

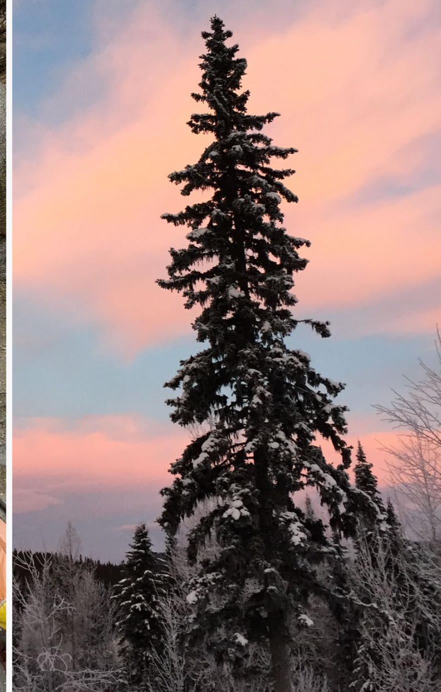

NI 43-101 Technical Report

Preliminary Economic Assessment for the Cariboo Gold Project

District of Wells, British Columbia, Canada

Prepared for:

Osisko Development Corp.

OSISKO DEVELOPMENT

CARIBOO GOLD PROJECT

Effective Date: May 24, 2022

Signature Date: May 24, 2022

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This technical report is effective as of the 24th day of May 2022.

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Abbreviation	**Description**
3D	three dimensional
a	annum (year)
AACE	American Association of Cost Engineers
AAS	atomic absorption spectroscopy
ABA	acid-base accounting
Ag	Silver
Ai	Abrasion index
AIS	Air insulated switchgear
AISC	all-in sustaining cost
Al	Aluminum
ALR	Agricultural Land Reserve
ARD	acid rock drainage
ATV	all-terrain vehicle
Au	Gold
Au-in soil	Gold-in-soil
AXPL	Axial planar
B	billion
BBA	BBA Engineering Ltd.
BC	British Columbia
BCEAA	*British Columbia Environmental Assessment Act, 2018*
BCSC	BC Securities Commission
BCWQG-AL	British Columbia Water Quality Guideline for Freshwater Aquatic Life
BFA	bulk fill area
BGM	Barkerville Gold Mines Division
BL	Bonanza Ledge
BOE	Basis of Estimate
BWi	Bond work index
C	Carbon
CA	Channel aggregation
CAD or $	Canadian dollar
CAM	Chlumsky, Armbrust and Meyer LLC
CaO	Calcium oxide (lime)
CAPEX	Capital expenditure

Table of Abbreviations	
Abbreviation	**Description**
CCLUP	Cariboo Chilcotin Land Use Plan
CEAA	*Canadian Environmental Assessment Act*
CGP	Cariboo Gold Project
CIM	Canadian Institute of Mining, Metallurgy and Petroleum
CIP	Carbon-in-pulp
Cl	Chloride
CLMV	Calcareous Mafic Volcaniclastic
CLSI	Calcareous siltstone
CLSS	Calcareous sandstone
CM	Cow Mountain
CMT	Construction Management Team
CN	Cyanide
CoA	Certificate of authorization
CoG	Cut-off grade
conc.	Concentrate
COO	Chief Operating Officer
COPC	Constituent of potential concern
CPTu	Cone penetration test
CRD	Cariboo Regional District
CRF	Cemented rockfill
CRM	Certified reference material
CSI	Carbonaceous siltstone
CTO	Cease trade order
Cu	Copper
$CuSO_4$	Copper sulphate
CWi	Crusher work index
CZ	Cow Zone
Datamine	Datamine Studio RM 1.9.36.0
DDH	Diamond drill hole
DFO	Department of Fisheries and Oceans
DMR	Digital mobile radio
DRIPA	BC's *Declaration on the Rights of Indigenous Peoples Act*
DSO	Deswik Stope Optimizer
EA	Environmental assessment
EAC	Environmental assessment certificate

Table of Abbreviations	
Abbreviation	**Description**
EAO	Environmental Assessment Office
EBA	EBA Engineering Consultants Ltd.
EBIT	Earnings before interest and tax
ECCC	Environment and Climate Change Canada
EDF	Environmental Design Flood
EL	Elevation
ELOS	Estimated linear overbreak and sloughing
EMLI	BC Ministry of Energy, Mines and Low Carbon Innovation
ENV	Ministry of Environment and Climate Change Strategy
EOH	End of hole
EPCM	Engineering, Procurement, Construction Management
ESS	Electrical substation
ESSF	Engelmann Spruce-Subalpine Fir
et al.	et alla (and others)
EXT	Extensional
F_{80}	80% passing - Feed size
FA	fire assay
Falkirk	Falkirk Environmental Consultants Ltd.
Fe	Iron
FIDQ	Fish Inventories Data Queries
FIFO	fly-in fly-out
FLNRORD	Forests, Lands, Natural Resource Operations, and Rural Development
FS	Feasibility study
FSR	Forest Service Road
FSTSF	Filtered stack tailings storage facility
G&A	General and Administration
GEMS	Geovia GEMS software
Geoex	Geoex Ltd.
GHG	Green House Gas
Gold City Mining	Gold City Mining Corp.
Golden Cariboo	Golden Cariboo Resources Ltd.
Golder	Golder Associated Ltd.
GSA	Gold stream agreement
HADD	Harmful alteration, disruption, or destruction
HCT	humidity cell test

Table of Abbreviations	
Abbreviation	**Description**
HDPE	High-density polyethylene
HQ	HQ - drill core diameter (63.5 millimetres)
HSE	Health, safety and environment
HSRC	Health, Safety, and Reclamation Code
Hudson Bay	Hudson Bay Mining and Smelting Co. Ltd.
HVAC	Heating, ventilation, and air conditioning
Hy-Tech	Hy-Tech Drilling Ltd.
ICP	Inductively coupled plasma
ID^2	Inverse distance squared
IDF	Inflow Design Flood
IEC	International Electrotechnical Commission
IGM	Island Mountain Gold Mines Ltd.
IHA	Interior Health Authority
IM	Island Mountain
InnovExplo	InnovExplo Inc.
IP	Induced Polarization
IPT	Integrated Project Team
IRR	Internal rate of return
IRS	Intact rock strength
ISO	International Organization for Standardization
IT	Information technology
IWGM	International Wayside Gold Mines Ltd.
JOC	Jack of Clubs Lake
K	Potassium
K_{80}	80% passing – Particle size
KCB	Klohn Crippen Berger Consultants
LBMA	London Bullion Market Association
LeapFrog	LeapFrog GEO™ v.2021.1.3
LED	Light-emitting diode
LHD	Load haul dump - scooptram
LOM	Life of mine
LP	Layer Parallel
LSA	Local Study Area
LST	Aurum Limestone
LTE	Long-term evolution

Table of Abbreviations	
Abbreviation	**Description**
M	Million
M&I	Measured and Indicated
Ma	Mega annum (Million years)
MAA	Multiple Account Analysis
MAG	Magnetic
masl	Metres above sea level
MBBR	Mix bed bioreactor
MC	Mosquito Creek
MDD	Maximum day demand
Mg	Magnesium
MIBC	Methyl isobutyl carbinol
MINFILE	Mineral Inventory of BC
Minimum NOWL	Minimum Normal Operating Water Level
ML	Metal leaching
MoF	Ministry of Forests
Mosquito Creek Gold	Mosquito Creek Gold Mining Company Ltd.
MOTI	Ministry of Transportation and Infrastructure
MPa	Megapascals
MRE	Mineral Resource Estimate
MS	Mass Spectrometry
MSC	Mineral sorter concentrates
msl	mean sea level
MSO	Minable Shape Optimiser®
Mtn	Mountain
MTO	Mineral Titles Online
MTOs	Material take-offs
MZ	Mosquito Zone
MZP	Main Zone Pit
Na	Sodium
$Na_2S_2O_5$	Sodium metabisulphite
NaCN	Sodium cyanide
NAG	net acid generation
NaOH	Sodium hydroxide
NE	Northeast
Newmont	Newmont Mining Corporation

Table of Abbreviations	
Abbreviation	**Description**
NHA	Northern Health Authority
NI	National Instrument
Ni	Nickel
No.	Number
NO_2	Nitrogen dioxide
NPAG	Non-potentially acid generating
NPV	Net present value
NQ	NQ - drill core diameter (47.6 millimetres)
NS	no sample
NS	North-South orientated
NSCP	North Seepage Collection Pond
NSR	Net smelter return
NWP	Northwest Zone Pit
O_2	Oxygen
ODV	Osisko Development Corp.
OGR	Osisko Gold Royalties Ltd.
OK	Ordinary kriging
OPEX	Operational expenditure
OREAS	Ore Research and Exploration Pty Ltd.
P_{80}	80% passing - Product size
Pa	Pascal
PAG	Potentially acid generating
Pan Orvana	Pan Orvana Resources Inc.
PAX	Potassium amyl xanthate
Paycore	Paycore Drilling
Pb	Lead
PD	Project Description
PDT	Project Development Team
PEA	Preliminary Economic Assessment
PFS	Pre-feasibility study
pH	Potential of hydrogen
PLC	Programmable logic controller
PM	Particulate matter
PMP	Project Management Plan
PoC	Push-to-Talk over Cellular

Table of Abbreviations	
Abbreviation	**Description**
PQ	PQ – drill core diameter (85.0 millimetres)
PST	Pacific Standard Time
Q2	Second quarter
Q3	Third quarter
QA/QC	Quality Assurance / Quality Control
QP	Qualified person
QR	Quesnel River
RCP	Reclamation and Closure Plan
RDFFG	Regional District of Fraser Fort George
RFP	Request for Proposal
RISC	Resources Information Standards Committee
ROM	Run of mine
RQD	Rock quality designation
RSA	Regional Study Area
RSPCSR	Regulation for Soil Protection and Contaminated Sites Rehabilitation
RWi	Rod work index
S	Sulphur
S.U.	Standard Unit
SAG	Semi-autogenous grinding
SARA	*Species at Risk Act*
SBS	Sub-Boreal Spruce
SCP	Sediment control pond
SEDAR	System for electronic document analysis and retrieval
SESC	Surface Erosion and Sediment Control
SFE	Shake flask extraction
SG	Specific gravity
SGS	Société Générale de Surveillance
SI	Siltstone
SMBS	Sodium metabisulphite
Snowden	Snowden Mining Industry Consultants Pty
SO_2	Sulphur dioxide
SO_4	Sulphate
SP	Self-potential
SRK	SRK Consulting (Canada) Inc.
SS	Lower Sandstone Facies – Chap 16 – should it be LSSF

Table of Abbreviations	
Abbreviation	**Description**
SSCP	South Seepage Collection Pond
SST	Site Services Team
Std	Standard S.U.
Supervisor	Snowden Supervisor v.8.6 software
SWTS	
SZ	Shaft Zone
TAC	Technical Advisory Committee
Talisker	Talisker Exploration Services Inc.
tCO2e	Tonne Carbon dioxide equivalent
TCS	Triaxial compressive strength
TL	Transmission Line
TMF	Tailings Management Facility
TNG	Tŝilhqot'in National Government
TSF	Tailings Storage Facility
TSS	Total suspended solids
TSX	Toronto Stock Exchange
TSX:V	TSX Venture Exchange
U/F	Underflow
U/G	Underground
UCS	Uniaxial compressive strength
USD or US$	United States dollar (examples of use: USD2.5M / US$2.5M)
UTM	Universal Transverse Mercator
UWR	Ungulate winter ranges
VFD	Variable frequency drives
VLF-EM	Very-low-frequency electromagnetic
vs.	Versus
VZ	Valley Zone
w/w	Weight per weight
WAD	Weak acid dissociable
WAN	Wide area network
WB	Water Balance
WBM	Water Balance Modelling
WBS	Work breakdown structure
WBWQM	Water Balance and Water Quality Model
Wells	District of Wells

Table of Abbreviations	
Abbreviation	**Description**
WGC	World Gold Council
WMP	Water Management Plan
WQM	Water Quality Model
WRP	Waste rock pile
WRSF	Waste Rock Storage Facility
WSP	WSP Canada Inc.
WTS	Water Treatment System
XRT	X-Ray Transmission
Zn	Zinc

Table of Abbreviations – Units of Measurement	
Unit	**Description**
$/t	dollars per metric tonne
%	percent
% solids	percent solids by weight
°C	degrees Celsius
°F	degrees Fahrenheit
µm	micron
A	ampere
cm	centimetre
d	day (24 hours)
deg. or °	angular degree
ft or '	feet (12 inches)
G	giga
g	gram
g/cm	grams per cubic centimetre
g/t	grams per tonne
GPa	gigapascal
Gt	gigatonne
h	hour (60 minutes)
ha	hectare
hp	horsepower
in. or "	inch
k	kips
K	Thousand (000)
kcfm	kilowatt cubic foot per minute
kg	kilogram
kg/m^2	kilograms per metre square
kg/m^3	kilograms per metre cube
kg/t	kilograms per tonne
km	kilometre
km/h	kilometre per hour
kt	kilotonne
kV	kilovolt
kW	kilowatt
kWh	kilowatt hour
kWh/t	kilowatt hour per tonne

Table of Abbreviations – Units of Measurement	
Unit	**Description**
L	Litre
L/min	Litres per minute
L/s	Litres per second
lb / lbs	pound / pounds
m	metre
m/h	metres per hour
m/s	metres per second
m^2	square metre
m^3	cubic metre
m^3/d	cubic metres per day
m^3/h	cubic metres per hour
m^3/s	cubic metres per second
mesh	US Mesh
mH	metres high
min	minute (60 seconds)
mm	millimetre
Mm^3	million cubic metres
MPa	megapascal
Mt	million tonnes
Mtpy	million tonnes per year
MVA	Mega volt ampere
MW	megawatt
mW	metres wide
Ø	diameter
oz	Troy ounce
ppm	parts per million
psi	pounds per square inch
s	second
st	short ton (2,000 lbs)
t	tonne (1,000 kg) (metric ton)
tpd	tonnes per day
tph	tonnes per hour
tpy	tonnes per year
V	volt
W	watt

Table of Abbreviations – Units of Measurement	
Unit	**Description**
W/m^2	watts per square metre
wk	week
y	year (365 days)

1. Summary

This *NI 43-101 Technical Report Preliminary Economic Assessment for the Cariboo Gold Project* ("the Report") Report was prepared and compiled by BBA Engineering Ltd. ("BBA") at the request of Osisko Development Corp. ("ODV"). The Cariboo Gold Project (the "Project") is an advanced stage gold exploration project located in the historic Wells-Barkerville mining camp, in the District of Wells ("Wells"), British Columbia ("BC"), Canada. The purpose of this Report is to summarize the results of the Preliminary Economic Assessment ("PEA") for the Project in accordance with the guidelines of the Canadian Securities Administrators National Instrument 43-101 ("NI 43-101") and Form 43101F1.

This report was prepared based on contributions from several independent consulting firms including, InnovExplo Inc. ("InnovExplo"), SRK Consulting (Canada) Inc. ("SRK"), WSP Canada Inc. ("WSP". "WSP-Golder"), BBA Engineering Ltd. ("BBA"), Falkirk Environmental Consultants Ltd. ("Falkirk"), and Klohn Crippen Berger Ltd. ("KCB"). This study provides a base case assessment for developing the Cariboo Gold deposit as an underground mine with a Services Building, including concentrator, located at the Mine Site Complex at Wells and further processing at the Quesnel River ("QR") QR Mill. The Services Building concentrator is designed to have a capacity of 8,000 tonnes per day ("tpd") whereas the QR Mill has a capacity of 1,040 tpd. The Mine Site Complex and QR Mill are separated by approximately 111 kilometres ("km"). Waste rock storage will be located at the Bonanza Ledge Site, 3.5 km from the Mine Site Complex in Wells, and will store 14 million tonnes ("Mt") of waste material from the Project.

All monetary units in the Report are in Canadian dollars ("CAD" or "$"), unless otherwise specified. Costs are based on second quarter (Q2) 2022 dollars. Quantity and grades are rounded to reflect that the reported values represent approximations.

1.1. Contributors

The major PEA contributors and their respective areas of responsibility are presented in Table 1-1.

Table 1-1: Report contributors

Qualified Person	General overview of responsibilities
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WSP Golder	
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1.2. Key Project Outcomes

The reader is advised that the results of the PEA summarized in this Report are intended to provide an initial, high-level review of the Project and potential design options. The PEA mine plan and economic model include numerous assumptions and the use of Inferred resources. Inferred resources are considered to be too speculative to be used in an economic analysis, except as allowed for by Canadian Securities Administrators' National Instrument 43-101 in PEA studies. There is no guarantee that Inferred resources can be converted to Indicated or Measured resources and, as such, there is no guarantee the Project economics described herein will be achieved.

The following list details the key project outcomes of the Report:

- Cariboo Gold Project Resources: 27.1 Mt of gold ("Au") at 4.0 g/t Au (Measured and Indicated) and 14.4 Mt at 3.5 g/t Au (Inferred);
- Total mineralized material mined: 28.2 Mt at 3.40 g/t Au average diluted gold grade;

- Mine life of 12 years, with peak year payable production of 315,806 ounces, average life of mine ("LOM") annual payable production of 236,381 ounces of gold;
- Gold payable recovery of 92.1%;
- Payable production (LOM) of 2.84 million ("M") Au ounces;
- Initial capital costs of $121.5M;
- Expansion capital costs of $716.1M;
- Sustaining costs of $527.2M;
- Reclamation costs of $18.5M, and a salvage value of $61.1M;
- Operating costs (total) of $94.0 per tonne mined;
- All-in sustaining costs of USD 961.6/oz net of by-product credits, including royalties, over LOM;
- Gross revenue of $6.29 billion ("B") and an operating cash flow of $3.32B LOM;
- Net present value ("NPV") of $763.8M at a 5% discount rate, and an internal rate of return ("IRR") of 21.4% after taxes and mining duties;
- LOM taxes of $660.8M and royalties of $314.3M;
- NPV of $1,195.3M at a 5% discount rate, and an IRR of 26.7% before taxes and mining duties;
- Pay-back period (after start of operations) of 5.8 years pre-tax and 6.0 years after-tax;
- Approximately 330 workers during the construction period and up to 592 employees will be required during operations for Phase II;
- Phase I of the Project will commence in 2024 with 2,000 tonnes per day ("tpd") production, ramping up to 8,000 tpd production in 2027 for Phase II;
- Concentrator construction starting in Q1 2025. Commercial production planned for Q1 2027.

1.3. Property Description and Ownership

The Project is located in ODV's Cariboo Gold Project Main Block, a group of claims located in the historical Wells-Barkerville mining camp of British Columbia that extends for approximately 77 km from northwest to southeast.

The Project falls within the Cariboo Regional District ("CRD"), a division of the local government system in BC, and Wells, BC. Wells is situated 74 km east of Quesnel, approximately 115 km southeast of Prince George, and approximately 500 km north of Vancouver.

ODV's land holdings consist of 412 mineral titles totalling 155,147.09 hectares ("ha") across two contiguous property blocks known as the Cariboo Main Block and the QR Property. These mineral titles include mineral claims, mineral leases, placer claims, and placer leases.

Through its 100% owned subsidiary Barkerville Gold Mines Ltd. ("BGM"), ODV holds 100% interest in 56 Cariboo Main Block placer titles, 35 QR Mill Property mineral claims, the QR mineral lease No. 320752, and 359 of the 376 Cariboo Main Block mineral and placer claims and placer leases. 17 mineral claims are jointly owned with other companies and individuals: ODV holds a 97.5% interest in six mineral claims, and 85% interest in two mineral claims, and a 50% interest in the other nine mineral claims.

The Project also contains 248 private land parcels from Crown-granted mineral claims (3,423.03 ha) that overlap many of the mineral titles where BGM is the registered owner on the title of the surface and/or undersurface rights to the parcels. A net smelter return (NSR) royalty of 5% payable to Osisko Gold Royalties Ltd. ("OGR") is the only royalty that applies to the Project.

1.4. Geology and Mineralization

The Project lies within the Kootenay Terrane of the Omineca Tectonic Belt in the south-central Canadian Cordillera. The Omineca rocks were complexly deformed by Middle Jurassic to Early Tertiary compressional tectonics, and by Tertiary transtension and extension. The Kootenay Terrane in the vicinity of the Project is subdivided into the eastern Cariboo and western Barkerville subterranes. The Cariboo Subterrane is juxtaposed on the Barkerville Subterrane by the east-dipping Pleasant Valley Thrust.

The Snowshoe Group, central to the Barkerville Subterrane, hosts the Project.

The Barkerville and Cariboo Subterranes comprise metamorphosed equivalents of continent-derived siliciclastic protoliths with interlayered marble units and granitic orthogneiss. The subterranes are pericratonic in character and are thought to have formed near the current western margin of Laurentia. Various authors suggest that both Barkerville and Cariboo Subterranes share the same tectostratigraphic position and depositional environment.

The principal gold-producing areas in the Barkerville Subterrane are hosted in rocks metamorphosed to lower-greenschist facies (sub-biotite isograd); amphibolite-facies rocks are locally found on the project but are not associated with any significant mineralization. The S1 and S2 fabrics are defined by phyllosilicate minerals (sericite and chlorite); they generally define foliation suggesting that peak metamorphic temperature coincided with the formation of cleavage.

Lode-gold mineralization in the Wells-Barkerville mining camp (Cariboo Gold District) shares many characteristics with an orogenic gold deposit model. Gold mineralization is associated with orogenic silica-carbonate-sericite-pyrite stable fluids moving along secondary permeability controlled by metamorphic fabrics, vein arrays, faults, lithologic contacts, and rheological contrasts.

Deposit types on the Project consist of vein and replacement-type mineralization grouped into five inter-related styles: 1) Fault-fill breccia veins subparallel to foliation (S1), hosted in carbonaceous mudstone; 2) Vertical NE-trending extensional ("AXPL") veins dominantly hosted in sandstone units in S3 cleavages; 3) Fractured moderately dipping ENE-trending shear veins, hosted in sandstone units; 4) Gold-bearing sulphide replacements hosted in fold hinges of calcareous sandstone units; and 5) Gold-bearing sulphide replacement mineralization hosted in fault-bounded calcareous siltstone units.

1.5. Status of Exploration and Drilling

ODV's exploration team executed a systematic methodology to the exploration program on the Project. The program included geological mapping, channel, soil, and underground sampling, and diamond drilling.

The exploration team continues its geological mapping across the Project to identify lithologic contacts, define alteration and geochemical signatures, record micro- and macro-scale structural data, and to collect select rock samples. The targeted deposit types within the Project are structurally and/or geochemically controlled, thus the mapping data continues to play a vital role in refining the geologic model of the area and defining mineralized zones.

The objectives for the 2020 and 2021 diamond drilling programs (the "2020 Program" and the "2021 Program") was to test new brownfields targets adjacent to known deposits, infill high-grade vein corridors modelled from the 2019 Preliminary Economic Assessment ("PEA") classified as inferred, and explore the depth potential of known deposits.

The focus of the 2022 diamond drilling program (the "2022 Program") is the infill of a proposed underground bulk-sampling area, the continued category conversion from inferred to indicated status of modelled vein corridors, and the delineation of additional vein corridors. The 2022 Program is ongoing as of May 12, 2022, and assay results are not yet received.

1.6. Mineral Resource Estimate

The 2022 Mineral Resource Estimate for the Project (the "2022 MRE") encompasses updated resources for the deposits of Cow Mountain (Cow Zone and Valley Zone), Island Mountain (Shaft Zone and Mosquito Zone), and Barkerville Mountain (Lowhee Zone). The updates were prepared by Leonardo de Souza, MAusIMM (CP), of Talisker Exploration Services Inc. ("Talisker"), and reviewed and validated by Carl Pelletier, P.Geo., and Vincent Nadeau-Benoit, P.Geo., both of InnovExplo Inc. ("InnovExplo"), using all available information. The KL Zone and BC Vein deposit were not drilled in 2021, but the search ellipse and distances were altered to match the other deposits. The BC Vein deposit has been depleted since the 2020 MRE. No changes are reported for Bonanza Ledge (Barkerville Mountain) deposit since the 2019 MRE. To report the 2022 MRE for the Project, conceptual mining shapes were used as constraints to demonstrate that the "reasonable prospects for eventual economic extraction" criteria is met; as defined in the CIM Definition Standards on Mineral Resources and Reserves (CIM Definition Standards; May 10, 2014) and the CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (MRMR Best Practice Guidelines; November 29, 2019).

The 2022 MRE covers all the deposits in the Cow-Island-Barkerville Mountain Corridor. The resource area for the Cow Mountain/Island Mountain segment covers a strike length of 3.7 km and a width of approximately 700 metres ("m"), down to a vertical depth of 600 m below surface. The estimate for the Barkerville Mountain segment covers a strike length of 3 km and a width of approximately 700 m, down to a vertical depth of 500 m below surface.

Two diamond drill hole databases cover the Project: Bonanza Ledge and BM-CM-IM (Barkerville Mountain including the BC Vein, KL, and Lowhee deposits, Cow Mountain including the Cow and Valley deposits, Island Mountain including the Shaft and Mosquito deposits). These databases were filtered by deposit (Cow, Shaft, Valley, Mosquito, BC Vein, KL or Lowhee) before working in Datamine. A subset of drill holes was used to generate the 2022 MRE database for each deposit The Cow deposit contains 1,252 validated drill holes. The Valley deposit contains 341 validated drill holes. The Shaft deposit database contains 805 validated drill holes. The Mosquito deposit contains 776 validated drill holes. The Lowhee deposit contains 372 validated drill holes. The BC Vein and KL deposits contain 295 validated drill holes.

The qualified professionals ("QP") data verification included the diamond drill hole databases used for the 2022 MRE (the "ODV Databases"), as well as the review and validation of the geological models of each deposit, and the review of information on mined-out areas and the data for selected drill holes (assays, quality assurance/quality control ["QA/QC"] program, downhole surveys, lithologies, alteration and structures).

The QPs also reviewed and validated the resource estimation process followed by ODV and Talisker Exploration Services Inc. ("Talisker"), including all parameters, geological interpretation, basic statistics, variography, interpolation parameters, block model construction, scripts that run the model, volumetric report, and the validation process.

Historical work subject to verification consisted of the holes used for the 2020 MRE (Beausoleil and Pelletier, 2020). Basic cross-check routines were performed between the current ODV Databases and the previously validated database for the 2020 MRE.

The QPs were granted access to the assay certificates for all holes in the 2021 drilling programs. Assays were verified for 5% of the drill holes. No discrepancies were found.

Overall, the QPs data verification demonstrates that the data, protocols, and estimation process for the Project are acceptable. The QPs consider the ODV databases to be valid and of sufficient quality to be used for the mineral resource estimate herein.

ODV updated, in 2021, the geological models for the Cow, Valley, Shaft, Mosquito, and BC Vein deposits using historical data, the data from the 2015-2019 drilling programs, and new holes from the 2020-2021 drilling programs. The KL and BC Vein deposits were not drilled in 2021, though the geological model was reviewed by the QPs. The Bonanza Ledge geological model, initially from Brousseau et al. (2017), was reviewed and validated by the QPs.

A total of 471 geological solids were created and/or updated for all the deposits.

The QPs have classified the 2022 MRE as measured, indicated, and inferred mineral resources based on data density, search ellipse criteria, drill hole density, and interpolation parameters. The 2022 MRE is considered to be reliable and based on quality data and geological knowledge. The mineral resource estimate follow 2014 CIM Definition Standards on Mineral Resources and Reserves.

Table 1-2 displays the results of the 2022 Mineral Resource Estimate at the official 2.0 g/t Au cut-off grade for the eight deposits on the Project: Cow, Valley, Shaft, Mosquito, BC Vein and Splays, KL, Lowhee, and Bonanza Ledge deposits.

Table 1-2: Cariboo Gold Project 2022 Mineral Resource Estimate reported at a 2.0 g/t Au cut-off grade (except for Bonanza Ledge; reported at a 3.5 g/t Au cut-off grade)

Category	Deposit	Tonnes	Grade	Ounces
		'000	(Au g/t)	'000
Measured	Bonanza Ledge	47	5.1	8
Indicated	Bonanza Ledge	32	4.0	4
	BC Vein	1,030	3.1	103
	KL	389	3.2	40
	Lowhee	1,621	3.6	188
	Mosquito	1,795	4.3	249
	Shaft	11,139	4.3	1,531
	Valley	4,403	3.8	536
	Cow	6,645	3.8	811
Total Indicated Mineral Resources		**27,055**	**4.0**	**3,463**
Inferred	BC Vein	461	3.5	53
	KL	1,905	2.8	168
	Lowhee	520	3.5	59
	Mosquito	1,262	3.6	146
	Shaft	5,730	3.9	725
	Valley	2,135	3.4	235
	Cow	2,394	3.1	236
Total Measured and Indicated Mineral Resources		**27,102**	**4.0**	**3,470**
Total Inferred Mineral Resources		**14,407**	**3.5**	**1,621**

Mineral Resource Estimate notes:

1. The independent and qualified persons for the Mineral Resource Estimates, as defined by NI 43-101, are Carl Pelletier, P.Geo., and Vincent Nadeau Benoit, P.Geo. (InnovExplo Inc.). The effective date of the 2022 Mineral Resource Estimate is May 17, 2022.
2. These mineral resources are not mineral reserves as they do not have demonstrated economic viability.
3. The Mineral Resource Estimate conforms to the 2014 CIM Definition Standards on Mineral Resources and Reserves and follows the 2019 CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines.
4. A total of 471 vein zones were modelled for the Cow Mountain (Cow and Valley), Island Mountain (Shaft and Mosquito), Barkerville Mountain (BC Vein, KL, and Lowhee) deposits and one gold zone for Bonanza Ledge. A minimum true thickness of 2.0 m was applied, using the grade of the adjacent material when assayed or a value of zero when not assayed.
5. The estimate is reported for a potential underground scenario at a cut-off grade of 2.0 g/t Au, except for Bonanza Ledge at a cut-off grade of 3.5 g/t Au. The cut-off grade for the Cow, Valley, Shaft, Mosquito, BC Vein, KL, and Lowhee deposits was calculated using a gold price of USD1,600 per ounce; a USD/CAD exchange rate of 1.30; a global mining cost of $50.41/t; a processing & transport cost of $30.41/t; and a G&A + Environmental cost of $16.18/t. The cut-off grade for the Bonanza Ledge deposit was calculated using a gold price of USD1,600 per ounce; a USD/CAD exchange rate of 1.30; a global mining cost of $79.13/t; a processing & transport cost of $60.00/t; and a G&A + Environmental cost of $51.65/t. The cut-off grades should be re-evaluated in light of future prevailing market conditions (metal prices, exchange rate, mining cost, etc.).

6. Density values for Cow, Shaft, and BC Vein were estimated using the ID2 interpolation method, with a value applied for the non-estimated blocks of 2.80 g/cm³ for Cow, 2.79 g/cm³ for Shaft, and 2.69 g/cm³ for BC Vein. Median densities were applied for Valley (2.81 g/cm³), Mosquito (2.79 g/cm³), KL (2.81 g/cm³) and Lowhee (2.75 g/cm³). A density of 3.20 g/cm³ was applied for Bonanza Ledge.
7. A four-step capping procedure was applied to composited data for Cow (3.0 m), Valley (1.5 m), Shaft (2.0 m), Mosquito (2.5 m), BC Vein (2.0 m), KL (1.75 m), and Lowhee (1.5 m). Restricted search ellipsoids ranged from 7 to 50 g/t Au at four different distances ranging from 25 m to 250 m for each deposit. High grades at Bonanza Ledge were capped at 70 g/t Au on 2.0 m composited data.
8. The mineral resources for the Cow, Valley, Shaft, Mosquito, BC Vein, KL, and Lowhee vein zones were estimated using Datamine Studio™ RM 1.9 software using hard boundaries on composited assays. The OK method was used to interpolate a sub-blocked model (parent block size = 5 m x 5 m x 5 m). Mineral resources for Bonanza Ledge were estimated using GEOVIA GEMS™ 6.7 software using hard boundaries on composited assays. The OK method was used to interpolate a block model (block size = 2 m x 2 m x 5 m).
9. Results are presented in situ. Ounce (troy) = metric tons x grade / 31.10348. Calculations used metric units (metres, tonnes, g/t). The number of tonnes was rounded to the nearest thousand. Any discrepancies in the totals are due to rounding effects. Rounding followed the recommendations as per NI 43-101.
10. The qualified persons responsible for this section of the technical report are not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political or other relevant factors that could materially affect the mineral resource estimate.

1.7. Mining Methods

1.7.1. Overview

The Project consists of three main zones (Cow, Shaft, and Valley) with two smaller satellite zones (Lowhee & Mosquito). The rate of exploitation of each deposit will change over time, while the overall steady state production rate is 8,000 tpd. In 2024, production will begin at 2,000 tpd for 2.5 years and will ramp up to 8,000 tpd (pending permitting) in 2027 for 9.5 years.

The selected mining method is long hole with longitudinal retreat. Primary materials handling fleet will comprise of 10 tonne (t) scooptram Load Haul Dump ("LHD") and 50 t haul trucks.

Pre-production of the underground workings is set to begin in 2023 with 2,000 tpd achieved in Q4 2024 and full production of 8,000 tpd at the Mine Site Complex in Q1 2027. Underground mine life is set to last until 2035.

A hydrogeological investigation program was completed to provide key groundwater related inputs to the PEA, namely, to estimate potential mine dewatering rates, to further understanding of the regional groundwater flow regime, and to characterize potential impacts of mine dewatering on groundwater and surface water systems.

1.7.2. Geotechnical Evaluation

SRK undertook two geotechnical field investigation programs on the Project designed to characterize the rock geotechnical conditions and support the underground mine and infrastructure designs, structural geology review, a detailed evaluation of geotechnical design domains, and the development of geotechnical design guidelines within each of these domains. These guidelines included excavation design parameters, estimates of dilution, as well as support requirements.

The 2018 geotechnical field data acquisition program included drilling and logging of 13 dedicated geotechnical drill holes. The 2021 geotechnical field data acquisition program included drilling and logging of 5 dedicated geotechnical drill holes. During both programs representative rock core samples from each geotechnical domain were collected from the geotechnical drill holes for laboratory testing.

A review of photographs taken of exploration drill holes was undertaken from 2020 to 2022 to build a bigger geotechnical understanding of the brock mass conditions across the Project site to optimize geotechnical design. A total of 83,047 m of photo-logging has been conducted to date.

In addition to the 3D structural model which had already been created to represent the major Regional Fault structures on the Cariboo Gold Project property, SRK also provided a 3D fault model that was created for the secondary structures.

The geotechnical evaluation focused on a qualitative drill hole based assessment of the rock mass forming the immediate hanging wall and footwall of the proposed mineable stopes in each vein. These drill holes were individually assessed based on the lithology logging data provided by ODV, the regional structural model provided by ODV, the secondary structural model provided by SRK, the geotechnical data acquired from the field program, and photographic review for the planned stopes in each major vein corridor, in each mining zone.

Excavation stability assessments have been completed using well-established empirical and semi-empirical relationships and engineering experience. The design procedure involves two steps: the quality of the rock mass is rated using a pre-defined classification system, and then the expected performance of the underground openings is predicted using an empirically derived stability correlation with the rock mass quality.

Sub-level open stoping with a sub-level spacing of 30 m is achievable in rock mass Class 1 to Class 3 lower by varying the open strike length and the use of two-phase backfill in the Class 3 lower rock mass in the Shaft Zone.

1.7.3. Mining Method Description

The long hole mining method was primarily selected due to the sub vertical geometry of mineralized vein corridors and the relatively lower cost. This method involves driving two drifts longitudinally along the mineralized vein corridors to define a stope. The top access serves as a drilling platform while the bottom access allows for mucking of drilled then blasted material. Once empty, these stopes are then backfilled with either pastefill or cemented rockfill. Stopes are mined retreating towards the access. This method allows for simultaneous mining of stopes along different vein corridors as well as along the same corridor if a pillar exists between active levels.

The minimum designed stope width for all zones is 3.7 m and the sill to sill stope height for all zones is 30 m. The maximum permissible strike length (the distance along strike that can be mined before backfilling is required) is a function of geotechnical constraints and differs by zone.

1.7.4. Mine Design

There will be three portals accessing underground ramps: The Cow portal to access the Lowhee Zone, the Island Mountain portal to access the Shaft Zone and Mosquito Zone as well as access the Main Ramp, and the Valley portal to develop the Main ramp connecting to the Island Mountain portal and access the Cow Zone and Valley Zone. The Valley portal will be used as the main services access. The zones are accessed by main ramps connecting to haulage drift and each individual zone has an internal ramp system. The Mosquito zone is further west, connected to Shaft by a 1,150 m long haulage drift.

Each zone is planned to be mined with the longitudinal retreat long hole method. Sublevels for all zones are 30 m sill to sill and a combination of Cemented Rock Fill (“CRF”) and pastefill are planned to backfill mined stopes. Stope strike lengths vary by zone based on geotechnical assessments of each zone. All zones are capped by a crown pillar (15 m for Cow and Valley and 20 m for Shaft and Mosquito) and vary in depth.

1.7.5. Underground Infrastructure

A major piece of underground infrastructure for the Project is the underground crushing system (two lines in parallel). This crusher is located below the Services Building in a location which has been identified as geotechnically favourable for long term infrastructure. Mineralized material will be brought to the crusher by underground trucks from all mining zones.

Mineralized material will ultimately be brought to surface using a vertical conveyor to be pre-concentrated by sorting and flotation. The material rejected by the sorter will be transferred back underground using a wastepass raise and then subsequently used as backfill material or hauled using automated trucks to the Bonanza Ledge Waste Rock Storage Facility ("WRSF").

The mine will include haulage drifts connecting the five separate zones, an underground garage, and pumping stations. The Valley portal will provide access for materials and the labour force.

1.7.6. Development Schedule

The development schedule has been created with a combination of traditional jumbos' development and road headers. The road headers are scheduled to provide a lateral advance of 200 m per month in single heading conditions. The jumbos will provide an average overall lateral advance of 300 m per month per jumbo crew when multiple active headings are available. Lateral development will rely on contractors for initial pre-production phase, with a handover to mine personnel with the initiation of full production.

1.7.7. Electrical Distribution and Networks

The mine will be supplied with a 13.8 kV line from a diesel generator before a connection to the local grid is established. Substations will transform the power to 600 or 1000 V depending on need or equipment to be supplied.

Fiber optics will be used to provide a data backbone to the mine. The mine network will then rely on 4G provided by radiant cables. This will allow for communication, automation of equipment as well as ventilation-on-demand.

1.7.8. Mine Automation and Monitoring Systems

The layout of mine levels was designed to facilitate the automation of mucking and hauling. Each level will have one load out which will allow for tele-remote loading of haulage trucks or loading of dumped waste material. Automation, or tele-operation of haulage trucks will be limited to between shifts only. Automation and tele-remote for LHD will be available any time as production levels will be isolated with barricades. By the end of 2026, all mucking operation on the production levels will be fully automated, with one operator for two scooptrams.

1.7.9. Permanent Mine Pumping Network

The mine dewatering network was designed to handle 16,000 cubic metres per day ("m3/day"). This system will also contribute to the drawdown of historic excavations.

1.7.10. Ventilation

The ventilation system has been designed to comply with British Columbia regulations. Airflow required to ventilate diesel engines were compiled using a 0.06 cubic metres per second ("m^3/s") / kilowatt ("kw") rate.

The system will be comprised of five independent intake fresh air raises that will all exhaust via the main ramps and portals. The total estimated airflow required to meet production is 920,000 cubic feed per minute ("cfm") (435 m^3/s).

1.7.11. Production Rate

Beginning in 2024, the total production rate will be 2,000 tpd (Phase I), ramping up in 2027 to 8,000 tpd (Phase II) (mineralized material above cut-off grade) with each zone contributing a different ratio to production over time.

1.7.12. Production Plan

The life of mine plan ("LOM") has a 12-year mine life at approximately 8,000 tpd. Production ramp-up to steady state of 8,000 tpd is achievable in 2027, the third production year with completion of the flotation circuit. The overall mine plan comprises 28.2 million tonnes ("Mt") of mineralized material that will be processed with an average grade of 3.4 grams per tonne ("g/t") gold ("Au"). The mine will produce 8.3 Mt of waste from development over the life of mine.

Table 1-3: Mineralized material produced per year

Year		2023	2024	2025	2026	2027	2028	2029
Lowhee	t	53,099	616,301	186,095	348,999	403,789	-	-
	g/t	2.86	3.32	2.65	2.61	2.76	-	-
Cow	t	-	-	-	57,647	684,812	730,964	811,506
	g/t	-	-	-	3.14	3.51	2.69	2.91
Valley	t	-	-	-	431,435	625,551	549,000	360,175
	g/t	-	-	-	2.88	3.45	3.45	3.49
Shaft	t	-	62,098	553,712	629,754	1,143,684	1,289,902	1,294,069
	g/t	-	3.59	4.14	3.70	3.51	3.39	3.56
Mosquito	t	-	-	-	-	51,557	362,073	456,250
	g/t	-	-	-	-	3.40	3.57	3.51
Year		**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**
Lowhee	t	-	-	-	-	-	-	-
	g/t	-	-	-	-	-	-	-
Cow	t	839,349	811,528	822,288	819,803	883,710	382,654	-
	g/t	3.10	3.01	3.10	3.03	3.03	2.76	-
Valley	t	365,000	365,000	366,000	339,430	541,043	484,111	-
	g/t	3.24	3.88	3.61	3.19	3.11	2.95	-
Shaft	t	1,292,372	1,307,471	1,294,350	1,504,505	1,424,625	977,577	-
	g/t	4.19	3.84	3.86	4.13	3.41	3.21	-
Mosquito	t	451,887	456,250	456,650	267,192	-	-	-
	g/t	3.39	3.36	3.04	2.62	-	-	-

1.7.13. Mine Equipment and Personnel

During pre-production, all development will be conducted by mine contractors. These contractors will provide the equipment used to develop lateral advance with the exception of the road headers. The contractor will own the equipment and it will be leased by ODV.

The mine will operate 365 days/year. A total of 388 employees related to underground mining for operation and maintenance services for Phase II are anticipated in Wells.

1.8. Mineral Processing and Metallurgical Testing

A preliminary metallurgical testwork program was previously undertaken to determine the metallurgical response on samples prepared from drill holes obtained from the Shaft, Cow, Valley and Mosquito deposits. The testwork consisted of an investigation into the amenability of mineral sorting to pre-concentrate the run of mine ("ROM") prior to milling, chemical characterization, a preliminary evaluation of comminution characteristics, a series of gravity, flotation and leaching tests, cyanide destruction testing as well as preliminary thickening and rheology tests. Additional testwork on samples from the Shaft deposit was performed during the Technical Report and Preliminary Economic Assessment for the Cariboo Gold Project. The new testwork consisted of metallurgical testing on mineral sorting test products, an extended gravity recoverable test, a series of flotation and cyanide leaching testing, a feasibility past fill test as well as a final dewatering and rheology test. Testwork data from the "NI 43-101 Technical Report, Preliminary Economic Assessment of the Cariboo Gold Project, Effective date: August 25, 2020", as well as new testwork with Effective date: April 25, 2022was considered for the process design.

1.9. Recovery Methods

The Cariboo Gold Project ("the Project") will ramp up tonnage in two phases, Phase I starting with a 2,000 tonnes per day ("tpd") mineral sorting and leaching flowsheet, followed by Phase II an 8,000 tpd mineral sorting, flotation, and leaching flowsheet.

In the first phase, the mineralized material will be processed in two stages at two sites. The Bonanza Ledge Site located at the current Bonanza Ledge Mine, and the Quesnel River ("QR") Mill located 116 kilometres ("km") from the Bonanza Ledge Site.

For the initial throughput of 2,000 tpd, a pre-concentrator, including mobile crushing and mineral sorting, will be built at the Bonanza Ledge Site. The use of the Bonanza Ledge Site will reduce the overall operation and transportation costs. The crushing operation will be a mobile unit, operated by a sub-contractor, and the crushed product will be processed in a mineral sorting circuit. The concentrate from the sorted concentrate will be trucked to the QR Mill for further comminution, leaching, and refining.

The QR Mill is an existing plant with a daily capacity to treat 850 tonnes ("t") of mineralized material. The QR Mill will require modifications to increase capacity up to 1,040 tpd and to process the higher concentrate feed grades from the Project.

In the second phase, the mineralized material will be processed in two stages at two sites. The Mine Site Complex, located in the District of Wells ("Wells"), and the QR Mill located 111 km west of the Mine Site Complex.

For the expanded throughput of 8,000 tpd, crushing will occur underground and will then be conveyed to the surface, where mineral sorting, grinding and flotation will be conducted in a Services Building at the Mine Site Complex. It is expected that it will take six months from start-up to ramp up to the full throughput. The Mine Site Complex Services Building and underground facility will serve as a pre-concentration step to reduce the overall operation and transportation costs. The primary crushing operation will be located underground, and the crushed product will be conveyed to the surface to feed a sizing screen. The sizing screen undersize will be discharged into a fine storage bin and the oversize will be sent to the mineral sorting circuit. The sorted concentrate will be combined with the fine storage bin material to feed a grinding and flotation circuit. The flotation concentrate will be trucked to the QR Mill for further comminution, leaching, and refining. The overall gold recovery will be 92.1%.

1.10. Project Infrastructure

The Project includes the following major components within the Project Footprint:

- Underground extraction infrastructure, two access portals (Island Mountain and Valley), conveyor and crushing facility;
- A Services Building at the Mine Site Complex containing a Surface Concentrator, Paste Backfill Plant, maintenance shop, mine dry, mine rescue, offices, and warehouse facilities;
- Electrical Substation;
- Workers Accommodation;
- Potable water well, pumping, treatment, storage, and distribution system;
- Sewage treatment system;
- Diesel and propane storage and distribution;
- Security Facilities and Main Entrance Gate;
- Firewater Pumping Station and Firewater Distribution Piping System;
- Bulk fill Area (BFA);
- Water Treatment Plant (WTP);
- A waste rock storage facility (WRSF) located at the Bonanza Ledge Site near the District of Wells, and associated access roads;
- ODV's existing Quesnel River Mill (QR Mill) and associated infrastructure, including upgrades to the existing QR Mill and worker's accommodations, and construction of a filtered stack tailings storage facility (FSTSF);

- Transportation Routes:
  - Transportation of concentrate between the Mine Site Complex and the QR Mill site along 56 kilometres (km) of Highway 26 and 59 km of the 500 Nyland Lake Forest Service Road, a forest service road maintained by West Fraser Mills Ltd.;
  - Transportation of workers, goods and service providers to Wells from Quesnel, BC, along Highway 26. A new highway bypass will be built before Wells to enable traffic to exit the highway before the community; and
  - Transportation of workers and goods to the QR Mill from Quesnel along Highway 26 and the 500 Nyland Lake Road, and workers along the Quesnel Hydraulic Road to 2700 Road and the 500 Nyland Lake Road;
- Transmission Line: a new 138 kilovolt ("kV") transmission line, 69.3 km in length, from Barlow Substation, near Quesnel to the Mine Site Complex that follows a corridor north of Highway 26 along forest service roads or other disturbance areas where possible. In the Project EA, a 69 kV line was proposed. While there is a change in the kV requirements, no changes to right of way, footprint or pole size are anticipated. For the purposes of this Report, the transmission line will be referred to as a 69 kV/138 kV transmission line.

1.11. Environmental and Permitting

1.11.1. Regulatory Context and Environmental Studies

An Environmental Assessment (EA) for the Project was initiated with the submission and acceptance of an initial project description (IPD) in 2020, as per the BC Environmental Assessment Act (2018), at a production rate of 4,750 tpd. Issuance of an Environmental Assessment Certificate ("EAC") is expected after successful review of the Application. The use of the updated resources in the PEA demonstrates the potential growth of the Project allowing for a scaled ramp up of activity to 8,000 tpd pending required permitting. Any changes to the Certified Project Description (or activities/works not authorized by the EAC), resulting from the increased production rate will first require an amendment to the Project EAC before proceeding to an updated detailed design and ensuing permit amendment applications.

As part of the EA Application for the Project, site-specific environmental baseline modelling and existing conditions characterization has been ongoing since 2016, with updates made to various reports following comments from the Technical Advisory Committee and the Participating Indigenous nations. ODV has prepared a preliminary list of key provincial and federal authorizations, licenses and permits that may be required for the Project, following the EA process. The QR Mill and Bonanza Ledge Mine, constituent parts of the Project, are authorized under separate *Mines Act* and *Environmental Management Act* permits, and each have their own associated reclamation bonding and liability estimates. Extensive baseline data collection and monitoring occurred as part of permit amendment applications for these sites, and monitoring data continues to be collected in support of site-specific environmental management and permit requirements.

Environmental baseline studies and modelling for the CGP have been undertaken in the following areas: air quality, terrain and soils, vegetation, wildlife and wildlife habitat, climate and physiography, fisheries and aquatic resources, surface water, and groundwater. In addition, ODV has established environmental monitoring plans for a suite of valued components to respond to regulatory requirements and best management practices for the Project.

1.11.2. Considerations of Social and Community Impacts

Since 2016, ODV has been undertaking meaningful and transparent engagement with Indigenous nations, the public, local community members, provincial and local government agencies and other stakeholders; and this engagement is ongoing. Positive relationships have been developed and maintained with three Participating Indigenous nations, Lhtako Dené Nation, Xat'śūll First Nation, Williams Lake First Nation, and ODV intends to maintain these relationships through all phases of the Project. CGP is in the asserted traditional territory of the Lhtako Dené Nation, while Xat'śūll First Nation territory overlaps the QR Mill, transportation routes and Mine Site areas, and Williams Lake First Nation's traditional territory is located to the southeast of the Project area overlapping the QR Mill and parts of the 500 Nyland Lake Forest Service Road.

1.11.3. Mine Reclamation and Closure Plan

ODV has prepared various Reclamation and Closure Plans (RCP) for the Project to detail how the sites will be reclaimed to a safe, stable, and non-polluting condition. An updated RCP was provided as an appendix to the Environmental Assessment (EA) for the Project. RCPs will continue to be updated as mine plans evolve, regulatory guidelines change, and in accordance with permit requirements. The Project footprint at each site has been divided into Master Areas to reflect disturbance type and proposed end land use. Detailed closure and reclamation prescriptions will be provided for each Master Area.

1.12. Capital and Operating Costs Estimates

1.12.1. Capital Costs

The total initial capital cost for the Cariboo Gold Project is estimated to be $121.5M and the total expansion capital cost is estimated to be $716.1M. The overall capital cost estimate developed in this PEA generally meets the American Association of Cost Engineers ("AACE") Class 4 requirements and has an accuracy range of between -30% and +30%. The capital cost estimate was compiled using mix of quotations and budgetary quotations, database costs, and database factors. Items such as sales taxes, land acquisition, permitting, licensing, feasibility studies and financing costs are not included in the cost estimate.

Costs are expressed in Q2 2022 Canadian dollars with an exchange rate of CAD 1.00 for USD 0.79 with no allowances for escalation, currency fluctuation or interest during construction.

The cumulative life of mine capital expenditures ("CAPEX"), including initial capital, expansion capital, sustaining capital, is estimated to be $1,364.8M. The Project's site reclamation and closure costs are estimated at 18.5M and it's salvage value is expected to be $61.1M.

Table 1-4: Project capital costs summary

Area	Cost Area Description	Initial capital cost ($M)	Expansion capital cost ($M)	Sustaining capital cost ($M)	Total cost (M$)
000	Mobile Equipment (non-mining)	3.2	1.8	5.6	10.6
200	Underground Mine	16.2	114.9	375.9	507.0
300	Water and Waste Management	2.6	88.6	9.9	101.1
400	Electrical & Communications	13.1	57.4	67.0	137.5
500	Surface Infrastructure	3.8	53.3	60.6	117.7
500	Mine Surface Infrastructure	2.1	2.5	5.7	10.4
600	Processing – Mine Site complex	1.5	189.1	-	190.6
600	Processing - QR Mill	37.6	17.1	2.4	57.0
700	Construction Indirect Costs	20.8	66.1	-	86.9
800	Owner's Costs	3.7	27.2	0.1	31.0
999	Contingency	0.5	98.1	-	98.7
	Capitalized Operating Costs	16.4	-	-	16.4
	Total	**121.5**	**716.1**	**527.2**	**1,364.8**
	Site Reclamation and Closure			18.5	18.5
	Salvage Value	-	-	-61.1	-61.1
	Total - Forecast to Spend	**121.5**	**716.1**	**484.6**	**1,322.2**

All capital costs for the Project have been distributed against the development schedule to support the economic cash flow model. Figure 1-1 presents the planned annual and cumulative LOM capital cost profile.

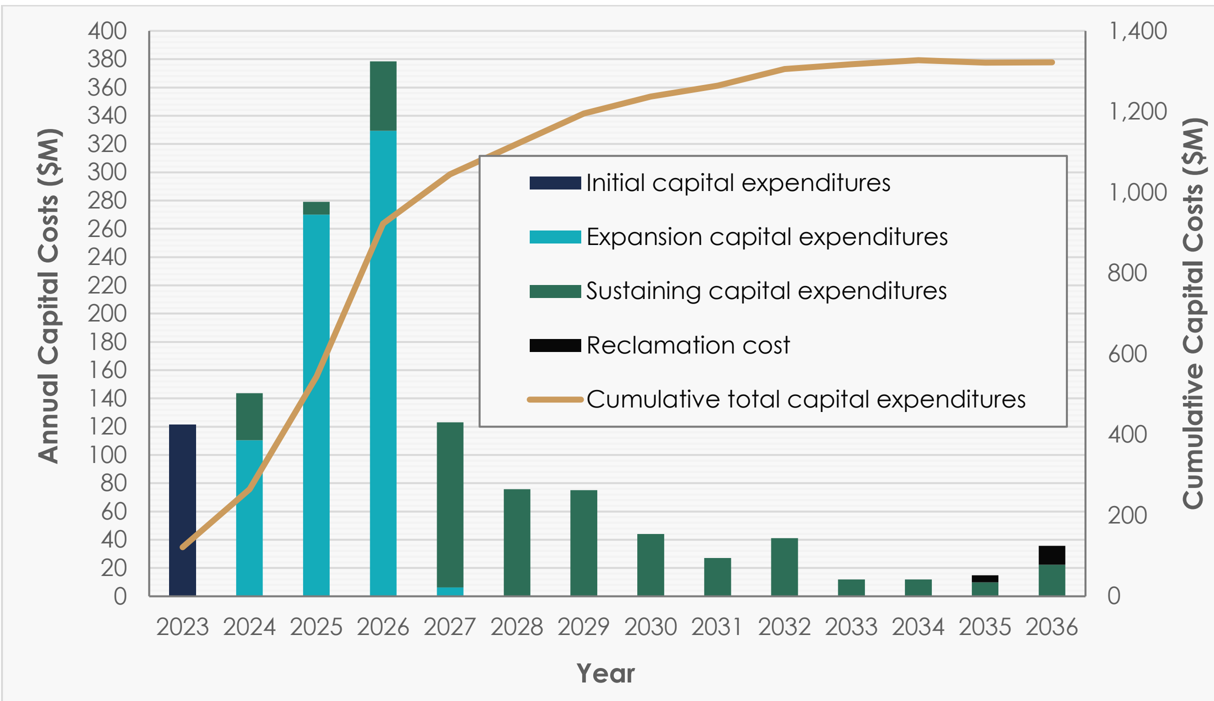


Figure 1-1: Annual and cumulative Project capital costs

1.12.2. Operating Costs

The operating cost expenditure ("OPEX") estimate is based on a combination of experience, reference projects, quotes and budgetary quotes and factors appropriate for a PEA study. The target accuracy of the operating costs is -/+30%. No cost escalation or contingency has been included within the operating cost estimate.

The operating cost estimate includes the costs to mine, transport and process the mineralized material to produce gold doré. It also includes costs for tailings management, water treatment and general and administration expenses ("G&A").

The average operating cost over the 12-year mine life is estimated to be $94.0/t mined. Total LOM and unit operating cost estimates are summarized in and are shown on a percentage basis in Table 1-5. Mining costs are presented inclusive of costs related to backfilling, including paste backfilling. Processing costs are presented inclusive of costs related to underground crushing and subsequent handling of ore during Phase II of the Project, as well as the costs related to mineral sorting for both phases of the Project.

Table 1-5: Total operating cost breakdown

Area	Cost area description	LOM ($M)	Annual average cost ($M)	Average LOM ($/tonne mined)	Average LOM ($/oz)	OPEX (%)
000	Mineralized material transport	108.5	9.0	3.9	38.2	4.1
200	Underground mining	1,499.9	125.0	53.3	528.8	56.7
300	Water and Waste Management	163.5	13.6	5.8	57.6	6.2
600	Processing – Mine Site Complex and QR Mill	675.8	56.3	24.0	238.2	25.5
800	Owner's Costs (G&A)	216.0	18.0	7.7	76.2	8.2
	Capitalized Operating Costs	-16.4	-1.4	-0.6	-5.8	-0.6
	Total	**2,647.3**	**220.6**	**94.0**	**933.3**	**100**

It is anticipated that 592 employees (staff and labour) will be required during the peak of operations during Phase II. Table 1-6 provides a summary of the employees by facility.

Table 1-6: Employee summary – All areas Phase II

Facility Area	Role	Total
General & Administration	Administration & Management	13
	Human resources and Community relations	3
	Health and safety	10
	Surface operations	11
	Technical Services (mine and geology)	27
	Subtotal	**64**
Underground Mine	Staff & Supervision	32
	Operations	250
	Maintenance & Services	106
	Subtotal	**388**
Processing	Staff & Supervision	22
	Operations and Maintenance	98
	Subtotal	**120**
Tailings, Waste & Water management	Staff & Supervision	10
	Operations and Maintenance	10
	Subtotal	**20**
Cariboo Gold Project	**Total**	**592**

1.13. Project Economics

The economic/financial assessment of the Project was carried out using a discounted cash flow approach on a pre-tax and after-tax basis, based on Q2 2022 metal price projections in US currency ("USD") and cost estimates capital expenditures ("CAPEX") and ("OPEX") in Canadian ("CAD" or "$") currency. Inflation or cost escalation factors were not taken into account. The base case gold price is USD $1,750/oz.

The economic analysis presented in this section contains forward-looking information with regard to the mineral resource estimates, commodity prices, exchange rates, proposed mine production plan, projected recovery rates, operating costs, construction costs and project schedule. The results of the economic analysis are subject to a number of known and unknown risks, uncertainties and other factors that may cause actual results to differ materially from those presented here. The reader is cautioned that this revised PEA is preliminary in nature and includes the use of Inferred mineral resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as mineral reserves and, as such, there is no certainty that the revised PEA economics will be realized.

The input parameters used and results of the financial analysis are presented in Table 1-7.

The pre-tax base case financial model resulted in an IRR of 26.7% and a NPV of $1,195.3M using a 5% discount rate. The pre-tax payback period after start of operations is 5.8 years.

On an after-tax basis, the base case financial model resulted in an IRR of 21.4% and a NPV of $763.8M using a 5% discount rate. The after-tax payback period after start of operations is 6.0 years.

The all-in sustaining costs ("AISC") over the LOM are USD 961.6/oz including royalties.

Table 1-7: Financial analysis summary

Description	Unit	Value
Total Tonnes Mined	M tonne (Mt)	28.2
Average Diluted Gold Grade	g/t	3.40
Total Gold Contained	oz	3,079,705
Total Gold Payable	oz	2,836,566
Average Annual Gold Produced	Au oz per year	236,381
Total Initial Capital Cost	$M	121.5
Total Expansion Capital Cost	$M	716.1
Sustaining Capital	$M	527.2
Site Reclamation Cost	$M	18.5
Salvage Value	$M	61.1

Description	Unit	Value
Operating Costs	$/t mined	94.0
All-in Sustaining Costs (AISC)	USD/oz	961.6
Total LOM NSR Revenue	$M	6,286.3
LOM Royalties	$M	314.3
Total LOM Operating Cash Flow	$M	3,324.7
Total LOM Pre-Tax Cash Flow	$M	2,002.5
Average Annual Pre-tax Cash Flow	$M	166.9
LOM Taxes	$M	660.8
Total LOM After-Tax Free Cash Flow	$M	1,341.7
Average Annual After-Tax Free Cash Flow	$M	111.8
Valuation Summary		
Pre-Tax NPV (@ 5% Discount Rate)	$M	1,195.3
Pre-Tax IRR	%	26.7
Pre-Tax Payback (after start of operations)	year	5.8
After-Tax NPV (@ 5% Discount Rate)	$M	763.8
After-Tax IRR	%	21.4
After-Tax Payback (after start of operations)	year	6.0

A financial sensitivity analysis was conducted on the Project's after tax NPV and IRR using the following variables: capital cost (pre-production and sustaining) operating costs, USD:CAD exchange rate, and the price of gold.

The graphical representations of the financial sensitivity analysis on NPV and IRR are depicted in Figure 1-2 and Figure 1-3. The sensitivity analysis reveals that the USD:CAD exchange rate and gold price have the most significant influence on both NPV and IRR compared to the other parameters, based on the range of values evaluated. After the USD:CAD exchange rates and gold price, NPV was most impacted by changes in operating costs and then, to a lesser extent, capital costs. It should be noted that the economic viability of the Project will not be significantly negatively impacted by variations in the capital cost, within the margins of error associated with the PEA capital cost estimate.

After the USD:CAD exchange rates and gold price, the Project's IRR was most impacted by variation in capital costs, and to a lesser extent by the operating costs.

Overall, the NPV and IRR of the Project are generally positive over most of the range of values used for the sensitivity analysis when analyzed individually.

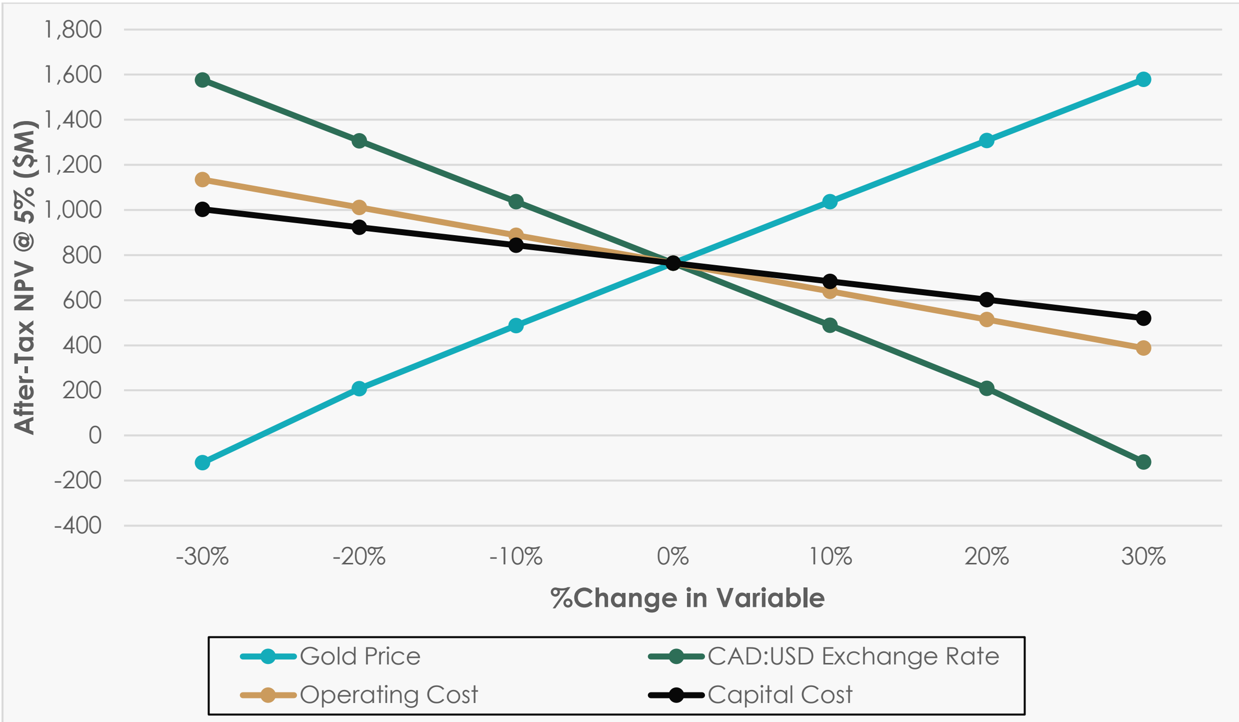


Figure 1-2: After-tax sensitivity analysis – Net present value (NPV)

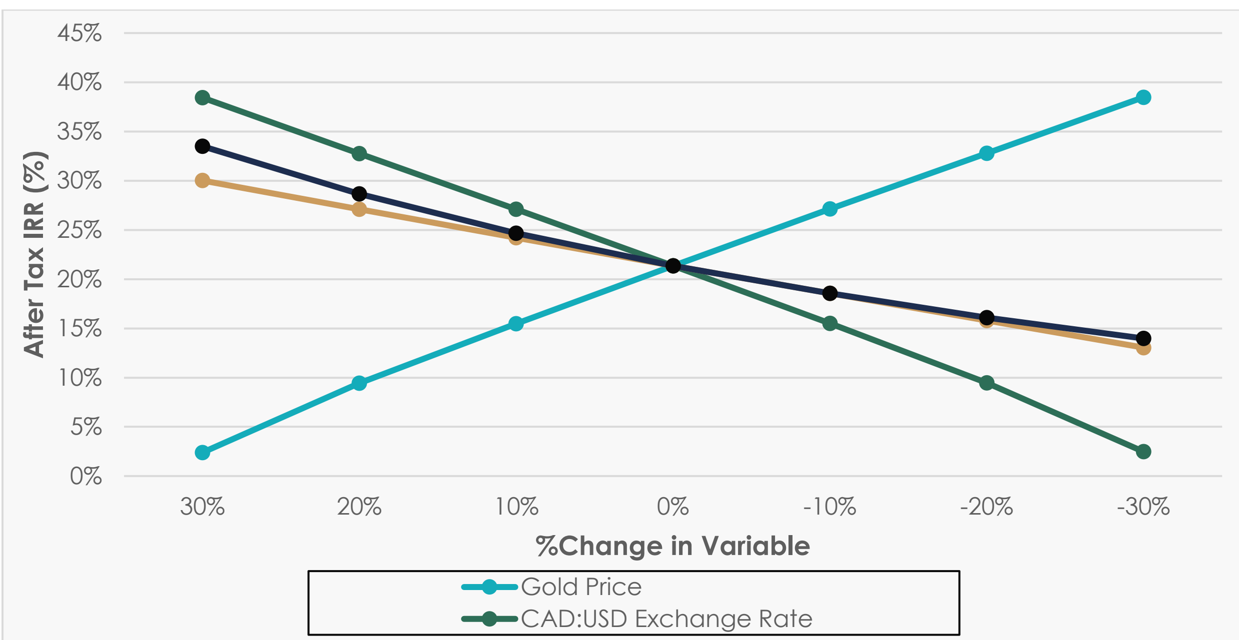


Figure 1-3: After-tax sensitivity analysis – Internal rate of return (IRR)

1.14. Project Schedule and Organization

ODV will assemble a team to manage the Project technical studies and Project construction. All Project phases including detailed engineering, procurement, pre-production and construction activities will be under the direction of the ODV Vice President of Engineering and Construction. Permitting and Project financing will be supported performed by ODV's Project Development Team and Financial teams respectively.

The preliminary on-site workforce requirement for construction, including infrastructure, concentrator, and development of the underground mine is expected to be 330 construction personnel to ramp up the Project to 8,000 tpd for 2027.

The major Project activity milestones are presented in Table 1-8.

Pending the completion of all studies and receipt of the required permits, the portal construction at Island Mountain is scheduled to begin in Q3 2023 while the concentrator and Mine Site Complex infrastructure construction is scheduled to begin in Q1 2025 with full capacity production beginning in Q1 2027.

Table 1-8: Key milestones (preliminary)

Activity	Date
Complete revised PEA study	Q2 2022
Collect bulk sample	Q2 2022
The Project Environmental Assessment Certificate ("EAC") for 4,750 tpd application and reception of certificate	Q4 2022
Start of dismantling activities as part of Care and Maintenance for Bonanza Ledge 3	Q4 2022
Start FS and Execution stage work (parallel activities)	Q4 2022
Start of Major Construction at QR Mill	Q1 2023
Transmission Line License of Occupation	Q3 2023
Receive permits for the 4,750 tpd Project	Q3 2023
Island Mountain Portal Construction & Development	Q3 2023
Early Works at Mine Site Complex	Q1 2024
Commissioning of QR Mill	Q1 2024
Start of Transmission Line Clearing and Construction	Q1 2024
Start of Major Construction at Mine Site Complex	Q1 2025
CGP Phase I 2,000 tpd achieved	Q4 2024
Commissioning of Mine Site Complex	Q3 2026
CGP Phase II 8,000 tpd achieved (pending permit amendment)	Q1 2027

1.15. Interpretations and Conclusions

This PEA was prepared by BBA and other experienced consultants for ODV to demonstrate the economic viability of developing the Project resources as an underground mine, and pre-concentrating the mineralized material using a mineral sorter circuit followed by flotation and transportation from the Mine Site Complex to the QR Mill for further processing by gravity and leaching. This Report provides a summary of the results and findings from each major area of investigation. Standard industry practices, equipment and processes were used. To date, the QPs are not aware of any unusual or significant risks or uncertainties that could materially affect the reliability or confidence in the Project based on the information available.

The results of the Study indicate that the proposed Project has technical and financial merit using the base case assumptions. The QPs consider the PEA results sufficiently reliable and recommend that the Cariboo Gold Project be advanced to next stage of development through the initiation of a feasibility study.

The following conclusions are based on the QPs detailed review of all pertinent information:

- The results demonstrate the geological and grade continuities for all eight gold deposits in the Cow-Island-Barkerville Mountain Corridor.
- In a potential underground scenario, the Cariboo Gold Project contains an estimated Measured Resource of 8,000 ounces of gold, and Indicated Resource of 3,463,000 ounces, and an Inferred Resource of 1,621,000 ounces.
- The resource estimates for the Mosquito, Shaft, Valley, Cow, and Lowhee deposits were updated using the 2021 drill results. Additional diamond drilling on multiple zones would likely increase the Inferred Resources and upgrade some of the Inferred Resources to Indicated Resources.
- The selected flowsheet for processing material from the deposits includes mineral sorting, grinding, flotation and leaching. The process at the Mine Site Complex produces a pre-concentrate consisting of mineral sorting concentrate in Phase I and in Phase II mineral sorting and flotation concentrate both Phases concentrates are transported to the QR Mill for further milling and leaching. Based on the testwork results and the proposed mining plan at the time, the overall projected Au recovery is 92.1%.
- The Project mine layout demonstrates a development intensive stope access requirement and therefore has a high development meter per tonne of mineralized material ratio. These factors may pose a challenge to successful implementation of the mine plan given the restrictive geotechnical parameters and intrinsically lower productivities of the mining method. However, through diligent planning and adherence to proper work procedures, sufficient active headings and stoping areas should meet daily production requirements.

- The use of innovative technologies and techniques may improve productivity: Such as roadheaders, and the use of autonomous equipment.
- The environmental baseline work completed to date is sufficient to support a PEA. Further work is underway, as required, to support the Environmental Assessment process and permit applications for the Project.
- The information and assumptions used in the design of the Mine Site Complex infrastructure are sufficient to support a PEA. Further work is underway and recommended to support subsequent design phases.
- The total capital costs (initial, expansion and sustaining) for the Project were estimated at $1,365 million ("M"), the average operating costs over the 12-year mine life is estimated to be $94.0/tonne mined.
- The financial analysis performed as part of this revised PEA using the base case assumptions results in an after-tax NPV 5% of $763.8 M and an internal rate of return of 21.4% (base case exchange rate of 0.79 CAD for 1.00 USD). The cumulative cash flow for the Project (after-tax) is $1,342 M and the payback period after start of operations is 6.0 years over the planned mine life of 12 years.

The QPs considers the PEA to be reliable, thorough, based on quality data, reasonable hypotheses, and parameters compliant with NI 43-101 requirements and CIM Definition Standards.

1.15.1. Risks and Opportunities

An analysis of the results of the investigations has identified a series of risks and opportunities associated with each of the technical aspects considered for the development of the Project.

Potential Risks

The most significant potential risks associated with the Project are:

- Transmission Line completion date delay will lead to an increase in operational cost as power costs with gensets are higher and require carbon taxes payment;
- High daily production rate from a narrow vein gold mine; potential for issues related to production capacity from each zone due to: geological continuity issues, geotechnical issues, interaction of equipment in each zone, any slowdown in mining cycle time (related to dewatering, backfill placement/curing, lead time for dewatering and materials handling);
- Greater water inflow than anticipated leading to an increase in water pumping and treatment capital cost;

- The inability to locate an appropriate borrow source for aggregate material near the Mine Site would increase the cost and environmental impact of the Project due to transporting the material over a greater distance;
- Discovery of an unidentified contaminant that cannot be treated by the chosen mine water treatment systems (complexity of contaminants) may lead to increased water treatment costs.

Many of the previous noted risks are common to most mining projects, many of which may be mitigated, at least to some degree, with adequate engineering, planning and pro-active management.

Key Opportunities

There are a number of opportunities that could improve the economics, timing and/or permitting potential of the Project. The key opportunities that have been identified at this time are as follows:

- Additional exploration surface definition diamond drilling could identify new resource areas and upgrade Inferred resources to the Indicated category;
- Strategic placement of low grade pillars to forego backfill or increased use of unconsolidated rockfill;
- A geometallurgical system should be implemented that would gather and analyse data collected during definition drilling and mapping to collect geotechnical, rock mass, and mineralogical properties. This should allow optimization of the mine sequence and cost structure to maximize the economics of each individual stope within the life of mine;
- NPAG waste rock material, using appropriate covers and/or liners if required, could be mixed with borrow pit aggregate for the construction of some of the civil and water management infrastructure at the Mine Site Complex and Bonanza Ledge Site.

1.16. Recommendations

Based on the results of the 2022 MRE, The QPs recommend that the Project move to an advanced phase of development, which would involve the preparation of a feasibility study covering all eight deposits: Cow, Valley, Shaft, Mosquito, Bonanza Ledge, BC Vein, KL, and Lowhee.

Specifically, the QPs recommend continuing ODV's exploration program (see below for details); updating the existing PEA for new mining scenarios at lower grades using data from the geotechnical, hydrogeological and metallurgical studies; collecting the underground Cow Mountain Bulk Sample, conducting a feasibility study after collecting the bulk sample; continuing the community outreach program; and conducting a characterization study of the mining project environment in tandem with these other projects.

It is recommended that the drilling (infill and exploration), geological mapping, and grab sampling test the extensions of known high-grade vein corridors and identify new targets.

The recommended work program is detailed below:

A) Exploration Work

- Infill drilling in high-grade vein corridors (> 6.0 g/t Au) to potentially convert inferred resources to the indicated category;
- Exploration drilling on all zones to explore the true depth potential of high-grade vein corridors using 50 m step-outs downdip;
- Continue geological mapping and surface sampling programs to identify and define new targets;
- NI 43-101 MRE update on the Project.

B) Complete the bulk sample

- Underground bulk sampling program to test geological and grade continuities, metallurgical and geotechnical parameters.

C) Feasibility Study- Further advanced studies on:

- Detailed mine and process design;
- Metallurgy;
- Infrastructure;
- Environmental management including tailings and water;
- Economic analysis.

A cost estimate for the proposed program was proposed by the QPs to serve as a guideline for the Project. The budget is presented in Table 1-9. and amounts to a total budget of $64.8 million. The QPs believe the recommended work program and proposed expenditures are appropriate and well thought out, and that the proposed budget reasonably reflects the contemplated activities.

Additional recommendations and further details on those can be found in Chapter 26.

Table 1-9: Work Program Budget

Work Program	Cost Estimate ($)

Infill and exploration drilling (130,000m)	30,000 000
Surface mapping and sampling	500,000
Bulk Sample	15,000,000
Feasibility Study	8,500,000
Contingency (20%)	10,800,000
Total	**64,800,000**

2. Introduction

This Report was prepared and compiled by BBA Engineering Ltd. ("BBA") at the request of Osisko Development Corp. ("ODV"). The purpose of this Report is to summarize the results of the Preliminary Economic Assessment ("PEA") for the Cariboo Gold Project ("the Project") in accordance with the guidelines of the Canadian Securities Administrators National Instrument 43-101 ("NI 43-101") and Form 43101F1.

BBA is an independent engineering consulting firm headquartered in Mont-Saint-Hilaire, Québec with mining groups based in Montréal, Vancouver, Toronto, and Sudbury. The Vancouver team led the overall integration of this Report. This Report was prepared under ODV's Project Manager, François Girard, and the ODV team based on contributions from several independent consulting firms including, InnovExplo Inc. ("InnovExplo"), SRK Consulting (Canada) Inc. ("SRK"), WSP Canada Inc. ("WSP", "WSP Golder"), BBA Engineering Ltd. ("BBA"), Falkirk Environmental Consultants Ltd. ("Falkirk"), and Klohn Crippen Berger Ltd. ("KCB").

2.1. Barkerville Gold Mines Division

Barkerville Gold Mines Division ("BGM") is a 100%-owned subsidiary of ODV, focused on the development of over 2,000 square kilometres ("km^2") of mineral tenures in the Cariboo Mining District in British Columbia, Canada. The land holdings consist of a 67 kilometre ("km") long and 25 km wide belt that contains historically producing mines, including Mosquito Creek Mine, Aurum Mine, and Cariboo Gold Quartz Mine. The current resource development is focused on the Island Mountain, Cow Mountain, and Barkerville Mountain corridor (collectively, the "Cow-Island-Barkerville Mountain Corridor"), where gold had been extracted from both pyrite replacement and quartz vein ores.

2.2. Basis of Technical Report

The following Report presents the results of the PEA for the development of the Project. As of the date of this Report, Osisko Development Corp. ("ODV") is a North American mine development company with a focus towards becoming a mid-tier gold miner with opportunities for immediate production. ODV is listed on the TSX Venture Exchange ("TSXV") under the symbol "ODV" with its head office situated at:

1100, av des Canadiens-de-Montréal
Suite 300, P.O. Box 211
Montréal, QC H3B 2S2

This Report, titled, "NI 43-101 Technical Report Preliminary Economic Assessment for the Cariboo Gold Project (BBA, May 24, 2022)", was prepared following the guidelines of the NI 43-101 and in conformity with the guidelines of the Canadian Institute of Mining, Metallurgy and Petroleum ("CIM") Standards on Mineral Resources and Reserves ("CIM Definition Standards").

2.3. Report Responsibility and Qualified Persons

The following individuals, by virtue of their education, experience, and professional association, are considered Qualified Persons ("QPs") as defined in the NI 43-101 and are members in good standing of appropriate professional institutions.

- Colin Hardie, P.Eng. — BBA Engineering Ltd.
- Mathieu Belisle, P.Eng. — BBA Engineering Ltd.
- Carl Pelletier, P.Geo — InnovExplo Inc.
- Vincent Nadeau-Benoit, P.Geo — InnovExplo Inc.
- Éric Lecomte, P.Eng. — InnovExplo Inc.
- Tim Coleman, P.Eng. — SRK Consulting (Canada) Inc.
- Paul Gauthier, P.Eng. — WSP Golder
- Aytaç Göksu, P.Eng. — WSP Golder
- Tom Rutkowski, P.Eng. — WSP Golder
- John Cunning, P.Eng. — WSP Golder
- Kristin Salzsauler, P.Geo. — WSP Golder
- Éric Poirier, P.Eng., PMP — WSP Canada Inc.
- David Willms, P.Eng. — Klohn Crippen Berger Ltd.
- Michelle Liew, P.Eng. — Klohn Crippen Berger Ltd.
- Katherine Mueller, P. Eng. — Falkirk Environmental Consultants Ltd.

The preceding QPs have contributed to the writing of this Report and have provided QP certificates, included at the beginning of this Report. Table 2-1 outlines the responsibilities for the various sections of the Report and the name of the corresponding Qualified Person.

Table 2-1: Qualified Persons and areas of report responsibility

Chapter	Description	Qualified Person	Company	Comments and exceptions
1.	Executive Summary	C. Hardie	BBA	All QPs contributed based on their respective scope of work and the Chapters/Sections under their responsibility.
2.	Introduction	C. Hardie	BBA	All QPs contributed based on their respective scope of work and the Chapters/Sections under their responsibility.
3.	Reliance on other Experts	C. Hardie	BBA	All QPs contributed based on their respective scope of work and the Chapters/Sections under their responsibility.
4.	Project Property Description and Location	V. Nadeau-Benoit C. Pelletier	InnovExplo	Sections 4.1-4.5.
		K. Mueller	Falkirk	Section 4.6.
5.	Accessibility, Climate, Local Resource, Infrastructure and Physiography	V. Nadeau-Benoit C. Pelletier	InnovExplo	All Chapter 5; Updated from 2020 InnovExplo MRE update.
6.	History	V. Nadeau-Benoit C. Pelletier	InnovExplo	All Chapter 6; Updated from 2020 InnovExplo MRE update.
7.	Geological Setting and Mineralization	V. Nadeau-Benoit C. Pelletier	InnovExplo	All Chapter 7.
8.	Deposit Types	V. Nadeau-Benoit C. Pelletier	InnovExplo	All Chapter 8.
9.	Exploration	V. Nadeau-Benoit C. Pelletier	InnovExplo	All Chapter 9.
10.	Drilling	V. Nadeau-Benoit C. Pelletier	InnovExplo	All Chapter 10.
11.	Sample Preparation, Analyses and Security	V. Nadeau-Benoit C. Pelletier	InnovExplo	All Chapter 11.
12.	Data Verification	V. Nadeau-Benoit C. Pelletier	InnovExplo	All Chapter 12.
13.	Mineral Processing and Metallurgical Testing	M. Belisle	BBA	All Chapter 13.
14.	Mineral Resource Estimate	V. Nadeau-Benoit C. Pelletier	InnovExplo	All Chapter 14, except for Chapter 14.12.
		E. Lecomte	InnovExplo	Chapter 14.12.
15.	Mineral Reserve Estimate	E. Lecomte	InnovExplo	All Chapter 15.
16.	Mining Methods	E. Lecomte	InnovExplo	Section 16.1, 16.5, 16.6, 16.8, 16.9, 16.10, 16.11.
		A. Göksu	WSP Golder	Section 16.4.
		T. Coleman	SRK	Sections 16.2.
		P. Gauthier	WSP Golder	Sections 16.3, 16.7.

Chapter	Description	Qualified Person	Company	Comments and exceptions
17.	Recovery Methods	M. Belisle	BBA	All Chapter 17.
18.	Project Infrastructure	E. Poirier	WSP	Section 18.2.1.2, 18.2.2 -18.2.6, 18.2.8, 18.2.13 (co-author), 18.2.14.3
		T. Rutkowski	WSP USA Inc. (WSP Golder)	Sections 18.2.11, 18.3.5 and 18.4.6
		J. Cunning	WSP Golder	Sections 18.2.12, 18.2.13, (co-author) and 18.3.2
		A. Göksu	WSP Golder	Sections 18.2.9, 18.2.10, 18.3.3 and 18.3.4
		D. Willms	KCB	Sections 18.4.3, 18.4.4 and 18.4.5
		C. Hardie	BBA	Sections 18.1, 18.2.14, 18.4.7
		M. Belisle	BBA	Sections 18.3.1, 18.4.2
19.	Market Studies and Contracts	C. Hardie	BBA	All Chapter 19
20.	Environmental Studies, Permitting, and Social or Community Impact	K. Mueller	Falkirk	All Chapter 20, except 20.3.1 to 20.3.7
		M. Liew	KCB	Co-Author of 20.3.5; Sections 20.3.6.2 and 20.3.6.3
		A. Göksu	WSP Golder	Section 20.3.6.1
		K. Salzsauler	WSP Golder	Co-Author of 20.3.5; Sections 20.3.1 to 20.3.4, and 20.5
		T. Rutkowski	WSP USA Inc. (WSP Golder)	Section 20.3.7
21.	Capital and Operating Costs	C. Hardie	BBA	All QPs listed here contributed based on their respective scope of work and the Chapters/Sections under their responsibility.
		E. Poirier	WSP	
		P. Gauthier	WSP Golder	
		M. Belisle	BBA	
		E. Lecomte	InnovExplo	
		T. Rutkowski	WSP USA Inc. (WSP Golder)	
		J. Cunning	WSP Golder	
		A. Göksu	WSP Golder	
		K. Salzsauler	WSP Golder	
		D. Willms	KCB	
		K. Mueller	Falkirk	
		M. Liew	KCB	
22.	Economic Analysis	C. Hardie	BBA	All Chapter 22
23.	Adjacent Properties	V. Nadeau-Benoit C. Pelletier	InnovExplo	All Chapter 23

Chapter	Description	Qualified Person	Company	Comments and exceptions
24.	Other Relevant Data and Information	C. Hardie	BBA	All Chapter 24
25.	Interpretation and Conclusions	C. Hardie	BBA	All QPs contributed based on their respective scope of work and the Chapters/Sections under their responsibility.
26.	Recommendations	C. Hardie	BBA	All QPs contributed based on their respective scope of work and the Chapters/Sections under their responsibility.
27.	References	C. Hardie	BBA	All QPs contributed based on their respective scope of work and the Chapters/Sections under their responsibility.

2.4. Effective Dates and Declaration

The overall effective date of the Report is May 24, 2022.

The Report has several effective dates for information:

- Effective date of the Cariboo Gold Project Mineral Resource Estimate used as the basis for the life of mine ("LOM") Plan: May 17, 2022;
- Date of last supply of laboratory testwork and investigations: April 25, 2022
- Date of the financial analysis: May 24, 2022.

