend

- ⊗ Proposed Project Mine Site
- Populated Place
- ▲ Spothight
- 16 Highway
- ⚡ Railway
- Existing Transmission Line
- Stream (>=4th Order)
- Waterbody (>= 5000ha)
- Parks and Protected Areas

Forestry Service Roads (FSR)

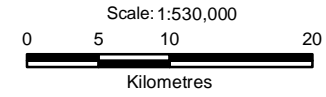
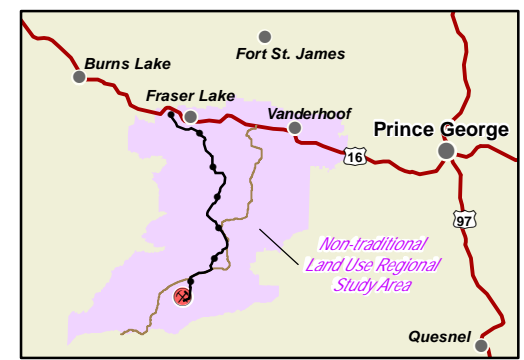
- Kluskus FSR
- Kluskus-Ootsa FSR
- Kluskus-Blue FSR
- Other FSRs

Project Components

- ✈ Proposed Airstrip
- Proposed Airstrip Access Road
- Proposed Transmission Line
- - - Proposed Transmission Line Reroute
- Proposed Mine Access Road
- Proposed Fresh Water Pipeline
- Exploration Road
- ⊠ Proposed Mine Site

Visual Resources

- Local Study Areas
- Regional Study Areas



Reference
 BC Government GeoBC Data Distribution
 NRCAN Geobase
 Ministry of Forests, Lands and Natural Resource Operations

CLIENT: **newgold**

PROJECT: **Blackwater Gold Project**

Visual Resources Study Areas

DATE: November, 2013	ANALYST: WR	Figure 2.2-7
JOB No: VE52277	QA/QC: SB	PDF FILE: 19-05_VisualRSA_v4.pdf
GIS FILE: 19-05_VisualRSA_v4.mxd		amec
PROJECTION: UTM Zone 10	DATUM: NAD83	

X:\GIS\Projects\VE\VE52277\Rightfield_Blackwater\Map\19-05_VisualRSA_v4.mxd

2.2.5 Mapping of Known Recreation Locations and Values

Existing inventories by the MFLNRO were mapped to obtain an understanding of the significance and sensitivity that members of the public attach to landscape in the study areas.

Scenic Areas: The Visual Landscape Inventory (VLI) identifies and delineates areas of visual sensitivity near communities and along travel corridors that could give rise to concern if their visual appearance were altered by forest practices or other resource development activities. Visual Sensitivity Classes (VSCs) are assessments of the likelihood that carrying out forest practices or other resource development activities in visual sensitive units (VSUs) would give rise to some degree of criticism or concern (BC MOF, 1997) (**Table 2.2-2**).

Table 2.2-2: Visual Sensitivity Class Descriptions

Sensitivity to Human-Made Visual Alteration	Visual Sensitivity Class Descriptions
Very High	The area is extremely important to viewers with a very high probability that the public would be concerned if the VSU was visually altered in any way or to any scale.
High	The area is very important to viewers with a high probability that the public would be concerned if the VSU was visually altered.
Moderate	The area is important to viewers with a probability that the public would be concerned if the VSU was visually altered.
Low	The area is moderately important to viewers with some risk that the public would be concerned if the VSU was visually altered.
Very Low	The area may be somewhat important to viewers with a small risk that the public would be concerned if the VSU was visually altered.

Note: VSC = Visual Sensitivity Class, VSU = Visual Sensitivity Unit

Recreation Values: The Recreation Features (RFI), which identifies areas of land and water encircling a recreational feature or combination of features that support, or have the potential to support, one or more recreational activities, was reviewed. Recreational significance is used as an underlay to the mapping of Visual Sensitivity in the mine site study area. In the proposed transmission line study areas a combination of recreational significance and recreational sensitivity was used to map recreation values. (BC ILMB, 2007; BC MOF, 1998) (**Table 2.2-3**).

Table 2.2-3: Recreation Sensitivity and Significance Ratings

Sensitivity Rating	Sensitivity Description	Significance Rating	Significance Description
High	If development occurred it would likely result in a major impact to recreational resources	High	Subjective rating considering the combined importance of the attraction capability, uniqueness, scarcity, scenic view, accessibility and amount of current recreational use
Moderate	If development occurred it would likely result in moderate impact to recreational resources	Moderate	
Low	If development occurred it would likely result in little impact to recreational resources	Low	

Recreation Sites: The BC Ministry of Forests, Lands and Natural Resource Operations (MFLNRO) identified areas of recreational value to locate simple and rustic public campgrounds and trails. From these sites visitors can enjoy nature through activities such as camping, boating, fishing, hunting, hiking, kayaking, mountain biking, ATViing, cross-country skiing and snowmobiling. These sites and trails currently fall under the mandate of the BC Ministry of Community, Sport, and Cultural Development (MCSCD).

These sites generally fall within integrated resource management settings. This means the land base is managed for a variety of land uses, which may include forestry, cattle grazing, mineral extraction, oil and gas exploration, recreation, fish and wildlife management, and watershed protection. Sites are managed through partnership agreements, thus no fees are charged for the services provided. The agreement holder has alternative ways of recovering the costs (e.g., volunteers). Alternatively, the ministry covers the costs of the maintenance contract.

The following descriptions define the various recreation layers mapped for the study areas:

- *Recreation Sites:* These can be either a recreation reserve (no facilities), recreation site (rustic facilities), or an interpretative forest.
- *Recreation Trails:* Hiking trails providing access to recreation sites. In some cases, they have heritage value as crafted and used by First Nations and pioneers in the past.
- *Recreation Viewing Direction:* The direction one looks from a viewpoint towards a scenic landscape. When a view is panoramic, it is to the middle of that panoramic view. There are no Recreation Viewpoints or Viewing Directions in the Visual Resources study areas.

2.2.6 Mapping of Known Protected Areas

No Conservancy Areas overlap the visual resource study area. The closest conservancy is the Dean River Conservancy, which is located 104 km to the west of the Project along the western boundary of Tweedsmuir Park. Francois Lake Park and Francois Lake Protected Area overlap the visual resources study area. Approximately 57 ha of the eastern boundary of Francois Lake Park overlap the edge of the transmission line LSA. The eastern boundary of the park is located approximately 5 km from the proposed transmission line. The visual resources RSA also overlaps Francois Lake Park and the Francois Lake Protected Area which is located approximately 6 km from the proposed transmission line.

2.2.7 Photographic Survey

Viewpoints were identified in the various study areas based on the following criteria:

- Proximity to roads;
- Locations with recreational value;
- Locations near protected areas;

- Homesteads of permanent residents and First Nations communities;
- Commercial activities such as ranches and lodges;
- Locations representative of site conditions reflecting impacts of current land uses; and
- Potential views over larger portions of the landscape.

Photographs were taken from identified locations in the direction of the proposed mine site and linear features. Seasonal variations were accounted for with a field visit in March to capture atmospheric and ground conditions typical in winter and a follow up visit in July to describe summer conditions. Where possible, a series of photographs stitched together as a panorama, to best represent site conditions and visibility. Photographs were taken using a RICOH G700SE with GPS module accessory with a Tiffen filter and 5 mm to 25 mm lens (F3.5-5.5) and stitched together using Reposition Layout function in Adobe® Photoshop®.

Photograph viewpoint baseline views were summarized for each photo location based on the following criteria (**Table 3.2-1** and **Table 3.3-1**):

- Topography;
- Vegetation cover;
- Water features;
- Existing disturbances; and
- Proximity to important features.

Landscape ratings for photograph viewpoints assessing viewer sensitivity and scenic quality are found in **Table 3.2-2**, **Table 3.3-2**, and **Table 3.4-2**. Viewer sensitivity is expressed as a measure of public concern for scenic quality influenced by the number and considerations of potential observers. Scenic quality is expressed as the measure of appeal of a tract of land. Both evaluations are rated using a relative scale from low to high based on a qualitative description as seen from each viewpoint formulated by the United States Department of the Interior, Bureau of Land Management (USDI BLM).

2.2.8 Artificial Light

The occurrence of excessive, misdirected, or obtrusive artificial light may alter natural and existing artificial light levels in the outdoor environment (**Figure 2.2-8**). Artificial light is considered as it has the potential to:

- Diminish the capacity to observe stars and, thereby degrade astronomical activities;
- Intrude on otherwise natural or low-light settings, affecting ecotourism amenities and activities, and creating a contrast between lit and unlit areas;
- Disrupt ecosystems by disorienting wildlife and insects through unnatural stimuli, disrupting navigation, reproduction, or the predator-prey equilibrium.



Figure 2.2-8: Natural and Artificial Lighting

2.2.9 Airstrip

An airstrip is proposed to facilitate the transport of materials and labour and is included in this baseline report due to associated infrastructure and activities (access road, terminal buildings, parking, storage, flights).

2.2.10 Assumptions and Limitations

- The VLI and RFI data layers are specific to forest harvesting and may not account for all landscape features rated by the public as significant and sensitive in terms of recreation and scenery.
- Information was taken from the records of consultation to include additional features valued by the public, First Nations and other stakeholders.
- The DEM has accuracy of ± 30 m;
- Viewshed analyses are likely to overestimate the visible areas and were generated without taking vegetation height and density into account;
- Alignments and project layout are as stipulated in the project description of the dAIR report; and
- Tatelkuz Lake Reserve 28 was inaccessible due to winter conditions, thus a representative photograph was taken as close as possible to its western boundary.

3.0 RESULTS/DISCUSSION

3.1 Local and Regional Land Use Planning

3.1.1 Vanderhoof Land and Resource Management Plan (LRMP)

Land use and access management plans guide and limit the utilization of natural resources that affect scenic quality and recreation resources. In addition, they shape the expectation visitors may have of solitude and interaction with nature.

The Vanderhoof LRMP provides strategic land use direction that supports balanced resource management to guide operational planning. A review of the Vanderhoof LRMP was initiated in 2005 due to the recent Mountain Pine Beetle (MPB) infestation. The objective was to ensure that the values in the LRMP are respected and considered with respect to the MPB epidemic and future salvage harvesting. The amended LRMP ensures that the plan remains relevant and aligned with current legislation, scientific information.

Various Resource Management Zone (RMZ) have been delineated and are managed for a wide array of resource values. The Project is located within the Davidson Creek RMZ, placing emphases on resource development. It is bordered by multi-value emphasis zones (Laidman Lake RMZ to the west and Chedakuz RMZ to the east). The proposed transmission line traverses through various resource development emphasis and multi-value zones as well as the Upper Nechako River special resource zone, identified to retain recreation values. (Figure 2.2-2 of the NTLU Baseline Report – Non-traditional Land Use Study Areas and Resource Management Zones).

3.1.2 Vanderhoof Vanderhoof Access Management Plan (AMP)

Resulting from a collaborative effort between members of the public and stakeholders within the Vanderhoof Communities, the Vanderhoof AMP provides an up-to-date and accurate indication of viewer sensitivity and expectations of scenic quality. In addition it sets limitations to the level and ease of access (motorized, non-motorized) to areas with recreational significance.