This Report was prepared as a National Instrument 43-101 Standards of Disclosure for Mineral Projects Technical Report for ODV by QPs, collectively the "Report Authors". The quality of information, conclusions, and estimates contained herein is consistent with the level of effort involved in the Report Authors' services, based on: i) information available at the time of preparation, ii) data supplied by outside sources; and iii) the assumptions, conditions, and qualifications set forth in this Report. This Report is intended for use by ODV subject to the terms and conditions of its respective contracts with the Report Authors, and relevant securities legislation.

This Report is intended for use by ODV subject to the terms and conditions of its contract with the report authors and relevant securities legislation.

The contract allows ODV to file this Report as a Technical Report with Canadian Securities Regulatory Authorities pursuant to National Instrument 43-101. Except for the purposes legislated under provincial securities law, any other uses of this Report by any third party is at that party's sole risk. The responsibility for this disclosure remains with ODV. The user of this document should ensure that this is the most recent Technical Report for the property as it is not valid if a new Technical Report has been issued.

2.5. Sources of Information

2.5.1. General

This Report is preliminary in nature, and is based in part on internal company reports, maps, published government reports, company letters and memoranda, and public information, as listed in Chapter 27 "References" of this Report.

The Report is based on numerous assumptions and Inferred Mineral Resources. Inferred Mineral Resources are considered too speculative geologically to have economic considerations applied to them that would enable them to be categorized as mineral reserves except as allowed for by Canadian Securities Administrators' National Instrument 43-101 in PEA studies. No mineral reserves have been estimated. There is no guarantee that Inferred resources can be converted to Indicated or Measured resources and, as such, there is no guarantee that the Project economics described herein will be achieved.

Sections from reports authored by other consultants may have been directly quoted or summarized in this Report and are so indicated, where appropriate.

This PEA has been completed using available information contained in, but not limited to, the following reports, documents and discussions:

- Technical discussions with ODV personnel;
- QPs' personal inspection of the Project site(s);
- Report of mineralogical, metallurgical and grindability characteristics of the Island Mountain, Cow Mountain, and Barkerville Mountain deposits, and Bonanza Ledge Site conducted by industry recognized metallurgical testing laboratories on behalf of ODV;
- The Project resource block model and estimate provided by InnovExplo are effective as of May 17, 2022;
- Internal and commercially available databases and cost models;
- Various reports covering site hydrology, hydrogeology, geotechnical, and geochemistry;
- Various reports covering site physical and biological environment;
- Internal unpublished reports received from ODV;
- Additional information from public domain sources.

The QPs have no known reason to believe that any of the information used to prepare this Report and evaluate the mineral resources presented herein is invalid or contains misrepresentations.

The authors have sourced the information for this Report from the collection of documents listed in Chapter 27 (References).

2.5.2. BBA Engineering Ltd.

The following entities or individuals provided specialist input to Mathieu Belisle, QP:

- Helin Girgin (BBA) provided data analysis and interpretation of the metallurgical testwork (Chapter 13) as well as inputs for the development of the process plant operating cost estimate in Chapter 21 (Capital and Operating Costs).

The following entities or individuals provided specialist input to Colin Hardie, QP:

- Gilles Léonard (BBA) and Yves Bouchard (BBA) provided the design and cost estimates for the mine site communications infrastructure;
- Yves Robitaille (BBA) provided the design and cost estimates for the Mine Site Complex electrical substation, power line and electrical power distribution;
- ODV and its external advisors have provided an estimate for the owner's costs and contingencies used in the development of the Project's baseline capital cost estimate found in Chapter 21 (Capital and Operating Costs);
- ODV provided an estimate for the General & Administration costs of the Project's operating cost estimate found in Chapter 21 (Capital and Operating Costs);
- Claude Catudal (BBA) and Jocelyn Marcoux (BBA) provided inputs for the industrial standards and norms for the various material, manpower and construction costs used in the development of the process plant capital costs (Chapter 21);
- Claude Catudal (BBA) provided input to the Project execution strategy and schedule as summarized in Chapter 24 (Other Relevant Data and Information);

These specialists are not considered as QPs for the purposes of this NI 43-101 Report.

2.5.3. InnovExplo Inc.

The following individuals provided specialist input to Éric Lecomte, QP:

- Sébastien Tanguay (InnovExplo), and Jean-Olivier Brassard (InnovExplo) provided designed underground workings, and scheduled mine plan;
- Yolaine Lavoie (Meglab) provided underground electrical and communication design, cost estimates for related materiel and electrical charge. She also provided electrical and communication sections of Chapter 16;
- Pierre Marquis (Technosub) provided underground dewatering design, cost estimates for related materials and provided the dewatering sections of Chapter 16;
- Robert Hamilton (InnovExplo) provided the mobile equipment rebuild schedule and related personnel and material cost estimates for major maintenance of mobile fleet. He also contributed purchasing schedule and yearly operating hours;

- Hugo Della Sbarba (Howden) provided ventilation design, underground heating demand, cost estimates, and hardware requirements. He also provided ventilation sections of Chapter 16.

These specialists are not considered as QPs for the purposes of this NI 43-101 Report.

2.5.4. SRK Consulting (Canada) Inc.

The following individual provided specialist input to Tim Coleman, QP:

- Olga Gibbons and Adrienne Joaquim (SRK) provided design inputs into the geotechnical assessments found in Chapter 16 (Mining Methods).

These specialists are not considered as QPs for the purposes of this NI 43-101 Report.

2.5.5. WSP Golder

The following individuals provided specialist input to Paul Gauthier, QP, Aytaç Göksu, QP, Tom Rutkowski, QP, John Cunning, QP, and Kristin Salzsauler, QP:

- Isaac Ahmed (WSP Golder) provided the design estimation for underground paste backfill design;
- Jeffery Gaudette (WSP Golder) provided underground mineral handling design and cost estimation;
- Darlene Nelson (WSP) provided the design and cost estimate for the Valley and Island Mountain portal;
- Lisa May (WSP Golder) on reclamation and mine closure;
- Fernando Ascencio, on waste rock storage facilities;
- Darryl Howard,Joanna Stec, Marcus Yu and Jeff Macsween (WSP Golder) on water treatment;
- Izak Green and Sailesh Singh (WSP Golder) for mine water pipeline design;
- Donald Kidd and Cameron Ofsoske(WSP Golder), on diffuser into Jack of Club Lake;
- Alison Snow (WSP Golder) on site water quality modelling;
- Philippe Benoît (WSP Golder) on water management strategy and water management infrastructure at Wells Mine Site Complex and Bonanza Ledge Site;
- Nick Gorski (WSP Golder) on hydrogeology at the Mine Site Complex and Bonanza Ledge Site.
- Jennifer Levenick (WSP Golder) on groundwater inflows modelling predictions.

These specialists are not considered as QPs for the purposes of this NI 43-101 Report.

2.5.6. WSP Canada Inc.

The following individuals provided specialist input to Éric Poirier (WSP), QP:

- Ian Hunsche (WSP) and Trent Purvis (WSP) provided design for roads and infrastructure civil design;
- Joske Whiteside (WSP) provided design and cost estimation for piping works related to infrastructure connections;
- Donald Kaluza (WSP) provided guidance on geotechnical requirements for roads, portals, pads, and buildings installations;
- Suchit Kaila (WSP) provided design for the fire protection system;
- Kirollos Shenouda (WSP) provided design for electrical distribution of the surface infrastructure and site lighting;
- Calvin Goldschmidt (JDS) and Thomas Gobeil (JDS) provided design and construction unit costs for earthworks, roads and infrastructure.

These specialists are not considered as QPs for the purposes of this NI 43-101 Report.

2.5.7. Klohn Crippen Berger Ltd.

The following individuals provided specialist input for the QR Mill to David Willms, QP, and Michelle Liew, QP:

- Drew Hegadoren (KCB), Maxwell Cronk (KCB), and Trisha Yang (KCB) on geotechnical design, construction staging planning and material takeoff for the proposed Filtered Stack Tailings Storage Facility;
- Adrian Moreau (KCB), Jiajia Zheng (KCB), and Alex Fitzpatrick (KCB) on surface water management and water quality predictions.

These specialists are not considered as QPs for the purposes of this NI 43-101 Report.

2.5.8. Falkirk Environmental Consultants Ltd.

The following individuals provided specialist input to Katherine Mueller, QP:

- Kristin Salzsauler (WSP Golder) and Philippe Benoit (WSP Golder) provided guidance, review and edits on geochemical and surface water management;
- Michelle Liew (KCB) provided guidance, review and edits on TSF design;
- Claudia Castro and Jennifer Gebert (Falkirk) on permitting, approvals, and social considerations.

These specialists are not considered as QPs for the purposes of this NI 43-101 Report.

2.6. Site Visits

The following bulleted list describes which Qualified Persons visited the site(s) (Mine Site Complex in Wells, Quesnel River Mill [QR Mill], and Bonanza Ledge Site), the date of the visit, and the general objective of the visit:

- Carl Pelletier (InnovExplo) conducted a site visit from February 1 to 4, 2016, and from May 3 to 12, 2016. The first visit included the Bonanza Ledge pit, the Cow Mountain area and the Island Mountain area. The second involved a visit to the core logging facilities and several drill hole collars. While on site, he also reviewed selected core intervals from the Barkerville Mountain and Cow Mountain deposits, performed an independent resampling program of said core and verified the Project databases;
- Vincent Nadeau-Benoit (InnovExplo) conducted a site visit from November 1 to 5, 2021. The visit included a tour and review of the core logging facilities, drill pads and mineralized outcrops as well as a review of drill hole cores from the 2020 and 2021 drilling programs;
- Tim Coleman (SRK) visited the proposed Mine site in Wells and the Bonanza Ledge Site on February 25, 2022, to conduct a review of the Project site, geotechnical review of drill cores, and observe ground conditions and excavation behaviour at the Bonanza Ledge Site;
- Éric Lecomte (InnovExplo) visited the proposed Mine Site Complex in Wells and the Bonanza Ledge Site, on February 25, 2022, to conduct a review of the Project site and observe ground conditions and excavation behaviour at the Bonanza Ledge Site;
- Mathieu Bélisle (BBA) visited the QR Mill on July 8 to 11, 2019 to conduct a review of the actual installation;
- Éric Poirier (WSP) visited the QR Mill on July 8 to 11, 2019, to conduct a review of the actual installation;
- John Cunning (WSP Golder) visited the site between August 17 and 18, 2021, to carry out a personal inspection of the proposed waste rock storage areas at Wells Mine site and Bonanza Ledge Site;
- Kristin Salzsauder (WSP Golder) visited the site between September 27 and 28, 2021, to conduct a personal review of the Project site, including a review of the visible geologic and geochemical characteristics of active and former mining areas at the Wells Mine Site, Bonanza Ledge Site and QR Mill;
- Katherine Mueller (Falkirk) visited the site between July 28 and July 29, 2021, to discuss all of the environmental management, compliance, and water management activities on site as it related to the current and future permitting requirements for the Project;
- David Willms and Michelle Liew (KCB) visited the QR Mill on July 26 to 28, 2021, to conduct dam safety inspection of the Tailings Storage Facility and Main Zone Pit.

As of the effective date of this report, the following QPs have not visited the Project site(s):

- Colin Hardie (BBA);
- Paul Gauthier (WSP Golder);
- Tom Rutkowski (WSP Golder);
- Aytaç Göksu (WSP Golder).

2.7. Currency, Units of Measure and Calculations

Unless otherwise specified or noted, the units used in this Report are metric. Every effort has been made to clearly display the appropriate units being used throughout this Report:

- Currency is in Canadian dollars ("CAD" or "$");
- All ounce units are reported in troy ounces, unless otherwise stated:
  1 oz (troy) = 31.1 g = 1.1 oz (Imperial);
- All metal prices are expressed in US dollars ("USD" or "US$");
- A Canadian dollar ("CAD" or "$") to United States dollar (USD) exchange rate of 0.79 USD for 1.00 CAD was used;
- All cost estimates have a base date of the second quarter ("Q2") of 2022.

This Report includes technical information that required subsequent calculations to derive subtotals, totals and weighted averages. Such calculations inherently involve a degree of rounding and consequently introduce a margin of error. Where these occur, the QPs consider them immaterial.

2.8. Acknowledgement

BBA and the other study contributors would like to acknowledge the general support provided by the following personnel during this assignment:

The Project benefitted from the specific input of François Vézina, François Girard, Victor Gauthier, Alexandre Burelle, Christian Laroche, Christopher Waite, Sylvie St-Jean, Daniel Mathieu, Walter Dorn, John-Paul McGrath, Martin Ménard, Maggie Layman, Ryan Friesen, Kevin Pinkerton, Luc Lessard, Kelsey Dodd, Hayley Archer, Julia Gartley, Amanda Fitch and Manon Dussault. Their contributions are greatly appreciated.

3. Reliance on Other Experts

The Qualified Persons ("QPs") have relied upon reports, information sources and opinions provided by outside experts related to the Cariboo Gold Project's ("the Project") mineral rights, surface rights, property agreements, royalties, and fiscal situation.

As of the date of this Preliminary Economic Assessment for the Cariboo Gold Project ("Report"), Osisko Development Corp. ("ODV") indicates that there are no known litigations potentially affecting the Project.

A draft copy of the Report has been reviewed for factual errors by ODV. Any changes made as a result of these reviews did not involve any alteration to the conclusions made. Hence, the statements and opinions expressed in this document are given in good faith and in the belief that such statements and opinions are neither false nor misleading at the date of this Report.

3.1. Mineral Tenure and Surface Rights

ODV supplied information about mining titles, option agreements, environmental liabilities, permits and First Nations negotiations. Carl Pelletier, QP, and Vincent Nadeau-Benoit, QP, of InnovExplo consulted British Columbia's internet-based electronic mineral titles administration system (Mineral Titles Online) (https://www.mtonline.gov.bc.ca/mtov/home.do) for the latest status regarding ownership and mining titles. Although the QPs have reviewed the option agreements and available claim status documents, they are not qualified to express any legal opinion with respect to the property titles, current ownership, or possible litigation. A description of such agreements, the property, and ownership thereof, is provided for general information purposes only. In this regard, the QPs have relied on information supplied by ODV and the work of experts they understand to be appropriately qualified.

This information is used in Chapter 4 of the Report. The information is also used in support of the Mineral Resource Estimate in Chapter 14.

3.2. Taxation and Royalties

Colin Hardie, QP, from BBA has relied upon ODV for guidance on applicable taxes, royalty agreements, and other government levies or interests, applicable to potential revenue or income from the Project. This information is used in Chapter 19 (Market Studies and Contracts) and Chapter 22 (Economic Analysis) of the Report.

4. Property Description and Location

4.1. Location

The Cariboo Gold Project ("the Project") is located in the historic Wells-Barkerville mining camp of British Columbia and extends for approximately 60 km from northwest to southeast.

The Project falls within the Cariboo Regional District ("CRD"), a division of the local government system in British Columbia ("BC"). The main towns in the Project area are the District of Wells ("Wells") and Barkerville Historic Town & Park. Wells is situated 74 kilometres ("km") east of Quesnel, approximately 115 km southeast of Prince George, and approximately 500 km north of Vancouver (Figure 4-1).

The coordinates of the centre of the Project are 121°34'46"W and 53°06'07"N (UTM coordinates: 595102E and 5884577N, NAD 83, Zone 10). The Project lies on National Topographic System ("NTS") maps sheets 93A/12/13/14, 93G/08, and 93H/03/04/05.

4.2. Mineral Title Status

Osisko Development Corp. ("ODV") supplied all mineral title maps and tables. ODV's Barkerville Gold Mines Division Free Miner Certificate number is 110263668 and their Mineral Title Branch Client ID is 104256. InnovExplo verified the status of all mineral titles using Mineral Titles Online ("MTO"), British Columbia's internet-based electronic mineral titles administration system (MTO, 2022).

ODV's land holdings consist of 412 mineral titles totalling 155,147.09 hectares ("ha") across two contiguous property blocks known as the Cariboo Main Block and the QR Property. The reader is reminded that the land holdings are registered in the names of Barkerville Gold Mines Ltd. ("BGM") and will be referred to as such in the following sections. These mineral titles include mineral claims, mineral leases, placer claims and placer leases. Whereas BGM is a wholly owned subsidiary of ODV, these titles grant ODV the rights to explore for metal mineralized material in bedrock or talus rock, including rock and other materials from mine tailings, dumps, and previously mined deposits of minerals, as set out in the *Mineral Tenure Act*. The breakdown according to type of mineral title is as follows:

Cariboo Main Block: 376 mineral titles (142,342.63 ha):

- 320 mineral claims totalling 135,402.04 ha (Figure 4-2);
- 43 placer claims totalling 4,544.84 ha (Figure 4-3); and
- 13 placer leases totalling 2,395.74 ha (Figure 4-3).

QR Property: 36 mineral titles (12,804.46 ha):

- 35 mineral claims totalling 9,640.06 ha (Figure 4-2); and
- 1 mineral lease (QR Mineral Lease #320752) totalling 3,164.40 ha (Figure 4-2).

BGM holds 100% interest in 56 Cariboo Main Block placer titles, 35 QR Property mineral claims and the QR mineral lease # 320752. BGM holds 100% interest in 359 of the 376 Cariboo Main Block mineral and placer claims and placer leases. There are 17 mineral claims jointly owned with other companies and individuals: BGM holds a 97.5% interest in six mineral claims, an 85% interest in two mineral claims, and a 50% interest in the other nine mineral claims.

A map showing mineral title distribution and ownership is presented in Figure 4-2.

The Project also contains 248 private land parcels from Crown-granted mineral claims (3,423.03 ha) that overlap many of the mineral titles, where BGM is the registered owner on title of the surface and/or undersurface rights to the parcels. (Figure 4-4:).

All placer claims and leases, and 303 out of 320 mineral claims within the Cariboo Main Block, are registered in the name of BGM. The remaining 17 mineral claims are registered jointly with various other companies and individuals. All mineral titles held entirely or partially by BGM are in good standing according to the MTO database.

There are no known significant factors or risks that may affect access, title, or the right or ability to perform work on the Project.

The Project is subject to various royalties, agreements, and encumbrances, as discussed below. A detailed list of mineral titles, ownership, royalties, and expiration dates is provided in Appendices 1, 2 and 3.

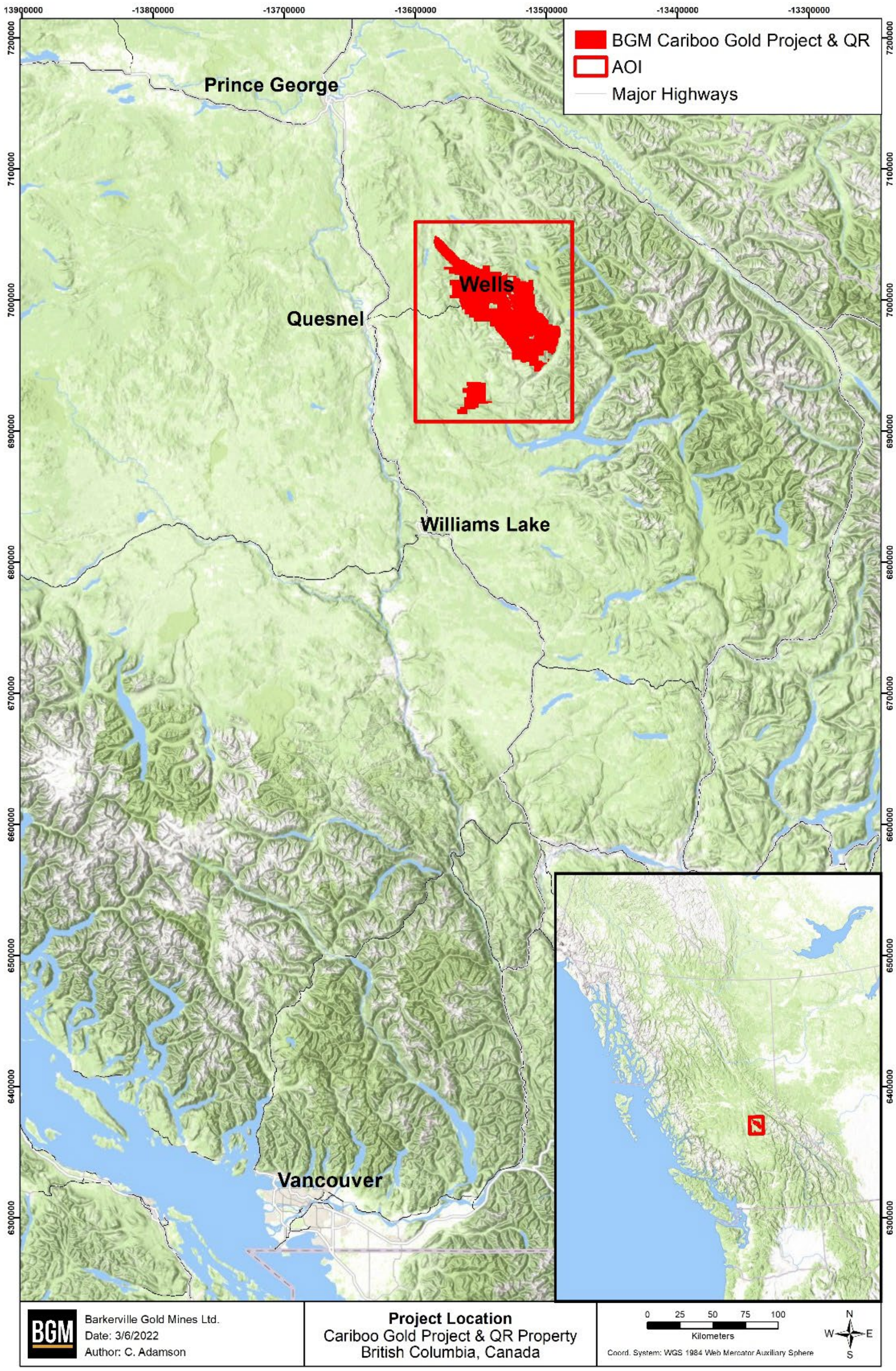


Figure 4-1: Location of the Cariboo Gold Project

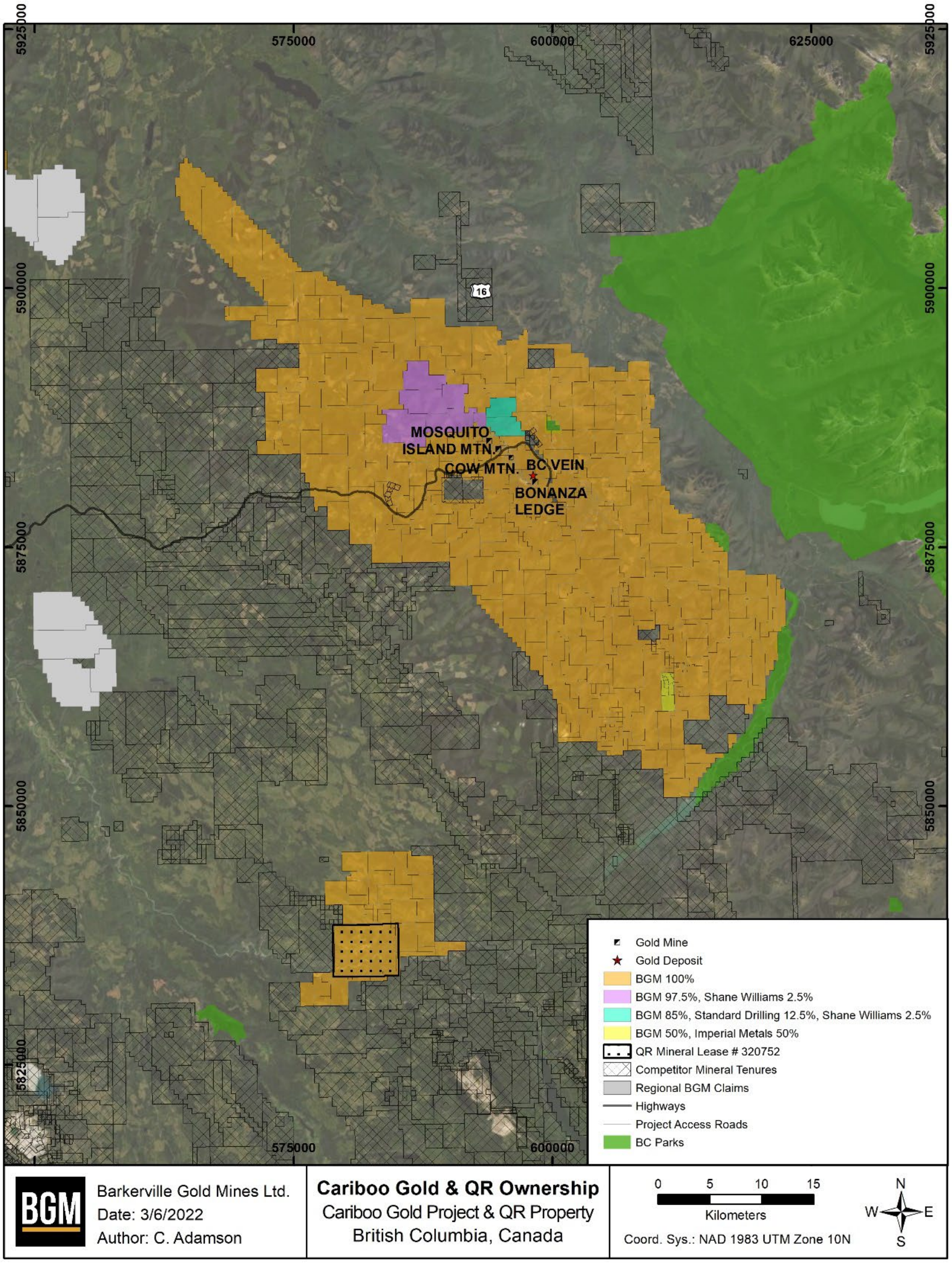


Figure 4-2: Mineral title and ownership map for the Cariboo Gold Project

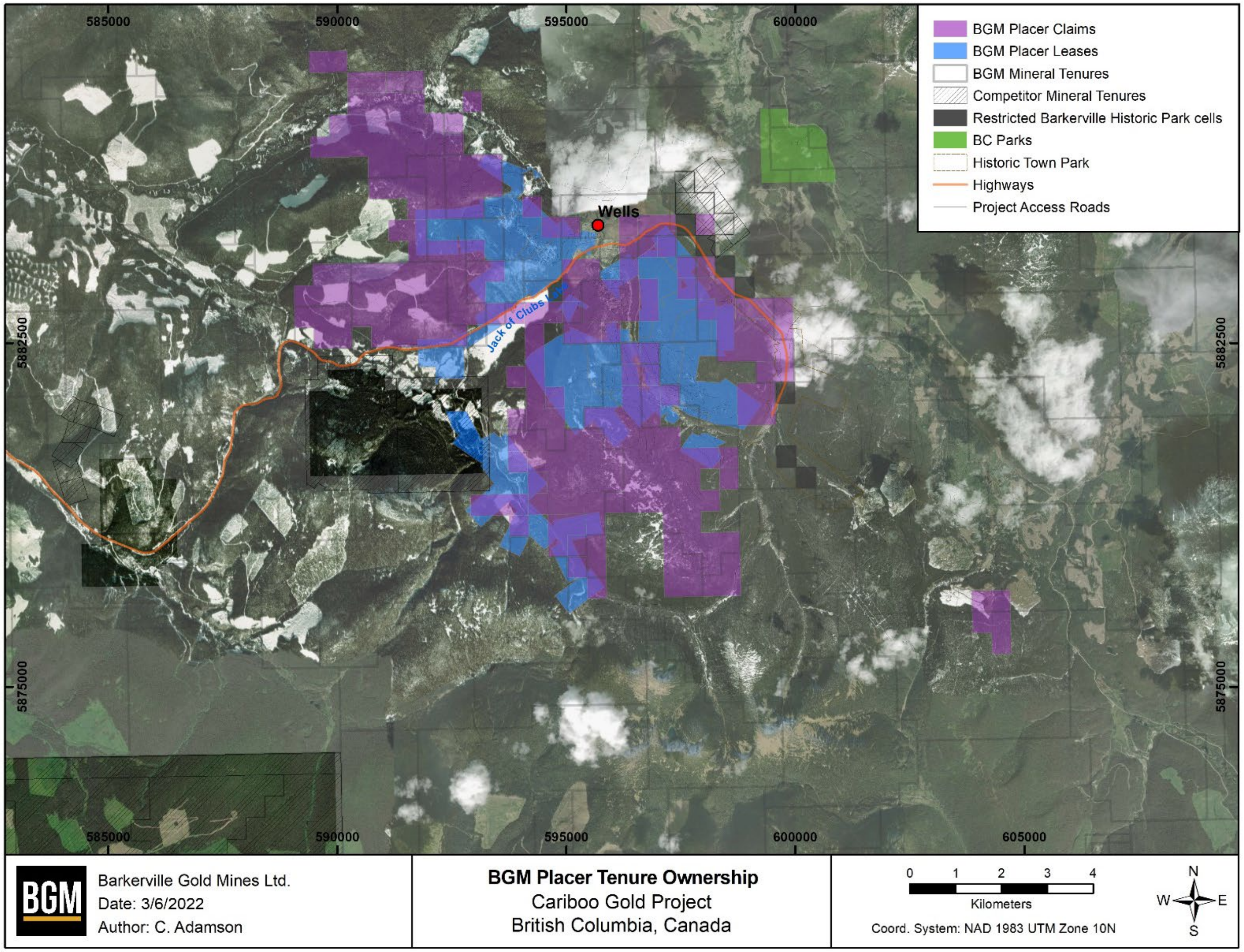


Figure 4-3: Map of placer claims and placer leases on the Cariboo Gold Project

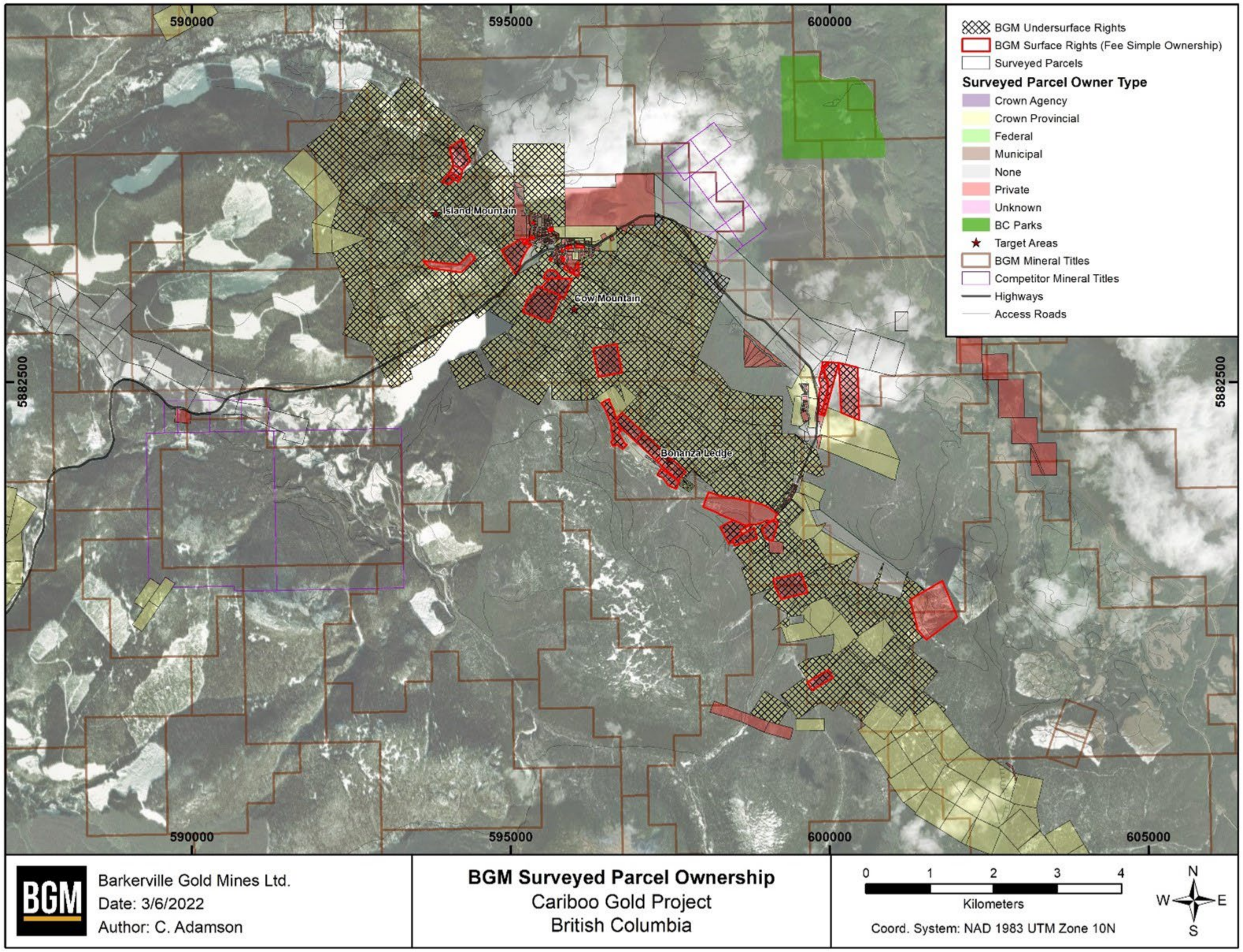


Figure 4-4: Map of Crown-granted mineral claims on the Cariboo Gold Project

4.3. Acquisition of the Cariboo Gold Project

BGM began acquiring land in Wells, B.C. and surrounding areas in the Cariboo Regional District in 1994. Under an option agreement dated October 4, 1994 (the "Cariboo Option Agreement"), BGM was granted an option to acquire a 50% interest in the Cariboo Gold Quartz Property in the Cariboo Gold District. In 2009, BGM completed the consolidation of the land package by acquiring contiguous projects belonging to Island Mountain Gold Mines Ltd. ("IGM") and Golden Cariboo Resources Ltd. ("Golden Cariboo"), both related parties to BGM and listed on the TSX Venture Exchange.

On May 12, 1999, BGM optioned to IGM a 50% interest in the Island Mountain/Aurum Gold Mine and the properties belonging to Mosquito Creek Gold Mining Company Limited. That option was then renegotiated in October 2004. In January 2006, BGM agreed to buy back the 50% interest in the optioned lands and purchase all of IGM's land holdings northwest of the District of Wells, B.C. This was approved by the TSX Venture Exchange on May 2, 2006.

To finalize the consolidation of the major land holdings in the Cariboo Gold District, BGM acquired all of the lands controlled by Golden Cariboo that lay along strike of the known mineralized trend for some 25 km from Barkerville Historic Town & Park, southeast of the Cariboo Hudson Mine. The acquisition of Golden Cariboo's mineral tenure holdings was approved by the TSX Venture Exchange on April 9, 2009, resulting in BGM's land tenure extending 60 km and encompassing the majority of the known strike length of the Barkerville Gold Belt.

Since 1994, BGM has acquired many mineral titles by staking and through agreements with other owners of titles within the Cariboo Gold District. Several claim groups are subject to net smelter return ("NSR") royalties (see Appendices 1, 2 and 3 for details).

Surface and undersurface rights to Crown Granted surveyed land parcels within the Project have also been acquired by the Company as per Table 4-1.

4.4. Agreement and Royalties with Osisko Gold Royalties Ltd.

On November 30, 2015, BGM entered into a letter agreement with Osisko Gold Royalties Ltd. ("OGR") whereby OGR agreed to purchase 32 million common shares of BGM (the "Private Placement") and a 1.5% NSR royalty on the Project (the "Royalty Financing"). Pursuant to the Private Placement, OGR agreed to acquire 32 million flow-through common shares of BGM at a price of \$0.32 per share, for total proceeds to BGM of \$10,240,000. Following the Private Placement, OGR expected to have ownership over 47,625,000 common shares of BGM, representing approximately 19.9% of the issued and outstanding BGM shares.

OGR also agreed to acquire a 1.5% NSR royalty on the Project for a cash consideration of $25 million. As part of the Royalty Financing, OGR and BGM also agreed to negotiate a gold stream agreement ("GSA") following the completion by BGM of a feasibility study on the Project. According to the terms, following a 60-day negotiation period, if OGR and BGM had not entered into a Gold Stream Agreement, BGM would either grant a right to OGR to purchase an additional 0.75% NSR royalty for consideration of $12.5 million or make a payment of $12.5 million to OGR.

On March 27, 2017, BGM announced it had entered into a letter agreement with OGR whereby OGR agreed to purchase an additional 0.75% NSR royalty on the Project for a cash consideration of $12,500,000 (paid). At the time, OGR owned a total NSR royalty of 2.25% on all mineral current rights held by BGM. The grant of the additional royalty would cancel OGR's royalty right, which was granted pursuant to the investment agreement between OGR and BGM dated February 5, 2016; however, OGR would retain a right of first refusal relating to any gold stream offer received by BGM with respect to the Project.

On September 05, 2018, BGM entered into the Second Amended and Restated Royalty Purchase Agreement whereby OGR purchased an additional 1.75% NSR royalty on the Project for a cash consideration of $20,000,000 (paid), with an option for OGR to purchase an additional 1.0% NSR royalty for $13,000,000 to bring the Cariboo NSR to 5.0%.

On September 23, 2019, BGM and OGR entered into a definitive agreement, pursuant to which OGR acquired all of the issued and outstanding common shares of BGM that it did not already own by way of a plan of arrangement (the "Arrangement"). Under the terms of the Arrangement, each shareholder of BGM (excluding OGR) received 0.0357 (the "Exchange Ratio") of a common share of OGR for each share of BGM held. The Exchange Ratio implied a consideration of $0.58 per BGM share, based on the closing price of OGR shares on the Toronto Stock Exchange ("TSX ") on September 20, 2019. The Exchange Ratio implied an equity value of approximately $338 million on a fully diluted in-the-money basis, inclusive of BGM shares held by OGR.

On November 21, 2019, the Arrangement became effective at 12:01 a.m. ("PST") and resulted in BGM becoming a wholly-owned subsidiary of OGR.

On October 5, 2020, OGR announced a spin out of mining assets and the creation of Osisko Development Corp. ("ODV") and exercised the 1.0% NSR purchase option on the Project, bringing the total royalty held by OGR on the Project to 5.0%. The Project is now operated by ODV (formerly Barolo Ventures Corp.), with BGM now a wholly-owned subsidiary of ODV. BGM no longer trades publicly on the TSX or any other stock exchange, pursuant to the earlier definitive agreement dated September 23, 2019, and the Arrangement whereby all the issued and outstanding shares of BGM were acquired by OGR. ODV trades publicly under the symbol ODV on the TSX.

OGR's 5.0% NSR royalty is the only royalty that applies to the mineral resource area of the Project.

4.5. Surface Rights Option Agreements

Table 4-1 lists properties where BGM owns the surface rights as well as the underlying option agreements under which the properties were acquired.

Table 4-1: BGM surface rights option agreements

PID	CG #	DISTRICT LOT	FEE SIMPLE OWNER	TITLE #	AGREEMENT NAME	VENDEE	VENDOR
008-218-803	5313/624 (U), 5763/628 (S)	10518	BARKERVILLE GOLD MINES LTD.	CA3393918	Island Mountain & Mosquito Creek Properties (MCG - IWG)	International Wayside Gold Mines Ltd.	Mosquito Consolidated Gold Mines
008-801-908	35/36 (B), 2672/597 (U)	93	BARKERVILLE GOLD MINES LTD.	CA3322180	Wells - Barkerville Cariboo Claims	Mosquito Creek Gold Mining Company Ltd.	Wharf Resources Ltd. / Peregrine Petroleum Ltd.
004-056-582	41F/34	41F	BARKERVILLE GOLD MINES LTD.	BB1960681	Myrtle-Proserpine Property (Newmont - GC)	Gold City Mining Corp.	Newmont Exploration Inc.
004-056-710	1F/34	1F	BARKERVILLE GOLD MINES LTD.	CA6623323	Williams Creek Crown Grants	Barkerville Gold Mines Ltd.	Williams Creek Gold
004-056-736	1B/35	1B	BARKERVILLE GOLD MINES LTD.	CA6623292	Derrien Road Access Agreement	Charls Derrien	Barkerville Gold Mines Ltd.
004-056-752	32F/34	32F	BARKERVILLE GOLD MINES LTD.	CA4347922	Williams Creek Crown Grants	Barkerville Gold Mines Ltd.	Williams Creek Gold
004-056-787	4B/35	4B	BARKERVILLE GOLD MINES LTD.	CA4347919	Derrien Road Access Agreement	Charls Derrien	Barkerville Gold Mines Ltd.
004-078-543	2F/34	2F	BARKERVILLE GOLD MINES LTD.	CA3322186	Blackbull & Camusa Crown Grants	International Wayside Gold Mines Ltd.	Grand Lowhee Mining Co. Ltd.
004-078-560	42F/34	42F	BARKERVILLE GOLD MINES LTD.	CA332187	Blackbull & Camusa Crown Grants	International Wayside Gold Mines Ltd.	Grand Lowhee Mining Co. Ltd.
004-078-578	17F/34	17F	BARKERVILLE GOLD MINES LTD. & GOLDEN CARIBOO RESOURCES LTD.	CA3322185	Xmas Crown Grants	International Wayside Gold Mines Ltd. and Golden Cariboo Resources Ltd.	P. Wright Contracting Ltd.
004-078-608	35F/34	35F	BARKERVILLE GOLD MINES LTD.	CA5682814	35F St George Crown Grant	Barkerville Gold Mines Ltd.	Prairie Flower Company Inc.
004-078-632	5F/34	5F	BARKERVILLE GOLD MINES LTD.	FB503371	Derrien Road Access Agreement	Charls Derrien	Barkerville Gold Mines Ltd.
004-086-627	2B/35	2B	BARKERVILLE GOLD MINES LTD.	CA3393199	Wells - Barkerville Cariboo Claims	Mosquito Creek Gold Mining Company Ltd.	Wharf Resources Ltd. / Peregrine Petroleum Ltd.
004-086-872	20F/34	20F	BARKERVILLE GOLD MINES LTD.	PT5233, PC16246	Island Mountain & Mosquito Creek Properties (MCG - IWG)	International Wayside Gold Mines Ltd.	Mosquito Consolidated Gold Mines
004-086-902	30F/34	30F	BARKERVILLE GOLD MINES LTD.	PT5234, PC16247	Island Mountain & Mosquito Creek Properties (MCG - IWG)	International Wayside Gold Mines Ltd.	Mosquito Consolidated Gold Mines
004-087-054	39F/34	39F	BARKERVILLE GOLD MINES LTD.	PT5232, PC16245	Island Mountain & Mosquito Creek Properties (MCG - IWG)	International Wayside Gold Mines Ltd.	Mosquito Consolidated Gold Mines
004-087-097	38F/34	38F	BARKERVILLE GOLD MINES LTD.	PT5235, PC16248	Island Mountain & Mosquito Creek Properties (IWG - IMG)	Island Mountain Gold Mines Ltd.	International Wayside Gold Mines Ltd.
014-385-643	5436/625	7795	BARKERVILLE GOLD MINES LTD.	CA3322188	P Wright Mosquito Crown Grants	International Wayside Gold Mines Ltd.	P. Wright Contracting Ltd.
014-385-686	5439/625	7798	BARKERVILLE GOLD MINES LTD.	CA3322189	Wells - Barkerville Cariboo Claims	Mosquito Creek Gold Mining Company Ltd.	Wharf Resources Ltd. / Peregrine Petroleum Ltd.
014-385-741	535/92	318	BARKERVILLE GOLD MINES LTD.	CA3322182	Wells - Barkerville Cariboo Claims	Mosquito Creek Gold Mining Company Ltd.	Wharf Resources Ltd. / Peregrine Petroleum Ltd.
014-385-759	4614/617 (S), 35/36 (B)	92	BARKERVILLE GOLD MINES LTD.	CA3322179	Cariboo Gold Quartz Property	International Wayside Gold Mines Ltd.	Mosquito Consolidated Gold Mines Ltd.
014-982-013	35/36	94	BARKERVILLE GOLD MINES LTD.	CA3322181	Cariboo Gold Quartz Property	International Wayside Gold Mines Ltd.	Mosquito Consolidated Gold Mines Ltd.
015-289-681	385/674	10467	BARKERVILLE GOLD MINES LTD.	CA4347921	Williams Creek Crown Grants	Barkerville Gold Mines Ltd.	Williams Creek Gold
014-385-732	2517/101	391	BARKERVILLE GOLD MINES LTD.	CA3322183	P Wright Mosquito Crown Grants	International Wayside Gold Mines Ltd.	P. Wright Contracting Ltd.
006-787-592	4215/55	131	BARKERVILLE GOLD MINES LTD.	CA3322184	12422 Barkerville Hwy (Parcel B Block 7 DL 131)	International Wayside Gold Mines Ltd.	Kenneth James Pollock and Dianne Lee Verne Pollock

PID	CG #	DISTRICT LOT	FEE SIMPLE OWNER	TITLE #	AGREEMENT NAME	VENDEE	VENDOR
026-025-906	2517/101	391	BARKERVILLE GOLD MINES LTD.	BB1991819	BGM Apartments (Lot 1 DL 391)	Barkerville Gold Mines Ltd.	Standard Drilling & Engineering Ltd.
017-589-517	2517/101	391	BARKERVILLE GOLD MINES LTD.	CA4545743	LV Fuel Tank Lot (Lot 1 DL 391) & Lot 2 DL 391	Barkerville Gold Mines Ltd.	Pete Wright (017-589-517)
018-685-056	1036/97	289	BARKERVILLE GOLD MINES LTD.	CA6190280	4270 Sanders Ave (Community Relations Office)	Barkerville Gold Mines Ltd.	Dennis Wayne Manuel
005-537-541	5313/624 (U), 5763/628 (S)	10518	BARKERVILLE GOLD MINES LTD.	CA8578737	4192 Davies Rd. (House Purchase)	Barkerville Gold Mines Ltd.	Robin Sharpe
006-773-931	1036/97	289	BARKERVILLE GOLD MINES LTD.	CA9231853	4206 & 4215 Margaret Ave	Barkerville Gold Mines Ltd.	Kelsey Dodd
009-497-463	2517/101	391	BARKERVILLE GOLD MINES LTD.	CA6851547	Merrick Wells Lots	Barkerville Gold Mines Ltd.	Estate of Douglas Warren Merrick
018-847-340	1036/97	289	BARKERVILLE GOLD MINES LTD.	BX36213	Merrick Wells Lots	Barkerville Gold Mines Ltd.	Estate of Douglas Warren Merrick
013-100-572	2517/101	391	BARKERVILLE GOLD MINES LTD.	CA6670546	Merrick Wells Lots	Barkerville Gold Mines Ltd.	Estate of Douglas Warren Merrick
013-778-366	1036/97	289	BARKERVILLE GOLD MINES LTD.	CA9229300	4206 & 4215 Margaret Ave	Barkerville Gold Mines Ltd.	Kelsey Dodd
018-328-288	1036/97	289	BARKERVILLE GOLD MINES LTD.	CA8802577	Blair Ave Subdivided Lots (House Purchase)	Barkerville Gold Mines Ltd.	Sharon Brown
019-113-854	2517/101	391	BARKERVILLE GOLD MINES LTD.	CA6881775	Merrick Wells Lots	Barkerville Gold Mines Ltd.	Estate of Douglas Warren Merrick
023-677-007	4215/55	131	BARKERVILLE GOLD MINES LTD.	PM47667	Cariboo RV Park	Barkerville Gold Mines Ltd.	Joy Stepan
018-856-870	4215/55	131	BARKERVILLE GOLD MINES LTD.	CA801713	12438 Barkerville Hwy (Hubs Motel Purchase)	Barkerville Gold Mines Ltd.	Harald Dietrich Andreesen and Dianne Elaine Andreesen
015-300-226	2099/1091	12634	BARKERVILLE GOLD MINES LTD.	CA2741385	Lightning Hotel / Stanley Road	Barkerville Gold Mines Ltd.	Karen Olsen
024-954-527	3417/306	363	BARKERVILLE GOLD MINES LTD.	FB488576	Bowron Lake Cabin	Barkerville Gold Mines Ltd.	Pete Wright
031-410-821	1036/97	289	BARKERVILLE GOLD MINES LTD.	CA9059927	Blair Ave Subdivided Lots (House Purchase)	Barkerville Gold Mines Ltd.	Sharon Brown
031-410-812	1036/97	289	BARKERVILLE GOLD MINES LTD.	CA9505757	Blair Ave Subdivided Lots (House Purchase)	Barkerville Gold Mines Ltd.	Sharon Brown

4.6. Environment

Environmental reclamation securities or bonds are posted for each of the areas where mining or exploration has been approved. ODV also maintains regular water, environmental, and wildlife monitoring activities as part of their permitting requirements within the Project area.

4.6.1. Environmental Liabilities

Environmental liabilities associated with the development and operation of the Project must be addressed for each disturbance associated with the proposed operations by posting new reclamation bonds, or updates to existing bonds for the QR Mill and Bonanza Ledge waste dump, and by the active management and reclamation/closure of the Project sites as the operation winds down.

Both the QR Mill ("QR") and Bonanza Ledge ("BL") sites are currently approved under separate *Environmental Management Act* and *Mines Act* permits, with associated, detailed Reclamation and Closure Plans ("RCP") and closure bonds in place. The liability estimate for the Project reclamation and closure will be provided during permitting processes at a later date.

A site-specific RCP for the Mine Site Complex, located at Wells, will be submitted to the BC Ministry of Energy, Mines, and Low Carbon Innovation ("EMLI"), in accordance with the application requirements for a *Mines Act* permit pursuant to the *Mines Act* (Government of BC, 1996), and Parts 10.6 and 10.7 of the revised Health, Safety, and Reclamation Code ("HSRC") for Mines in British Columbia (EMLI, 2021).

ODV has estimated that a cash reclamation bond for $18,484,755 will be required for the Project and will be posted to the BC Ministry of Finance as part of the permit process. This estimate does not include the current QR Mill and Bonanza Ledge Mine, which are currently approved under separate *Mines Act* permits, M-198 and M-238 respectively. Separate, detailed reclamation and closure plans and bonding estimates are maintained for those sites. This bond can be progressively recovered pending satisfactory completion of reclamation and closure objectives.

4.6.2. Required Permits and Status

In 2019, permitting for the Project at a production rate of 4,000 tonnes per day ("tpd") commenced. This production rate was based on the mineral resource estimate provided in "NI 43-101 Technical Report - Preliminary Economic Assessment (PEA) of the Cariboo Gold Project" (August 18, 2019).

The Project was subject to a provincial environmental assessment ("EA") as it exceeded the following threshold under the Reviewable Projects Regulation (B.C. Reg. 243/2019): "A new mine facility that, during operations, will have a production capacity of >75,000 tonnes per year ("t/yr") of mineral ore".

In October 2019, the EA process commenced with the submission of an initial Project Description and Engagement Plan, to the BC Environmental Assessment Office (the "EAO"), under the former BCEAA (2002). Following guidance from the EAO, in collaboration with ODV, and following regulatory requirements, it was decided the Project would continue the EA process under the new 2018 BCEAA. Subsequently, the Project Description submitted in October 2019 was accepted as fulfilling the requirements of the Initial Project Description as part of the new Act, in February 2020.

As the EA process continued, further exploration work and updates to the mineral resource estimate ("NI 43-101 Technical Report and Mineral Resource Estimate for the Cariboo Gold Project" (October 5, 2020)) supported an increase in the proposed production rate to 4,750 tpd.

The Project, at a production rate of 4,750 tpd, is currently undergoing review as per the BC Environmental Assessment Act ("BCEAA") 2018, with issuance of an Environmental Assessment Certificate ("EAC") expected after successful review of the application.

Since submission of the EAC Application in July 2021, ongoing exploration work and updating of the mineral resource estimate supports an increase in the production rate to 8,000 tpd after the first 3 years of operations. Any changes to the Certified Project Description, resulting from the increased production rate will first require an amendment to the Project EAC before proceeding to an updated detailed design and ensuing permit amendment applications.

A number of regulations establish the legal framework for the EA process under the BCEAA, and are detailed in Chapter 20, Section 20.6.2 (BC Environmental Assessment Regulations). In addition to the provincial EAC approval, the Project is expected to require federal and provincial permits, approvals and authorizations As the Project proceeds, specific permit requirements will be determined based on discussions with the regulatory agencies. These permits are further detailed in Chapter 20, Section 20.6.3 (Federal Permits, Approvals, Licences and Authorizations) and Section 20.6.4 (Provincial Permits, Approvals and Licences).

ODV has *Mines Act* and *Environmental Management Act* permits for the Bonanza Ledge Mine (M238, and PE-17876) and the QR Mill (M-198, PE-12601and Air permit 18124) which will be amended for the Project.

The Project facilities include areas within the jurisdictions of the CRD and the District of Wells, for the Mine Site Complex specifically. Both jurisdictions have passed bylaws that may pertain to Project activities/operations and property ownership or business operations and these further discussed in Chapter 20, Section 20.6.5 (Local Government Permits).

Other Wells bylaws are applicable to utility connections and municipal service fees related to property development (water, sewer, garbage). These bylaws would be addressed through direct applications with the District of Wells.

5. Accessibility, Climate, Local Resources, Infrastructure and Physiography

Osisko Development Corp. ("ODV") is committed to communicating and engaging with stakeholders in the District of Wells ("Wells") and the surrounding Cariboo Gold Project ("the Project") area, including but not limited to the provincial government, third party mineral and placer owners operating in the area, neighbouring property owners, Barkerville Historic Town & Park, and Indigenous nations communities.

Wells is a mining town with a rich history of mineral exploration and production and is also a regional centre and tourist attraction for artists and outdoor enthusiasts. ODV maintains and fosters relationships with the community through public and stakeholder meetings (see Section 4.7), and through recruiting employees and sponsoring community events. The City of Quesnel, with a population of 23,000, is located 80 kilometres ("km") to the west. It has an airport and can provide the goods and services ODV requires. Williams Lake and Prince George are the nearest other major transportation and logistical hubs in the federal electoral district of Cariboo–Prince George, located 193 km and 175 km from Wells, respectively.

The following descriptions of the accessibility, climate, local resources, infrastructure and physiography for the Project and the Cariboo Gold District are taken from Georges et al. (2013) and Dzick (2015). Slight modifications have been made to adapt the text to the style of this report.

5.1. Accessibility

The Project is located in Wells, British Columbia (BC), roughly 80 km east of the City of Quesnel. The Project is accessible via Highway 26, which branches off Provincial Highway 97 at Quesnel (Figure 5-1). A network of gravel roads provides access to Cow Mountain, Island Mountain and Barkerville Mountain. ODV's project offices and related facilities are located in the town of Wells.

The QR Mill is a wholly-owned and fully permitted milling and tailings facility approximately 110 km from Wells. The 500 Nyland Lake Forest Service Road, an all-season road, provides access to the site.

5.2. Infrastructure and Local Resources

The City of Quesnel is the primary supply, service and population centre for natural resource industries in the area and has the closest regional hospital. Manpower is also available in the region and many current employees live in Wells or Quesnel.

The region has the availability of power and water to support a mining operation that will be accessed by the Project. Canadian National Railway provides rail access from Quesnel to the Port of Vancouver and Highway 97 travels north-south through Quesnel.

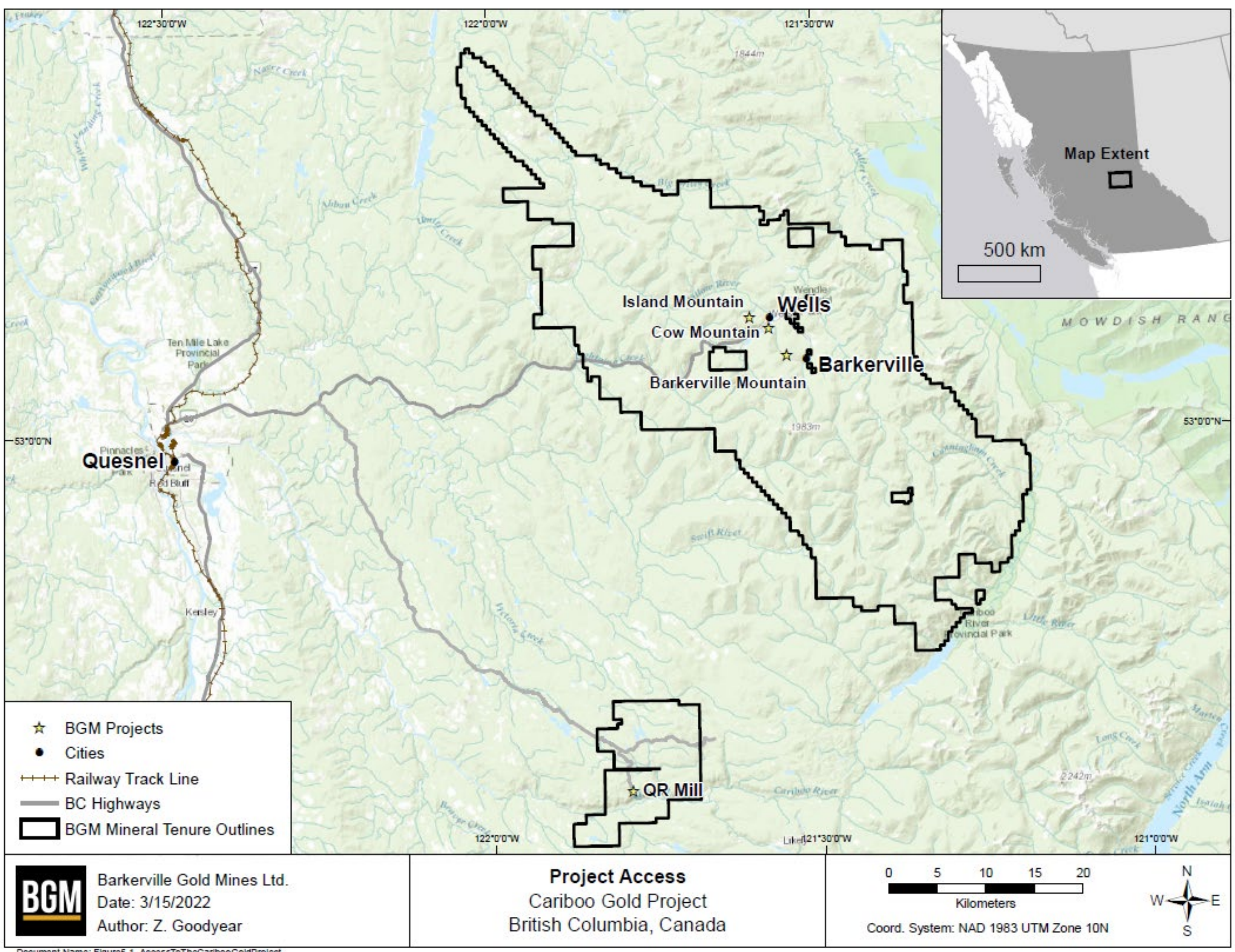


Figure 5-1: Access to the Cariboo Gold Project

ODV has sufficient surface rights in the Project area for mineral exploration and development operations. These rights are generally conveyed by ODV's Crown-granted mineral claims or by specific permits, like those related to tailings and waste disposal areas, or water and timber use.

Currently, local resources include single-phase 7.2 kilovolt ("kV") power, potable water from the District of Wells public works (supplying roughly 985,000 litres ["L"] per day to the town), local sewage treatment, waste disposal sites, and high-speed internet and telecommunication services, including radio communication towers maintained by ODV for use by company personnel and site contractors.

The Project infrastructure includes an upgrade to the potable water supply and the construction of a 138 kV Transmission Line, connecting to the Barlow Creek Substation and terminating at the Mine Site in Wells.

ODV completed an assessment of the Project areas and have determined availability of a tailings storage area at he QR Mill, waste disposal areas at the Mine Site and Bonanza Ledge, and a location for the processing plant at the Mine Site and the QR Mill. Further information on this infrastructure can be found in Chapter 18 (Project Infrastructure).

ODV holds seven water licences: one for Willow River, three at the QR Mill site, one at the Ballarat temporary work camp, one unused licence on Island Mountain, and one for a well at the geological compound and field offices at Lowhee Creek. The climate allows for year-round mining operations, and there is enough readily available water to conduct diamond drilling.

5.3. Climate

The Cariboo Region experiences a dry continental climate due to the coastal mountains influencing the westerly flow of winds and moisture coming from the Pacific Ocean. The climate at the site is characterized by relatively cold winters and mild summers. The annual precipitation is moderate and there is comparatively little variation over the year in monthly precipitation. The Project is able to operate 365 days a year.

Historical trend analysis and climate change predictions were used to evaluate the likelihood of the historical measurements to represent future climate conditions. Climate existing condition studies for the project were conducted by Golder. Table 5-1 consolidates the main climate statistics obtained from the Mine Site and QR Mill existing conditions report (Golder, 2021a; Golder, 2021b).

Table 5-1: Summary of climate statistics

Variable	Mine Site Golder, 2021a)	QR Mill (Golder, 2021b)
Mean annual total precipitation (mm)	1,034	671
Mean annual rainfall (mm)[(1)]	530	-
Mean annual snowfall (mm)[(1)]	504	-
1:2-year 24-hour rainfall (mm)	30.4	21
1:100-year 24-hour rainfall (mm)	66.4	41
Mean annual temperature for the LSA and RSA (°C)	1.7 (1,460 m mean elevation)	3.2 (949 m mean altitude)
Mean annual temperature lapse rate (°C change per 100 m altitude increase)	-0.38	-0.37
Average winter season (sub-zero mean monthly temperatures)	November to March	November to March
Mean annual relative humidity (%)	72	68.3
Mean annual solar radiation (W/m^2)	130	136
Mean annual shallow lake evaporation for the LSA and RSA[(2)] (mm)	630	676
Mean annual potential evapotranspiration for the LSA and RSA[(2)] (mm)	737	862
Difference in mean annual shallow evaporation and potential evapotranspiration between the LSA and RSA (%)[(1)]	2% to 3%	-
Mean snow depth for the month of March (cm)	96	63
Mean snow density for the month of March (g/cm^3)	0.29	0.30

Note: Statistics are based on reviewed historical records from multiple climate stations and measured and derived data (where applicable).

[(1)] Data point only for the Mine Site.

[(2)] Data point only for the RSA of QR Mill.

5.4. Physiography

The topography in the Project area is mountainous (Figure 5-2), rising from a low point of approximately 1,190 metres above sea level ("masl") in the incised river valleys around Wells and Barkerville Historic Town & Park to a peak of 2,060 masl at Roundtop Mountain located 25 km south of Wells. Mount Proserpine, 11 km south of the town, summits at 1,830 masl.

Mountain summits are generally rounded, reflecting the passage of continental ice sheets during the Pleistocene Epoch. Pleistocene glacial till and clay are widespread. Moderately drained and well-drained morainal and colluvial materials dominate at higher elevations. Valley bottoms are overlain by very poorly drained organic deposits or moderately drained fluvial sands adjacent to the Willow River, downstream of Jack of Clubs Lake, lower Lowhee Creek, and the Willow River. Ice direction is generally to the northwest near Wells, and glacial till is the most widespread surficial deposit in the area.

The relatively small drainage basins of Jack of Clubs Lake and Williams Creek converge at Wells and together compose the upper headwaters of Willow River. They represent a combined catchment area of approximately 100 kilometres squared ("km^2") at the southern extremity of the Willow River Basin and together embody roughly 3% of the total area of the basin. The Willow River flows into Fraser River east of Prince George.

The area is well forested, and the mountains are typically covered with subalpine forests, except near their peaks. Vegetation is dominated by Engelmann Spruce (*Picea engelmann*), Lodgepole Pine (*Pinus contorta var. latifolia*) and Subalpine Fir (*Abies lasiocarpa*), accompanied by alders and other deciduous varieties on lower wetter slopes flanking river valleys. Prominent in the subalpine flora is the shrub *Rhododendron albiflorum (Rhodoendron)*. Bedrock exposure is poor, except along creeks, ridgelines and logging roads.

Figure 5-2: Aerial view of the town of Wells looking east

Photograph looking east from above Island Mountain. Mount Murray (left) and Mt. Waverly (right) are the highest peaks in the distance, with the Cariboo Mountains beyond. Island Mountain forms the foreground with Valley Mountain to the left and Cow Mountain to the right, on the south side of the town of Wells (centre). Barkerville Mountain is located beyond Cow Mountain to the right of the photo. The southeastern part of Wells is built on a fan of placer tailings that issued from Lowhee Creek (right) into Jack of Clubs Lake (bottom right). (Photo from Google Earth, 2020)

6. History

The Cariboo Gold Project ("the Project") contains several historical mines, including Cariboo Gold Quartz Mine, Aurum Mine/Island Mountain Mine, and Mosquito Creek Mine. The local placer claims highlight the general endowment of the Cariboo Gold Project ("the Project") camp but, for the purposes of this Report, they are not discussed in detail.

For the purposes of this Chapter, the term "ore" is being used in historical context.

6.1. Historical Mines

6.1.1. Cariboo Gold Quartz Mine

Fred Wells purchased the Rainbow claim group from A.W. Sanders and formed Cariboo Gold Quartz Mining Company Ltd. ("Cariboo Gold Quartz Mining") in 1927. The Cariboo Gold Quartz Mine operated from 1927 to 1959 at Cow Mountain.

In October 1942, gold mining was classified as a non-war industry by the federal government and received no priority for labour or supplies. As a result, gold mines in British Columbia were unable to hire replacement labour for the duration of the war. The mining operation never recovered from the loss of revenue caused by a 50% reduction in production and the depletion of reserves in the absence of exploration drilling and only minor development during this period.

Following the purchase of the Island Mountain Mine in 1954, Cariboo Gold Quartz Mining focused on developing higher grade pyrite-type replacement ore.

The Cariboo Gold Quartz Mine closed on August 31, 1959.

In 1959, in its 33rd Annual Report, the company reported book reserves of 95,265 tonnes ("t") of ore, including a 1952 reserve write-down of 42,275 t of 9.26 grams per tonne ("g/t") gold ("Au") and another 52,990 t of 12.69 g/t Au scattered in 51 ore remnants through 13 levels and across a distance of 10,500 feet ("ft") (3,200 metres ["m"]).

These "Reserves" are historical in nature and should not be relied upon. It is unlikely they comply with current NI 43-101 requirements or follow Canadian Institute of Mining ("CIM") Definition Standards, and their relevance and reliability have not been verified. They are included in this section for illustrative purposes only and should not be disclosed out of context.

The Cariboo Gold Quartz Mill continued processing ore from the Aurum Mine on Island Mountain until March 1967. During the period between 1933 and 1967, a total of 1,951,944 t of ore was mined, yielding 863,307 ounces ("oz") of gold and 91,652 oz of silver. (MINFILE number 093H 019); the average recovery during that period was 95.3%.

6.1.2. Island Mountain Mine (Aurum Mine)

In 1925, C.J. Seymour Baker acquired the original five Crown-granted mineral claims (later known as the Aurum Group), which he worked until 1932.

In 1932, Newmont Mining Corporation ("Newmont") acquired the Aurum Group and eight adjacent claims to form Island Mountain Mines Company Ltd.

Milling commenced in 1934 at a rate of 50 short tons ("st") per day and reached a peak of 149 st/d in 1941. Quartz-type ore in diagonal vein structures and pyrite-type ore in the Aurum limestone unit were both extracted. The mine was developed over a strike length of 4,500 ft (1,371.6 m). After 1945, no further exploration or development was carried out west of the Aurum Fault, and in 1952 the mine suspended active exploration and development.

Under Newmont's ownership, production from the mine was 770,093 st (699,536 t) from which 333,705 oz of gold and 48,130 oz of silver were recovered (MINFILE number 093H 006). The mill also recovered 531 lb of zinc and 134 lb of lead.

Cariboo Gold Quartz Mining purchased the mine and equipment from Newmont in 1954 for a sum of CAD305,000. Underground workings extending northwest from the Island Mountain Mine into the Mosquito Group are formally known as the Aurum Mine. The Cariboo Gold Quartz Mine and Island Mountain Mine do not connect below Jack of Clubs Lake.

6.1.3. Mosquito Creek Mine

Andrew H. Jukes, of Calgary, acquired the Mosquito Creek claim group and formed Mosquito Creek Gold Mining Company Ltd. ("Mosquito Creek Gold") in 1971 to explore the ground above the Aurum Mine. Surface exploration drilling and underground development from 1971 to 1975 were financed by a joint venture agreement with the Home Oil Company Ltd. of Calgary. They conducted an extensive surface and underground exploration and development program on the property. In 1975, Mosquito Creek Gold purchased all of Home Oil Company's interest in the property. Subsequently, Peregrine entered into a joint venture agreement with Mosquito Creek Gold, whereby it ultimately earned a 50% working interest in the property.

A total of 27,384 oz of gold were recovered from 86,248 t of mostly pyrite-type ore milled during the main production period (1980 to 1983). The operation failed due to low initial reserves and a low discovery rate of new ore. The latter was the result of insufficient development at depth and northwest of the Mosquito Fault.

In 1984, Hudson Bay Mining and Smelting Co. Ltd. ("Hudson Bay") optioned the property but dropped it after earning a 10% interest. Hudson Bay sold its interest back to Mosquito Creek Gold, and Peregrine sold its 50% interest to Mosquito Creek Gold.

In 1986, the property was optioned by Hecla Mining Company of Canada Ltd. who conducted underground exploration work and then dropped their interest in the company.

Mining operations were intermittent until 1987 when Mosquito Creek Gold became Mosquito Creek Consolidated Gold Mines Ltd. After the gold price dropped, and new ore became hard to find, the mine closed in 1987. During the period between 1980 and 1987, a total of 92,826 t of ore were mined from which 35,054 oz of gold and 9,750 oz of silver were recovered (MINFILE number 093H 010).

In 1988, Lyon Lake Mines Ltd. optioned the property and earned a 50% interest after performing underground exploration.

6.2. Surface Work Programs

6.2.1. Cariboo Gold Quartz Mining Company Ltd. (1968)

In 1968, Dolmage Campbell and Associates Ltd. carried out 5 km of bulldozer trenching on behalf of Cariboo Gold Quartz Mining.

A total of 17 trenches, approximately 2 m to 2.5 m deep, were excavated across the Baker-Rainbow contact over a strike length of 1.6 km on Island Mountain. Pyritic mineralization, 6 m long by 1 m wide, was discovered in Trench J.

6.2.2. Wharf Resources Ltd. (1980–1981)

In 1972, Cariboo Gold Quartz Mining amalgamated with Coseka Resources Ltd. to form a company with the name of the latter. In April 1973, Wharf Resources Ltd. (formerly Plateau Metals and Industries) amalgamated with French Exploration Ltd. (a wholly owned subsidiary of Coseka Resources).

Wharf Resources carried out surface drilling programs in 1980 and 1981 to search for near-surface ore on the Cariboo and Island Mountain claim groups. A total of 7,010 m of percussion drilling and 1,219 m of diamond drilling were completed in 1980 and 1981 (Bolin, 1984).

6.2.3. Blackberry Gold Resources Inc. (1988)

In 1987, Blackberry Gold Resources Inc. completed several work programs on the ARCH 1-4 claim group located on Cow Mountain and Richfield Mountain. The objective of the work was to discover gold mineralization associated with the system of north-striking fault structures. Very-low-frequency electromagnetic ("VLF-EM") geophysical surveys were used to define conductors inferred to be the strike extension of major faults on the Cariboo Group of Crown-granted mineral claims. Four strong conductive trends were tested along six fences of percussion drill holes for a total of 2,424 m of drilled in 79 holes. This was followed by 2,465 m of diamond drilling in 19 holes.

6.2.4. Pan Orvana Resources Inc. (1989–1991)

On July 12, 1985, Mosquito Creek Gold purchased the Cariboo and Island Mountain claim groups from Wharf Resources Ltd. Pan Orvana Resources Inc. ("Pan Orvana") signed the Cariboo Gold Option Agreement on May 20, 1988, obtaining the right to earn a 50% interest in the Cariboo Group, but terminated the agreement in 1991 without exercising the option.

Pan Orvana excavated 20 surface trenches, drilled four holes, and conducted ground geophysical surveys, geochemical sampling programs, and geological mapping.

6.2.5. Gold City Mining Corp. (1994–1995)

In 1994 and 1995, Gold City Mining Corp. ("Gold City Mining") assembled a large land position consisting of 13,000 hectares ("ha") of mineral titles between Mount Tom and the Cariboo Hudson Mine to form the Welbar Gold Project.

Doing so involved seven option agreements, including one that covered the Mosquito Creek, Island Mountain, and Cariboo claim groups. The latter was subject to the Cariboo Option Agreement between Mosquito Creek Consolidated Gold Mines Ltd. and International Wayside Gold Mines Ltd. Intera Information Technologies Corp. flew a synthetic aperture radar survey in July 1995. DIGHEM I Power completed a regional airborne radiometric-Mag-EM survey of 1,280 line-km, as well as trenching and diamond drilling on some of their properties, including one drill hole on the Mosquito Creek Group.

From October 1 to November 30, 1995, Gold City Mining conducted a 13-hole (1,865 m) diamond drilling program on the Cariboo-Hudson Property (Chapman, 1996a).

Gold City Mining optioned the Cariboo-Hudson Property from Cathedral Gold Corp. in 1994.

In November 1995, Gold City Mining sunk four diamond drill holes (560 m) on the Williams Creek Property (Chapman, 1996b). That same month, Gold City Mining drilled two holes (390 m) on the Island Mountain Property (Chapman, 1997).

6.3. International Wayside Gold Mines Ltd. (1999–2014)

Table 6-1 summarizes the work conducted by International Wayside Gold Mines Ltd. ("IWGM") on the Island Mountain Project between 1999 and 2014, as documented in Pickett (2000; 2001; 2002; 2003), Pautler (2003; 2004), Johnson (2005), Moore (2006), Yin and Daignault (2007a) and Yin (2011), as well as Management Discussion and Analysis reports ("MD&A") from Island Mountain Gold Mines Ltd. ("IGM"), International Wayside Gold Mines Ltd. ("IWGM") and Barkerville Gold Mines Ltd. ("BGM").

Table 6-1: Summary of diamond drilling on the Island Mountain Project from 1999 to 2014

Year	Zone/Area	Surface diamond drilling	
		(drill hole)	(m)
1999	Footwall of the West Fault	10	902.2
2000	Northwest of the Mosquito Creek Mine	10	1,750.5
2001	Gold-in-soil anomaly	2	367.3
	Favourable stratigraphy	1	183.8
	Kutney Zone	4	672.7
2002	Gold-in-soil anomaly and IP anomaly	2	191.7
	Gold-in-soil anomaly	2	210.3
2003	2003 trenching program	13	1,397.5
2004	Snapjack Zone	3	303.9
	Teapot Vein	3	555.0
2005	Snapjack Zone	9	906.1
	Southern soil anomaly	4	780.3
	Channel sample anomaly	2	202.1
2006-2009	No drilling	0	0.0
2010	Reconnaissance exploration	1	178.6
2011-2014	No drilling	0	0.0
Total		**66**	**8,602.0**

6.4. International Wayside Gold Mines Ltd. (1995–2009)

The following descriptions cover the history of exploration work conducted by IWGM on the Cariboo Gold Quartz Project between 1995 and 2009 and are taken from Lord and Reid (1997), Reid (1999), Hall (1999), Lord and Hall (2001), Walton (2002a; 2002b; 2003a; 2003b), Gates (2005), Duba (2005), Daignault and Moore (2006), Sandefur and Stone (2006), Yin and Daignault, (2007; 2008), Brown (2009), Fier et al. (2009) and Yin (2010a; 2010b). The text retains the references therein.

6.4.1. 1995–1999 Work Programs

IWGM worked the Project area continuously from May 1, 1995. Most of the work was carried out on the main mine trend, either from the surface or underground from the 1200 level adit.

In 1998 and 1999, a secondary target, the BC Vein, was explored over a strike length of 384 m by 31 surface drill holes totalling 2,245.2 m. The goal of this program was to find high-grade ore shoots of the kind located by Cariboo Gold Quartz Mining in the 1940s. Table 6-2 summarizes IWGM's drilling on the Project between 1995 and 1999.

In the summer of 1997, IWGM carried out a geochemical and prospecting program to find new mineralized showings and generate targets for further exploration. The geochemical surveys yielded 1,079 soil samples, 59 stream sediment samples, and 121 rock samples.

Table 6-2: Summary of diamond drilling on the Cariboo Gold Project from 1995 to 1999

Year	Zone	Surface diamond drilling		Underground diamond drilling		Underground percussion drilling	
		(drill hole)	(m)	(drill hole)	(m)	(drill hole)	(m)
1995	Rainbow	17	844.0	12	496.5	6	96.9
1996	Rainbow	8	424.0	5	157.6	38	867.8
	Pinkerton	5	385.3	-	-	25	998.5
1997	Rainbow	20	1,617.6	-	-	-	-
	Pinkerton	17	1,359.4	-	-	9	481.5
	Sanders	2	170.1	-	-	33	2,023.6
1998	Pinkerton	-	-	-	-	5	307.2
	Sanders	2	157.9	-	-	19	964.4
	Butts	2	146.0	-	-	-	-
	BC Vein	13	846.7	-	-	-	-
1999	BC Vein	18	1,398.4	-	-	-	-
Total		**104**	**7,349.4**	**17**	**654.1**	**135**	**5,739.9**

6.4.2. 2000–2009 Work Programs

IWGM carried out extensive work from 2000 to 2009. Table 6-3 summarizes the drilling by year and area of interest.

Table 6-3: Summary of diamond drilling on the Cariboo Gold Project from 2000 to 2009

Year	Zone/Area	Surface diamond drilling		Underground diamond drilling	
		(drill hole)	(m)	(drill hole)	(m)
2000	BC Vein Bonanza Ledge	48	6,227.4	-	-
2001	BC Vein Bonanza Ledge	22	5,145.9	-	-
	Cow Mountain	3	653.8	-	-
2002	BC Vein Bonanza Ledge	18	3,394.0	-	-
	Myrtle Property	5	1,206.1	-	-
2003	Bonanza Ledge	26	3,037.3	3	203.3
	Myrtle Property	4	781.5	-	-
2004	Bonanza Ledge	60	7,788.6	73	5,974.1
	Bonanza Ledge – engineering	17	1,899.5	-	-
	Myrtle Property	5	861.4	-	-
	Goldfinch Target	6	826.6	-	-
	Groundwater monitoring well holes	2	120.1	-	-
2005	Lowhee Creek	23	4,422.4	-	-
	Black Bull	3	474.9	-	-
2006	Mucho Oro	31	4,682.1	-	-
2007	Cow Mountain	15	1,463.6	-	-
2008	Goldfinch and Bonanza Ledge	10	1,762.1	-	-
2009	Cow Mountain	11	1,900.2	-	-
	Lowhee Creek	2	329.8	-	-
	Bonanza Ledge	18	1,781.5	-	-
	Groundwater monitoring well holes	7	362.7	-	-
Total		**336**	**47,222.0**	**76**	**6,177.4**

6.4.2.1. 2000 Work Program

On March 23, 2000, IWGM announced the discovery of a new mineralized zone while drilling the BC Vein. The type of mineralization encountered had not previously been identified in the region. The new zone was named the Bonanza Ledge Zone.

Subsequent geochemical, geophysical, and diamond drilling programs explored the Bonanza Ledge and BC Vein zones to look for new Bonanza Ledge-type targets away from the initial discovery. The work program consisted of 48 drill holes for 6,227.4 m and focused on area adjacent to the BC Vein. Surface exploration, completed mainly between August and October 2000, included geological mapping, prospecting, 44.2 line-km of soil sampling (2,400 samples on cut grid lines, spacing of 61 m by 15.2 m), and 32.9 line-km of ground geophysical surveys including self-potential ("SP"), Induced Polarization ("IP"), VLF-EM, and ground Mag surveys. To provide an accurate topographic base map for IWGM's claims, an aerial photographic survey was flown in August and September 2000, covering its full extent. Historical mineral resource estimates from this period are superseded by those reported herein. They are described in detail in a previous technical report (Beausoleil and Pelletier, 2018) available on SEDAR.

In 2000, IWGM hired an independent consultant, R.G. Simpson (P.Geo.), to review the Cow Mountain data and the 1999 Resource (Dykes, 1999). Simpson estimated an Inferred resource (see IWGM's 2000 AIF) for Cow Mountain and following the recommendations from Simpson, another mineral resource estimate was completed by G.H. Giroux in 2000 (Giroux, 2000).

6.4.2.2. 2001 Work Program

The program in 2001 included diamond drilling, 20 line-km IP survey along 22 lines on Cow Mountain, 24.3 line-km of SP surveying, and 7.2 line-km of brushing out of lines for the IP survey on 11 lines.

6.4.2.3. 2002 Work Program

Diamond drilling was carried out in 2002, along with a mineral resource estimate by Giroux Consulting (the "2002 Estimate"; Giroux, 2002).

6.4.2.4. 2003 Work Program

The 2003 work program involved 70 m of trenching in six trenches. The work concentrated on the Bonanza Ledge Zone, the adjacent Myrtle Group, and the Sanders Zone. The program also included surface and underground drilling. Historical mineral resource estimates from this period are superseded by those reported herein. They are described in detail in a previous technical report (Beausoleil and Pelletier, 2018) available on SEDAR.

In 2003, an independent preliminary economic assessment ("PEA") completed by DJP Consultants Ltd. (Pow, 2003) concluded that the 2002 Estimate yielded a probable reserve of 3,109,000 t grading 2.95 g/t Au for 294,700 oz of contained gold, and that there were sufficient reserves to supply an on-site processing plant with 1,359 tonnes per day ("tpd") using open pit mining methods over 6.5 years, for life of mine ("LOM") production of 261,900 oz of gold. The PEA was based upon a pre-tax initial rate of return ("IRR") of 29.5% (used equipment) at a gold price of US$340/oz.

This "PEA" is historical in *nature and should not be relied upon. In 2003, it was compliant with NI 43-101 requirements. Since 2003, more drilling has been added, and more geological information has become available. Additionally, the assumptions for the cut-off grade calculations, as well as the estimated capital and operating costs, are likely to have changed since 2003. Consequently, the DJP Consultants Ltd. PEA cannot be considered as current. It is included in this section for illustrative purposes only and should not be disclosed out of context.*

6.4.2.5. 2004 Work Program

The work program in 2004 focused mainly on the Bonanza Ledge Zone. The Bonanza Ledge Zone was drilled from the surface and underground.

Underground development at Bonanza Ledge started in late 2003 and continued into 2004.

Exploration activities also included underground and surface drilling, geological mapping, trenching, a soil grid extension, and channel sampling along road exposures.

6.4.2.6. 2005 Work Program

In March 2005, 10,000 dry tonnes of concentrate from Bonanza Ledge were shipped via CN Rail to Noranda Inc.'s smelter in Rouyn-Noranda, Québec, for refining into gold bullion. IWGM received net proceeds before royalties of $1,505,720 for 5,200 oz recovered post-milling from the Bonanza Ledge bulk sample collected in 2004.

The exploration program included surface drilling, surface mapping, and sampling.

A gravity geophysical survey was planned to cover the Bonanza Ledge and Lowhee Creek areas. The survey was initiated in November 2005 but only covered the grid on the Bonanza Ledge deposit.

6.4.2.7. 2006 Work Program

The work program in 2006 consisted of surface drilling, prospecting, surface mapping, and sampling.

IWGM retained Chlumsky, Armbrust and Meyer LLC ("CAM") of Lakewood, Colorado to prepare a public PEA (the "2006 PEA"). Prior to the 2006 PEA, CAM and Minefill Services Inc. had completed an internal "scoping study" for IWGM on the Bonanza Ledge Zone. CAM advanced this internal study to comply with NI 43-101 standards. The study used the 2002 Estimate of Giroux (2002).

IWGM intended to process the material mined from Bonanza Ledge at a nearby facility, in particular, the Quesnel River Mill ("QR Mill") facility belonging to Cross Lake Minerals. Testing showed good amenability to cyanidation with recoveries ranging from 93% to 97%. These recoveries were attained rapidly, with 98% of the recovery occurring in the first six hours of the 72-hour leach.

The economic analysis of this scenario reported an estimated net present value ("NPV") of $10.7 million, assuming a discount rate of 5%, and total expenditures of approximately $23.0 million. The sensitivity analyses carried out on the cash flow model determined that the project was most sensitive to changes in recovery and gold price, and the project was least sensitive to changes in capital costs.

6.4.2.8. 2007–2008 Work Programs

The work programs in 2007 and 2008 consisted of surface drilling. In 2007, 1,463.54 m were drilled on Cow Mountain in 15 holes to test the Rainbow and Sanders zones. In 2008, 1,762.07 m were drilled in 10 holes to further define the Bonanza Ledge Zone and test the adjacent Goldfinch Target.

6.4.2.9. 2009 Work Program

Surface drilling was conducted during the 2009 work program.

In 2009, an NI 43-101 technical report was prepared for IWGM and Barkerville. It addressed the geology and exploration history for gold on properties in the IWGM land package comprising the Cariboo Gold Project. The scope of the technical report included an update and compilation of recent exploration activities completed by IWGM on the land tenure of the Cariboo Gold Project from 2006 to 2008. This report built on previous technical reports that outlined gold mineral resources contained in the Project area, with mineral resource calculations specific to the Cow Mountain area (Giroux, 2006) and the Bonanza Ledge Zone area (Sandefur and Stone, 2006).

A pre-feasibility study ("PFS") was prepared for the Bonanza Ledge Project by EBA Engineering Consultants Ltd. ("EBA") of Vancouver, British Columbia, and several independent professionals and consultants. The study used the mineral resource and mineral reserve evaluation (the "2009 Estimate") of Mintec Inc. of Tucson, Arizona, as the basis of its economic analysis. The PFS was an update of the previously disclosed mineral resource (Sandefur and Stone, 2006). An NI 43-101 technical report was prepared by EBA. Historical mineral resource estimates from this period are superseded by those reported herein and described in detail in these previous technical reports available on SEDAR.