In the mine site area, the Davidson Creek basin, higher elevations of Mount Davidson, and Kuyakuz Mountain is designated for non-motorized Accessible Recreation. The Messue Wagon Road Trail, Tatelkuz Lake, and surroundings designated for Motorized Road Accessible Recreation. The proposed transmission line traverses through the Mount Greer, Crystal Lake, Bigbend Arm, Chedakuz, and Tatelkuz Motorized Road Accessible Recreation zones.

3.1.3 Government Actions Regulation Orders – Scenic Areas and Visual Quality Objectives

There are currently no regulations in BC that govern the effects of industrial development on visual resources; nor are there any established procedures prescribing how to evaluate the potential effects on visual resources. However, Section 150.3 of the FRPA enables the creation of regulations to designate scenic areas and establish visual quality objectives (VQOs) for these areas.

Though specific to forest harvesting, the qualitative and quantitative VQOs established through the Forest Planning and Practices Regulation provide a reasonable, defensible, and established basis on which to evaluate baseline conditions and potential effects on the study area's visual quality. The provincial Visual Landscape Inventory and Visual Impact Assessment standards and procedures are best practice procedures on which visual resources effects assessments should be based.

Pursuant to the BC *FRPA* (Government of BC, 2002), Section 7 Scenic Areas and VQOs of the Government Actions Regulation (GAR) states:

“7 (1) The minister responsible for the *Land Act* by order may establish an area as a scenic area if satisfied that the area:

- is visually important based on its physical characteristics and public use, and
- requires special management that has not otherwise been provided for by this regulation or another enactment.

(2) The minister responsible for the *Forest Act* by order may establish for a scenic area visual quality objectives that are consistent with subsection (1) and are within the categories of altered forest landscape prescribed under Section 1.1 of the *Forest Planning and Practices Regulation*.”

A brief description of the history and current status of VQOs for the Vanderhoof Forest District (VFD) associated with GAR Ministerial Orders is summarized below.

3.1.4 Government Actions Regulation 2008

VQOs were established for the Vanderhoof Forest District pursuant to Section 7(2) of the GAR by an Approved GAR Order dated 15 December 2005 and applied to the Scenic Areas as identified in the District Manager's letter dated 22 September 2008, and grandparented under Section 180 of the *FRPA* (Government of BC, 2002).

Scenic Areas with a Partial Retention VQO are located within the mine site RSA along the west facing slopes of Kuyakuz Mountain and Tatelkuz Mountain as well as the area surrounding Tatelkuz Lake. Scenic Areas with Modified VQOs have been identified in the

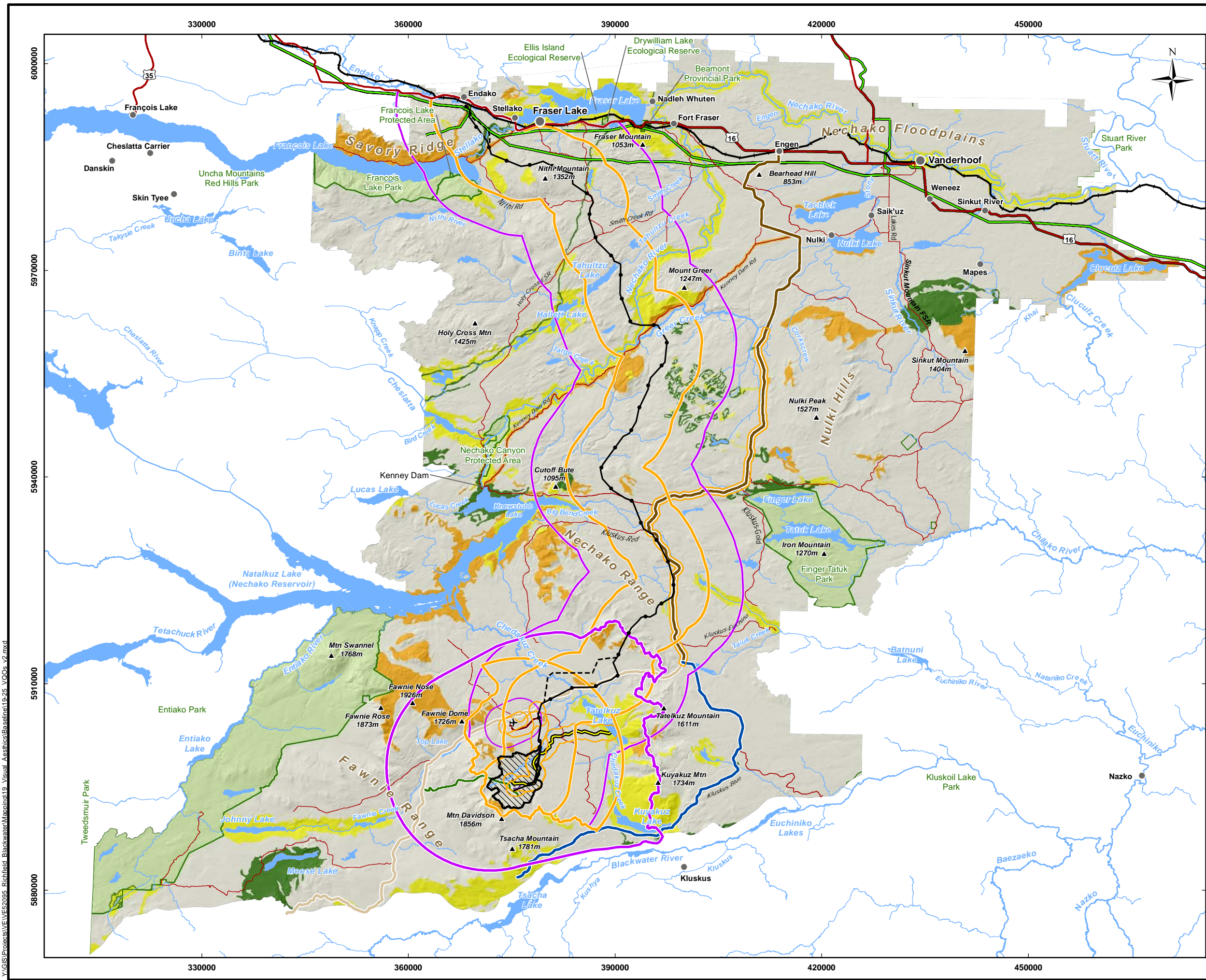
Fawnie Range, including the east slope of Mount Davidson and the higher elevations of the Fawnie Dome.

Scenic areas with a Retention VQO are located in the proposed transmission line LSA in the Stellako River valley and hills near the headwaters of the Greer Creek. Scenic areas with a Partial Retention VQOs are located on the west slope of Nithi Mountain, the Nechako River Valley, south slope of Mount Greer, and the Brewster Lake area. Modified VQOs are located along the Francoise Lake Road, Greer Creek Valley, and the south slope of the Nechako Range. Refer to **Table 3.1-1** for the desired level of visual quality for each resource management level and **Figure 3.1-1** for spatial distribution of scenic areas and associated VQOs.

Table 3.1-1: Established Visual Quality Objectives for Scenic Areas

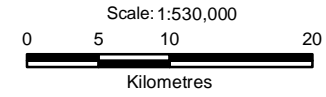
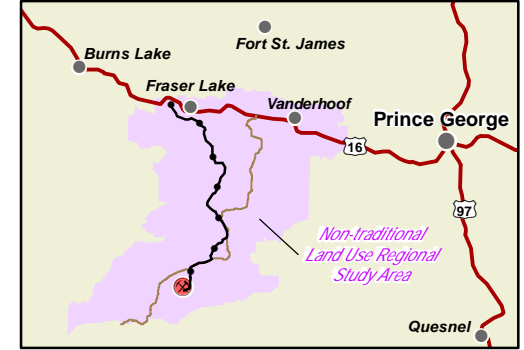
VQO	Desired Level of Visual Quality: “An altered forest landscape in which the alteration, when assessed from a significant public viewpoint, is”:	Accepted Visual Impact
Preservation	(i) very small in scale, and (ii) not easily distinguishable from the pre-harvest landscape	Allow very little visual impact
Retention	(i) difficult to see, (ii) small in scale, and (iii) natural in appearance	
Partial Retention	(i) easy to see, (ii) small to medium in scale, and (iii) natural and not rectilinear or geometric in shape	
Modification	(i) very easy to see, and (ii) (A) large in scale and natural in its appearance, or (B) small to medium in scale but with some angular characteristics	
Maximum Modification	(i) very easy to see, and (ii) (A) very large in scale, (B) rectilinear and geometric in shape, or (C) both	Allow considerable visual impact

Note: VQO = Visual Quality Objective



Legend

- ⊗ Proposed Project Mine Site
- Populated Place
- ▲ Spothight
- ⬛ Highway
- ⚡ Railway
- Existing Transmission Line
- ▭ Parks and Protected Areas
- Forestry Service Roads (FSR)**
- Kluskus FSR
- Kluskus-Ootsa FSR
- Kluskus-Blue FSR
- Other FSRs
- Project Components**
- ✈ Proposed Airstrip
- Proposed Transmission Line
- - - Proposed Transmission Line Reroute
- Proposed Mine Access Road
- Proposed Fresh Water Pipeline
- Exploration Road
- ▭ Proposed Mine Site
- Established Visual Quality Objectives**
- ▭ Retention
- ▭ Partial Retention
- ▭ Modification
- Visual Resources**
- ▭ Local Study Areas
- ▭ Regional Study Areas



Reference
 BC Government GeoBC Data Distribution
 NRCAN Geobase
 Ministry of Forests, Lands and Natural Resource Operations

CLIENT: **newgold**

PROJECT: **Blackwater Gold Project**

Scenic Areas with Established Visual Quality Objectives

DATE: November, 2013	ANALYST: WR	Figure 3.1-1
JOB No: VE52277	QA/QC: SB	PDF FILE: 19-25_VQOs_v2.pdf
GIS FILE: 19-25_VQOs_v2.mxd		amec
PROJECTION: UTM Zone 10	DATUM: NAD83	

X:\GIS\Projects\VE\VE52095_Richfield_Blackwater\Map\19-25_VQOs_v2.mxd

3.2 Mine Site Study Area

Topography: The mine site is located in the southern parts of the Nechako Plateau. Tertiary lava flows shaped the region, covering older volcanic and sedimentary rocks of the Takla and Hazelton Groups and intrusive rocks of the Upper Jurassic and Cretaceous Age. Glacial drift is widespread as the ice occupied the plateau, which in moving across, marked the surface with incised valleys and drumlin-like ridges, resulting in the present day undulant nature of the terrain with lakes forming in the depression (Holland, 1976).

The proposed mine site is situated within the Lower Nechako Regional Watershed on the east slope of the Fawnie Mountain Range, directly below Mount Davidson (El. 1856). Various streams drain these slopes, including the Davidson and Turtle Creeks, and flow east where they converge with the Chedakuz drainage system. This drainage system emerges from the south slope of Kuyakuz Mountain (El. 1734) and Kuyakuz Lake, and flows into Tatelkuz Lake (El. 933), resulting in a 923 m drop in altitude.

East of Tatelkuz Lake, the Nechako Range stretches northwards to Knewstubb Lake, delineating the catchment boundary with the Euchino Lakes Regional Watershed. South of Mount Davidson, the Fawnie Range recedes towards the Blackwater River and Kluskus Lakes with a distinctive ridgeline extending to Kuyakuz Lake. This ridgeline divides the Lower Nechako Reservoir and Euchino Lake Regional Watersheds.

Several high lying peaks follow the central spine of the Fawnie Range from Mount Davidson towards the north, where the Fawnie Dome (El. 1726) and Fawnie Nose (El. 1926) are located. To the west of this divide, Fawnie Creek and Matthews Creek drain the Upper Eutsuk Lake Regional Watershed (**Figure 2.2-2**).

Visibility: The spine of the Fawnie Range and ridgeline receding towards Kuyakuz Lake generally confines visibility inside the Davidson Creek basin. Line-of-sight is interrupted throughout the Davidson Creek basin due to the undulating nature of the terrain and landscape features such as the incised Turtle Creek Valley and ridgeline along the west bank of Tatelkuz Lake. Due to its elevated location within the viewscape, the slopes of the Nechako Range are within line-of-sight of the mine site, but beyond 15 km where visual impacts dissipate significantly with increasing distance.

3.2.1 Current Land Use and Site Conditions

Forestry: The most dominant land use in the VFD is timber harvesting, in particular in the less-populated backcountry areas with lower viewer sensitivity ratings. Other aspects affecting forestry from a visual perspective are the MPB and a history of recurring fires. The frequency of fires and infestation of MPB are expected to increase in central BC due to climate change.

Since 1999, unusually hot, dry summers and mild winters have resulted in the largest ever-recorded MPB outbreak in North America resulting in widespread mortality of Lodgepole pine and vast stretches of standing dead timber. Prior to the outbreak, the historical allowable harvest rate in the VFD was approximately 2 million cubic metres per year (Mm^3/y), compared to 2006 when the harvest target increase three-fold to $6.5 Mm^3$ (Pousette and Hawkins). The increased allowable annual cut is intended to address beetle-infested timber but is having a negative impact on scenic quality in the mine site LSA and RSA having increased the intensity of forestry practices.

In the Interior Mountain Zone, with characteristic cold and dry winters and hot and even drier summers, the 90-year economic cycle for harvesting is higher than average. This extends the visual impacts of clear-cuts on the scenic quality of an area, especially during winter with the stark contrast between snow covered cut blocks and tree covered older blocks. This is particularly evident in the higher elevation slopes of the Fawnie and Nechako Ranges. **Figure 3.2-2** shows the distribution and density of forest cut blocks in relation to scenic areas in the mine site study areas.

Livestock and Tourism: With only 10,000 inhabitants, there are many sparsely populated areas in the VFD. The Davidson Creek RMZ has few permanent residents with the majority clustered around Tatelkuz Lake. The area is managed under access restriction with traffic restricted to logging trucks and private landowners and their managers operating livestock ranches in the area north of Tatelkuz Lake (Doug Short Ranch, Mills Ranch). Mills Ranch operates a resort for visitors interested in activities in and around Tatelkuz Lake (e.g., horseback riding, hiking, fishing, and kayaking). The main lodge/chalet structure and separate cabins face east towards views of Tatelkuz Lake and Tatelkuz Mountain. In the southwest section of the mine site RSA, a tract of private land is located adjacent to the Mathews Creek.

Hunting and Adventure: The area is a popular destination for hunters and trappers, with good wildlife habitat and various traplines and guide outfitter areas. Motorized recreational activities common to the area include snowmobiling and ATVing.

3.2.2 Recreation Locations and Values

The VLI identifies an area of Very High Visual Sensitivity at the north section of Tatelkuz Lake with areas surrounding the lake and along the lower slopes of the Nechako Range identified as High Visual Sensitivity. Higher peaks in the Nechako and Fawnie Ranges are designated with Moderate Visual Sensitivity with a higher lying section of the east slope of Mount Davidson identified as Low Visual Sensitivity.

The RFI identified areas with High Recreation Significance in lower Chedakuz Creek Valley north of the Kluskus-Ootsa FSR. To the south, areas with High Recreation Significance are located along the higher elevations of the Nechako Range, Tsacha Mountain, and the higher elevations of Mount Davidson as well as the Fawnie Creek Valley. Moderate Significance is

designated in the Davidson Creek basin between the Fawnie and Nechako mountain ranges (**Figure 3.2-1**).

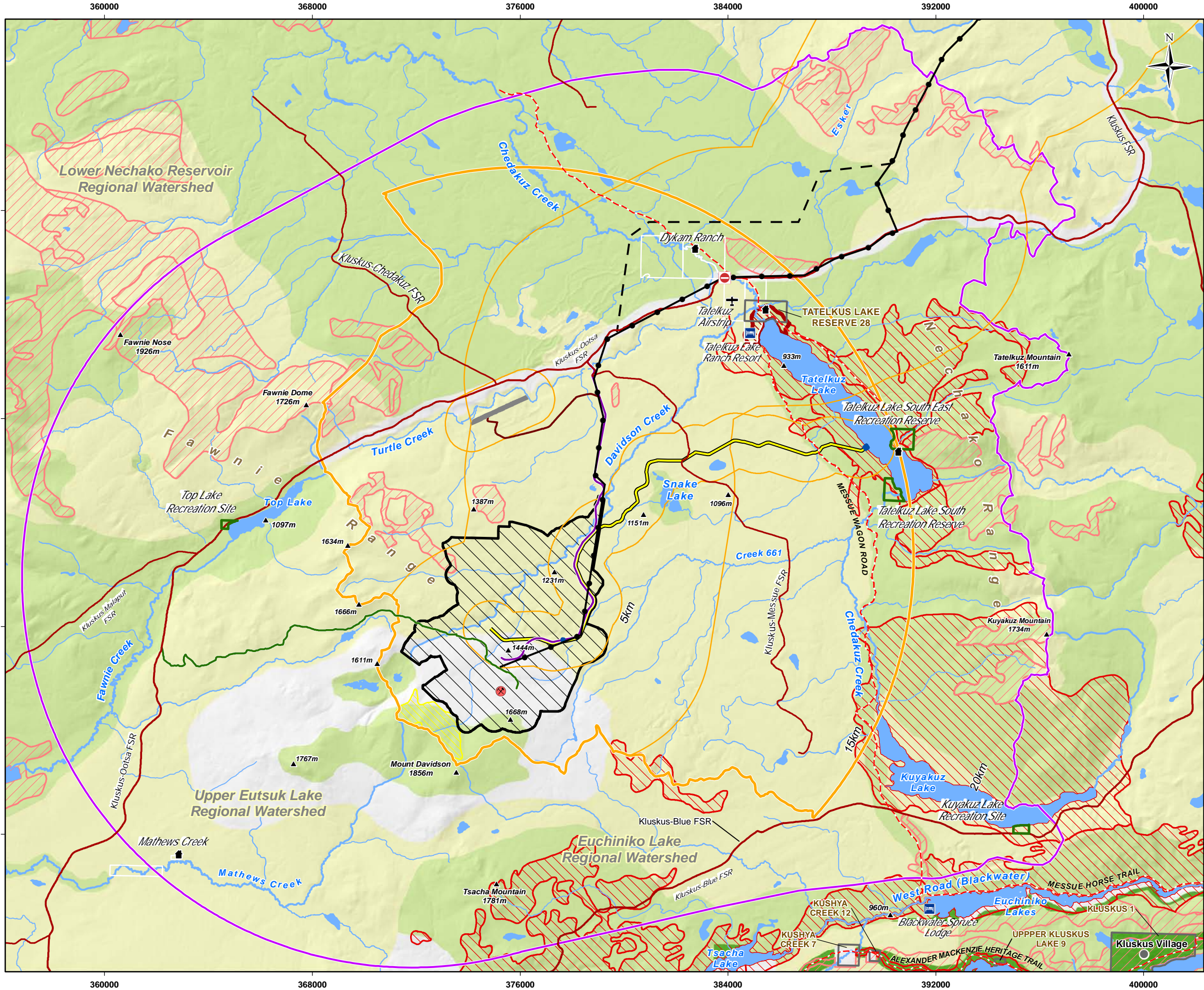
Scenic quality is a major factor in recreational use, and forest landscapes often provide the scenic backdrop highly valued by the public and the tourism industry. Maintaining visual quality from a recreational and tourism perspective includes the following strategies (Vanderhoof LRMP, 2005):

- Alterations should borrow from natural line and form to an extent that they are comparable to natural occurrences;
- Plan timber harvesting to manage for viewscales (consider modifications using deciduous trees);
- Consult with stakeholders when designing a landscape plan; and
- Viewscape management strategies considered for areas with high scenic quality that may be affected by the Project.

MCSCD recreation sites are mainly associated with major lakes where forestry activities are carefully managed to maintain a higher scenic quality rating with the following areas identified in the mine site LSA and RSA (**Figure 3.2-2**):

- Top Lake South (in the Fawnie Creek Valley on the west slopes of the Fawnie Range accessible via the Kluskus-Ootsa Road);
- Kuyakuz Lake (south slopes of Kuyakuz Mountain in the Nechako Range accessible via the Kluskus-Blue Road);
- Tatelkuz Lake South (southwest shores of Tatelkuz Lake at the inflow of the Chedakuz Creek); and
- Tatelkuz Lake South East (southeast shores of Tatelkuz Lake).

Views generally focus on lakes with rest areas and rustic picnic facilities offered to self-serve visitors. Refer to baseline views and ratings tables for description of views and baseline characteristics from the main viewpoints (**Table 3.2-1** and **Table 3.2-2**).



Legend

- Populated Place
- ▲ Spothights
- ⊘ Restricted Access
- Forestry Service Roads
- - - Recreation Trails
- ▭ Recreation Sites
- ▭ Private Land
- ▭ Indian Reserves

Project Components

- ⊗ Blackwater Camp
- Exploration Road
- Proposed Mine Access Road
- Proposed Transmission Line
- - - Proposed Transmission Line Reroute
- Proposed Fresh Water Pipeline
- Proposed Airstrip Access Road
- ▭ Proposed Airstrip Extent
- ▭ Proposed Fresh Water Pipeline Intake
- ▭ Proposed Mine Site

Visual Landscape Inventory (VLI)

Visual Sensitivity

- ▨ Very High
- ▨ High
- ▨ Moderate
- ▨ Low

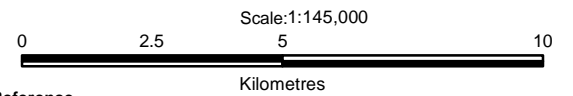
Recreation Features Inventory (RFI)

Recreation Significance

- ▨ Very High
- ▨ High
- ▨ Medium
- ▨ Low
- ▨ Unknown

Visual Resources

- ▨ Local Study Areas
- ▨ Regional Study Areas



Reference
 BC Government GeoBC Data Distribution
 BCGOV FLNRO Recreation Sites and Trails Branch