In late 2009, International Wayside Gold Mines purchased the QR Mine and Mill from Cross Lake Minerals Ltd. and in January 2010, changed their name to Barkerville Gold Mines Ltd (BGM).

6.5. Barkerville Gold Mines Ltd. (2010-2014)

The following description of work conducted by BGM on the Project between 2010 and 2014 is taken from Yin (2011; 2013), Georges (2012), Georges et al. (2013), Dzick (2015), Layman (2015), and BGM's MD&A reports. The text retains the references therein.

Table 6-4 outlines the drilling on the Project from 2010 to 2014.

Table 6-4: Summary of diamond drilling on the Cariboo Gold Project from 2010 to 2014

Year	Zone/Area	Surface Diamond Drilling	
		(drill hole)	(m)
2010	Bonanza Ledge	17	2,918.2
	Cow Mountain	45	5,792.3
	Island Mountain	1	178.6
2011	Pit Vein Zone	10	1,045.2
	BC Vein	30	9,284.6
	Bonanza Ledge (ARD samples)	5	943.1
	Cow Mountain	163	43,410.6
	Stouts Gulch and Myrtle Property	2	212.2
	Groundwater monitoring well holes	21	3,019.9
2012	Cow Mountain	14	2,753.2
2013	No drilling	0	0
2014	Cow Mountain	10	4,142.2
Total		**318**	**73,700.1**

6.5.1. 2010–2011 Work Programs

Surface trenching and sampling work were completed in 2010. A total of 175 samples were collected from 18 channels. The channels were spaced approximately 6 m apart along a 125 m long trench.

The work program in 2011 included surface drilling and trenching. A total of 66 channel samples were collected from the trenches.

6.5.2. 2012 Work Program

All historical estimates are superseded by the current mineral resource estimate reported in Chapter 14 of this report.

On June 28, 2012, BGM announced a public mineral resource estimate for the Gold Quartz open pit model on Cow Mountain (the "Gold Quartz Estimate") and the geological potential of the 6.4-km Cow–Island–Barkerville Mountain Corridor (BGM news release of June 28, 2012). Geoex Ltd. ("Geoex") prepared the independent estimate. The announcement of the estimate led to a request for a supporting technical report within 45 days from the BC Securities Commission ("BCSC") and initiated a request for further information from the Geoex QP (Peter T. George). The BCSC was provided with a draft technical report. Upon review of the draft technical report, the BCSC expressed concerns about certain methods, parameters, and assumptions used to estimate the mineral resources and potential exploration targets at Cow Mountain, as well as the estimates themselves. The final version of the NI 43-101 technical report was filed on SEDAR on August 13, 2012 (Georges, 2012).

On August 14, 2012, the BCSC issued a cease trade order ("CTO") against BGM, stating that the report was not in the required form under NI 43-101 (BGM press release of August 15, 2012). BGM was advised that the CTO would remain in place until BGM filed an NI 43-101 report acceptable to the BCSC, addressing all technical disclosure concerns.

On October 19, 2012, BGM retained Snowden Mining Industry Consultants Pty ("Snowden") to review the report in question and help satisfy the CTO conditions. On November 5, 2012, BGM provided an additional update on its technical review. As requested by Snowden, 14 twin holes had been drilled on Cow Mountain between September 22, 2012 and October 14, 2012 (drill holes CM12-01A to CM12-09C), for a total of 2,759.4 m. The total meterage included five drill holes that had to be abandoned after hitting shafts and/or underground workings before reaching their target. Channel samples were also collected from the 2012 trenches on Cow Mountain. This data was used to verify the results of the report in question.

During its review of the NI 43-101 report, Snowden examined historical samples not included in the original Gold Quartz Estimate. Snowden recommended that these samples be included in the ongoing mineral resource estimate for Cow Mountain after being validated. The Gold Quartz Estimate was based on a database containing 619 drill holes. About 2,142 holes had been drilled on the property of which more than 1,464 had been verified by Mintec.

In July 2012, BGM received an amendment to *Mines Act* Permit M-198 for the QR Mill to allow the custom milling of up to 300,000 t of ore from the Bonanza Ledge Mine, as well as the disposal of associated mine tailings in the QR Main Zone Pit. In December 2012, BGM received an amended *Environmental Management Act* Permit, PE-17876, to allow effluent discharge associated with active mining at Bonanza Ledge.

6.5.3. 2013 Work Program

In June 2013, BGM filed an NI 43-101 technical report to present and support the updated mineral resource estimate for Cow Mountain (the "2013 Estimate"; Georges et al., 2013). As part of the mandate, Snowden assisted Geoex and BGM in the review and audit of the data validation and verification aspects of the Cow Mountain data, the determination of the most appropriate estimation method for Cow Mountain, and the preparation of the independent mineral resource estimate for the Cow Mountain area.

The 2013 estimate was reported at a range of cut-off grades for the Indicated and Inferred categories (Georges et al., 2013). No Measured mineral resources were estimated.

On July 15, 2013, the BCSC Rescinded the CTO issued on August 14, 2012. On October 9, 2013, common shares of BGM resumed trading on the Toronto Stock Exchange ("TSX:V").

To satisfy some of the recommendations of the last technical report (Georges et al., 2013), BGM reviewed core sampling records for all drill holes in the Cow Mountain mineral resource model. A core sampling and assaying program was conducted to provide assays for any previously unsampled drill core intervals. The infill sampling program (55,698.6 m) was conducted on 250 holes drilled in 2007, 2009, 2010 and 2011 on Cow Mountain (BGM press release of January 20, 2014). The program was completed in January 2014. Available reject samples for all the Cow Mountain drill holes were shipped to Acme Labs for fire assay–metallic screen analysis. In total, 25,280 samples were sent to Acme Labs.

Historical mineral resource estimates from this period are superseded by the 2021 Mineral Resource Estimate ("2021 MRE") reported herein. They are described in detail in previous technical reports available on SEDAR.

6.5.4. 2014 Work Program

BGM conducted surface drilling in 2014.

In March 2014, BGM announced the commencement of operations at the Bonanza Ledge Mine. The first production blast was on March 12, 2014. Over the course of the year, BGM milled 53,090 t of ore at an average head grade of 6.23 g/t Au and a recovery rate of 90%. The average net operating cost was $1,669 per ounce.

6.6. Barkerville Gold Mines Ltd. (2015-2021)

All exploration and drilling results from 2015-2021 are summarized in Chapters 9 and 10. Production and historical mineral resource estimates are summarized below.

For the purposes of this Report, Barkerville Gold Mines Ltd., as it operated from 2015-2021, will be referred to as Osisko Development Corp. ("ODV"). Current ODV management has been in place since 2015 and on November 21, 2019, Osisko Gold Royalties acquired the Cariboo Gold Project through the acquisition of Barkerville Gold Mines Ltd. The Project was part of the Osisko Gold Royalties contributed assets that created the Osisko Development Corp. on November 25, 2020.

During 2015, ODV milled 11,275 t of Bonanza Ledge ore at an average head grade of 10.14 g/t Au, a recovery rate of 94%, and an average net operating cost of $877/oz. Based on the results as of February 28, 2015, management decided to cease production and place Bonanza Ledge under care and maintenance.

In 2016, ODV mandated InnovExplo Inc. ("InnovExplo") (Brousseau et al., 2017) to complete an NI 43-101 technical report and Mineral Resource Estimate (the "2017 MRE") for the Barkerville Mountain deposit. GEOVIA GEMS™ was used for modelling purposes and the estimation approach, which consisted of 3D block modelling and the ordinary kriging interpolation method. The close-out date of the database was July 18, 2016, and the effective date of the 2017 MRE was March 21, 2017 (Brousseau et al., 2017).

In January 2017, ODV began commissioning its wholly owned QR Mill using the low-grade stockpile at the Bonanza Ledge open pit. Material sorting was done at the stockpile, producing relatively high-grade pre-concentrate. By the end of February 2017, 2,860 t of ore was transported to the QR Mill for an average grade of 2.94 g/t Au. During the second quarter of 2017, portal and underground development began at the Bonanza Ledge Mine to prepare for the processing of in-situ Bonanza Ledge material. A total of 470 m of underground development was completed in 2017, resulting in the processing of approximately 7,000 t of both low- and high-grade development material at the QR Mill for commissioning and training purposes.

In 2017, ODV mandated InnovExplo (Beausoleil and Pelletier, 2018) to update the 2017 MRE and perform a review and validation of the maiden mineral resource estimate for the Cow Mountain and Island Mountain deposits combined (the "2018 MRE"). The ordinary kriging ("OK") grade interpolation method was used. The results of the in situ 2018 MRE at the 3.0 g/t cut-off grade are presented in Table 6-5.

The close-out date of the database was December 31, 2017, and the effective date for the 2018 MRE was May 2, 2018.

Table 6-5: 2018 Cariboo Gold Project Mineral Resource Estimate at a cut-off of 3.0 g/t Au (Beausoleil and Pelletier, 2018)

Deposit by Categories	Tonnes	Au (g/t)	Au (Oz)
Measured (total)			
Bonanza Ledge	264,000	7.3	61,900
Indicated			
Bonanza Ledge	63,400	4.8	9,700
BC Vein	444,900	6.4	91,600
Mosquito	247,000	9.5	75,700
Shaft	4,373,200	5.9	835,600
Valley	769,600	5.8	142,700
Cow	1,947,800	6.1	381,800
Total Indicated Mineral Resources	**7,845,900**	**6.1**	**1,537,100**
Total Measured and Indicated Mineral Resources	**8,109,900**	**6.1**	**1,599,000**
Inferred			
BC Vein	173,400	4.6	25,400
Mosquito	699,200	6.0	135,600
Shaft	7,357,000	5.1	1,213,000
Valley	2,454,300	5.4	423,400
Cow	2,047,300	5.4	358,300
Total Inferred Mineral Resources	**12,731,200**	**5.2**	**2,155,700**

Notes to Table 6-5:

1. The official underground mineral resource is reported at a cut-off grade of 3.00 g/t Au based on CAD1,664 per troy ounce gold and gold metallurgical recoveries of 87.4%.
2. Cut-off grades must be re-evaluated in light of prevailing market conditions (gold price, exchange rate and mining cost).

These "Mineral Resources" are historical in nature and should not be relied upon. Although they comply with current NI 43-101 requirements and follow CIM Definition Standards, they are included in this section for illustrative purposes only and should not be disclosed out of context.

Test Mining at Bonanza Ledge was completed in December 2018. The objective was to gain technical information and train personnel to aid in future studies, permitting, and future mining. A total of 1,900 m of development took place at the Bonanza Ledge Mine in 2018. Approximately 120,000 t of ore were extracted and processed at an average grade of 5.94 g/t Au. Bonanza Ledge Mine was placed on care and maintenance in December 2018.

In 2019, ODV mandated InnovExplo (Beausoleil and Pelletier, 2019) to review, validate and update the 2018 MRE ("2019 MRE"). The OK grade interpolation method was used. The overall results of the 2019 MRE at the official 3.0 g/t cut-off grade are presented in Table 6-6.

Table 6-6: 2019 Cariboo Gold Project Mineral Resource Estimate at a cut-off of 3.0 g/t Au (Beausoleil and Pelletier, 2019)

Category	Deposit	Tonnes (000)	Grade (Au g/t)	Ounces (000)
Measured	Bonanza Ledge	175	6.1	34
Indicated	Bonanza Ledge	55	4.6	8
	BC Vein	734	5.6	132
	Mosquito	542	7.1	124
	Shaft	7,200	5.6	1,300
	Valley	1,212	5.3	208
	Cow	3,578	5.5	637
Total Indicated Mineral Resources		**13,266**	**5.63**	**2,401**
Inferred	BC Vein	87	3.6	10
	Mosquito	690	6.5	144
	Shaft	5,817	5.0	941
	Valley	3,475	4.9	545
	Cow	1,867	4.7	282
Total Measured and Indicated Mineral Resources		**13,495**	**5.6**	**2,443**
Total Inferred Mineral Resources		**11,936**	**5.0**	**1,922**

Notes to Table 6-6:

The estimate is reported for a potential underground scenario at cut-off grades of 3.0 g/t Au.

3. The cut-off grades were calculated using a gold price of USD1,300 per ounce, a CAD:USD exchange rate of 1.3; a mining cost of $42/t; a processing cost of $75/t; and G&A of $22/t.
4. The cut-off grades should be re-evaluated in light of future prevailing market conditions (metal prices, exchange rate, mining cost, etc.).

These "Mineral Resources" are historical in nature and should not be relied upon. Although they comply with current NI 43-101 requirements and follow CIM Definition Standards, they are included in this section for illustrative purposes only and should not be disclosed out of context.

Based on the results of the 2019 MRE, ODV mandated BBA Engineering Ltd. ("BBA") to prepare a technical report and PEA for the Cariboo Gold Project (Morgan et al., 2019). A number of specialized consultants assisted BBA with the PEA: Allnorth Consultants Ltd., Golder Associates Ltd., InnovExplo Inc., Mining Plus Canada Consulting Ltd., SRK Consulting (Canada) Inc., and WSP Canada Inc. The effective date of the PEA was August 18, 2019. The purpose was to complete a review and compilation of the mineral resources, mining designs, processing options, and preliminary economics of the Project, and to support the results disclosed in ODV's press release entitled "Barkerville Gold Mines Delivers Positive PEA for Cariboo Gold Project" dated August 19, 2019.

The PEA provided a base case assessment for developing the Cariboo Gold Project as a 4,000 tpd underground mine, with a concentrator located at the Mine Site at Wells and further processing at the QR Mill. The Project defined 13.3 million tonnes ("Mt") of mineralized material at an average of 5.6 g/t Au Indicated and 11.9 Mt at 5.0 g/t Au Inferred. The mine life was estimated to be 11 years. These results are described in detail in the PEA (Morgan et al., 2019) available on SEDAR.

In 2020, ODV mandated InnovExplo (Beausoleil and Pelletier, 2020) to complete an NI 43-101 technical report to present an updated mineral resource estimate and geological model (the "2020 MRE") for the Cariboo Gold Project. Leapfrog Geo was used for modelling purposes (GEOVIA GEMS™ was used for Bonanza Ledge) and the estimation approach, which consisted of 3D block modelling in Datamine Studio RM (Block modelling was completed using GEOVIA GEMS™ for Bonanza Ledge) and using OK grade interpolation method. The results of the in-situ 2020 MRE for the Barkerville Mountain deposit at a 2.1 g/t cut-off grade are presented in Table 6-7.

The close-out date of the database was January 29, 2020, and the effective date of the 2020 Estimate was April 28, 2020 (Beausoleil and Pelletier, 2020).

Table 6-7: 2020 Cariboo Gold Project Mineral Resource Estimate at 2.1 g/t Au cut-off (Beausoleil and Pelletier 2020)

Category	Deposit	Tonnes	Grade	Ounces
		* 1000	(Au g/t)	* 1000
Measured	Bonanza Ledge	240	5.1	39
Indicated	Bonanza Ledge	86	3.9	11
	BC Vein	1,192	4.7	179
	KL	393	3.3	42
	Lowhee	381	3.7	46
	Mosquito	783	6.0	150
	Shaft	10,889	4.7	1,644
	Valley	1,744	4.5	251
	Cow	5,734	4.5	838
Total Indicated Mineral Resources		**21,201**	**4.6**	**3,160**
Inferred	BC Vein	472	3.9	60
	KL	1,926	2.9	181
	Lowhee	1,032	3.2	105
	Mosquito	1,348	4.8	208
	Shaft	7,913	4.2	1,081
	Valley	5,683	4.0	722
	Cow	3,276	3.5	364
Total Measured and Indicated Mineral Resources		**21,441**	**4.6**	**3,200**
Total Inferred Mineral Resources		**21,649**	**3.9**	**2,721**

Notes to Table 6-7:

1. The estimate is reported for a potential underground scenario at cut-off grade of 2.1 g/t Au;
2. The cut-off grades were calculated using a gold price of USD1,350 per ounce; a USD/CAD exchange rate of 1.31; a mining cost of $65.39/t; a processing, environment & transport cost of $28.67/t; and G&A cost of $11.07/t.
3. The cut-off grade should be re-evaluated in light of future prevailing market conditions (metal prices, exchange rate, mining cost, etc.).

These "Mineral Resources" are historical in nature and should not be relied upon. Although they comply with current NI 43-101 requirements and follow CIM Definition Standards, they are included in this section for illustrative purposes only and should not be disclosed out of context.

The Bonanza Ledge Mine resumed development in mid–2019 and in 2020, 3,268 t of ore was extracted at an average grade of 2.58 g/t Au. In 2020, the underground focus was the development of drifts to access the BC Vein. In 2021, 98,786 t of ore was extracted at an average grade of 4.48 g/t Au (as of December 31, 2021). Development of a new portal to access and develop a bulk sample at the Cow Mountain portion of the mineral resource was completed in December 2021.

7. Geological Setting and Mineralization

7.1. Introduction & Clarification

For the purposes of this Report, Barkerville Gold Mines Ltd. ("BGM"), as it operated from 2015 to 2020, will be referred to as Osisko Development Corp. ("ODV"). Current ODV management is a merger of the BGM management team that has been in place since 2015 and select Osisko Gold Royalties ("OGR") team members after OGR acquired the Cariboo Gold Project ("the Project") through the acquisition of Barkerville Gold Mines Ltd. on November 21, 2019. The Project was part of the OGR assets that created the Osisko Development Corp. on November 25, 2020.

In addition, the Cariboo Gold Project as described geologically refers to the entirety of the ODV land package in British Columbia. Within this land package, a proposed project ("the Project") is currently undergoing an Environmental Assessment under the *BC Environmental Assessment Act* (2018) with the addition of the Lowhee Zone discovered in 2019. The Project mining zones are limited to the Cow Zone, Lowhee Zone, Valley Zone, Shaft Zone, and Mosquito Creek.

7.2. Regional Geological Setting

The principal vein and gold-rich replacement-style deposits of the Cariboo Gold Project are hosted within Neoproterozoic to Paleozoic off-shelf siliciclastic and lesser carbonate facies rocks belonging to the Snowshoe Group of the peri-cratonic Barkerville terrane (e.g., Monger and Berg, 1984; Struik, 1986;1988; Schiarizza and Ferri, 2003; Ferri and Schiarizza, 2006). The Barkerville terrane, or sub-terrane, has several stratigraphic correlatives within the more southerly Kootenay terrane (Struik,1986;1988; Ferri and Schiarizza 2006) and may likewise correlate in part with the Yukon-Tanana terrane of northern BC, Yukon, and Alaska (Struik, 1986; Monger and Berg, 2002). Within central BC, the Barkerville terrane represents the westernmost component within the Omineca morphogeological belt of the Canadian Cordillera (Figure 7-1).

The Omineca Belt, relative to the more easterly Foreland Belt, is characterized by elevated metamorphic grades, Paleozoic through early Tertiary granitoid intrusions, and protracted polyphase deformation beginning by the Middle Jurassic (e.g., Monger and Price, 2002) (Figure 7-2). Physiographic domains of the Omineca Belt include the Purcell, Selkirk, Monashee, Cariboo, Omineca, Cassiar, and Selwyn mountains (Monger and Price, 2002). Across the Cariboo Mountains, the Omineca Belt can be described as consisting of the following tectonostratigraphic elements:

1. Neoproterozoic rift-related clastic and minor volcanic rocks deposited on continental basement attenuated during break-up of the supercontinent Rodinia (e.g., Monger and Price, 2002; Hoffman, 1991) (basal Barkerville and Cariboo terrane sequences);

2. Paleozoic peri-cratonic off-shelf siliciclastic rocks, with lesser volcanic, volcaniclastic, and carbonate facies rocks (characteristic Barkerville terrane sequences) (e.g., Struik 1988; Ferri and Schiarizza, 2003);
3. More proximal Paleozoic platformal carbonate facies and siliciclastic rocks (characteristic Cariboo terrane sequences) (e.g., Ferri and Schiarizza, 2003);
4. Large-scale klippe including Late Paleozoic mafic volcanic rocks, ultramafic to mafic intrusive rocks, and deep sea pelagic sedimentary rocks often interpreted as representing a partial ophiolite sequence (Slide Mountain terrane) (e.g., Struik, 1988; Nelson, 1993).

Proximal and off-shelf sequences of the Cariboo and Barkerville terranes are interpreted to have been deposited on and adjacent to the continental margin of ancestral North America (Laurentia). This idea is supported by deep-crustal geophysical data collected through the National Lithoprobe Geoscience Project (Monger and Price, 2002; Cook, 1995) (Figure 7-3), and by locally exhumed windows of Paleoproterozoic continental basement of North American affinity occurring within the Omineca Belt of south-central BC (e.g., the Monashee core complex) (Monger and Berg, 2002).

The metamorphism and magmatism that characterize the Omineca Belt are superimposed across the interface between peri-autochthonous terranes (e.g., Barkerville, Kootenay) and allochthonous terranes of the more westerly Intermontane Belt. The boundary between the two belts can thus be placed somewhat arbitrarily, unless coincident with a major fault (Monger and Price, 2003). Within the Cariboo terrane, the Omineca-Intermontane Belt boundary is coincident with the Barkerville-Quesnellia terrane boundary along the Jurassic aged Eureka thrust (e.g., Struik, 1988; Schiarizza and Ferri, 2003; Ferri and Schiarizza, 2006). Figure 7-4, modified from Struik (1988), details the inferred tectonic architecture across the Omineca Belt in the Cariboo Gold District.

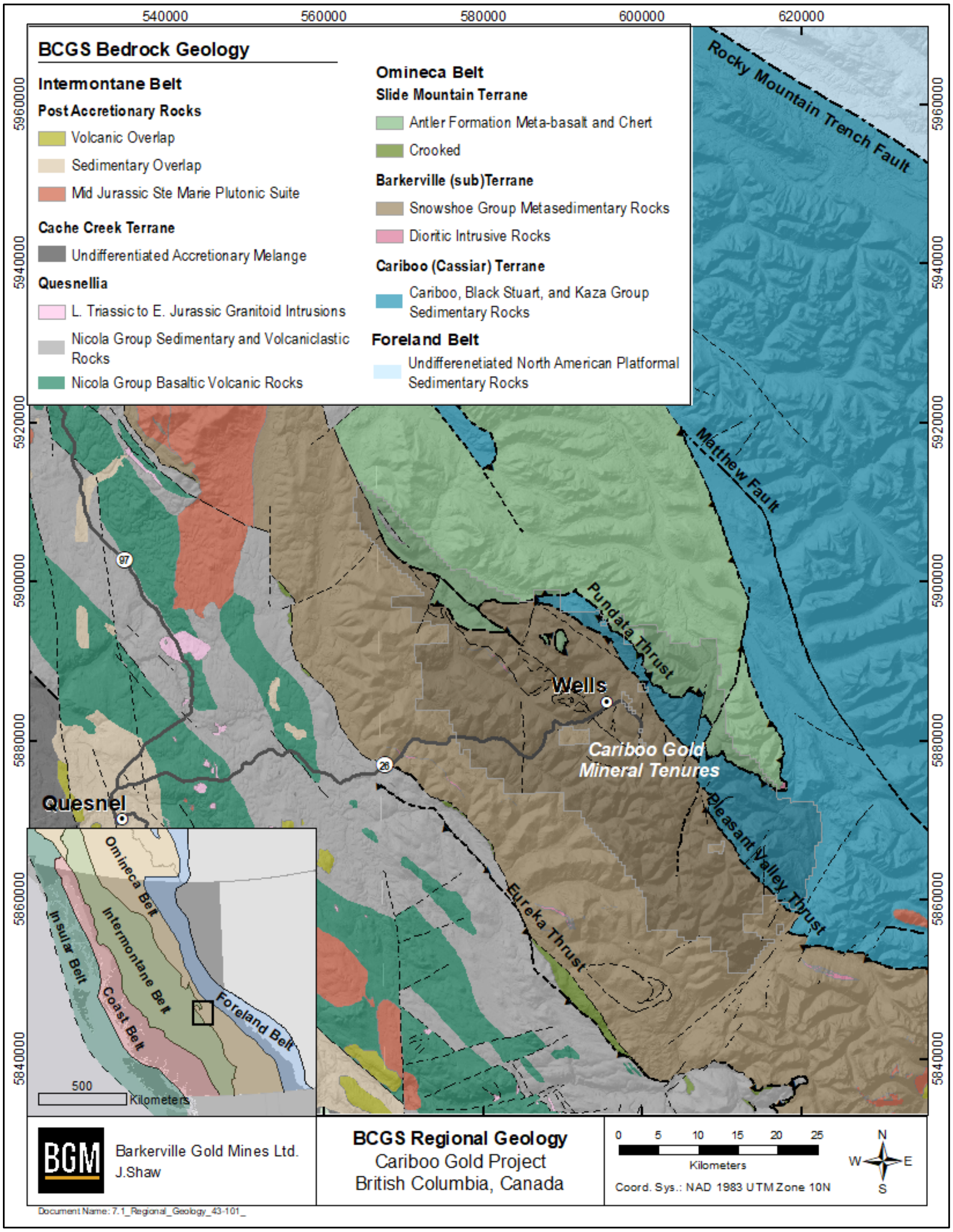
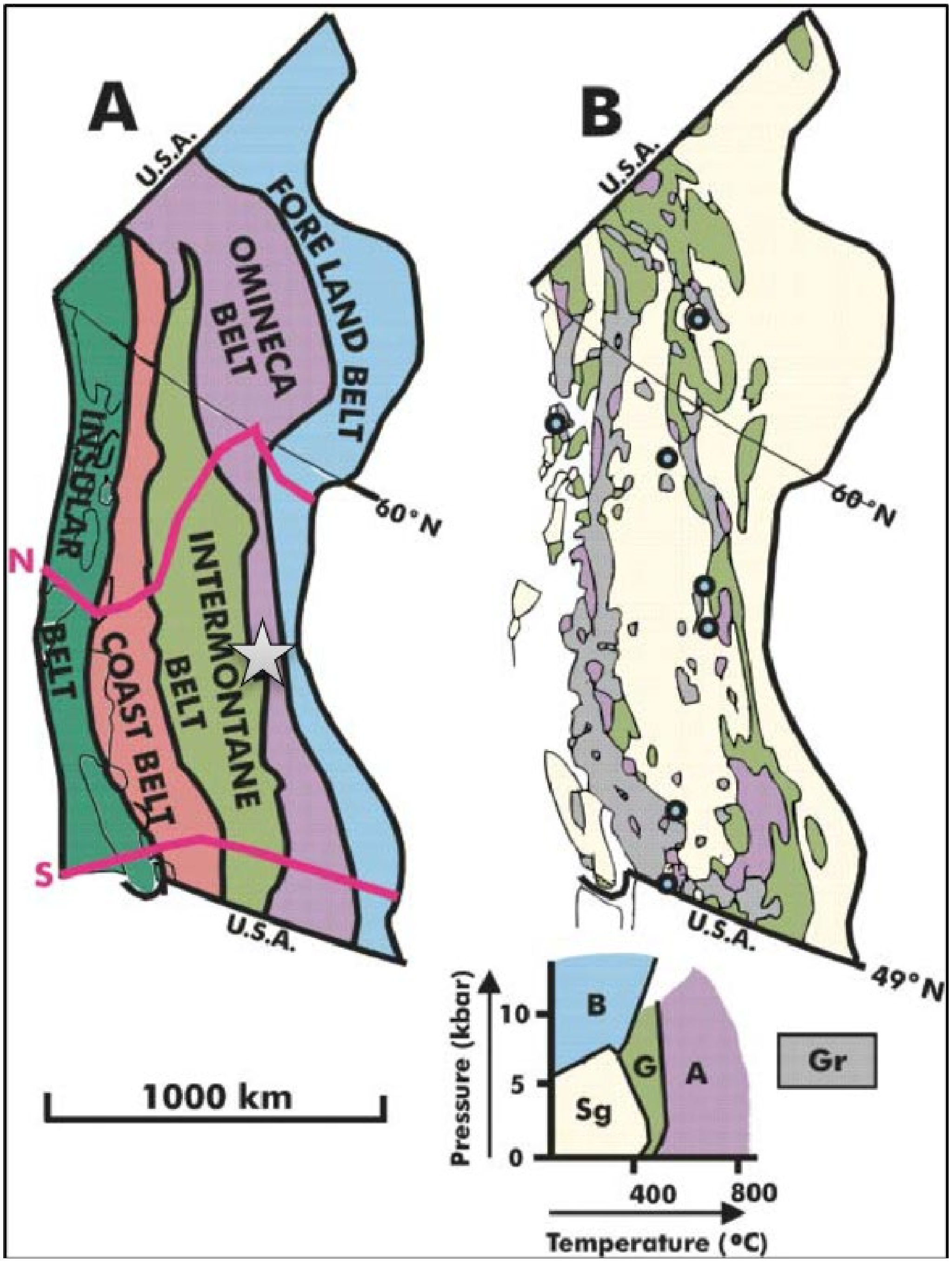


Figure 7-1: BCGS bedrock geology of the Cariboo Gold Project area



(**A**) Approximate location of the Cariboo Gold Project indicated by the star

(**B**) Sg – sub-greenschist facies; G – greenschist facies; A – amphibolite facies; B – Blueschist facies (dots); Gr – granitic rocks

Figure 7-2: A) Morphogeological belts of the Canadian Cordillera with the northern (N) and southern (S) Lithoprobe transects; B) Simplified map of the distribution of granitic rocks and regional metamorphic grade (Monger and Price, 2002)

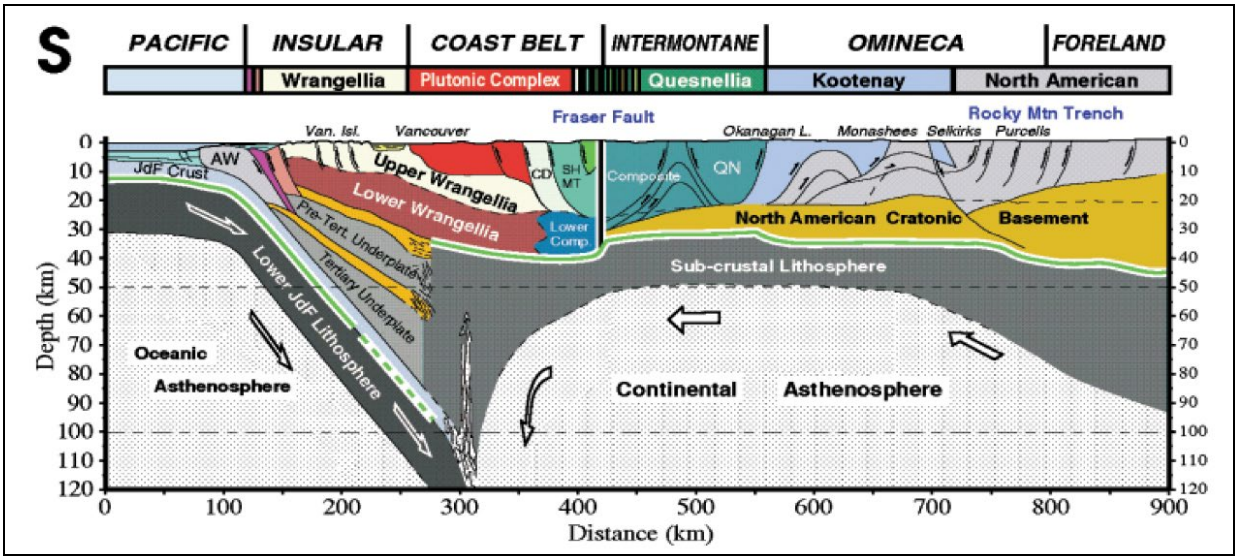


Figure 7-3: Lithospheric-scale cross-section of the southern Cordilleran Lithoprobe transect (Monger and Price, 2002)

The Cariboo terrane represents the easternmost component of the Omineca Belt within the Cariboo district; its boundary with the Foreland Belt coincides with the eastern limit of the Cariboo Mountains at the Rocky Mountain Trench. The Cariboo terrane is juxtaposed atop the Barkerville terrane along the E-dipping Pleasant Valley Thrust. The age of formation of the thrust must post-date the youngest rocks within the Barkerville and Cariboo terranes, which fossil age constraints place within the Lower Permian (Struik, 1986; 1988). While stratigraphic similarities certainly exist between sections of the Barkerville and Cariboo terranes (e.g., Monger and Berg, 1984; Struik, 1986) the more carbonate-rich stratigraphy of the Cariboo suggests a setting proximal to the Laurentian margin, and it is commonly classified as a sub-terrane of the more northerly Cassiar (Struik, 1986; Ferri and Schiarizza, 2006). Significant (≥500 km) relative-northward Cretaceous through Eocene translation of the Cassiar terrane along the Northern Rocky Mountain – Tintina fault system is believed to disperse and step westward at the northern limits of the Cariboo mountains. The more southerly accommodation of this translation is believed to have occurred along the intra-Omineca Matthew and McLeod Lake faults, with comparatively minor displacements experienced along the Rocky Mountain Trench (Gabrielse et al., 2006).

The allochthonous Quesnel terrane, or Quesnellia, consists primarily of Middle Triassic to Lower Jurassic sedimentary, volcanic, and intrusive rocks formed in an island arc – arc-marginal basin setting (Struik, 1988; Panteleyev et al., 1996). These rocks represent the easternmost component of the Intermontane Belt and were emplaced above the Barkerville terrane along the east-vergent Eureka Thrust during the Early to Middle Jurassic (e.g., Schiarizza and Ferri, 2003). The thrust itself was folded not long after its formation (Struik, 1988; Schiarizza and Ferri, 2003), and is marked by lenses of variably sheared mafic and serpentinized ultramafic rocks collectively described as the Crooked Amphibolite (Struik, 1988; Schiarizza and Ferri, 2003; Ferri and Schiarizza, 2006). The Crooked Amphibolite represents an ophiolitic sliver (e.g., Pantaleyev et al., 1996), and is commonly viewed as a correlative of a potential root to the shallowly emplaced Slide Mountain terrane (Pantaleyev et al., 1996, Struik, 1986; Ash, 2001; Ray et al., 2001; Ferri and Schiarizza, 2006). Quesnel terrane accretion, perhaps co-eval with the emplacement of the Slide Mountain terrane, has been linked with the development of the earliest recognizable phases of deformation and accompanying regional metamorphism within the Cariboo and Barkerville terranes (Ferri and Schiarizza, 2003). Metamorphic cooling ages of 174+\- 4 Ma obtained from U-Pb dating of metamorphic sphene from the Quesnel Lake area (Mortensen et al., 1987) constrain peak metamorphism to the Middle Jurassic.

The Slide Mountain terrane structurally overlies both the Cariboo and Barkerville terranes along the sub-horizontal, broadly warped and locally folded Pundata Thrust (Struik, 1986). In the Wells-Barkerville area, the Slide Mountain klippe consists of Lower-Mississippian to Lower Permian meta-basalt and chert of the Antler Formation (e.g., Schiarizza and Ferri, 2002). The structural relationship between the Pleasant Valley and Pundata thrusts seems to suggest that the latter post-dates the former and that, therefore, Slide Mountain emplacement post-dates Cariboo-Barkerville terrane amalgamation (Struik 1986, 1988). However, Schiarizza and Ferri (2003) note that it is in fact unclear whether the Pleasant Valley thrust cuts up-section through the Pundata to affect Antler Formation rocks of the Slide Mountain terrane.

Smaller-scale klippen of amphibolite facies metabasaltic and metasedimentary rocks of uncertain terrane affiliation overlie lower greenschist facies rocks of the Barkerville terrane at both Mount Tom and Island Mountain (Struik, 1988; Ferri and Schiarizza, 2006).

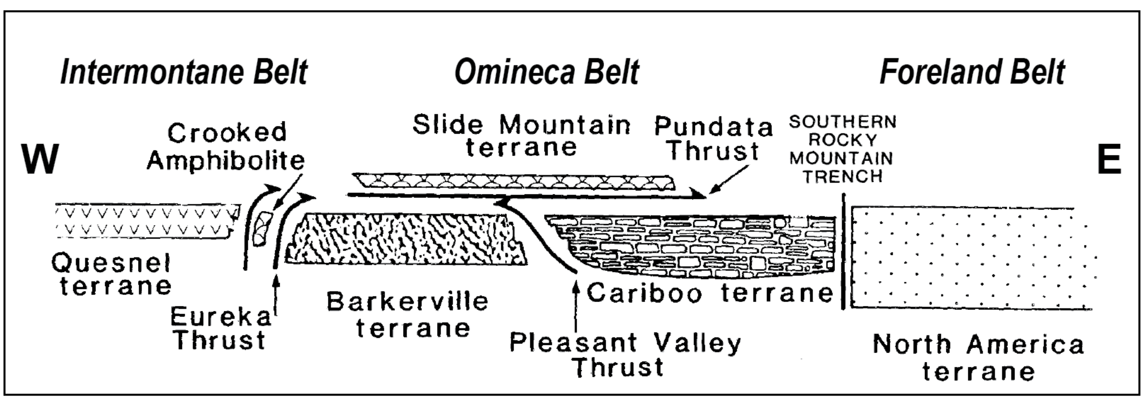


Figure 7-4: Tectonic architecture of the Cariboo Gold District
Modified from Struik (1986)

7.2.1. Snowshoe Group Stratigraphy

Siliciclastic and carbonate sequences, volcanic and volcaniclastic rocks of the Barkerville terrane collectively comprise the Snowshoe Group, a singular formal unit proposed by Struik (1986). Stratigraphic subdivisions of the Snowshoe Group proposed by Struik (1986) were qualified as "informal", given uncertainties regarding relative stratigraphic order. A final re-interpretation, as presented in Ferri and Schiarizza (2006) goes hand in hand with a new model for the fundamental structural architecture within the Barkerville terrane allowing for large-scale structural repetitions of a simplified stratigraphic sequence. See Struik (1988) for further discussion of earlier stratigraphic interpretations across the Barkerville and Cariboo terranes. The simplified stratigraphy of Ferri and Schiarizza (2006) divides the Snowshoe Group into three major successions, from oldest to youngest: the Downey, Harveys Ridge and Goose Peak successions (Figure 7-5).

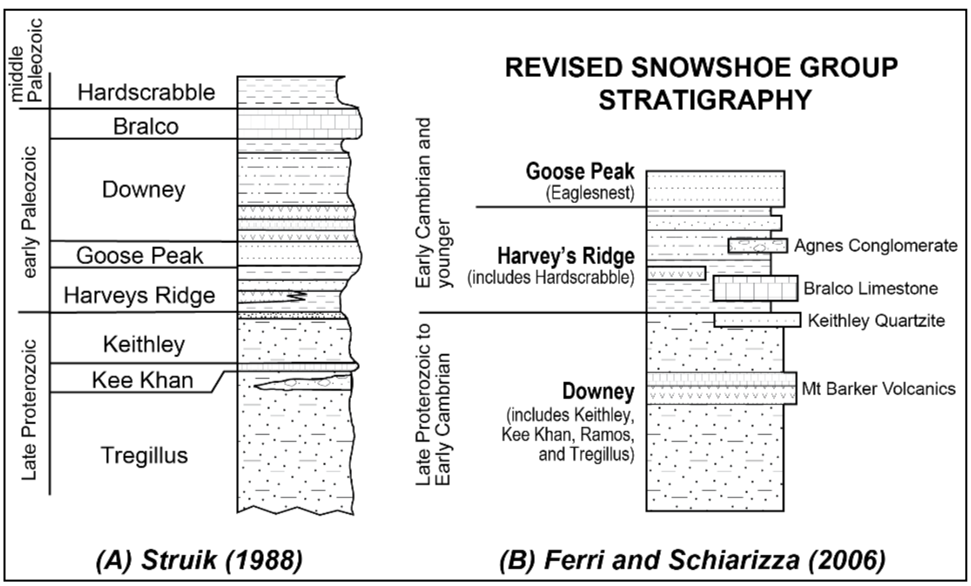


Figure 7-5: Stratigraphic interpretations of the Snowshoe Group
Modified from Ferri and Scharizza (2006)

The revised Downey succession of Ferri and Schiarizza (2006) outcrops within two separate belts in the Barkerville terrane. An eastern belt corresponds to the original Downy succession of Struik (1988); a western belt corresponds to and includes the Tregillus clastic rocks, Kee Khan marble, Keithley, and Ramos successions as defined by Struik (1988). Siliciclastic rocks within the Downey succession of Ferri and Schiarizza (2006) consist of green-grey micaceous to feldspathic quartzite and phyllite or schist, depending on metamorphic grade. Ferri and Schiarizza retain the name 'Keithley Quartzite' to describe a localized marker orthoquartzite occurring near the top of the sequence. The Downey succession commonly includes relatively thick and discontinuous carbonate units, including the Kee Khan marble of Struik (1988), which are found most often in association with alkali mafic metavolcanic and volcaniclastic rocks (e.g., Mt. Barker Volcanics). Metavolcanic rocks range from thin horizons of chloritic phyllite in the Wells-Barkerville area, to thick, regional-scale exposures of chlorite±actinolite phyllite and schist north of Cariboo Lake (Allan et. al., 2017). Ferri and Schiarizza (2006) constrain the depositional age range for the Downey succession to Late Proterozoic through Early Cambrian. The geochemical nature of Downey volcanic rocks and the immature nature of its siliciclastic sequences are consistent with deposition in a continental rift environment (Ferri and Schiarizza, 2006). Depositional onset is consistent with the timing of Rodinia break-up (e.g., Hoffman, 1991).

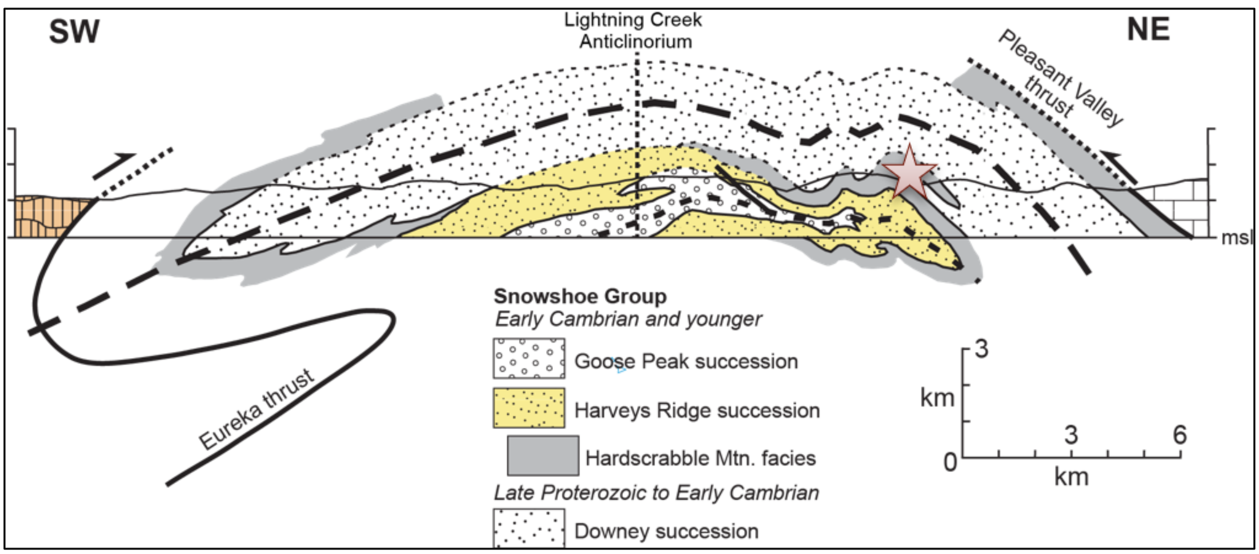
The revised Harveys Ridge succession of Ferri and Schiarizza (2006) includes rocks grouped by Struik (1988) into the separate Harveys Ridge and Hardscrabble Mountain successions. The sequence consists predominantly of dark grey to black carbonaceous and locally pyritic siltstone to phyllite and variably carbonaceous dark to pale grey quartzite. The term 'Hardscrabble facies' is still employed to describe the finer grained rocks in the succession, though facies changes between carbonaceous siltstones and quartzites occur both in section and laterally. The Harveys ridge succession also includes intervals of dark grey to black (carbonaceous) limestone and minor mafic metavolcanic rocks. The Agnes Conglomerate of Struik (1988) forms discontinuous lenses at the uppermost levels of the succession. The Bralco Limestone of Struik (1988) is found at the base of the succession but is believed to occur only within its eastern exposures. Rocks of the Harveys Ridge succession are believed to be in sharp contact with rocks of the underlying Downey, though Harveys Ridge is transitional into the overlying Goose Peak succession, grading from carbonaceous to clean quartzites in its upper reaches.

The Goose Peak succession of Ferri and Schiarizza (2006) consists predominantly of light grey to grey-green quartzite to feldspathic quartzite with lesser interbedded dark grey phyllite and siltstone. The redefined sequence includes both the Goose Peak and Eaglesnest successions of Struik (1988).

Ferri and Schiarizza (2006) constrain the Harveys Ridge and Goose Peak successions as Early Cambrian or younger, based on correlations with similar units within the Cariboo terrane to the east. Lower Permian conodont ages are determined for the Sugar Limestone, which unconformably overlies Hardscrabble facies rocks at Sugar Creek on Hardscrabble Mountain (Struik, 1988). While the upper age limits of the Harvey's Ridge and Goose Peak successions are otherwise poorly constrained, the age gap represented by the unconformity at the base of the Sugar Limestone may be quite profound (Ferri and O'Brein, 2002).

Snowshoe group rocks are locally intruded by dikes and sills of varying composition and relative timing of emplacement (e.g., Struik 1988).

In tandem with the revised Snowshoe Group stratigraphy, Ferri and Schiarizza (2006) present a model within which Snowshoe Group rocks, along with the overriding Eureka Thrust, are folded into a terrane-scale SW-vergent nappe (Figure 7-5). The nappe is overridden in the NE by the Cariboo terrane along the Pleasant Valley Thrust, beneath which Downey succession rocks are interpreted to represent the core of an early recumbent anticline. The nappe itself is then subjected to another phase of upright folding about a horizontal axis to produce a broad antiform with the youngest Snowshoe group rocks of the Goose Peak succession exposed at its core. The broad antiform, known as the Lightning Creek Anticlinorium, was recognized by Struik (1988) as a domain across which orogenic vergence transitions from NE to SW. In a transect along the Barkerville Highway (BC 26) the domain is characterized by predominantly subhorizontal regional foliation. Further south, i.e., in the Yanks Peak area north of Cariboo Lake, the domain is characterized by tight upright folds.



Note: Section line approximately equivalent to a transect along the Barkerville Highway (BC 26). The approximate location of Wells is indicated by the star.

Figure 7-6: Barkerville terrane nappe model
Modified from Ferri and Schiarizza (2006)

7.2.2. Metamorphism

All known gold mineralization within the Barkerville trend is hosted in rocks metamorphosed to lower-greenschist facies (sub-biotite isograd). The principal metamorphic minerals largely depend on the protolith but generally include sericite, chlorite, quartz, and iron-carbonate. A regional S1 foliation is defined by the alignment of metamorphic micas, suggesting that peak metamorphic temperature coincided with the D1 deformation with possible overprinting during D2 (Struik, 1988). Peak metamorphism is thought to have occurred at approximately 174±4 Ma, based on a U-Pb age for metamorphic titanite (sphene) collected near Quesnel Lake (Mortensen et al., 1987). Andrew et al. (1983) reported a similar K-Ar whole-rock age of 179±8 Ma for phyllite at the Cariboo Gold Quartz Mine. However, more recent dating by Rhys et al. (2009) constrained the age of the metamorphism at Cariboo Gold Quartz and Bonanza Ledge Mines between 146.6±1.1 and 151.5±0.8 Ma, which is significantly closer to the age of mineralization.

Amphibolite-facies rocks are found within a klippe atop Island Mountain but are not associated with any significant mineralization and their origin is not well understood. Rocks within the klippe at Island Mountain include both amphibolite and garnet-mica (white mica ± biotite) schist. They have been postulated as correlative with the Slide Mountain terrane and/or Crooked Amphibolite but may alternatively represent more deeply rooted rocks of Barkerville terrane affinity (e.g., Schiarizza and Ferri, 2003). Amphibolite-facies rocks are also found at the western margin of the Barkerville terrane, where Snowshoe Group rocks consist of garnet-biotite schists and micaceous quartzites (Moynihan & Logan, 2009; Struik et al., 1992).

7.3. Property Geology

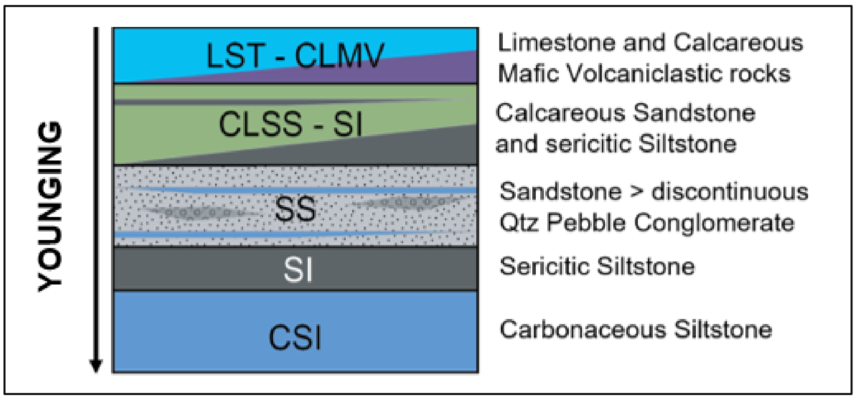
Detailed surface mapping conducted at a 1:2,000 scale and the collection of high-density structural data was completed within the core of the Cariboo Gold Project area covering the Island Mountain, Cow Mountain, Barkerville Mountain, and Mount Proserpine prospect areas during the 2018-2019 field seasons. The following synthesis is based largely on that work. Culminating map and cross-section products are presented in Figure 7-13 and Figure 7-14 at the end of this section.

Snowshoe Group rocks within the Cariboo Gold Project consists of an internally deformed sequence of siliciclastic, carbonate, and lesser volcaniclastic rocks that correspond with both the Downey and Harveys Ridge (including Hardscrabble facies) successions of Ferri and Schiarizza (2006). Historical workings in the Cariboo Gold District along with active brownfields exploration of approximately 13 km in strike length define a strike-parallel belt of lode gold deposits hereafter and historically referred to as the Barkerville trend. Within the Barkerville trend, Snowshoe Group rocks are deformed within a close to tightly folded northwest-southeast striking and northeast-dipping tectonostratigraphic sequence regionally metamorphosed to greenschist facies and locally disrupted by strike-parallel shear structures of varying thickness and undetermined offset (e.g., BC Vein). Given the consistency of low metamorphic grades within deposit hosting rocks of the Cariboo Gold Project, all Snowshoe Group lithologies are referenced using protolith terminology in both core logging and surface mapping. These pre-established protocols will be followed herein.

Each of the vein-related deposits within the Cariboo Gold Project (Mosquito Creek, Shaft, Valley, Cow Mountain, Lowhee, and KL) are hosted in Snowshoe Group rocks within the hanging-wall to the BC Vein shear structure. A large-scale (ca. 300 m wavelength) D2 fold pair, consisting of the Mosquito Creek antiform and Barkerville synform, is exposed at different structural levels across Island Mountain, Cow Mountain, and Barkerville Mountain drill areas. Most of the diamond drilling at the Cariboo Gold Project takes place within the shared overturned limb of the Mosquito Creek-Barkerville antiform-synform pair. Despite complexities of finer-scale structural repetition and lateral facies changes, the tectonostratigraphy in this shared overturned limb can be described in terms of a simplified five-member sequence (Figure 7-7) that can be applied across the Island Mountain, Cow Mountain, and Barkerville Mountain drill areas. From top to bottom (oldest to youngest) this sequence includes:

1. Calcareous facies rocks including limestone (LST), characteristically chloritic and effervescent volcaniclastic rocks with varying degrees of intermixed carbonates classified within the Project as calcareous mafic volcaniclastic rocks (CLMV), and lesser occurrences of dominantly sericitic to weakly chloritic calcareous siltstones (CLSI).
2. Transitional calcareous siliciclastic facies rocks including dominantly sericitic to locally chloritic and less commonly fuchsite-bearing calcareous sandstone (CLSS) and sericitic siltstone (SI).
3. A sandstone dominant facies characterized by generally weakly carbonaceous pale to medium-grey, fine to locally coarse-grained, quartz-dominant to sub-arkosic sandstone (SS) with varying scales of intercalated carbonaceous siltstone (CSI) horizons (interlaminations to map-scale interbeds) and less common discontinuous lenses of quartz to locally polymictic quartz-plagioclase-lithic pebble conglomerate (CGL).
4. A laterally extensive siltstone facies generally characterized by iron-carbonate porphyroblastic sericitic to locally weakly chloritic siltstone (SI).
5. A carbonaceous siltstone facies correlative to the Hardscrabble facies of Ferri and Schiarizza (2006) and characterized by moderate to strongly carbonaceous siltstone (CSI) with locally characteristic euhedral diagenetic pyrite and variable intercalations of very fine to fine-grained carbonaceous sandstone.

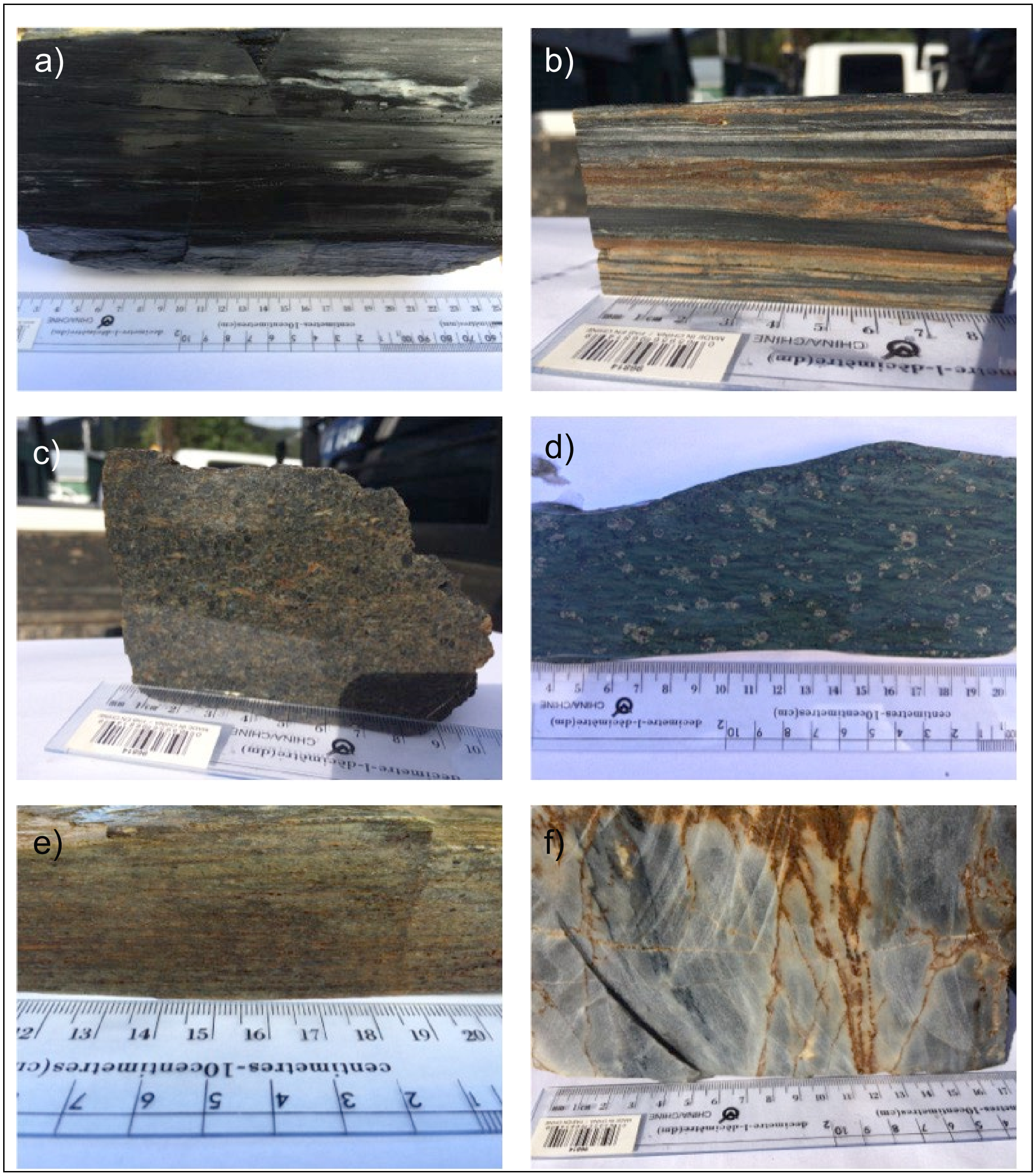
The highest density and largest scale veins at the Cariboo Gold Project are hosted within the rheologically favourable central sandstone facies, sometimes referred to as the "*Target Sandstone*". It should be noted that rocks of both the sericitic siltstone and carbonaceous siltstone facies gradually coarsen moving laterally to the southeast, respectively correlating with micaceous sandstone and carbonaceous sandstone dominant facies in the Mount Proserpine area.



Note that the sequence, presented as commonly drilled, is overturned.

Figure 7-7: Simplified BC Hanging-wall tectonostratigraphy for the Island, Cow, and Barkerville Mountain drill areas

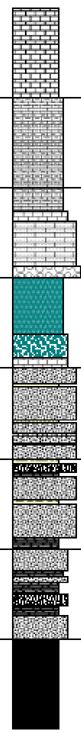
Photographic examples of select lithologies encountered at the Cariboo Gold Project are presented in Figure 7-8. More detailed tectonostratigraphic facies models prepared by Harbort (2017) for Island Mountain – Cow Mountain and Barkerville Mountain sequences are presented (likewise overturned) in Figure 7-9 and Figure 7-10, respectively. Specific details of these models will not be discussed herein.



a) carbonaceous siltstone; **b)** interlaminated carbonaceous siltstone and fine-grained sandstone; c) coarse-grained sandstone; **d)** calcareous mafic volcaniclastic; **e)** calcareous siltstone; **f)** micritic limestone

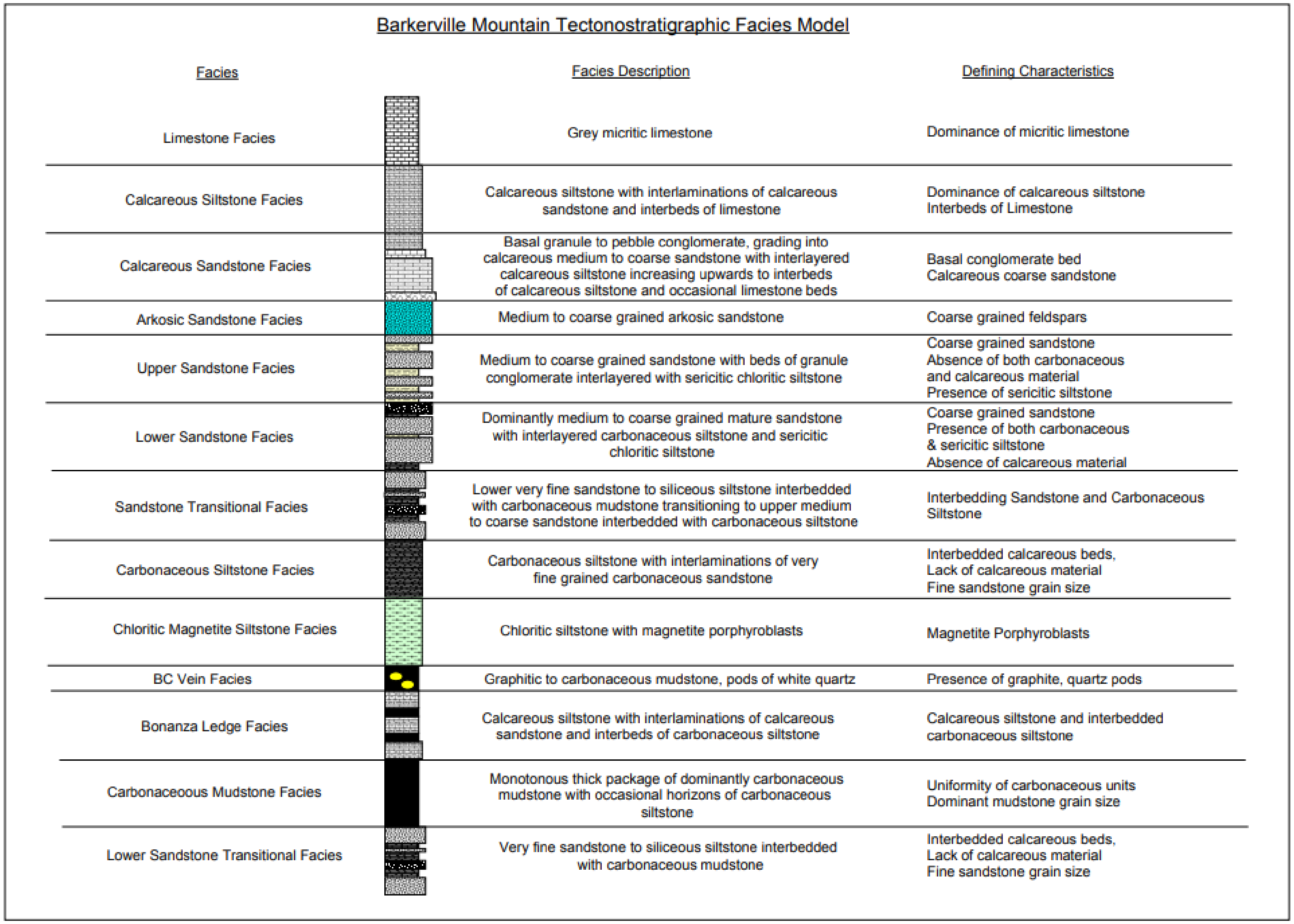
Figure 7-8: Select rock-types observed on the Cariboo Gold Project (Barkerville Gold Mines, 2018)

Island and Cow Mountain Tectonostratigraphic Facies Model



Facies	Facies Description	Defining Characteristics
Limestone Facies	Grey micritic limestone	Dominance of micritic limestone
Calcareous Siltstone Facies	Calcareous siltstone with interlaminations of calcareous sandstone and interbeds of limestone	Dominance of calcareous siltstone Interbeds of Limestone
Calcareous Sandstone Facies	Basal granule to pebble conglomerate grading into calcareous medium to coarse sandstone with interlayered calcareous siltstone increasing upwards to interbeds of calcareous siltstone and occasional limestone beds	Basal conglomerate bed Calcareous coarse sandstone
Calcareous Volcaniclastic Facies	Basal limestone horizon, lower unit of calcareous mostly aphanitic and minor pyroclastic mafic volcaniclastic, extensive upper unit of aphanitic calcareous mafic volcanoclastic with widespread calcite veining stockwork	Basal limestone bed Chlorite rich pyroclastic base Chlorite rich aphanitic upper Calcite veining
Upper Sandstone Facies	Medium to coarse grained sandstone with beds of granule conglomerate interlayered with sericitic chloritic siltstone	Coarse grained sandstone Absence of both carbonaceous and calcareous material Presence of sericitic siltstone
Lower Sandstone Facies	Dominantly medium to coarse grained mature sandstone with interlayered carbonaceous siltstone and sericitic chloritic siltstone	Coarse grained sandstone Presence of both carbonaceous & sericitic siltstone Absence of calcareous material
Basal Transitional Facies	Lower very fine sandstone to siliceous siltstone interbedded with carbonaceous mudstone transitioning to upper medium to coarse sandstone interbedded with carbonaceous siltstone	Interbedded calcareous beds, Lack of calcareous material Fine sandstone grain size
Basal Facies	Monotonous thick package of dominantly carbonaceous mudstone with occasional horizons of carbonaceous siltstone	Uniformity of carbonaceous units Dominant mudstone grain size

Figure 7-9: Detailed tectonostratigraphic facies model for Island and Cow Mountains (Harbort, 2017)



Barkerville Mountain Tectonostratigraphic Facies Model

Facies	Facies Description	Defining Characteristics
Limestone Facies	Grey micritic limestone	Dominance of micritic limestone
Calcareous Siltstone Facies	Calcareous siltstone with interlaminations of calcareous sandstone and interbeds of limestone	Dominance of calcareous siltstone Interbeds of Limestone
Calcareous Sandstone Facies	Basal granule to pebble conglomerate, grading into calcareous medium to coarse sandstone with interlayered calcareous siltstone increasing upwards to interbeds of calcareous siltstone and occasional limestone beds	Basal conglomerate bed Calcareous coarse sandstone
Arkosic Sandstone Facies	Medium to coarse grained arkosic sandstone	Coarse grained feldspars
Upper Sandstone Facies	Medium to coarse grained sandstone with beds of granule conglomerate interlayered with sericitic chloritic siltstone	Coarse grained sandstone Absence of both carbonaceous and calcareous material Presence of sericitic siltstone
Lower Sandstone Facies	Dominantly medium to coarse grained mature sandstone with interlayered carbonaceous siltstone and sericitic chloritic siltstone	Coarse grained sandstone Presence of both carbonaceous & sericitic siltstone Absence of calcareous material
Sandstone Transitional Facies	Lower very fine sandstone to siliceous siltstone interbedded with carbonaceous mudstone transitioning to upper medium to coarse sandstone interbedded with carbonaceous siltstone	Interbedding Sandstone and Carbonaceous Siltstone
Carbonaceous Siltstone Facies	Carbonaceous siltstone with interlaminations of very fine grained carbonaceous sandstone	Interbedded calcareous beds, Lack of calcareous material Fine sandstone grain size
Chloritic Magnetite Siltstone Facies	Chloritic siltstone with magnetite porphyroblasts	Magnetite Porphyroblasts
BC Vein Facies	Graphitic to carbonaceous mudstone, pods of white quartz	Presence of graphite, quartz pods
Bonanza Ledge Facies	Calcareous siltstone with interlaminations of calcareous sandstone and interbeds of carbonaceous siltstone	Calcareous siltstone and interbedded carbonaceous siltstone
Carbonaceous Mudstone Facies	Monotonous thick package of dominantly carbonaceous mudstone with occasional horizons of carbonaceous siltstone	Uniformity of carbonaceous units Dominant mudstone grain size
Lower Sandstone Transitional Facies	Very fine sandstone to siliceous siltstone interbedded with carbonaceous mudstone	Interbedded calcareous beds, Lack of calcareous material Fine sandstone grain size

Figure 7-10: Detailed tectonostratigraphic facies model for Barkerville Mountain (Harbort, 2017)

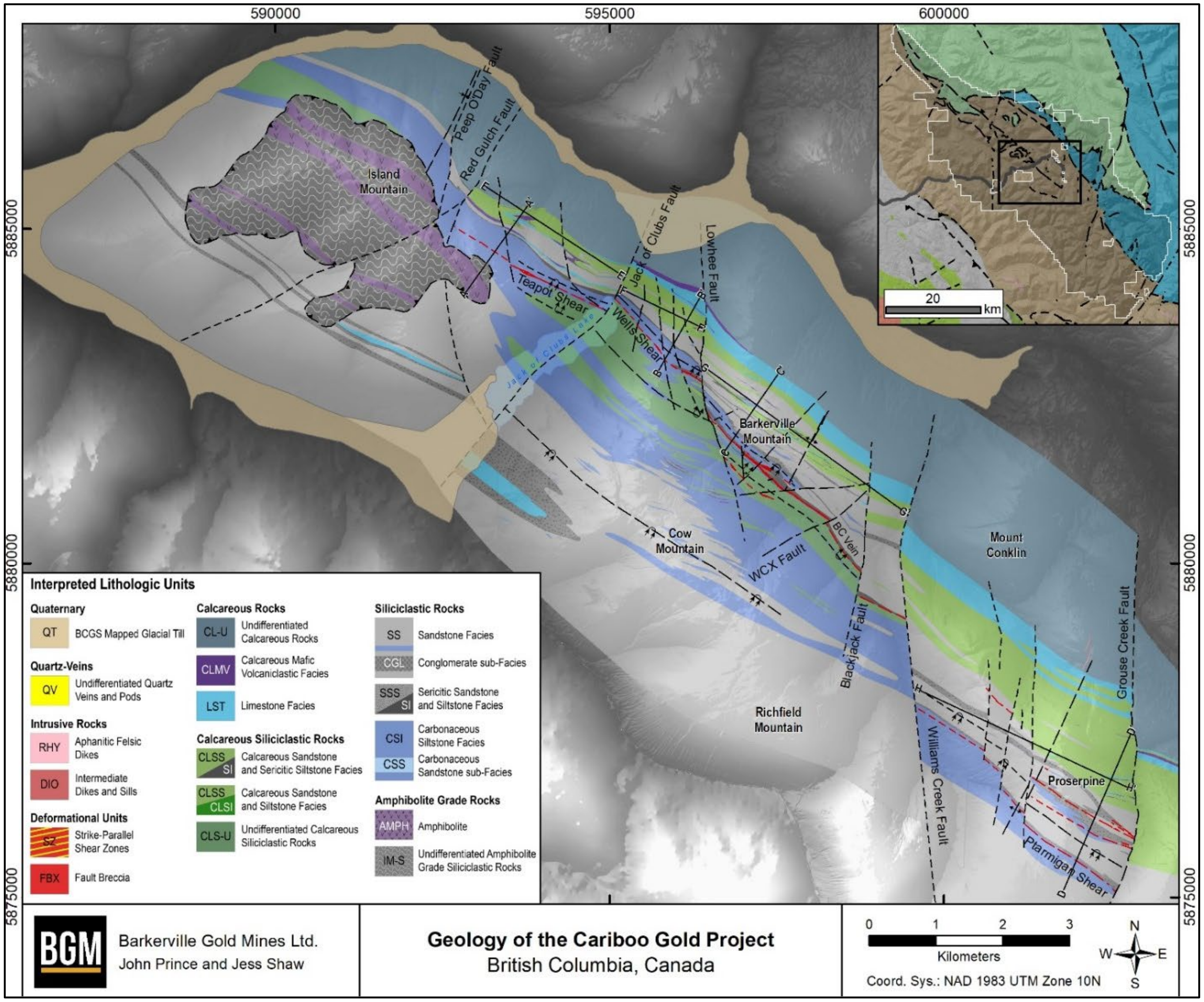
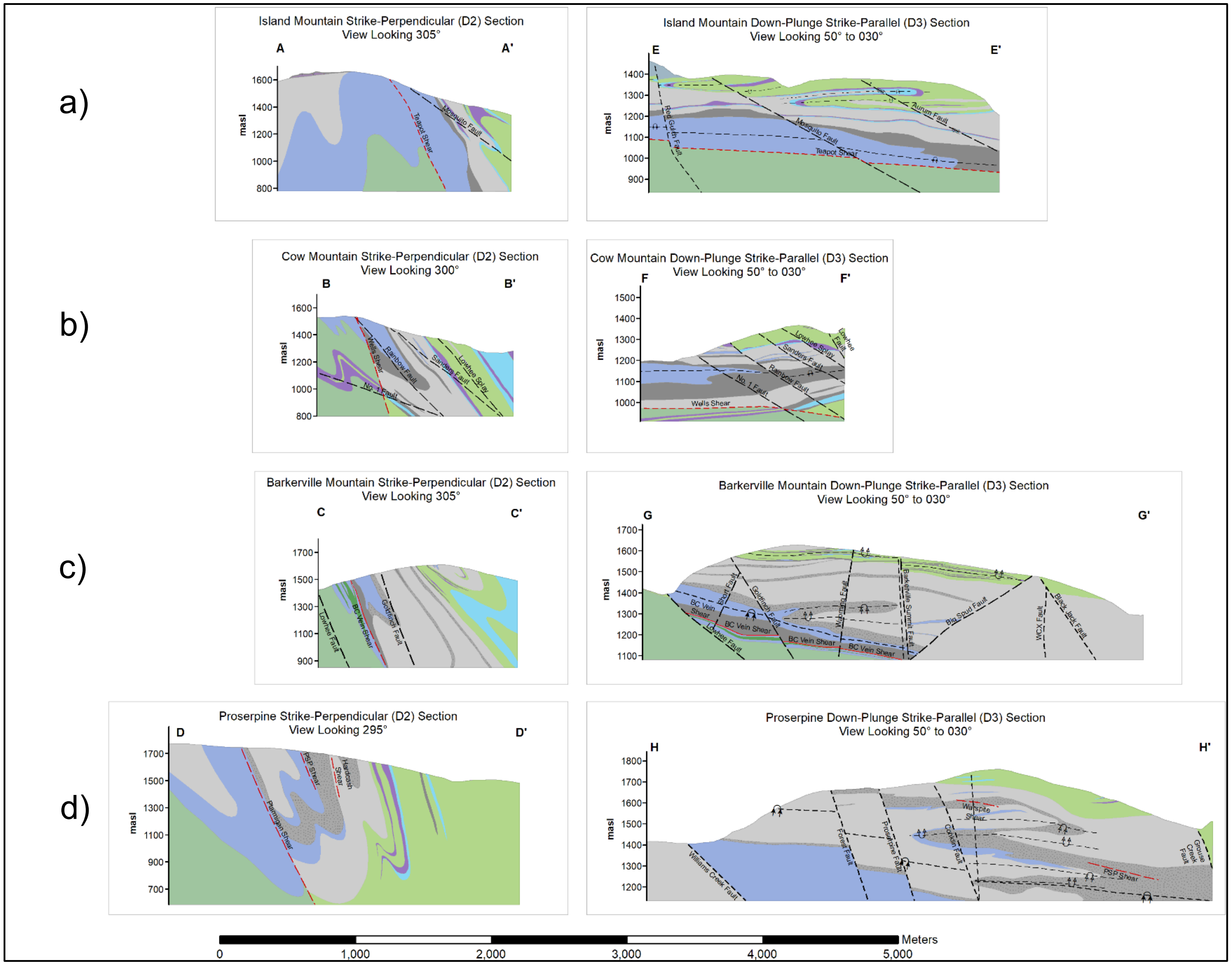


Figure 7-11: Geologic map of the core Cariboo Gold Project Area; corresponding sections presented below (Shaw and Prince, 2019)



a) Island Mountain sections; **b)** Cow Mountain sections; **c)** Barkerville Mountain sections; **d)** Mount Proserpine sections

Figure 7-12: Vertical strike-perpendicular (left) and down-plunge strike-parallel (right) cross-sections for the core Cariboo Gold Project area (Shaw and Prince, 2019)

7.4. Structural Geology

A minimum of four phases of deformation are recognized within the Cariboo Gold Project area, resulting in a complex array of intersecting and cross-cutting deformational fabrics (Figure 7-13).

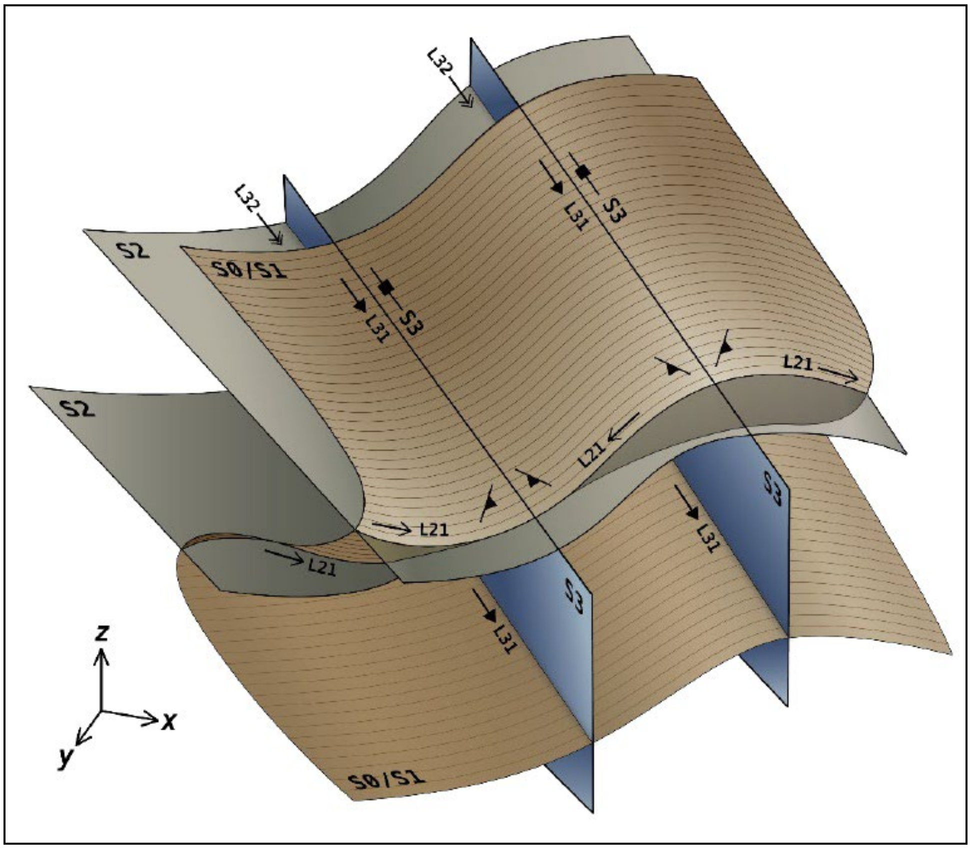


Figure 7-13: Relative orientation of variable structures arising from polyphase deformation within the Wells-Barkerville area (Shaw, 2018)

7.4.1. Deformation 1

The earliest recognizable phase of deformation (D1) in the Cariboo Gold District is best evidenced by the presence of a penetrative slaty to phyllitic cleavage (S1) developed axial planar ("AXPL") to rarely observed transpositional folds (F1). The S1 foliation is the generally the dominant fabric throughout the area and is predominantly defined by phyllosilicate minerals (sericite and chlorite). F1 folds are rarely observed, expressed as highly asymmetric and isoclinal isolated hinges of rootless folds (Figure 7-14a). The D1 event is commonly attributed to emplacement of the Slide Mountain allochthon and is believed to be transitional into D2.

7.4.2. Deformation 2

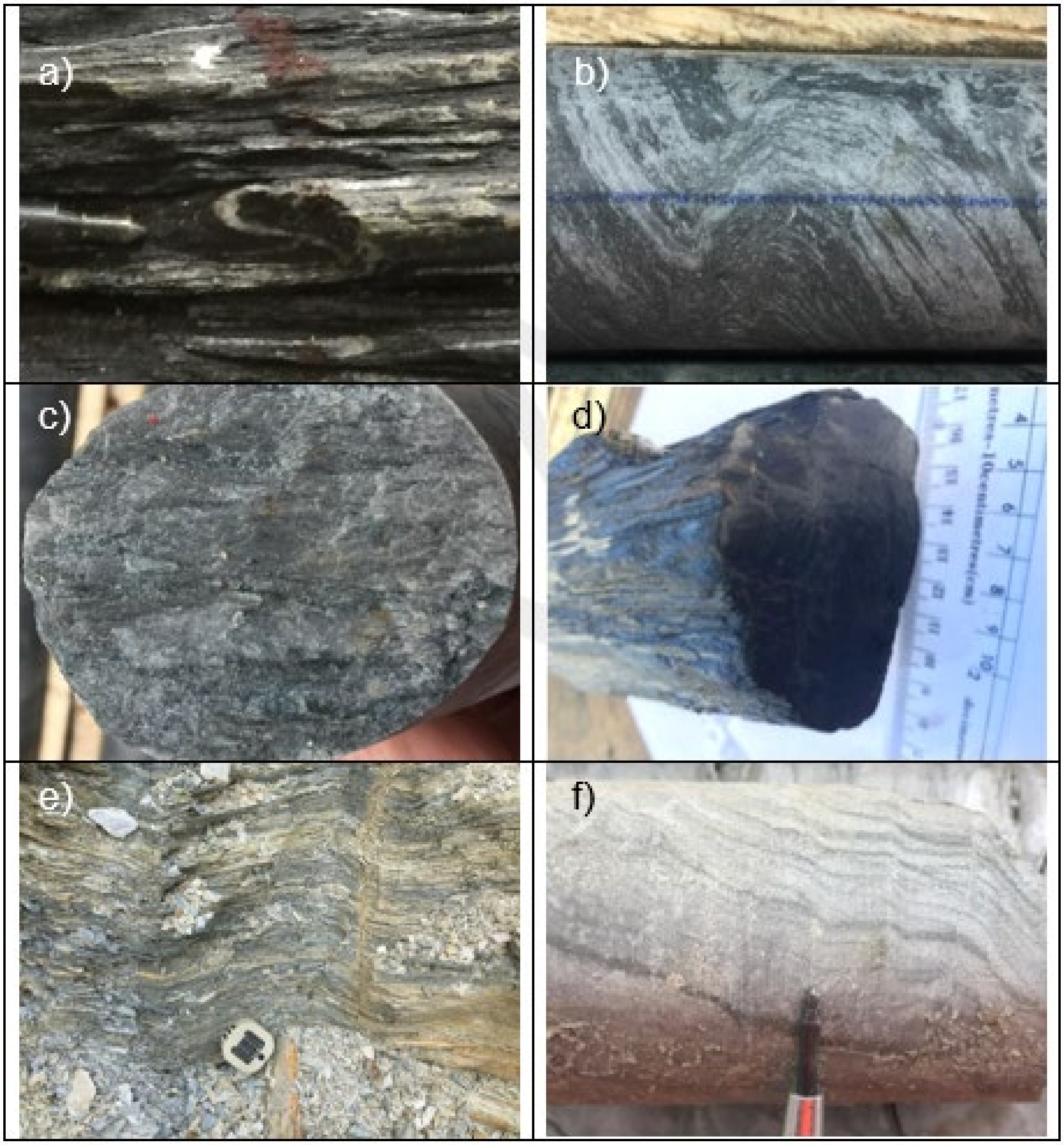
A secondary phase of deformation (D2) accommodated northeast-southwest shortening with the development of close to locally isoclinal F2 folds moderately inclined with vergence toward the SW in the Barkerville trend. Folding was accompanied by the development of a disjunctive to locally phyllitic axial planar crenulation cleavage (S2) (Figure 7-14b) striking west-northwest with an average dip ~50° to the northeast within the Barkerville trend. A well-developed S1-S2 intersection lineation (Figure 7-14c) approximates the F2 axis. The S2 foliation becomes more penetrative where proximal to F2 hinge zones, making it difficult to discern between S1 and S2 foliations locally. Rod-shaped L-tectonites developed under uniaxial strain (Figure 7-14d) are also observed within F2 hinge zones and are particularly well-formed within the carbonaceous siltstone facies. The long axes of replacement mineralization at Mosquito Creek and Island Mountain are parallel to these lineations, within the hinge zones and parallel to the axes of F2 folds.

This second phase of deformation is likely related to the progressive collision of the Quesnel terrane. The final phase of northeast-southwest shortening (D3 of Ferri and Schiarizza, 2003) is characterized by the local development of a steeply dipping S2-strike parallel, disjunctive fracture set within the Barkerville trend and is grouped within the D2 event at the Cariboo Gold Project.

7.4.3. Deformation 3

A tertiary phase of deformation (D3) accommodated strike-parallel (northwest-southeast) shortening with the development of gentle F3 folds with a generally disjunctive sub-vertical axial planar cleavage (S3). The geometry, scale, and deformation mechanics involved with the formation of F3 folds are significant contributors to structural control and distribution of vein-hosted Au-mineralization within the Barkerville trend. With continued shortening under more brittle crustal conditions, local extension in the hinge zones of F3 antiforms resulted in the opening of S3-parallel Mode 1 fractures. The primary Au-bearing vein systems in the region are classified as axial planar because they parallel the S3 disjunctive cleavage and are believed to have exploited and/or contributed to the progressive opening of these fracture systems.

F3 folds are observable at the hand sample and outcrop scale but can also reach wavelengths exceeding 1km (Figure 7-14e,f and Figure 7-15). The geometry of the larger-scale F3 folding is best recognized by changing dip angles through S3 cleavage fanning, folding of the L21 intersection lineation, and by deflections in S1 strike (Shaw and Prince, 2019).



a) F1 isoclinal fold hinges attributed to remnant transposed layering during D1; **b)** F2 folds with weakly developed S2 foliations AXPL to folds; **c)** L21 intersection lineation; **d)** rod-shaped L-tectonite fold hinge structure of F2 fold axis; **e)** Open gentle F3 folds with weakly developed spaced AXPL cleavage; **f)** Weakly developed F3 crenulation cleavage**.**

Figure 7-14: Deformation phases and associated fabrics on the Cariboo Gold Project (Barkerville Gold Mines, 2018)

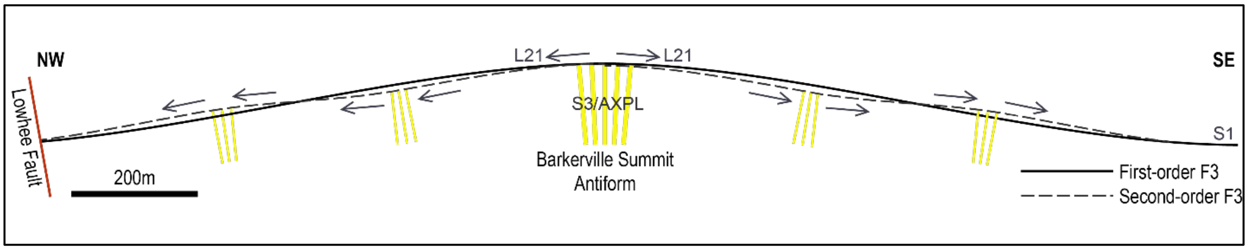


**Figure 7-15: To scale schematic strike parallel Barkerville Mountain section illustrating the geometries of first and second order F3 folds
(Shaw and Prince 2019)**

7.4.4. Deformation 4

A final brittle phase of deformation (D4) is recognized by the development of both S3-parallel and N-S trending faults with constrained relative surface offsets (most commonly dextral) locally exceeding 1,000 m (e.g., Grouse Creek and Williams Creek faults). The S3-parallel D4 faults may be post-orogenic relaxation structures reactivating and inverting D3 reverse faults, or simply normal faults exploiting zones of high density S3 fractures. The N-S striking D4 faults may likewise form as normal structures linking pre-existing fracture systems but are locally characterized by dominant components of dextral strike-slip. This latter observation suggests either a syn-relaxation component of dextral transtension, or an independent, post-relaxation phase of dextral transpression.