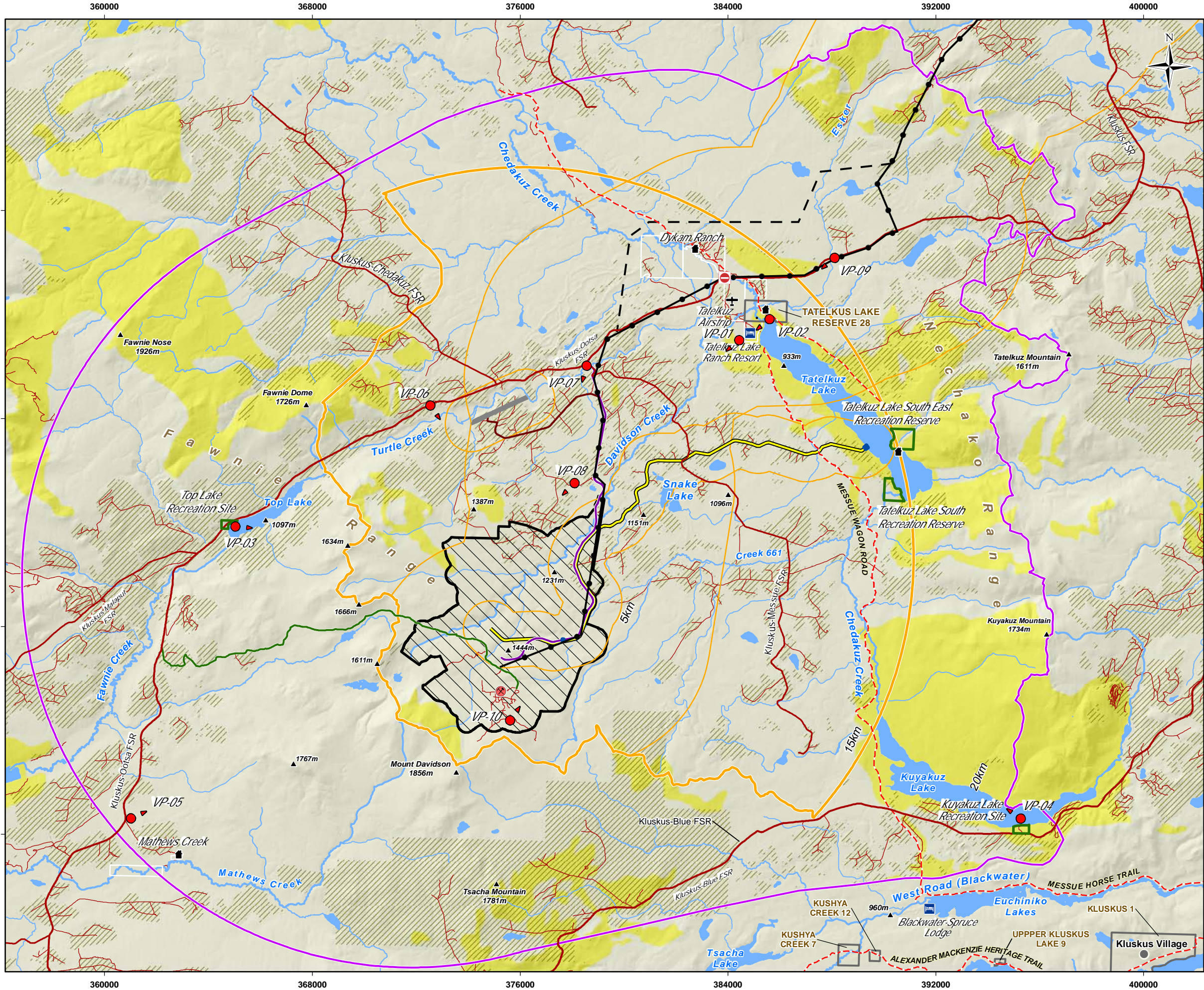
CLIENT: **newgold**

PROJECT: **Blackwater Gold Project**

Recreational and Scenic Resources in the Mine Site Study Areas

DATE: November, 2013	ANALYST: WR	Figure 3.2-1
JOB No: VE52095	QA/QC: SB	PDF FILE: 19-20_RecValMine_v3.pdf
GIS FILE: 19-20_RecValMine_v3.mxd		amec
PROJECTION: UTM Zone 10	DATUM: NAD83	

Y:\GIS\Projects\VE\VE52095_Richfield_Blackwater\Mapping\19_20_RecVal\Line_v3.mxd



Legend

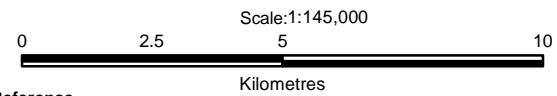
- Populated Place
- ▲ Spothights
- ⊘ Restricted Access
- Forestry Service Roads
- Logging Roads
- - - Recreation Trails
- ▭ Recreation Sites
- ▭ Private Land
- ▭ Indian Reserves
- ▨ Forest Cut Blocks
- ▨ Scenic Areas

Project Components

- ⊘ Blackwater Camp
- Exploration Road
- Proposed Mine Access Road
- ◆ Proposed Transmission Line
- - - Proposed Transmission Line Reroute
- Proposed Fresh Water Pipeline
- Proposed Airstrip Access Road
- ▭ Proposed Airstrip Extent
- ▭ Proposed Fresh Water Pipeline Intake
- ▭ Proposed Mine Site

Visual Resources

- ▨ Local Study Areas
- ▨ Regional Study Areas
- Photographic Survey Locations



Reference
BC Government GeoBC Data Distribution
BCGOV FLNRO Recreation Sites and Trails Branch

CLIENT: **newgold**

PROJECT: **Blackwater Gold Project**

Photograph Viewpoints in the Mine Site Study Areas

DATE: December, 2013	ANALYST: WR	Figure 3.2-2
JOB No: VE52095	QA/QC: SB	PDF FILE: 19-21_RecLocMine_v4.pdf
GIS FILE: 19-21_RecLocMine_v4.mxd		amec
PROJECTION: UTM Zone 10	DATUM: NAD83	

Y:\GIS\Projects\VE\VE52095_Richfield_Blackwater\Mapping\19_Visual_Aesthetics\Baseline\19-21_RecLocMine_v4.mxd

3.2.3 Photographic Survey

Table 3.2-1: Photo Viewpoint Baseline Views in the Mine Site Study Areas

No.	Viewpoint Name	View Description	Baseline Characteristics
VP-01	Tatelkuz Lake Ranch Resort	Looking South West towards the Fawnie Mountain Range from the lodge	Agricultural setting with fields, paddocks, and sheds. Forest cut blocks visible on surrounding hillsides
VP-02	Tatelkuz Lake Reserve 28	View from location near the reserve looking South West towards Mount Davidson	
VP-03	Top Lake Recreation Site	Looking East towards the Fawnie Mountain Range from the recreation site	Forestry setting with clear cuts and FSRs. Water features dominate immediate view (Top Lake), Mountains framing outward views (Fawnie Range). Cleared forest cut blocks visible on the surrounding slopes
VP-04	Kuyakuz Lake Recreation Site	Looking North West towards the Fawnie Mountain Range from the recreation site	Natural setting. Water features dominate immediate view (Kuyakuz Lake), Mountains framing outward (Nechako Range) and distant views (Fawnie Range). No forest cut blocks visible from the area.
VP-05	Mathews Creek Private Land	Looking North East towards Mount Davidson from the turnoff to the property	Forestry setting with clear cuts and FSRs. Mountains framing outward views (Fawnie Range, Mount Davidson). Cleared forest cut blocks visible on the surrounding slopes
VP-06	Kluskus-Ootsa FSR (Turtle Creek Valley)	Looking South East towards the Davidson Creek from the FSR	Forestry setting with overriding effects of logging practices (active FSRs, differing stand heights, clear cuts, root and offcut piles, erosion). Mountains framing outward views (Fawnie and Nechako Ranges)
VP-07	Kluskus-Ootsa FSR (proposed mine access road)	Looking South towards the undulating hills of the Davidson Creek basin	
VP-08	Davidson Creek (Fawnie Range View)	Looking South West towards the Fawnie Mountain Range from a location near Davidson Creek	
VP-09	Kluskus-Ootsa FSR (Nechako Range)	Looking South West towards the Fawnie Range along the FSR descending from the Nechako Mountain Range	
VP-10	Mount Davidson (Nechako Range View)	Looking North East across Davidson Creek Basin towards Tatelkuz Lake and the Nechako Mountain Range	Forestry setting with most surround areas a patchwork of clear cuts. Fawnie Range framing outward views, Nechako Range framing distant views. Bottom end of Tatelkuz Lake faintly visible in the distance

Source: Field visit (11 to 13 March 2013)

Note: Baseline views of locations near the mine site area (Davidson Creek Basin between the Fawnie and Nechako Mountain Ranges). Characteristics and Ratings applicable to the direction the photograph was taken (**Figure 3.2-2**).

Table 3.2-2: Landscape Rating for Photo Viewpoints in the Mine Site Study Areas

No.	Viewpoint Name	Rationale (Potential Viewers & Relevance)	Visibility	Viewer Sensitivity	Scenic Quality
VP-01	Tatelkuz Lake Ranch Resort	Permanent resident and commercial operation in the Mine Site LSA	Enclosed: Densely forested, ridgelines blocking view outside immediate viewshed	Very Low	Low
VP-02	Tatelkuz Lake Reserve 28	Permanent resident and historic settlers in the mine site LSA	Partially Enclosed: Surrounded by patches of forests, mountain ranges visible in the distance	Low	Low
VP-03	Top Lake Recreation Site	Recreation site utilized by visitors for picnics, camping, kayaking, fishing, and hunting in the mine site RSA	Partially Enclosed: Surrounded by patches of forests with hills, some views in specific directions	Low to Moderate	Moderate
VP-04	Kuyakuz Lake Recreation Site		Unrestricted views across water body up to nearest ridgeline or mountain	Moderate	High
VP-05	Mathews Creek Private Land	Permanent resident in the mine site RSA	Forested with numerous clear cuts, resulting in relatively open landscapes and views	Low	Low to Moderate
VP-06	Kluskus-Ootsa FSR (Turtle Creek Valley)	Strategic location illustrating general character and visibility of landscapes as well as current land use in the mine site LSA	Forested with numerous clear cuts and elevated road, resulting in relatively open views	Low to Moderate	Low
VP-07	Kluskus-Ootsa FSR (proposed mine access road)		Forested with numerous clear cuts along road, resulting in relatively open views	Low to Moderate	Very Low
VP-08	Davidson Creek (Fawnie Range View)		Forested with some clear cuts, resulting in relatively open views	Low	Very Low
VP-09	Kluskus-Ootsa FSR (Nechako Range)		Forested with some clear cuts along the road, resulting in relatively open views	Low	Low
VP-10	Mount Davidson (Nechako Range View)		Open vegetation at relatively high altitudes resulting in unrestricted views across lower lying areas	Low	Low to Moderate

Source: Field visit (11 to 13 March 2013)

Note: Landscape Ratings of locations near the mine site area (Davidson Creek Basin between the Fawnie and Nechako Mountain Ranges). Characteristics and Ratings applicable to the direction the photograph was taken.

3.3 Transmission Line Study Area

Topography: The transmission line study area traverses through the Nechako Plateau, spanning the basin of the Nechako River and its main tributaries the Stuart and Endako Rivers. The Plateau is bounded in the south by the Blackwater River. Low mountains surround Francois Lake (Fraser Mountain 1,053 m, Nithi Mountain 1,352 m, and Holy Cross Mountain 1,425 m) with peaks at a comparable elevation scattered throughout the Nulki Hills further to the east (Mount Greer 1,247 m, Nulki Peak 1,527 m, and Iron Mountain 1,270 m). Between these two undulating areas, the Nechako River cuts through the Nechako Canyon

from the Kenney Dam wall below the Nechako Reservoir onto open floodplains below Fraser Lake.