The presence of brecciated mineralized quartz vein material within D4 structures has been observed in drill core (Figure 7-15a) and was reported by Skerl (1948), indicating that at least some of the movement on D4 faults must postdate mineralization. D4 structures (e.g., Lowhee fault) are also observed to cross-cut and offset mineralized corridors. Many of the best-mineralized prospects within the Barkerville Trend are formed adjacent to the D4 faults, e.g., Shaft Zone, Valley Zone, Lowhee Zone. The observed spatial association between vein zones and major D4 structures may simply reflect the preferential formation of each within zones of high S3 fracture density.

7.5. Mineralization and Alteration

Gold-bearing veins and replacement-style mineral deposits in the Cariboo Gold Project are inter-related but can be subdivided into five principal types:

1. Fault-fill shear veins in fractured early-phase quartz lenses within carbonaceous mud and silt-rich, foliation sub-parallel (northwest-southeast trending) shear zones (BC Vein-style).
2. Sub-vertical, foliation-perpendicular (northeast-southwest trending) so-called axial-planar ("AXPL") veins structurally controlled by late-stage extensional fractures preferentially formed in rheologically brittle sandstone units.

3. Foliation-oblique so-called extensional ("EXT") veins characterized by greatest mineral potential where in association with AXPL vein systems.
4. Sulphide-replacement bodies structurally controlled by and elongate parallel to the hinges of F2 folds within calcareous sandstones and limestones (Mosquito Creek-style).
5. Fault bound sulphide-replacement bodies within calcareous siltstones (Bonanza Ledge-style).

Photographic examples of varying mineralization styles are presented in Figure 7-16 and Figure 7-17

7.5.1. Vein-related Mineralization

Axial planar quartz veins are the primary source of vein hosted Au within the Barkerville trend, defining the fundamental architecture of the Mosquito Creek, Shaft, Valley, Cow Mountain, Lowhee, and KL deposits. Individual veins range in width from millimeters to several meters. Where density is high, AXPL veins form mineralized corridors extending for up to a few hundred meters along strike and down-dip within rheologically prospective units. Though often advantageous to model and describe AXPL veins as tabular bodies, their morphologies are generally more complex. They are often observed to pinch and swell in thickness with undulatory margins, and commonly network with (and/or refracture and cross-cut) earlier extensional ("EXT") vein systems. Au-bearing EXT veins and Au-rich sulphide replacement bodies are intimately related to AXPL vein systems, both spatially and presumably in terms of mineralizing fluid dynamics.

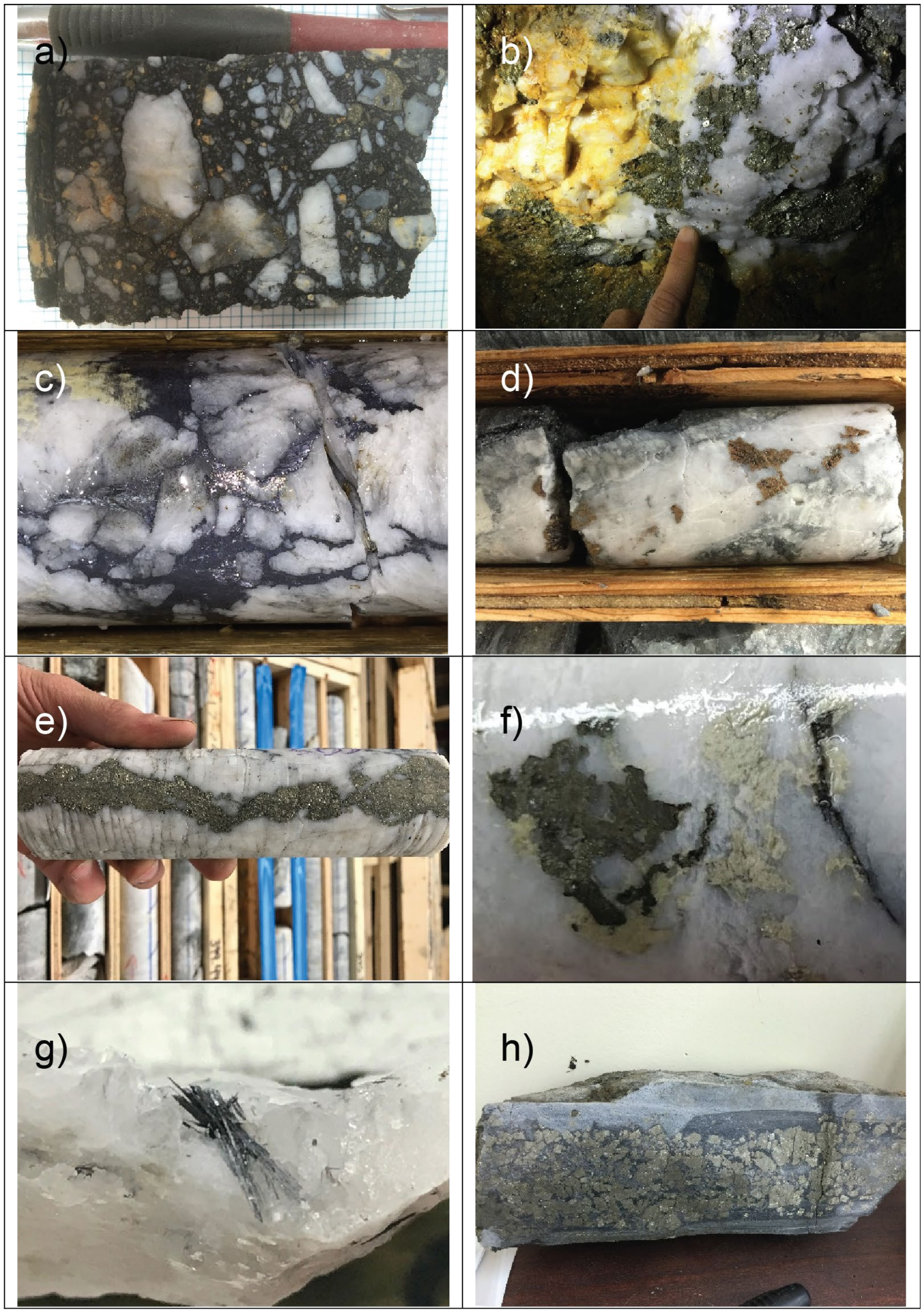
The composition of both the AXPL and EXT veins is quartz dominant. Lesser iron carbonate usually occurs as vein-marginal or clustered intergrowths and vein-hosted sericite is also common. Pyrite is the most prevalent sulphide mineral across all deposits, with vein content ranging from trace amounts to tens of percent (Figure 7-16b). Pyrite content appears to have a direct association with gold content within veins. Galena (Figure 7-16c) and arsenopyrite are also common vein-hosted sulphides, occurring in individual veins in amounts up to several percent and locally exceeding pyrite content. Additional sulphide minerals generally occurring in trace amounts include pyrrhotite, sphalerite (Figure 7-16d), chalcopyrite and (rarely) argentite. Pb-Ag-Bi sulphosalts including cosalite are found in trace amounts within veins and generally have a close association with elevated Au grades (Figure 7-16g). Scheelite is also locally observed, generally as secondary fill within quartz vein vugs.

Veining can be subdivided into at least two temporally separate events. Both events are characterized by a quartz - iron carbonate ± sericite hydrothermal fluid, but they differ greatly in their Au potential. Early veins may host sulphides (mostly Py, Po, Gal, Sph ± Cpy) but tend to be barren of Au except were mineralized by later fluids. The later, Au bearing veins tend to be more sulphide rich (mostly Py, Aspy, Gal, Sph ± Arg ± Cos) and cross-cut earlier veining (Figure 7-16e). In these cases, sulphides may be observed filling void space or occasionally replacing the iron-carbonate within the early veins (Figure 7-16f), a reaction which is known to precipitate Au from solution:

$$FeCO_3 + Au(HS)_2^- = FeS_2 + CO_2 + H_2O + Au \quad \text{(Zhu et al., 2011)}$$

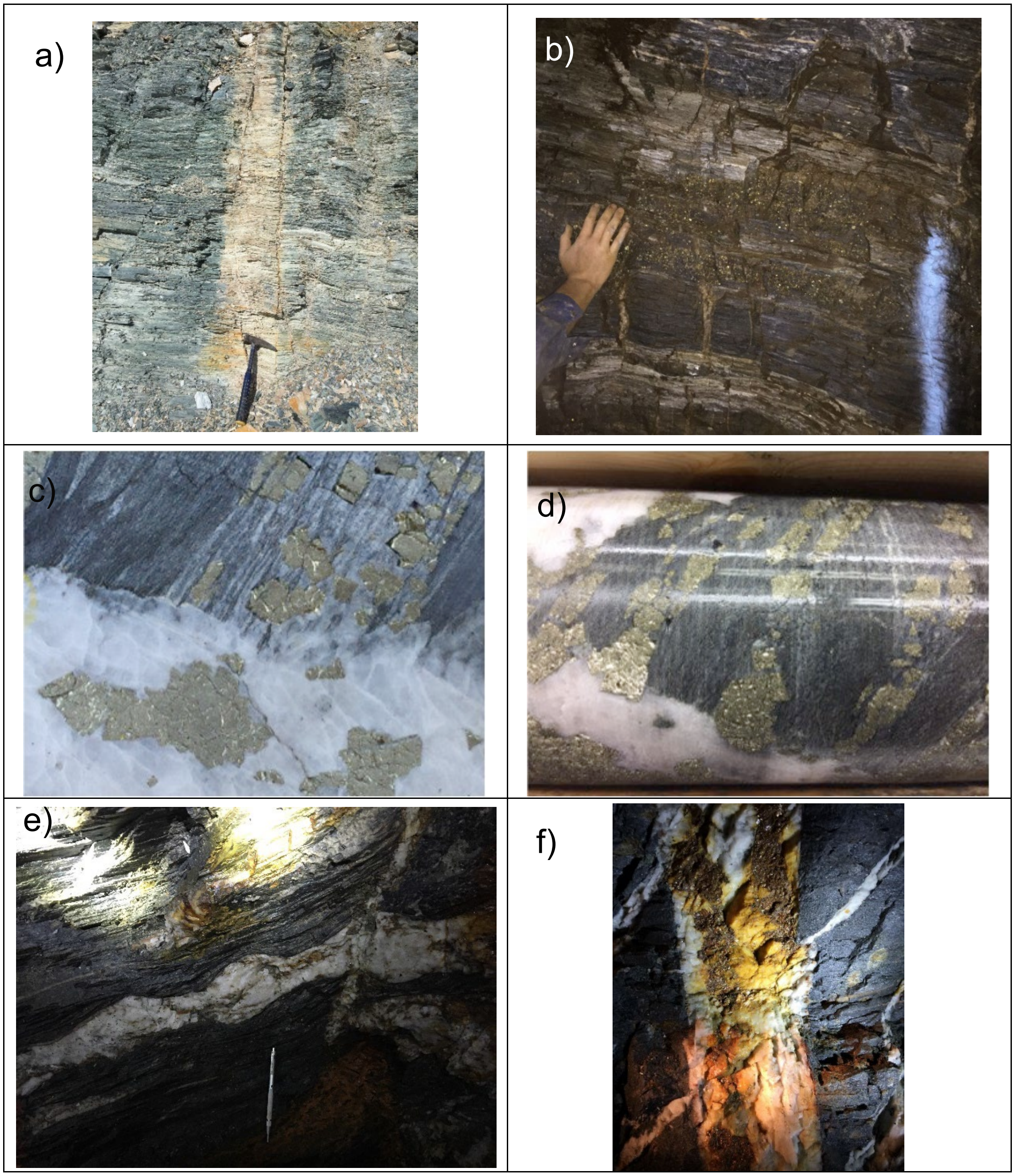
7.5.2. Replacement-style Mineralization

Replacement mineralization (Figure 7-16h) in calcareous siliciclastic and carbonate facies rocks varies from fine to coarsely crystalline pyrite with rare arsenopyrite. This style of mineralization is thought to be the result of a reaction between the slightly acidic, Au bearing hydrothermal fluid and carbonate minerals within the host rocks which results in the simultaneous dissolution of carbonate and precipitation of gold-rich sulphide. Bonanza Ledge-style replacement mineralization is hosted in calcareous siltstone and consists entirely of fine-grained pyrite mineralized material' . Sulphide content in replacement mineralized material' types is generally high, ranging from 10% (replacing thin calcareous bands) to massive (replacing entire beds). Mosquito Creek-style replacement bodies in limestones and calcareous sands contain the most consistently high Au grades in the Cariboo Gold Project. These replacement bodies are thought to be both spatially and temporally related to mineralized AXPL vein systems (Figure 7-17b).



a) BC Vein-style fault-fill (breccia annealing) mineralization; **b)** Pyrite in quartz vein; **c)** Galena in quartz vein; **d)** Sphalerite in quartz vein; **e)** Pyrite deposition along the centerline of veins in pre-existing inter-crystal void space; **f)** Pyrite replacement of iron-carbonate; **g)** Cosalite in quartz vein; **h)** Sulphide replacement mineralization.

Figure 7-16: Mineralization styles observed on the Cariboo Gold Project (Barkerville Gold Mines, 2018)



a) Vertical S3 structures bounding sericite-Fe-carbonate alteration; **b)** Vertical AXPL veins acting as multiple feeders to sulphide replacement body; **c)** Diffuse AXPL vein boundary with silica bleeding into replacement band; **d)** Outgrowths of pyrite from vein into carbonate replacement bands; **e)** Semi-vertical AXPL vein cutting across boudinaged layer-parallel vein; **f)** Vertical AXPL vein cross-cutting oblique-dipping shear veins.

Figure 7-17: Structural controls on the mineralization of the Cariboo Gold Project (Barkerville Gold Mines, 2018)

7.5.3. Vein-related Alteration

A schematic illustrating the relationships between mineralized quartz veins and their associated alteration halos as observed within the Cariboo Gold Project is presented in Figure 7-18. Large veins tend to exhibit a strong silica alteration halo with associated vein halo pyrite (Figure 7-19a). Stepping outward, moderate silicification persists, accompanied by moderate sericite, with pyrite present only in trace amounts (Figure 7-19b). A widespread moderate silica envelope with patchy but intense silica closer to the veins is observed within high density vein corridors. Moving further from the fluid source, silicification becomes weak and sericite is present as the dominant alteration mineral (Figure 7-19). The distal-most alteration halo is characterized by iron carbonate and lesser sericite (Figure 7-19d). Clay minerals (e.g., illite, smectite) and chlorite may be presented as vein forming minerals outside of mineralized corridors (Figure 7-19e, f).

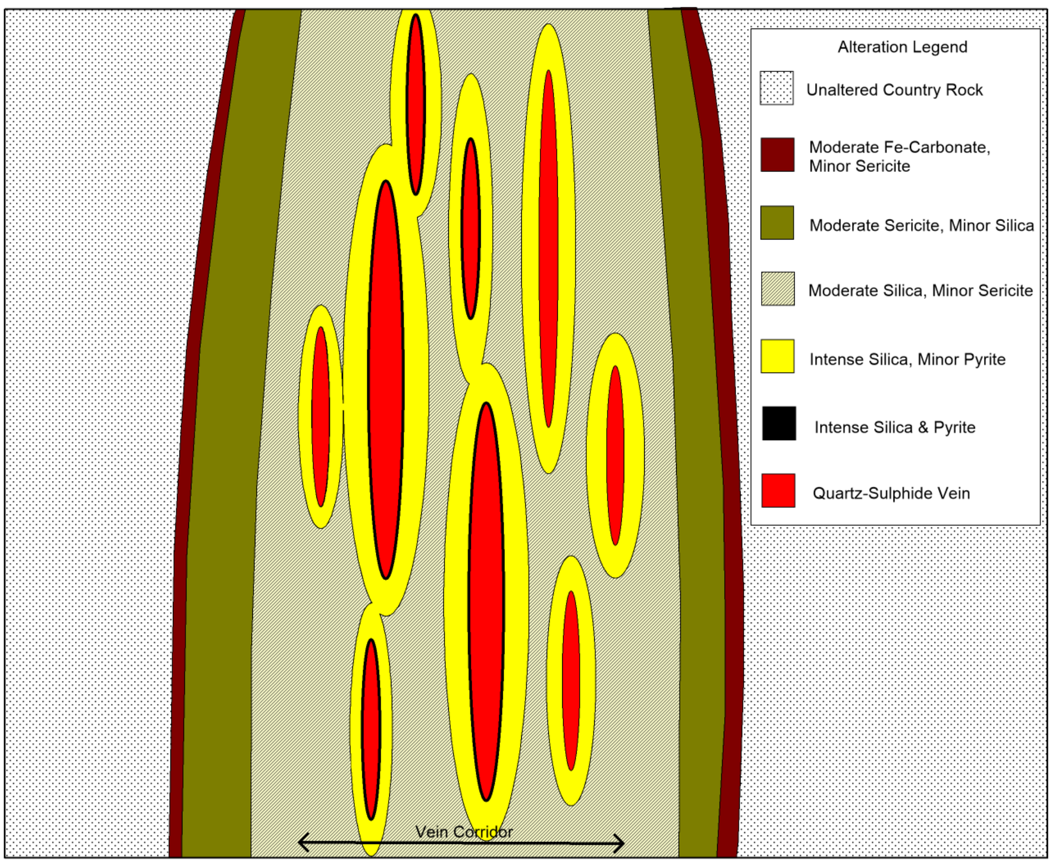
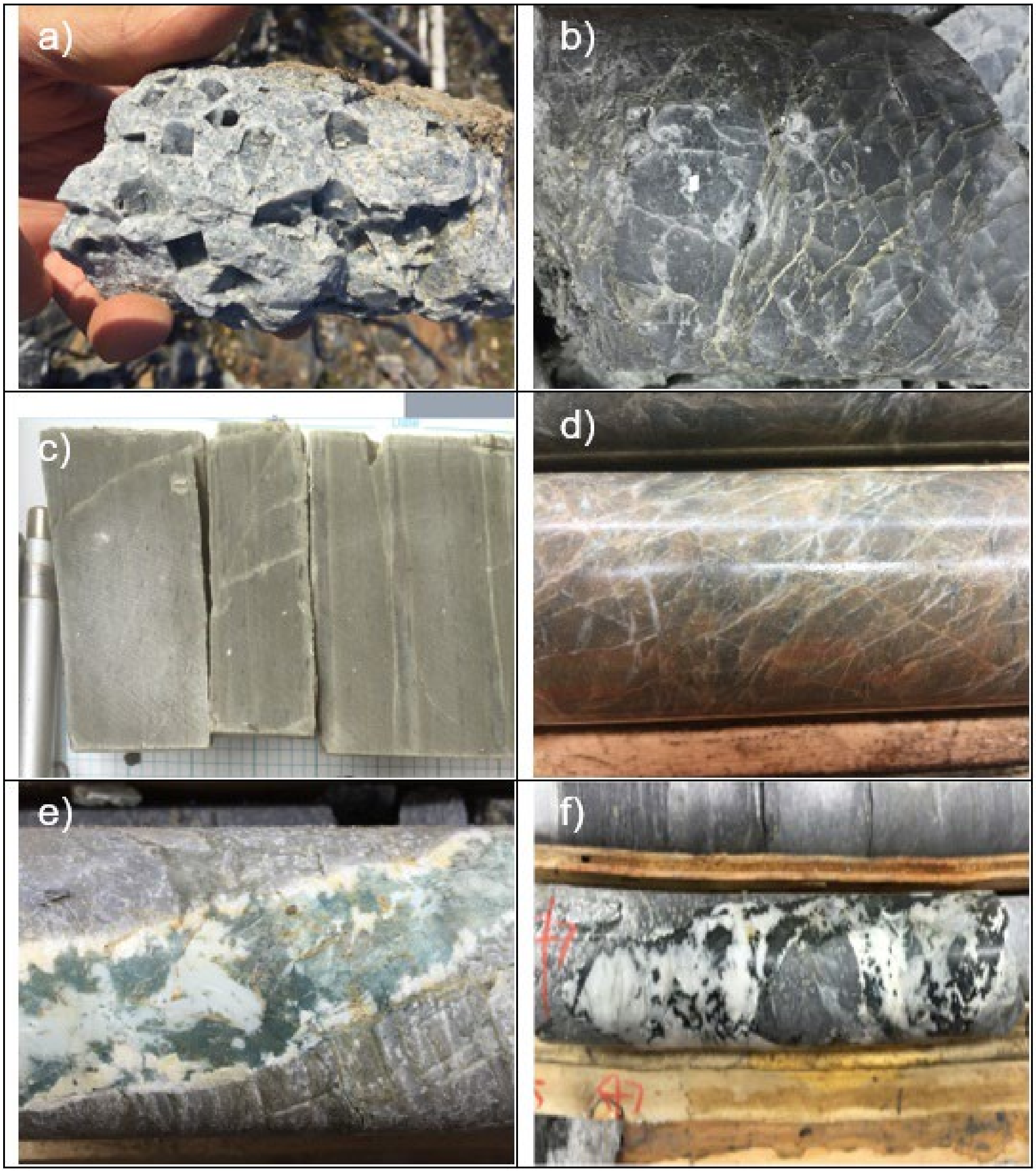


Figure 7-18: Schematic vertical section (looking NE) of vein alteration observed at the Cariboo Gold Project (Barkerville Gold Mines, 2018)



a) Intense silica alteration with boxwork textures after pyrite in vein margin; **b)** Intense silica alteration with trace pyrite adjacent to vein margin; **c)** Moderate sericite alteration distal from vein array; **d)** Iron carbonate alteration distal from vein array; **e)** Late argillic alteration in vertical AXPL vein; **f)** Late chlorite alteration in vertical AXPL vein

Figure 7-19: Vein-related alteration styles at the Cariboo Gold Project (Barkerville Gold Mines, 2018)

7.6. Age of Mineralization

Age of mineralization in the Cariboo Gold District is currently constrained to an approximate 20 m.y. window straddling the Jurassic-Cretaceous boundary. ^{40}Ar-^{39}Ar dates obtained from white mica in Au-bearing veins and replacement bodies by Rhys et al. (2009), Mortensen et. al. (2011) and Allen et al. (2017) are presented in Figure 7-19)

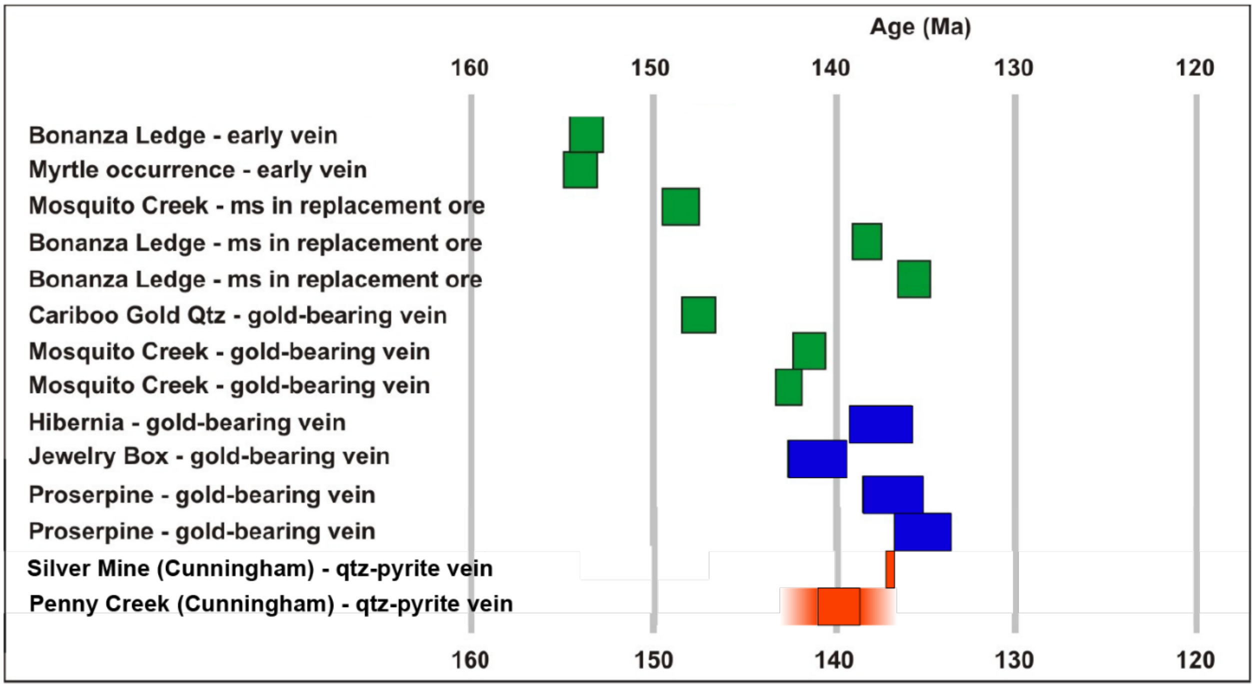


Figure 7-20: Compilation plot of $^{39}Ar/^{40}Ar$ age data from white mica in veins and replacement bodies in the Cariboo Gold District
Green blocks from Rhys et al. (2009); blue blocks from Mortenson et al. (2011); red blocks from Allen et al. (2017)
Modified from Mortensen et. al. (2011).

8. Deposit Types

The Cariboo Gold Project shares many characteristics with an orogenic gold deposit model (Chapman and Mortensen, 2016). This class of deposit is typified by deformed and metamorphosed mid-crustal blocks and major structures, inherent products of orogenesis (Figure 8-1). Orogenic gold deposits span the entire breadth of the province of British Columbia, occurring predominantly within two main belts. The westerly belt is associated with accreted pericratonic terranes linked to Late Cretaceous to Paleocene movement on crustal-scale dextral strike-slip fault systems along the western margin of the Stikine terrane, and eastern Coast Belt (e.g., Bralorne-Pioneer, Atlin, Cassiar). The easterly belt is crudely cospatial with the Jurassic to Cretaceous accretion of the Intermontane terranes and autochthonous strata of the ancestral North American (e.g., Cariboo, Sheep Creek) (Allan, 2017). Orogenic deposits have significant economic importance, as they are known to host auriferous mineralization as high-grade vein deposits, low-grade bulk-tonnage lode deposits, and are intimately linked with substantial placer accumulations (Goldfarb et al., 2001; 2005).

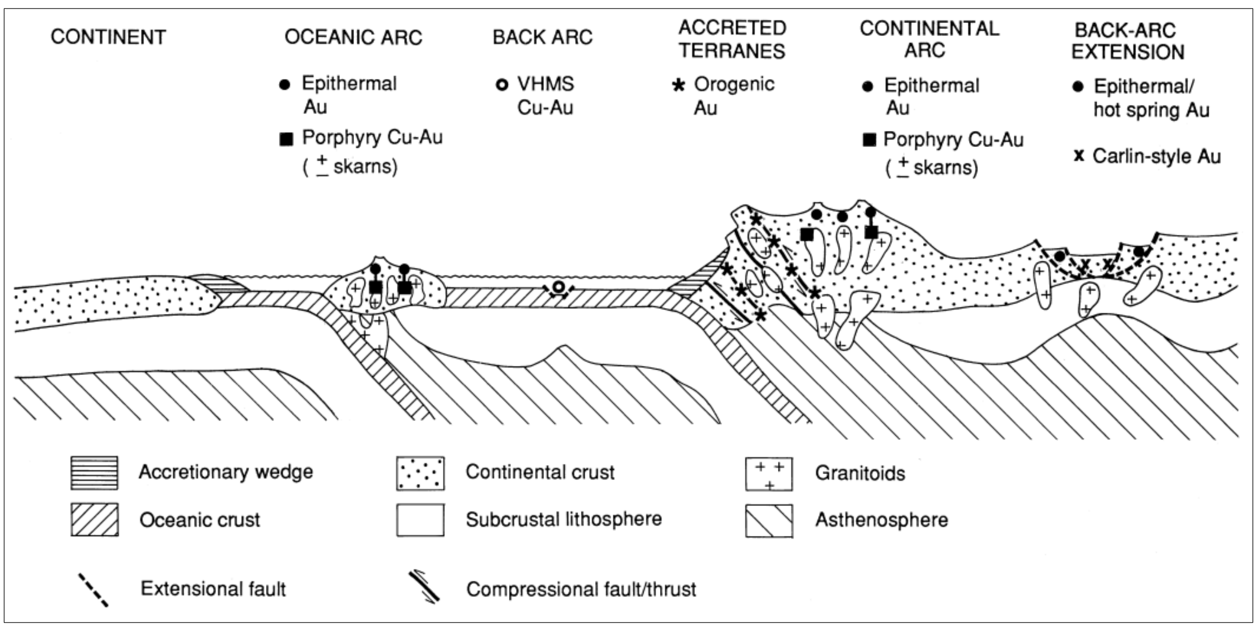


Figure 8-1: Tectonic settings of gold-rich epigenetic mineral deposits
Orogenic gold deposits are emplaced during compressional to transpressional regimes and throughout much of the upper crust, in deformed accretionary belts adjacent to continental magmatic arcs.
(Modified after Groves et al. 1998)

The majority of orogenic gold deposits in metamorphic terranes, such as the Barkerville terrane, are found adjacent to first-order, deep-crustal fault zones, which show complex structural histories and may extend along strike for hundreds of kilometres with widths of as much as a few thousand metres (Goldfarb et al., 2005). Most orogenic gold deposits occur in greenschist facies rocks, but significant orebodies can be present in both lower and higher-grade rocks (Phillips and Powell, 2010). Hydrothermal fluids are generated from metamorphic dehydration reactions along deep-crustal fault zones, driven by episodes of major pressure fluctuations during seismic events (Cox et al., 2005). Gold mineralization is associated with orogenic silica-carbonate-sericite-pyrite stable fluids moving along secondary permeability controlled by metamorphic fabrics, vein arrays, faults, lithologic contacts, and rheological contrasts (Groves et al., 2003). Gold deposits form as simple to complex networks of gold-bearing, laminated quartz-carbonate shear veins along second- and third-order faults, particularly at jogs or changes in strike along major deformation zones. Mineralization styles vary from stockworks and breccias in shallow, brittle regimes, through laminated crack-seal veins and sigmoidal vein arrays in brittle-ductile crustal regions, to replacement- and disseminated-type orebodies in deeper, ductile environments (Groves et al., 2003). Mineralization is syn- to late-deformation and typically post-peak metamorphism, and commonly associated with silica-carbonate-sericite-pyrite alteration. Gold is largely confined to the quartz-carbonate vein network, but may also be present in significant amounts within iron-rich sulphidized wall-rock selvages, or within silicified and sulphide-rich replacement zones (Dubé and Gosselin, 2007). One of the key structural factors for gold mineralization emplacement is often a late strike-slip movement event that reactivates earlier-formed structures within the developing orogen (Goldfarb et al., 2001). The following aims to highlight economically significant deposit types within the Cariboo Gold Project.

8.1. Vein Deposits

Inter-related vein systems are the principal source of gold within the Barkerville trend and are a key fluid pathway for sulphide mineralization. Axial planar ("AXPL") quartz veins represent the dominant vein system hosting gold-rich sulphide mineralization for the Mosquito Creek, Shaft, Valley, Cow Mountain, Lowhee, and KL zone deposits. AXPL veins are classified as such since they are believed to have exploited and/or contributed to the progressive opening of axial planar fracture systems in the hinge zones of F3 folds. AXPL veins parallel the sub-vertical F3 axial planar disjunctive cleavage (S3) and are classifiable by a perpendicular relationship with S1 foliation (Figure 8-2).

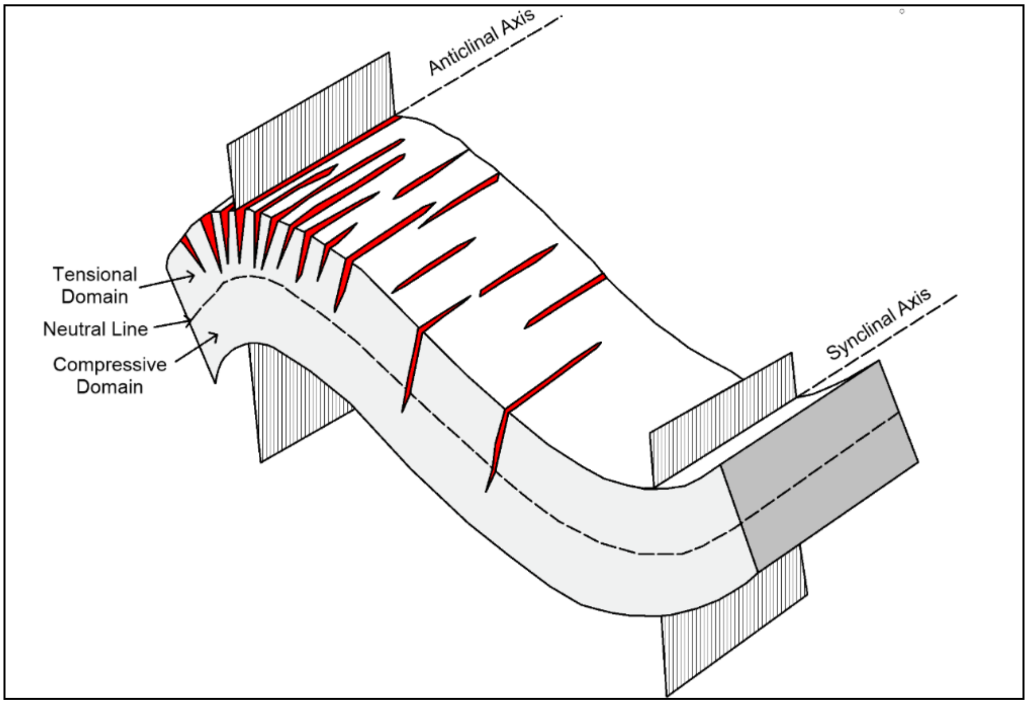


Figure 8-2: Model for the formation of vertical AXPL veins in the hinges of F3 folds on the Cariboo Gold Project (Harbort, 2017a)

Extensional ("EXT") veins are classified by an orientation oblique to S1-foliation (Figure 8-3). Significant scatter in both drill hole and surface datasets suggests that veins classified as EXT may represent multiple variably oriented S1-oblique sub-populations. At least one population of EXT veins is parallel to the S2 cleavage and suggests veins classified as EXT may have exploited S2 surfaces.

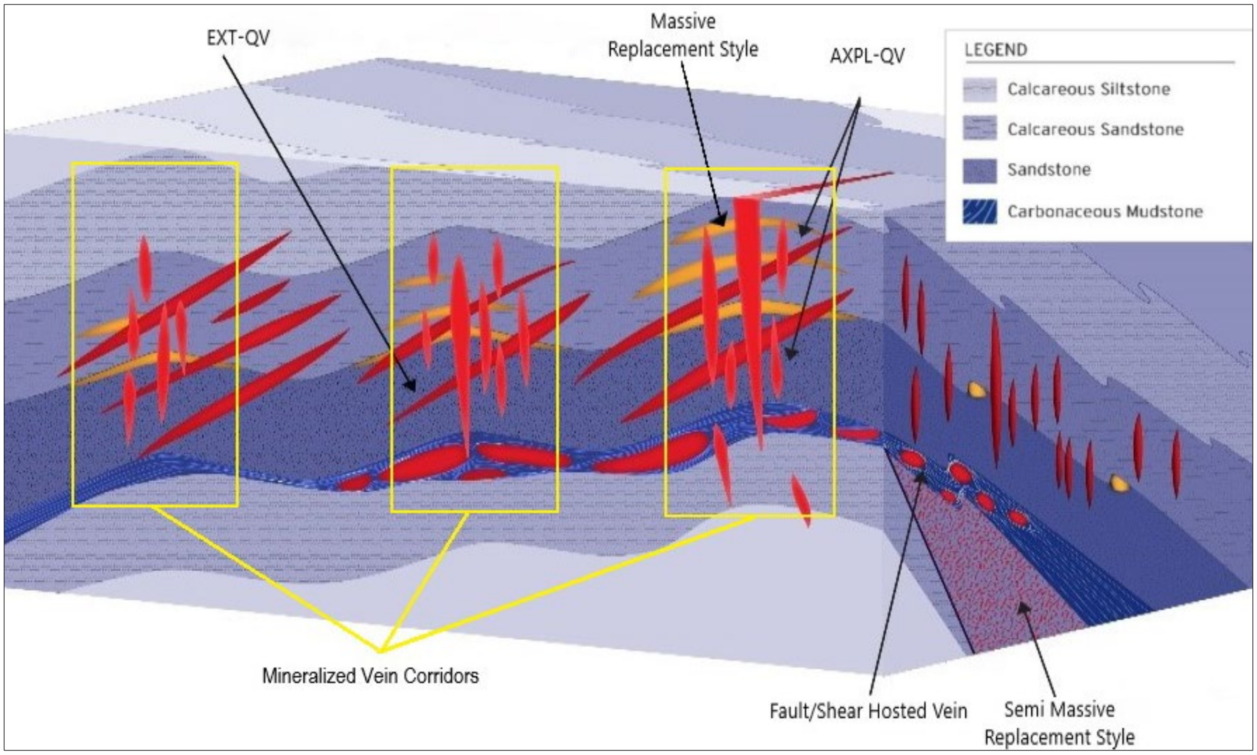


Figure 8-3: Composite model of the mineralization styles on the Cariboo Gold Project Illustrating oblique EXT quartz veins (dark red), Massive replacement style in the hinges of F2 folds (orange), sub vertical AXPL quartz veins along S3 surfaces (light red), D2 related Fault. Shear hosted (BC Vein) and semi massive replacement (Bonanza Ledge) (modified after Harbort, 2017a).

Veins range in width from millimetres to several metres and are termed vein corridors when highly concentrated over 2 metres ("m") in width and up to hectometers in strike. Vein corridors are planar structures, typified as steeply dipping, striking N020-N050, 100-700 m downdip and extending 100-300 m along strike. The principal aims of exploration and infill drilling programs involve testing the extent and concentrations of AXPL vein corridor deposits, with targeting based in part on proximity to identifiable large-scale F3 hinge zones (Shaw and Prince, 2019).

8.2. Replacement Deposits

Replacement-style gold mineralization contains the most consistently high gold grades in the Cariboo Gold Project and were the main target for the historic underground Mosquito Creek Mine on Island Mountain. Semi-massive replacement style mineralization observed at the historically mined Bonanza Ledge is fault-bounded in the footwall of the BC Vein shear. The replacement deposits observed at Island Mountain and Mosquito Creek are thought to be structurally controlled in the hinges of F2 folds and the formation of L-tectonites and considered contemporaneous with the AXPL veining (Figure 8-4). These rod-like structures which parallel F2 fold axis' act as conduits for hydrothermal fluids which react with the pH buffered calcareous sediments. This reaction simultaneously creates pore space and precipitates gold-rich sulphides.

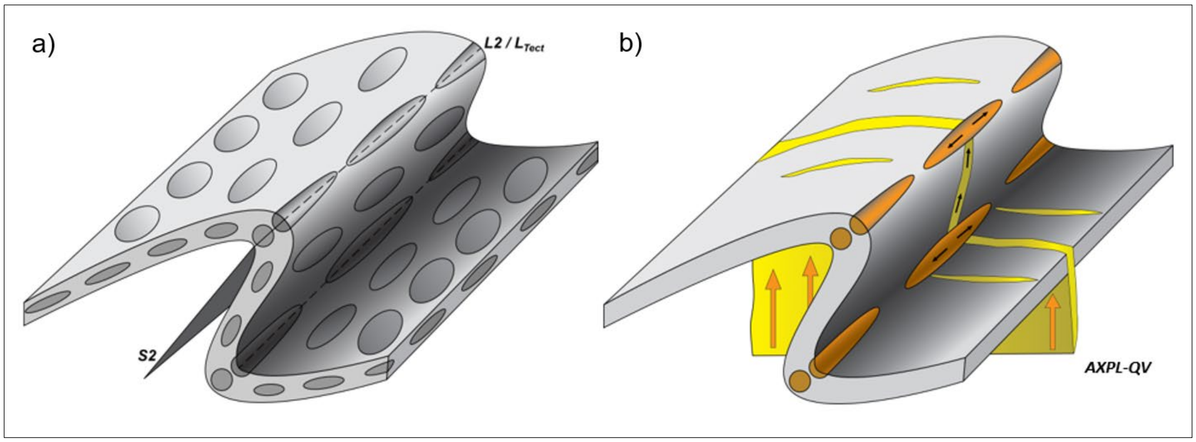


Figure 8-4: a) Formation of structural traps in F2 hinges as L-Tectonites; b) Replacement style mineralization (orange) fed by AXPL quartz veins (yellow)

8.3. Shear Zone Deposits

Steep, orogen-parallel, D2-parallel faults, and damage zones act as fluid pathways for crustal fluids. The BC Vein is a poly-deformed, steeply-dipping, and S1 strike-parallel shear zone of unknown relative offset. The structure is internally characterized by strongly carbonaceous to graphitic siltstone fault breccia, discontinuous pods of brecciated milky white quartz and later stage grey quartz which has, in places, annealed the breccia matrix. Fine-grained pyrite and gold are associated with the annealing late-stage grey quartz. The Wells Shear is interpreted as the offset Cow Mountain equivalent of BC Vein owing to its similar strike, deformational style, and position within tectonostratigraphic sequence. The BC Vein-Wells Shear structure is highly variable in thickness both along strike and down dip. The close geographic association between this structure and the locations of highest density axial planar veining as well as the highest gold grades in both soil and rock geochemical assays is taken to reflect its importance as a fluid pathway at the time of mineralization.

9. Exploration

For the purposes of this Report, Barkerville Gold Mines Ltd. ("BGM"), as it operated from 2015 to 2020, will be referred to as Osisko Development Corp. ("ODV"). Current ODV management is a merger of the BGM management team that has been in place since 2015 and select Osisko Gold Royalties ("OGR") team members after OGR acquired the Cariboo Gold Project ("the Project") through the acquisition of Barkerville Gold Mines Ltd. on November 21, 2019. The Project was part of the OGR assets that created the Osisko Development Corp. on November 25, 2020.

ODV carried out work on the Cariboo Gold Project yearly from 2015 to 2021. These programs consisted of geologic mapping, surface rock sampling and soil sampling. The field programs typically ran from April to October, depending on the weather, with the soil program occurring towards the middle of that period. Mapping and sampling efforts targeted the northwest and southeast extensions of the known mineralized corridor in the Wells area, as well as a parallel trend, at Mount Burns (Lightning Creek Trend). These prospect areas are displayed in Figure 9-1.

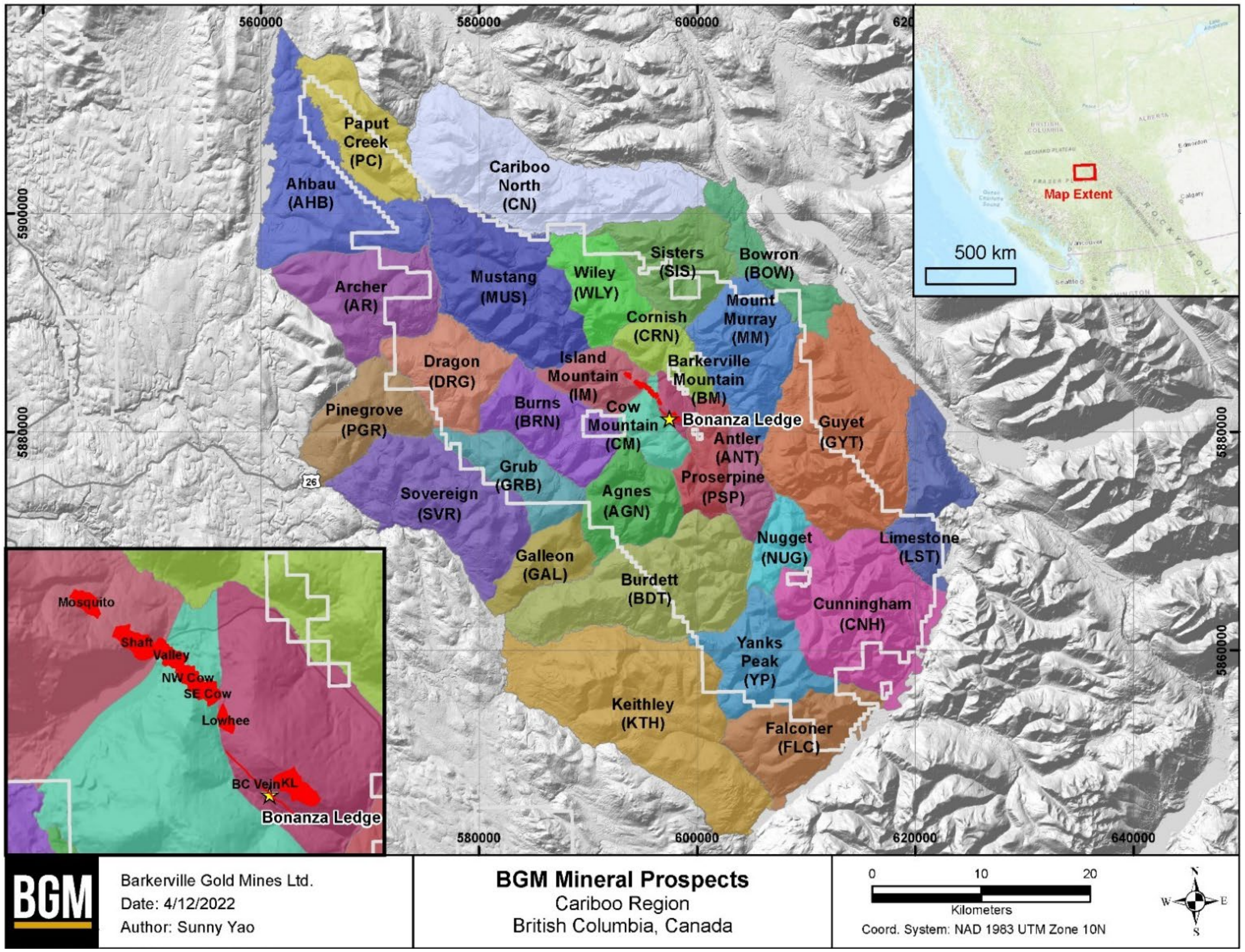
9.1. 2020 and 2021 Purpose and Methodology

9.1.1. Geologic Mapping

Geological mapping was conducted to identify lithologic contacts, define alteration and geochemical signatures, record structural data and collect select rock samples. The scale of mapping was conducted at 1:2000. Mapping of an area was classified as complete when all roads, trails and stream valleys were traversed. Rock samples were taken when significant veining and/or sulphide mineralization occurred. These samples were sent to be fire assayed to provide gold-grade and multi-element data to aid in future exploration programs.

9.1.2. Soil Sampling

Soil sampling was conducted to identify gold-in-soil anomalies, which were then used to target prospective bedrock. Dutch augers were used to taking 500-gram ("g") soil sample from the B soil horizon. If the B horizon was not present, a C horizon sample was taken. If insufficient sample material was available, a no sample ("NS") point was marked and noted. Soil samples were collected every 50 metres ("m") along north-south oriented lines spaced 200 m apart. The sample lines were oriented to best test for gold mineralization hosted in quartz lenses oriented parallel to stratigraphy and northeast-southwest trending quartz veins noted throughout the Cariboo Gold prospect. At any outcrop or historical working site observed in the field, geologic information was collected, and a rock sample was taken if the material yielded possible mineralization. Soil samples returned with gold ("Au") values in the 90th percentile and above were considered anomalous. Anomalous samples were used to guide further exploration.



Note: The grey outlines the Cariboo claims boundary. The prospects are broken down by region with its associated name and acronym

Figure 9-1: Illustrates Barkerville's mineral prospects of the Cariboo Region

9.2. Program Objectives and Results

For Barkerville Gold Mines ("BGM") and previous operators' works prior to 2015 refer to Chapter 6.

9.2.1. 2015-2019 Geochemical and Mapping Programs

From 2015 to 2019, ODV executed a systematic approach with surface mapping and geochemical sampling. From 2015 to 2017, sampling efforts specifically targeted the Barkerville Trend, a major deep-seated shear that trends 60 kilometres ("km") northwest-southeast through the central of the project area, called the Cariboo Break at the time. In 2018 and 2019, the focus shifted to the northwest and southeast extensions of known mineralization around the Wells area within the Barkerville Trend. Further exploration was conducted along the parallel Lightning Creek Trend. A summary of the samples collected from mapping and geochemical sampling is summarized in Table 9-1. Figure 9-2 and Figure 9-3 illustrate the locations of the work programs. Results from these programs generated drill targets for past and current drilling.

Table 9-1: Surface geochemical samples collected on the Cariboo Gold Project 2015-2019

Year	Rock Samples (qty)						Structural Stations (qty)	Soil Samples (qty)
	Grab	Select	Float	Linear	Channel	Panel		
2015	-	25	-	-	-	111	1,875	-
2016	81	75	1	17	341	50	704	4,928
2017	121	42	-	10	11	-	439	3,775
2018	108	182	25	8	26	4	4,961	6,307
2019	52	139	-	1	-	8	1,291	-
Total	**362**	**463**	**26**	**36**	**378**	**173**	**9,270**	**15,010**

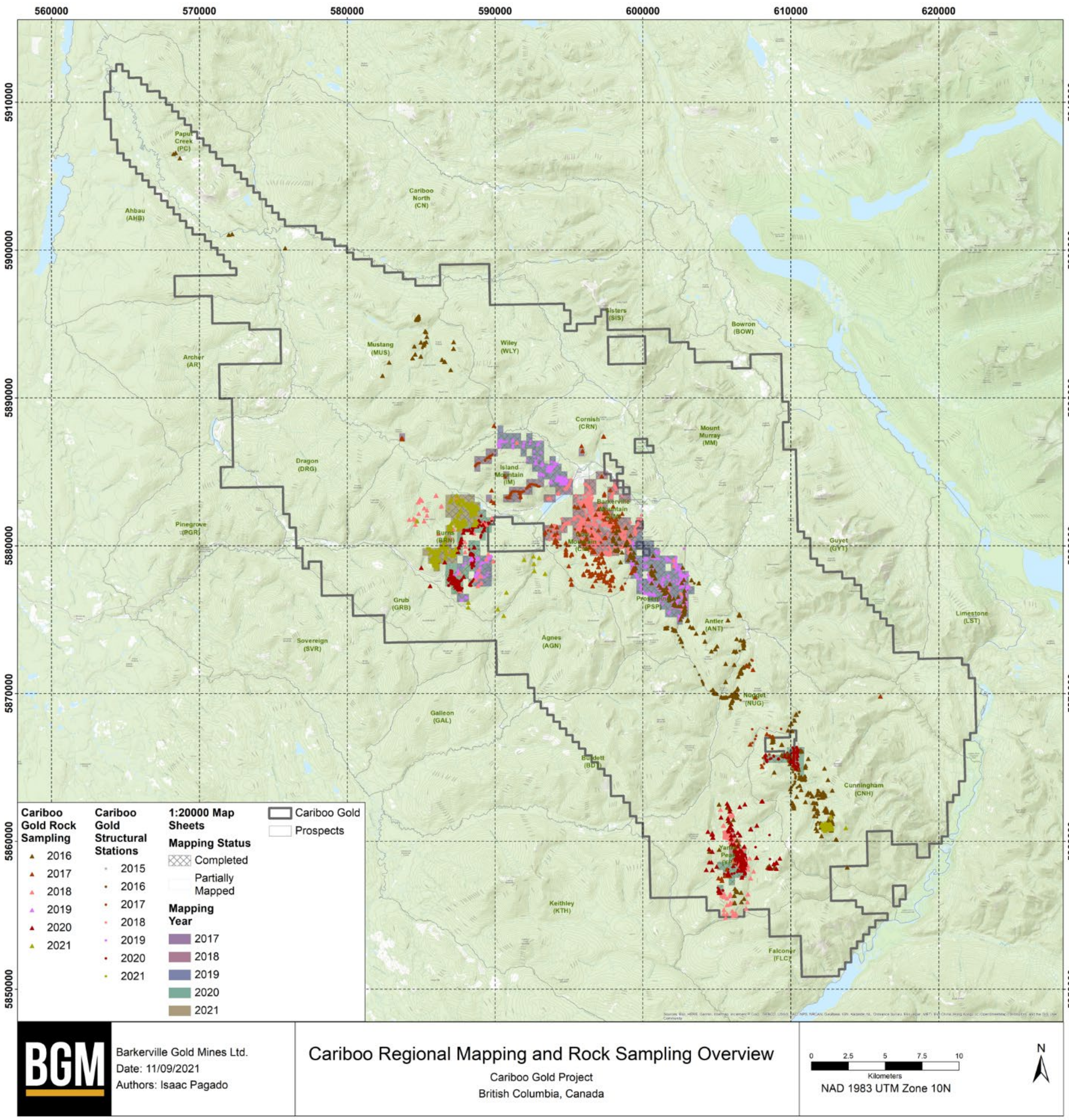


Figure 9-2: Cariboo Regional mapping and rock sampling overview from 2015 to 2021

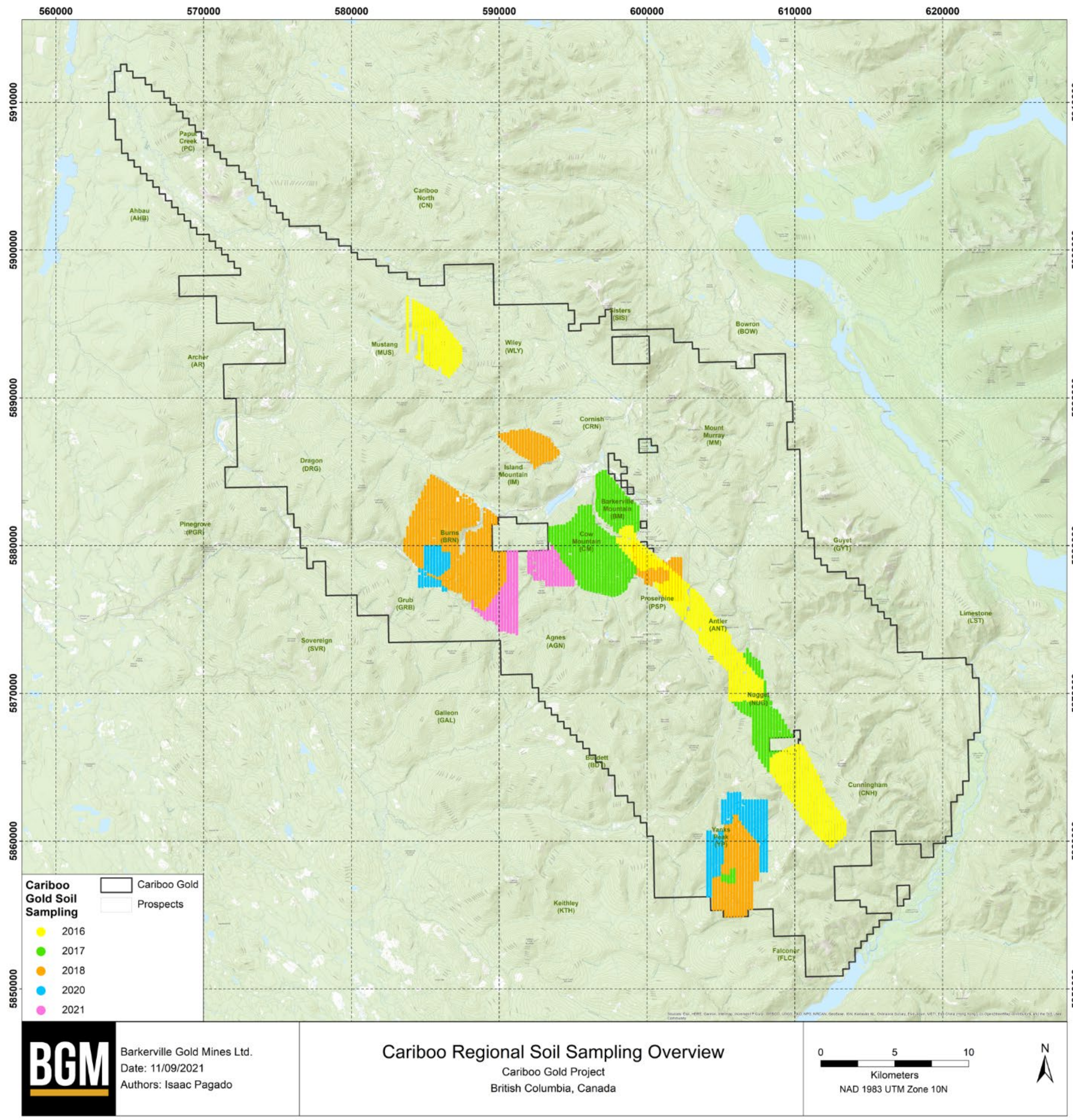


Figure 9-3: Cariboo Regional soil sampling overview from 2016 to 2021

9.2.2. 2016 Magnetic and VTEM Survey Program

In 2016, a helicopter-borne Magnetic and VTEM Survey was conducted by Geotech Ltd. over ODV's Cariboo Gold Project. The principle geophysical sensors used were a VTEM Plus system and a horizontal magnetic gradiometer with two caesium sensors. The sensors were tested daily to verify data integrity. The survey was flown in southwest to northeast lines spaced 200 m apart. A total of 7,024 line-km of data was acquired. The data was corrected against a base station. The program resulted in 1,308 km^2 of geophysical data that confirmed a northwest-southeast anomaly associated with magnetic anomalies.

9.2.3. 2020 Geochemical and Mapping Programs

Geological surface mapping took place on the Burns Mountain prospect from June 22 to August 4, 2020. Geochemical surveying coincided with mapping on the Yanks Peak prospect from August 18 to September 10, 2020. The geochemical survey then moved to Burns Mountain from September 10 to 29, 2020. The objective at Yanks Peak prospect was designed to expand upon the results derived from the 2017 and 2018 geochemical survey completed by ODV. The grid at the Burns Mountain prospect was designed to infill a gap in the geochemical grid and expand to the south of Lightning Creek to Chisholm Creek.

The 2020 geochemical sampling program was designed to primarily test for soil geochemical signatures in an area known to host several mineral occurrences which lay within a quartzite dominant lithology. A secondary objective was to collect stratigraphic and structural geologic information with emphasis on structural control and the structural relation to mineralization on the properties. A total of 429 soil samples and seven rock samples were collected on the Burns Mountain prospect; 1,187 soil samples and 56 rock samples were collected on the Yanks Peak prospect in 2020. These results are summarized in Table 9-2.

The principal aims of the 2020 mapping program were to refine the understanding of local stratigraphy and structure, with emphasis on the structural controls on mineralization. Additionally, another goal of the program was to delineate highly prospective target areas for future brownfields exploration and provide recommendations for targeting methodology. The program consisted of detailed geologic mapping at a 1:2000 scale at the Burns Mountain, Yanks Peak and Cunningham Creek prospects. A total of 43 rock samples were collected at the Burns Mountain prospect, 12 rock samples at the Cunningham Creek prospect and 42 rock samples at the Yanks Peak prospect. The 2020 program collected an additional 3,060 structural measurement at 905-point locations on the Burns Mountain prospect, 1,036 structural measurements at 341-point locations on the Cunningham Creek prospect, and 2,318 structural measurements at 706-point locations on Yanks Peak prospect. The results from the mapping program are summarized in Table 9-2 The anomalous gold-in-soil values along with the data gleaned from the geologic mapping program on these prospects indicated stratigraphy and veining similar to those which are gold-bearing in the Wells-Barkerville area. Exploratory drilling in this area is recommended in the future to test the area's viability.

Table 9-2: 2020 Soil, Rock Samples and Structural Station by Prospect

Prospect	Soil Samples	Grab Samples	Select Mineralized Samples	Panel Samples	Linear Samples	Channel Samples	Structural Stations
Burns	429	15	32	2	1	-	905
Cunningham	-	-	12	-	-	-	341
Yanks Peak	1,187	34	63	-	-	1	706
Total	**1,616**	**49**	**107**	**2**	**1**	**1**	**1,952**

9.2.4. 2021 Geochemical and Mapping Programs

Geological surface mapping took place on the Burns Mountain prospect from June 1 to July 25, 2021, and September 18 to October 3, 2021, and on the Cunningham Creek prospect from August 12 to October 21, 2021. The geochemical survey took place on the Burns Mountain, Cow Mountain, and Mount Agnes prospects from June 26 to July 21, 2021, and July 25 to August 31, 2021.

The primary objective of the 2021 Soil program was to connect the Burns Mountain and Yanks Peak soil sampling grids along the Lightning Creek Trend. This will be the goal of soil sampling programs for the next few years on the Cariboo Gold claim block. A secondary objective was to begin closing the gap in the soil data between Cow Mountain and Burns Prospects, following up on anomalies seen in the eastern portion of Burns Mountain and western portion of Cow Mountain.

In total, 651 soil samples were collected on the Burns Mountain prospect, 682 on the Mount Agnes prospect and 20 on the Cow Mountain prospect areas. In addition, a total of e rock samples were collected on the Mount Agnes prospect and eight on the Burns Mountain prospect by the geochemical sampling team in 2021. These results are summarized in Table 9-3. The 2021 Geologic mapping programs principal aims were to delineate and provide detailed exploration strategies for greenfield-brownfield exploration targets within both Burns Mountain and Cunningham Creek prospects. The focus of the mapping efforts in the Burns Mountain area was on Mount Nelson and Oregon Gulch. The efforts on Mount Nelson were in following up on geochemical anomalies found in previous years' soil programs. Oregon Gulch has many historic showings that suggest mineralization in a style comparable to what ODV is targeting. On the Cunningham Creek prospect mapping was focused on the historic Cariboo-Hudson Mine and along the trend of it. Detailed geologic mapping was conducted at a 1:2000 scale. A total of 244 rock samples were collected on Burns Mountain, eight rock samples on Mount Agnes, and 97 rock samples on the Cunningham Creek prospects. The 2021 mapping team collected an additional 3,509 structural measurements at 844-point locations on the Burns Mountain prospect, and 1,390 structural measurements at 407-point locations on the Cunningham Creek prospect. These results are summarized in Table 9-3. The anomalous gold-in-soil values along with the data collected from the geologic mapping program on both prospects indicated stratigraphy and veining similar to those which are gold-bearing in the Wells-Barkerville area. Exploratory drilling in this area is recommended in the future to test the area's viability.

Table 9-3: 2021 Soil, Rock Samples and Structural Station by Prospect

Prospect	Soil Samples	Grab Samples	Select Mineralized Samples	Panel Samples	Linear Samples	Channel Samples	Structural Stations
Agnes	682	1	7	-	-	-	-
Burns	651	105	127	10	1	1	844
Cunningham	-	41	51	1	1	3	407
Cow Mountain	20	-	-	-	-	-	-
Total	**1,353**	**147**	**185**	**11**	**2**	**1**	**1,251**

10. Drilling

This chapter focuses mainly on Osisko Development Corp.'s ("ODV") 2020, 2021 and 2022 diamond drilling programs (the "2020 Program", "2021 Program" and "2022 Program") and Barkerville Gold Mines Ltd. ("BGM") 2015 to 2019 diamond drilling programs. Drilling prior to 2015 is summarized in the history chapter (Chapter 6). Meterage summaries by prospect may differ from those reported in previous NI 43-101 reports, as drill holes have been re-assigned to prospects based on the target deposit rather than their collar location.

The objectives for the 2020 and 2021 programs were to test new brownfields targets adjacent to known deposits, infill high-grade vein corridors modelled from the 2019 preliminary economic assessment ("PEA") currently classified as Inferred and explore the depth potential of known deposits. The focus of the on-going "2022 Program" is the infill of a proposed underground bulk-sampling area, the continued category conversion from inferred to indicated status of modeled vein corridors, and the delineation of additional vein corridors. Previous drilling programs are summarized in Chapter 6. Figure 10-1 shows an overview map of the 2015 through 2022 Programs.

From 2015 to 2022, BGM/ODV drilled a total of 2,280 diamond drill holes, totalling 695.08 kilometres ("km") of drill core. While surface data continues to inform the geologic model, diamond drill core is the primary source of geological information for the Project.

The current mineral resource estimate update (the "2022 MRE") presented in Chapter 14, with an effective date of May 19, 2022, includes assay results from up to November 23, 2021. The potential impact on the 2022 MRE of the assay results received after this date is also commented below.

10.1. Drilling Methodology

Drills were aligned using a Suunto compass. The downhole dip and azimuth were surveyed using a REFLEX EZ-TRAC tool or Minnovare's Azimuth Aligner (for a part of the 2021 drilling campaign). Collar locations are determined using a Trimble DGPS. The first survey was usually measured 9 metres ("m") below the casing, and readings were then taken every 30 m downhole. A survey was also taken at the bottom of the hole if the end of hole ("EOH") depth was 15 m or more from the previous test. The instrument was handled by the drilling contractors, and survey information was digitally recorded using IMDEX's IMDEXHUB-IQ, as well as transcribed and provided in paper format to ODV geologists.

At the drill rig, the drill helpers placed core into core boxes and marked off every 3-m drill run using a labeled wooden block. The drill helpers were also responsible for marking orientation information on the core using either the Reflex Act III tool or the DeviCo DeviHead orientation tool. All holes were drilled in NQ diameter unless noted otherwise in this report.

All drill hole casings collared at an elevation similar to Jack of Clubs Lake were cemented into bedrock. Special consideration was given to the Valley Zone due to the local groundwater conditions, whereby a cementing procedure was deployed to ensure no groundwater would escape the drill hole once plugged: A first hole was drilled through the overburden and cased (HWT size) 6 m to 9 m into competent bedrock. HQ drill rods were then drilled 1 m beyond casing. Once the geologist and drill foreman inspected the rock to ensure the rock was competent bedrock, casing was reamed to the bottom of the hole and cemented with the drill foreman present. A PQ displacement plug was then pushed downhole until cement came up around the casing, leaving it to set. After at least 24 hours, 250 pounds per square inch ("psi") of water pressure was applied to the drill hole. If, during the pressure test, the pressure decreased and water was able to escape the cement, the drill hole was either abandoned or recemented. If no issues were experienced during the pressure test, drilling would then commence, and this process was repeated for any additional holes. Upon completion of the drill hole, a safety plug was placed 24 m past the shoe and the hole cemented. The HQ drill rods were then removed, and a displacement plug was pumped down the hole. One additional batch of cement was then pumped downhole, and a wait time of 45 minutes was observed, ensuring no water was seen exiting the hole.

10.2. Core Logging Procedures

The drill core was transported to ODV's facility in the District of Wells ("Wells") where it was cleaned of drilling additives and mud, and the metres were marked before collecting the data. Recovery for each 3-m drill run was noted. When recovery was less than 2.50 m (>0.5 m of loss), loss was recorded on a separate block as a "lost core interval".

Geotechnical data collection included Rock Quality Designation ("RQD"), Intact Rock Strength ("IRS"), and fracture counts at 1-3 m intervals. Magnetic susceptibility data were not collected because it was concluded that such data are not relevant to the deposit. Downhole orientation lines were connected where possible, and orientation off-set measurements were recorded.

All data (lithology, alteration, mineralization, structures, interval structures, and veins less than and greater than 5 centimetres ["cm"]) were recorded using Datamine DHLogger software. Sample intervals and pertinent information regarding lithology, mineralization and alteration were marked on the core.

After recording the sampling information, drill core samples were cut in half using a diamond-blade table mounted rock saw. Half the sample was bagged and labelled, then packaged for shipment to an assay lab. Numbered security tags were applied to lab shipments for chain of custody requirements. Samples were then shipped to the laboratory of ALS Minerals in North Vancouver, British Columbia, for analysis. The remaining half-core samples are stored on-site in a secured location for future reference.

The QPs have not identified drilling, sampling, or recovery factors that could materially impact the accuracy and reliability of the results. In the opinion of the QPs, the core logging and sampling procedures used by ODV are consistent with generally accepted industry best practices and are, therefore, adequate for an advanced exploration project.

10.3. 2015 to 2019 Drilling

In 2015, drilling was focused on Barkerville Mountain (Figure 10-6) with 180 holes drilled on the BC Vein and Bonanza Ledge deposit, totalling 35,848.5 m; eight drill holes on the KL Zone totalling 1,675 m, and 12 dill holes on the Barkerville Mountain deposit totalling 3,626.7 m. The 2015 diamond drill program was designed to drill the BC Vein structure at a spacing of 25 m to 50 m to a depth of 250 m from surface, and a spacing of 100 m down to a depth of 450 m below surface (Brousseau et al., 2017).

In 2016, drilling on Barkerville Mountain (Figure 10-6) consisted of 53 holes on the BC Vein and Bonanza Ledge deposit, totalling 8,605.5 m, and 10 holes on the KL Zone deposit, totalling 2,621.18 m. The BC Vein area was drilled to infill high-grade areas at 12.5 m to 25 m spacing (Brousseau et al., 2017) while the KL Zone was drilled to test an 800 m-long gold-in-soil ("Au-in soil") anomaly (Beausoleil and Pelletier, 2018). Cow Mountain drilling produced 233 drill holes on the Cow prospect, and drill holes on the Valley Zone prospect, totalling 31,157.07 m and 1,023.5 m, respectively. The Cow Mountain drilling program (Figure 10-4) was designed to upgrade areas of geological uncertainty as well as constrain the geological model in areas devoid of historical drilling on Cow Mountain. It also focused on confirming historical gold intersections using modern drilling techniques. The 2016 campaign tested depths of approximately 300 m. Drill holes were completed on approximately 50 m centres in selected areas (Beausoleil and Pelletier, 2018). Drilling in the Valley Zone tested the lateral extents of AP veins and refined the stratigraphic model. Results showed denser than expected vein occurrences. As a result, three more rigs were added to the program and collar locations were stepped out to expand the intersected vein corridors (Beausoleil and Pelletier, 2018). On Island Mountain, 33 holes were drilled on the Shaft Zone prospect, and 50 holes on the Mosquito Creek prospect, totalling 11,289.5 m and 16,026.75 m, respectively. Drilling on Island Mountain (Figure 10-2) was conducted in order to better understand the structural and lithological controls on gold mineralization, as well as to test the down-plunge extent of sulphide replacement zones.

In 2017, drilling was again conducted on Barkerville Mountain (BC Vein and Bonanza Ledge, KL Zone, and Barkerville Mountain deposits), Cow Mountain (Cow and Valley Zone deposits), and Island Mountain (Shaft Zone and Mosquito Creek deposits) (Figure 10-6, Figure 10-4, and Figure 10-2, respectively). Barkerville Mountain drilling produced 25 holes at BC Vein, seven at Bonanza Ledge, and one drill hole at KL Zone, totalling 4,412.7 m, 3,388 m, and 530.15 m, respectively. It should be noted that the diamond drill hole ("DDH") on the BC Vein of Barkerville Mountain were drilled for geotechnical purposes only and were therefore not assayed or included in the resource estimate database (Beausoleil and Pelletier, 2018). The 2017 drilling program on Barkerville Mountain explored the Au-in-soil anomaly adjacent to the KL Zone, investigating the 2016 identified targets. Cow Mountain had a total of 17 drill holes at the Cow prospect, and 80 drill holes at the Valley Zone prospect, totalling 6,034.7 m, and 38,872.96 m, respectively. Cow Mountain drilling continued the goals of the 2016 drilling program. Island Mountain had a total of 211 holes at the Shaft Zone prospect, and 44 dill holes at the Mosquito Creek prospect, totalling 93,733.12 m and 13,455.7 m, respectively. Drilling on Island Mountain during 2017 was primarily designed to define the extent of recently discovered vein systems and to discover new vein corridors and sulphide replacement. Early in the program, holes were drilled on 100 m drill centres with dice-five infill patterns concentrated in the Shaft Zone. As the geologic understanding of the controls on mineralization improved, a tighter infill of approximately 25 m spacing began in August to expand known corridors (Beausoleil and Pelletier, 2018).

In 2018, drilling was conducted on Barkerville Mountain (BC Vein and Bonanza Ledge deposits), Cow Mountain (Cow and Valley Zone deposits), and Island Mountain (Shaft Zone and Mosquito Creek deposits) (Figure 10-6, Figure 10-4, and Figure 10-2, respectively). Barkerville Mountain had a total of ten drill holes on the BC Vein and Bonanza Ledge deposits totalling 1,683.8 m. The aim of the 2018 Program at Barkerville Mountain was to provide infill data on the BC Vein. In addition, the program expanded upon data collected in 2017 and also targeted vein mineralization concentrated within the hanging wall of the BC Vein.

Cow Mountain had a total of 246 drill holes on the Cow prospect, and two drill holes on the Valley Zone prospect, totalling 67,715.05 m and 401.9 m, respectively. The aim of the 2018 Program at Cow Mountain was to infill and expand the high-grade gold-bearing vein corridors (Beausoleil and Pelletier, 2018). Drilling on Island Mountain produced 168 drill holes on the Shaft Zone prospect, and 20 drill holes on the Mosquito Creek prospect, totalling 53,731.29 m and 4,597 m, respectively. The 2018 Program at Island Mountain focused on targets generated by underground mapping and sampling data, as well as historical data compiled from smaller scale mapping, trenching, soil sampling and drilling programs. The program aimed to demonstrate continuity and expand on known mineralized vein corridors. Infill drilling was designed to intercept modelled vein corridors with a 25-m spacing at depth in order to convert Inferred resources to the Indicated category (Beausoleil et al., 2019).

Also, in 2018, in addition to the main Cariboo Gold Project claim group detailed above, Grouse Creek had a total of 14 drill holes, totalling 4,903.2 m (Figure 10-8). The aim of the drilling program was to identify the potential source of a Au-in-soil anomaly and subsequent gold rich placer deposits in the Discovery Claim and Shy Robin Gulch. (Filgate, 2018).

In 2019, drilling was conducted on Barkerville Mountain (BC Vein and Bonanza Ledge, KL Zone, Williams Creek, and Lowhee Zone deposits), Cow Mountain (Cow prospect), and Island Mountain (Shaft Zone, Mosquito Creek, and Willow prospects) (Figure 10-6, Figure 10-4, and Figure 10-2, respectively). Barkerville Mountain had a total of 36 drill holes on the BC Vein and Bonanza Ledge deposit, 73 on the KL Zone, four on Williams Creek, and 24 holes on the Lowhee zone, totalling 7974.2 m, 31,974.62 m, 1,572 m, and 8,422 m, respectively. The 2019 Program on Barkerville Mountain focused on exploration for mineralized vein corridors analogous to those on Cow and Island Mountains within the prospective sandstone unit, with drilling on BC Vein to increase confidence in the block model (Beausoleil et al., 2019). Cow Mountain had a total of 72 drill holes on the Cow prospect, totalling 16,136.6 m and was primarily focused on infill drilling and testing down dip extents of mineralized vein corridors. Island Mountain had a total of 26 drill holes on the Shaft Zone prospect, 15 on the Mosquito Creek prospect, and six on the Willow prospect, totalling 12,032.45 m, 8,258.89 m, and 3,078.9 m, respectively. The objective of the 2019 Program on Island Mountain was to infill high-grade areas currently classified as Inferred on the Mosquito and Shaft Zones and to test the strike and depth extent of the mineralized vein corridors. Exploration to the northwest of Mosquito Creek also occurred on what is known as the Willow Target, a Au-in-soil geochemical anomaly identified from 2018 soil sampling (Beausoleil et al., 2019). Additionally, the Proserpine property had a total of six holes drilled, totalling 2,676.25 m. This program was aimed at testing Au-in-soil anomalies and historical gold occurrences, as well as historical underground workings.

10.4. 2020 Drilling Program

The 2020 drilling program (the "2020 Program") was conducted between January 16, 2020, and December 14, 2020, by Smithers, B.C. based Hy-Tech Drilling Ltd. ("Hy-Tech") and its primary focus was delineating the Cow-Island-Barkerville corridor. A total of 57,078.8 m was drilled in 196 surface holes, as summarized in Table 10-1. The objective of this program was to further delineate mineralized vein corridors within all deposits and intercept veins with a 25 m spacing from previously drilled holes in order to convert Inferred resources to the Indicated category.

Table 10-1: Summary of BGM's 2020 Program

Deposit	Number of Holes	Metres Drilled
BC Vein and Bonanza Ledge	3	560.60
Lowhee Zone	24	10,144.50
Cow Mountain	48	12,596.05
Valley Zone	56	17,558.85
Shaft Zone	15	3,909.00
Mosquito Creek	50	9,392.40
Proserpine	5	2,917.40
Total	**201**	**57,078.80**

The 2020 Program at Island Mountain focused on Shaft Zone with 3,909 m drilled in 15 holes and Mosquito Creek, totalling 9,392.4 m drilled in 50 holes (Figure 10-2), further continuing the category conversion work from Inferred to Indicated status within known vein corridors.

The 2020 Program at Cow Mountain (Figure 10-4) was primarily focused in the Valley Zone to continue category conversion work and expand known mineralized vein corridors, with a total of 12,596.05 m drilled in 56 holes. Target vein corridors are being drilled from surface to a maximum vertical depth of 600 m. Additional infill drilling on Cow Mountain was conducted (Figure 10-4), furthering category conversion on known vein corridors (Inferred to Indicated) and exploring the down-dip extent of selected targets. The targeted vein corridors were drilled from surface to a maximum vertical depth of 350 m with a 25 m intercept spacing at depth. A total of 12,596.05 m was drilled in 48 holes.

A bulk core sampling program to test the feasibility of the mineral sorter was conducted during the 2020 and 2021 drill program on both Cow Mountain and Island Mountain, totalling 168 m and 513 m, respectively. A total of 2,000 kilograms ("kg") of material was collected. Samples were selected based on modelled vein corridors hosting ore grades inferred to be representative of the overall deposit. Selected samples were then shipped to Société Générale de Surveillance ("SGS") for metallurgical analysis.

The aim of the 2020 Program at Barkerville Mountain (Figure 10-6) was to provide infill data on the BC Vein and to further define the Lowhee Zone prospect.

BC Vein drilling, totalling 560.6 m in three holes, improved block model confidence and further delineated the deposit. Drilling at the Lowhee Zone targeted mineralized vein corridors within the prospective sandstone unit analogous to those on Cow and Island mountains. The targeted vein corridors were drilled from surface to a maximum vertical depth of 370 m with a 25 m intercept spacing at depth. A total of 10,144.5 m was drilled in 24 holes.

The intersections were visually compared in 3D to the mineralized zones 3D solids and interpolated block grades of the 2020 MRE.

Overall, visual inspection of the 2020 drilling results demonstrated that the thickness and the grade of the mineralized zones were in the same order of magnitude as the 2020 MRE. The 2020 drilling continued to confirm the geological and grade continuities that were demonstrated in the 2020 MRE (Beausoleil et al., 2019).

In addition, 2020 also saw drilling on the Proserpine prospect (Figure 10-8), with five drill holes totalling 2,917.4 m. The program consisted of one stratigraphic drill hole and four holes drilled orthogonal to known surface mineralization within the Proserpine prospect from September 13, 2020, to November 16, 2020. The objective of the stratigraphic hole was to constrain stratigraphy, understand F2 relationships, and target strike parallel shear structures, while the objective of the remaining holes was to explore for NE-SW-striking, AXPL oriented vein structures, and to create an Inferred resource by stepping out from 2019 drilling (Yao and Doyle, 2020).

10.5. 2021 Drilling Program

Table 10-2: Summary of BGM's 2021 Program

Deposit	Number of Holes	Metres Drilled
Lowhee Zone	95	29,860.9
Cow Zone	6	1,988.5
Valley Zone	108	47,484.92
Shaft Zone	162	60,990.8
Mosquito Creek	42	10,710.65
Total	**413**	**151,035.77**

The 2021 drilling program (the "2021 Program") was conducted by Hy-Tech between January 4, 2021, and October 20, 2021. The 2021 Program also saw the addition of Paycore Drilling ("Paycore"), based in Valemount, British Columbia, between August 18, 2021, and October 16, 2021.

The 2021 Program at Island Mountain focused on Shaft Zone with 60,990.8 m drilled in 162 holes, and Mosquito Creek totalling 10,710.65 m drilled in 42 holes (Figure 10-2), further continuing the category conversion work from Inferred to Indicated status within known vein corridors.

The 2021 Program at Cow Mountain (Figure 10-4) was primarily focused in the Valley Zone to continue category conversion work and expand known mineralized vein corridors with a total of 47,484.92 m drilled in 108 holes. Minor drilling on Cow Mountain was conducted, totalling 1,988.5 m drilled in six holes (Figure 10-4). The purpose of this drilling was to conduct metallurgical testing of modelled vein corridors.

The 2021 Program at Lowhee Zone (Figure 10-6) continued to define the prospect, targeting mineralized vein corridors within the prospective sandstone unit analogous to those on Cow Mountain and Island Mountain. A total of 29,860.9 m was drilled in 95 holes. Drill hole spacing along the modelled vein corridors was kept to a distance of 25 m.

10.6. 2022 Drilling Program

Table 10-3: Summary of BGM's 2022 Program

Deposit	Number of Holes	Metres Drilled
Lowhee Zone	19	4,829.9
Total	**19**	**4,829.9**

The 2022 drilling program (the "2022 Program") was conducted by Hy-Tech at the Lowhee Zone on Barkerville Mountain (Figure 10-6). The 2022 Program started on March 25, 2022, and was on-going as of May 12, 2022.

The focus of the 2022 Program at the Lowhee Zone was the infill of a proposed underground bulk-sampling area, the continued category conversion from Inferred to Indicated status of modelled vein corridors, and the delineation of additional vein corridors.

As of May 12, 2022, 19 diamond drill holes of the 2022 Program had been completed, totalling 4,829.9 metres. As of May 12, 2022, assay results for the 2022 Program were not yet received.

10.7. QPs Comments

As of May 12, 2022, assay results from 85 holes were received after November 23, 2021, representing 36,150.65 m of assays. Overall, the visual inspection of the 2022 drilling results demonstrated that the thickness and the grade of the mineralized zones are in the same order of magnitude as the 2022 MRE. The 2022 drilling continues to confirm the geological and grade continuities that were demonstrated in the 2022 MRE.

For the purpose of this Report, the QP is of the opinion that the gains and the losses would balance each other, and the resulting difference would not be material to the overall resource. According to the drilling results in the extension of the known mineralized zones and with the discovery of new zones, there is a potential to increase the mineral resources.