Between the Nulki Hills and the Nechako Range, a series of gradual watershed boundaries divide streams flowing east into Finger and Tatuk Lakes and west into Knewstubb Lake. Further to the south, the Nechako and Fawnie ranges feature much higher peaks between 1,611 m and 1,856 m as highlighted in the section on the mine site area (**Figure 2.2-1**).

Visibility: Due to the undulating nature of the terrain and vegetation cover, visibility is often limited to the immediate viewshed along the main FSRs with views over the larger region opening up on higher ridges and/or when a cut block were cleared next to the road. Due to the effects of monoculture and close configuration of saplings to increase vertical volume, forest cover is very dense throughout the area. When larger views open up beyond 5 km to 10 km, it is at a distance where texture and detail are absent from the view.

3.3.1 Current Land Use and Site Conditions

Forestry: Forest tenures, cut blocks, and associated FSRs are located throughout the VFD. Forestry activities described for the mine site study areas also applies to the transmission line study areas.

Livestock and Tourism: Due to accessibility along Highway 16, an increased number of cattle ranches are located in the north where various range tenures span crown land in less populated areas. The following rangeland tenures are located near the proposed transmission line alignment:

- Susan Steiner (Nithi Mountain);
- Chester Larson (Nithi Road and Valley);
- CTN Ranching Ltd. (Between Smith Creek and the Nechako River); and
- Rim Rock Ranch Ltd. (Greek Creek Valley along the Kenney Dam Road).

The north sections of the proposed transmission line study areas are utilized more intensively for tourism activities, with various routes branded and advertised by billboards along the Kluskus FSR, e.g., Big River Country (**Figure 2.2-4**).

Private Land: Private land parcels are clustered around major lakes (Francois Lake, Fraser Lake, Tachik Lake, and Nulki Lake) and adjacent to major rivers in the study area (Nithi River, Smith Creek, Tahultzu Creek) where farmsteads, local roads, power lines, and fence lines combine to create a pastoral setting. Adjacent to the Bigbend Creek, an isolated parcel of private land is located near the northeast inlet of Knewstubb Lake with access along the 500 road (**Figure 2.2-4**).

Hunting and Adventure: As in the mine site study areas, various traplines and guide outfitter areas are located along the proposed transmission line alignment. In addition, groups of private individuals kayak and canoe along the Nechako River Canoe Trail from the Nechako Canyon Protected Area to the confluence with the Endako River.

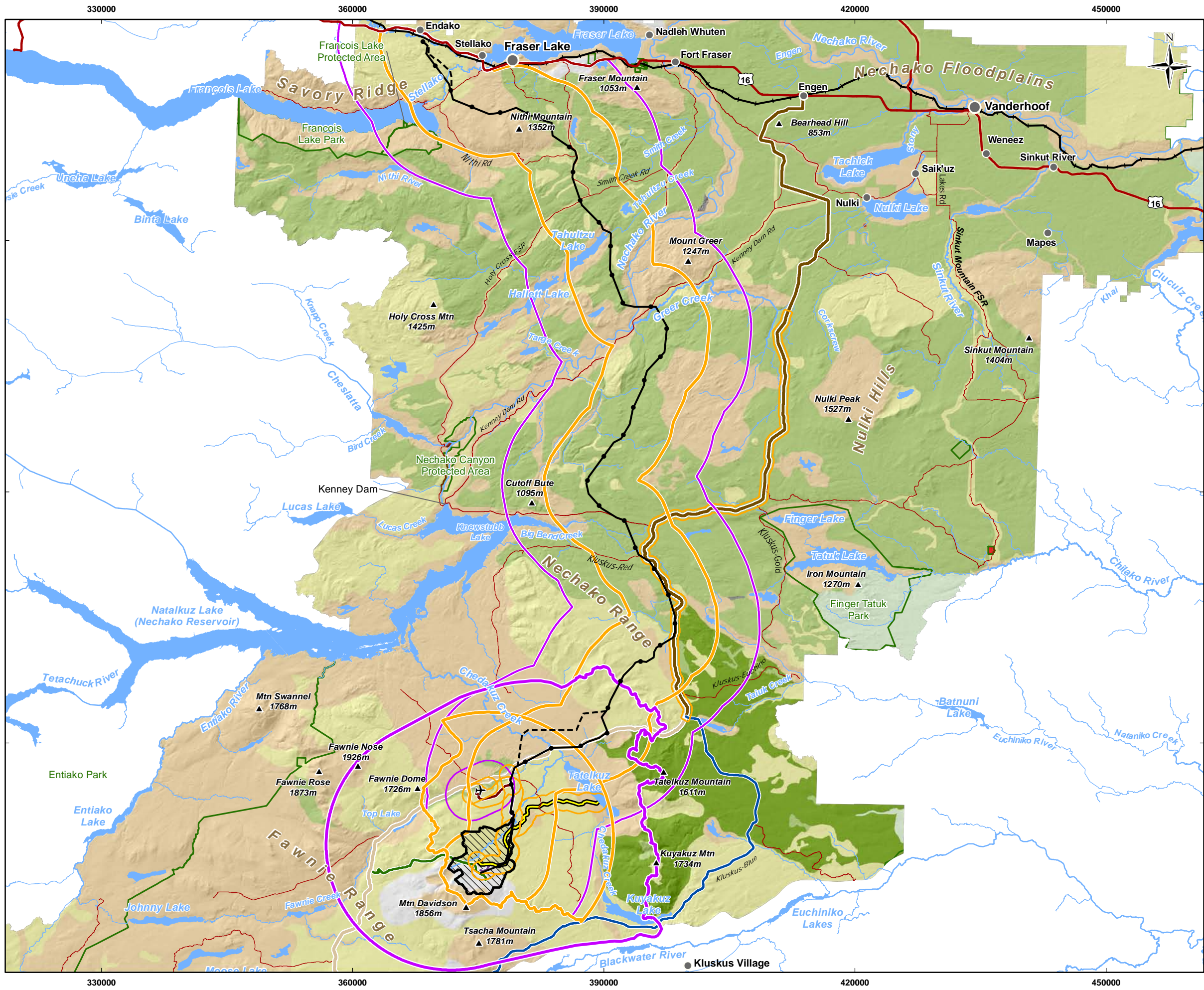
3.3.2 Recreation Locations and Values

Recreation Values: The RFI identifies areas that support recreation, with populated areas classified as having moderate sensitivity. Prominent and scenic landscapes such as major mountain ranges and rivers receive a high significance rating. The following recreation values are located along the proposed alignment of the transmission line (**Figure 3.3-1**):

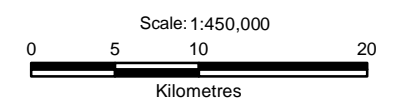
- Endako to the Stellako River – Moderate sensitivity/Low significance;
- Nithi Mountain – Moderate sensitivity/High significance;
- Mount Greer – High significance/Low sensitivity;
- Mount Greer and the Nechako River – Moderate sensitivity/High significance;
- Kenney Dam Road to 500 Road – Low sensitivity/Moderate significance;
- East section of Knewstubb Lake – Moderate sensitivity/High significance;
- Kluskus-Red FSR section – Low sensitivity/Moderate significance; and
- Nechako Range – Moderate sensitivity/Moderate significance.

Recreation Sites: As in the mine site study area, recreation sites are mostly associated with water bodies in the region. The following areas were identified in the transmission line LSA with those in close proximity to the proposed alignment assessed in the photographic evaluation (**Figure 3.3-2**):

- Big Bend Meadow (along the Kluskus FSR where it crosses Big Bend Creek);
- Brewster Lake (northeast slopes of the Nechako Range);
- Casey Lake (south of Endako);
- Chief Gray Lake (east of Cutoff Bute);
- Foster Lake (south of Fraser Lake);
- Greer Creek (confluence of the Nechako River and Greer Creek);
- Hobson Lake (inflow of Big Bend Creek into Knewstubb Lake);
- Nithi River (outflow of Francois Lake); and
- Veronica Lake (southeast of the Greer Creek Recreation Site).



- Legend**
- Populated Place
 - ▲ Spothight
 - ⬮ Highway
 - ⬮ Railway
 - Existing Transmission Line
 - Stream (>=4th Order)
 - Waterbody (>= 5000ha)
 - Parks and Protected Areas
- Forestry Service Roads (FSR)**
- Kluskus FSR
 - Kluskus-Ootsa FSR
 - Kluskus-Blue FSR
 - Other FSRs
- Project Components**
- ✈ Proposed Airstrip
 - Proposed Airstrip Access Road
 - Proposed Transmission Line
 - - - Proposed Transmission Line Reroute
 - Proposed Mine Access Road
 - Proposed Fresh Water Pipeline
 - Exploration Road
 - ▨ Proposed Mine Site
- Sensitivity and Significance Rating**
- High sensitivity, very high significance
 - High sensitivity, high significance
 - Moderate sensitivity, high significance
 - Moderate sensitivity, moderate significance
 - Low sensitivity, high significance
 - Low sensitivity, moderate significance
 - Low sensitivity, Low significance
- Visual Resources**
- Local Study Areas
 - Regional Study Areas



Reference
 BC Government GeoBC Data Distribution
 NRCAN Geobase
 Ministry of Forests, Lands and Natural Resource Operations

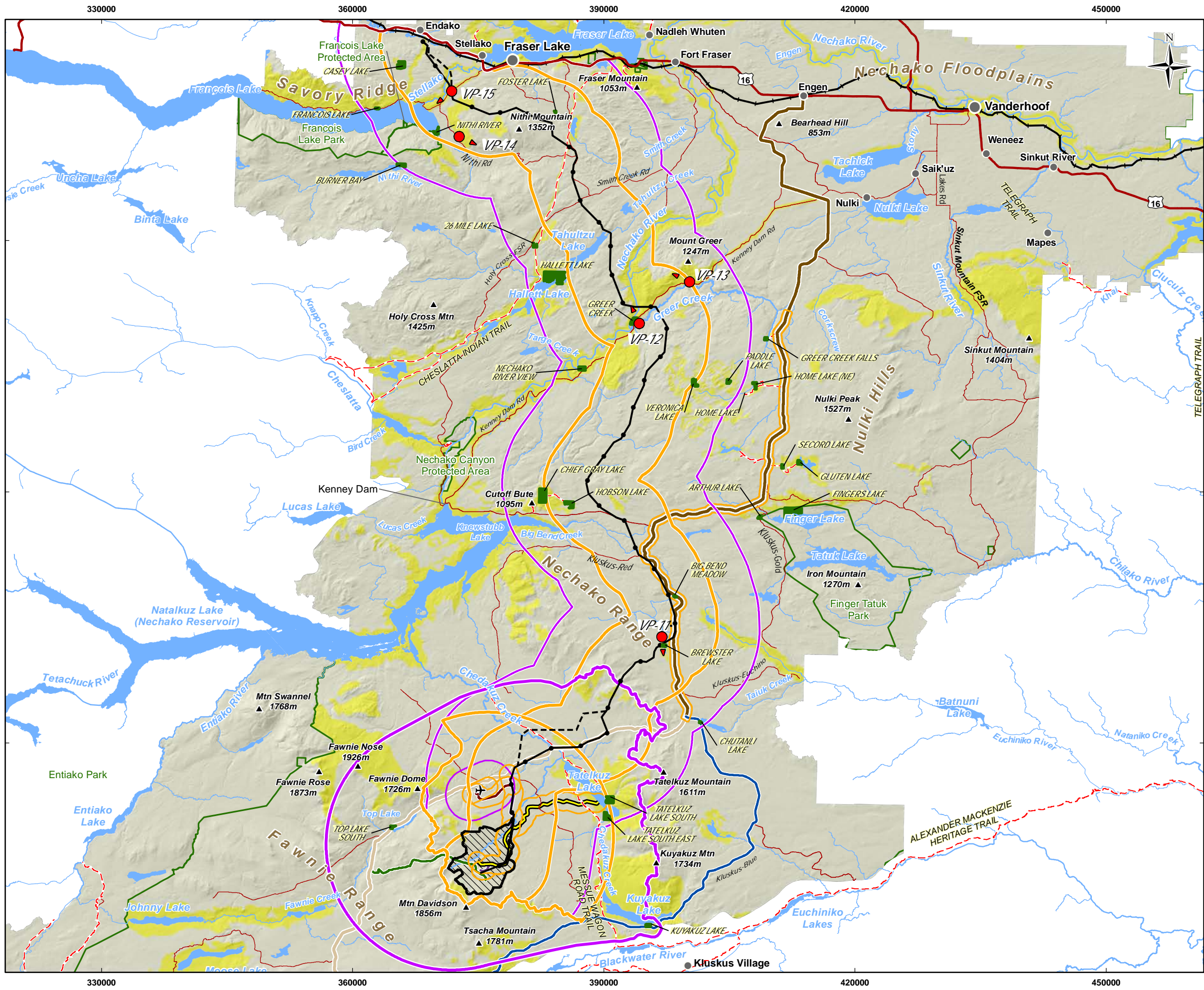
CLIENT:

PROJECT: Blackwater Gold Project

Recreation Values in the Proposed Transmission Line Study Areas

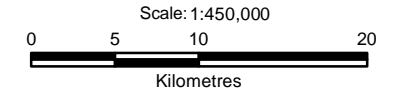
DATE: November, 2013	ANALYST: WR	Figure 3.3-1
JOB No: VE52277	QA/QC: SB	PDF FILE: 19-23_RecValPTL_v2.pdf
GIS FILE: 19-23_RecValPTL_v2.mxd		
PROJECTION: UTM Zone 10	DATUM: NAD83	

X:\GIS\Projects\VE\VE52277\Rightfield_Blackwater\Map\Map19_23_RecValPTL_v2.mxd



Legend

- Populated Place
- ▲ Spothight
- 16 Highway
- ✈ Railway
- Existing Transmission Line
- ▭ Parks and Protected Areas
- Forestry Service Roads (FSR)**
- Kluskus FSR
- Kluskus-Ootsa FSR
- Kluskus-Blue FSR
- Other FSRs
- Project Components**
- ✈ Proposed Airstrip
- Proposed Airstrip Access Road
- Proposed Transmission Line
- - - Proposed Transmission Line Reroute
- Proposed Mine Access Road
- Proposed Fresh Water Pipeline
- Exploration Road
- ▭ Proposed Mine Site
- Recreation Locations**
- - - Recreation Trails
- Recreation Sites near the Visual Resources Study Areas
- Scenic Areas
- Photographic Survey Locations
- Visual Resources**
- Local Study Areas
- Regional Study Areas



Reference
 BC Government GeoBC Data Distribution
 NRCAN Geobase
 Ministry of Forests, Lands and Natural Resource Operations

CLIENT: **newgold**

PROJECT: **Blackwater Gold Project**

Photograph Viewpoints in the Proposed Transmission Line Study Areas

DATE: November, 2013	ANALYST: WR	Figure 3.3-2
JOB No: VE52277	QA/QC: SB	PDF FILE: 19-24_ReLocPTL_v2.pdf
GIS FILE: 19-24_ReLocPTL_v2.mxd		amec
PROJECTION: UTM Zone 10	DATUM: NAD83	

X:\GIS\Projects\VE\VE52277\Rightfield_Blackwater\Map\19-24_ReLocPTL_v2.mxd

3.3.3 Photographic Survey

Table 3.3-1: Photo Viewpoint Baseline Views along the Proposed Transmission Line

No.	Viewpoint Name	View Description	Baseline Characteristics & Visibility
VP-11	Brewster Lake Recreation Site	Looking South East across Brewster Lake from the main viewpoint	Undisturbed forests adjacent to natural lake with sloping and staggered tree lines covering surrounding ridges. No forest cut blocks visible from the area. Nechako Range framing views in the distance
VP-12	Greer Creek Recreation Site	Looking North down the Nechako River from the main viewpoint	Pastoral setting, homesteads, fence lines. Moving water features (Nechako River) visible and dominant with natural and forested banks
VP-13	Crystal Lake Ranch and Resort	Looking North West along the Kenney Dam Road towards Mount Greer	Agricultural setting with fields, paddocks, and sheds. Mostly natural forests covering nearby Mount Greer
VP-14	Steiner Ranch	Looking East down the Nithi River Valley towards Nithi Mountain	Residential/Agricultural setting with main roads, homesteads, fields, paddocks and sheds. Forests patches covering the lower lying slopes of Nithi Mountain with denser areas along the Nithi River Valley
VP-15	Francoise Lake Road	Looking South West towards Francois Lake at a location near the Heise Ranch	Residential/Agricultural setting with main roads, homesteads, fields, paddocks and sheds

Source: Field visit (11 to 13 March 2013)

Note: Baseline views of locations along the proposed transmission line alignment as per the baseline study. Characteristics and ratings applicable to the direction the photograph was taken (**Figure 3.3-2**).

Table 3.3-2: Landscape Rating for Photo Viewpoints along the Proposed Transmission Line

No.	Viewpoint Name	Rationale (Potential Viewers & Relevance)	Visibility	Viewer Sensitivity	Scenic Quality
VP-11	Brewster Lake Recreation Site	Recreation site utilized by visitors for picnics, camping, kayaking, fishing, and hunting in the proposed transmission line LSA	Enclosed: Densely forested, ridgelines blocking view outside immediate viewshed	High	High
VP-12	Greer Creek Recreation Site		Enclosed: Steep valley slopes limiting views to upstream and downstream	Moderate to High	Moderate
VP-13	Crystal Lake Ranch and Resort	Permanent resident and commercial operation in the proposed transmission line LSA	Open fields adjacent to road resulting in open views along the road and towards Mount Greer	Moderate to High	Low to Moderate
VP-14	Steiner Ranch	Permanent resident and commercial operation in the proposed transmission line LSA	Open areas and rangeland resulting in open views amplified by relatively elevated position	Low	Low to Moderate
VP-15	Francoise Lake Road	Permanent resident in the proposed transmission line LSA	Dense forested areas either side limits views to along the road	Low	Low

Source: Field visit (11 to 13 March 2013)

Note: Landscape ratings of locations along the proposed transmission line alignment as per the baseline study. Characteristics and ratings applicable to the direction the photograph was taken.

3.4 Kluskus FSR Access Road Study Area

3.4.1 Current Land Use and Site Conditions

The Kluskus FSR was built for industrial purposes with up to 100 logging trucks and other heavy transport vehicles travelling along it per day during the peak activity season. It is a managed access road where radio communication procedures are mandatory. Topography and visibility conditions are similar to those described for the proposed transmission line study areas. Densely forested areas line the road and visibility is limited to the right of way (ROW) unless the viewer is passing through a recently cleared cut block.

3.4.2 Recreation Sites

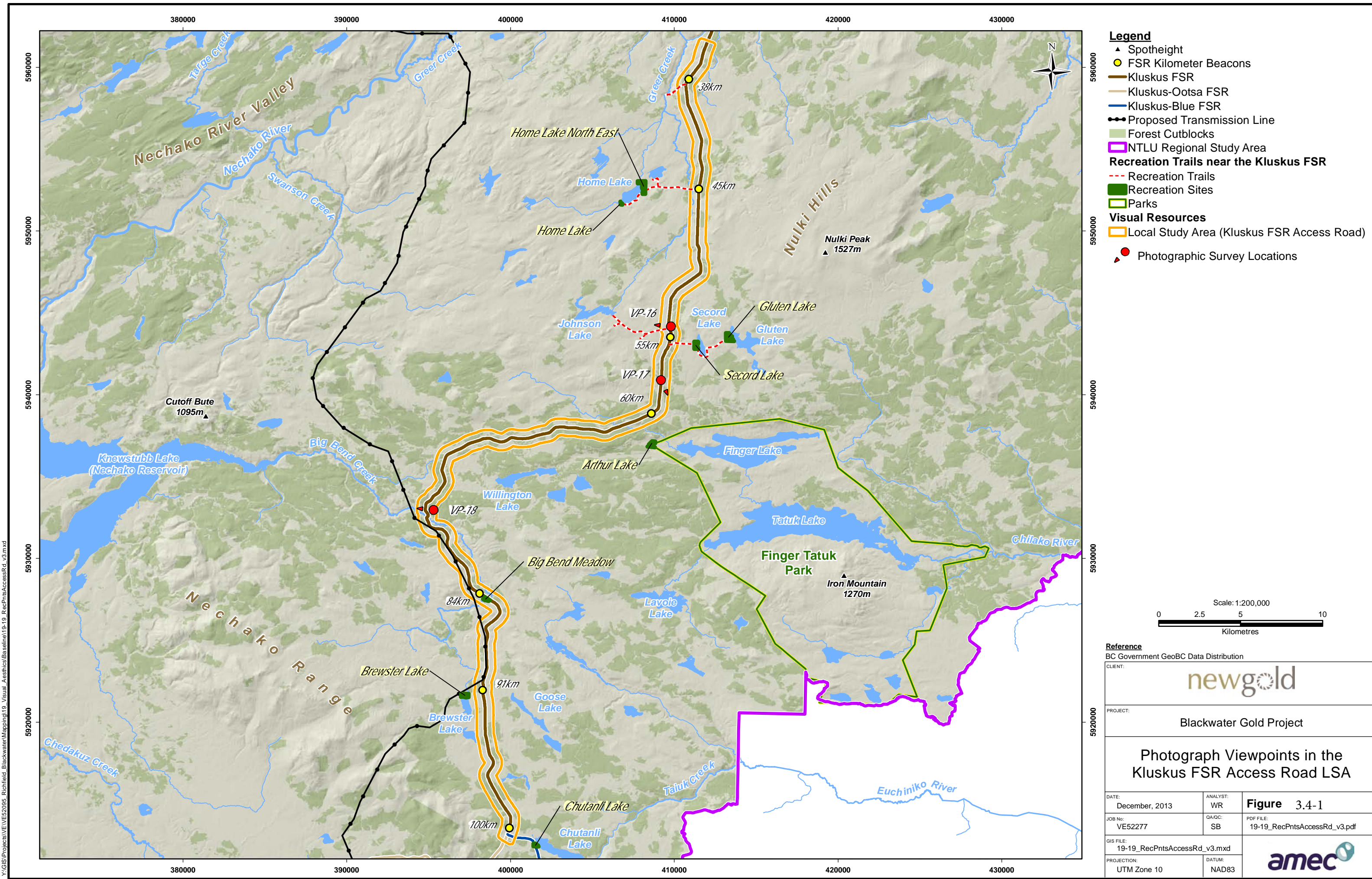
A series of BC MCSCD recreation sites are located along the Kluskus FSR between the Nulki Hills and the Nechako Range. Trailheads are located adjacent to the road where recreational visitors park their vehicles and follow short trails (1 km to 5 km) leading to recreation sites and lakes in the region (**Figure 3.4-1**):

- Greer Creek Falls Trailhead (at the 38 km FSR beacon);
- Johnson Lake Trailhead (at the 55 km FSR beacon);
- Home Lake Trailhead (at the 45 km FSR beacon);
- Home Lake Northeast Trailhead (at the 45 km FSR beacon); and
- Gluten and Secord Lake Trailhead (at the 55 km FSR beacon).