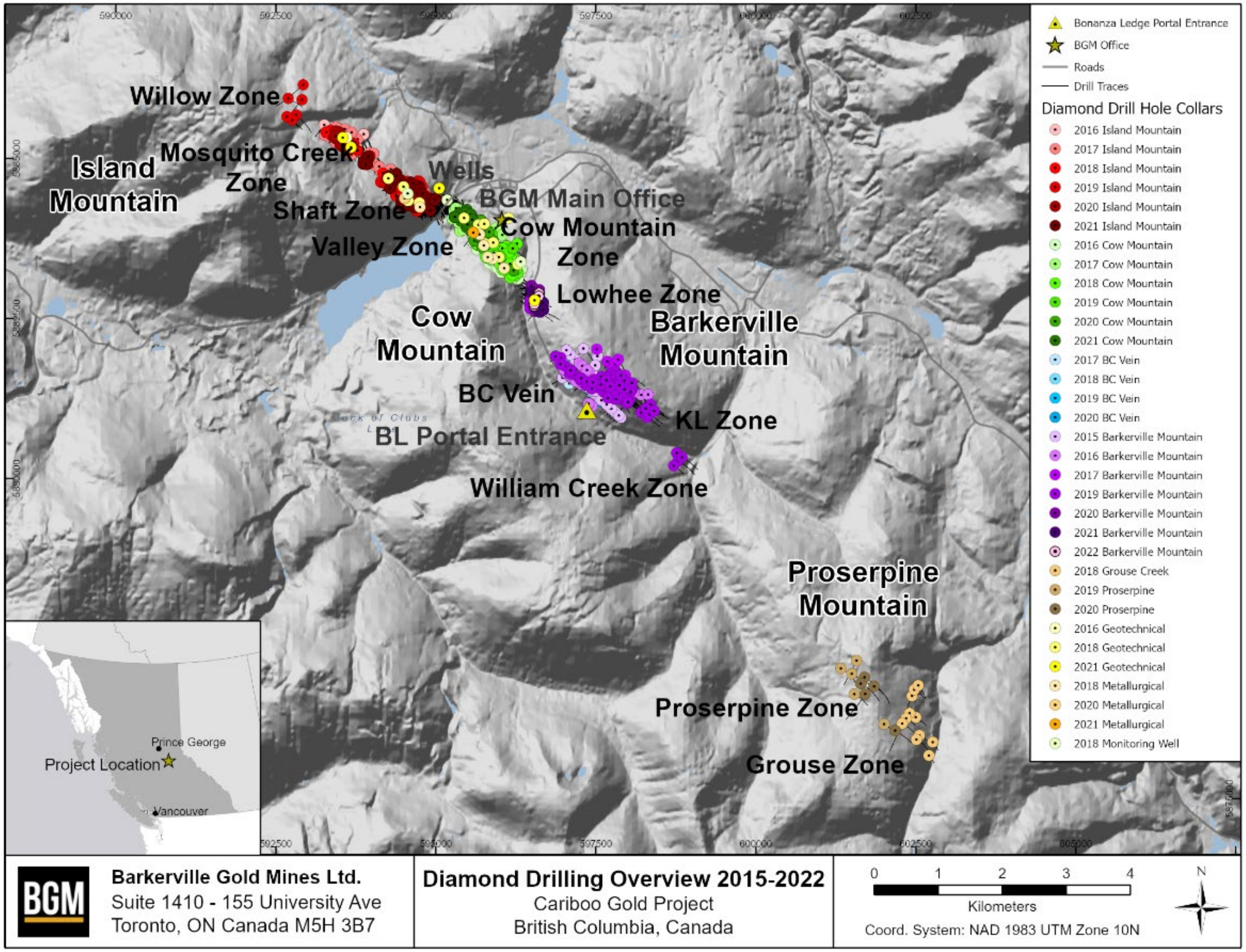


Figure 10-1: Cariboo Gold Project Diamond Drilling Program Overview

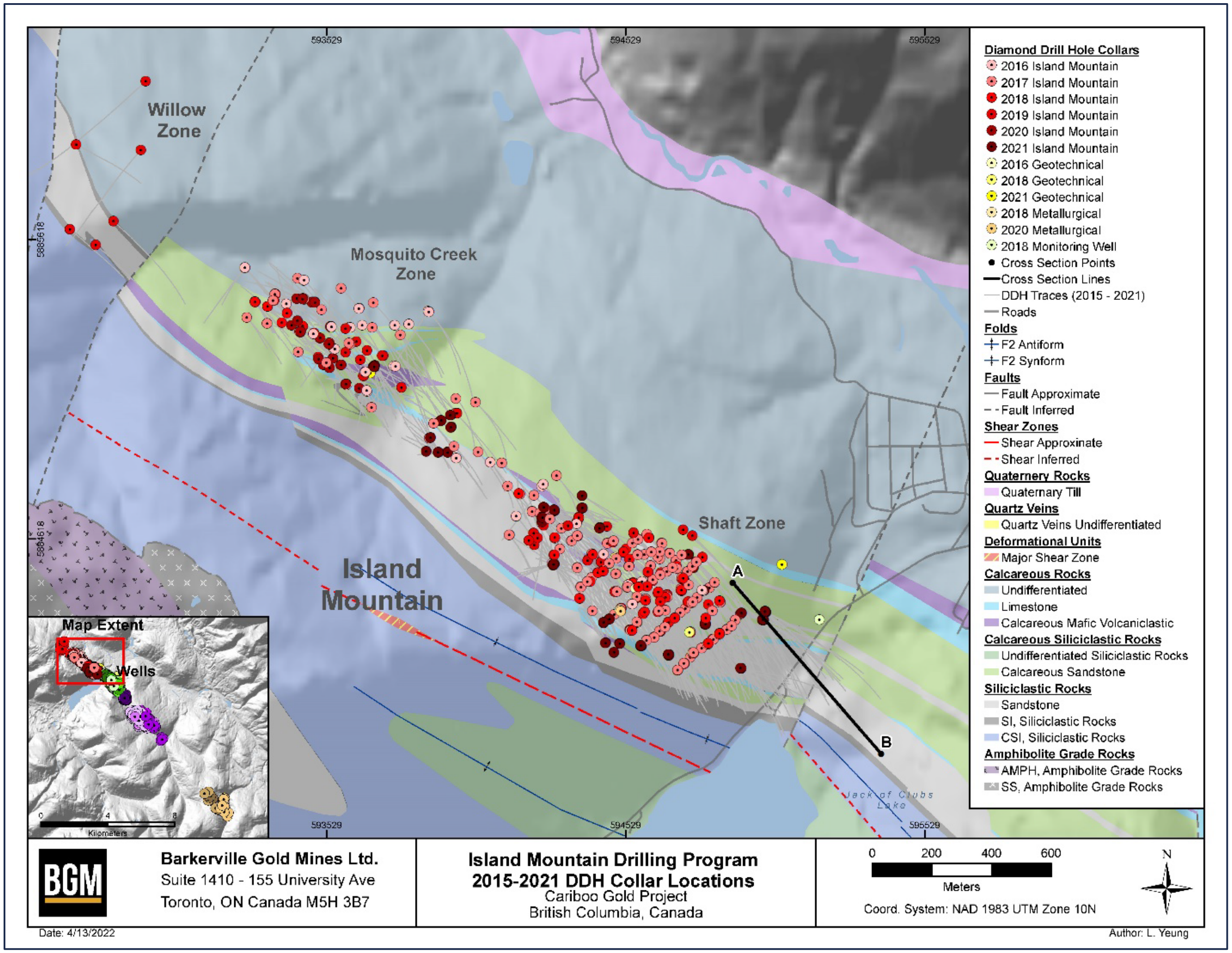


Figure 10-2: Island Mountain Drilling Program 2015-2021

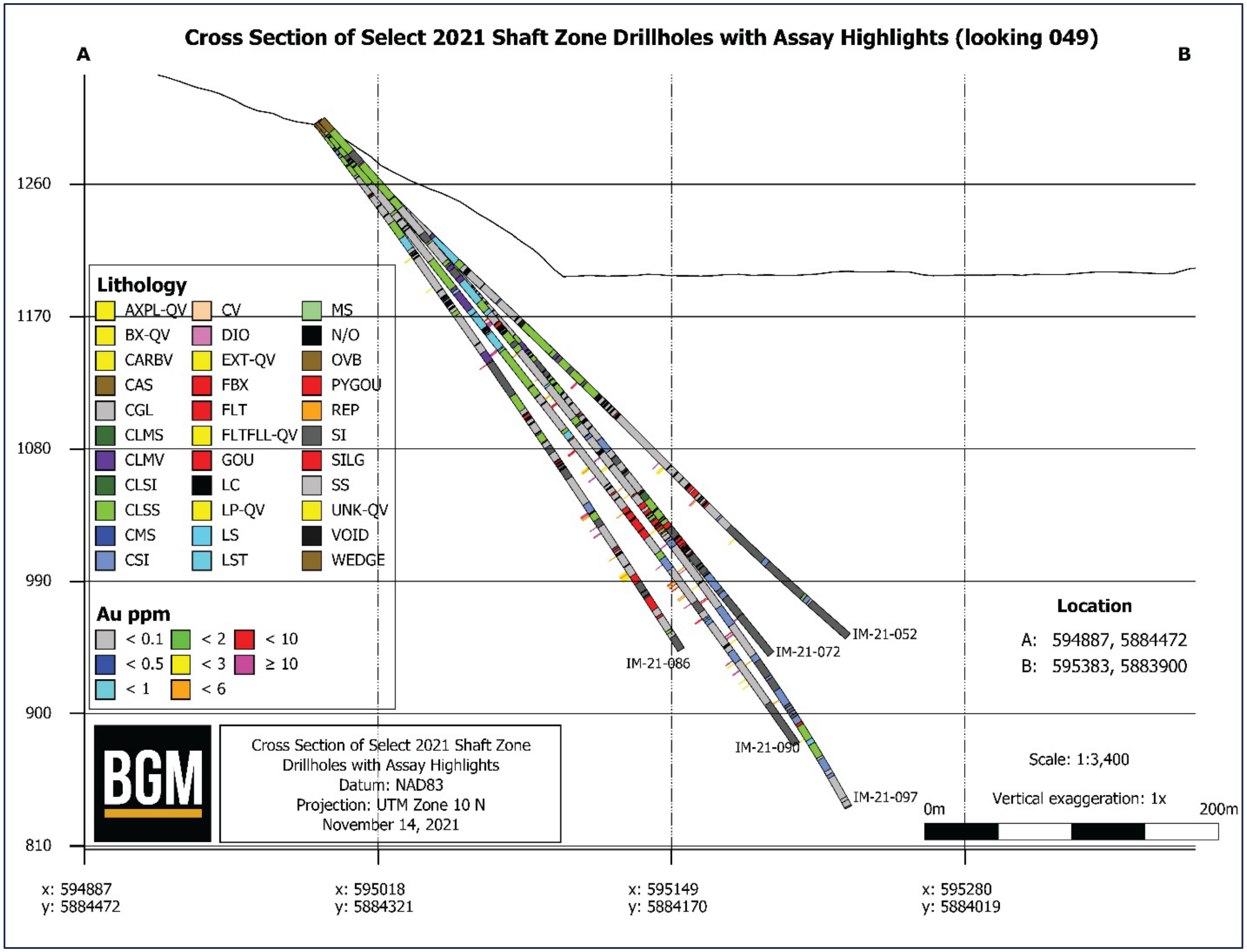


Figure 10-3: Cross-section of Shaft Zone diamond drill holes with gold assay highlights

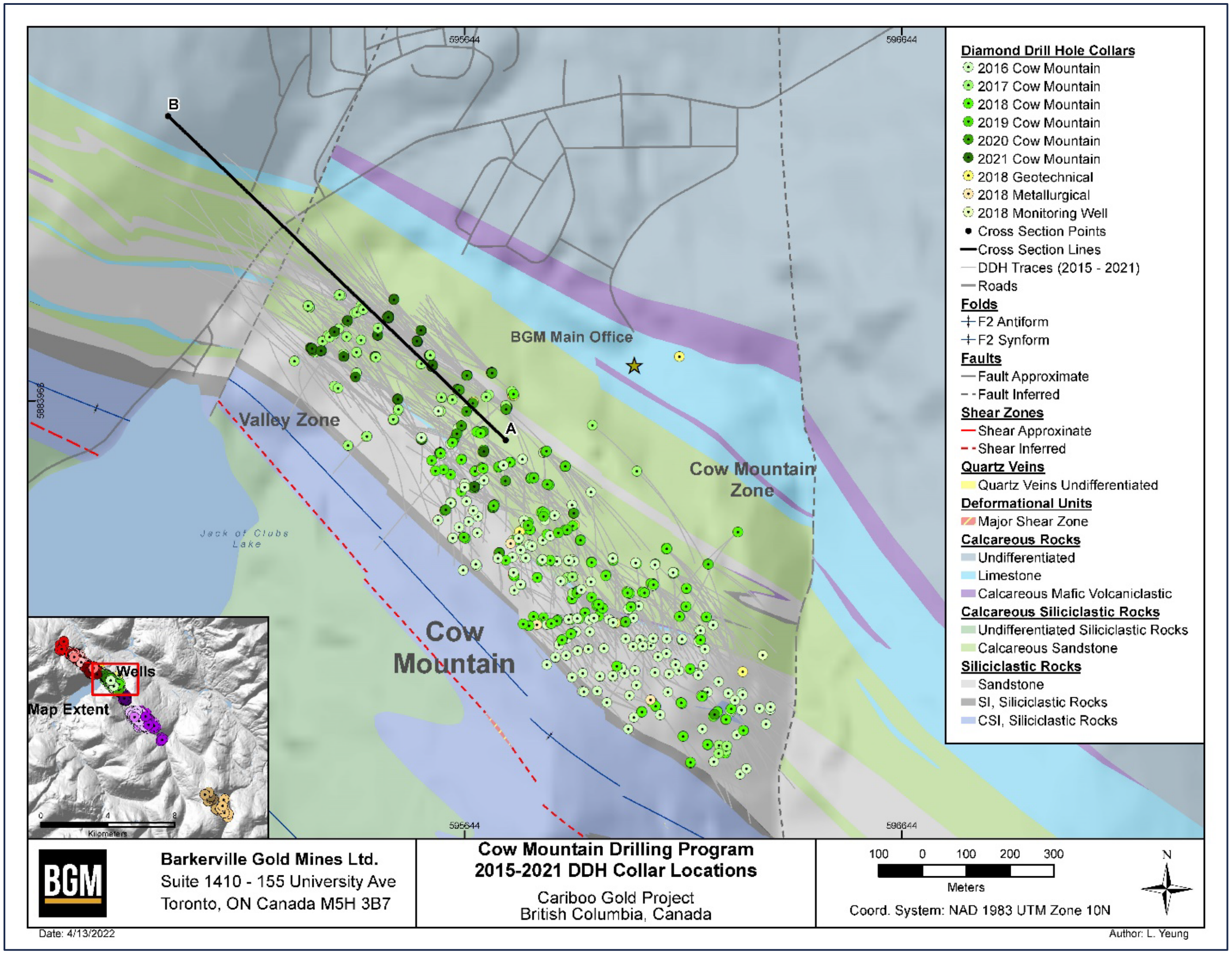


Figure 10-4: Cow Mountain Drilling Program 2015-2021

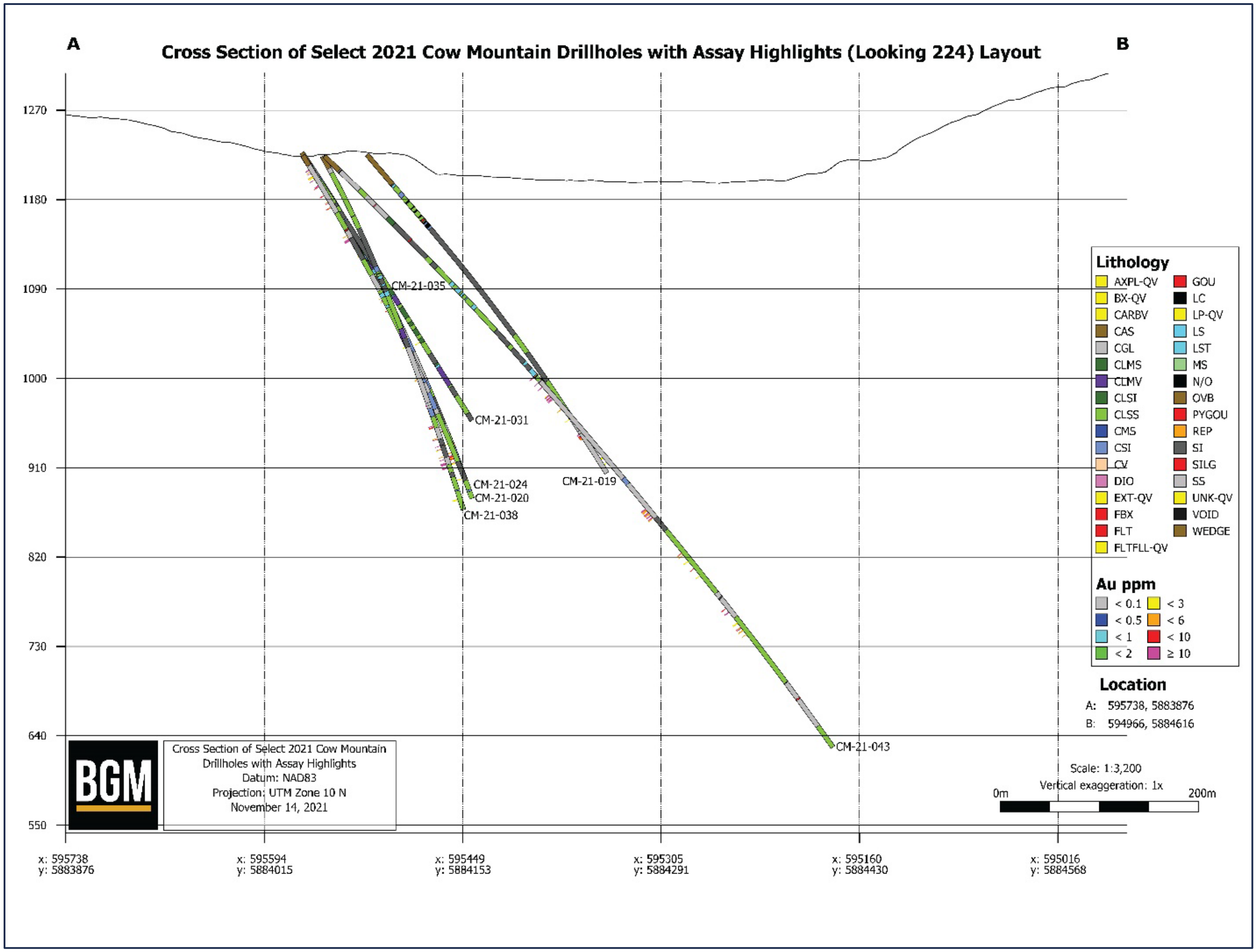


Figure 10-5: Cross-section of Cow Mountain diamond drill holes with gold assay highlights

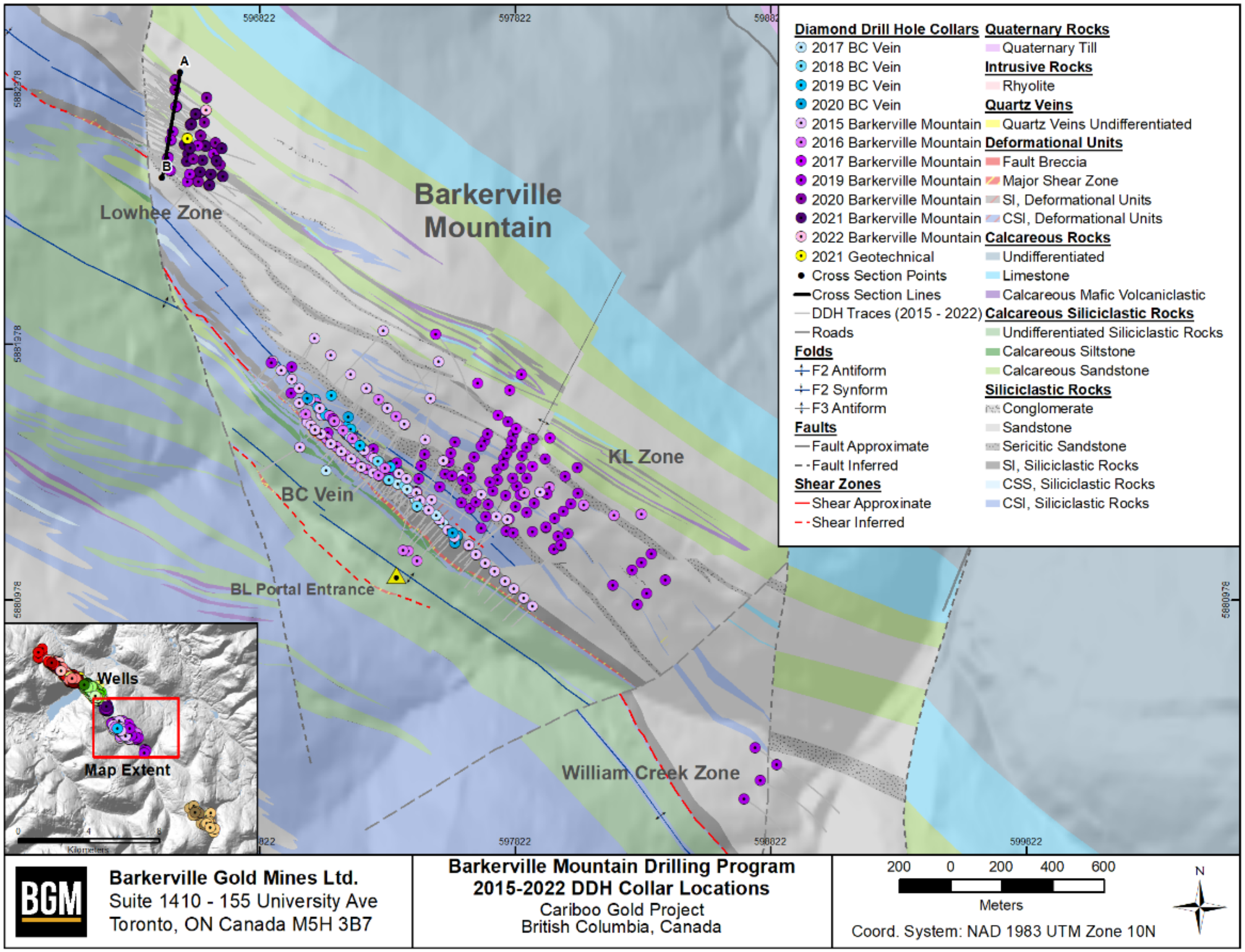


Figure 10-6: Barkerville Mountain Drilling Program 2015-2022

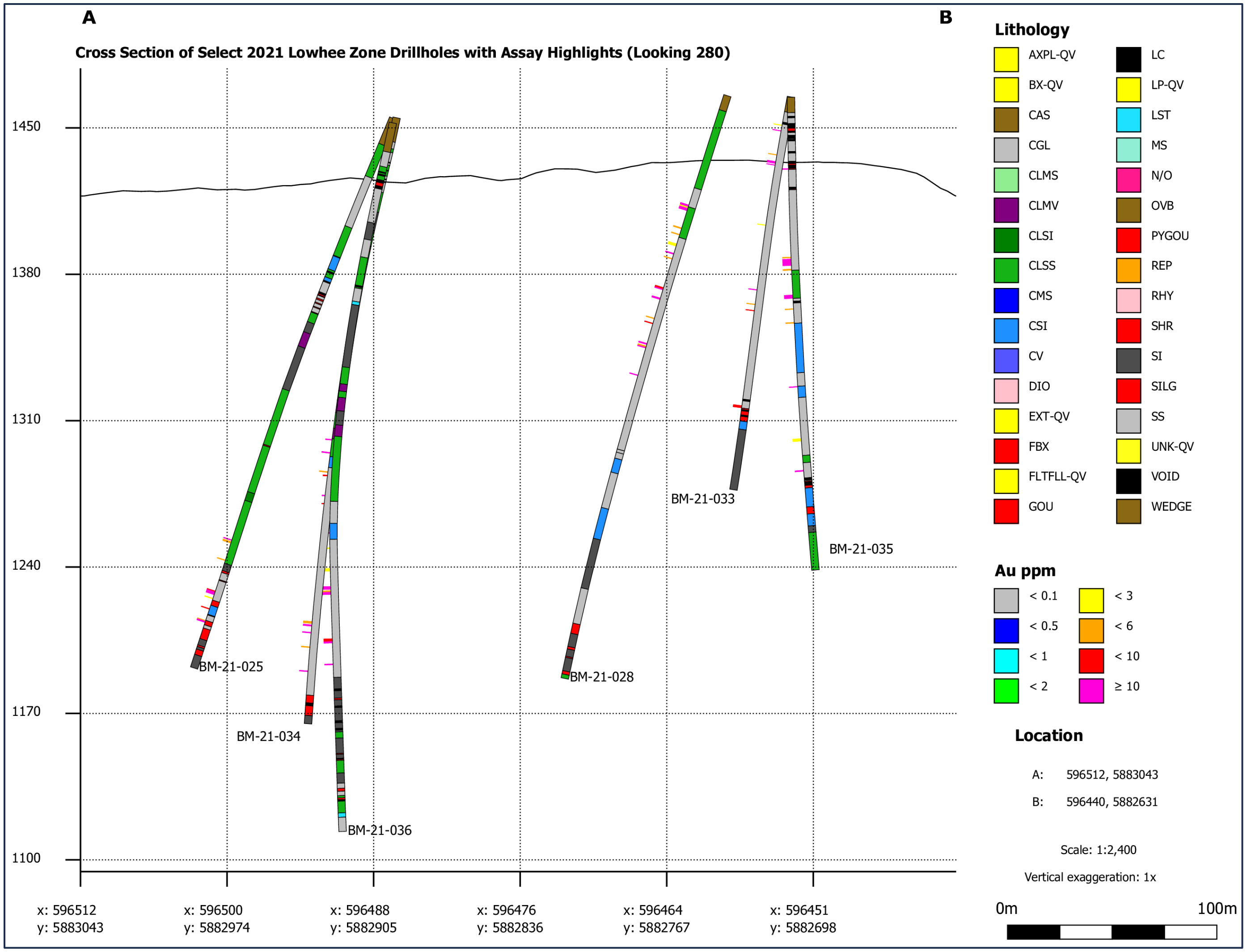


Figure 10-7: Cross-section of Barkerville Mountain diamond drill holes with gold assay highlights

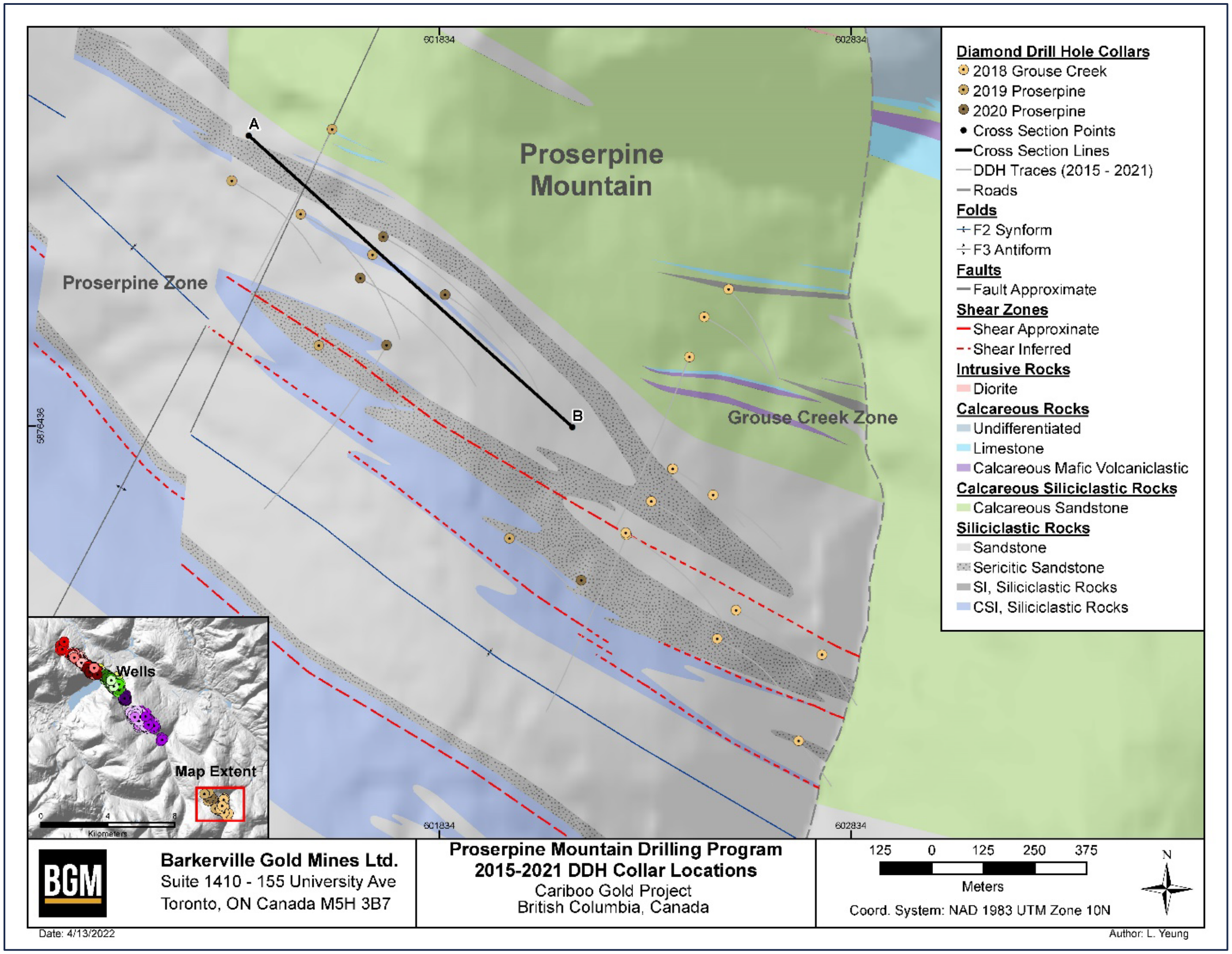


Figure 10-8: Proserpine Mountain Drill Program 2015-2021

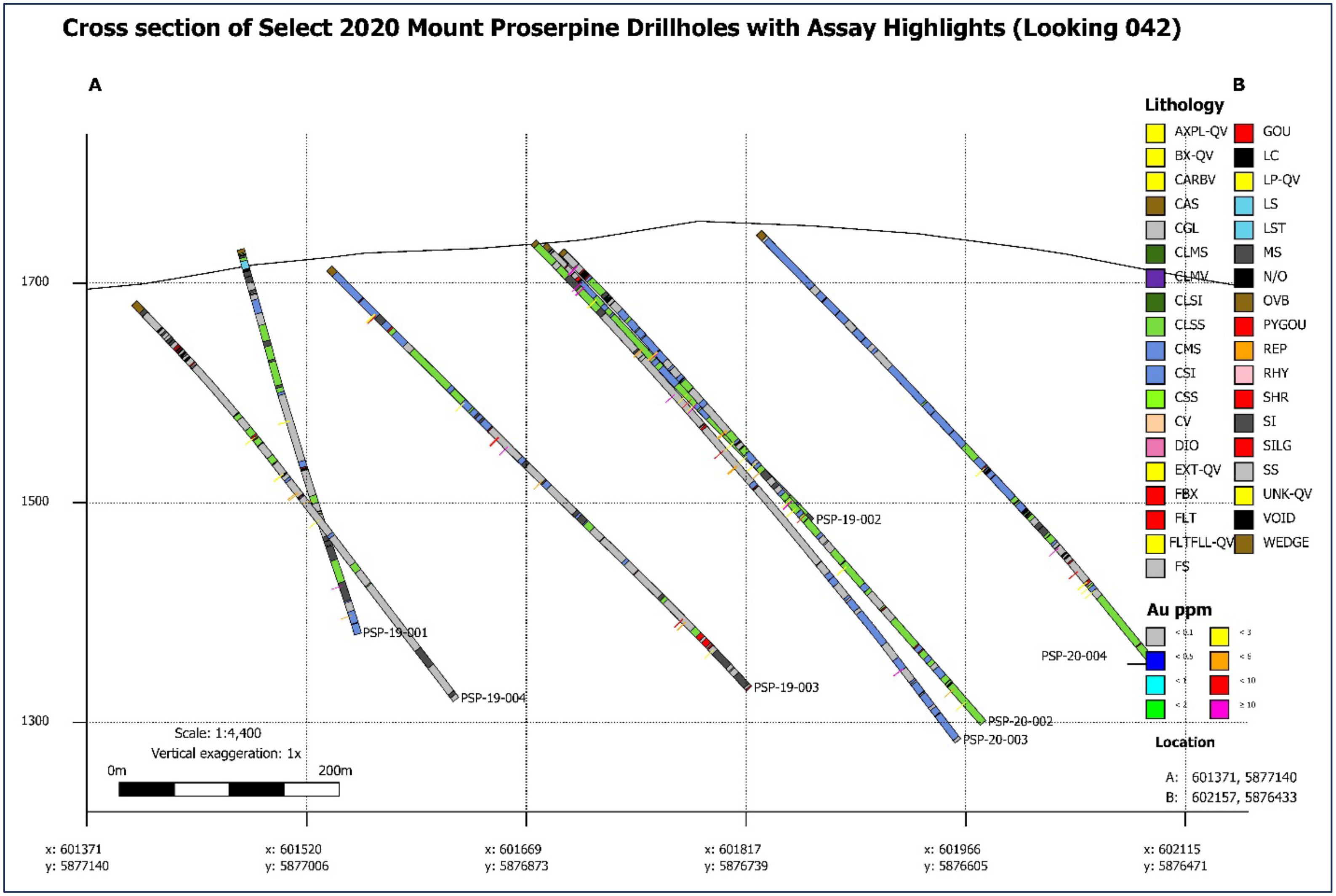


Figure 10-9: Cross-section of Proserpine Mountain diamond drill holes with gold assay highlights

11. Sample Preparation, Analyses and Security

This chapter describes the sample preparation, analysis, and security procedures for the 2020 and 2021 diamond drill holes programs ("2020 and 2021 Programs") included in the current resource estimate. The qualified professionals ("QP") reviewed the quality assurance-quality control ("QA/QC") procedures and results. The reader is referred to Beausoleil and Pelletier (2020) for details of the 2019 drilling program, to Beausoleil and Pelletier (2019) for details of the 2018 drilling program, and to Beausoleil and Pelletier (2018) for the 2016 and 2017 programs.

11.1. Core Handling, Sampling and Security

Core handling, sampling, and security procedures are managed by Osisko Development Corp. ("ODV") personnel. The procedures are described in detail below.

The drill core is placed into wooden core boxes at the drill site with the end of each drill run marked with a small wooden block displaying the depth of the hole. Box labels indicate the hole and box numbers. The boxes are racked and covered at the drill, secured with ratchet straps, and then transported daily from the drill site to ODV's core storage and logging facility. The boxes are labelled in permanent marker with the hole and box number (e.g., GR-15-01 Bx 1). The core is transported by truck during the drilling programs. The slogging facility is located within the District of Wells, British Columbia ("Wells"). There are two secure core storage areas, one in the District of Wells near the core logging facility and a second is located near the Ballarat Camp, approximately five km east of Wells.

Upon receiving a load of core from the drill crew, the core is brought into the logging room. Meterage blocks are checked for errors, the core is oriented in the box and cleaned, and the metre marks are drawn on the core before logging begins. The geological and geotechnical core logging data is collected with Datamine's DHLogger software.

The sample intervals are between 0.5 metres ("m") and 1.5 m in length and do not cross geological contacts. A line is drawn with a pencil along the length of the core to indicate where the core will be sawed. Each sampling ticket is divided into three tags. One tag is stapled to the core box at the beginning of the interval to record the drill hole number and sample interval recorded. The second tag is placed in the sample bag, which is sent to the laboratory; this tag does not reference the drill hole or meterage. The last tag remains in the sample ticket book with the hole number and recorded intervals. All samples are assigned a unique sample number.

After the core boxes with tags are photographed, the core boxes are moved to the cutting station. The core is cut lengthwise by diamond saw, with half the core submitted as the primary sample and the remaining half core retained in the core box for future reference.

The samples are individually bagged with the corresponding tag. The tag number is written on the bag and each bag is sealed. The bags are then placed in rice bags and the rice bags are sealed with numbered security tags for the chain of custody requirements. If any tampering with security tags is suspected, the laboratory will communicate with ODV. Samples are transported to the ALS Minerals ("ALS") laboratory in Vancouver, British Columbia ("BC") and the remaining drill core is subsequently stored on site at ODV's secure facilities in Wells and at a second location near the Ballarat camp, approximately 5 km east of Wells.

11.2. Laboratories Accreditation and Certification

The International Organization for Standardization ("ISO") and the International Electrotechnical Commission ("IEC") form the specialized system for worldwide standardization. ISO/IEC 17025 General Requirements for the Competence of Testing and Calibration Laboratories set out the criteria for laboratories wishing to demonstrate that they are technically competent, operating an effective quality system, and able to generate technically valid calibration and test results. The standard forms the basis for the accreditation of competence of laboratories by accreditation bodies. ISO 9001 applies to management support, procedures, internal audits, and corrective actions. It provides a framework for existing quality functions and procedures.

All the samples of the 2020 and 2021 Programs were submitted to the ALS laboratory in BC. The ALS laboratory is ISO 9001 certified and accredited (ISO/IEC 17025) for the analytical methods used routinely on the samples from Cow Mountain, Island Mountain, and Barkerville Mountain. The ALS facility is a commercial laboratory independent of ODV and has no interest in the Cariboo Gold Project ("the Project").

11.3. Sample Preparation and Assay

11.3.1. Sample Preparation

- Samples are sorted and logged into the ALS LIMS program;
- Samples are dried and weighed;
- Samples are crushed to +70% passing 2 millimetres ("mm") (CRU-31);
- The crushed sample split of up to 500 grams ("g") is pulverized to +85% passing 75 microns ("µm") screen (PUL 32m);
- Samples containing visible gold or cosalite mineralization are assayed by metallic screen method; a crushed sample split of 1,000 g is pulverized (method PUL-32) to pass 100 µm (Tyler 150 mesh) stainless steel screen to separate the oversize fractions (method SCR-21).

11.3.2. Gold Assaying

- A 50 g pulp aliquot is analyzed by Au-AA26: fire assay followed by aqua regia digestion (HNO_3-HCl) with an atomic absorption spectroscopy finish ("AAS");

- When assay results are higher than 100 grams per tonne ("g/t") gold ("Au"), a second 50 g pulp aliquot is analyzed by Au-GRA22: fire assay, parting with nitric acid (HNO_3) with a gravimetric finish;
- All samples containing visible gold or cosalite mineralization are assayed by the metallic screen method (method Au-SCR21). At the request of ODV, any sample exceeding 100 g/t Au (Au-AA26) is rerun with the screen method following the procedure below;
- For visible gold assays or cosalite mineralization, the +100 µm fraction (Au+) is analyzed in its entirety by fire assay ("FA") with gravimetric finish. The 100 µm fraction (minus) is homogenized and two subsamples are analyzed by FA with AAS (Au-AA25) or gravimetric finish (Au-GRA21). The average of the two minus fraction subsamples are taken and reported as the Au-fraction result. The gold content is then determined by the weighted average of the Au+ and Au- fractions.

11.3.3. Multi-element Assaying

- Some samples are analyzed by trace-level multi-element method ME-MS61: a 0.25 g aliquot is digested by four-acid digestion (HNO_3-$HClO_4$-HF-HCl) and HCl leach (method GEO-4A01) and analyzed by ICP-AES.
- Following this analysis, the results are reviewed for high concentrations of bismuth, mercury, molybdenum, silver, and tungsten and diluted accordingly. Samples meeting these criteria are then analyzed by ICP-MS. Results are corrected for spectral interelement interferences.

11.3.4. Specific Gravity Measurements

- Before crushing and pulverizing, the specific gravity of selected samples is determined by the bulk sample method (water displacement, OA GRA08).

11.4. Quality Assurance and Quality Control

This section summarizes the reviews of ODV's 2020 and 2021 assay QA/QC program.

A total of 49,243 and 111,361 samples (including QA/QC samples) were assayed during 2020 and 2021. The 2020 and 2021 QA/QC programs included a routine insertion of standards and blanks. ODV included one standard in every 20 samples and one blank in every 40 samples. The 2020 and 2021 QA/QC programs did not include field or coarse reject duplicates.

11.4.1. Certified Reference Materials (Standards)

Accuracy is monitored by adding standards at the rate of one certified reference materials ("CRM") for every 20 samples. Standards are used to detect assay problems with specific sample batches and any possible long-term biases in the overall dataset. ODV's definition of a quality control failure is when:

- Assays for a CRM are outside plus or minus three standard deviations (±3SD) or ±10%; or
- Assays for two consecutive CRMs are outside ±2SD, if one of them is outside ±3SD.

11.4.2. 2020 Certified Reference Materials (Standards) Performance

A total of 2,458 standards were analyzed during the 2020 Program, for an insertion rate of 5.0%. Five different CRMs from Ore Research and Exploration Pty Ltd. ("OREAS") were used.

In 2020, a total of 22 QC failures were recognized, and reruns were requested in 17 cases. Reruns were not requested for the other five cases, as per ODV's protocol, because the surrounding samples were assayed at or below the lower detection limit (0.01 g/t Au). A total of 18 corrected certificates were issued, and the corrected assays were loaded into the database.

The 2020 average CRM results are all within ±0.4% of the expected values (Table 11-1). Most assays were within ±3SD of the accepted value (Figure 11-1).

Table 11-1: Results of standards used by ODV for the 2020 Program

CRM	Count	Expected Au (g/t)		Observed Au (g/t)		Percent of Expected (%)
		Average	SD	Average	SD	
OREAS 218	113	0.531	0.017	0.533	0.013	100.3%
OREAS 219	506	0.76	0.024	0.760	0.019	100.0%
OREAS 226	609	5.45	0.126	5.448	0.083	100.0%
OREAS 228b	612	8.57	0.199	8.583	0.134	100.2%
OREAS 237	618	2.21	0.054	2.219	0.044	100.4%
Total	**2,458**	**Weighted Average**				**100.15%**

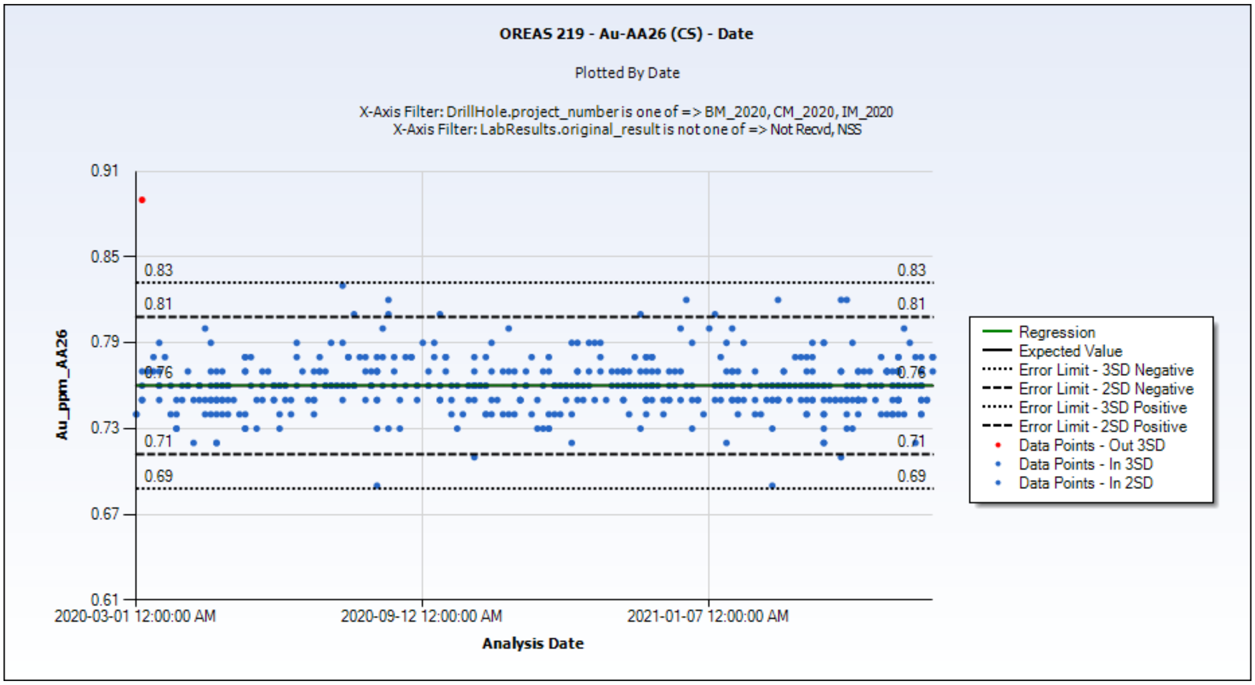


Figure 11-1: Example of results for standard OREAS 219 for the 2020 Program

11.4.3. 2021 Certified Reference Materials (Standards) Performance

A total of 5,571 standards were analyzed during the 2021 Program, for an insertion rate of 5.0%. Eight different CRMs from OREAS were used.

In 2021, a total of 75 QC failures were recognized, and reruns were requested in 63 cases. Reruns were not requested for the other 12 cases, as per ODV's protocol, because the surrounding samples were assayed at or below the lower detection limit (0.01 g/t Au). A total of 50 corrected certificates were issued, and the corrected assays were loaded into the database. Two standards failed again on the rerun, but the samples that were rerun along with the standards were within 10% of the original values.

The 2021 average CRM results are all within ±1.8% of the expected values, except for OREAS 217 which had a small sample size (Table 11-2). Most assays were within ±3SD of the accepted value (Figure 11-1).

Table 11-2: Results of standards used by ODV for the 2021 Program

CRM	Count	Expected Au (g/t)		Observed Au (g/t)		Percent of Expected (%)
		Average	SD	Average	SD	
OREAS 217	2	0.338	0.010	0.345	0.007	102.1%
OREAS 219	1,207	0.76	0.024	0.758	0.019	99.7%
OREAS 226	1,083	5.45	0.126	5.417	0.101	99.4%
OREAS 228b	640	8.57	0.199	8.553	0.159	99.8%
OREAS 232	267	0.902	0.023	0.901	0.020	99.9%
OREAS 237	1,477	2.21	0.054	2.216	0.047	100.3%
OREAS 240	353	5.51	0.139	5.427	0.104	98.5%
OREAS 242	542	8.67	0.215	8.516	0.171	98.2%
Total	**5,571**	**Weighted Average**				**99.60%**

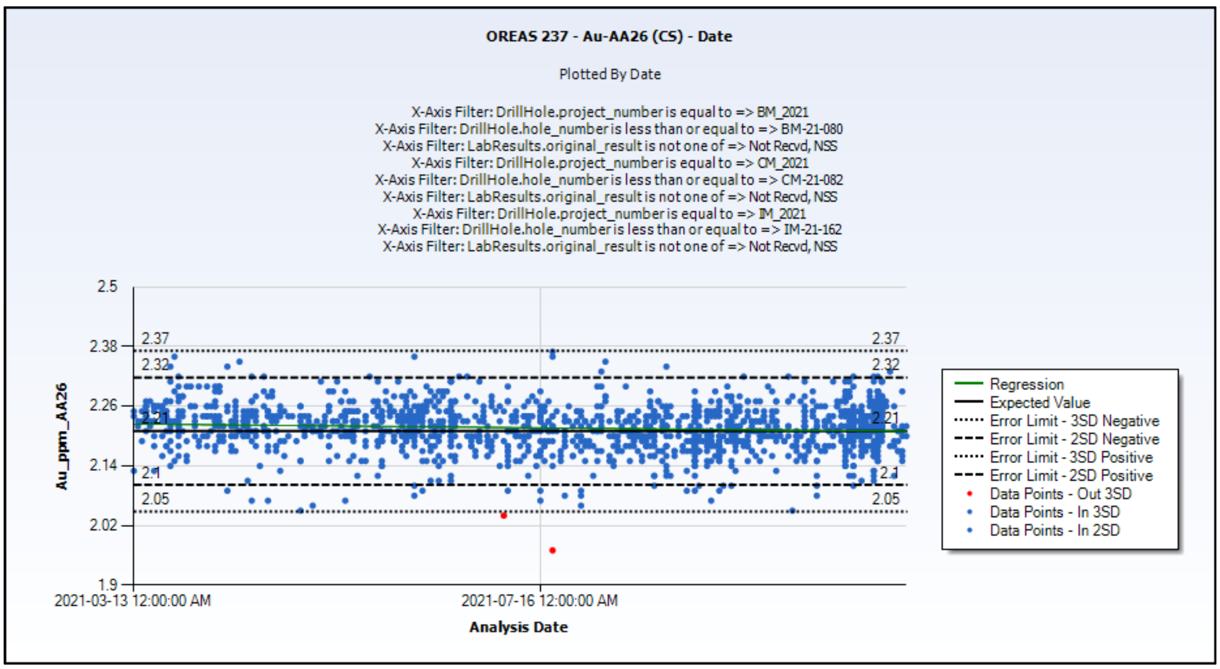


Figure 11-2: Example of results for standard OREAS 237 for the 2021 Program

11.4.3.1. Comment for Monitoring Accuracy

The QP is of the opinion that ODV's quality control program for monitoring accuracy using standards is reliable and valid based on the results presented by ODV personnel.

11.4.4. Blank Samples

Contamination during preparation is monitored by the routine insertion of coarse barren material (a "blank") that goes through the same sample preparation and analytical procedures as the core samples. Elevated values for blanks may indicate sources of contamination in the fire assay procedure (contaminated reagents or crucibles) or sample solution carry-over during instrumental finish.

11.4.5. 2020 Blank Samples Performance

In 2020, 1,235 blanks were submitted to ALS with the core samples. ODV personnel identified two cases of contamination for gold in coarse blank material, and both cases were sent for repeat assaying. Both cases passed on the rerun. The corrected assay certificates were loaded into the database.

All the blanks analyzed at ALS assayed less than or equal to 0.1 g/t Au, which is 10 times the detection limit of 0.01 g/t Au and are thus considered acceptable. Table 11-3 summarizes the performance of the blanks. Figure 11-3 shows the results over the year.

Table 11-3: Results of blanks used by ODV for the 2020 Program

Total blanks	1,235
Minimum Au g/t	<0.01
Maximum Au g/t	0.09
Below detection limit (# and %)	1073 (86.9%)
QC Failures (# and %)	2 (0.16%)

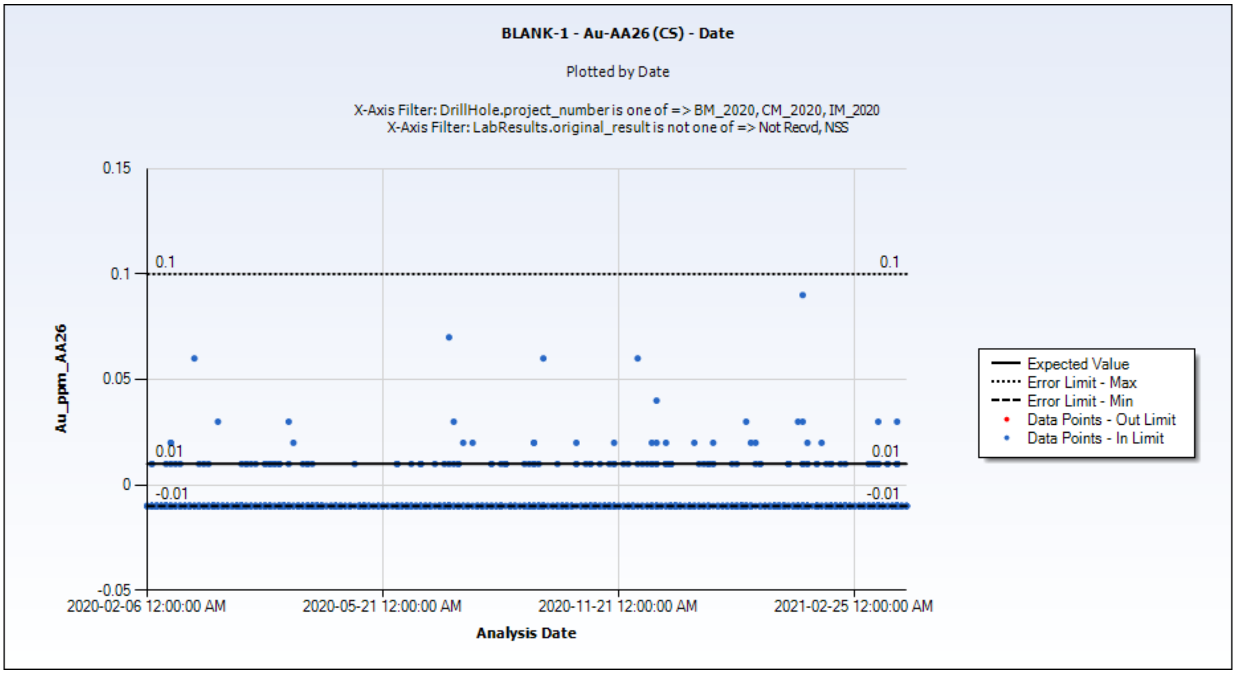


Figure 11-3: Results of blanks for the 2020 Program

11.4.6. 2021 Blank Samples Performance

In 2021, 2,789 blanks were submitted to ALS with the core samples. ODV personnel identified two cases of contamination for gold in coarse blank material, and both cases were sent for repeat assaying. Both cases passed on the rerun. The corrected assay certificates were loaded into the database.

All the blanks analyzed at ALS, assayed less than or equal to 0.1 g/t Au, which is 10 times the detection limit of 0.01 g/t Au, and are thus considered acceptable. Table 11-4 summarizes the performance of the blanks. Figure 11-4 shows the results over the year.

Table 11-4: Results of blanks used by ODV for the 2021 Program

Total blanks	2,789
Minimum Au g/t	<0.01
Maximum Au g/t	0.09
Below detection limit (# and %)	2,315 (83.0%)
QC Failures (# and %)	2 (0.07%)

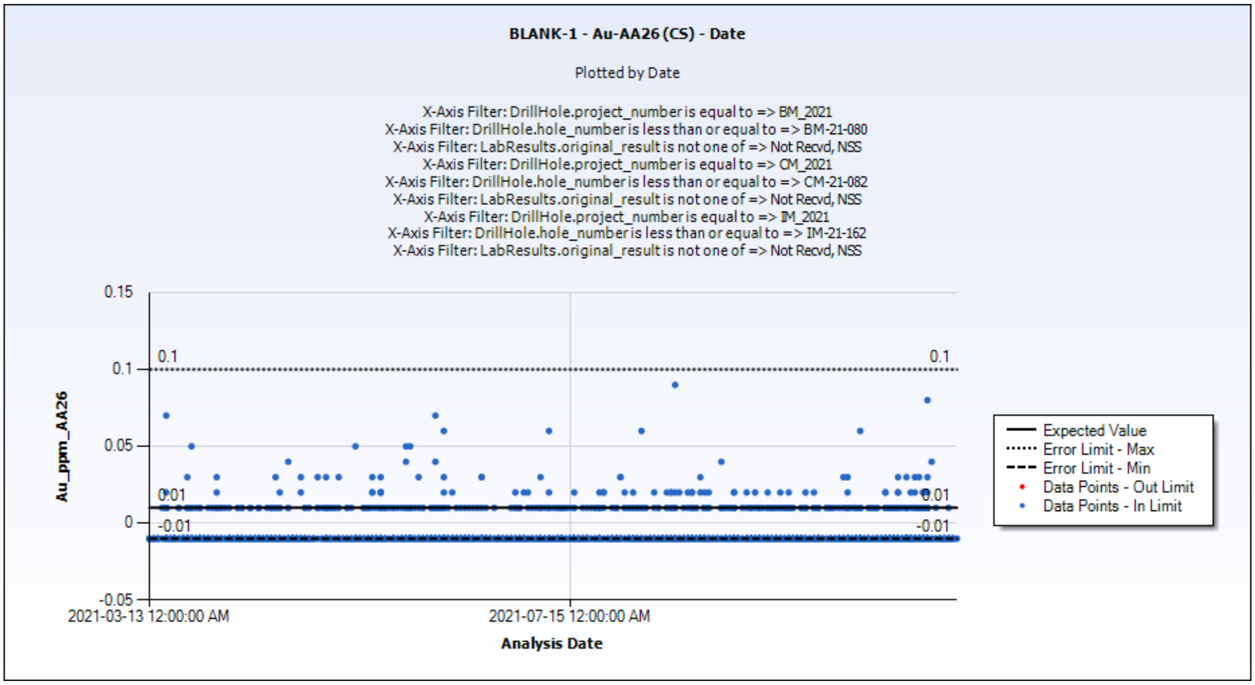


Figure 11-4: Results of blanks for the 2021 Program

11.4.6.1. Comment on Monitoring Contamination

The QP is of the opinion that ODV's quality control program for monitoring contamination using blanks is reliable and valid based on the results presented by ODV personnel.

11.5. Conclusions

A total of 564 holes from the 2020 and 2021 Programs were included in the current resource. The QP is of the opinion that the sample preparation, analysis, QA/QC, and security protocols used for the Project follow generally accepted industry standards, and that the data is valid.

12. Data Verification

This chapter covers the data verification of the diamond drill hole databases used for the 2022 mineral resource estimate ("MRE") (the "ODV Databases"), as well as the review and validation of the geological models of each deposit, and the review of information on mined-out areas and the data for selected drill holes (assays, QA/QC program, downhole surveys, lithologies, alteration, and structures).

The Qualified Persons ("QP") also reviewed and validated the resource estimation process followed by ODV and Talisker Exploration Services Inc. ("Talisker"), including all parameters, geological interpretation, basic statistics, variography, interpolation parameters, block model construction, scripts that run the model, volumetric report, and the validation process.

The ODV Databases contain the 2,730 completed and validated diamond drills holes ("DDH") used for the 2020 MRE. They are divided among four databases covering the eight deposits as follows:

- Cow Mountain database for the Cow and Valley deposits (1,201 holes);
- Island Mountain database for the Shaft and Mosquito deposits (867 holes);
- Barkerville Mountain database for the BC Vein and Splays, the KL, and the Lowhee deposits (500 holes);
- Bonanza Ledge database (162 holes).

Since the 2020 MRE, no drilling has been carried out on the KL, BC Vein, and the Bonanza Ledge deposits. The 2020 MRE for the Bonanza Ledge deposit as published in both technical reports (Beausoleil and Pelletier, 2020), remains current for the 2022 MRE. The 2022 MRE results for the KL and the BC Vein deposits are different from the 2020 MRE results; search ellipses and interpolation parameters were modified to be consistent with the other five deposits.

The verification for this Technical Report also included a site visit conducted by the QP, Mr. Vincent Nadeau-Benoit, from November 1 to 5, 2021. The site visit included a visit and review of the core logging facilities, drill pads, and mineralized outcrops. The QP also examined core from drill holes from the 2020 Program and 2021 Program. Core logging and sampling procedures were discussed with the ODV's geologists Ms. Tessa Scott, Ms. Natalie Cook, Ms. Tezla Hayduk, and Ms. Katherine Gleadow. Discussions covered collar locations, drilling protocols, downhole surveys, logging protocols, oriented core, structural measurements, sampling protocols and QA/QC protocols. Mr. Nadeau-Benoit, QP, is of the opinion that the site visit and validation exercises demonstrated the validity of the protocols in place and their use during the 2020 Program and 2021 Program.

Mr. Carl Pelletier, QP, also previously conducted site visits; from February 1 to 4, 2016, and from May 3 to 12, 2016. The first included the Bonanza Ledge pit, the Cow Mountain area, and the Island Mountain area. The second involved a visit to the core logging facilities and several drill hole collars.

12.1. Historical Work

Historical work subject to verification consisted of the holes used for the 2020 MRE (Beausoleil and Pelletier, 2020). Basic cross-check routines were performed between the current ODV Databases and the previously validated database for the 2020 MRE; i.e., collars, downhole surveys, assay fields. No discrepancies with the current database were found.

12.2. ODV Databases

The ODV Databases were verified for consistency against the Datamine DHLogger export.

The final databases are considered to be of good overall quality. The QPs consider the ODV Databases to be valid and reliable.

12.2.1. ODV Drill Hole Collar and Downhole

The 2020 and 2021 surface drill hole collars were surveyed using a Trimble DGPS unit.

The collar survey information was verified for 5% of the holes from the latest drilling programs, using the raw survey files. The QP verifications also included numerous field checks on collar location (using a handheld GPS). No discrepancies were found.

Downhole surveys (single shot and multi-shots) were conducted on the majority of surface holes. The Reflex survey information was verified for 5% of the holes from the latest drilling programs. No discrepancies were found.

12.2.2. Assays

The QPs had access to the assay certificates for all historical and current holes in the ODV Databases. All assays were verified for selected drill holes from the latest drilling programs, i.e., 5% of the 2020 Program. The assays recorded in the databases were compared to the original certificates from ALS Minerals (North Vancouver, BC). The electronic transfer of the laboratory results via e-mail, followed by the electronic transfer directly into the databases by the issuer's staff, allowed for immediate error detection and prevented any typing errors.

No errors or discrepancies were found. The final databases are considered to be of good overall quality. The QPs consider the ODV Databases to be valid and reliable.

Discussions and reviews with the issuer's personnel convinced the QPs that the protocols and the QA/QC program in place are adequate.

12.3. Mined-out Voids

Only BC Vein is currently being mined. The resource for this deposit is depleted with a solid representing the latest surveyed underground workings (as of December 31, 2021) with a 5 metre ("m") buffer around them.

The 2020 voids model for Bonanza Ledge (all types of historical underground workings combined; see below) remains current and was used for the 2022 MRE.

The "buffer voids" are a combination of the historical underground workings (stopes, drifts and shafts) of the Cariboo Gold Quartz Mine (Cow Mountain), the Aurum Mine and Mosquito Creek Mine (Island Mountain), and the Barkerville Mountain Mine (Barkerville Mountain) with a 5 m buffer around them.

These "buffer voids" were used to deplete the final resource estimate.

For the Cow, Valley, Shaft, Mosquito, Lowhee, and BC Vein deposits, the drilling program continues to intercept undocumented voids. To reduce the associated risk, a spherical buffer with a 10 m radius was applied around the intercepts to represent a potential stope of 20 m in diameter. These spherical buffers were also used to deplete the final resource estimate.

The QPs consider the level of detail in the void triangulation to be of good quality and reliable, despite some uncertainty related to previously undocumented voids.

12.4. ODV Logging, Sampling and Assaying Procedures

The QP examined drill holes from the 2020 Program and 2021 Program.

All core boxes were labelled and properly stored on core racks or on pallets. Sample tags are present in the boxes and it was possible to validate sample numbers and confirm the presence of mineralization in the reference half-core samples from mineralized sections.

Independent resampling was also completed by the QP of mineralized intervals from the Cow deposit and Mosquito deposit. The results show that low-grade samples yielded grade that are consistent with the original results and more variable results for higher-grade samples (although gold ["Au"] values still considered high), reflecting a nugget effect commonly related to this type of deposit.

Table 12-1 shows the results of the independent resampling.

The pictures in Figure 12-1 document the site visit and core review.

Table 12-1: Results of the independent resampling of material from the Cow and Mosquito deposits

Hole Information			Original (ODV)		1/4-Split (InnovExplo)		Litho. Code (Deposit)
Hole ID	From	To	Sample Number	Au (ppm)	Sample Number	Au (AA26) (ppm)	
CM-21-010	94.80	95.85	B859968	0.03	2155817	0.03	SS (V8-Cow)
CM-21-010	95.85	96.85	B859969	4.05	2155818	5.78	SS (V8-Cow)
CM-21-010	96.85	97.65	B859971	1.18	2155819	0.66	SS (V8-Cow)
CM-21-010	97.65	98.85	B859972	1.20	2155820	0.75	SS (V8-Cow)
CM-21-010	98.85	100.00	B859973	3.02	2155821	1.51	SS (V8-Cow)
CM-21-010	100.00	101.50	B859974	0.12	2155822	0.08	SS (V8-Cow)
IM-21-005	204.00	205.40	C235583	Below DL	2155823	0.02	SS (V39-Mosquito)
IM-21-005	205.40	206.05	C235584	1.94	2155824	2.10	SS (V39-Mosquito)
IM-21-005	206.05	207.15	C235585	17.95	2155825	18.85	SS (V39-Mosquito)
IM-21-005	207.15	208.00	C235586	0.02	2155826	0.03	SS (V39-Mosquito)
IM-21-005	208.00	209.50	C235587	0.02	2155827	0.02	SS (V39-Mosquito)

12.5. Mineral Resource Estimation Process

The 2022 MRE for the Cow, Shaft, Valley, Mosquito, BC Vein, KL, and Lowhee deposits were prepared by Talisker. The geological interpretation and 3D geological model were prepared by ODV. The QPs reviewed and validated all the parameters for the seven updated models including: geological interpretation, basic statistics, variography, interpolation parameters, block model construction, scripts running the model, volumetric report, and the validation process.

Since the 2020 MRE, no exploration and definition drilling have been carried out on the KL, BC Vein, and Bonanza Ledge deposits. The 2020 MRE for the Bonanza Ledge deposit as published in both technical reports (Beausoleil and Pelletier, 2020), remains current for the 2022 MRE. The 2022 MRE results for the KL and the BC Vein deposits are different from the 2020 MRE results; search ellipses and interpolation parameters were modified to be consistent with the other five deposits.

The QPs reviewed the estimation process described in Chapter 14 for the eight deposits and considers these models to be acceptable.

12.6. Conclusion

Overall, the QPs data verification demonstrates that the data, protocols interpretation, and estimation process are acceptable. The QPs consider the ODV Databases to be valid and of sufficient quality to be used for the mineral resource estimate herein.

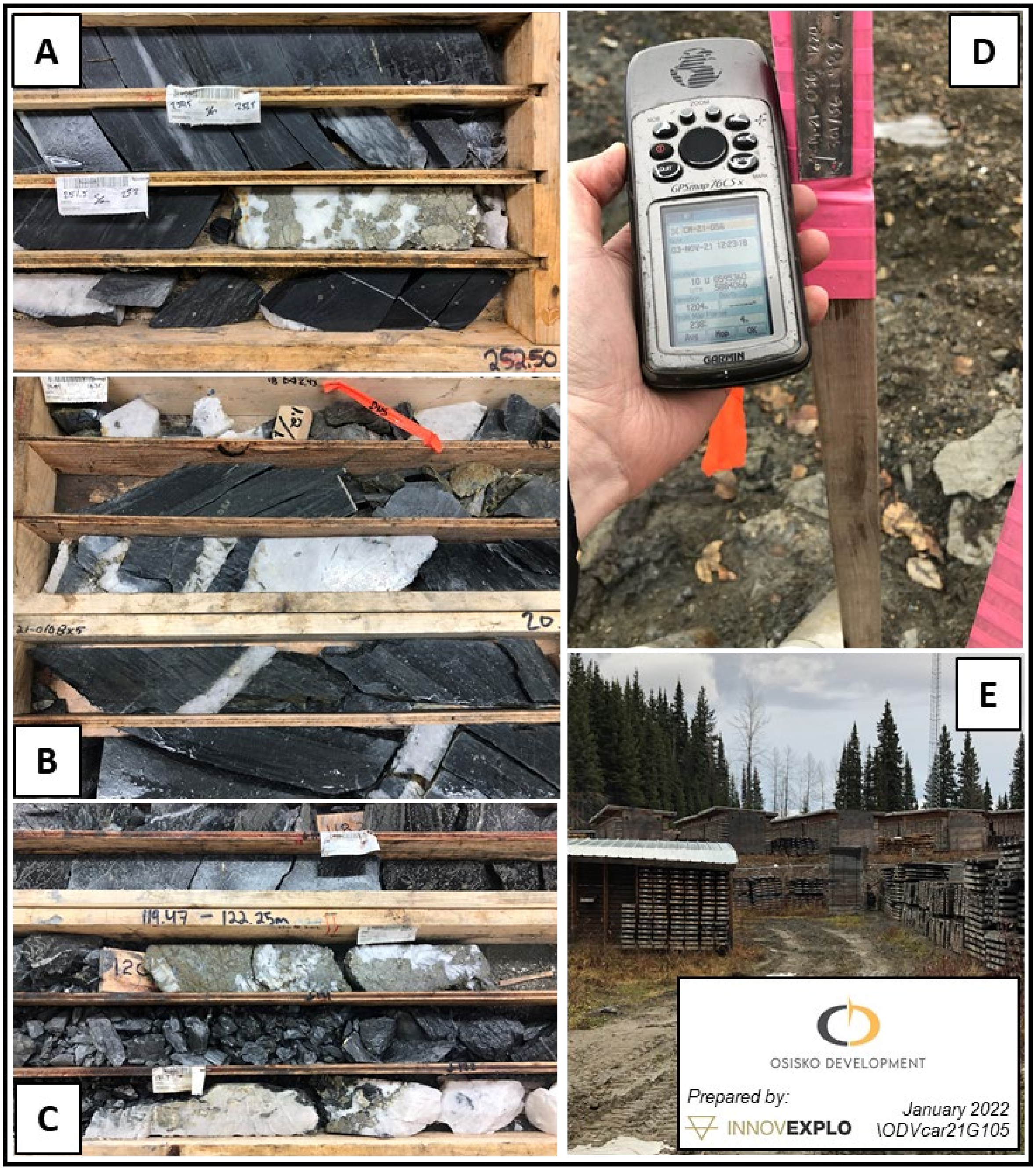


Figure 12-1: Site visit including core review (November 2021)
A) Review of hole BM-21-001 (Lowhee deposit); B) Review of hole CM-21-010 (Cow and Valley deposit); C) Review of hole IM-21-067 (Shaft deposit); D) Field check by QP on collar location; E) External core storage

13. Mineral Processing and Metallurgical Testing

13.1. Testwork Campaign

The metallurgical testwork program was developed by BBA Engineering Ltd. ("BBA") and Osisko Development Corp. ("ODV") in order to characterize the Cariboo Gold Project ("the Project") mineralized material behaviour to mineral processing and extraction processes. The testwork program was designed to determine the mineralized material response to a pre-concentration process and subsequently to the cyanide leach process. The testwork was conducted in 2018 at Steinert, SGS, Cyanco, and Pocock.

13.1.1. Sample Selection and Compositing

The program included composite samples from four zones: Shaft Zone ("SZ"), Cow Zone ("CZ"), Valley Zone ("VZ"), and Mosquito Zone ("MZ"). The material for the composites was obtained from NQ drill core intervals from the diamond drill core of the drilling campaigns performed by ODV in 2016, 2017 and 2018. The spatial distribution of the selected intervals is represented in Figure 13-1 and Figure 13-2.

The selected mineralized intervals for the life of mine ("LOM") composite included wall rock/shoulder samples from quartered NQ drill core and were separated on site into two size fractions: coarse (-60 millimetres ["mm']/+10 mm) sized material sent to Steinert in Kentucky, USA for mineral sorting testwork; and fines (-25 mm) sized material sent to SGS Burnaby, British Columbia, for compositing for metallurgical testwork. The amount of material received by each is presented in Table 13-1.

A single composite of fines (-25 mm) fraction was prepared at SGS by blending the material from each zone to represent the expected LOM distribution. The testwork for the fines (-25 mm) fraction involved mineralized material characterization, grindability, gravity, and flotation. Mineral sorting pre-concentration products received from Steinert were also blended to create composites, representing the expected LOM distribution and individual mineralized zones. Cyanide leaching response of pre-concentrates from both the mineral sorting and flotation samples were tested individually. A bulk sample representing the QR Mill feed blend of mineral sorter concentrate and flotation concentrate was prepared for leach optimization.

Table 13-1: Material received for LOM composites

Zone	Weight (kg)	
	Fines	Coarse
Cow	257.8	365.2
Valley	59.4	172.4
Mosquito	81.0	33.2
Shaft	287.8	237.2
Shaft 2	411.8	590.8
Total	**1,097.8**	**1,398.8**

Drill core intervals for variability composites that represented gold ("Au") grade variation of each mineralized zone was selected by ODV and BBA and sent to SGS for a second metallurgical testwork campaign. The material received for the variability testwork program was 1,243 kilograms ("kg") from Shaft Zone, 728 kg from Cow Zone, and 180 kg from Valley Zone (Table 13-2). The drill core intervals received were crushed to -35 mm and screened. The coarse fraction (35+10 mm) of the material was sent to Steinert for mineral sorting testwork. Material sized 10 mm was kept at SGS for metallurgical testwork. Mineral sorting products received back from Steinert were assayed and prepared for metallurgical testwork at SGS. A map of the testwork program and samples produced for extended testwork- is provided in Figure 13-3.

Table 13-2: Material received for variability composites

Zone	Composite Name	Weight (kg)		
		Fines	Coarse	Total
Shaft Zone	SZ-LOM	157	370	**527**
	SZ-High	89	160	**249**
	SZ-Low	87	174	**261**
	SZ-Deep	64	142	**206**
Cow Zone	CZ-LOM	58	167	**225**
	CZ-High	70	139	**209**
	CZ-Low	78	216	**294**
Valley Zone	VZ-LOM	18	38	**56**
	VZ-High	14	29	**43**
	VZ-Low	17	64	**81**

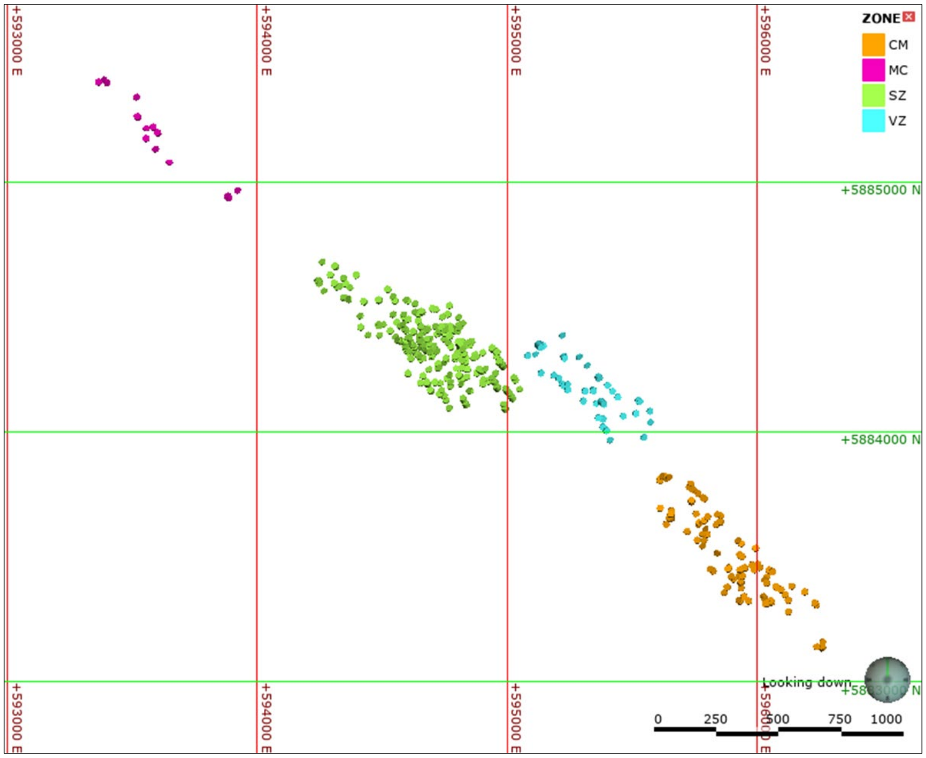


Figure 13-1: Sample locations – Plan view
(Source: Morgan et al, 2019)

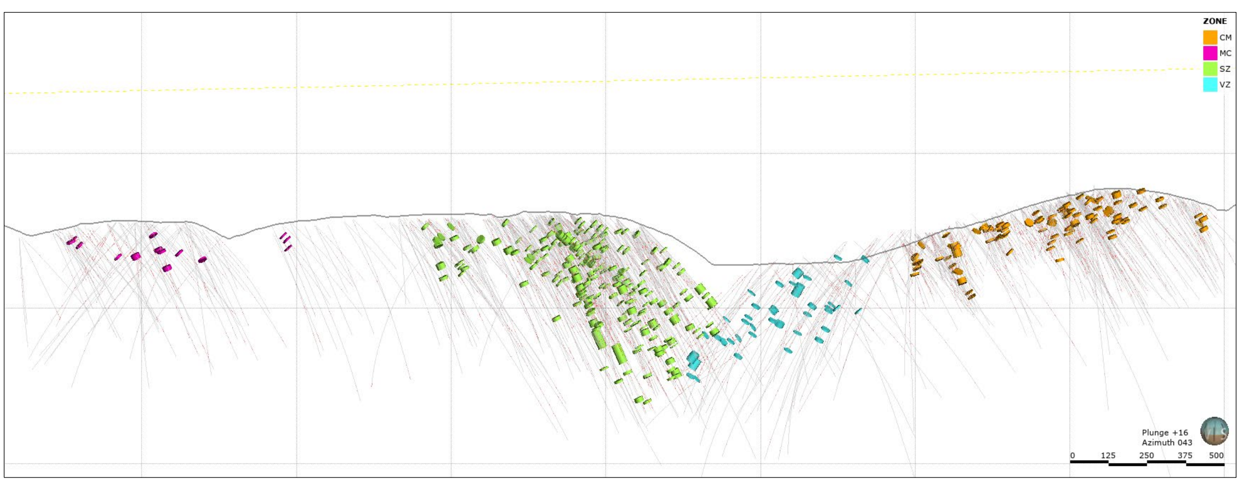


Figure 13-2: Sample locations – Section view
(Source: Morgan et al, 2019)

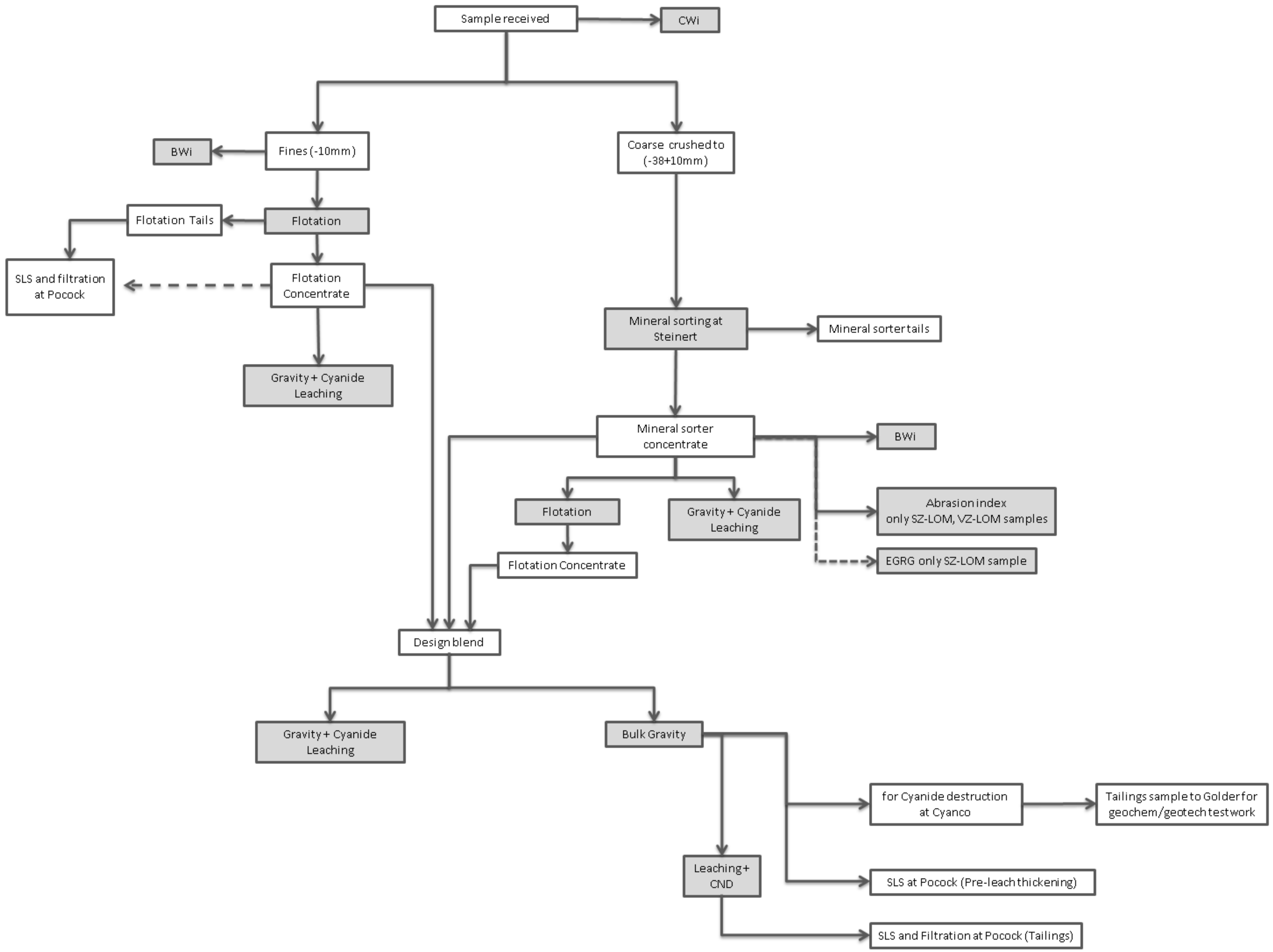


Figure 13-3: Testwork program map and samples produced for extended testwork (Source: Morgan et al, 2019)

13.1.1.1. Composite Characterization

Head Assays

The composites were submitted to screened metallic analysis for gold at +150 (oversize) and -150 (undersize) meshes and subjected to semi-quantitative inductively coupled plasma ("ICP") scan for multi element analysis. Table 13-3 summarizes the results of LOM composite fines and Table 13-4 summarizes the results of LOM composite mineral sorting samples for major elements.

Table 13-3: LOM composite fines head assay

Sample	Oversize mass (%)	Undersize mass (%)	Au grade of oversize (g/t)	Au grade of undersize (g/t)	Calculated total Au grade (g/t)	Total S grade (%)
Fines composite	3.77	96.23	15.70	2.94	3.42	2.62

Table 13-4: LOM mineral sorting samples head assays

Zone	Sample ID	Oversize mass (%)	Undersize mass (%)	Au grade of oversize (g/t)	Au grade of undersize (g/t)	Calculated total Au grade[(1)] (g/t)	Total S grade[(1)] (%)
Shaft	SZ1	3.5	96.5	24.29	6.88	7.48	4.38
Cow	CZ	3.6	96.4	40.62	3.31	4.67	2.28
Valley	VZ1	3.9	96.1	10.80	3.47	3.77	3.07
Mosquito	MC	5.1	94.9	5.36	4.93	4.91	4.93
Run of Mine	ROM 1-1	4.4	95.6	18.87	4.66	5.19	3.97
Shaft	SZ2	2.1	97.9	120.26	6.65	7.35	4.49
Run of Mine	ROM-2	2.4	97.6	24.76	4.85	5.30	4.31
Run of Mine	ROM 1-2	2.8	97.2	59.46	6.20	6.89	4.08
Valley	VZ2	2.3	97.7	28.31	3.24	3.77	3.23
Shaft	LOM-SZ	3.6	96.4	81.57	6.01	9.27	3.12
Shaft	SZ[(2)]	3.3	96.7	26.41	5.45	5.94	3.24
Cow	CZ[(2)]	4.3	95.7	62.15	4.41	7.10	2.76

(1) Head grades calculated using mineral sorting product assays.

(2) Feed crushed to -38 mm.

The variability composites were also submitted to screened metallic analysis for gold at +150 (oversize) and -150 (undersize) meshes and subjected to semi-quantitative ICP scan for multi element analysis. Table 13-5 summarizes the results of variability composite fines and Table 13-6 summarizes the results of variability mineral sorting samples for major elements.

Table 13-5: Variability composites – Fines (-10mm) head assays

Sample ID	Oversize mass (%)	Undersize mass (%)	Oversize Au (g/t)	Undersize Au (g/t)	Calculated Total Au grade (g/t)	Total TOC grade (%)	Total S grade (%)	Total Cu (g/t)	Total Fe (g/t)
SZ LOM	3.7	96.3	10.9	9.3	9.4	0.1	7.4	<40	71,287
SZ High	3.6	96.4	30.0	20.5	20.9	0.1	10.4	140	102,439
SZ Low	3.7	96.3	79.5	8.2	10.8	0.2	7.8	<40	80,090
SZ Deep	3.9	96.1	7.0	2.7	2.9	0.5	2.3	121	35,611
CZ LOM	3.7	96.3	20.0	3.2	3.8	0.4	2.8	<40	50,877
CZ Low	3.9	96.1	46.9	5.7	7.4	0.5	6.7	<40	74,497
CZ High	2.3	97.7	283.0	14.9	21.2	0.7	8.1	<40	83,066
VZ LOM	2.9	97.1	89.7	5.1	7.7	1.4	3.5	87	89,018
VZ Low	96.9	3.1	14.9	3.5	3.9	0.7	5.4	162	43,225
VZ High	96.7	3.3	48.9	9.5	10.9	0.8	9.3	117	51,286

Table 13-6: Variability composites – Mineral sorting samples head assays

Sample ID	Oversize mass (%)	Undersize mass (%)	Oversize Au (g/t)	Undersize Au (g/t)	Calculated total Au grade[1] (g/t)	Total TOC grade (%)	Total S grade (%)	Total Cu (g/t)	Total Fe (g/t)
SZ LOM	3.1	96.9	9.4	6.4	6.5	0.2	4.2	105.6	46,736
SZ High	3.1	96.9	55.0	8.9	9.7	0.1	4.3	278.8	52,407
SZ Low	3.4	96.6	17.1	4.3	4.7	0.1	3.1	33.9	41,011
SZ Deep	3.0	97.0	88.4	1.5	3.4	0.5	1.4	49.8	29,508
CZ LOM	3.2	96.8	62.6	2.1	4.0	0.3	1.7	52.5	34,771
CZ Low	3.3	96.7	15.8	3.0	3.5	0.3	2.9	<40	37,368
CZ High	3.4	96.6	208.4	6.8	14.1	0.5	5.7	<40	57,561
VZ LOM	4.0	96.0	18.7	5.3	5.8	0.9	4.8	118.2	58,423
VZ Low	3.6	96.4	5.4	2.7	2.9	0.5	3.5	63.3	43,225
VZ High	5.4	94.6	14.6	5.7	6.0	1.2	3.2	108.7	48,112

(1) Head grades calculated using mineral sorting product assays.

Gold deportment

A sample of LOM fines composite was submitted for gold deportment analysis at SGS. The study reported 13.8% of total liberated gold (liberated and pure gold minerals) and 86.2% gold associated with other minerals. 59.9% of the gold was associated with pyrite, 7.3% with heavy silicates, and 2.5% with complex sulphides (Figure 13-4).

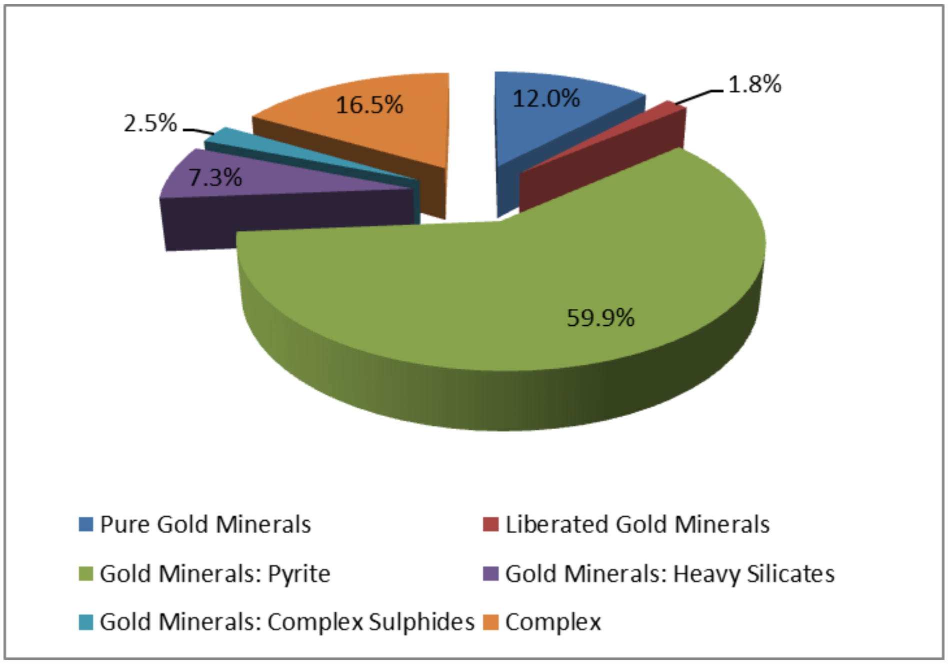


Figure 13-4: Mineralogical distribution of gold occurrences

The gold association by size is presented in Figure 13-5. Approximately 43% of pure gold was found in the coarse size range of 125-180 µm and gold associated with heavy silicates was under 20 µm.