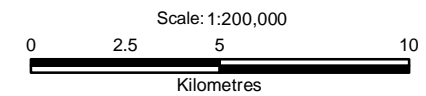
The following *recreation sites* have no specific trails leading to them; however, are along or near the Kluskus FSR:

- Arthur Lake (near the Kluskus FSR at the 60 km beacon);
- Big Bend Meadow (adjacent to the FSR at the 55 km beacon);
- Brewster Lake Trail (access road at 91 km FSR beacon);
- Chutanli Lake (east of the intersection of the Kluskus and Kluskus-Blue FSRs near the 100 km beacon); and
- Finger Lake (near the Kluskus FSR at the 60 km beacon).

In addition, the northwest corner of Finger Tatuk Park is located approximately 2 km from the Kluskus FSR.



- Legend**
- ▲ Spotheight
 - FSR Kilometer Beacons
 - Kluskus FSR
 - Kluskus-Ootsa FSR
 - Kluskus-Blue FSR
 - Proposed Transmission Line
 - Forest Cutblocks
 - NTLU Regional Study Area
- Recreation Trails near the Kluskus FSR**
- - - Recreation Trails
 - Recreation Sites
 - Parks
- Visual Resources**
- Local Study Area (Kluskus FSR Access Road)
 - Photographic Survey Locations



Reference
BC Government GeoBC Data Distribution

CLIENT: **newgold**

PROJECT: Blackwater Gold Project

Photograph Viewpoints in the Kluskus FSR Access Road LSA

DATE: December, 2013	ANALYST: WR	Figure 3.4-1
JOB No: VE52277	QA/QC: SB	
GIS FILE: 19-19_RecPntsAccessRd_v3.mxd		amec
PROJECTION: UTM Zone 10	DATUM: NAD83	

Y:\GIS\Projects\VE\VE52095_Richfield_Blackwater\Mapping\19-19_Visual_Aesthetics\Baseline\19-19_RecPntsAccessRd_v3.mxd

3.4.3 Photographic Survey

Table 3.4-1: Baseline Views of Photo Viewpoints along the Kluskus FSR Access Road

No.	Viewpoint Name	View Description	Baseline Characteristics
VP-16	Johnson Lake Recreation Site Trailhead	Looking west from the Kluskus FSR towards the start of the Johnson Lake Hiking Trail	Forestry setting with industrial use FSR and related traffic, differing stand heights and clear cuts
VP-17	Kluskus FSR (Finger Tatuk Park)	Looking southeast towards the park and lakes in the distance from a location along the FSR	Forestry setting with industrial use FSR and related traffic, differing stand heights and clear-cuts. Rolling hills and mountain ranges faintly visible in the far distance
VP-18	Bigbend Creek/Access Road/Transmission Line Intersection	Looking northwest up the Bigbend Creek Valley from the Kluskus FSR bridge	Pastoral setting. Flowing water visible with natural and forested banks

Source: Field visit (11 to 13 March 2013)

Note: Baseline views of locations along the access road. Characteristics applicable to the direction the photograph was taken.

Table 3.4-2: Landscape Rating for Photo Viewpoints along the Kluskus FSR Access Road

No.	Viewpoint Name	Rationale (Potential Viewers & Relevance)	Visibility	Viewer Sensitivity	Scenic Quality
VP-16	Johnson Lake Recreation Site Trailhead	Representative example of a trailhead along the access road (1 of 5), leading to recreation sites at lakes and falls within walking distance of the Kluskus FSR use in the access road LSA	Densely forested areas confine views to immediate viewshed along the road unless next to a clear cut and/or on a higher lying ridge	Low	Low
VP-17	Kluskus FSR (Finger Tatuk Park)	Strategic location illustrating general character and visibility of landscapes as well as current land use in the access road LSA		Low	Low
VP-18	Bigbend Creek/Access Road/Transmission Line intersection		Enclosed: Steep valley slopes limiting views to upstream and downstream	Low	Low to Moderate

Source: Field visit (11 to 13 March 2013)

Note: Baseline views of locations along the Kluskus FSR access road. Characteristics and ratings applicable to the direction the photograph was taken.

3.5 Fresh Water Pipeline Study Area

The fresh water pipeline is planned to route from the mine site along the southeast banks of Davidson Creek, cross the undulating terrain of the lower Davidson Watershed through numerous forest cut blocks, an intake on the southwest shoreline of Tatelkuz Lake. The proposed pipeline will be buried, and the analysis is focused on the ROW created along the alignment, indicating disrupted line-of-sight with increasing visibility lower down the slope, narrowing to areas closer to the alignment as it nears Tatelkuz Lake (**Figure 2.2-5**).

3.5.1 Current Land Use and Site Conditions

The alignment routes through Crown land used mainly for forestry and related activities (refer to VP-08 for general character of landscapes and impacts of current land uses along the upper and middle sections of the alignment). There are no private land parcels near the alignment.

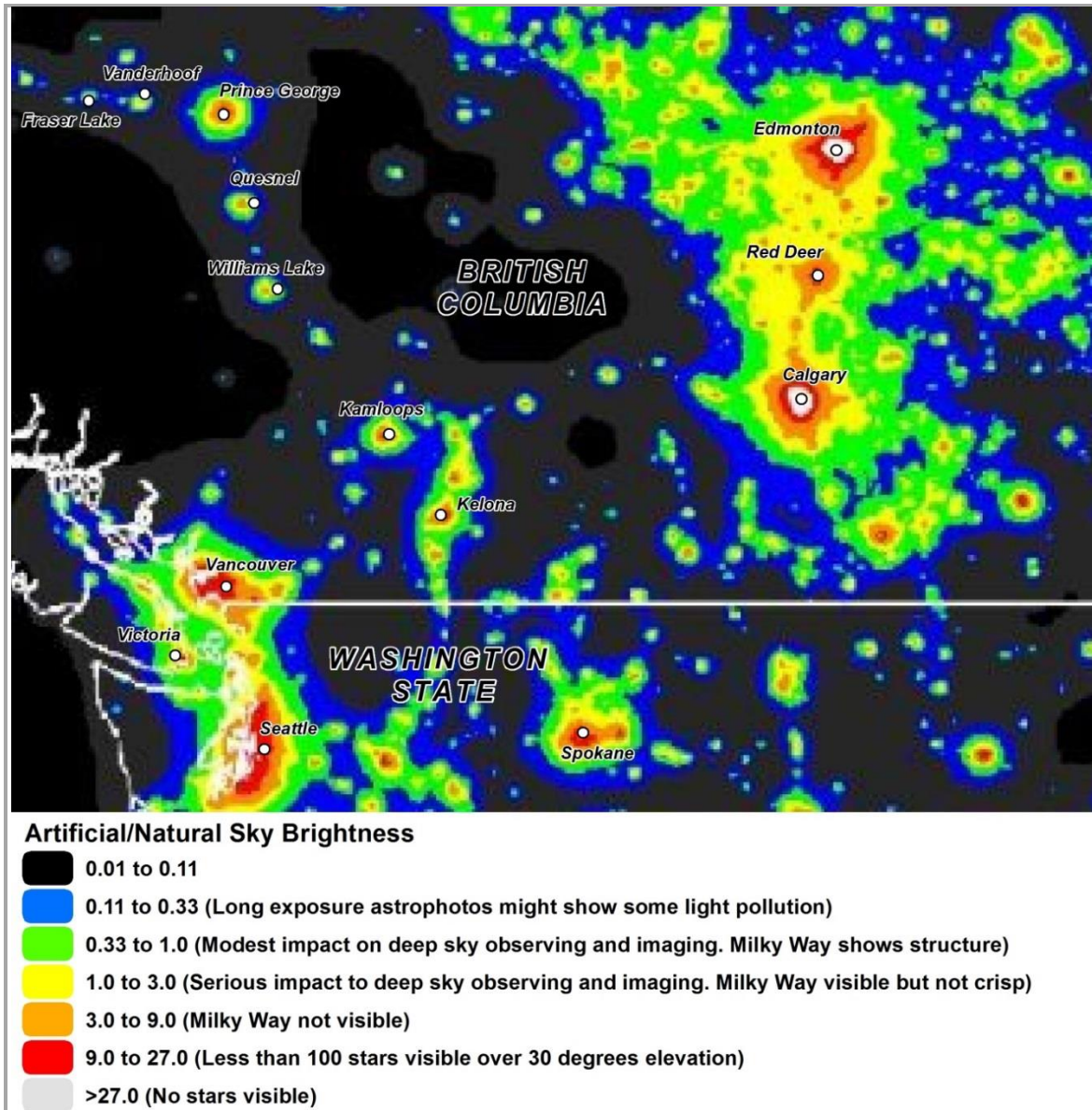
3.5.2 Recreation Locations and Values

The east section of the alignment crosses the Messue Wagon Road Heritage Trail in an area with High Recreation Significance and High Visual Sensitivity along the southwest banks of Tatelkuz Lake. The Tatelkuz Lake South East recreation reserve is located directly opposite the lake from the pipeline inlet. The Tatelkuz Lake South recreation reserve is located 1.5 km to the south. During warmer months, the lake is used for recreational activities such as kayaking and fishing (**Figure 3.2-2**).

3.6 Light Pollution – Current Conditions in Southern BC

Major cities and towns in BC (e.g., Vancouver, Victoria, Kelowna, Kamloops, Prince George) currently reflect levels of artificial and natural sky brightness of up to 27 magnitudes per square arcsecond (mags/sq arcsec), indicating less than 100 stars visible over 30 degrees of elevation. In comparison, cities in Alberta, such as Edmonton and Calgary, measure more than 27 mags/sq arcsec, which indicate that no stars may be visible. Closer to the Project, small towns, such as Williams Lake and Quesnel, measure up to 9 mags/sq arcsec, indicating that the Milky Way may not be visible.

Smaller towns in the NTLU RSA, such as Vanderhoof and Fraser Lake, measure only 3 mags/sq arcsec, resulting in the Milky Way being visible but not crisp, with modest to serious impacts to sky observation and imaging. The majority of the Visual Resources study areas fall within 0.01 to 0.11 mags/sq arcsec, indicating good potential for astronomical activities (**Figure 3.6-1**).



Source: BC Royal Astronomical Society of Canada

Figure 3.6-1: Artificial and Natural Sky Brightness

3.7 Airstrip and Airstrip Access Road Study Areas

3.7.1 Current Land Use and Site Conditions

The proposed airstrip footprint is located in the Turtle Creek Valley near the Kluskus-Ootsa FSR, in the Davidson RMZ where access is restricted from the Chedakuz Creek crossing. The surrounding area is intensively utilized for timber harvesting with forest cut blocks overlapping and surrounding the footprint.

3.7.2 Recreation Locations and Values

There are no scenic areas overlapping the airstrip and airstrip access road LSAs. One VSU with a moderate sensitivity rating is located in the southwest section of the airstrip RSA. The airstrip and airstrip access road LSAs fall within an area of moderate recreation significance. High significance is limited to the section of the airstrip RSA north of the Kluskus-Ootsa FSR. No recreation sites are located within the airstrip LSA and RSA as well as the airstrip access road LSA.

4.0 CONCLUSIONS

The Visual Resources study areas are located on the Nechako Plateau, where sub-mountain ranges (Fawnie, Nechako, Telegraph) prominent river valleys (Chedakuz Creek, Greer Creek, Nechako River), and late-glacial lakes (Tatelkuz, Kuyakuz, Knewstubb) combine with low population densities to result in a relatively natural setting.

However, the influence of forestry land uses and activities are pervasive throughout. Forest cutblocks, clear-cuts, FSRs and logging roads, differing stand heights and densities, root and off-cut piles and monoculture patterns are evident in most landscapes not designated as scenic areas by the VLI. The effects of clear cutting are more evident during the winter months when clear cuts are cover with snow. This is especially evident along the higher lying mountain ranges when passing through the area along the main FSRs.

Relatively natural areas are located within VSUs with a Moderate to Very High Visual Sensitivity along the higher lying mountain ranges. Generally, operations are adapted to manage scenic quality within the viewsapes of MCSCD recreation sites. In particular, Brewster Lake and Kuyakuz Lake where near park-like viewsapes are available over adjacent lakes, surrounding tree lines and hills. Viewer sensitivity is relatively high at recreation sites due to their popularity amongst locals and visitors.

Recreationally significant areas are located within the mine site study area along the Nechako Range, Tsacha Mountain, Fawnie Creek Valley and southwest slopes of Mount Davidson. Visually Sensitive areas are located around Tatelkuz and Kuyakuz Lakes and the higher elevations of the Nechako and Fawnie Ranges.

Visibility is limited to viewsheds along the main roads, opening up to some extent at the ridgelines of regional watershed, when passing by clear-cuts next to the road. Visibility within the mine site study area is contained by the southern and western boundaries of the Lower Nechako regional watershed boundaries. Viewscapes extent to the east from the mine footprint towards the slopes of the Nechako Range.

A high number of private land parcels are located to the north, mostly near major lakes and rivers where access is readily available from Highway 16 and other main roads. Population densities are lower in the southern parts of the study areas where a number of cattle ranches are located within rangeland tenures. In the mine site study areas, private ranches are limited the north end of Tatelkuz Lake. Recreation lodges and resorts are located adjacent to major lakes in the region. Some lodges coincide with cattle ranches within a pastoral character, where outdoor activities such as kayaking, hiking, fishing, horseback riding, and ATVing are offered to visitors. The majority of the Visual Resources study areas fall within a low level of artificial/natural sky brightness.

REFERENCES

- AMEC. Environment and Infrastructure. 2013. Draft Application Information Requirements for New Gold Inc. (Version B).
- Aviation Environment Federation (AEF), principal UK non-profit environmental association concerned with the environmental effects of aviation. Available at <http://www.aef.org.uk/>. Accessed July 2013.
- BC Hydro. Guidelines for development near overhead transmission lines in BC. Available at <http://transmission.bchydro.com/home>. Accessed April 2013.
- BC Journal of Ecosystems and Management. 2006. An assessment of critical assumptions supporting the timber supply modeling for mountain-pine-beetle-induced allowable annual cut uplift in the Prince George Timber Supply Area. John Pousette and Chris Hawkins.
- BC MFLNRO . Establishment of Scenic Areas and Visual Quality Objectives (VQO's) for the Vanderhoof Forest District (VFD). 2012. Objectives for Visual Quality ver: 4.0. Available at http://www.for.gov.bc.ca/ftp/DVA/external/!publish/Scenic%20Areas-VQOs_DVA/sept1808order.pdf. Accessed 2013.
- BC Ministry of Forests Lands and Natural Resource Operations (BC MFLNRO). 2012. Vanderhoof Forest District Land and Resource Management Plan. Available at http://www.ilmb.gov.bc.ca/sites/default/files/resources/public/PDF/LRMP/Vanderhoof_LRMP.pdf. Accessed 2013.
- BC MOF. 1998. Recreation Features Inventory Procedures and Standards Manual. October 1998. Available at <http://www.ilmb.gov.bc.ca/risc/pubs/culture/rfi/assets/rfi.pdf>. Accessed July 2012.
- BC MOF. 2001. Visual Impact Assessment Guidebook. Second edition. Forest Practices Branch. Available at <http://www.for.gov.bc.ca/tasb/legsregs/fpc/fpcguide/VISUAL/VIA-01.pdf>. Accessed July 2012.
- BC MOF. 2012. Prince George Timber Supply Area (TSA) Mid-term Report. Available at http://www.for.gov.bc.ca/hfp/mountain_pine_beetle/mid-term-timber-supply-project/Prince%20George%20TSA.pdf. Accessed 2013.
- British Columbia Ministry of Forests (BC MOF). Forest Practices Branch. 1997. Visual Landscape Inventory. Procedures and Standards Manual. May 1997. Available at <http://www.ilmb.gov.bc.ca/risc/pubs/culture/visual/vli.pdf>. Accessed July 2012.
- Canadian Forest Products Ltd. Forest Management Group. 2012. Vanderhoof Defined Forest Area. Sustainable Forest Management Plan.

Dark-Sky Guidelines, Royal Astronomical Society of Canada, Robert Dick, March 2008, revise 2011. Available at <http://www.rasc.ca/lpa/guidelines>. Accessed July 2013.

Government of BC, 1976. *Landforms of British Columbia; A Physiographic Outline*.
Stuart S. Holland.

Government of BC, 2000. *Protected Areas of British Columbia Act*. SBC 2000, c17.

Government of BC, 2002. *Forest and Range Practices Act*. SBC 2002, c. 69.

Government of British Columbia (BC), 1996. *Park Act*. RSBC 1996, c344.

Light Pollution and Ecosystems, Travis Longcore and Catherine Rich, University of Southern California, 2006. Available at http://www.actionbioscience.org/environment/longcore_rich.html. Accessed 2013.

World Atlas of Artificial Sky Brightness, produced by: P. Cinzano, F. Falchi (University of Padova), C.D. Elvidge (NOAA National Geophysical Data Center, Boulder, Colorado, USA).

ANNEXES





Annex 1
Photographs Taken From Viewpoints
in the Visual Resources Study Areas



Photo VP-01: *Tatelkuz Lake Ranch Resort. Looking Southwest towards the Fawnie Range from the lodge captured at X384,845 Y5,907,313 (UTM10) on 13/03/2013 (7:55AM) during winter*



Photo VP-02: *Tatelkuz Lake Reserve 28. View from a location near the reserve, looking Southwest towards Mount Davidson captured at X384,591 Y5,907,989 (UTM10) on 13/03/2013 (8:05AM) during winter*



Photo VP-03: *Top Lake Recreation Site. Looking East towards the Fawnie Range captured at X364,761 Y5,899,901 (UTM10) on 12/03/2013 (7:40AM) during winter*



Photo VP-04: *Kuyakuz Lake Recreation Site. Looking Northwest towards the Fawnie Range captured at X395,186 (UTM10) Y5,888,325 on 12/03/2013 (10:28AM) during winter*



Photo VP-05: Mathews Creek Private Land. Looking Northeast towards Mount Davidson from the turnoff to the property captured at X362,739 5,887,146 (UTM10) on 12/03/2013 (12:54PM) during winter



Photo VP-06: Kluskus-Ootsa FSR (Turtle Creek Valley). Looking Southeast towards the Davidson Creek from the FSR captured at X371,675 Y5,904,048 (UTM10) on 11/03/2013 (4:06PM) during winter



Photo VP-07: Kluskus-Ootsa FSR (Proposed Mine Access Road). Looking South towards the undulating hills of the Davidson Creek basin captured at X378,581 Y5,906,214 on 12/03/2013 (11:53AM) during winter



Photo VP-08: Davidson Creek (Fawnie Range View). Looking Southwest towards the Fawnie Range from a location near Davidson Creek captured at X378,581 Y5,906,214 (UTM10) on 12/03/2013 (11:53AM) during winter



Photo VP-09: Kluskus-Ootsa FSR (Nechako Range). Looking Southwest towards the Fawnie Range along the FSR descending from the Nechako Range captured at X390,574 Y5,911,263 (UTM10) on 11/03/2013 (3:50PM) during winter



Photo VP-10: Mount Davidson (Nechako Range View). Looking Northeast across Davidson Creek Basin towards Tatelkuz Lake captured at X375,285 Y5,893,185 (UTM10) on 12/03/2013 (1:31PM) during winter



Photo VP-11: *Brewster Lake Recreation Site. Looking Southeast across Brewster Lake from the main viewpoint of the recreation site captured at X 397,168 Y5,921,561 (UTM10) on 11/03/2013 (2:24PM) during winter*



Photo VP-12: *Greer Creek Recreation Site. Looking North down the Nechako River from the main viewpoint of the recreation site captured at X393,437 Y5,960,125 (UTM10) on 13/03/2013 (10:20AM) during winter*



Photo VP-13: Crystal Lake Ranch and Resort. Looking North West along the Kenney Dam Road towards Mount Greer captured at X 399,606 Y5,964,949 (UTM10) on 13/03/2013 (12:00PM) during winter



Photo VP-14: Steiner Ranch. Looking East down the Nithi River Valley towards Nithi Mountain captured at X 371,755 Y5,983,153 (UTM10) on 13/03/2013 (1:56PM) during winter



Photo VP-15: *Francoise Lake Road. Looking Southwest towards Francois Lake at a location near the Heise Ranch captured at X 371,789 Y5,987,966 (UTM10) on 13/03/2013 (2:17PM) during winter*



Photo VP-16: *Johnson Lake Recreation Site Trailhead. Looking Westwards from the Kluskus FSR towards the start of the Johnson Lake Hiking Trail captured at X409,708 Y5,944,002 (UTM10) on 11/03/2013 (12:58PM) during winter*



Photo VP-17: Kluskus FSR (Finger Tatuk Park). Looking Southeast towards the park and lakes in the distance from a location along the FSR captured at X409,750 Y5,945,271 (UTM10) on 11/03/2013 (1:56AM) during winter



Photo VP-18: Bigbend Creek/Access Road/Transmission Line intersection. Looking Northwest up the Bigbend Creek Valley from the Kluskus FSR bridge captured at X 395,050 Y5,932,457 (UTM10) on 11/03/2013 (01:33PM) during winter