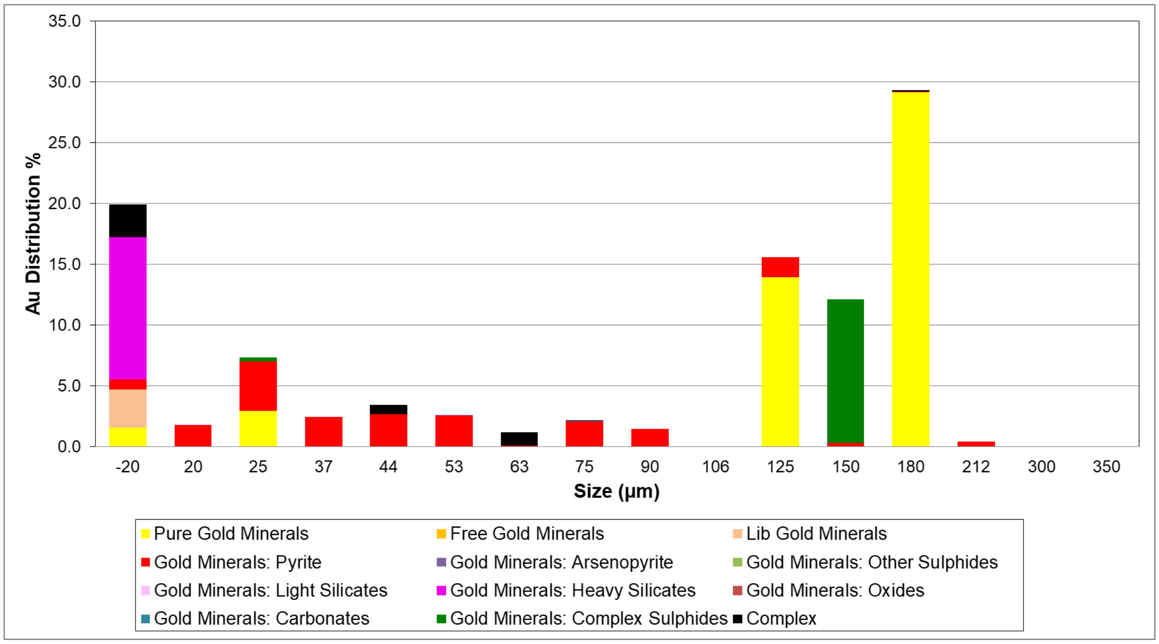


Figure 13-5: Gold association by size
(Source: Morgan et al, 2019)

13.1.2. Comminution Testwork

Samples were submitted to crusher work index ("CWi"), Bond ball mill work index ("BWi"), and abrasion index ("Ai") testing at SGS. The test results are presented in Table 13-7, Table 13-8 and Table 13-9. CWi and BWi results categorize the hardness of the mineralized material as medium, and the abrasiveness of the mineralized material is categorized as medium to moderately abrasive based on Ai.

Table 13-7: Crusher work index

Sample ID	CWi (kWh/t)
SZ-Deep MSC	6.9
SZ-High MSC	7.3
SZ-LOM MSC	5.7
SZ-Low MSC	6.5
CZ High	12.4
CZ Low	18.5
CZ LOM	15.8

Table 13-8: Abrasion index

Sample ID	Ai (g)	Ai Category
SZ-Deep MSC	0.227	Medium
SZ-High MSC	0.250	Medium
SZ-LOM MSC	0.283	Medium
SZ-Low MSC	0.229	Medium
CZ High	0.341	Moderately Abrasive
CZ Low	0.390	Moderately Abrasive
CZ LOM	0.309	Moderately Abrasive

Grindability testwork was performed on the fines and mineral sorter concentrates ("MSC") individually.

Table 13-9: Bond ball mill work index

Sample ID	Mesh of grind	Bond Work index (kWh/t)
-25 mm (Sample #1) / Fines	150	10.7
-25 mm (Sample #1) / Fines	230	14.2
CZ Low Fine	150	12.0
CZ LOM Fine	150	11.2
CZ High Fine	150	11.4
SZ Low Fine	150	11.6
SZ High Fine	150	11.8
SZ Deep Fine	150	12.1
VZ-21 ROM	150	11.7
VZ-22 ROM	150	13.9
VZ-23 ROM	150	11.3
VZ-24 ROM	150	14.5
CZ Comp MSC	230	14.0
SZ Comp MSC	230	14.0
MSC LOM Comp	230	14.2
SZ LOM MSC	230	15.0
SZ High MSC	230	14.9
SZ Low MSC	230	15.7
SZ Deep MSC	230	14.7
CZ LOM MSC	230	15.4
CZ Low MSC	230	16.4
CZ High MSC	230	17.0

13.1.3. Mineral Sorting Testwork

Mineral sorting testwork was conducted at Steinert facilities in Kentucky, USA, in August 2018. The initial testwork program focused on 1,264 kg of drill core material, from all four deposits, crushed to -60 mm/+10 mm. The mineral sorting products of two samples from Shaft Zone and Cow Zone were recombined to reproduce the previously tested -60 mm/+10 mm feed, crushed to -35 mm/+10 mm and sent back to Steinert for mineral sorting. A summary of these samples is presented in Table 13-10.

Table 13-10: Mineral sorted LOM composites

Zone	Sample ID	Mass (kg)	Size fraction
Shaft	SZ1	239	-60 mm/+10 mm
Shaft	SZ2	252	
Cow	CZ	325	
Valley	VZ1	46	
Mosquito	MC	8	
Run of Mine	ROM 1	30	
Run of Mine	ROM 2	70	
Run of Mine	ROM 1-2	62	
Valley	VZ2	70	
Shaft	LOM-SZ	178	
Shaft	SZ	66	-35 mm/+10 mm
Cow	CZ	58	

The second mineral sorting testwork program involved the variability samples from three mineralized deposits. Ten variability samples sized -35 mm/+10 mm were mineral sorted at Steinert in January 2019. The summary of the variability samples is presented in Table 13-11.

Once the mineral sorting tests were completed, the mineral sorting products were sent to SGS for analysis along with the -8 mm fines generated during mineral sorting due to sample handling.

Table 13-11: Mineral sorted variability composites

Zone	Sample ID	Mass (kg)	Size fraction
Shaft	SZ LOM	330	-35 mm/+10 mm
	SZ High Grade	149	
	SZ Low Grade	158	
	SZ Deep	129	
Cow	CZ LOM	161	
	CZ Low Grade	208	
	CZ High Grade	134	
Valley	VZ LOM	36	
	VZ Low Grade	61	
	VZ High Grade	27	

Sensor Evaluation

In order to determine the best sensor suited to the Project material, hand-picked core samples representing mineralized rock and waste rock were prepared. The response of these two groups of rocks to X-Ray Transmission ("XRT"), colour camera, induction, and XRT/laser combination scanners were evaluated.

An XRT/laser combination was used for the testing based on the results of the evaluation.

Flowsheet Tests and Results

The tests on each sample were run in a five-stage process. The first four stages were "rougher" stages consisting of XRT only at different scanner settings. The purpose of the XRT scanner is to collect the sulphide minerals. The fifth stage was a laser scanner "scavenger" to collect quartz bearing particles.

The XRT rougher stage conditions were set up to be highly selective at first to produce the highest grade concentrate with the least amount of mass pull. With each additional stage, the conditions became less selective, increasing recovery but decreasing concentrate grade. Conditions for maximum gold recovery and simultaneous waste rejection were selected based on the analysis of the results. A summary of the results for each sample tested is presented in Table 13-12. The "Fines" in the table refers to the fines generated during the sorting test manipulation. According to the mineral sorter strategy, they can be combined with concentrate. The "grade vs. recovery" curves for each sample are illustrated in Figure 13-6.

Table 13-12: Mineral sorting test results – LOM composites

Zone	Sample ID	Feed grade (Au, g/t)	Mass pull (%)			Au distribution (%)			Product grade (Au, g/t)		
			Conc.[1]	Waste	Fines	Conc.[1]	Waste	Fines	Conc.[1]	Waste	Fines
Shaft	SZ1	7.48	70.4	29.6	4.2	99.2	0.8	3.7	10.8	0.2	6.6
Shaft	SZ2	7.35	60.7	39.3	2.6	98.2	1.8	4.5	11.9	0.3	12.7
Cow	CZ	4.67	48.7	51.3	4.1	97.4	2.6	5.6	9.6	0.2	6.4
Valley	VZ1	3.77	78.1	21.9	3.1	99.0	1.0	7.9	4.6	0.2	9.7
Mosquito	MC	4.92	86.1	13.9	6.7	99.1	0.9	8.9	5.6	0.3	6.3
Run of Mine	ROM 1	5.19	82.2	17.8	3.8	99.2	0.8	7.9	6.0	0.2	10.7
Run of Mine	ROM 2	5.3	52.4	47.6	11.2	95.1	4.9	10.9	10.8	0.5	5.2
Run of Mine	ROM 1-2	6.89	42.4	57.6	0.1	96.9	3.1	0.2	15.8	0.4	9.6
Valley	VZ2	3.77	44.2	55.8	0.9	97.4	2.6	1.1	8.4	0.2	4.5
Shaft	LOM-SZ	9.27	65.2	34.8	1.9	98.9	1.1	1.4	14.3	0.3	6.8
Shaft	SZ (-35 mm/+10 mm)	5.94	44.2	55.8	0.9	96.6	3.4	1.2	13.1	0.4	7.8
Cow	CZ (-35 mm/+10 mm)	7.10	65.2	34.8	1.9	77.5	22.5	2.8	8.4	4.6	10.9
Global Average		**5.97**	**61.7**	**38.4**	**3.5**	**96.2**	**3.8**	**4.7**	**9.9**	**0.7**	**8.1**
Minimum		**-**	**42.4**	**13.9**	**0.1**	**77.5**	**0.8**	**0.2**	**4.6**	**0.2**	**4.5**
Maximum		**-**	**86.1**	**57.6**	**11.2**	**99.2**	**22.5**	**10.9**	**15.8**	**4.6**	**12.7**

[1] Concentrate mass recovery, gold distribution, and grade values include fines.

Table 13-13: Mineral sorting test results – Variability composites

Zone	Sample ID	Feed grade (Au, g/t)	Mass pull (%)			Au distribution (%)			Product grade (Au, g/t)		
			Conc.[1]	Waste	Fines	Conc.[1]	Waste	Fines	Conc.[1]	Waste	Fines
Shaft	SZ LOM	6.47	33.6	66.4	0.1	86.8	13.2	0.2	16.73	1.28	9.66
	SZ High Grade	9.74	44.5	55.5	0.1	92.0	8.0	0.3	20.17	1.40	18.60
	SZ Low Grade	4.68	34.8	65.2	0.1	93.5	6.5	0.2	12.58	0.46	8.99
	SZ Deep	3.41	32.4	67.6	0.1	35.6	64.4	0.2	3.74	3.25	6.32
Cow	CZ LOM	3.95	65.7	34.3	6.8	64.0	36.0	5.6	3.85	4.14	3.24
	CZ Low Grade	3.45	65.6	34.4	4.7	96.2	3.8	7.1	5.06	0.38	5.21
	CZ High Grade	14.05	70.0	30.0	9.1	99.7	0.3	5.3	20.01	0.15	8.14
Valley	VZ LOM	5.77	61.2	38.8	5.8	98.4	1.6	11.1	9.27	0.24	5.77
	VZ Low Grade	2.90	56.3	43.7	5.4	95.5	4.5	7.3	4.92	0.29	3.86
	VZ High Grade	5.96	43.0	57.0	6.3	97.6	2.4	8.0	13.53	0.25	7.65
SZ Average		**6.07**	**36.3**	**63.7**	**0.1**	**77.0**	**23.0**	**0.2**	**13.30**	**1.60**	**10.89**
CZ Average		**7.15**	**67.1**	**32.9**	**6.9**	**86.6**	**13.4**	**6.0**	**9.64**	**1.56**	**5.53**
VZ Average		**4.88**	**53.5**	**46.5**	**5.8**	**97.2**	**2.8**	**8.8**	**9.24**	**0.26**	**5.76**
Global Average		**6.04**	**50.7**	**49.3**	**3.9**	**85.9**	**14.1**	**4.5**	**10.99**	**1.18**	**7.74**

(1) Concentrate mass recovery, gold distribution, and grade values include fines.

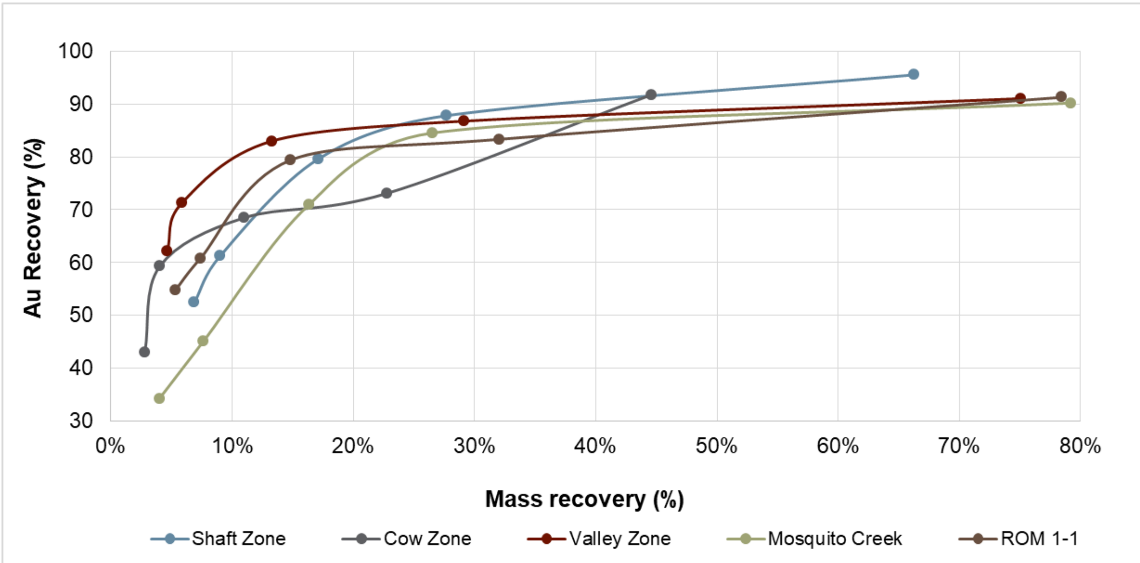


Figure 13-6: Mineral sorting grade recovery curves

The XRT was successful in recovering 70% to 94% of the gold after four roughing stages targeting sulphide bearing rock with only 23% to 37% mass pull. The implementation of a laser scavenging step to collect quartz particles increased gold recovery on average by approximately 2% for Shaft samples and approximately 9% for Cow and Valley samples. However, the associated mass recovery increased by 19% on average; ranging between 7% and 32%. In general, Shaft Zone samples had lower mass recoveries at the laser stage. With further testing, it may be possible to optimize the mineral sorter setting for quartz recovery to maintain gold recovery and limit mass pull.

The samples prepared and sent to Steinert were screened to the designated feed sizes (-60 mm/+10 mm or -35 mm/+10 mm), however there were fines generated during transport, material handling, and testing. The mass and gold recoveries of the generated fines (-8 mm) collected at the end of the tests were included in the total recovery and grade. It is critical to consider the fines during circuit design as they represent an average of 5% of the gold fed at the mineral sorting stage. In the testwork, the concentrate was targeted for separation by air jet while the fines reported with the waste to the conveyor belt and then were screened out. In operations, the waste will be removed by air jetting and the fines will report with the concentrate (Steinert, 2019).

Mineral sorter Performance

Table 13-14: Summary – Average mineral sorting recoveries

Zone	Feed grade (Au, g/t)	Mass recovery (%)	Au recovery (%)	Conc. grade (Au, g/t)	Waste grade (Au, g/t)
Shaft Zone	6.8	48.2	87.6	12.9	0.9
Cow Zone	6.6	63.0	87.0	9.4	1.9
Valley Zone	4.4	56.6	97.6	8.1	0.2

The average mass recovery of the Cow Zone and Valley Zone mineral sorting concentrates were higher than the Shaft Zone mineral sorting concentrates. Although gold recoveries for the majority of the tested samples were higher than 87%, SZ Deep, CZ LOM and CZ (-35 mm/+10 mm) samples were outliers with lower recoveries. The global average recovery increases to 95.7% excluding these outlying data points. Further testwork is required to determine the response to mineralogical variation and to optimize the mineral sorting settings.

Effect of Particle Size

The Shaft Zone and Cow Zone samples of -60 mm/+10 mm size fraction, which were outside the recommended top size to minimum size range of 3:1, were re-crushed to -35 mm/+10 mm and re-submitted to the mineral sorting procedure. The results of re-runs are presented in Table 13-12. For the Shaft Zone, the mass recovery improved significantly from an average of 65% to 44% without compromising the gold recovery. However, for the Cow Zone, gold recovery dropped unexpectedly. Although the mass pull was higher, 4.6% of gold was reported to waste. The testwork on the -35mm/+10mm size range with the variability samples followed the same trend for Shaft Zone.

13.1.4. Flotation Testwork

Samples

Kinetic flotation tests were conducted on: fine fraction gravity tails, fine fraction of whole rock composites, mineral sorter concentrate, and a blend of mineral sorter concentrate with fines.

The gravity tails composites were produced from bulk gravity concentration tests, while the whole rock samples consisted of the -25 mm fines. The effect of grind size on flotation performance at target P_{80} values of 200, 150 and 100 µm was tested on these samples. Whole rock variability composites (SZ1, SZ2, SZ3 and SZ4) were tested at two target P_{80} values of 200 and 400 µms. The results of the flotation tests on the fines are provided in Table 13-15. Variability fines of CZ and SZ were also tested at 100 µm and 200 µm (Table 13-16).

Mineral sorting concentrate of CZ and SZ variability samples were tested at 100 µm and 200 µm. The same mineral sorter concentrate samples were blended with their generated fines and tested at 100 µm and 200 µm. The results are provided in Table 13-17.

Table 13-15: Flotation test results – Fines

Test ID	Feed type	Grind size (P_{80}, µm)		Au grade (g/t)			Mass pull (%)		Au recovery (%)	
		Target	Actual	Head	Conc.[1]	Tails	9 min	20 min	9 min	20 min
F1	Gravity tails	200	248	2.11	13.5	0.04	15.4	21.0	98.4	98.9
F2	Gravity tails	150	205	2.56	14.0	0.05	18.0	23.9	98.5	98.8
F3	Gravity tails	100	131	2.57	11.2	0.04	22.7	31.0	98.9	99.2
F10	Whole rock	200	178	3.18	14.11	0.03	18.3	22.5	99.3	99.5
F11	Whole rock	150	123	3.58	16.42	0.04	17.2	21.6	99.1	99.3
F12	Whole rock	100	75	3.20	12.24	0.03	20.5	26.0	99.3	99.5
F-SZ1-A	Whole rock	200	221	12.04	47.24	0.06	22.9	25.4	99.6	99.8
F-SZ1-B	Whole rock	400	351	10.75	44.73	0.21	21.2	23.9	98.4	99.4
F-SZ2-A	Whole rock	200	131	15.46	35.42	0.10	37.7	43.5	99.6	99.6
F-SZ2-B	Whole rock	400	211	14.34	36.80	0.06	33.9	38.9	99.7	99.8
F-SZ3-A	Whole rock	200	144	7.01	30.23	0.06	19.1	23.1	99.3	99.5
F-SZ3-B	Whole rock	400	234	5.41	27.73	0.02	15.6	19.4	99.7	99.7
F-SZ4-A	Whole rock	200	89	2.74	9.61	0.01	21.7	28.4	99.6	99.7
F-SZ4-B	Whole rock	400	156	2.86	11.84	0.03	18.7	24.0	99.1	99.2
						Minimum	**15.4**	**19.4**	**98.4**	**98.8**
						Average	**21.2**	**26.1**	**99.1**	**99.4**
						Maximum	**37.7**	**43.5**	**99.7**	**99.8**
						Standard deviation	**6.3**	**6.7**	**0.5**	**0.3**

(1) Concentrate and tailings grades presented are at 9 min.

Table 13-16 Flotation test results – Variability composite fines

Test ID	Feed type	Grind size (P_{80}, µm)		Au grade (g/t)			Mass pull (%)		Au recovery (%)	
		Target	Actual	Head	Conc.[1]	Tails	9 min	20 min	9 min	20 min
CZ-LOM-F1	Fines	200	180	4.51	38.6	0.11	11.4	13.5	97.8	98.1
CZ-LOM-F2	Fines	100	205	4.07	18.5	0.29	20.8	25.0	94.3	95.2
CZ-Low-F1	Fines	200	131	6.90	33.5	0.07	20.4	23.8	99.2	99.4
CZ-Low-F2	Fines	100	178	6.27	22.2	0.05	28.1	31.8	99.5	99.6
CZ-High-F1	Fines	200	123	21.68	91.2	0.15	23.7	25.1	99.5	99.7
CZ-High-F2	Fines	100	75	13.60	40.6	0.15	33.2	38.9	99.3	99.6
SZ-LOM-F1	Fines	200	300	10.97	67.0	0.12	16.1	17.0	98.1	99.1
SZ-LOM-F2	Fines	100	133	9.74	44.6	0.08	21.7	24.3	99.3	99.4
SZ-Low-F1	Fines	200	182	7.35	34.3	0.04	21.3	23.4	99.4	99.6
SZ-Low-F2	Fines	100	124	7.54	27.9	0.09	26.8	30.3	99.1	99.2
SZ-High-F1	Fines	200	213	18.20	75.3	0.11	24.0	28.3	99.1	99.6
SZ-High-F2	Fines	100	128	19.78	67.2	0.08	29.3	32.9	99.7	99.7
SZ-Deep-F1	Fines	200	214	3.02	19.2	0.02	15.6	18.5	99.2	99.5
SZ-Deep-F2	Fines	100	127	3.08	13.3	0.04	22.9	26.4	98.9	99.0
Minimum							**15.4**	**19.4**	**98.4**	**98.8**
Average							**21.2**	**26.1**	**99.1**	**99.4**
Maximum							**37.7**	**43.5**	**99.7**	**99.8**
Standard deviation							**6.3**	**6.7**	**0.5**	**0.3**

(1) Concentrate and tailings grades presented are at 9 min.

Fines Flotation

As seen in Table 13-15 and Table 13-16, regardless of grind size, the average gold recovery of fines flotation achieved was approximately 99% after 9 minutes ("min") flotation. In general, an increase in mass pull was observed with decreasing grind size, with no discernible improvement in recovery. It is therefore recommended to use a flotation time of 9 min at a targeted grind size of 200 µm for fines fraction.

A graph of the gold recovery as a function of flotation time is presented in Figure 13-7. The plot illustrates that gold recovery reaches a plateau after 9 minutes beyond which additional flotation time does not improve recovery. While gold recovery is not improved, Figure 13-8 illustrates that increasing flotation time from 9 min to 20 min results in an average increase of approximately 5% in mass pull for an average 0.2% increase in gold recovery.

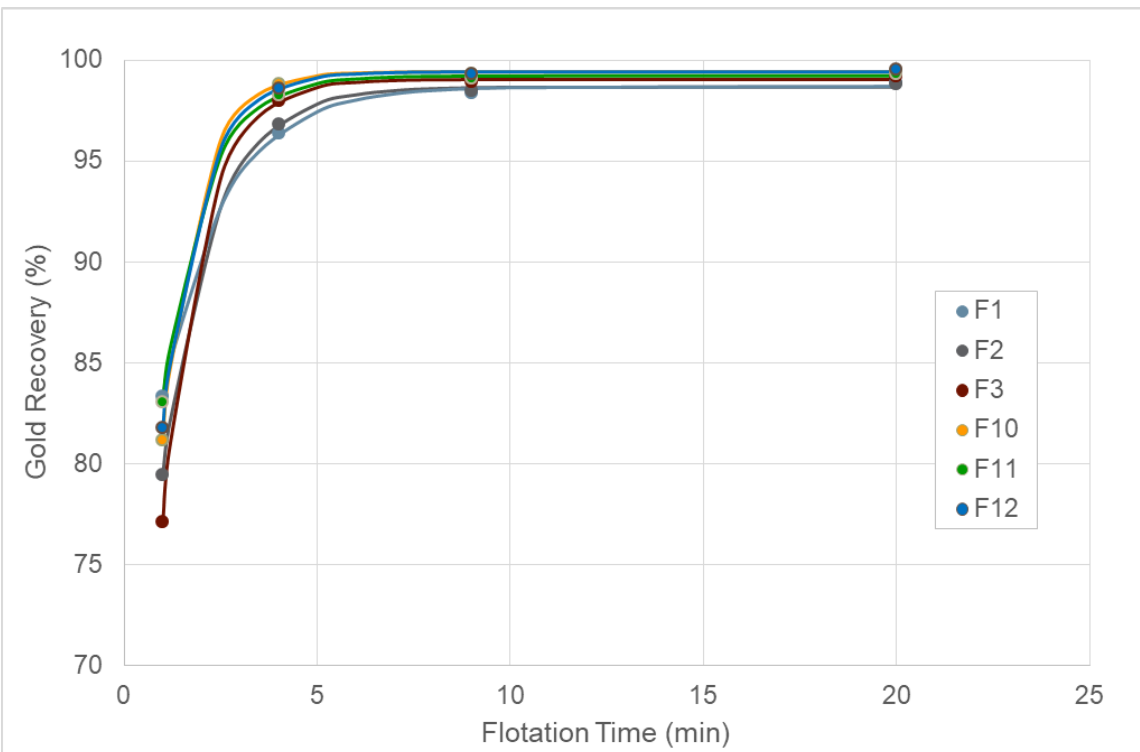


Figure 13-7: Gold recovery flotation kinetics (Hansuld and Gajo, 2019)

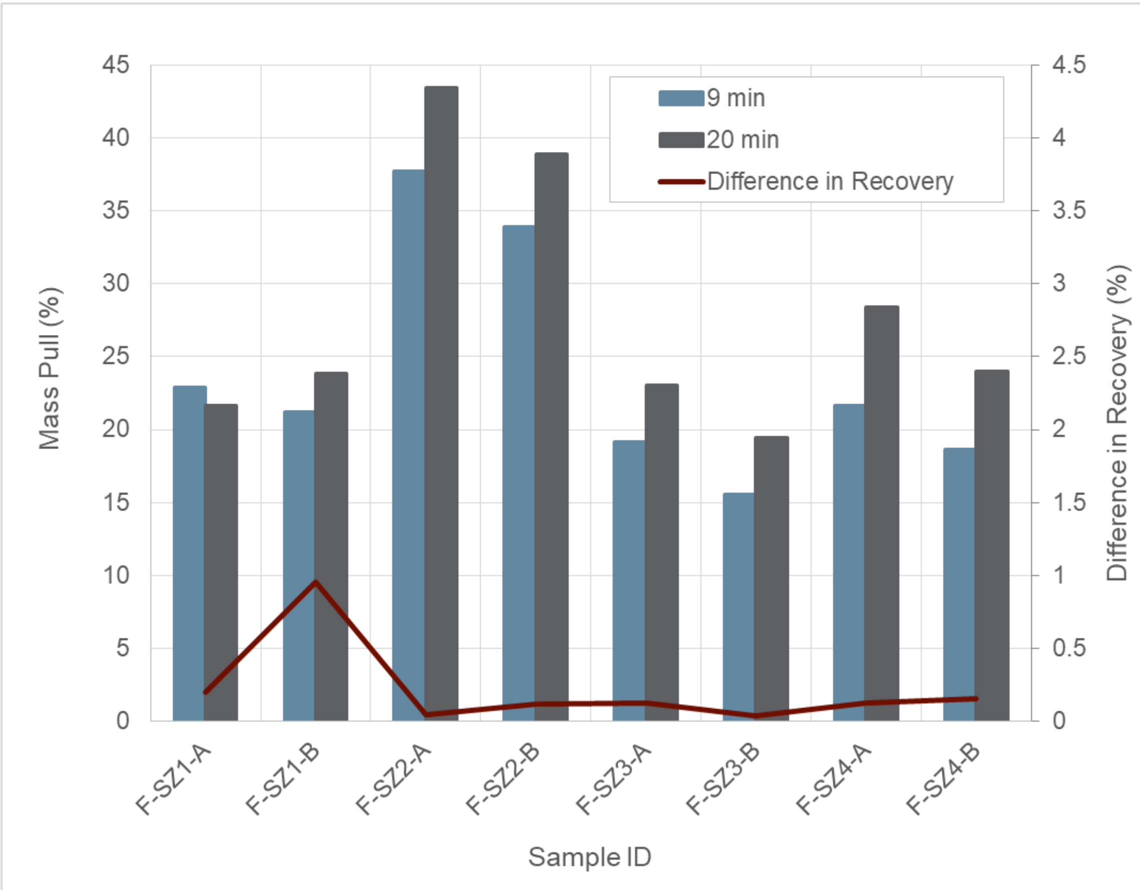


Figure 13-8: Impact of flotation time on mass pull and gold recovery (Hansuld and Gajo, 2019)

Mineral Sorter Concentrate Flotation

Table 13-17 shows that the mineral sorter concentrate flotation average gold recovery was higher than 98.6% after 9 min of flotation. In general, an increase in mass pull was observed with decreasing grind size, without any noticeable improvement in recovery. CZ-LOM blend of mineral sorter concentrates, and fines achieved 72% and 78% at 9 min flotation and >99% at 15 min. Further testwork is recommended on mineral sorter concentrate and fines blend.

Table 13-17: Flotation test results – Mineral sorter concentrate

Test ID	Feed type	Grind size (P_{80}, µm)		Au grade (g/t)			Mass pull (%)		Au recovery (%)	
		Target	Actual	Head	Conc.[1]	Tails	9 min	15 min	9 min	15 min
CZ-LOM-MSC-F1	MSC	100	116	2.08	9.2	0.04	22.2	29.1	98.6	99.3
CZ-LOM-MSC-F2	MSC	200	200	2.06	14.1	0.03	14.4	19.6	98.6	98.8
CZ-LOM-Blend-F1	MSC + Fines	100	101	9.06	24.1	3.43	27.3	36.3	72.4	99.8
CZ-LOM-Blend-F2	MSC + Fines	200	174	4.76	18.3	1.32	20.2	26.0	77.9	99.7
VZ-LOM-MSC-F1	MSC	100	101	8.49	24.5	0.02	34.6	42.3	99.8	99.9
VZ-LOM-MSC-F2	MSC	200	197	10.15	32.9	0.04	30.8	34.7	99.7	99.8
VZ-LOM-Blend-F1	MSC + Fines	100	97	6.88	20.1	0.04	34.2	38.7	99.6	99.7
VZ-LOM-Blend-F2	MSC + Fines	200	201	1.21	3.1	0.06	37.9	43.4	96.9	97.7
						Minimum	**14.4**	**19.6**	**72.4**	**97.7**
						Average	**27.7**	**33.8**	**93.0**	**99.3**
						Maximum	**37.9**	**43.4**	**99.8**	**99.9**
						Standard deviation	**7.63**	**7.74**	**10.40**	**0.71**

[1] Concentrate and tailings grades presented are at 9 min.

13.1.5. Gravity Concentration

Gravity concentration tests were performed on the blend of mineral sorter concentrate and flotation concentrate prior to leach tests. The samples were first subjected to gravity concentration using a lab scale Knelson concentrator and further concentrated with Mozley table. The average gold recovery was 28.1%.

13.1.6. Leaching Testwork

A leaching program was conducted and included flotation rougher concentrates, mineral concentrate, and blended flotation/mineral sorter concentrates at 70:30, 50:50 and 30:70 of fines-to-coarse ratios. The fines-to-coarse proportion for operations had not been established when the tests were performed, the testwork program was designed to cover a range of scenarios. The samples were prepared to a pulp density of 45% (weight/weight [“w/w”]) solids, with the exception of the flotation rougher concentrate leach tests that were run at 35% (w/w) solids. All leaching tests were conducted at a target pH of 11 to 11.5 and dissolved oxygen levels of 6 parts per million (“ppm”) to 8 ppm. A summary of the leaching conditions and results for individual tests are presented in Table 13-18 and averages by sample type are presented in Table 13-19.

Fines flotation concentrate, mineral sorter concentrate flotation concentrate and mineral sorter concentrate of variability composites were blended in proportions, which would represent the pre-concentrate production and leached at 45 µm and 75 µm with and without pre-treatment. Results of the leach tests are presented in Table 13-19 and the averages are presented in Table 13-21.

Table 13-18: Summary of leaching results

Test ID	Sample ID	Test conditions					Results							
		Feed K_{80}	Leach K_{80}	Leach time	$Pb(NO_3)_2$	NaCN	Adjusted NaCN cons.	CaO cons.	Au grade		Au recovery	Ag grade		Ag recovery
									Residue	Calc. head		Residue	Calc. head	
		µm	µm	hr	g/t	g/L	kg/t	kg/t	g/t	g/t	%	g/t	g/t	%
CN-1	F4-G Rougher Conc.	75	~71	72	0	2.0	0.55	1.23	1.34	12.64	89.4	4.40	14.48	69.6
CN-2	F4-G Rougher Conc.	30	29.8	72	0	2.0	0.83	1.89	0.82	15.05	94.6	3.00	15.37	80.5
CN-3	F4-G Rougher Conc.	45	~45	72	0	2.0	0.48	1.72	1.13	15.94	92.9	3.30	16.22	79.7
CN-77A-1	77A MSC	45	53	48	0	0.5	0.28	2.40	0.64	15.84	96.0	1.53	12.47	87.7
CN-77A-2	77A MSC	45	52	48	200	0.5	0.32	1.48	0.72	17.02	95.8	1.60	13.39	88.1
CN-77A-3	77A MSC	45	54	48	200	0.5	0.35	1.34	0.65	15.92	95.9	1.50	12.36	87.9
CN-77B-1	77B MSC	45	46	48	0	0.5	0.20	0.87	0.34	7.77	95.7	0.65	6.03	89.2
CN-77B-2	77B MSC	30	35	48	0	0.5	0.19	0.93	0.17	7.92	97.8	0.73	6.43	88.6
CN-77C-1	77C MSC	45	47	48	0	0.5	0.10	0.67	0.06	2.38	97.3	0.50	2.14	76.7
CN-79A-1	79A MSC	45	44	48	0	0.5	0.22	0.97	0.31	12.67	97.6	0.50	9.46	94.7
CN-79B-1	79B MSC	45	43	48	0	0.5	0.16	0.79	0.20	7.70	97.5	0.55	5.69	90.3
CN-79B-2	79B MSC	30	32	48	0	0.5	0.21	0.83	0.14	7.27	98.1	0.63	5.88	89.2
CN-79C-1	79C MSC	45	49	48	0	0.5	0.09	0.61	0.05	1.46	96.8	0.50	1.49	66.4
CN-5050-1	Sample 1 (50:50)	45	48	48	0	0.54	0.24	0.85	0.40	9.30	95.7	1.50	2.80	46.4
CN-5050-2	Sample 1 (50:50)	45	45	48	0	0.35	0.18	0.79	0.41	9.42	95.7	1.50	2.74	45.3
CN-7030-1	Sample 2 (70:30)	45	42	48	0	0.64	0.33	0.83	0.44	9.12	95.1	1.67	3.12	46.5
CN-7030-2	Sample 2 (70:30)	45	43	48	0	0.45	0.23	0.83	0.45	9.28	95.1	1.67	3.01	44.6
CN-7030-3	Sample 2 (70:30)	45	42	48	0	0.35	0.17	0.90	0.46	9.18	95.0	1.63	2.99	45.4
CN-3070-1	Sample 3 (30:70)	45	49	48	0	0.47	0.21	0.74	0.27	8.43	96.8	1.20	2.17	44.8
CN-3070-2	Sample 3 (30:70)	45	51	48	0	0.35	0.16	0.74	0.28	8.58	96.7	1.13	2.14	47.2

Table 13-19: Leaching results of flowsheet blends

Test ID	Sample ID	Test conditions					Results				
		Feed K_{80}	Leach K_{80}	Pre-aeration time	Leach time	NaCN	Adjusted NaCN cons.	CaO cons.	Au grade		Au recovery
									Residue	Calc. head	
		µm	µm	hr	hr	g/L	kg/t	kg/t	g/t	g/t	%
CN-CZ-LOM-1	CZ-LOM Gravity Tails	45	51	10	30	0.50	0.13	1.4	0.15	2.0	92.7
CN-CZ-LOM-2		45	50	0	40	0.50	0.27	0.7	0.11	2.0	94.5
CN-CZ-LOM-3		75	64	0	40	0.50	0.22	0.6	0.18	2.3	92.3
CN-CZ-Low-1	CZ-Low Gravity Tails	45	52	10	30	0.50	0.22	1.3	0.21	3.0	93.0
CN-CZ-Low-2		45	51	0	40	0.50	0.30	0.8	0.32	4.4	92.7
CN-CZ-Low-3		75	77	0	40	0.50	0.33	0.9	0.42	4.3	90.3
CN-CZ-High-1	CZ-High Gravity Tails	45	51	10	30	0.50	0.26	1.5	0.50	8.0	93.8
CN-CZ-High-2		45	53	0	40	0.50	0.35	1.1	0.57	9.1	93.8
CN-CZ-High-3		75	75	0	40	0.50	0.21	0.8	0.56	6.7	91.6
CN-VZ-LOM-1	VZ-LOM Gravity Tails	45	51	10	30	0.50	0.20	1.3	0.34	8.1	95.8
CN-VZ-LOM-2		45	51	0	40	0.50	0.27	0.9	0.42	7.8	94.6
CN-VZ-LOM-3		75	71	0	40	0.50	0.21	0.8	0.51	8.3	93.9
CN-VZ-Low-1	VZ-Low Gravity Tails	45	52	10	30	0.50	0.18	1.3	0.26	4.9	94.7
CN-VZ-Low-2		45	55	0	40	0.50	0.25	0.8	0.24	4.2	94.3
CN-VZ-Low-3		75	73	0	40	0.50	0.23	0.7	0.39	5.0	92.3
CN-VZ-High-1	VZ-High Gravity Tails	45	52	10	30	0.50	0.18	1.2	0.85	12.7	93.3
CN-VZ-High-2		45	50	0	40	0.50	0.26	1.1	0.87	12.2	92.9
CN-VZ-High-3		75	65	0	40	0.50	0.28	1.0	1.07	12.8	91.6
CN-SZ-LOM-1	SZ-LOM Gravity Tails	45	48	10	30	0.50	0.55	3.0	0.62	21.8	97.2
CN-SZ-LOM-2		45	53	0	40	0.50	0.37	1.5	0.73	21.0	96.6
CN-SZ-LOM-3		75	71	0	40	0.50	0.36	1.4	0.87	20.3	95.7
CN-SZ-Low-1	SZ-Low Gravity Tails	45	47	10	30	0.50	0.29	2.6	0.56	15.3	96.4
CN-SZ-Low-2		45	51	0	40	0.50	0.28	1.6	0.29	8.8	96.7
CN-SZ-Low-3		75	66	0	40	0.50	0.32	1.3	0.56	13.6	95.9
CN-SZ-High-1	SZ-High Gravity Tails	45	51	10	30	0.50	0.25	1.7	1.15	26.4	95.7
CN-SZ-High-2		45	52	0	40	0.50	0.44	1.3	0.58	14.7	96.0
CN-SZ-High-3		75	62	0	40	0.50	0.50	1.2	1.46	28.7	94.9
CN-SZ-Deep-1	SZ-Deep Gravity Tails	45	49	10	30	0.50	0.17	1.5	0.15	3.4	95.6
CN-SZ-Deep-2		45	50	0	40	0.50	0.25	1.1	0.17	4.7	96.4
CN-SZ-Deep-3		75	64	0	40	0.50	0.23	1.1	0.36	18.5	98.1

Results

In general, excellent gold leaching recoveries between 95% and 98% were observed for all tests performed on MSC and blended MSC/flotation concentrate samples. A 3-4% decrease in recovery was observed for the rougher flotation concentrates when leached alone.

Silver ("Ag") recoveries were quite variable averaging 77% and 86% for the flotation concentrates and mineral sorter concentrates respectively. While gold recoveries were excellent for the blended samples, silver recoveries for the same samples averaged 46%.

Table 13-20: Leach test result averages by sample type

Sample ID	Results								
	Feed K_{80}	Adjusted NaCN cons.	CaO cons.	Au grade		Au recovery	Ag grade		Ag recovery
				Residue	Calc. head		Residue	Calc. head	
	µm	kg/t	kg/t	g/t	g/t	%	g/t	g/t	%
Fines flotation Concentrate Average	50	0.62	1.61	1.1	14.54	92.3	3.57	15.4	76.6
Mineral sorter Concentrate Average	42	0.21	1.09	0.33	9.59	96.8	0.87	7.53	85.9
50:50 Blend Average	45	0.21	0.82	0.40	9.36	95.7	1.50	2.77	45.9
70:30 Blend Average	45	0.24	0.85	0.45	9.20	95.1	1.66	3.04	45.5
30:70 Blend Average	45	0.19	0.74	0.28	8.51	96.8	1.17	2.16	46.0

Leaching of blended pre-concentrates at approximately 50 µm on average resulted in 94% gold recovery. A range of 0.8-2.4% decrease in recovery was observed for leaching at 75 µm compared to 45 µm. In general, the pre-aeration stage decreased cyanide consumption insignificantly; however, lime consumption increased 0.6 kilograms per tonne ("kg/t") on average.

Table 13-21: Leach test result averages for flowsheet blends

Sample ID	Targeted feed F_{80}	Results					
		Leach K_{80}	Adjusted NaCN cons.	CaO cons.	Au grade		Au recovery
					Residue	Calc. head	
	µm	µm	kg/t	kg/t	g/t	g/t	%
Pre-aeration Average	45	50	0.24	1.7	0.48	10.6	94.8
45 µm Average	45	51	0.30	1.1	0.43	8.9	94.8
75 µm Average	75	69	0.29	1.0	0.64	12.0	93.7

The fines flotation concentrates were leached at three grinding sizes: 75 µm, 45 µm and 30 µm. With decreasing particle size, gold recovery improved, reagent consumption of lime (CaO) and cyanide (NaCN) increased as expected with the exposure of additional mineral surfaces produced by finer grinding. The flotation concentrates were leached for 72 hours while the mineral sorting products and blended samples were leached for 48 hours.

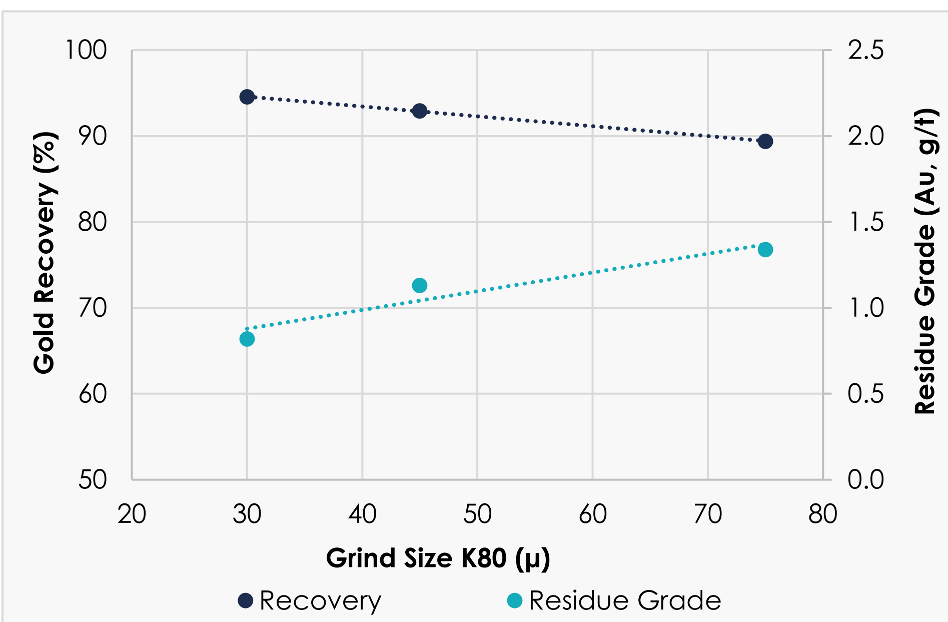


Figure 13-9: Leach recovery and residue grade as a function of grind size

Reagent Consumption

When comparing the tests conducted at a P_{80} of 45 µm, the highest lime and cyanide consumptions of 0.48 kg/t and 1.72 kg/t respectively, were in the tests where the fines flotation concentrates were leached on their own. The average lime and cyanide consumptions when leaching the mineral sorting concentrates were considerably lower at 0.21 kg/t and 1.09 kg/t respectively. The lime consumption of the blends was lower than either the mineral sorter concentrate, and fines flotation concentrate consumptions. The cyanide consumption of the blends was equivalent to that of the mineral sorter concentrates when leached on their own.

13.1.7. Cyanide Destruction Testwork

Cyanide destruction testwork was performed on a bulk gravity tailings sample of the 50:50 (fines to coarse ratio) blend of flotation concentrate and mineral sorter concentrate at Cyanco following cyanidation. To reduce the reagent consumption rates, a pre-aeration step was added to leaching ahead of cyanide destruction. The addition of the pre-aeration step reduced the cyanide consumption and the amount of total cyanide in leach tails by reducing the formation of stable metal cyanide complexes, which were suspected to be cyanide consumers, and as a result reduced the detox reagent consumption rates. Targeted cyanide levels were successfully achieved with both conditions.

13.1.8. Thickening, Filtration and Rheology Testwork by Pocock Industrial

13.1.8.1. Samples Tested

Three samples were sent to Pocock Industrial in Salt Lake City, Utah for thickening, filtration and rheology testing; these included flotation tailings, pre-leach thickener feed and detoxed tailings. The characteristics of the as-received materials are summarized in Table 13-22.

Table 13-22: Sample characterization

Sample	Particle size (P_{80}, µm)	pH (as received)	SG for calculations
Flotation Tailings	105	7.8	2.76
Pre-leach Thickener Feed	41	10.9	2.88
Detoxed Tailings	36	9.2	2.97

13.1.8.2. Thickening

Flocculant Screening

All three samples were submitted to flocculant screening tests to identify the best reagent for flocculation of solids to promote rapid settling and reducing suspended solids concentration in overflow. The screening tests also provided an indication of the required reagent dosing. The selected flocculant for all three samples was a high molecular weight, 10% charge anionic polyacrylamide.

Once an appropriate flocculant was selected, static settling tests were conducted to provide an estimate of the optimized operating parameters, including feed slurry density and flocculant dosing, for dynamic testing. The recommended flocculant dosing for dynamic testing ranged between 24 grams per tonne ("g/t") and 36 g/t.

Dynamic Testing

Dynamic thickening tests were performed on each material to determine the recommended maximum hydraulic design basis for high-rate thickener design. Expected underflow solids concentrations and overflow suspended solids concentrations were also determined in testing. Table 13-23 provides high-rate thickener design criteria and operating parameters for each material.

Table 13-23: Recommended high-rate thickener operating parameters

Sample	Feed pulp density (%, w/w)	Flocculant dose (g/t)	Design net feed loading ($m^3/m^2/h$)	Predicted TSS (mg/L)	Predicted U/F density (%, w/w)
Flotation Tailings	14.8	24 - 26	3.7	150-250	71%
Pre-leach Thickener Feed	15.0	27 - 30	4.0	150-250	62%
Detoxed Tailings	17.2	32 - 36	3.8	150-250	64%

The overflow clarities achieved were shown to be in the range of what is generally acceptable. For further reduction of overflow suspended solids concentration, a polish filtration step may be required to treat the thickener overflow.

Each of the three thickening applications requires dilution of feed to between 13% and 17% (w/w) solids.

The suggested maximum design hydraulic loading rate is as follows:

- The flotation tailings material is 3.7 $m^3/m^2/h$ with a maximum recommended underflow density of 71% (w/w);
- The pre-leach thickener feed material is 4.0 $m^3/m^2/h$ with a maximum recommended underflow density of 62% (w/w);
- The detoxed tailings material is 3.8 $m^3/m^2/h$ with a maximum recommended underflow density of 64% (w/w).

13.1.8.3. Rheology

Rheological measurements were performed on thickened samples on each of the flotation tailings, pre-leach thickener feed and detoxed tailings materials. A typical yield stress vs. percent solids is presented in Figure 13-10.

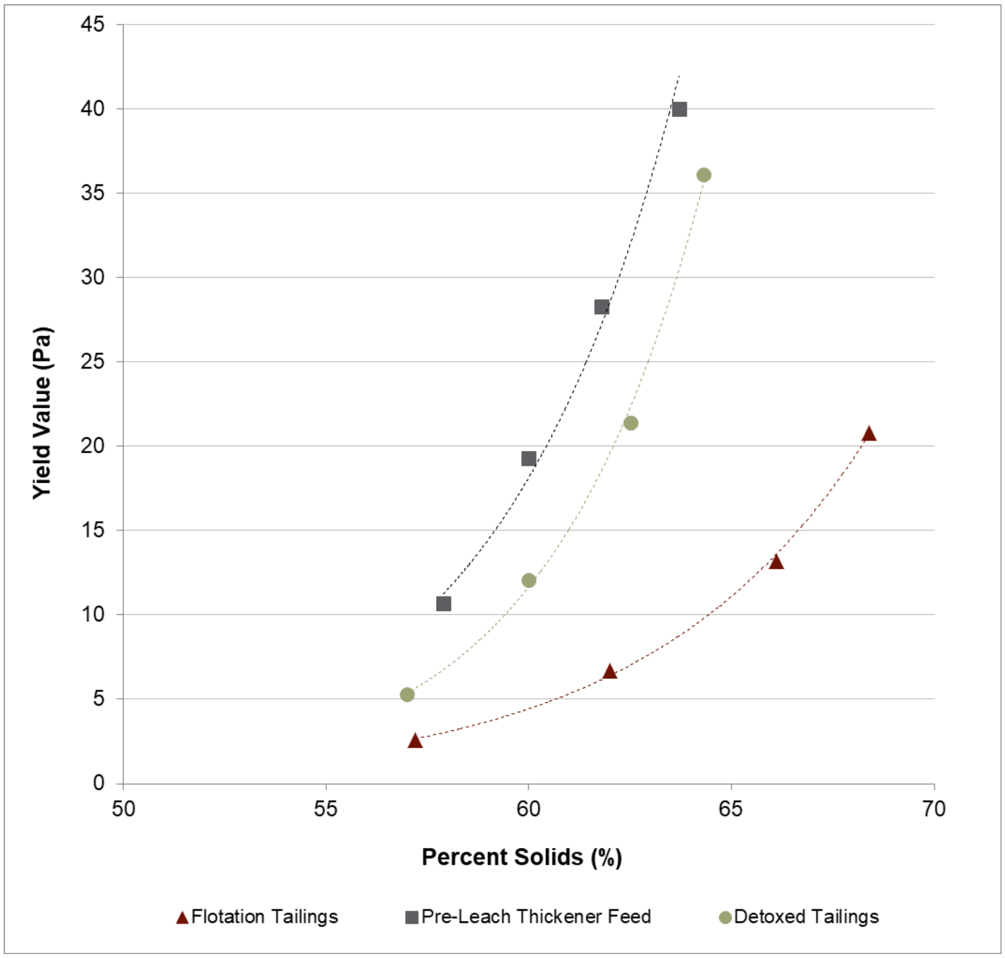


Figure 13-10: Yield value versus percent solids (Source: Pocock Industrials, 2019)

Rheology results indicate that for each of the materials, the yield value was less than 30 pascals ("Pa") at the maximum thickened underflow density recommended from the thickening tests. For these materials, a heavy-duty thickener rake mechanism is recommended to minimize the thickener underflow density due to insufficient rake torque.

13.1.8.4. Filtration Tests

Pressure filtration tests were conducted on both flotation and detox tailings. The tests were done in a 60 mm chamber, using air blow with and without membrane squeeze. The test conditions and main filtration results are presented in Table 13-24.

Table 13-24: Pressure filtration results and design parameters

Sample	Membrane squeeze	Feed pulp density (%, w/w)	Dry bulk density (t/m^3)	Cake thickness (mm)	Cycle time (min)	Cake moisture (%)
Flotation Tailings	N	68.3	1.49	60.0	12.0	8.5
Flotation Tailings	Y	68.3	1.53	58.3	12.5	8.0
Detoxed Tailings	N	62.7	1.50	60.0	12.0	13.9
Detoxed Tailings	Y	62.7	1.57	57.4	12.5	12.7

The results demonstrate that both with and without the membrane squeeze, both tailings materials dewatered well within an acceptable cycle time (12 min to 12.5 min). The cake moisture achieved for the flotation tailings and detoxed tailings ranged from 8.0% to 8.5% and from 12.7% to 13.9%, respectively. Obtained results for detoxed tailings are in the industry standard for tailings dry stacking (above 80% solid w/w).

13.1.9. Mass Pull Projection

The average recovery and mass pull results presented in this section were for the pre-concentrate blends prepared for the testwork program. The blends were prepared using a fixed proportion of each mineralized zone considering the preliminary mine plan at the time. Annual recovery projections are expected to differ from the average testwork results according to the final mine plan proportions of mineralized zones.

The average gold recovery and mass pull results from the testwork performed are summarized in Table 13-25. The projected pre-concentrate transferred to the QR Mill is 21.2% of the Mine Site Complex feed mass and the overall gold recovery is 92.2%.

Table 13-25: Average gold recovery and mass pull for each process step

Process step	Average stage mass pull (%)	Average Au stage recovery (%)
Crushing circuit fines	30.0	36.0
Crushing circuit coarse	70.0	64.0
Flotation concentrate	20.0	98.9
Coarse mineral sorting concentrate	42.6	93.9
Pre-concentrate (QR Feed)	21.2	95.3
Gravity	N/A	28.1
Leaching of pre-concentrate	N/A	95.5
Overall Au Recovery		**92.2**

13.2. Shaft Zone Bulk Sample Testing

The metallurgical testwork program was developed by BBA and ODV in order to confirm mineral sorter performance and mineralized material behaviour to mineral processing and extraction processes. This program included one bulk sample from Shaft Zone. The testwork was conducted in 2020 at Tomra, and 2021-2022 at SGS.

13.2.1. Mineral Sorting Testwork

Mineral sorting testwork was conducted in Wedel, Germany by Tomra in 2020. The initial sample was 2,213 kg from the Shaft Zone. The sample was screened, the undersize material (-10 mm) was removed, and two ranges of grain sizes, +10-25 mm and +25 mm, were generated. In Test Series 1, the material +25 mm was sorted, while in Test Series 2 the fine-grained material +10-25 mm was sorted. The sample preparation flowsheet is shown in Figure 13-11. Tomra used XRT sensors to detect sulphides, and laser sensors to detect quartz particles.

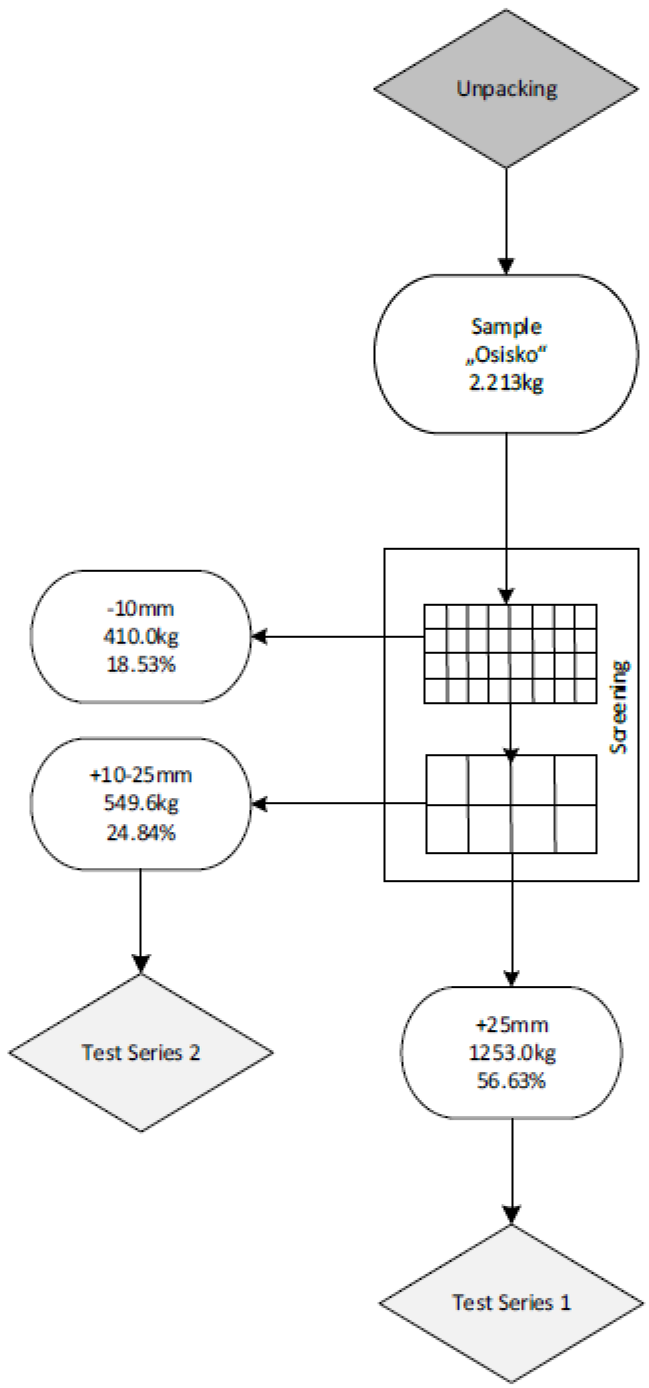


Figure 13-11: Sample preparation flow diagram (Source: Shibistova, 2021)

Flowsheet and Results

The flowsheet used to produce the mineral sorter concentrates is a "cascade" method, where the sorting is conducted in series with increased sorting sensitivity. The first two sorting steps were performed with the XRT sensor to produce a high-medium grade concentrate and a low-grade concentrate. The waste from the XRT tests was sorted with the laser sensor in scavenger tests. The Series 1 sample underwent additional screening and a second laser sorting stage after the first scavenger test to produce a massive quartz and a quartz vein product. The flowsheet used can be seen in Figure 13-12.

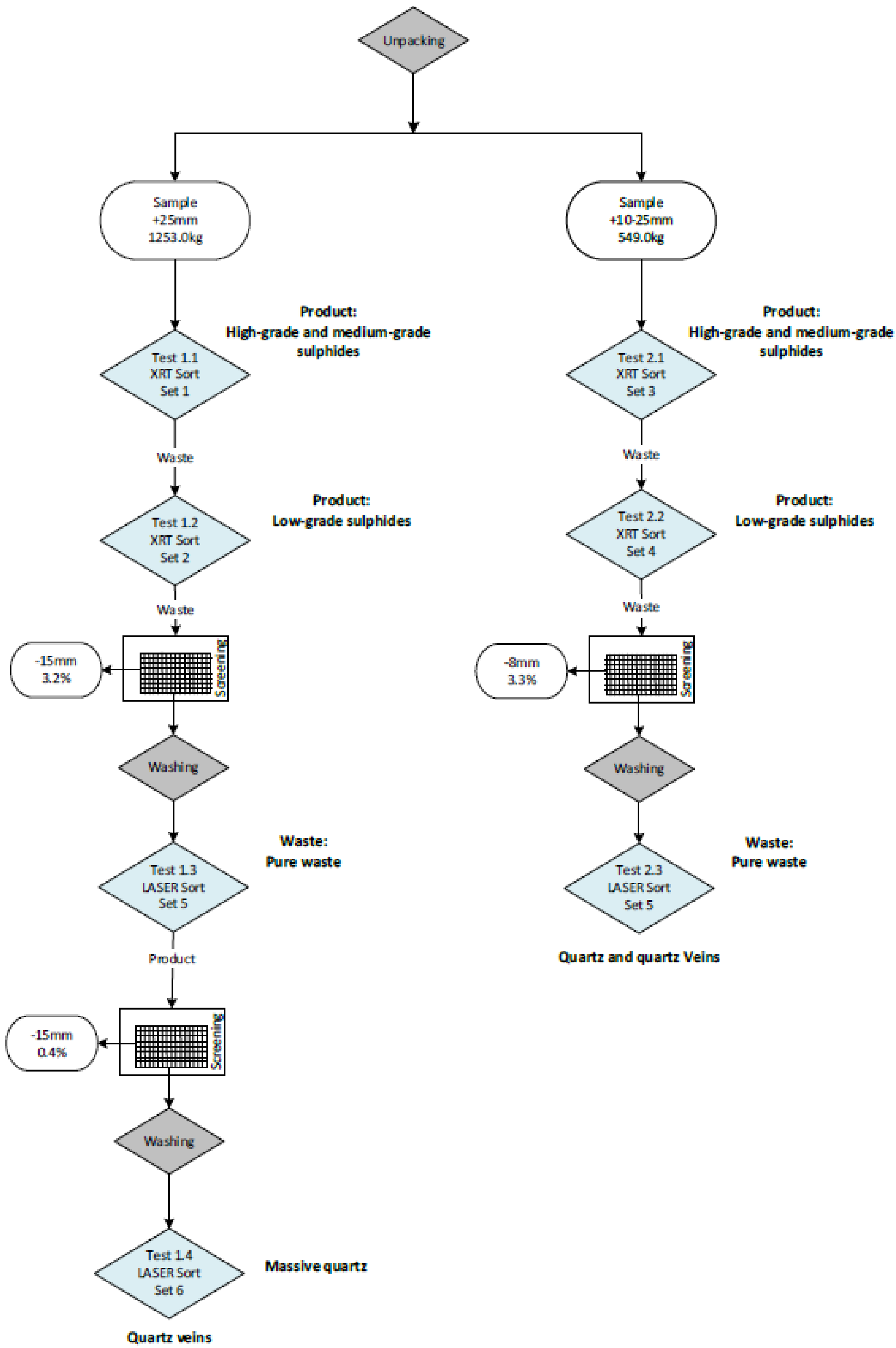


Figure 13-12: Mineral sorting testwork flowsheet
(Source: Shibistova, 2021)

The testwork showed that, in both tests, significant upgrading was achieved in the first sorting stage, regardless of the particle size. Both high-medium grade sulphide concentrates achieved gold grades of 6.1-6.2 g/t in mass pulls ranging from 35-42% with 93-96% recovery. The addition of the second stage of XRT sorting combined with screening was able to increase the mass pulls by 10-12%, for total mass pull to mineral sorting concentrates of 48-53%, and total gold recoveries of 99.2-99.6%. Detailed results of the products are shown in Table 13-26**Error! Reference source not found.**.

Table 13-26: Mineral sorting results

		Sample +25mm	Sample +10-25mm
Screened fines -10mm	Au (g/t)	6.3	
		5.6	
Feed	Au (g/t)	2.3	2.8
		2.3	2.3
Set 1-Waste	Au (g/t)	0.1	0.3
		0.5	0.6
	Au (g/t)	6.2	6.1
Set 1- Conc.		5.8	4.5
	Mass pull %	35.5	42.4
		96.4	93.3
Set 2-Waste	Au (g/t)	0.0	0.0
		0.3	0.3
Screened fines	Au (g/t)	1.7	4.0
		0.1	0.6
Set 2-Conc	S (%)	0.6	0.6
		47.5	52.7
	Total Au Recovery (%)	**99.2**	**99.6**

13.2.2. Composite Development for SGS Program

Three composite samples were prepared by combining the undersize material with combined concentrates from the Tomra mineral sorting testwork. Figure 13-13 shows how the mineral sorter concentrate samples were combined to create the mineral sorter concentrate ("OS Conc") sample. Each composite has the same total mass and it is the ratio of undersize ("Prep fines") to OS Conc that varies. Mineral sorter concentrate represents 67.9% of blend 1, 45% of blend 2, and 27.8% of blend 3.

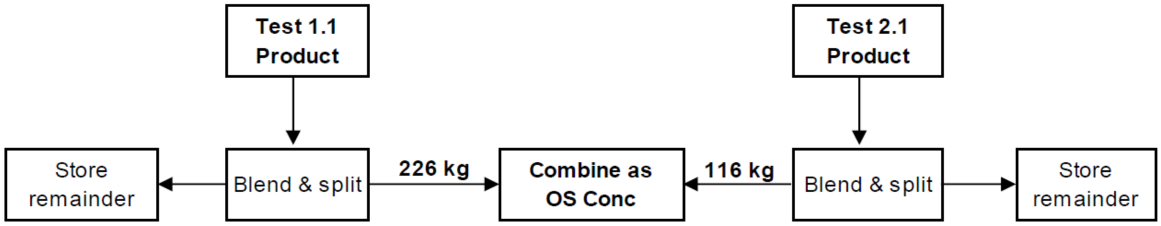


Figure 13-13: Sample preparation – Mineral sorter concentrate
(Source: Sun, 2022)

Table 13-27: Recipes of composite samples

Sample ID	Weight, kg		Total mass, kg
	Prep fines	OS conc	
Blend 1	78.1	165.4	243.5
Blend 2	133.9	109.6	243.5
Blend 3	175.7	67.8	243.5

Sample head assays are presented in Table 13-28. Blend 1 has the highest gold grade with 8.81 g/t, blend 2 has the second highest with 6.95 g/t, and blend 3 has the lowest with 6.22 g/t, making the overall average grade of 7.33 g/t Au. All three blends have similar silver grades leading to an average of 4.44 g/t Ag.

Table 13-28: Head assays results summary

Sample ID	Au g/t	Ag g/t	Cu %	Fe %	Zn %	S %	TC %	TOC %
Blend 1	8.81	4.28	0.02	5.90	0.14	5.48	0.54	0.11
Blend 2	6.22	4.61	0.02	6.21	0.13	6.22	0.49	0.12
Blend 3	6.95	4.42	0.02	6.79	0.11	6.38	0.47	0.12
Average	7.33	4.44	0.02	6.30	0.13	6.03	0.50	0.12

13.2.3. Rougher Flotation Testwork Results

The samples were tested under three different grind sizes: 150 µm (F1), 100 µm (F2), and 75 µm (F3). The effect of the grinding size on rougher flotation was observed while keeping the same reagent dosages, pH, rougher stages, and flotation durations. These conditions are shown in Table 13-29.

Table 13-29: Rougher flotation test conditions

Test #	Grind size K80 µm	Reagent		pH	Rougher Stages	Time min
		PAX g/t	MIBC g/t			
F1	150	30	19	natural	4	8
F2	100	30	19	natural	4	8
F3	75	30	19	natural	4	8

Figure 13-14, Figure 13-15, and Figure 13-16 present the flotation kinetics for each blend and each rougher flotation test condition. These figures show that all samples reach 97%+ recovery in eight minutes of flotation.

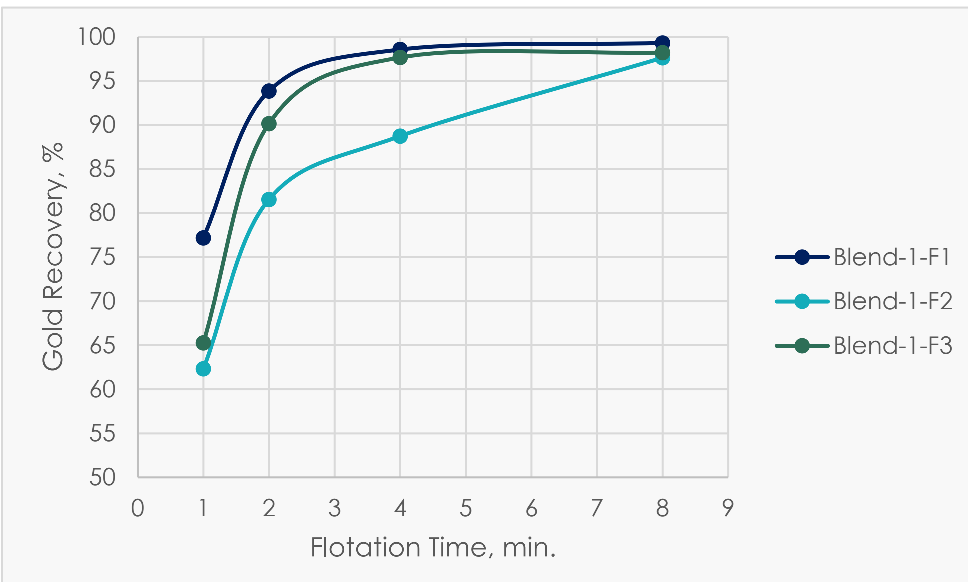


Figure 13-14: Flotation time versus gold recovery – Blend 1

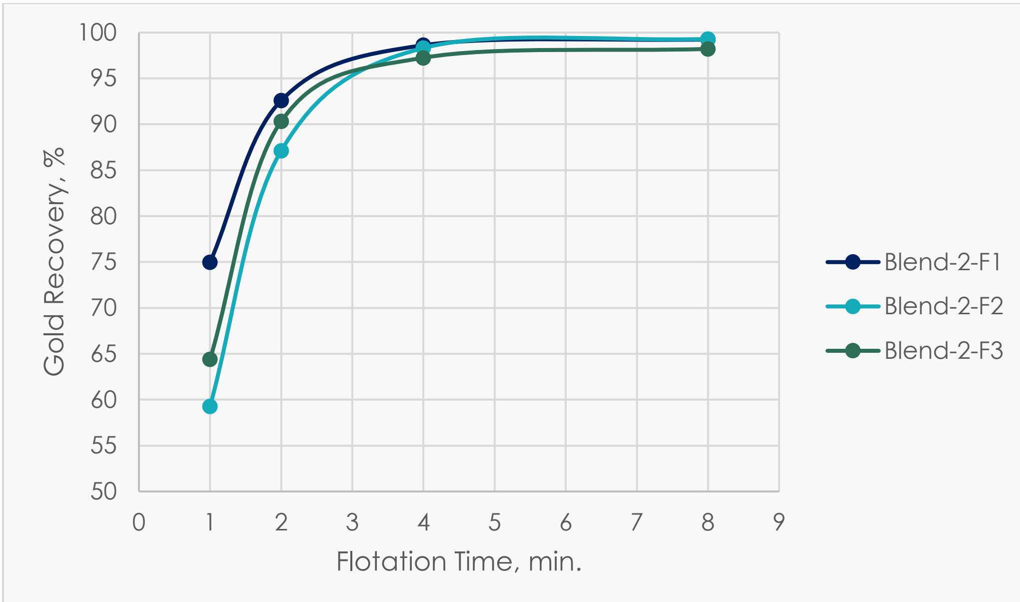


Figure 13-15: Flotation time versus gold recovery – Blend 2

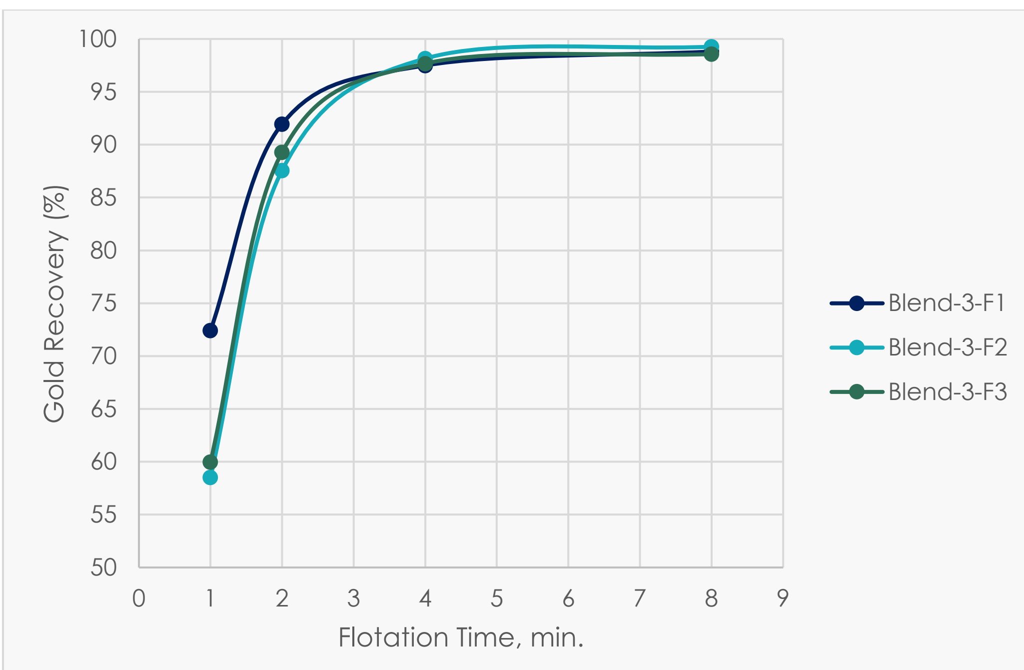


Figure 13-16: Flotation time versus gold recovery – Blend 3

Figure 13-17, Figure 13-18, and Figure 13-19 show the effects of the grind sizes on the flotation gold recoveries. For blend 1, F1 (150 µm) has the highest gold recovery with 99.3%, while F2 (100 µm) has the lowest gold recovery with 97.6%. For blend 2, F2 (100 µm) has the highest gold recovery with 99.3%, while F3 (75 µm) has the lowest gold recovery with 98.2%. For blend 3, F2 (100 µm) has the highest gold recovery with 99.3% while F3 (75 µm) has the lowest gold recovery with 98.6%. Based on these results, the design grind size is determined to be 100 µm.

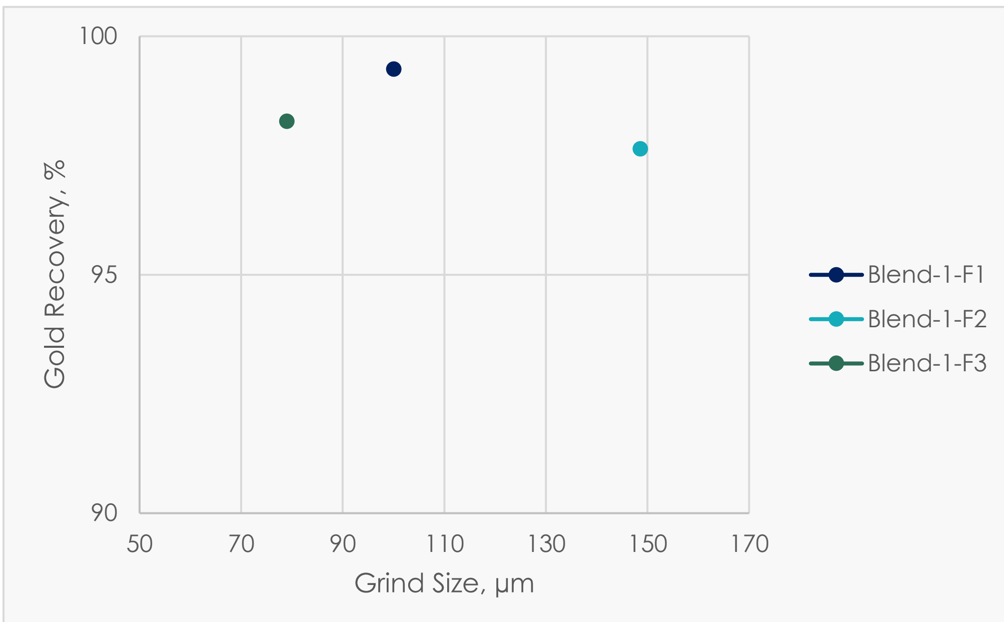


Figure 13-17: Grind size versus gold recovery – Blend 1

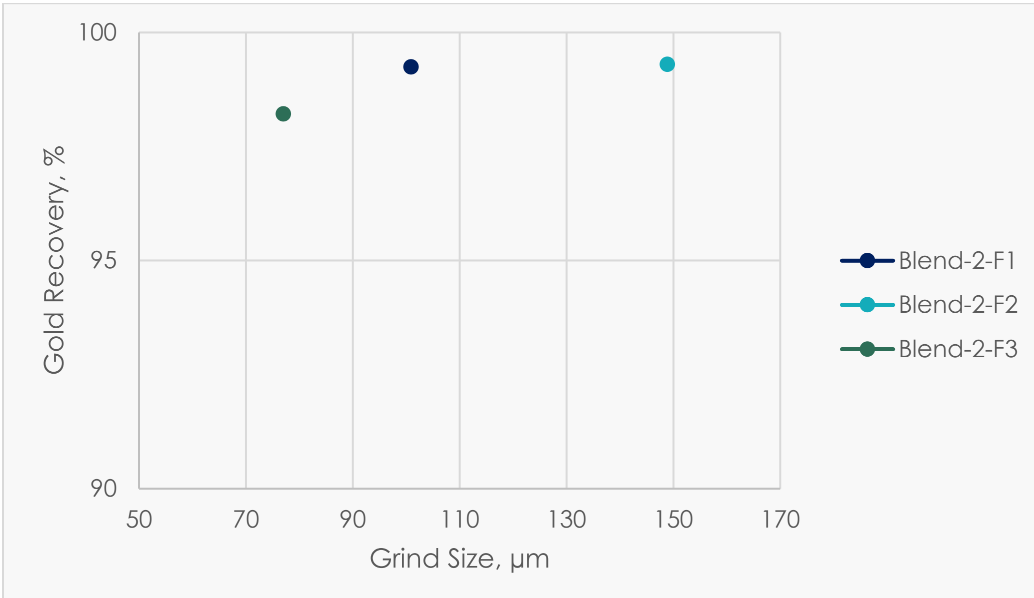


Figure 13-18: Grind size versus gold recovery – Blend 2

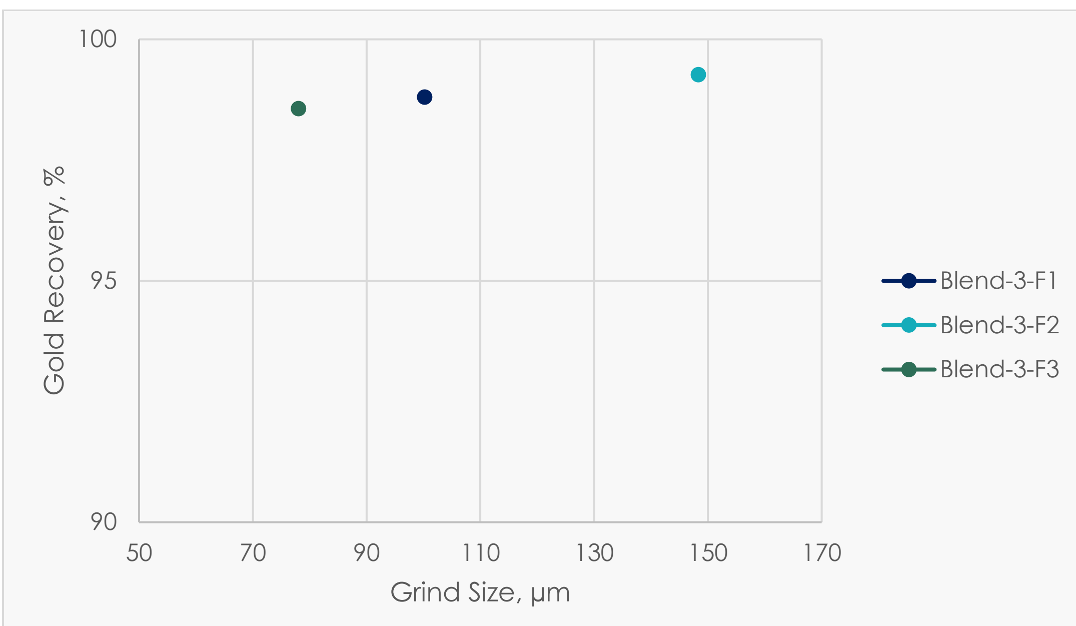


Figure 13-19: Grind size versus gold recovery – Blend 3

Rougher flotation test results for each blend at 100 µm grind size are shown in Table 13-30. Gold recovery ranged from 97.6-99.3% with grades from 44.3-52.8 g/t at mass pulls of 13.9-16.1%.

Table 13-30: Rougher flotation test results

Test #	Grind Size µm	Weight %	Assays, g/t, %						Distribution					
			Au	Ag	Cu	Fe	S	TOC	Au	Ag	Cu	Fe	S	TOC
			g/t	g/t	%	%	%	%	g/t	g/t	%	%	%	%
Blend-1-F2	100	13.9	52.8	27.9	0.06	32.8	38.4	0.34	97.6	94.7	64.3	82.0	98.1	36.3
Blend-2-F2	100	15.3	44.3	26.4	0.04	33.5	38.5	0.31	99.3	95.0	60.5	83.7	98.4	40.0
Blend-3-F2	100	16.1	45.8	25.9	0.04	34.7	39.9	0.28	99.3	95.2	62.2	85.8	98.4	44.5

13.2.4. Cleaner Flotation Testwork Results

The cleaner flotation samples were tested under three different grind sizes: 100 µm, 45 µm, and 25 µm. The effect of regrinding on cleaner flotation was observed while keeping the same reagent dosages, pH, cleaner stages, and flotation durations. These conditions are shown in Table 13-31.

Table 13-31: Cleaner flotation test conditions

Grind size K80 µm	Reagent		pH	Cleaner Stages	Time min
	PAX g/t	MIBC g/t			
No	5	2	natural	2	8
45	5	2	natural	2	8
25	5	2	natural	2	8

Table 13-32 shows that regrinding has a negative effect on gold and silver recoveries for blend 1 and blend 2. However, for blend 3, regrinding the sample to 46 µm improved the gold recovery by 11.1% with little impact on the silver recovery.

Table 13-32: Cleaner flotation test results

Sample ID	Re-grind	Weight	Assays, g/t, %						Distribution					
			Au	Ag	Cu	Fe	S	TOC	Au	Ag	Cu	Fe	S	TOC
	K_{80}	%	g/t	g/t	%	%	%	%	g/t	g/t	%	%	%	%
Blend-1	-	10.8	62.3	34.6	0.06	39.4	46.0	0.32	96.4	86.2	41.5	75.5	91.9	23.0
Blend-1	40	8.65	76.7	39.2	0.07	41.4	48.0	0.27	95.3	83.1	39.3	63.5	77.6	17.1
Blend-1	24	3.62	153	89.0	0.14	36.7	43.3	0.57	88.4	76.1	33.8	23.8	29.5	14.8
Blend-2	-	11.8	58.6	31.1	0.06	39.9	47.0	0.31	97.1	87.2	44.6	78.6	93.6	25.0
Blend-2	40	9.43	66.0	34.0	0.07	42.6	49.2	0.23	92.6	80.3	40.9	66.8	79.1	17.2
Blend-2	22	2.97	190	107	0.15	38.2	44.6	0.47	79.4	73.2	30.1	19.1	22.6	10.4
Blend-3	-	12.4	53.1	31.1	0.05	40.7	47.1	0.25	82.0	89.0	41.3	76.5	90.1	23.7
Blend-3	46	10.7	77.9	34.6	0.06	43.4	49.0	0.21	93.3	87.5	39.0	70.5	81.5	18.8
Blend-3	24	4.64	136	68.0	0.11	38.7	44.6	0.37	85.9	76.4	33.7	27.3	31.9	13.8

13.2.5. Bulk Rougher Flotation Test

The three blend's rougher flotation samples were mixed and their test results of the 3 series of 22 tests were averaged. The blend mixes were used for the subsequent extended gravity recoverable gold test ("E-GRG") and leaching tests. Table 13-33 shows the average weight recovery, Au rougher concentrate grade, Au rougher tailings grade, and Au recovery for each blend average. The blend weight recovery averages vary between 16.9% and 18.5%; Au recovery averages vary between 98.2% and 99.5%; Au rougher concentrate grade averages vary between 37.4 g/t and 38.0 g/t.

Table 13-33: Bulk rougher flotation test results summary

Test #	Mass Pull	Au, g/t		Au Recovery
	%	Ro Conc	Ro Tailings	%
Blend -1-Average	16.9	38.0	0.04	99.5
Blend -2-Average	18.0	37.4	0.17	98.2
Blend -3-Average	18.5	37.8	0.05	99.4

13.2.6. Combined Flotation Concentrate Assay

The assay results of the combined flotation concentrate are shown below. In addition to having 39.2 g/t of gold and 26.7 g/t of silver, the combined concentrate has high amounts of iron, sulphur, and copper.

Table 13-34: Assay results summary – combined flotation concentrate

Elements	Assay Results
Au, g/t	39.2
Ag, g/t	26.7
Fe, %	30.9
Cl, g/t	<50
S, %	34.9
Hg, g/t	<0.3
F, %	0.074
Ca, g/t	1060
Cu, g/t	349
Mg, g/t	1840

Elements	Assay Results
Ni. g/t	<300
As, g/t	4490
Bi, g/t	51.1
Cd, g/t	85.9
Pb, g/t	4790
Sb, g/t	38.6
Se, g/t	<10
Te, g/t	<4

13.2.7. E-GRG Test Results

The E-GRG test on the combined flotation sample was performed to understand the amenability of the sample to gravity concentration as a function of size distribution. The test results are shown in Table 13-35. The overall gold and silver gravity recoveries for the combined flotation sample are 31.8% and 14.2%, respectively.

Table 13-35: E-GRG test results summary – gold and silver

Sample ID	P_{80}, µm		Mass, %		Cumulative Recovery, %		Concentrate grade, g/t	Head Grade, g/t	
	Stage 1	Stage 2	Stage 1	Stage 2	Stage 1	Stage 2		Direct	Calculated
Fconc - Gold	112	50	0.62	0.55	17.9	31.8	1,028	39.2	37.8
Fconc - Silver	112	50	0.62	0.55	9.4	14.2	291	26.7	23.9

13.2.8. Leaching Conditions

The leach tests were performed at 45 µm grind size, 50 wt % slurry density, and 10.8-11 pH for 48 hours.

Table 13-36: General test conditions

Grind Size, K_{80} µm	Pulp Density wt %	pH	Leach Time h
45	50	10.8 - 11	48

13.2.9. Leaching Test Results

The overall leaching test results for various testing conditions are shown in Table 13-37. Regardless of the testing conditions, gold recoveries varied between 95.7% and 96.8%; silver recoveries varied between 44.8% and 55.5%. The highest gold recovery was observed for B2-Fconc-L6; the highest silver recovery was observed for B3-Fconc-L4; the lowest gold recovery was observed for B1-Fconc-L1; the lowest silver recovery was observed for B2-Fconc-L5. The effects of pre-conditioning, dissolved oxygen content, and NaCN concentration are compared in more detail in the following sections.

Table 13-37: Leaching test results for all conditions

Test #	Sample ID	K_{80} µm	Pulp Density %	Precondition		pH	DO	NaCN Concentration		Retention Time hr	Consumption		Extraction	
				Period hr	Air/O2			Added g/L	Maintained g/L		NaCN kg/t	CaO kg/t	Au %	Ag %
B1-Fconc-L1	B1-FConc	54	0.5	12 hr	O2	10.8-11	>20	0.5	0.5	48	1.47	1.64	95.7	49.6
B1-Fconc-L2	B1-FConc	54	0.5	12 hr	O2	10.8-11	>20	1.0	1.0	48	1.76	1.62	95.9	52.4
B1-Fconc-L3	B1-FConc	54	0.5	12 hr	O2	10.8-11	>20	1.5	1.5	48	1.80	1.58	96.0	51.6
B1-Fconc-L4	B1-FConc	54	0.5	-	-	10.8-11	5.75	1.0	1.0	48	1.79	0.92	96.3	52.0
B1-Fconc-L6	B1-FConc	54	0.5	12 hr	Air	10.8-11	5.05	1.0	1.0	48	1.67	1.52	96.7	51.5
B2-Fconc-L1	B2-FConc	57	0.5	12 hr	O2	10.8-11	14.6	0.5	0.5	48	1.40	1.92	95.7	48.4
B2-Fconc-L2	B2-FConc	57	0.5	12 hr	O2	10.8-11	13.54	1.0	1.0	48	1.84	1.83	95.9	52.8
B2-Fconc-L3	B2-FConc	57	0.5	12 hr	O2	10.8-11	12.83	1.5	1.5	48	1.69	1.60	96.5	54.7
B2-Fconc-L4	B2-FConc	57	0.5	-	-	10.8-11	4.93	1.0	1.0	48	1.81	1.06	96.5	52.7
B2-Fconc-L5	B2-FConc	57	0.5	12 hr	Air	10.8-11	7.39	0.5	0.5	48	0.83	1.81	95.9	44.8
B2-Fconc-L6	B2-FConc	57	0.5	12 hr	Air	10.8-11	5.23	1.0	1.0	48	1.55	1.63	96.8	50.5
B3-Fconc-L1	B3-FConc	53	0.5	12 hr	O2	10.8-11	13.35	0.5	0.5	48	1.30	1.75	95.6	49.7
B3-Fconc-L2	B3-FConc	53	0.5	12 hr	O2	10.8-11	13.19	1.0	1.0	48	1.45	1.62	96.0	48.0
B3-Fconc-L3	B3-FConc	53	0.5	12 hr	O2	10.8-11	14.49	1.5	1.5	48	1.52	1.56	95.9	48.7
B3-Fconc-L4	B3-FConc	53	0.5	-	-	10.8-11	5.7	1.0	1.0	48	1.53	1.39	96.0	55.5
B3-Fconc-L5	B3-FConc	57	0.5	12 hr	Air	10.8-11	6.05	0.5	0.5	48	0.92	2.01	96.7	49.6
B3-Fconc-L6	B3-FConc	57	0.5	12 hr	Air	10.8-11	4.78	1.0	1.0	48	1.66	1.52	96.5	49.9

13.2.10. Reagent Consumption

The highest cyanide consumption of 1.84 kg/t was a result of NaCN dosage maintained at 1.0 grams per litre ("g/L") and oxygen pre-conditioning, while the lowest cyanide consumption of 0.832 kg/t was a result of NaCN dosage maintained at 0.5 g/L and air pre-conditioning, and both resulted in a 95.9% gold recovery. The highest lime consumptions of 2.01 kg/t, respectively, was a result of a NaCN dosage maintained at 0.5 g/L and air pre-conditioning, while the lowest lime consumption of 0.92 kg/t was a result of a NaCN dosage maintained at 1.0 g/L and no pre-conditioning, and the gold recoveries were 96.7% for the high consumption and 96.3% for the low consumption.

13.2.11. Leach Condition Optimization

The leach conditions were optimized around pre-conditioning, using air or oxygen, and cyanide dosages. The conditions and results are shown in Table 13-38.

Table 13-38: Test conditions and metal extractions

Test #	Precondition		DO	NaCN Concentration		Retention Time hr	Metal Extraction	
							Au	Ag
	Period	Air/O2		Added	Maintained		48 hr	48 hr
	hr			g/L	g/L		%	%
B1-Fconc-L1	12 hr	O2	>20	0.5	0.5	48	95.7	49.6
B1-Fconc-L2	12 hr	O2	>20	1.0	1.0	48	95.9	52.4
B1-Fconc-L3	12 hr	Air	>20	1.5	1.5	48	96.0	51.6
B1-Fconc-L4	-	-	5.75	1.0	1.0	48	96.3	52.0
B1-Fconc-L6	12 hr	Air	5.05	1.0	1.0	48	96.7	51.5
B2-Fconc-L1	12 hr	O2	14.6	0.5	0.5	48	95.7	48.4
B2-Fconc-L2	12 hr	O2	13.5	1.0	1.0	48	95.9	52.8
B2-Fconc-L3	12 hr	O2	12.8	1.5	1.5	48	96.5	54.7
B2-Fconc-L4	-	-	4.93	1.0	1.0	48	96.5	52.7
B2-Fconc-L5	12 hr	Air	7.39	0.5	0.5	48	95.9	44.8
B2-Fconc-L6	12 hr	Air	5.23	1.0	1.0	48	96.8	50.5
B3-Fconc-L1	12 hr	O2	13.4	0.5	0.5	48	95.6	49.7
B3-Fconc-L2	12 hr	O2	13.2	1.0	1.0	48	96.0	48.0
B3-Fconc-L3	12 hr	O2	14.5	1.5	1.5	48	95.9	48.7
B3-Fconc-L4	-	-	5.7	1.0	1.0	48	96.0	55.5
B3-Fconc-L5	12 hr	Air	6.05	0.5	0.5	48	96.7	49.6
B3-Fconc-L6	12 hr	Air	4.78	1.0	1.0	48	96.5	49.9

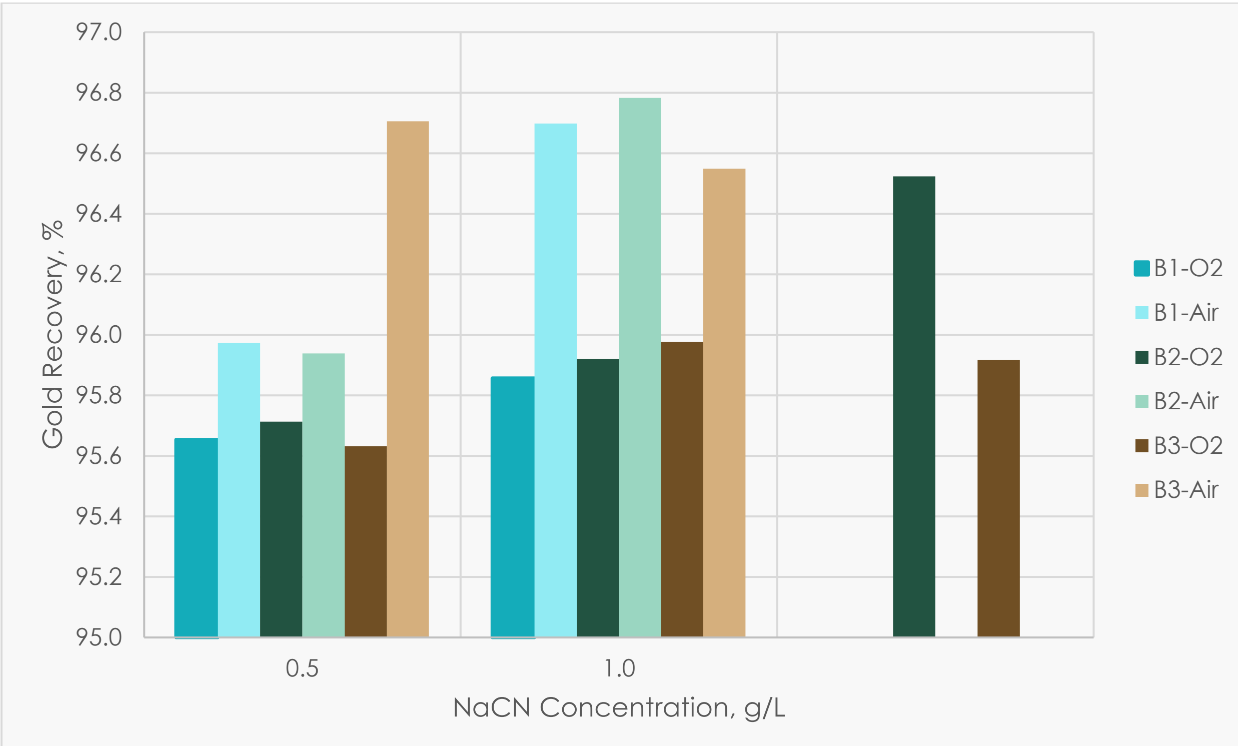


Figure 13-20: Effect of NaCN on gold recovery

For all blends, increasing the NaCN dosage from 0.5 g/L to 1.0 g/L improved the gold recovery, regardless of the use of air or oxygen for pre-conditioning; however, increasing to 1.5 g/L only improved the recovery for blend 2. The impact of pre-conditioning was most apparent in the leach kinetics, as shown in Figure 13-21, Figure 13-22, and Figure 13-23.

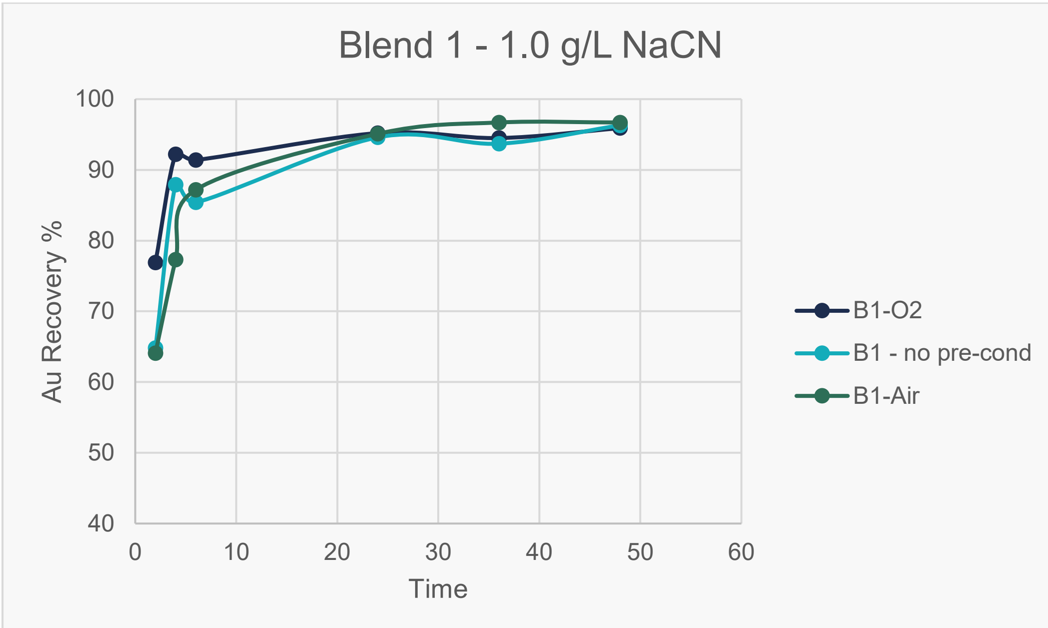


Figure 13-21: Leach kinetics for blend 1 at 1.0 g/L NaCN

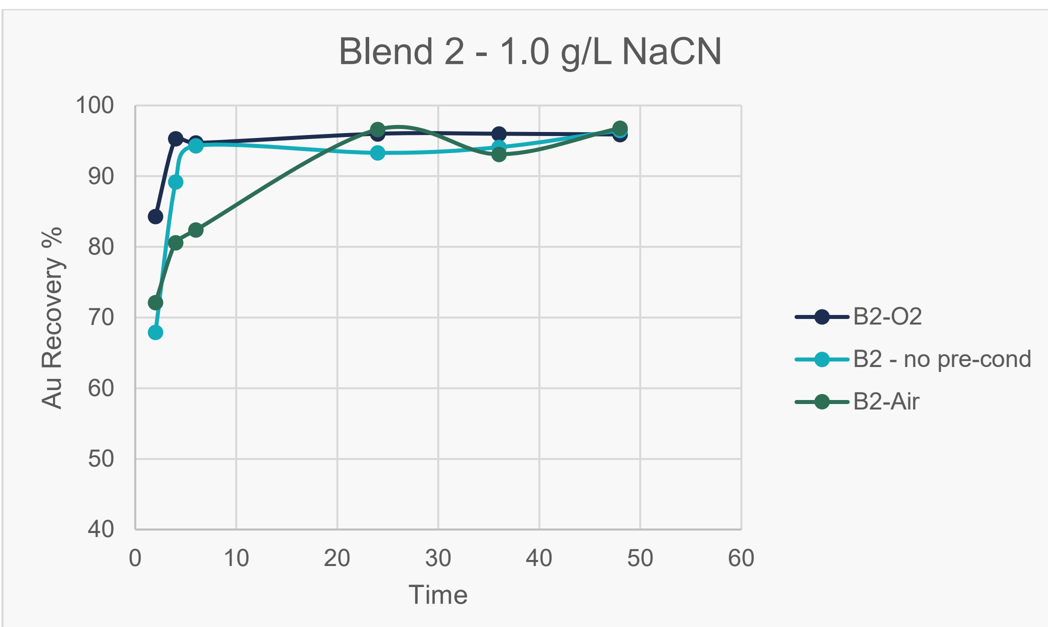


Figure 13-22: Leach kinetics for blend 2 at 1.0 g/L NaCN

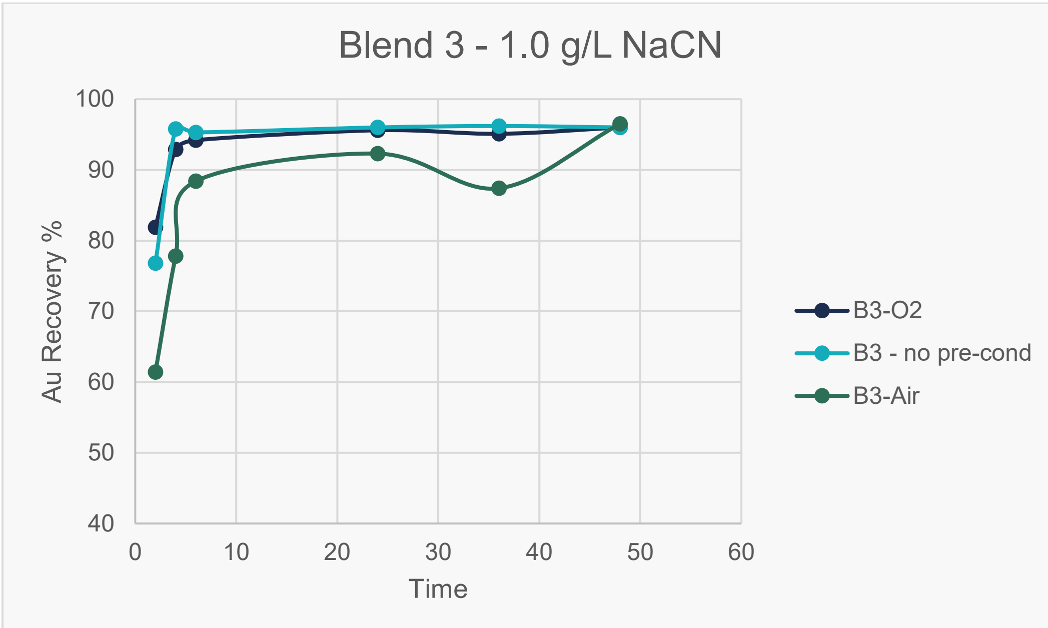


Figure 13-23: Leach kinetics for blend 3 at 1.0 g/L NaCN

For blends 1 and 2, after 24 hours, the gold recoveries were about the same, regardless of pre-conditioning, or with air or oxygen. In blend 3, the use of air significantly impacted the overall gold recovery.

Table 13-39: Additional assays on CIP feed

Test #	Metal Extraction		Additional Assays on Final Solutions							
	Au	Ag								
	48 hr	48 hr	CN(T)	CNWAD	CN(F)	CNO	CNS	Cu	Fe	Zn
	%	%	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
B1-Fconc-L4	96.3	52.0	649	649	569	51	820	237	14.4	139
B1-Fconc-L6	96.7	51.5	761	587	449	41	630	173	4.1	86.4
B2-Fconc-L4	96.5	52.7	724	624	569	61	860	137	6.12	119
B2-Fconc-L6	96.8	50.5	599	574	439	38	630	156	4.3	71.2
B3-Fconc-L4	96.0	55.5	574	574	499	52	710	119	6.27	95.8
B3-Fconc-L6	96.5	49.9	649	624	449	37	570	170	5.8	70.7

13.2.12. Leaching Testwork Reagent Consumption

13.2.12.1. Bulk CIP Test Results

Two carbon-in-pulp ("CIP") tests were conducted on 10 kg sample of the combined flotation concentrate from the three composites. The CIP tests were performed with two carbon concentrations, 30 g/L and 50 g/L. Both tests showed good gold recoveries. With 50 g/L carbon, the gold and silver extractions were 93.6% and 58.1%. With 30 g/L carbon, the gold and silver extractions were 93.2% and 58.1%.

Table 13-40: Bulk CIP test conditions summary

Test #	K80 µm	Pulp Density %	Precondition		pH	DO	NaCN Concentration		Carbon Conc. g/L
			Period hr	Air/O2			Added g/L	Maintained g/L	
Fconc-CIP	48	50%	12 hr	O2	10.8-11	10	1.0	1.0	50
Fconc-CIP 2	48	50%	12 hr	O2	10.8-11	11	1.0	1.0	30

Table 13-41: Bulk CIP test results summary

Test #	Head Assays				Residue Assays		Consumption		Gold Extraction		Silver Extraction	
	Direct Au g/t	Calc'ed Au g/t	Direct Ag g/t	Calc'ed Ag g/t	Au g/t	Ag g/t	NaCN kg/t	CaO kg/t	Leach (48 hr) %	on Carbon %	Leach (48 hr) %	on Carbon %
Fconc-CIP	37.7	32.2	22.3	20.5	1.18	8.2	1.74	1.52	96.6	93.6	60.9	58.1
Fconc-CIP 2	37.7	33.4	22.3	20.7	1.26	8.0	1.86	1.59	96.6	93.2	62.1	58.0

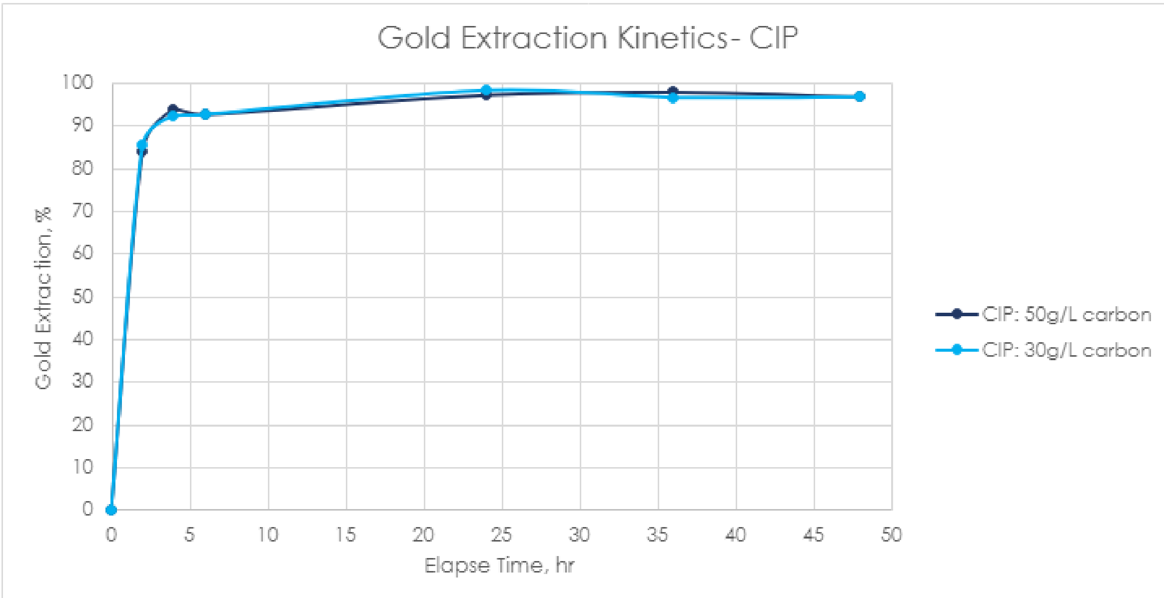


Figure 13-24: Gold extraction kinetics - CIP

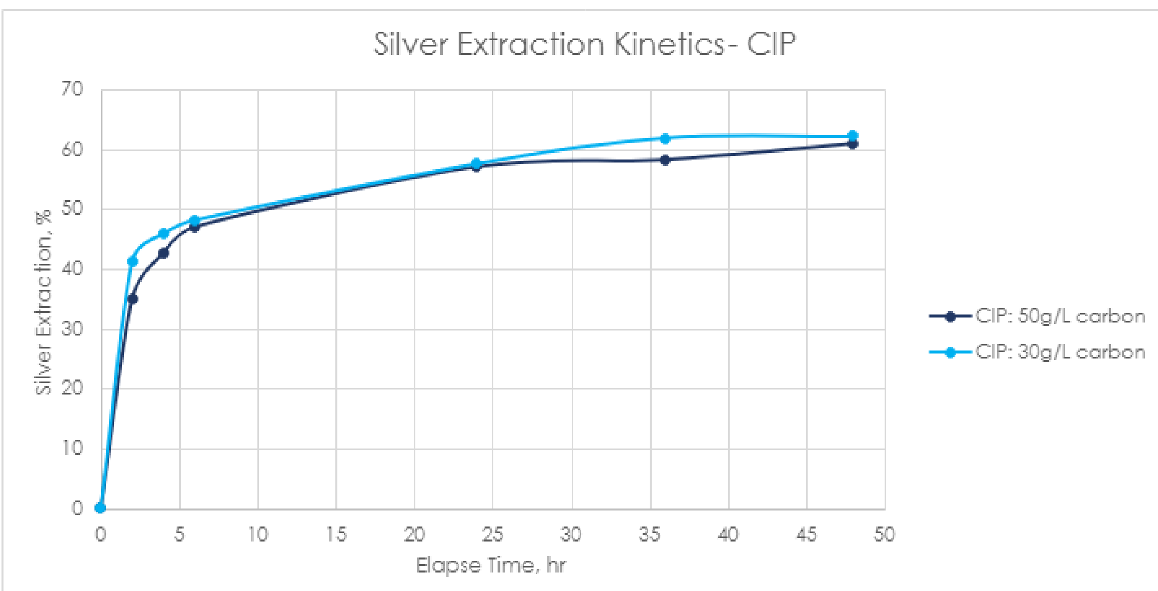


Figure 13-25: Silver Extraction Kinetics – CIP

The CIP kinetics show that for both carbon dosages, gold extraction was relatively similar, and there were only small differences for silver extraction.

13.3. Thickening and Filtration Tests

The objective of the thickening, filtration and rheology testing is to measure solid-liquid separation rates to predict sizing and operating parameters for full-scale dewatering equipment. Tests were performed at FLS laboratory in Midvale, Utah, on a flotation tailings composite. Process water from the flotation testing was used to represent full scale slurry sample. Characteristics are summarized in Table 13-42.

Table 13-42: As-received sample characteristic summary

Description	Flotation Tailings Solid Sample	Process Water
Suspended solids, wt %	84.0	-
Dissolved solids, wt %	0.00	0.01
Solids Specific Gravity	2.70	-
Liquor Specific Gravity	-	1.00
pH	-	8.1
D80, µm	101	-
D50, µm	37.5	-
D20, µm	11	-
D10, µm	5.7	-

13.3.1. Thickening Tests

As part of the thickening tests, five different flocculants were tested, and BASF Magnafloc MF10 was selected for the remaining tests, as it performed the best. All the tests generated clear overflow and good settling rates.

Table 13-43: Evaluated flocculants

Flocculant	Charge	Molecular Weight	Charge Density
AN 923 VHM	Anionic	Medium	Low
AN 910	Anionic	Low	Low
MF 351	Non-ionic	Medium	None
MF 1011	Anionic	High	Medium
MF 10	Anionic	High	Very low

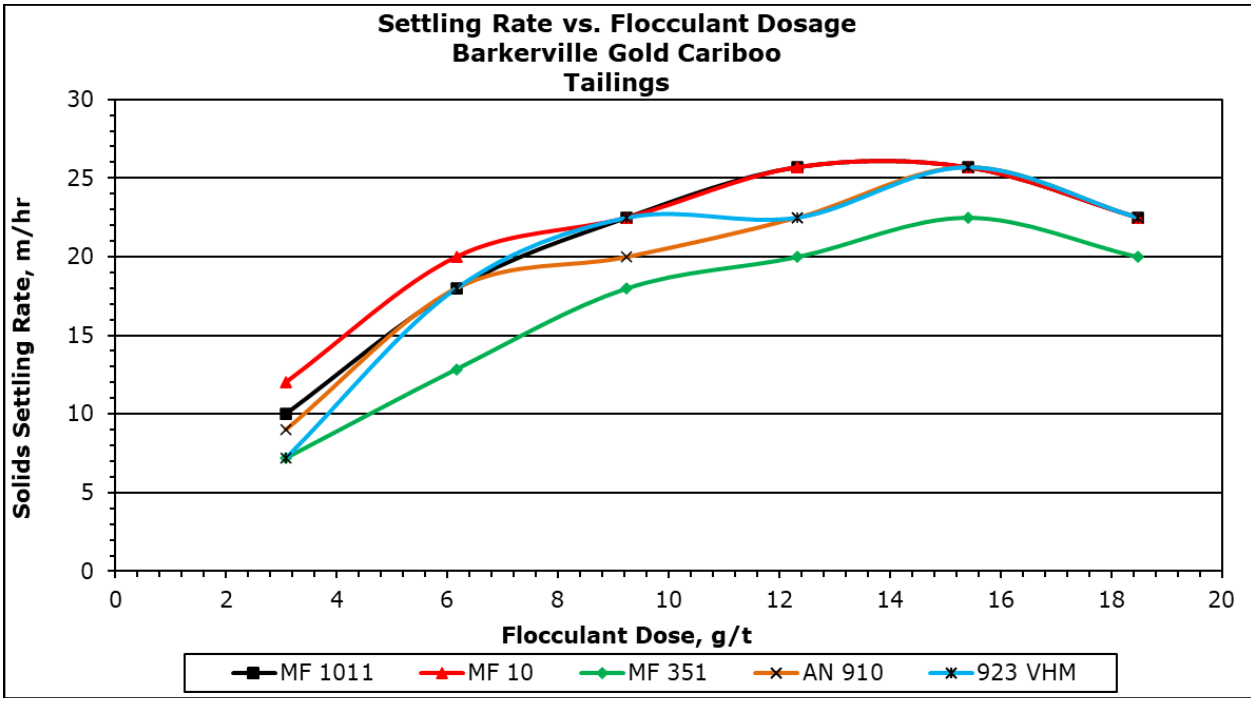


Figure 13-26: Settling rate vs Flocculant dosage
(Source: De Paula, 2022)

Additional tests were performed to determine the maximum flux rate and the corresponding percent solids, which were then used for the 2 litre ("L") static tests to represent a high-rate thickener, and continuous fill tests to determine the underflow density. These tests showed that at a feed percent solids of 12% and flocculant dosage of 12 g/t an underflow percent solids of 68% can be achieved. The recommended thickener operating parameters are shown in Table 13-44.

Table 13-44: Recommended thickener operating parameters

Description	Value
Recommended Feed Solids Density, wt %	12
Underflow Characteristics	
Design Underflow Solids, wt %	68
Minimum Mud Residence Time Required, min	60
Underflow Yield Stress, Pa	35
Overflow Characteristics	
Overflow Clarity, ppm	100

Description	Value
Flocculant	
Recommended Flocculant	MF 10
Recommended Total Flocculant Dose, g/t	12
Recommended Flocculant Concentration, g/L	0.1
Thickener Sizing	
Solids Unit Area (m^2/tpd)	0.03
Recommended Rise Rate (m/h)	12

13.3.2. Filtration Tests

There were two types of filtration tests conducted to simulate both a vacuum disc filter and pressure filter. Both filter tests were performed at 68% solids to represent flotation tailings thickener underflow. The vacuum filter was able to achieve a cake moisture of 18-22% with thicknesses ranging from 19-44 mm, in 14-126 seconds. The pressure filter was able to achieve a cake moisture of 10.4% at both 32 mm and 50 mm thicknesses, with a blow time of 8-10 minutes at a pressure of 10 Bar.

Table 13-45: Vacuum filtration test results

Process Parameter	Flotation Tailings
Filter Media	Paste Backfill
Feed Solids Density, wt %	68
Form Vacuum, kPa	68
Dry Vacuum, kPa	68
Cake Thickness, mm	34
Dry Cake Weight, kg/m^2	54
Formation Time, min	0.7
Dry Time, min	1.1
Cake Moisture, wt %	19
Filtration rate, kg/m^2/h	1,056

Table 13-46: Pressure filtration test results

Process Parameter	Flotation Tailings	
Test ID	1	2
Chamber Type	Recessed	
Filter Media	POPR 966	
Filter Feed Suspended Solids, wt%	68.0	
Chamber Thickness, mm	50	32
Feed Pressure, Bar	10.0	10.0
Drying Pressure, Bar	7.0	7.0
Fill Time, min	0.33	0.17
Air Blow Time, min	10.0	8.0
Ultimate Cake Moisture, wt%	10.4	10.4
Dry Cake Density, kg/m^3	1,543	1,521
Filtration Rate (kg/m^2/h)	168	123

13.4. Rheology Testwork by SGS

13.4.1. Samples Tested

Two samples were sent to SGS in Lakefield, Ontario, for rheology testing, one from the flotation concentrate thickener underflow and one from the CIP detoxified tailings. The characteristics of the as-received material are summarized in Table 13-47.

Table 13-47: Rheology sample characterization

Sample ID	Test Code	K_{80} µm	ASG	SG	a ASG/SG	Temp °C	Solids % w/w	Density g/L
Flotation Concentrate Underflow	T5	117	3.87	3.89	1.00	22	78.9	2402
	T1		3.86		0.99		78.1	2377
	T2		3.83		0.98		74.4	2231
	T3		3.91		1.01		70.5	2088
	T4		3.84		0.99		66.0	1966
CIP Detox Tailings Underflow	T7	52	3.76	3.71	1.00	21	71.1	2093
	T8		3.72		1.00		69.1	2021
	T9		3.58		0.97		67.1	1937
	T10		3.70		1.00		65.1	1906
	T11		3.70		1.00		62.6	1842
	T12		3.70		1.00		60.1	1782

13.4.2. Results

The results from the rheological testing show that for the flotation concentrate thickener underflow, a percent-solids of 75% could be expected, while for the detoxified tailings, a percent-solids of 68% could be expected from commercial thickeners. A summary of the results for the flotation concentrate is shown in Table 13-48 and Figure 13-27, and Table 13-49 and Figure 13-28 provide a summary for the detoxified tailings.

Table 13-48: Summary of rheology results – Flotation concentrate underflow

Test Code	Solids % w/w	Unsheared Sample			Unsheared Sample			Observations
		Shear Rate γ range, 1/s	Yield Stress τ_{yB} Pa	Plastic Viscosity η_P mPa.s	Shear Rate γ range, 1/s	Yield Stress τ_{yB} Pa	Plastic Viscosity η_P mPa.s	
T5	78.9	100-300	114	724	100-300	72	614	Thixotropic
T1	78.1	100-300	80	546	100-300	61	411	Thixotropic
T2	74.4	100-300	35	87	100-300	18	86	Thixotropic
T3	70.5	100-300	9.9	30	100-300	5.9	32	Minor Settling
T4	66.0	100-300	3.3	14	Not available			Fast Settling

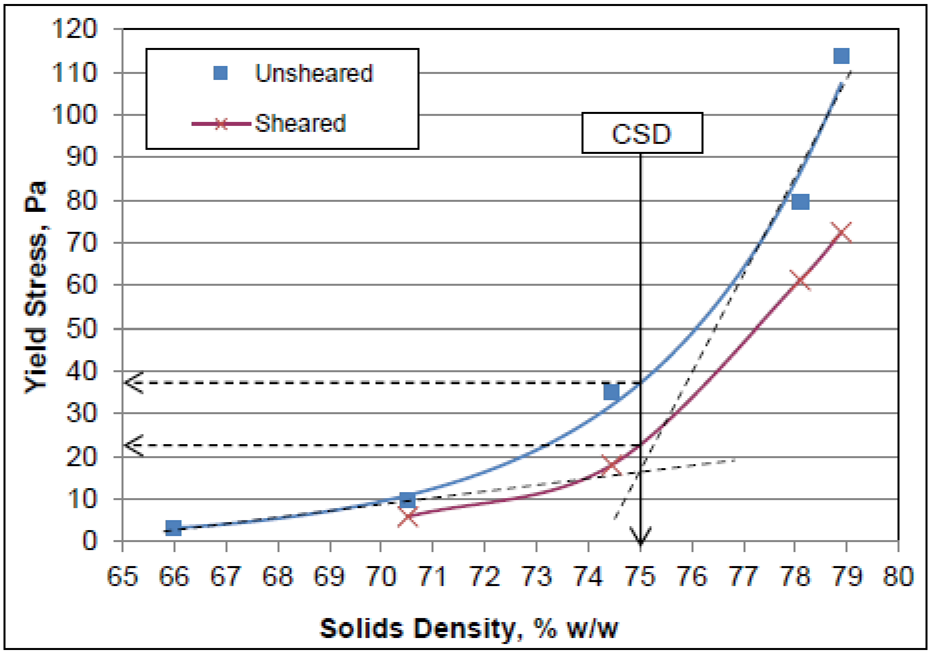


Figure 13-27: Yield stress versus solids density – Flotation concentrate underflow (Source: Liu and Ashbury, 2022)

Table 13-49: Summary of rheology results – CIP detox tailings underflow

Test Code	Solids % w/w	Unsheared Sample			Unsheared Sample			Observations
		Shear Rate ϒ range, 1/s	Yield Stress τy B Pa	Plastic Viscosity η P mPa.s	Shear Rate ϒ range, 1/s	Yield Stress τy B Pa	Plastic Viscosity η P mPa.s	
T7	71.1	200-400	112	33	200-400	44	87	Thixotropic
T8	69.1	200-400	57	25	200-400	25	45	Thixotropic
T9	67.1	200-400	30	22	200-400	16	27	Thixotropic
T10	65.1	200-400	17	19	200-400	11	19	Thixotropic
T11	62.6	200-400	9.2	14	200-400	6.5	14	Minor Settling
T12	60.1	200-400	4.8	12	200-400	3.2	13	Settling

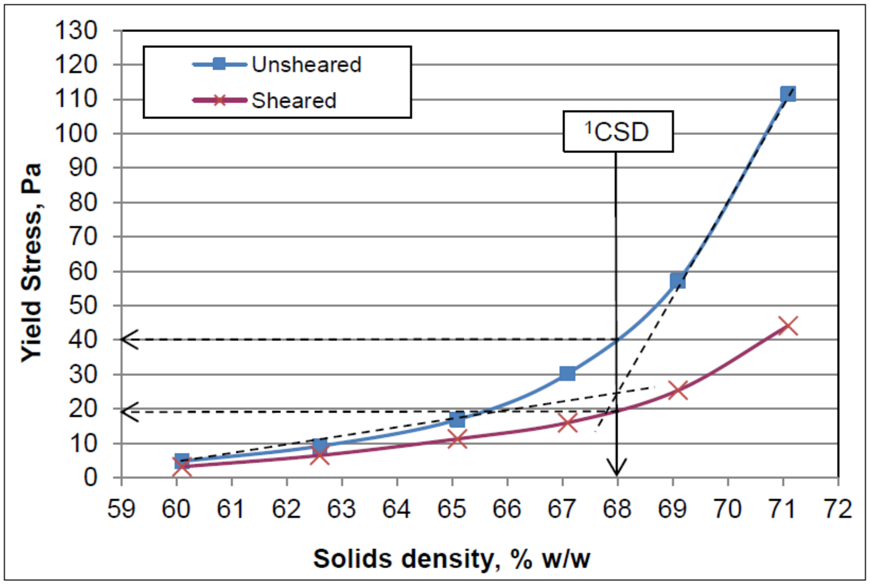


Figure 13-28: Yield stress versus solids density – CIP detox tailings underflow (Source: Liu and Ashbury, 2022)

14. Mineral Resource Estimates

The 2022 Mineral Resource Estimate ("MRE") for the Project (the "2022 MRE") encompasses updated resources for the deposits of Cow Mountain (Cow Zone and Valley Zone), Island Mountain (Shaft Zone and Mosquito Zone), and Barkerville Mountain (Lowhee Zone). The updates were prepared by Leonardo de Souza, MAusIMM (CP), of Talisker Exploration Services Inc. ("Talisker"), and reviewed and validated by Carl Pelletier, P.Geo., and Vincent Nadeau-Benoit, P.Geo., both of InnovExplo Inc. ("InnovExplo"), using all available information.

The KL Zone and BC Vein deposit were not drilled in 2021, but the search ellipse and distances were altered to match the other deposits. The BC Vein deposit has been depleted since the 2020 MRE. No changes are reported for Bonanza Ledge (Barkerville Mountain) deposit since the 2019 MRE.

To report the 2022 MRE for the Project, conceptual mining shapes were used as constraints to demonstrate that the "reasonable prospects for eventual economic extraction" criteria is met; as defined in the CIM Definition Standards on Mineral Resources and Reserves (CIM Definition Standards; May 10, 2014) and the CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (MRMR Best Practice Guidelines; November 29, 2019).

The mineral resource updates include information from the 2020 and 2021 exploration programs.

The effective date of the 2022 MRE is May 17, 2022.

14.1. Methodology

The 2022 MRE covers all the deposits in the Cow-Island-Barkerville Mountain Corridor. The mineral resource area for the Cow/Island segment covers a strike length of 3.7 kilometres ("km") and a width of approximately 700 metres ("m"), down to a vertical depth of 600 m below surface. The estimate for the Barkerville segment covers a strike length of 3 km and a width of approximately 700 m, down to a vertical depth of 500 m below surface.

The models for the Cow, Valley, Shaft, Mosquito, BC Vein, KL and Lowhee deposits were prepared using LeapFrog GEO v.2021.1.3 ("LeapFrog") and Datamine Studio RM 1.9.36.0 ("Datamine"). Leapfrog was used for the modelling, which included the construction of 470 mineralized solids: 109 for Cow; 100 for Valley; 93 for Shaft; 75 for Mosquito; 6 for BC Vein including five BC Vein splays; 40 for KL; and 47 for Lowhee. Datamine was used for the estimation, which consisted of 3D block modelling and the ordinary kriging ("OK") interpolation method. Statistical studies, capping and variography were completed using Datamine, GSLIB and Excel. Capping and validations were carried out in Datamine and Microsoft Excel.

The Bonanza Ledge model was prepared using GEOVIA GEMS software v.6.7 ("GEMS"). GEMS was used for the modelling, which included the construction of one mineralized solid, and for the estimation, which consisted of 3D block modelling and OK interpolation. Statistical studies and variography were done using Snowden Supervisor v.8.6 software ("Supervisor"). Capping and several validations were carried out in Microsoft Excel and Supervisor.

The main steps in the methodology were as follows:

- Compile and validate the diamond drill hole databases used for mineral resource estimation;
- Validate the geological model and interpretation of the mineralized zones based on lithological and structural information, historical underground mapping and general orientation of stopes, and metal content;
- Validate the drill hole intercepts database, compositing database, and capping values, for the purposes of geostatistical analysis and variography;
- Validate the block models and grade interpolation;
- Revise the classification criteria and validate the clipping areas for mineral resource classification;
- Assess the mineral resources with "reasonable prospects for economic extraction" and select appropriate cut-off grades and produce "resources-level" optimized underground mineable shapes; and
- Generate a mineral resource statement.

14.2. Drill Hole Database

Two diamond drill hole databases cover the Project: Bonanza Ledge and BM-CM-IM (Barkerville Mountain including the BC Vein, KL, and Lowhee deposits, Cow Mountain including the Cow and Valley deposits, Island Mountain including the Shaft and Mosquito deposits).

These databases were filtered by deposit (Cow, Shaft, Valley, Mosquito, BC Vein, KL or Lowhee) before working in Datamine. A subset of drill holes was used to generate the 2022 MRE database for each deposit (Table 14-1 and Figure 14-1).

The close-out date for the Cow deposit is August 25, 2021. It contains 1,252 validated drill holes (1,100 surface DDH and 152 DDH).

The close-out date for the Valley deposit is November 9, 2021. It contains 341 validated surface drill holes.

The close-out date for the Shaft deposit is November 23, 2021. It contains 805 validated drill holes (646 surface DDH and 159 underground DDH).

The close-out date for the Mosquito deposit is July 19, 2021. It contains 776 validated drill holes (520 surface DDH and 256 underground DDH).

The close-out date for the Lowhee deposit is November 17, 2021. It contains 372 validated drill holes (333 surface DDH and 39 underground DDH).

The close-out date for the BC Vein and KL deposits is February 14, 2020. It contains 295 validated drill holes (236 surface DDH and 59 underground DDH).

The close-out date for the Bonanza Ledge GEMS database is July 18, 2016. It contains 213 validated holes, of which a subset of 162 was used as the mineral resource database (103 surface DDH and 59 underground DDH) (Table 14-1and Figure 14-2). The database also contains 7,432 blast holes that were used to guide the interpretation only.

All databases include lithological, alteration and structural descriptions taken from drill core logs. Oriented core data have been available since the 2016 Program.

The databases cover the strike length of each mineral resource area at variable drill spacings, ranging from 10 m to 60 m for the Cow, Island and Barkerville mountain deposits, and from 5-15 m for the Bonanza Ledge deposit.

In addition to the tables of raw data, each database includes several tables of calculated drill hole composites and wireframe solid intersections, which are required for the statistical evaluation and mineral resource block modelling.

Table 14-1: Number of drill holes in each database

Deposit	Validated Drill Holes used for the 2022 MRE		
	Surface	Underground	Total
Cow	1,100	152	1,252
Valley	341	0	341
Shaft	646	159	805
Mosquito	520	256	776
KL	133	0	133
Lowhee	333	39	372
BC Vein	372	0	372
Bonanza Ledge	103	59	162

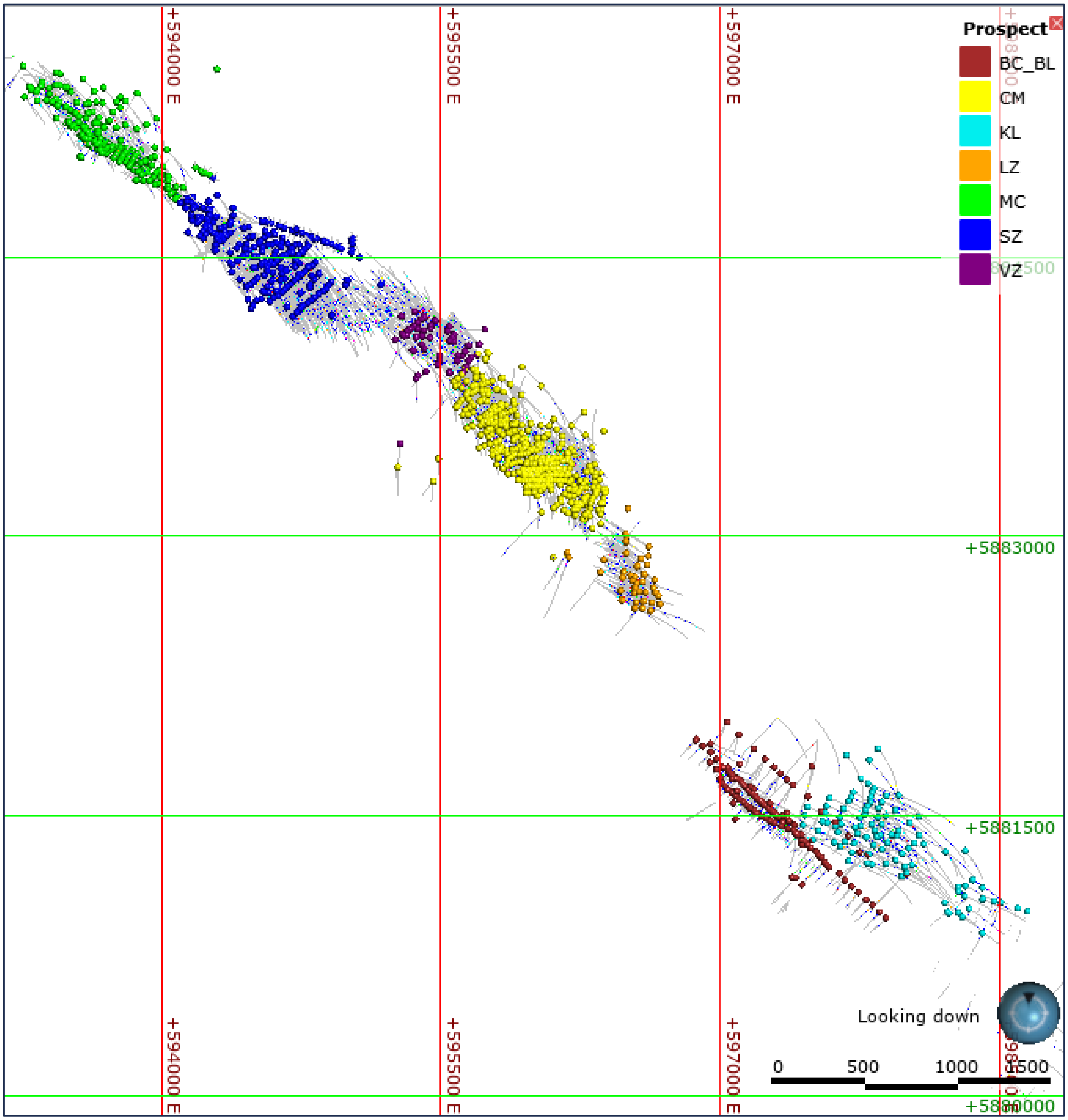


Figure 14-1: Surface plan view of the validated diamond drill holes used to in the 2022 MRE for the deposits of the Cow-Island-Barkerville Mountain Corridor

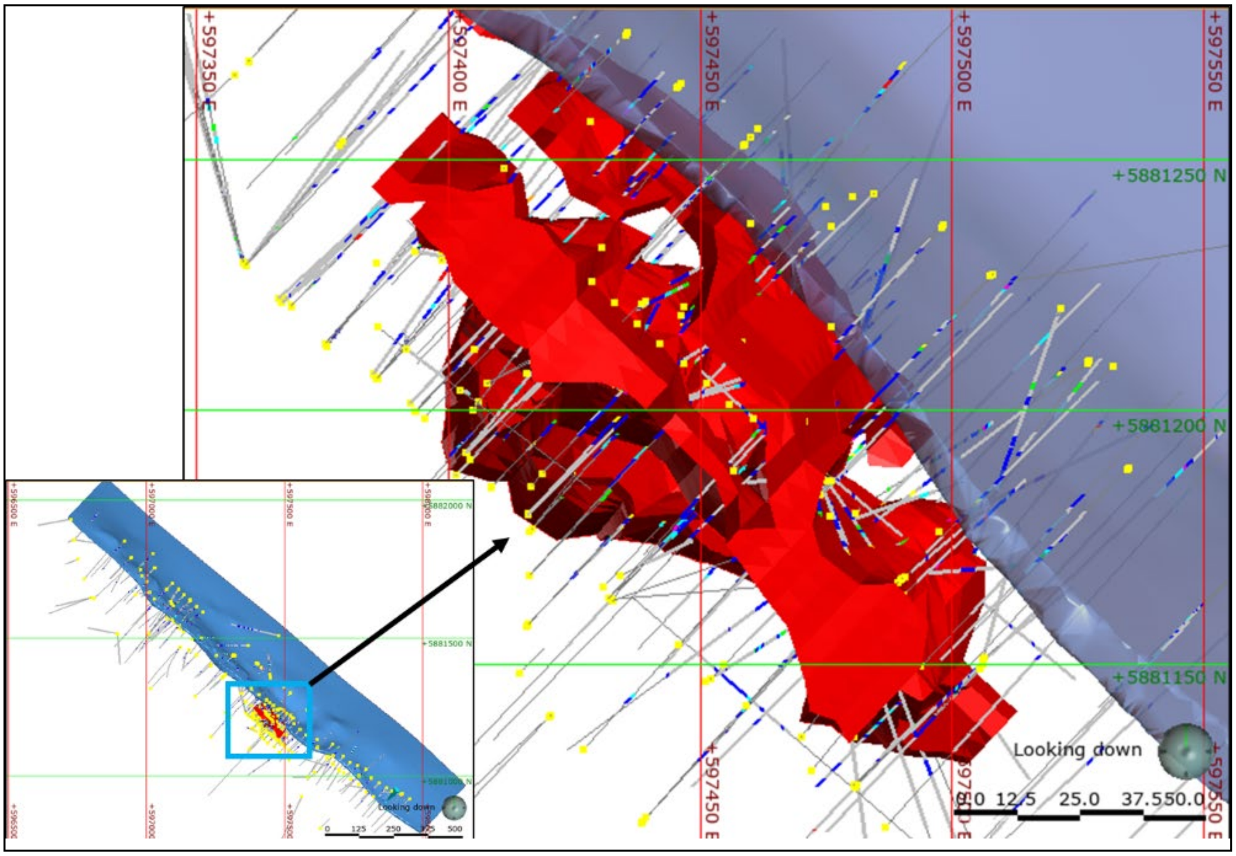


Figure 14-2: Surface plan view of the validated Bonanza Ledge diamond drill holes used for the 2022 MRE The inset figure shows the location of Bonanza Ledge (red) along the BC Vein (blue)

14.3. Geological Model

ODV updated, in 2021, the geological models for the Cow, Valley, Shaft, Mosquito, and Lowhee deposits using historical data, the data from the 2015-2019 drilling programs, and new holes from the 2020-2021 drilling program.

The KL and BC Vein deposit were not drilled in 2021, the geological model was reviewed and validated by the QPs.

The Bonanza Ledge geological model, same as documented in Brousseau et al. (2017), was reviewed and validated by the QPs. No new data have been acquired at Bonanza Ledge since the technical report of Brousseau et al. (2017).

The data used to update the geological models consists of drill hole data (including oriented core), underground mapping from historical level plans, and stope orientations. Oriented core data have been available since 2016 for all the deposits.

A total of 471 geological solids were created and/or updated for all the deposits.

The Cow, Valley, Shaft, Mosquito, Lowhee, and KL geological models consist of 464 mineralized solids representing axial planar ("AXPL") veins (Figure 14-3). All geological solids were modelled in Leapfrog. The solids were designed with a minimum thickness of 2 m and based on a cut-off grade of 2.0 g/t Au. The solids veins extend to a radius of up to 50 m from the last selected intercept or are fixed at the mid-distance of an intercept that does not meet the minimum grade criterion. The solids were snapped to drill holes. The solids were created from the AXPL structural data using indicator interpolants.

Figure 14-4 shows an example of a modelled solid representing AXPL veins from the Shaft deposit model.

The geological model for the BC Vein includes one sheared solid representing the mineralized Layer Parallel ("LP") vein, along with five solids representing mineralized LP splays (Figure 14-5). The solids were modelled in Leapfrog. The BC Vein and splays were modelled from geological logs and grade intervals. The BC Vein was designed with a minimum thickness of 2 m, controlled by the hanging and footwall of the shear, and was based on a cut-off grade of 1.0 g/t Au. Geological contacts were given precedent over grade. The splays were designed with a minimum thickness of 2 m and were based on a cut-off grade of 1.0 g/t Au. All solids were snapped to drill holes.

A geological structural contact was modelled between the BC Vein and the KL deposits. The surface is a major lithological contact between the brittle sandstone, which hosts the KL AXPL veins, and the more ductile carbonaceous mudstones and siltstones that host the BC Vein shear and LP veins. This contact was used as a hard boundary to limit the extent of the mineralized geological models (Figure 14-5).

In 2017, InnovExplo created one solid for the Bonanza Ledge deposit (Brousseau, 2017). Construction lines were created on cross-sections spaced 5 to 25 m apart, which were snapped to drill hole intercepts. The solid was inspired by a sulphide shell defined in Brousseau et al. (2017) using a threshold of 3% pyrite and clipped to the Footwall Fault to the southwest, which was modelled from drill hole logs (Figure 14-6). The authors reviewed and validated the 2017 model and concluded that the model remains accurate for the 2022 MRE update.

Two surfaces were created for each deposit to define the topography and the overburden/bedrock contact. The topography was created using LIDAR data from 2016, except for Bonanza Ledge, which used LIDAR data from 2000 (before the test pit was excavated at the Bonanza Ledge mine). The overburden-bedrock contact was modelled using logged overburden intervals. A waste solid was also created for Bonanza Ledge corresponding to the block model limits.

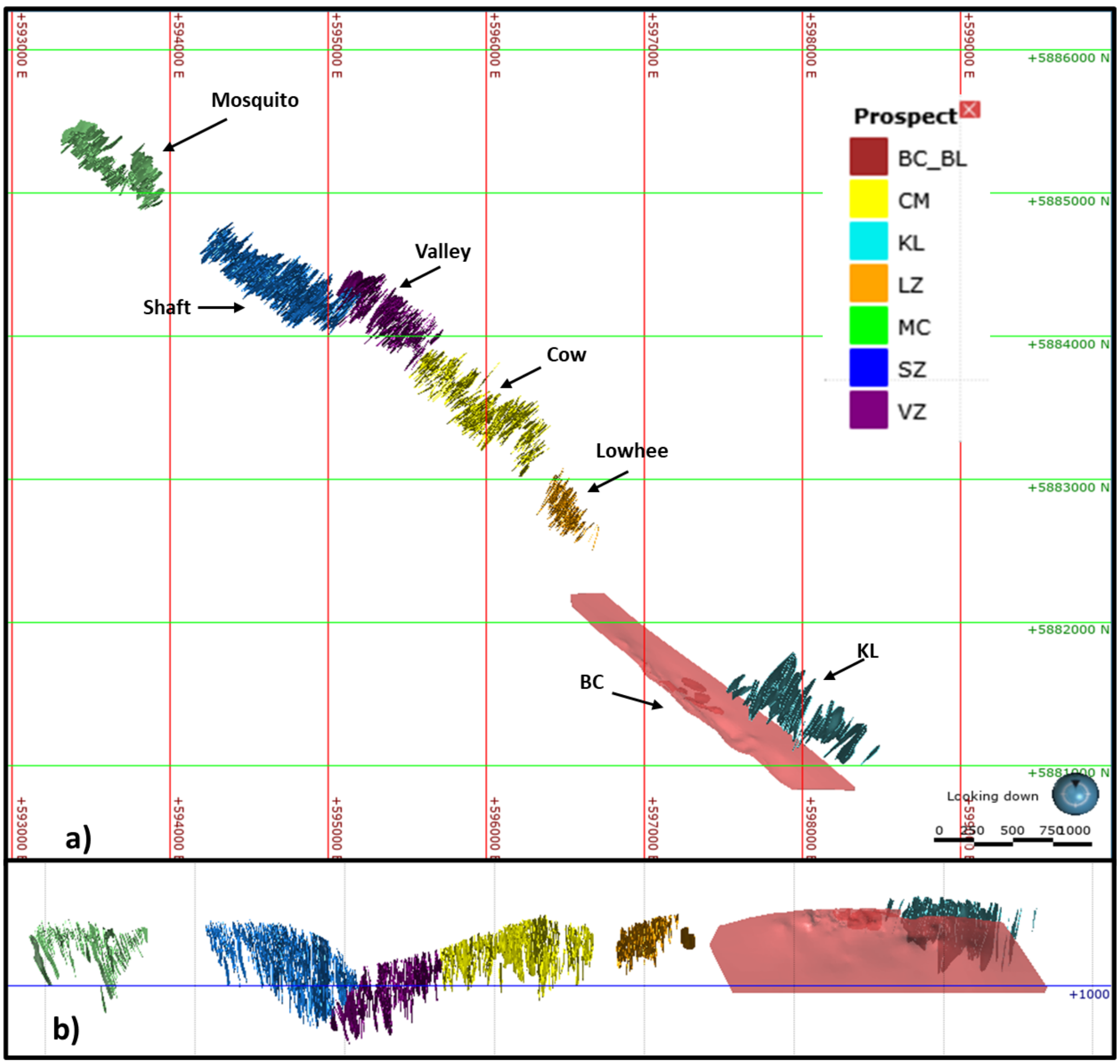


Figure 14-3: Mineralized solids of the Cow, Valley, Shaft, Mosquito, Lowhee, BC Vein and KL models a) Surface plan view; b) Section view looking NNE

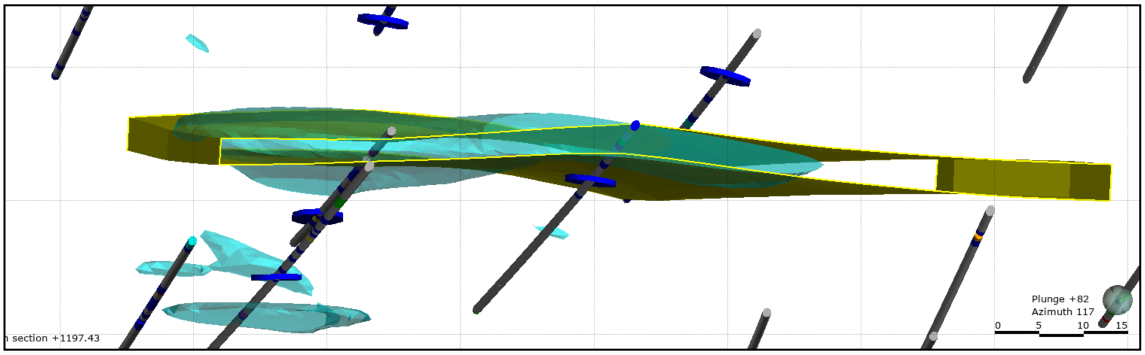


Figure 14-4: Example of data used for the 3D Shaft deposit model
Vein solid (yellow); 3.0-g/t Au indicator interpolant (cyan); oriented core AXPL veins (blue); 25-m-thick cross-section

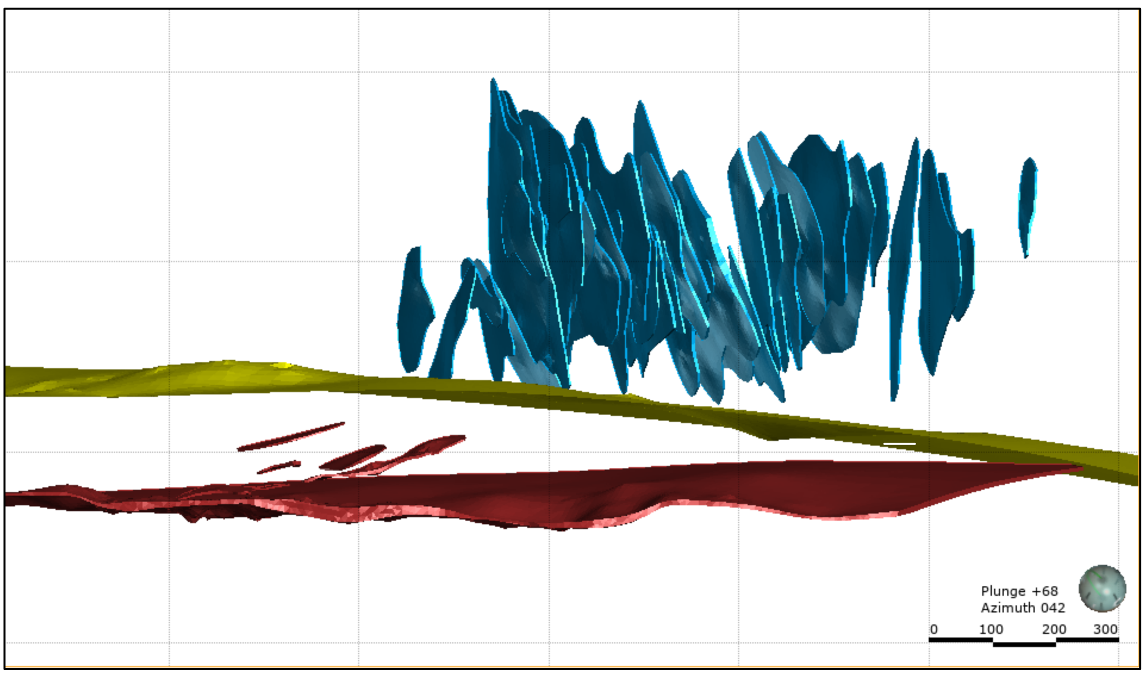


Figure 14-5: Isometric view of the BC Vein and KL deposit models, and the AXPL-LP contact surface
BC Vein (dark red); KL (blue); AP-LP contact (yellow)

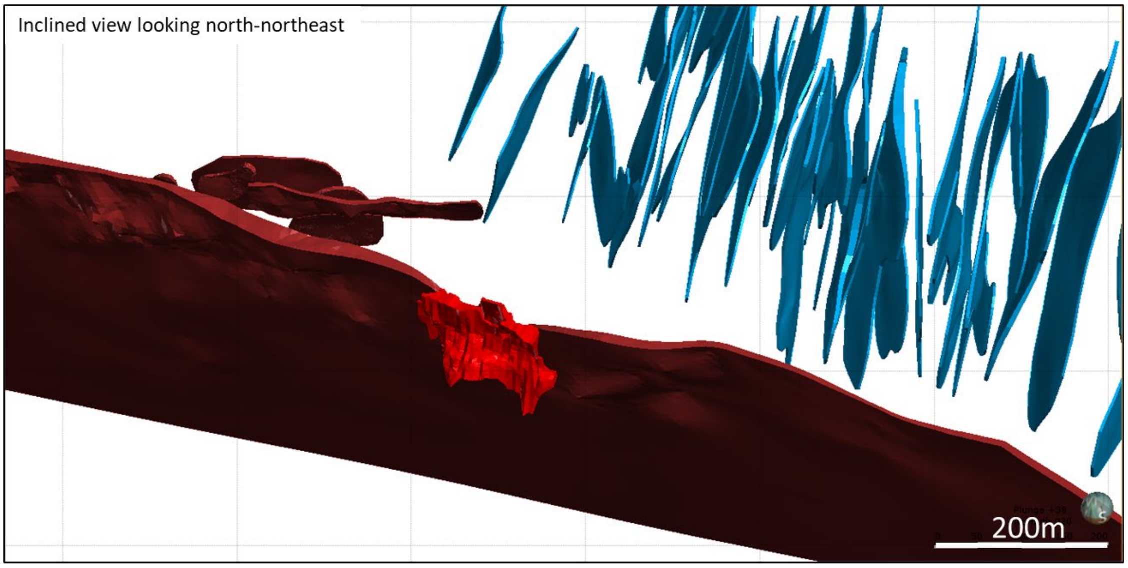


Figure 14-6: Isometric view of the BC Vein, Bonanza Ledge, and KL deposit models
BC Vein (dark red); Bonanza Ledge (red); KL (blue)

14.4. Voids Model

Current drifts and stopes are mined at Bonanza Ledge and BC Vein by ODV. These voids are modelled and updated by ODV. The voids are used to deplete the final mineral resource for these deposits.

A 5-m buffer was applied to the modelled voids of the Cow, Valley, Shaft, Mosquito, Lowhee, and BC Vein deposits to compensate for the uncertainty in void locations.

Drilling continues to intercept undocumented voids. To reduce the associated risk, a spherical buffer with a 10-m radius was applied around the intercepts to represent a potential stope of 20 m in diameter. These "buffer voids" were used to deplete the final mineral resource estimate only when the drilled void was not intersecting the stopes buffer.

In 2022, for the purpose of the PEA update, InnovExplo and ODV reviewed historical data and were able to model and recover additional historical stopes, mainly, and other underground infrastructure that were added to the voids model used in the previous MRE. These historical infrastructure additions were mainly at the Cow deposit, but some were also added to the voids model of the Mosquito and Shafts deposits. Many voids intercepts (previously undocumented) are now explained by the updated voids model. Uncertainty in void locations remains, locally, as some voids intercepted remain unexplained by the void model.

Based on the available data, the voids in the Datamine and GEMS projects are considered accurate.

Figure 14-7 and Figure 14-8 show the voids used to deplete the current mineral resource estimate.

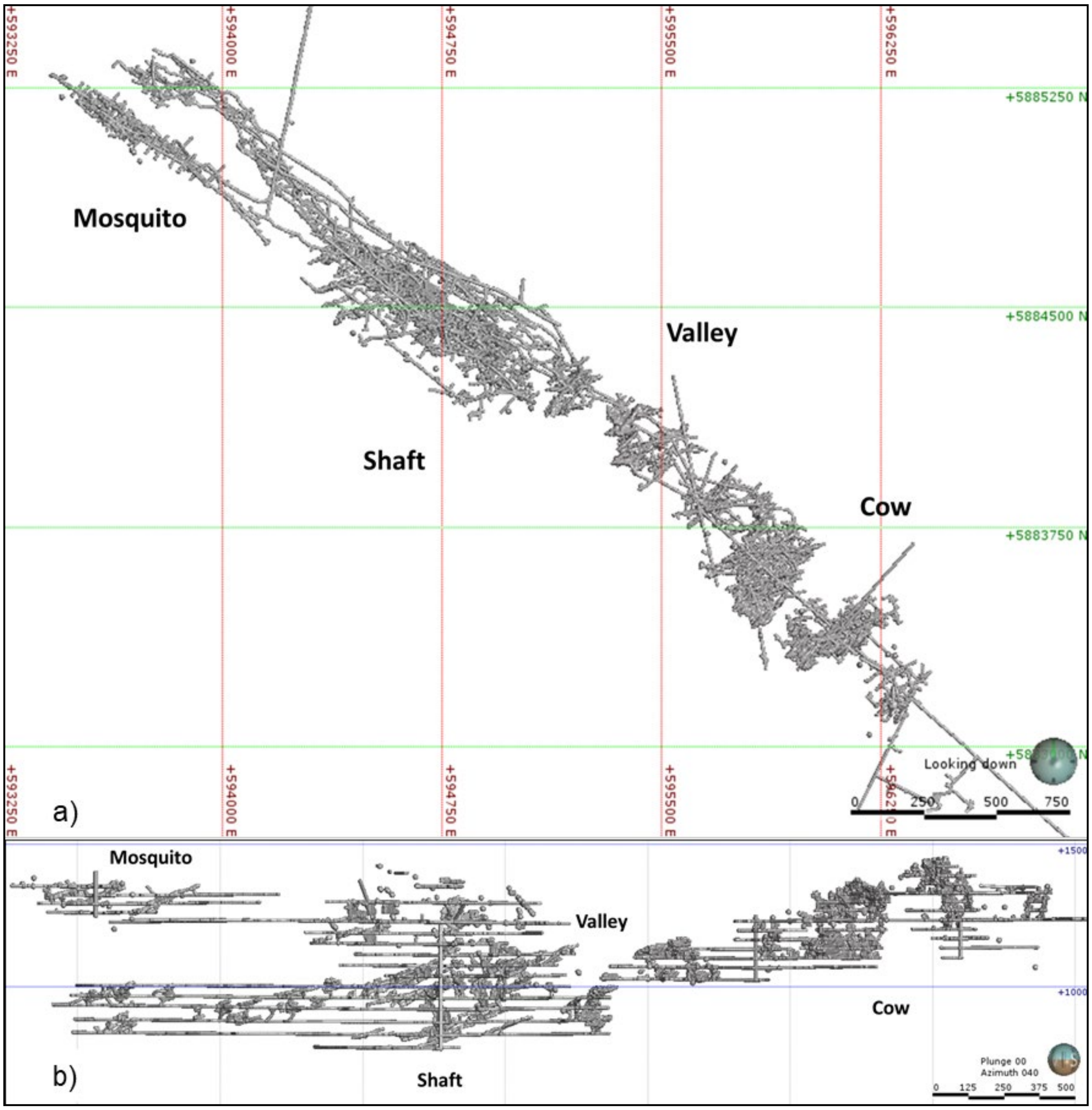


Figure 14-7: Plan and longitudinal view of the 5-m buffer voids for Cow Mountain and Island Mountain

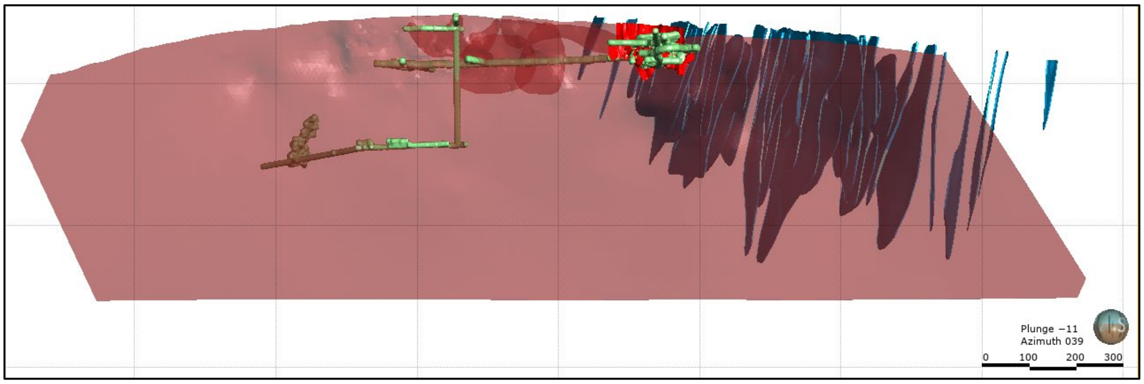


Figure 14-8: Longitudinal view of the 5-m buffer voids for the BC Vein, Bonanza Ledge, and KL deposits 5-m buffer voids (green); BC Vein (transparent red); Bonanza Ledge (red); KL (blue); looking NNE

14.5. Compositing

Codes were automatically attributed to DDH assay intervals intersecting the mineralized veins. Codes use the name of the corresponding 3D solid. The coded intercepts were used to analyze sample lengths and generate statistics for raw assays and composites. Table 14-2 summarizes the statistical analysis of the original (raw) assays for each deposit. The raw sample statistics used for composite length, capping and variograms were defined by deposit and not individual veins due to the paucity of data.

Table 14-2: Summary statistics for the DDH raw assays

Deposits	Number of samples	Max (Au g/t)	Mean (Au g/t)	Standard Deviation	Coefficient of Variation
Cow	14,876	6,590	4.31	56.54	13.12
Valley	10,765	1,870	3.20	20.44	6.39
Shaft	22,035	3,780	4.02	30.01	7.46
Mosquito	4,103	1,965	4.58	33.72	7.36
BC Vein	3,919	309	2.76	11.07	4.01
KL	2,413	145	1.88	6.09	3.23
Lowhee	4,850	2,420	3.78	38.37	10.15
Bonanza Ledge	3,062	234.5	7.08	15.35	2.17

The DDH gold assays were composited within each of the mineralized veins to minimize any bias introduced by variable sample lengths. Vein thickness, proposed block size, and original sample length were taken into consideration when calculating the composite length for each deposit: 3.0 m at Cow, 1.5 m at Valley, 2.0 m at Shaft, 2.5 m at Mosquito, 2.0 m at BC Vein, 1.5 m at Lowhee and 2.0 m at Bonanza Ledge. The composite length of 1.75 m for KL is the best-fit to assay sample lengths based on histograms and probability plots.

Tails were redistributed for all intervals less than half the composite length. A grade of 0.00 g/t Au was assigned to missing sample intervals from historical holes (pre-2016) within the solids. Missing samples from the 2016-2019 drilling programs due to lost core, voids or lost samples were ignored. A few holes from the 2016-2021 programs were only partially sampled; a value of 0.00 g/t Au was assigned to these missing intervals.

Table 14-3 presents the summary statistics by deposit.

Table 14-3: Summary statistics for composites

Deposits	Number of samples	Max (Capped) (Au g/t)	Mean (Au g/t)	Standard Deviation	Coefficient of Variation
Cow	5,811	50	2.76	5.99	2.17
Valley	6,535	40	2.25	5.02	2.23
Shaft	10,806	50	2.87	6.74	2.35
Mosquito	1,897	50	3.09	6.96	2.26
BC Vein	2,040	40	2.30	5.45	2.37
KL	1,294	20	1.39	2.66	1.91
Lowhee	2,872	40	2.13	5.28	2.47
Bonanza Ledge	2,602	70	5.98	10.77	1.80

14.6. High-grade Capping

Although the indicator variograms suggest that high-grade continuity ranges increase with decreasing grade, the lack of detailed underground mapping and sampling is an obstacle to defining the most suitable grade ranges in areas with wider drilling grids.

Multiple capping (capping at different ranges in each deposit) was selected as the capping methodology for the Cow, Valley, Shaft, Mosquito, KL, Lowhee, and BC Vein models (see below for Bonanza Ledge).

For these deposits, the highest selected capping value corresponds to the grade at 99% of the total variance on indicator variograms. The highest grades vary from 20 to 70 g/t Au. The second and third grades were selected based on the probability plot and vary from 7 to 30 g/t Au. The Shaft deposit is shown as an example in Figure 14-9 and Figure 14-10.

The maximum range for high-grade connectivity was established using the indicator variograms, which suggest a loss of connectivity after 17 to 33 m, depending on the mineralized zone. A range of 25 m was selected and applied to all zones as a general average, given the lack of detailed information for each deposit.

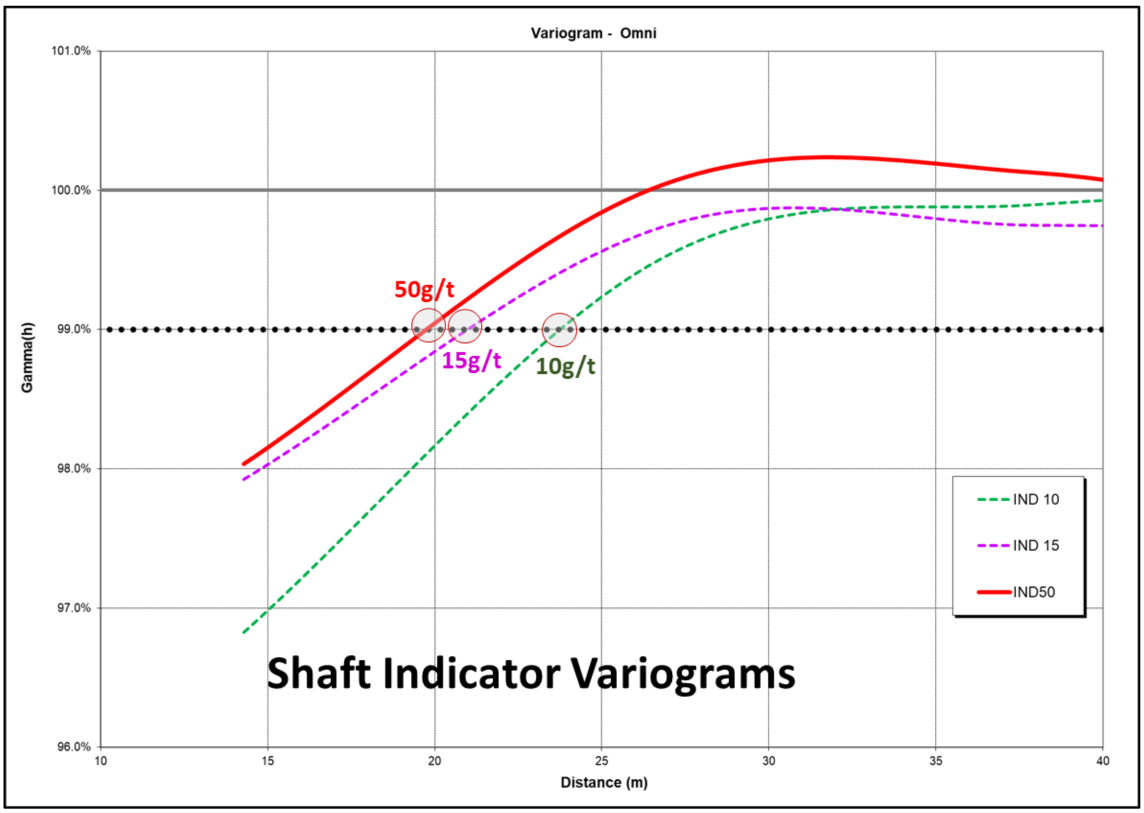


Figure 14-9: Indicator variograms for the Shaft deposit

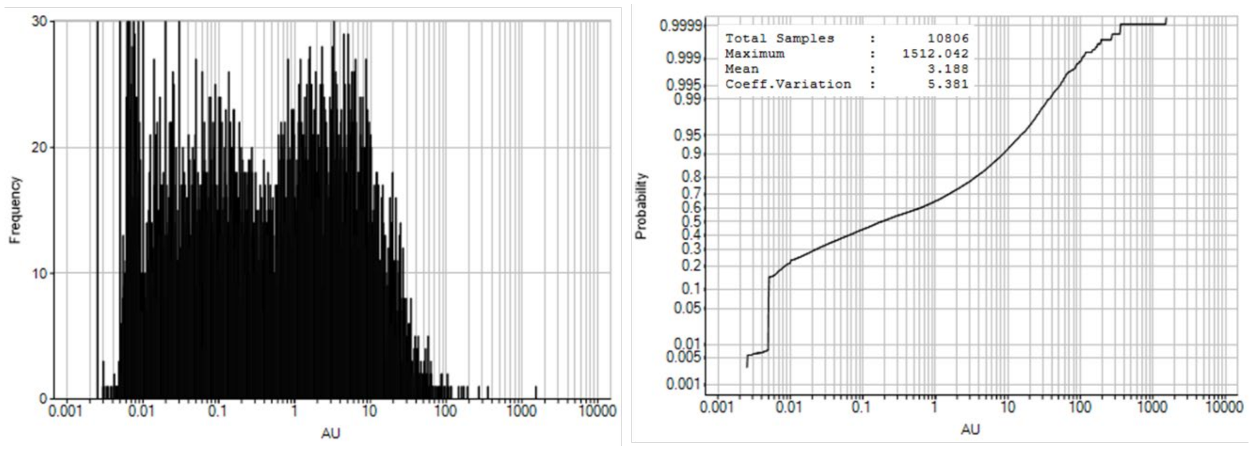


Figure 14-10: Grade log histogram and probability plot for the Shaft deposit

For Bonanza Ledge, basic univariate statistics were performed on individual composited gold assay datasets. The capping applied for Bonanza Ledge was a single top cap of 70 g/t Au on the composited data.16 samples were capped with this value, which was selected by combining the dataset analysis with the probability plot and log-normal grade distribution.

14.7. Density

Bulk densities were determined by standard water immersion methods on half-core samples. ODV's mineral resource databases contain 7,233 measurements taken on samples from all deposits. Table 14-4 provides a breakdown of bulk density measurements in modelled mineralized solids by zone.

Table 14-4: Bulk density by mineralized zone

Deposit	Number of Samples	Median SG	Method
Cow	1,109	2.80	ID^2 and Median
Valley	1,262	2.81	Median
Shaft	2,206	2.79	ID^2 and Median
Mosquito	515	2.79	Median
BC Vein	323	2.69	ID^2 and Median
KL	437	2.81	Median
Lowhee	1,176	2.75	Median
Bonanza Ledge	205	3.20	Median

For the Cow, Shaft and BC Vein models, the bulk density was estimated by the Inverse Distance Squared ("ID2") interpolation method in the block model. The median bulk density was applied to non-estimated blocks: 2.80 g/cm³ at Cow, 2.79 g/cm³ at Shaft, and 2.69 g/cm³ at BC Vein.

Due to the paucity of data, the median value of the bulk density measurements was applied to all blocks in the Valley (2.81 g/cm³), Mosquito (2.79 g/cm³), KL (2.81 g/cm³) and Lowhee (2.75 g/cm³) deposits.

For Bonanza Ledge, the average value of 3.20 g/cm³ from Sandefur and Stone (2006) was applied. In 2017, InnovExplo confirmed this value with 23 bulk density measurements during the independent resampling program, returning an average of 3.19 g/cm³ (Brousseau et al., 2017).

A density of 2.00 g/cm³ was assigned to the overburden, 2.70 g/cm³ to the waste rock and 0.00 g/cm³ to the 5-m buffer voids (including underground drifts and stopes). The 3D mineralized zones were clipped at the overburden.

Bulk densities were used to calculate tonnages from the volume estimates in the block model.

14.8. Block Model

A block model was created for each of the deposits.

For the Cow, Valley, Shaft, Mosquito, Lowhee, KL, and BC Vein models, unrotated sub-block models were used in Datamine. The sub-blocks were created within each mineralized vein zone.

The Bonanza Ledge block model corresponds to an unrotated percent block model in GEMS. All blocks with more than 0.01% of their volume falling within a selected solid were assigned the corresponding block code for that solid in their respective folder. A percent block model was generated, reflecting the proportion of each block inside every solid (i.e., individual mineralized zones, overburden, voids and waste).

The origin of each block model is the lower-left corner. Block dimensions reflect the sizes of mineralized zones and plausible mining methods.

Table 14-5 shows the properties of each block model.

Table 14-5: Block model properties

Deposits	Description	Easting (m)	Northing (m)	Elevation (m)
Cow	Block Model Origin	595,500	5,883,000	850
	Parent Block Dimension	5	5	5
	Number of Parent Blocks	190	190	128
	Sub-block Dimension	0.625	0.625	0.5
Valley	Block Model Origin	595,000	5,883,700	600
	Parent Block Dimension	5	5	5
	Number of Parent Blocks	160	160	130
	Sub-block Dimension	0.625	0.625	0.5
Shaft	Block Model Origin	594,160	5,884,000	690
	Parent Block Dimension	5	5	5
	Number of Parent Blocks	212	164	154
	Sub-block Dimension	0.625	0.625	0.5
Mosquito	Block Model Origin	593,250	5,884,850	800
	Parent Block Dimension	5	5	5
	Number of Parent Blocks	150	140	130
	Sub-block Dimension	0.625	0.625	0.5
BC Vein	Block Model Origin	596,500	5,880,800	940
	Parent Block Dimension	5	5	5
	Number of Parent Blocks	370	284	118
	Sub-block Dimension	1.0	1.0	1.0
KL	Block Model Origin	597,500	5,880,900	1,000
	Parent Block Dimension	5	5	5
	Number of Parent Blocks	210	190	130
	Sub-block Dimension	0.5	0.5	0.5
Lowhee	Block Model Origin	596,300	5,882,450	1,000
	Parent Block Dimension	5	5	5
	Number of Parent Blocks	90	140	100
	Sub-block Dimension	0.5	0.5	0.5
Bonanza Ledge	Block Model Origin	596,700	5,880,800	1,600
	Block size	2	2	5
	Block extent (m)	1,300	1,200	620

14.9. Variography and Search Ellipsoids

For the Cow, Valley, Shaft, Mosquito, KL, Lowhee, and BC Vein models, the 3D directional-specific search ellipses were guided by the hanging wall and footwall of each vein for an anisotropic search. The search radii were determined by the indicator variograms in Section 14.6.

Variogram models were designed for gold using composited assay data. Spherical variograms were modelled for each of these deposits.

Figure 14-11 shows an example of the variogram models used in the mineral resource estimation for the Cow model.

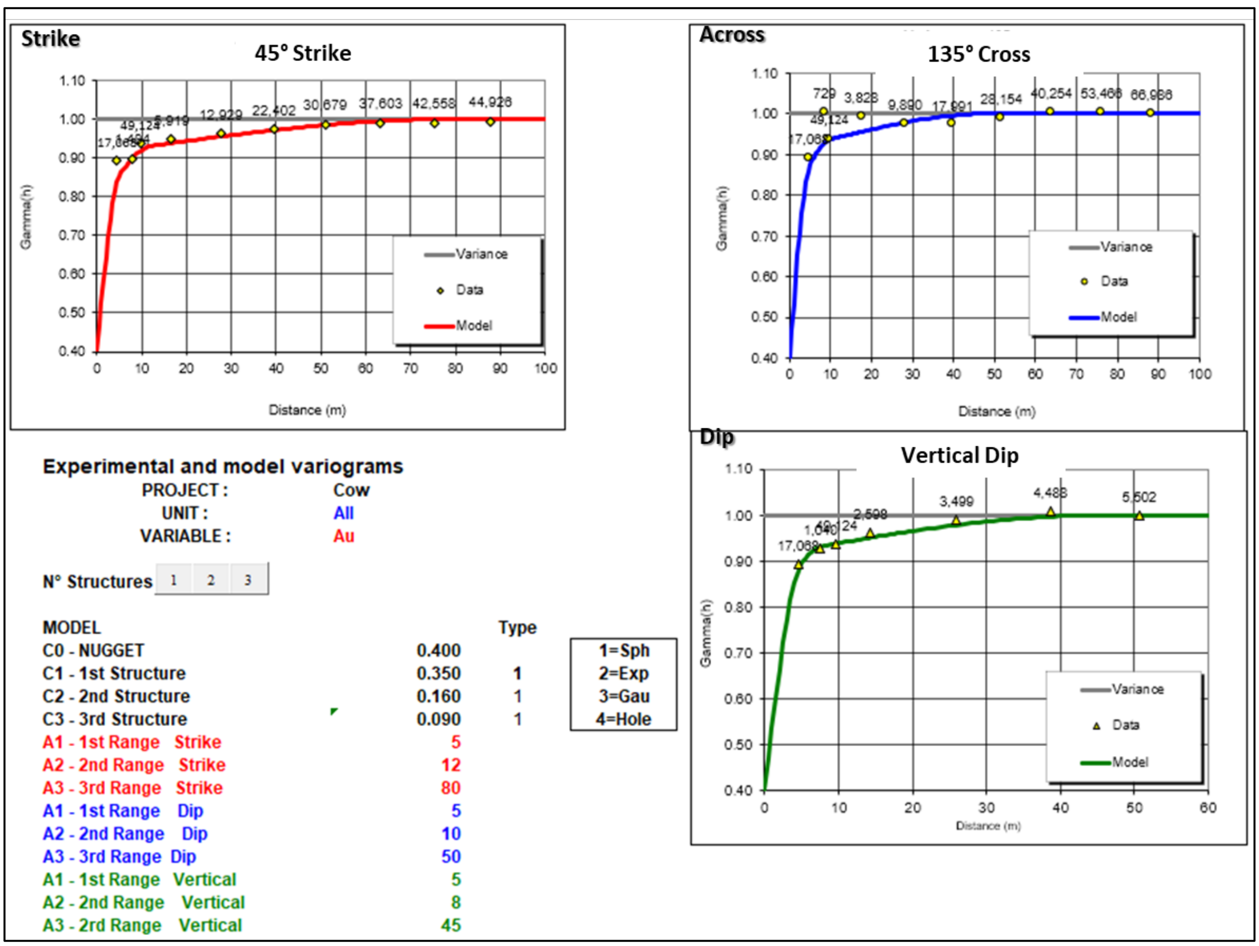


Figure 14-11: Variogram models of gold grade for the Cow deposit

For the Bonanza Ledge model, a 3D directional variography was completed on DDH composites of capped gold assay data. The study was carried out in Supervisor software. The 3D directional-specific investigations yielded the best-fit model along an orientation that corresponds to the strike and dip of the mineralized zones.

The downhole variograms suggest a low nugget effect of 3% for the Bonanza Ledge zones. Two sets of search ellipsoids were built from the variogram analysis, corresponding to 1x the results and 1.5x the results.

14.10. Grade Interpolation

The interpolation profiles were customized for each vein of each deposit to estimate grades with hard boundaries.

For the Cow, Valley, Shaft, Mosquito, KL, Lowhee, and BC Vein deposits, the mineralized vein blocks were estimated independently, with an anisotropic three-pass search to estimate all blocks within the veins. For each pass, the high grades were restricted, as determined in Section 14.6. The first pass range and distance for the restricted search grade (high-grade capping) correspond to a maximum of 25 m, as determined in Section 14.6. For the second and third passes, the ranges increased (respectively 2x and 2.5x the previous pass ranges) but the restricted search grade values decreased. These grade values were determined from indicator variograms and the geological knowledge for each deposit. The fourth interpolation pass was used to fill the wireframes with grade.

For the Bonanza Ledge deposit, passes ranges were derived from the variography using capped composites. The interpolation was run on a point area workspace extracted from the DDH dataset in GEMS. A two-pass search was used for the mineral resource estimate. The ellipsoid radii for Pass 1 were the same as the variography results (1x). The ellipsoid radii from Pass 2 were 1.5x the results for blocks not interpolated during Pass 1.

The OK method was selected for the final mineral resource estimation as it better honours the grade distribution for all the deposits.

The grade estimation parameters are summarized in Table 14-6.

Table 14-6: Grade estimation parameters

Deposit	Pass	Min Cmp	Max Cmp	Min DDH	Orientation			Ranges			
					Azi	Dip	Azi	X (m)	Y (m)	Z (m)	Au g/t Cap
Cow	1	4	12	2	Anisotropic			25	25	25	50
	2	4	12	2	Anisotropic			50	50	50	25
	3	4	12	2	Anisotropic			125	125	125	15
	4	3	12	2	Anisotropic			250	250	250	10
Valley	1	4	12	2	Anisotropic			25	25	25	40
	2	4	12	2	Anisotropic			50	50	50	25
	3	4	12	2	Anisotropic			125	125	125	15
	4	3	12	2	Anisotropic			250	250	250	10
Shaft	1	4	12	2	Anisotropic			25	25	25	50
	2	4	12	2	Anisotropic			50	50	50	30
	3	4	12	2	Anisotropic			125	125	125	15
	4	3	12	2	Anisotropic			250	250	250	10
Mosquito	1	4	12	2	Anisotropic			25	25	25	50
	2	4	12	2	Anisotropic			50	50	50	30
	3	4	12	2	Anisotropic			125	125	125	15
	4	3	12	2	Anisotropic			250	250	250	10
BC Vein	1	4	12	2	Anisotropic			25	25	25	40
	2	4	12	2	Anisotropic			50	50	50	30
	3	4	12	2	Anisotropic			125	125	125	10
	4	4	12	2	Anisotropic			250	250	250	5
KL	1	4	12	2	Anisotropic			25	25	25	20
	2	4	12	2	Anisotropic			50	50	50	10
	3	4	12	2	Anisotropic			125	125	125	7
	4	3	12	2	Anisotropic			250	250	250	7
Lowhee	1	4	12	2	Anisotropic			25	25	25	40
	2	4	12	2	Anisotropic			50	50	50	20
	3	4	12	2	Anisotropic			125	125	125	15
	4	NA – All blocks were estimated with the first 3 passes									
Bonanza Ledge	1	4	12	2	Anisotropic			25	12.5	25	50
	2	4	12	2	Anisotropic			50	25	50	30
	3	4	12	2	Anisotropic			100	50	100	15

14.11. Block Model Validation

The block models were validated visually and statistically. The visual validation confirmed that each block models honour the drill hole composite data and justifies the multiple capping for the second, third and fourth passes (Figure 14-12).

ID2 and NN models were produced to check for local bias in the models. The ID2 models matched well with the OK models, and the differences in the high-grade composite areas are within acceptable limits. The trend and local variation of the estimated ID2 and OK models were compared with the NN models and composite data using swath plots in three directions (North, East and Elevation) for the first pass. The ID2, NN and OK models show similar trends in grades with the expected smoothing for each method when compared to the composite data. Figure 14-13 shows the swath plot in the three principal directions of the Shaft deposit as an example.

The Bonanza Ledge model of Brousseau et al. (2017) was reviewed and validated, and a reconciliation exercise performed, but no changes were made to the block model. According to the reconciliation results of the 2018 development in the Bonanza Ledge mine, grade produced versus estimated is 87.5% for a combined dilution-recovery rate of 14.3%. No activities were carried out at the Bonanza Ledge mine in 2019-2020. The author believes the Bonanza Ledge block model reconciliation results were acceptable for the 2019 MRE given the nature of the deposit, and the data can be used to update the 2022 MRE.

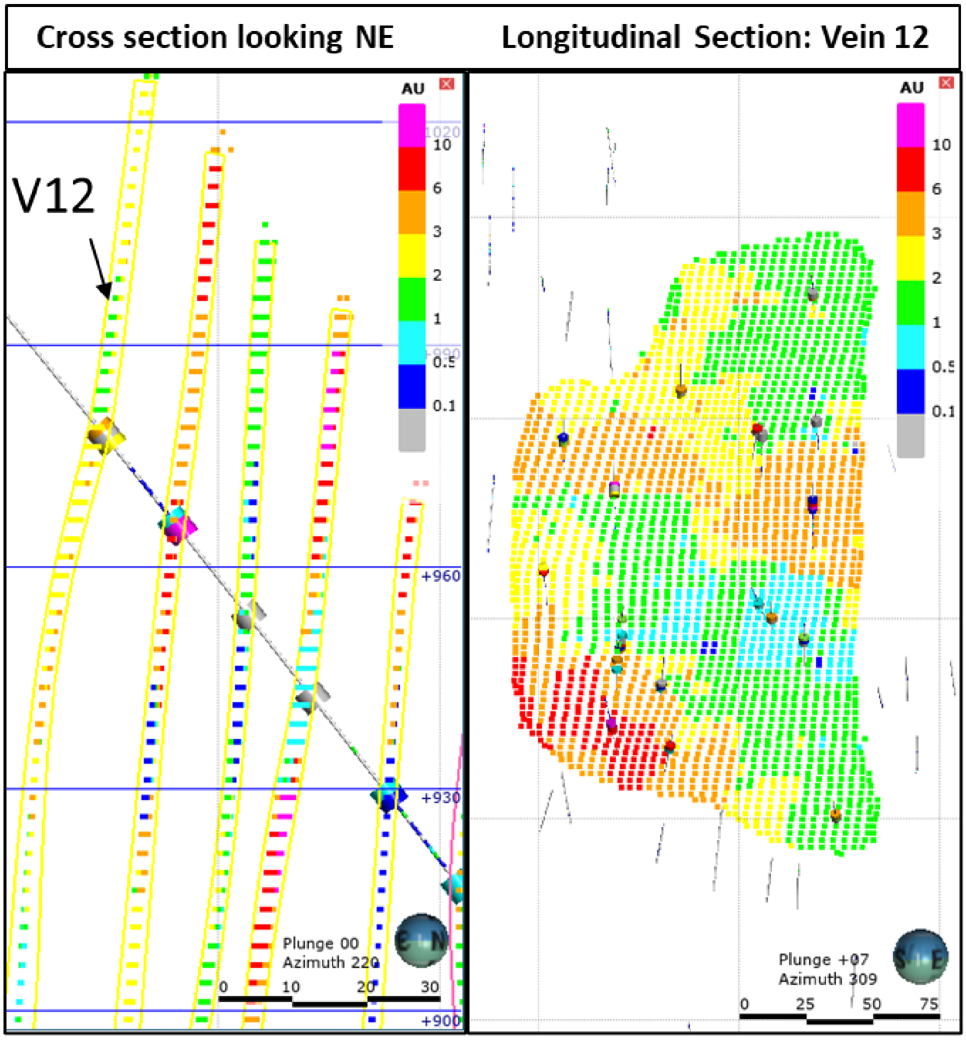


Figure 14-12: Validation of the Valley block model, comparing drill hole composites and block model grade values
a) Cross-section looking northeast (±5 m); b) Long section of Vein 12 showing all blocks

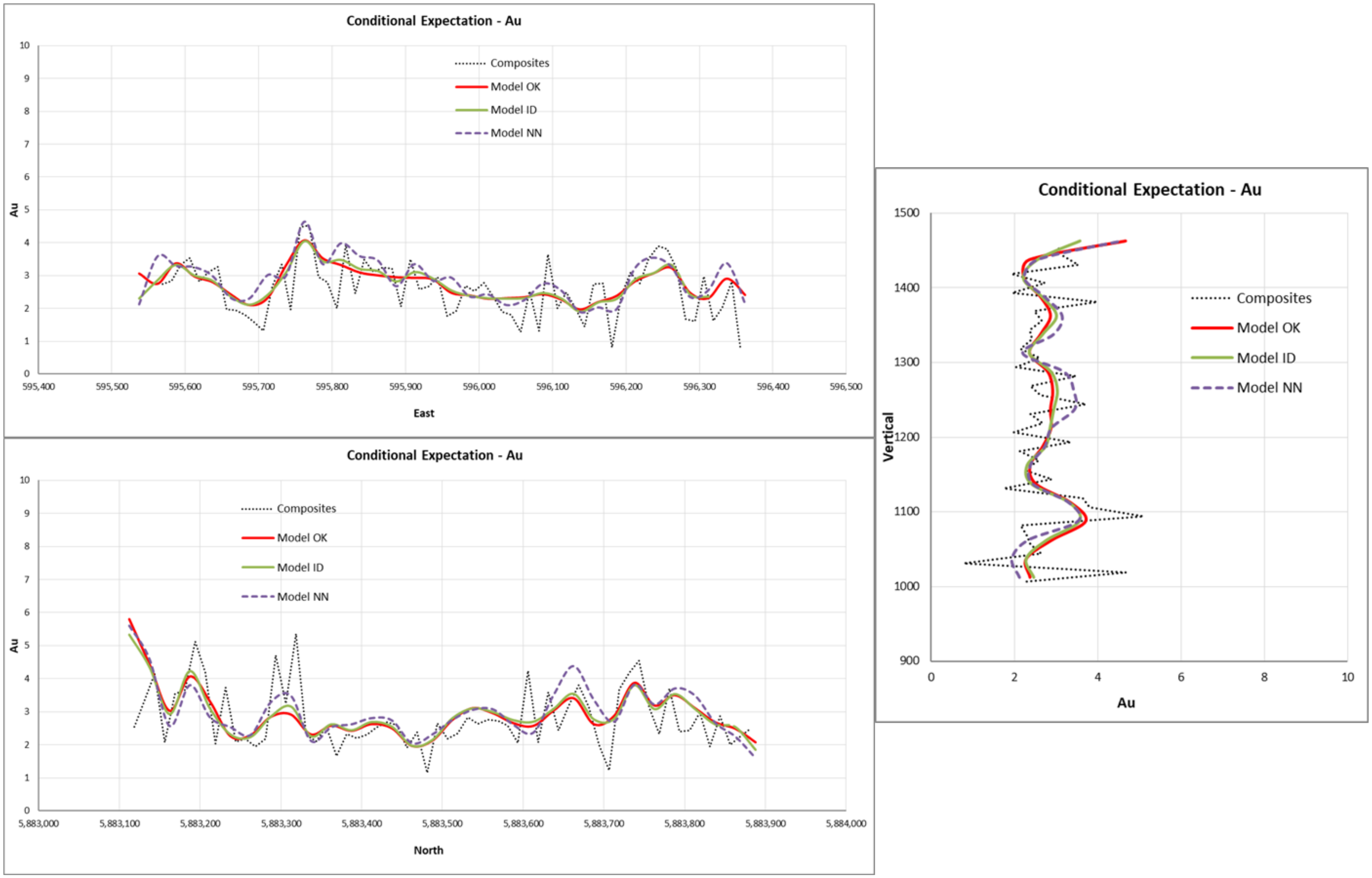


Figure 14-13: Cow model validation using three-direction swath plots comparing the different interpolation methods to the DDH composites

14.12. Economic Parameters and Cut-off Grade

Cut-off grade ("CoG") parameters were determined by ODV and QP, Éric Lecomte, using the parameters presented in Table 14-7 and Table 14-9. All deposits except for Bonanza Ledge are reported at a CoG of 2.0 g/t Au. Bonanza Ledge is reported at a CoG of 3.5 g/t Au.

Table 14-7: Input parameters used to calculate the underground cut-off grade for Cow, Valley, Mosquito, Shaft, Lowhee, KL, and BC Vein deposits

Input parameter	Value
Gold price (US$/oz)	1,600.00
Exchange rate (USD:CAD)	1.30
Gold Price ($/oz)	2,080
Royalty (%)	5.0%
Recovery (%)	91.8%
Global mining costs ($/t)	50.41
Processing & transport costs ($/t)	30.41
G&A + Environmental costs ($/t)	16.18
Total cost ($/t)	**116.50**
Mineral resource cut-off grade (g/t Au)	2.0

Table 14-8: Input parameters used to calculate the underground cut-off grade for Bonanza Ledge

Input parameter	Value
Gold price (US$/oz)	1,600.00
Exchange rate (USD:CAD)	1.30
Gold Price ($/oz)	2,080
Royalty (%)	5.0%
Recovery (%)	86.0%
Global mining costs ($/t)	79.13
Processing & transport costs ($/t)	60
G&A + Environmental costs ($/t)	51.65
Total cost ($/t)	**190.78**
Mineral resource cut-off grade (g/t Au)	3.5

The QP considers the selected cut-off grades of 2.0 g/t Au and 3.5 g/t Au to be adequate based on the current knowledge of the Project and to be instrumental in outlining mineral resources with reasonable prospects for eventual economic extraction for an underground mining scenario in each deposit.

The Deswik Stope Optimizer ("DSO") parameters used a minimum mining shape of 10.0 m along the strike of the deposit, a height of 10.0 m and a width of 2.0 m. The maximum shape measures 10.0 m x 10.0 m x width of the mineralized zone. The typical shape was optimized first. If it was not potentially economical, smaller stope shapes were optimized until it reached the minimum mining shape.

The use of those conceptual mining shapes as constraints to report mineral resource estimates demonstrate that the "reasonable prospects for eventual economic extraction" meet the criteria defined in the CIM Definition Standards; May 10, 2014, and the MRMR Best Practice Guidelines; November 29, 2019.

14.13. Mineral Resource Classification

14.13.1. Cow, Valley, Shaft, Mosquito, KL, Lowhee, and BC Vein deposits

No Measured mineral resources were defined.

Indicated mineral resources were defined for blocks estimated with a minimum of 2 DDH and within 25 m of a drill hole. The classification can extend up to 35 m if the mineralized trend is demonstrated by multiple adjacent holes.

Inferred mineral resources were defined for blocks estimated with a minimum of 2 DDH and within 50 m of a drill hole. The classification can extend to 60-65 m from a hole if the mineralized trend is demonstrated by multiple adjacent holes.

Based on the criteria described above, the final classification, for all deposits, was obtained after applying a series of outline rings (clipping boundaries) created in longitudinal views, keeping in mind that a significant cluster of blocks would be necessary to obtain an Indicated mineral resource. Within the Indicated category outlines, some Inferred blocks were upgraded into Indicated, whereas some Indicated blocks outside of these outlines were downgraded to Inferred category. The QPs consider this a necessary step to homogenize (smooth out) the mineral resource volumes in each category and to avoid the inclusion of isolated blocks in the Indicated category.

Figure 14-14 shows an example of the mineral resource classification for the Cow deposit.

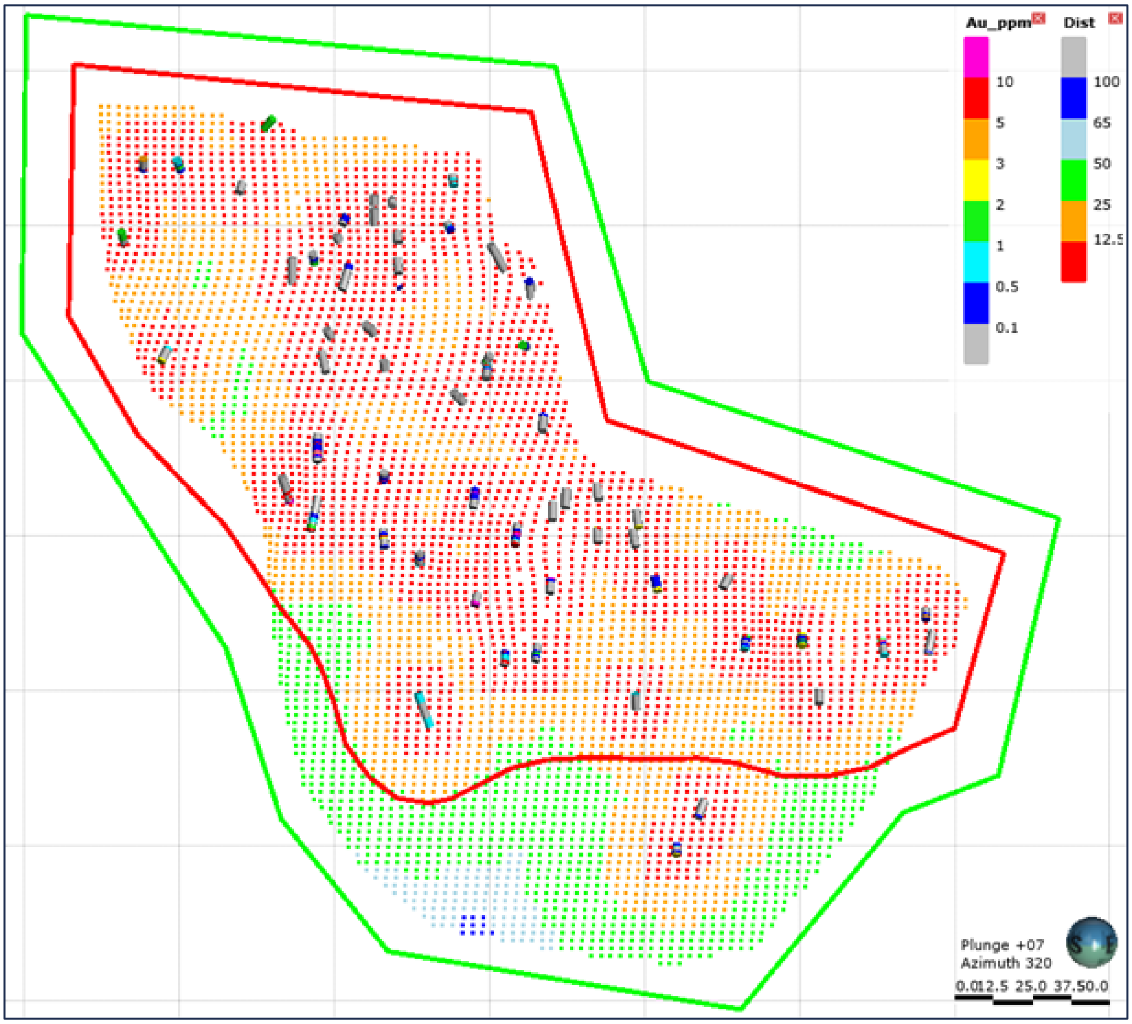


Figure 14-14: Example of a clipping boundary for classification
Indicated category clip (red); Inferred category clip (green) for the V11 vein of the Cow deposit

14.13.2. Bonanza Ledge deposit

Measured mineral resources were defined for blocks showing geological and grade continuity interpolated during Pass 1 only, with a minimum of three drill holes and a closest distance of less than 10 m, and for blocks no more than 40 m below the pit.

Indicated mineral resources were defined for blocks showing geological and grade continuity interpolated with a minimum of two drill holes during Pass 1 and a closest distance of less than 20 m.

Inferred mineral resources were defined by the remaining blocks interpolated from Pass 1 and Pass 2.

Figure 14-15 shows the mineral resource classification for the Bonanza Ledge deposit.

In some areas, interpolated blocks remained unclassified due to the lack of confidence in grade and/or continuity; these are kept as exploration potential.

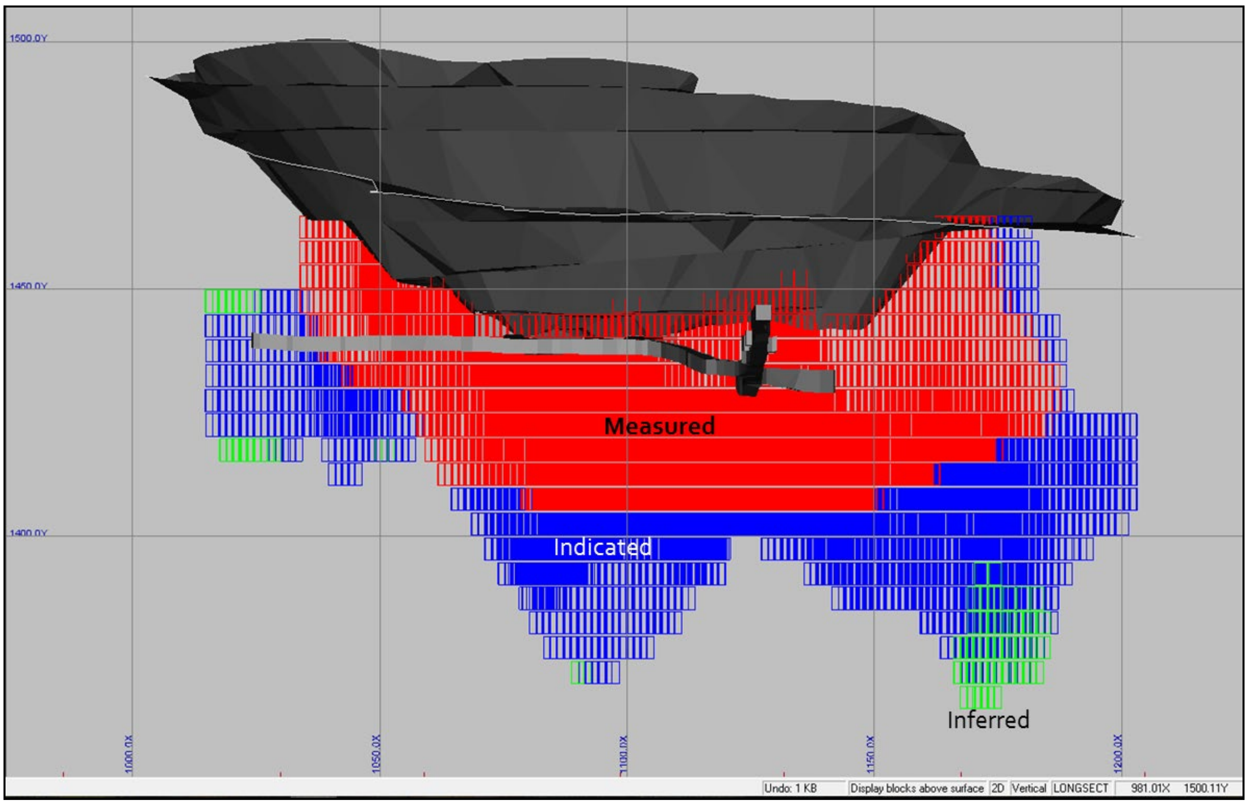


Figure 14-15: Longitudinal view showing the classified mineral resources of the Bonanza Ledge deposit

14.14. Mineral Resource Estimate

The QPs have classified the 2022 MRE as Measured, Indicated, and Inferred mineral resources based on data density, search ellipse criteria, drill hole density, and interpolation parameters. The 2022 MRE is considered to be reliable and based on quality data and geological knowledge. The mineral resource estimate follow 2014 CIM Definition Standards on Mineral Resources and Reserves.

Table 14-9 displays the results of the 2022 MRE for the Project at the official 2.0 g/t Au cut-off grade for all eight deposits: Cow, Valley, Shaft, Mosquito, KL, Lowhee, BC Vein and Bonanza Ledge.

Table 14-10 and Table 14-11 shows the cut-off grade sensitivity analysis of the 2022 MRE. The reader should be cautioned that the figures provided in Table 14-10 and Table 14-11 should not be interpreted as a mineral resource statement. The reported quantities and grade estimates at different cut-off grades are presented for the sole purpose of demonstrating the sensitivity of the mineral resource model to the selection of a reporting cut-off grade.

Table 14-9: Cariboo Gold Project 2022 Mineral Resource Estimate reported at a 2.0 g/t Au cut-off grade (except for Bonanza Ledge; reported at a 3.5 g/t Au cut-off grade)

Category	Deposit	Tonnes	Grade	Ounces
		'000	(Au g/t)	'000
Measured	Bonanza Ledge	47	5.1	8
Indicated	Bonanza Ledge	32	4.0	4
	BC Vein	1,030	3.1	103
	KL	389	3.2	40
	Lowhee	1,621	3.6	188
	Mosquito	1,795	4.3	249
	Shaft	11,139	4.3	1,531
	Valley	4,403	3.8	536
	Cow	6,645	3.8	811
Total Indicated Mineral Resources		**27,055**	**4.0**	**3,463**
Inferred	BC Vein	461	3.5	53
	KL	1,905	2.8	168
	Lowhee	520	3.5	59
	Mosquito	1,262	3.6	146
	Shaft	5,730	3.9	725
	Valley	2,135	3.4	235
	Cow	2,394	3.1	236
Total Measured and Indicated Mineral Resources		**27,102**	**4.0**	**3,470**
Total Inferred Mineral Resources		**14,407**	**3.5**	**1,621**

Mineral Resource Estimate notes:

1. The independent and qualified persons for the Mineral Resource Estimates, as defined by NI 43-101, are Carl Pelletier, P.Geo., and Vincent Nadeau Benoit, P.Geo. (InnovExplo Inc.). The effective date of the 2022 Mineral Resource Estimate is May 17, 2022.
2. These mineral resources are not mineral reserves as they do not have demonstrated economic viability.
3. The Mineral Resource Estimate conforms to the 2014 CIM Definition Standards on Mineral Resources and Reserves and follows the 2019 CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines.

4. A total of 471 vein zones were modelled for the Cow Mountain (Cow and Valley), Island Mountain (Shaft and Mosquito), Barkerville Mountain (BC Vein, KL, and Lowhee) deposits and one gold zone for Bonanza Ledge. A minimum true thickness of 2.0 m was applied, using the grade of the adjacent material when assayed or a value of zero when not assayed.
5. The estimate is reported for a potential underground scenario at a cut-off grade of 2.0 g/t Au, except for Bonanza Ledge at a cut-off grade of 3.5 g/t Au. The cut-off grade for the Cow, Valley, Shaft, Mosquito, BC Vein, KL, and Lowhee deposits was calculated using a gold price of USD1,600 per ounce; a USD/CAD exchange rate of 1.30; a global mining cost of $50.41/t; a processing & transport cost of $30.41/t; and a G&A + Environmental cost of $16.18/t. The cut-off grade for the Bonanza Ledge deposit was calculated using a gold price of USD1,600 per ounce; a USD/CAD exchange rate of 1.30; a global mining cost of $79.13/t; a processing & transport cost of $60.00/t; and a G&A + Environmental cost of $51.65/t. The cut-off grades should be re-evaluated in light of future prevailing market conditions (metal prices, exchange rate, mining cost, etc.).
6. Density values for Cow, Shaft, and BC Vein were estimated using the ID2 interpolation method, with a value applied for the non-estimated blocks of 2.80 g/cm^3 for Cow, 2.79 g/cm^3 for Shaft, and 2.69 g/cm^3 for BC Vein. Median densities were applied for Valley (2.81 g/cm^3), Mosquito (2.79 g/cm^3), KL (2.81 g/cm^3) and Lowhee (2.75 g/cm^3). A density of 3.20 g/cm^3 was applied for Bonanza Ledge.
7. A four-step capping procedure was applied to composited data for Cow (3.0 m), Valley (1.5 m), Shaft (2.0 m), Mosquito (2.5 m), BC Vein (2.0 m), KL (1.75 m), and Lowhee (1.5 m). Restricted search ellipsoids ranged from 7 to 50 g/t Au at four different distances ranging from 25 m to 250 m for each deposit. High grades at Bonanza Ledge were capped at 70 g/t Au on 2.0 m composited data.
8. The mineral resources for the Cow, Valley, Shaft, Mosquito, BC Vein, KL, and Lowhee vein zones were estimated using Datamine Studio^{TM} RM 1.9 software using hard boundaries on composited assays. The OK method was used to interpolate a sub-blocked model (parent block size = 5 m x 5 m x 5 m). Mineral resources for Bonanza Ledge were estimated using GEOVIA GEMS^{TM} 6.7 software using hard boundaries on composited assays. The OK method was used to interpolate a block model (block size = 2 m x 2 m x 5 m).
9. Results are presented in situ. Ounce (troy) = metric tons x grade / 31.10348. Calculations used metric units (metres, tonnes, g/t). The number of tonnes was rounded to the nearest thousand. Any discrepancies in the totals are due to rounding effects. Rounding followed the recommendations as per NI 43-101.
10. The qualified persons responsible for this section of the technical report are not aware of any environmental, permitting, legal, title, taxation, socio-economic, marketing, political or other relevant factors that could materially affect the mineral resource estimate.

Table 14-10: Cut-off grade sensitivity analysis for the Cow, Valley, Shaft, Mosquito, BC Vein, KL, and Lowhee deposits of the Cariboo Gold Project

Cut-off Grade	Indicated			Inferred		
	Tonnes ('000)	Grade Au g/t	Ounces ('000)	Tonnes ('000)	Grade Au g/t	Ounces ('000)
1.90	28,550	3.9	3,543	15,429	3.4	1,683
2.00	**27,022**	**4.0**	**3,458**	**14,407**	**3.5**	**1,622**
2.10	25,548	4.1	3,371	13,438	3.6	1,560

Table 14-11: Cut-off grade sensitivity analysis for the Bonanza Ledge deposit of the Cariboo Gold Project

Cut-off Grade	Measured			Indicated		
	Tonnes ('000)	Grade Au g/t	Ounces ('000)	Tonnes ('000)	Grade Au g/t	Ounces ('000)
3.20	65	4.5	9	38	3.6	4
3.50	**47**	**5.1**	**8**	**32**	**4.0**	**4**
3.70	43	5.2	7	21	4.3	3

15. Mineral Reserve Estimates

Not applicable at the current stage of the Project.

16. Mining Methods

16.1. Introduction

Underground longhole longitudinal retreat with a combination of paste fill and cemented rockfill ("CRF") mining methods will be used for the extraction of the economic mineable inventory, as it is the most economic, and sustainable methodology. The Cariboo Gold Project ("the Project") is planned in two phases, Phase 1 is at 2,000 tonnes per day ("tpd") for 2.5 years, increasing during Phase II to an average production of 8,000 tpd over a 9.5-year life of mine ("LOM"). This Report has focused on five underground zones: Shaft Zone, Valley Zone, Cow Zone, Mosquito Zone and Lowhee Zone. The mining zones are accessed via three main portals (Cow, Valley [Main], and Island Mountain) and are connected by an internal ramp system.

16.2. Rock Engineering

SRK Consulting (Canada) Inc. ("SRK") performed a geotechnical evaluation of the Project which included data from two geotechnical field investigation programs designed to characterize the geotechnical conditions of the rock and support the underground mine and infrastructure design, structural geology review, a detailed evaluation of geotechnical design domains, and the development of geotechnical design guidelines within each of these domains. These guidelines included excavation design parameters, estimates of dilution, as well as ground support requirements. The various elements of the geotechnical evaluation and findings are discussed in more detail in the following sections.

16.2.1. Geotechnical Programs

Two geotechnical field data acquisition programs were completed, the first taking place during late summer and fall of 2018, and the second taking place in the summer of 2021.

Both involved quality assurance and quality control ("QA/QC") by SRK to ensure a high quality of data collected.

SRK's 2018 field geotechnical data acquisition/investigation program comprised of geotechnical logging of oriented triple tube HQ core. Thirteen geotechnical drill holes were logged using RMR_{89} and Q' rock mass classification systems for a total length of 4,180.8 metres ("m"). Basic geotechnical data (recovery, fracture count, rock quality designation ("RQD"), and estimated intact rock strength) were collected for the 2016 to 2021 resource exploration drill holes. This program focused on the Shaft, Cow, and Valley Zones, as well as the Valley (Main) Portal location.

Representative rock core samples from each geotechnical domain were collected from the geotechnical drill holes in the 2018 field program to complete 96 multi-stage triaxial compressive strength tests ("TCS") at the Queen's University laboratory.

The 2021 field program comprised of geotechnical logging of oriented triple tube HQ core from five geotechnical specific holes with a total length of 880.95 m using the same logging guidelines as 2018. This program focused on the expanded Mosquito Zone and new Lowhee Zone, as well as the proposed Island Mountain Portal location.

During the 2021 field program, core samples were collected to complete four unconfined compressive strength ("UCS") tests and nine TCS tests.

The results of the TCS test results are summarized in Table 16-1. The tests included Intact Elastic Modulus (Young's Modulus) data. The samples were referenced to each logged lithology as well as lithological facies and representative averages for the rock physical properties were determined for each facies. Poisson's ratio data was collected as part of the 2021 lab testing but is limited in quantity and is too variable to make any definitive conclusions. Representative unit weights and Intact Elastic Modulus', based on laboratory testing, for each of the lithological facies are summarized in Table 16-2. Should numerical stress modelling be required for the Project, it is recommended that estimated values for the lithologies are benchmarked against values from similar rock types.

Table 16-1: TCS 2018 and 2021 test results

Confining Pressures		σ3 = 5 MPA		σ3 = 10 MPA		σ3 = 15 MPA		σ3 = 20 MPA		σ3 = 25 MPA	
Logged Lithology	Number of samples	Average σ1 (MPa)	Standard Deviation σ1 (MPa)	Average σ1 (MPa)	Standard Deviation σ1 (MPa)	Average σ1 (MPa)	Standard Deviation σ1 (MPa)	Average σ1 (MPa)	Standard Deviation σ1 (MPa)	Average σ1 (MPa)	Standard Deviation σ1 (MPa)
Calcareous Mafic Volcaniclastic ("CLMV")	7	59.9	19.3	73.6	24.8	83.7	33.0	90.0	36.0	110.4	37.5
Calcareous Siltstone ("CLSI")	1	42.4		59.4		72.7		88.5		100.3	
Calcareous Sandstone ("CLSS")	36	60.1	34.5	75.7	34.4	88.9	38.6	101.9	39.3	116.5	36.3
Carbonaceous Siltstone ("CSI")	9	43.4	15.4	57.6	18.6	71.9	19.8	80.5	20.8	95.2	18.5
Aurum Limestone ("LST")	6	48.2	28.6	63.0	30.3	75.8	33.1	84.7	35.1	104.5	35.8
Siltstone ("SI")	28	53.6	29.9	65.0	32.9	75.1	33.9	86.7	35.8	99.5	33.9
Lower Sandstone Facies ("SS")	9 ~~9~~	70.8	37.2	90.1	42.4	108.8	51.7	122.4	60.3	143.9	62.1

Table 16-2: Summary of Unit Weight, Intact Elastic Modulus, and Intact Poisson's Ratio based on 2018 and 2021 Laboratory Testing Results

Modelled Lithological Facies	Design Unit Weight, g (tonnes/m³)	Intact Rock Elastic Modulus (GPa)
Calcareous Siltstone Facies	2.80	25.74
Calcareous Sandstone Facies	2.78	43.3
Aurum Limestone	2.77	35.84
Upper Sandstone Facies	2.74	29.65
Mafic Volcanic Facies	2.80	25.74
Lower Sandstone Facies	2.81	27.47
Basal Transitional Facies	2.86	30.70
Basal Facies	2.77	45.14

TCS results were also used to extrapolate UCS values to allow for comparison to strengths obtained using direct UCS tests and estimated using point load tests ("PLT") tests. UCS estimates from TCS tests are summarized in Table 16-3. The limited UCS test results are summarized in Table 16-4.

Table 16-3: UCS estimates extrapolated from 2018 and 2021 TCS tests

Zone	Lithological Facies	Triaxial Testing Results (2018 & 2021)				
		No. Valid Tests	Extrapolated UCS (MPa)			
			Min	Average	Max	StdDev
Cow	Calcareous Silstone Facies	11	10	24	57	13
	Calcareous Sandstone Facies	2	32	33	34	1
	Aurum Limestone	3	32	37	45	6
	Upper Sandstone Facies	13	7	26	47	15
	Mafic Volcaniclastic	3	33	47	69	16
	Lower Sandstone Facies	7	21	45	97	27
	Basal Transitional	1	72	72	72	0
	Basal	3	20	38	68	21
Shaft	Calcareous Silstone Facies	0	-	-	-	-
	Calcareous Sandstone Facies	3	23	66	102	33
	Aurum Limestone	0	--	-	-	-
	Upper Sandstone Facies	10	15	44	107	28
	Mafic Volcaniclastic	7	10	60	102	30
	Lower Sandstone Facies	13	12	36	114	27
	Basal Transitional	3	16	49	78	25
	Basal	0	-	-	-	-

Zone	Lithological Facies	Triaxial Testing Results (2018 & 2021)				
		No. Valid Tests	Extrapolated UCS (MPa)			
			Min	Average	Max	StdDev
Valley	Calcareous Silstone Facies	0	-	-	-	-
	Calcareous Sandstone Facies	1	46	46	46	0
	Aurum Limestone	1	32	32	32	0
	Upper Sandstone Facies	1	24	24	24	0
	Mafic Volcaniclastic	1	38	38	38	0
	Lower Sandstone Facies	0	-	-	-	-
	Basal Transitional	0	-	-	-	-
	Basal	0	-	-	-	-
Mosquito	Calcareous Silstone Facies	2	4	12	21	8
	Calcareous Sandstone Facies	0	--	--	--	-
	Aurum Limestone	2	39	42	45	3
	Upper Sandstone Facies	1	21	21	21	0
	Mafic Volcaniclastic	1	59	59	59	0
	Lower Sandstone Facies	0	-	-	-	-
	Basal Transitional	0	-	-	-	-
	Basal	0	-	-	-	-
Island Mountain Portal	Calcareous Silstone Facies	0	18	20	22	2
	Calcareous Sandstone Facies	0	-	-	-	-
	Aurum Limestone	0	-	-	-	-
	Upper Sandstone Facies	0	-	-	-	-
	Mafic Volcaniclastic	0	-	-	-	-
	Lower Sandstone Facies	0	-	-	-	-
	Basal Transitional	0	-	-	-	-
	Basal	0	-	-	-	-

Table 16-4: Direct UCS test results from 2021 field program

	Unit	Count of UCS	Min of UCS	Average of UCS	Max of UCS	StdDev of UCS
Mosquito	**MPa**	**3**	**22**	**49**	**67**	**19**
Calcareous Siltstone Facies	MPa	3	22	49	67	19
Island Mountain Portal	**MPa**	**1**	**17**	**17**	**17**	**0**
Calcareous Siltstone Facies	MPa	1	17	17	17	0
Total	**MPa**	**4**	**17**	**41**	**67**	**22**

Table 16-5 shows the total length of core by zone that was reviewed and assigned a rock mass quality rating.

Table 16-5: Summary of length of core photo logged, by Zone

Zone	Length of core quantified 2020 (m)	Length of core quantified 2021/22 (m)	Length of core quantified total (m)	Length of core quantified total (km)
Valley	2,332	774	3,106	3.1
Shaft	37,984	5,054	43,038	43.0
Cow	20,652	6,330	26,982	27.0
Mosquito	2,685	3,814	6,499	6.5
Lowhee	-	3,422	3,422	3.4

The location of the 2018 and 2021 dedicated geotechnical drill holes used for assessment of the Project deposit are shown in Figure 16-1.

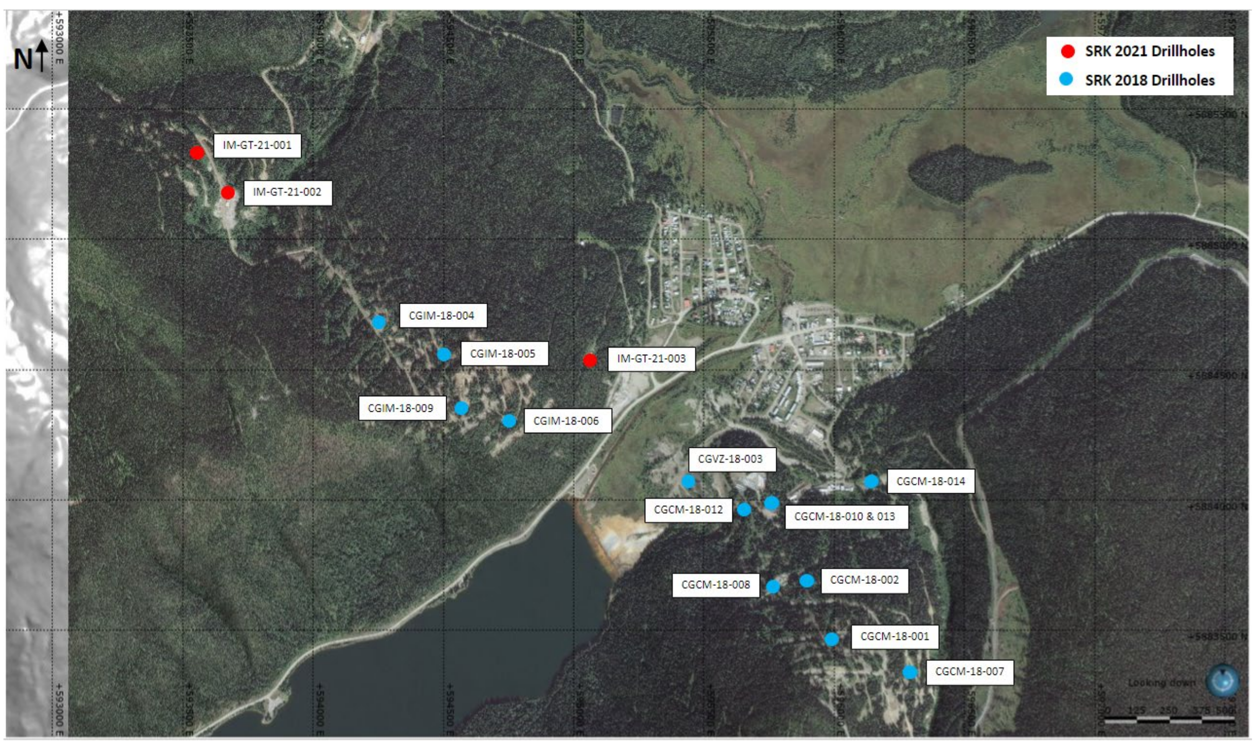


Figure 16-1: Plan view showing collar locations of 2018 and 2021 dedicated geotechnical drill holes for the Project

16.2.2. Structural Geology

A 3D structural model had already been created to represent the major Regional Fault structures on the Project property. SRK provided a 3D fault model that was created for the secondary structures for the Project property, where information existed to extend these faults. This model was based on the integration of drill hole data and underground mapping in the old mine-workings. Each of the mineralized zones were modelled separately. Modelling of the secondary faults in the Cow, Valley, Shaft, and Mosquito Zones took place in 2019. Secondary faults in the Mosquito Zone were updated in 2021 and secondary faults in the Lowhee Zone were modelled in 2022.

16.2.3. Geotechnical Design

16.2.3.1. Geotechnical Design Classifications

A thorough evaluation of geotechnical parameters, laboratory strength testing, kinematic, and empirical analyses have been conducted to support the underground mine design. The deposit lithological facies have been modelled and initial assessments considered the geotechnical characteristics of the facies. The result of this assessment show that the main indicator for rock mass quality on the Project site is the presence of faults and the width of the damage zones associated with each fault or fault intersection.

Based on this assessment, five rock mass classifications with unique geotechnical characteristics were defined. Due to the variability in the Shaft and Mosquito Zones Class 3 Lower was broken out from the upper end of the Class 4 domain to better represent site specific ground conditions. The geotechnical characteristics for these domains are:

- Class 1 and 2: Open Stoping: represents the most competent rock mass in the deposit. It is comprised of massive rock mass, with high intact rock strength. Foliation parallel fractures are less pervasive in this domain.
- Class 3: Open Stoping – Reduced Strike Length: is characterized by moderately jointed rock mass. Foliation is well developed in this domain.
- Class 3 Lower ("Class 3L"): Open Stoping – Further Reduced Strike Length: is characterized by lower RQD. Foliation is well developed in this domain, and the rock tends to break along the foliation planes.
- Class 4: Cut and Fill: represents a rock mass which is not deemed suitable for massive mining due to increased fracture frequency and weak intact rock strength. Excavations in this domain will require limited spans and appropriate support to maintain stability.
- Class 5: Cut-and-Fill: represents the least competent rock mass which is not deemed suitable for massive mining due to increased fracture frequency and weak intact rock strength. Excavations in this domain will require limited spans and appropriate support to maintain stability.

Stopes in the proven and indicated resource in each vein were reviewed individually and the anticipated distribution of the stopes in each geotechnical class was determined. Ratios of the different classes in each zone were then used to extrapolate classes for the inferred resource.

Rock mass properties for each zone are summarized in Table 16-6.

Table 16-6: Summary of rock mass properties for each qualitative geotechnical classification

Qualitative Geotechnical Classification	RMR_{89} (Bieniawski, 1989)	Q' (Grimstad and Barton, 1993)
Class 1 and 2	55 – 65 (Fair to Good rock mass)	6.67 to 25.00
Class 3	50 – 55 (Fair rock mass)	1.39 to 3.13
Class 3 Lower	35 – 50 (Fair rock mass)	0.37 to 1.67
Class 4	33 – 40 (Poor rock mass)	0.28 to 0.74
Class 5	14 – 33 (Very poor rock mass)	0.09 to 0.28

16.2.3.2. Geotechnical Design Approach

Excavation stability assessments have been completed using well-established empirical and semi-empirical relationships and engineering experience. These relationships enable estimates to be made of the expected mining conditions and support requirements based on a detailed description of the rock mass, excavation geometry, and prevailing stress conditions. The design procedure involves two steps: the quality of the rock mass is rated using a pre-defined classification system, and then the expected performance of the underground openings is predicted using an empirically derived stability correlation with the rock mass quality.

16.2.3.3. Geotechnical Design Criteria (Personnel Access)

Design spans (3 m to 5 m) for which personnel access is required have been reviewed based on the critical span design curve presented by Ouchi et al. (2004). In the static stress condition, the excavations in the Class 1, Class 2, and Class 3 domains are expected to remain stable with standard ground support (i.e., rockbolts and mesh). Additional ground support (i.e., rockbolts, mesh, and shotcrete) will be required in the Class 3L, Class 4, and Class 5 domains to maintain a stable operating span. In some cases, shorter round lengths and spiling may be required in Class 4 and Class 5 ground, determining exact ground support specifications for such situations should be used site specific assessment by site rock mechanics personnel.

16.2.3.4. Geotechnical Design Criteria (Stope Design and Dilution)

For excavations in which personnel access is not required, such as longhole stopes, designs were assessed using the modified Matthews stability curve after Stewart and Forsyth (1995), and the failure iso-probability curves developed by Mawdesley and Trueman (2003). A range of stope dimensions were evaluated for stability and dilution. A fixed sub-level spacing of 30 m (floor to floor) was used for all mining zones with maximum strike length, stope span, and geotechnical dilution determined for each of the mining zones.

Empirical estimates using the estimated linear overbreak and sloughing ("ELOS") approach and benchmarking have been used to come up with the dilution estimates for the various geotechnical domains in each Zone considering the variation in stope heights (Clark, 1998).

Based upon the rock mass conditions, the stope dimensions and geotechnical dilution estimations presented in Table 16-7 are considered appropriate for each of the Mining Zones.

In all cases, the stope lengths should be adjusted based on varying steepness of mineralized veins and acceptable hanging wall and footwall dilution. Open stoping mining methods are considered high risk in the Class 4 and Class 5 domains for all zones and are not recommended. During the construction of underground development ongoing rock mass and geotechnical assessment has the potential to allow the development of alternative mining methods as the geological and geotechnical understanding of the area improves.

16.2.3.5. Backfill Design

Longhole stoping requires backfill to manage stability and achieve the planned extraction. Paste fill produced from the processed tailings and binding agents is required in longitudinal stopes and closure areas where mining progresses towards previously mined areas. The closure areas will require placement of a higher strength plug or slab where the backfill will be undermined, with regular backfill in the rest of the stope. All excavations should be tight filled to minimize the space for potential failure and rock settlement that could result in surface subsidence. This requirement is especially critical in the shallow areas of the mine where stope failure is more likely to cause surface subsidence.

Table 16-7: Stope design summary by mining zone

Geotechnical Domain	Qualitative rock mass classification	Mosquito Zone	Shaft Zone	Valley Zone	Cow Zone	Lowhee Zone
Good Rock	Class 1	Strike length = 15 - 20m Max width = 15m Dilution(1) = 0.6 - 1.0m	n/a	Strike length = 15 - 20m Max width = 10m Dilution(1) = 0.6 - 1.0m	Strike length = 15 - 20m Max width = 10m Dilution(1) = 0.6 - 1.0m	Strike length = 15 - 20m Max width = 10m Dilution(1) = 0.6 - 1.0m
				Strike length = up to 15 m Max width = 22m Dilution(1) = 0.6 - 1.2m	Strike length = up to 15 m Max width = 22m Dilution(1) = 0.6 - 1.2m	Strike length = up to 15 m Max width = 22m Dilution(1) = 0.6 - 1.2m
	Class 2	Strike length = 15 - 20m Max width = 15m Dilution(1) = 0.6 - 1.0m	n/a	Strike length = 15 - 20m Max width = 10m Dilution(1) = 0.6 - 1.0m	Strike length = 15 - 20m Max width = 10m Dilution(1) = 0.6 - 1.0m	Strike length = 15 - 20m Max width = 10m Dilution(1) = 0.6 - 1.0m
				Strike length = up to 15 m Max width = 22m Dilution(1) = 0.6 - 1.2m	Strike length = up to 15 m Max width = 22m Dilution(1) = 0.6 - 1.2m	Strike length = up to 15 m Max width = 22m Dilution(1) = 0.6 - 1.2m
Fair Rock	Class 3	Strike length = 10 - 15m Max width = 15m Dilution(1) = 0.8 - 1.5m	Strike length = 10 - 15m Max width = 5m Dilution(1) = 0.8 - 1.5m	Strike length = 10 - 15m Max width = 5m Dilution(1) = 0.8 - 1.8m	Strike length = 10 - 15m Max width = 5m Dilution(1) = 0.8 - 1.8m	Strike length = 10 - 15m Max width = 5m Dilution(1) = 0.8 - 1.8m
			Strike length = up to 10m Max width = 15m Dilution(1) = 0.8 - 1.5m	Strike length = up to 10m Max width = 22m Dilution(1) = 0.8 - 2.5m	Strike length = up to 10m Max width = 22m Dilution(1) = 0.8 - 2.5m	Strike length = up to 10m Max width = 22m Dilution(1) = 0.8 - 2.5m
	Class 3L	Strike length = 8 - 10m Max width = 4m Dilution(1) = 1.5 - 3.0m Mining Factor(2) = 50 %, requires leaving rib pillar of 8-10m	Strike length = 8 - 10m Max width = 4m Dilution(1) = 1.5 - 3.0m Mining Factor(2) = 50 %, requires leaving rib pillar of 8 - 10m	n/a	n/a	n/a
		Strike length = 8 - 10m Max width = 15m Dilution(1) = 1.5 – 4.4m Mining Factor(2) = 50 %, requires leaving rib pillar of 10m	Strike length = up to 8m Max width = 15m Dilution(1) = 1.5 - 4.0m Mining Factor(2) = 50 %, requires leaving rib pillar of 8 - 10m			
Poor to Very Poor Rock	Class 4	No bulk mining – over hand cut and fill				
	Class 5	No bulk mining – under hand cut and fill				

Notes:

(1) Dilution; indicates the total dilution (hanging wall + footwall dilution).

(2) Mining Factor; indicates the percentage of stopes that are estimated to be recovered at this sub-level spacing and rock mass classification. This percentage is to be applied to the inventory in advance.

16.2.4. Ground Support Recommendations

16.2.4.1. Lateral Development

Ground support requirements have been determined using several widely accepted empirical design charts including Barton et al. (1974), Grimstad and Barton (1993), Laubscher (1990), previous SRK experience and experience gained in the Bonanza Ledge Mine, presently in operation, adjacent to the Project. The empirical design recommendations have been adjusted based on SRK's understanding of the expected rock mass conditions within the various geotechnical domains. Table 16-8 lists ground support recommendations for the anticipated range of conditions in geotechnical domains for varying development spans and orientations. Wider mining spans than those considered will require ground support designed on a case-by-case basis, including those for the underground crusher.

Table 16-8: Ground support recommendations for long-term access and short-term production excavations

Type of Excavation		Excavation Dimensions	Ground Support Classification (Geotechnical Domains)				
			Good Rock	Fair Rock		Poor to Very Poor Rock	
			Class 1 and 2	Class 3	Class 3L	Class 4	Class 5
Long Life Excavations	Main Ramp, Ramp Re-muck, Level Access	5.8 mH x 5.3 mW	1.8 m resin rebar bolts on 1.5 m square pattern and #6 galvanized wire mesh to 1.5 m from the floor	2.4 m resin rebar bolts on 1.2 m square pattern and #6 galvanized wire mesh to 1.5 m from the floor	2.4 m coated Swellex bolts on 1.0 m square pattern, #6 galvanized wire mesh and 50 mm shotcrete to as close to the floor as possible.	2.4 m coated Swellex bolts on 1.0 m square pattern, #6 galvanized wire mesh and 50 mm shotcrete to as close to the floor as possible.	2.4 m coated Swellex bolts on 1.0 m square pattern, #6 galvanized wire mesh and 100 mm shotcrete to as close to the floor as possible.
	Other service drifts	4.3 mH x 4.3 mW					
	Truck Turn-around	6.5 mH x 6.0 mW	As per above with the addition of: 4.0 m cable bolts (or coupled Swellex or coupled rebar) on 2.0m square pattern		As per above with the addition of: 4.0 m coupled Swellex on 2.0m square pattern	n/a	n/a
Open Stoping	In ore development	4.0 mH x 3.7 mW	1.8 m Swellex bolts on 1.5 m square pattern and #6 galvanized wire mesh to 1.5 m from the floor	1.8 m Swellex bolts on 1.2 m square pattern and #6 galvanized wire mesh to 1.5 m from the floor	1.8 m Swellex bolts on 1.0 m square pattern, #6 galvanized wire mesh and 50 mm shotcrete to as close to the floor as possible.	1.8 m Swellex bolts on 1.0 m square pattern, #6 galvanized wire mesh and 50 mm shotcrete to as close to the floor as possible.	1.8 m Swellex bolts on 1.0 m square pattern, #6 galvanized wire mesh and 75 mm shotcrete to as close to the floor as possible.

Note: All development through the regional faults and Class 5 ground will require spiling.

16.2.4.2. Vertical Infrastructure

Existing nearby resource exploration drill holes were photo-logged and used as a guide to the potential local rock mass conditions. These data were used to develop the ground support requirements for the vertical infrastructure per rock mass classification. The McCracken and Stacey (1989) empirical method of assessing raise stability was utilized.

Based on the assessment of the planned locations, the raises are not expected to remain stable if left unsupported through the faults and weaker zones. Ground support is necessary for the raise development and long-term stability. Table 16-9 summarizes the support recommendations based on the planned ventilation raise locations and stability assessment.

It is considered essential to drill a diamond core geotechnical raise pilot hole at the location of each of the proposed raises to confirm the rock quality and unit thicknesses prior to excavation.

Table 16-9: Preliminary ground support recommendations for vertical infrastructure based on Alimak mining

Geotechnical Domain	Ventilation Raise Dimensions	
	3.0 m Radius	4.0 m Radius
Class 1-2	No support required.	1.5 m #8 resin rebar on a 1.2 m square pattern with wire mesh
Class 3	1.5 m #8 resin rebar on a 1.0 m square pattern with wire mesh	1.8 m #8 resin rebar on a 1.0 m square pattern with wire mesh
Class 3 Lower	1.8 m #8 resin rebar on a 1.0 m square pattern with wire mesh and 50 mm shotcrete	2.4 m #8 resin rebar on a 1.0 m square pattern with wire mesh and 50 mm shotcrete
Class 4	1.8 m #8 resin rebar on a 1.0 m square pattern with wire mesh and 50 mm shotcrete	2.4 m #8 resin rebar on a 1.0 m square pattern with wire mesh and 50 mm shotcrete
Class 5	Avoid development in Class 5 ground.	

16.2.4.3. Extraction Sequencing

The overall sequence of veins extraction is recommended to be broadly based on using a footwall to hanging wall approach retaining protection pillars on the cross-cuts, see Figure 16-2. These protection pillars would then be extracted on a hanging wall to footwall approach, retreating out of the cross-cuts. The cross-cut protection pillars need to be of sufficient strike length to prevent over-stressing as the extent of extraction increases.

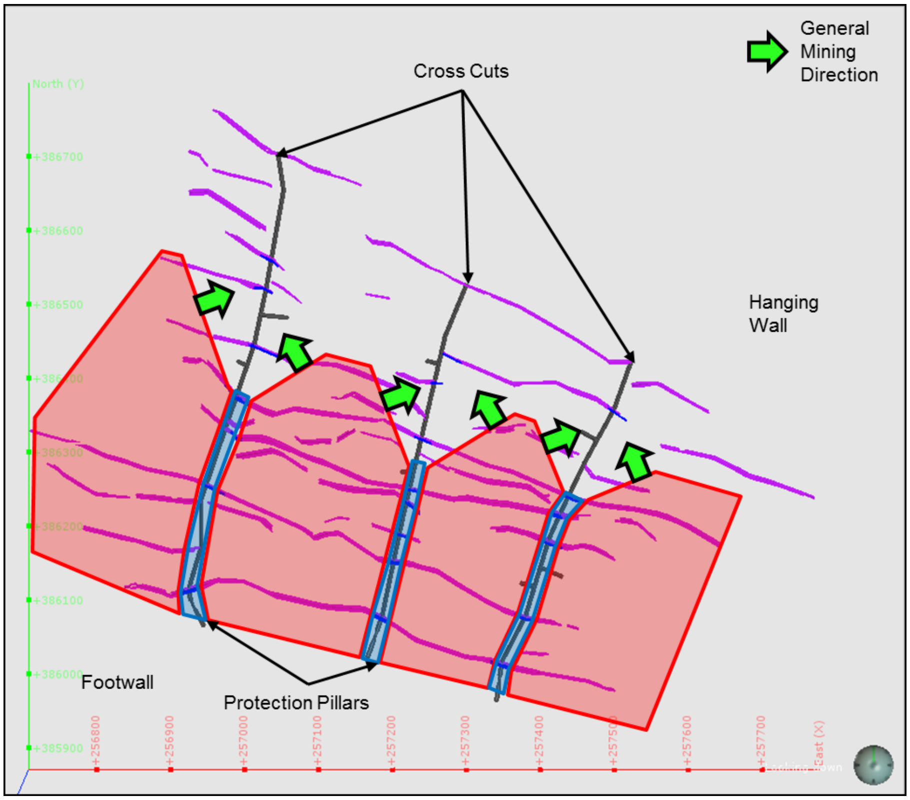


Figure 16-2: Schematic of the recommended general extraction sequence, with protection pillars being retained along the cross cuts

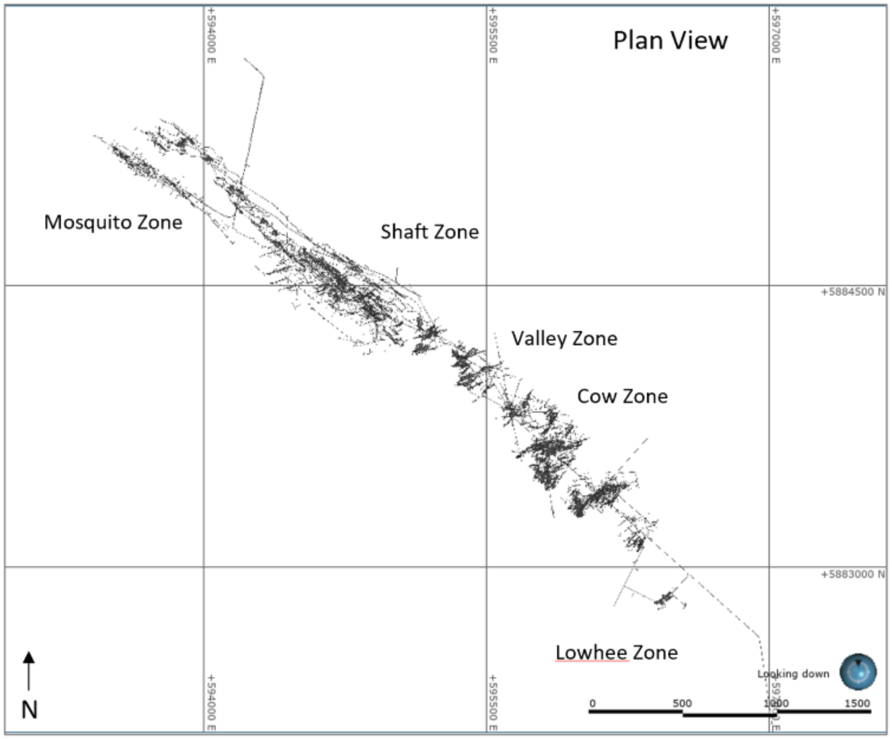
16.2.4.4. Crown Pillar Requirements

Crown pillar assessments have been completed using the Scaled Span method after Carter (2008) for proposed excavation within 50 vertical metres from surface that consists of development drives (cross-cuts, strike drives), underground infrastructure (backfill chamber), and mining blocks (longhole stoping, cut-and-fill). Rock mass characteristics of the Class 3 domain for the Cow Zone, Valley Zone, and Lowhee Zone, and Class 3L domain for the Shaft Zone and Mosquito Zone were used. These parameters are not inclusive of fault zones and crown pillars within fault zones will require further assessment specific to each fault.

The crown pillar is considered a quasi-permanent long-term crown pillar, Class F as per Carter (2008). To achieve a crown pillar with this classification, a minimum rock crown pillar thickness of 15 m below the modelled overburden surface is required in the Cow, Valley, and Lowhee Zones, and 20 m below the modelled overburden surface in the Shaft and Mosquito Zones. Stopes immediately below the crown pillar should be tight filled with cemented rock fill or paste to meet the Class F long-term crown pillar designation.

16.2.4.5. Existing Underground Infrastructure

Historic mine workings consist of decommissioned portals, decline ramps, drifts, and stopes. ODV has built a 3D model of these mine workings (Figure 16-3). The model of historic workings has been incorporated into the assessment. Required stand-off distances from these workings have been set based on the rock mass quality surrounding these workings. When old workings are anticipated to be intersected, cover holes must be drilled in advance of the development to confirm their location and to determine if they are filled, what they are filled with and to determine if these excavations have been dewatered.



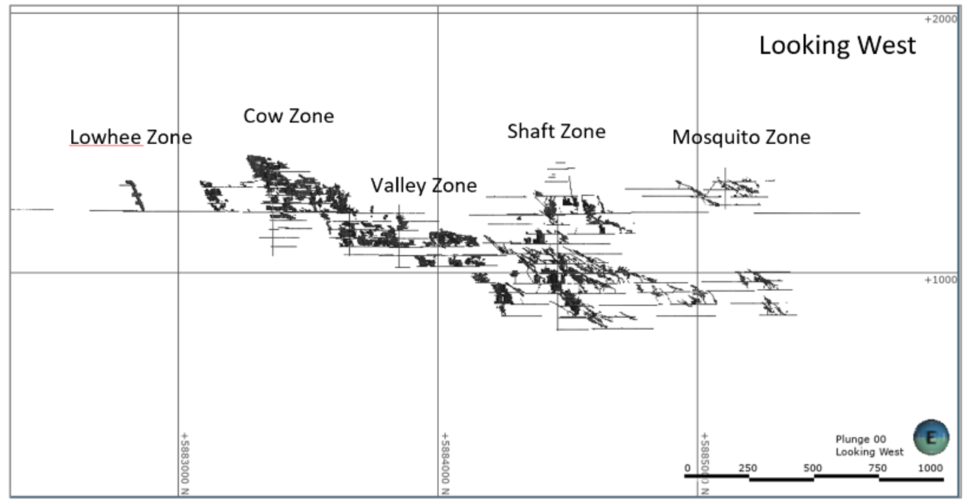


Figure 16-3: Existing underground workings - plan and section views
Solids provided by ODV, 2018

16.3. Mine Access

There will be three portals accessing underground ramps: the Cow Portal, the Island Mountain Portal, and the Valley (Main)Portal. Figure 16-4 shows the location of these in relation to the District of Wells.

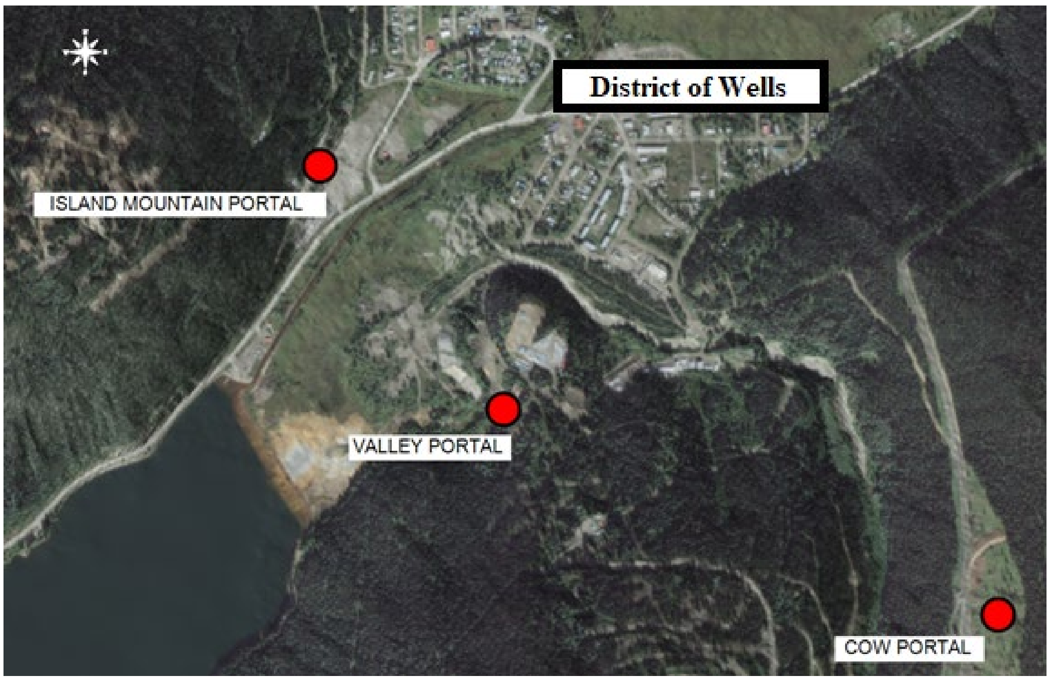


Figure 16-4: Cariboo Gold Project Portal locations

16.3.1. Valley Portal

The preliminary portal box cut excavation slope design parameters and ground support recommendations for the Valley (Main) Portal ("Valley Portal") have been provided based on data collected from two vertical geotechnical drill holes within the proposed box cut location and surface geotechnical investigations for the plant site and rock dumps near the portal.

The design basis includes:

- Permanent slopes in the overburden should be excavated at 2H:1V (30°);
- Slopes within weathered rock should be excavated at 1H:1V (45°);
- The slopes should be vegetated to manage water runoff and prevent erosion;
- A minimum 10 m rock face of Fair rock (RMR 50 to 60) is recommended to establish a 10 m (vertical thickness) brow above the portal;

- A 3 m catch berm should be maintained at the overburden-weathered rock contact to protect equipment and personnel from local bench instability and loose rock;

Cut-off and toe drains will be installed around the perimeter of box cut at the toe of overburden slope, and at the portal;

Figure 16-5 and Figure 16-6 show the proposed portal design for Valley.

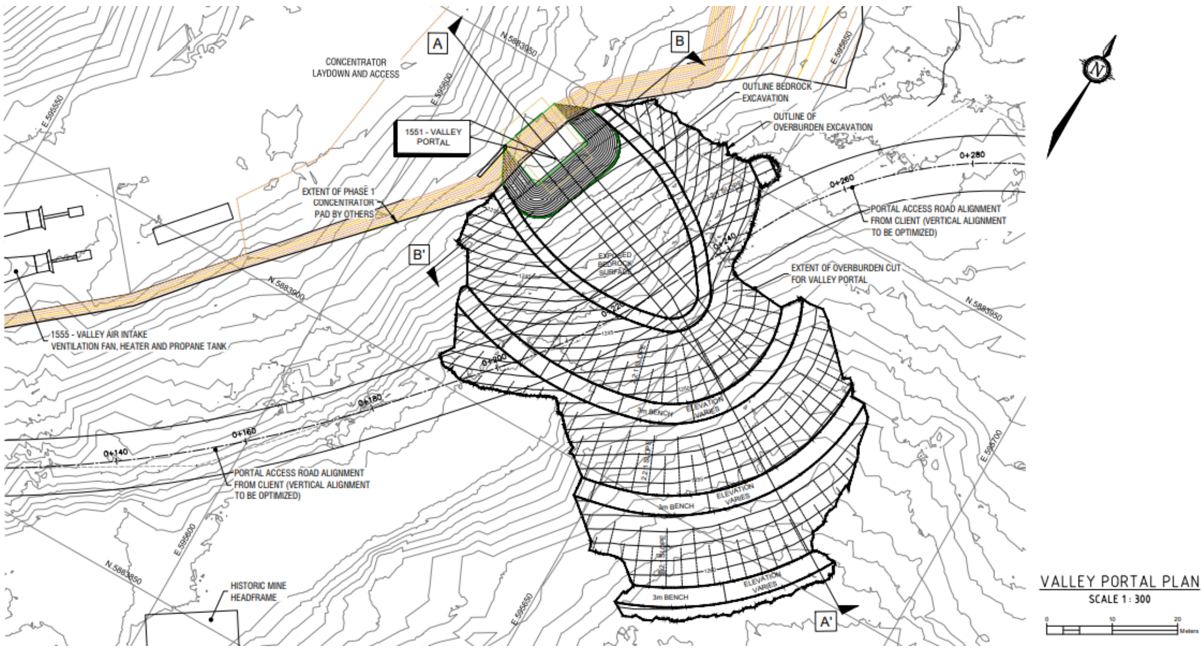


Figure 16-5: Plan view Valley proposed Portal

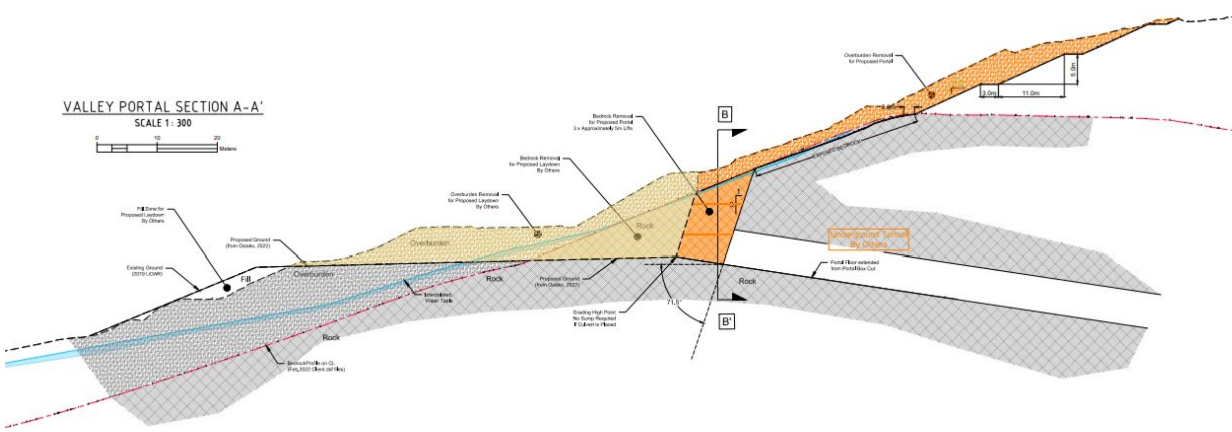


Figure 16-6: Valley Portal cross-section

Excavation support recommendations include self-drilling spiling, rebar, cables, and shotcrete in the brow area and at the start of the decline. Exposed benches will likely need to be shotcreted to maintain long term integrity.

A steel cover (corrugated culvert) will be installed to protect the access against weather conditions and potential falling boulders. Crushed rock around the culvert will stabilize the infrastructure at long term

16.3.2. Island Mountain Portal

The proposed conceptual design for Island Mountain Portal will be very similar to the Valley Portal, with same slopes for temporary slope stability and Factor of Safety of 1.3. Future work will be required to validate the current assumption.

16.3.3. Cow Portal

The Cow Portal is already in place for ODV's exploration Cow Mountain Bulk Sample and gives access to the underground ramp. No feature work is required on this existing portal.

Figure 16-7: Cow Portal

16.3.4. Access Ramps

The planned footwall access ramp locations should be further geotechnically assessed once the decline is developed close to the ore body. This will need to consider the location of the major structures in the footwall relative to the vein system.

16.4. Mine Hydrogeology

16.4.1. Mine Site Area Hydrogeology

The conceptual hydrogeology for the Mine Site area can be described as a mountain-valley hydrogeological system that has been altered by historical and current mining processes. The conceptual flow system for the Mine Site Complex is shown on Figure 16-8 and the conceptual flow system for the Historical Tailings Deposit Area is shown on Figure 16-9.

The overburden of the Jack of Clubs Valley is a sequence of interlayered aquifers and aquitards deposited during previous glaciations. Overall, the Mine Site hydrostratigraphy has been sub-divided into 10 hydrostratigraphic units, consisting of:

- Four local or regional overburden aquifers (Fill, Placer Outwash, Alluvium / Alluvial Fans, and Wells Aquifer),
- Three local or regional overburden aquitards (Till/Lowlands, Historical Mill Tailings, Glaciolacustrine), and
- Four bedrock units (Siltstone, Mine Area Bedrock, Regional Bedrock, and the Jack of Clubs Fault Zone).

In a broad sense, groundwater flow in the overburden near Jack of Clubs Valley can be classified into two systems: a deep groundwater system (i.e., Wells Aquifer hydrostratigraphic unit) and a shallow groundwater system (i.e., Alluvium / Alluvial Fans and Placer Outwash hydrostratigraphic units), which are separated by a thick package of low permeability clays and silts (Glaciolacustrine hydrostratigraphic unit). The Wells Aquifer is the principal groundwater source for municipal water supply for the District of Wells.

Groundwater elevations can generally be considered a subdued reflection of topography, with higher groundwater elevations in the upland areas and lower groundwater elevations in the lowland areas. Similarly, regional groundwater flow directions are generally from areas of high elevation to areas of low elevation. Both groundwater elevations and flow directions are locally influenced by underground mine workings.

Within the Mine Site Complex area, there are over 180 km of historical underground mine workings that strike perpendicularly beneath the mountains that straddle the main Jack of Clubs Valley. These historical underground mine workings act as hydrogeological controls (local sinks), influencing the groundwater flow in the area and contributing to a downward hydraulic gradient near the underground workings. The historical underground mine workings are partially flooded, with the flooded water level controlled predominantly by adits in the valley walls located approximately 5 m to 20 m above the surface of the valley floor. These adits connecting with the valley walls are free draining and discharge groundwater seepage locally to the margins of the valley. Historical mine workings above the adit elevations daylighting in the valley walls are assumed to be predominantly dry and contributing to localized depressurization of the surrounding bedrock. The extent of depressurization is interpreted to be small based on hydraulic head data that shows saturated bedrock at higher elevations, and in consideration of the low bedrock hydraulic conductivity.

Groundwater seepage from the mine openings is observed and is greater in spring and early summer during the high water freshet period, and declining or ceasing during the drier summer and in the winter. The flooded workings are not known to have bulkheads and therefore will influence hydraulic heads by equalizing the hydraulic head across the flooded interconnected workings. Other groundwater seepages have been observed in the Wells Historical Tailings Deposit, in the area delineated as "Groundwater Seepage Area" on Figure 16-8. This seepage area is planned for investigation to evaluate if its associated with an exploration hole that encountered artesian conditions.

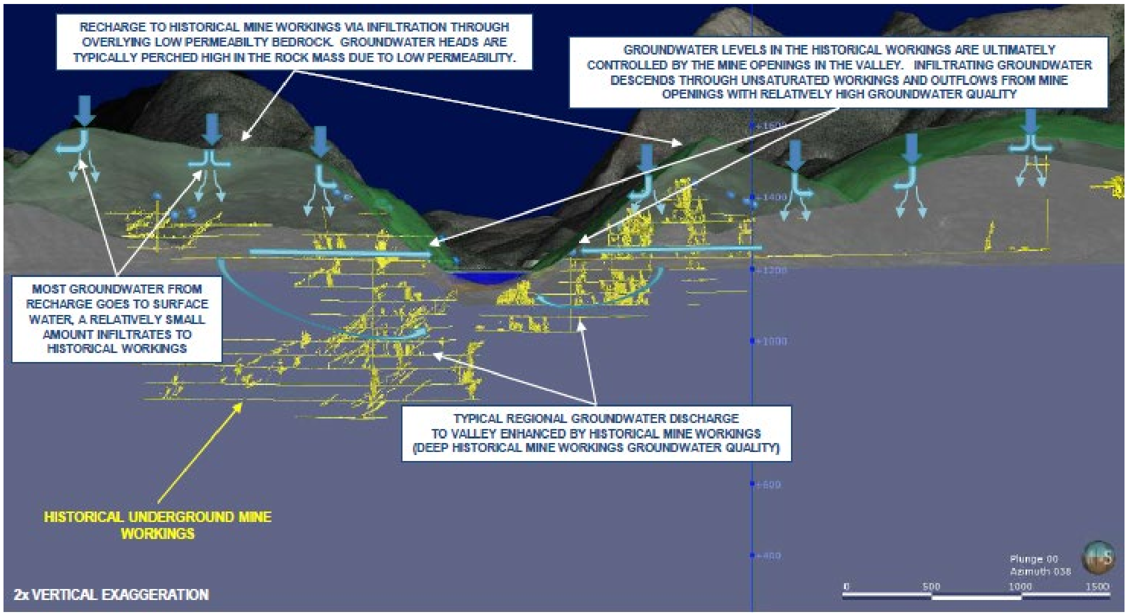


Figure 16-8: Groundwater recharge and discharge – Mine Site area (Golder, 2021a)

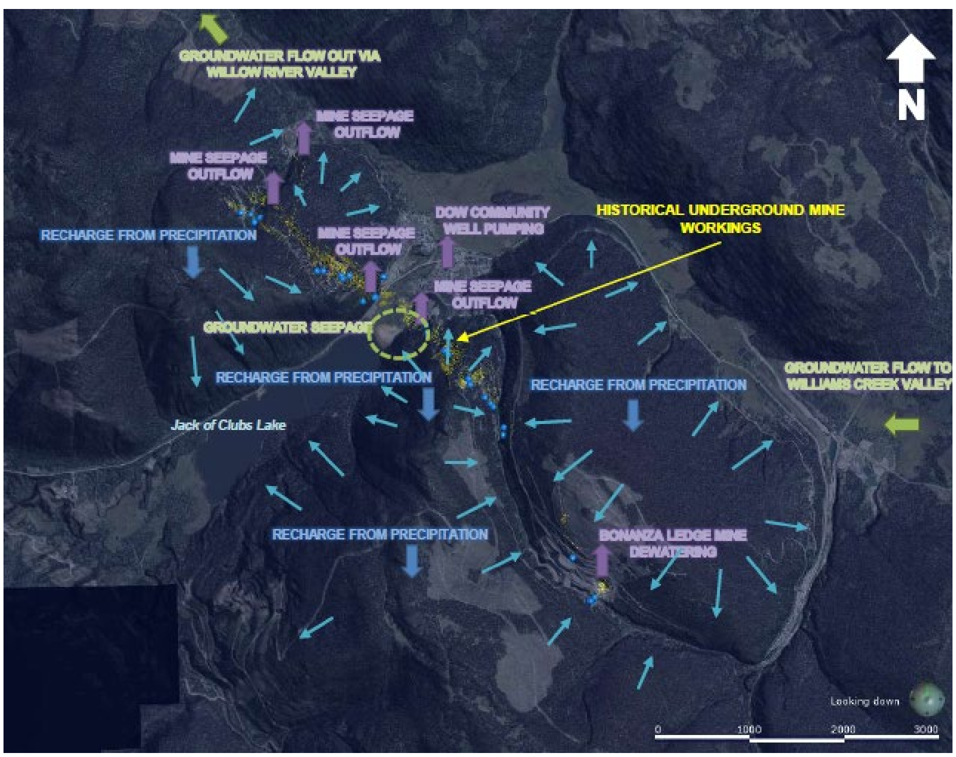


Figure 16-9: Inferred groundwater flow direction – Mine Site area (Golder, 2021a)

16.4.2. QR Mill Area Hydrogeology

The QR Mill area is located on a relatively exposed bedrock plateau, with a steep (greater than 300 m) topographic decline along the southern side, down to the Quesnel River. The plateau, being exposed during the period of the last glaciation, had much of its overburden eroded and removed by the glaciers, resulting in a relatively thin overburden layer, comprised predominantly of glacial till overlying bedrock. The thickest overburden is located in a small, north-south oriented depression located to the east of the QR Mill. Historical and current mining activities have altered the area, with three small networks of historical underground mine workings, several small open pit mines, and the QR Mill tailings storage facility ("TSF"), which sits in the saddle of the north-south oriented depression between areas of higher elevation to the east and west.

The hydrostratigraphy of the QR Mill area has been seperated into four hydrostratigraphic units:

- Thin overburden (glacial till);
- Shallow weathered bedrock (upper 35 m of bedrock);
- Deep Bedrock; and
- Wally's Fault, located under the western portion of the QR TSF with an apporixately north-south orientation.

The groundwater levels across the area are a subdued reflection of topography and are consistently close to the ground surface, with inferred preferential flow through the shallow weathered bedrock. The hydraulic properties of Wally's Fault are untested, but it is possible the fault acts as a preferential flow zone. Groundwater recharge occurs primarily in upland areas of higher elevation and groundwater discharge occurs in areas of lower elevation. Shallow groundwater levels across the area vary seasonally and experience two groundwater peaks during the year: one during the snowmelt/freshet period and one in the fall. Figure 16-10 shows a conceptual interpretation of the groundwater recharge and discharge within the QR Mill area.

The pond levels of the QR TSF, which sits above the saddle of the north-south oriented topographic depression, provide a driver for groundwater flow. Seepage from the QR TSF is collected in ponds to the north and south of the dams, with further seepage to the north to the Rudy Creek Valley and to the south via water management infrastructure and ultimately to Creek #3. The Main Zone Pit ("MZP") acts as a local sink for groundwater and outflows to Creek #3 as part of the local water management. Two other flooded pits are present in the area (North Lobe Pit and Northwest), which may locally affect groundwater flow, though they have no defined outflow. Shallow groundwater quality downgradient of the QR TSF shows less influence of mine activities compared to shallow groundwater quality in closer vicinity to the QR TSF.

Three historical underground workings are present in the QR Mill area, with portals connected to surface (Midwest Portal, West Portal, and North Portal). Groundwater levels in the West and Midwest Portal are either near ground surface or there is observed seepage discharging to ground surface. The orientation of the underground connected to the North Portal suggests this underground is free draining, with discharge at the portal. The inferred groundwater flow directions within the QR Mill area are presented in Figure 16-11.

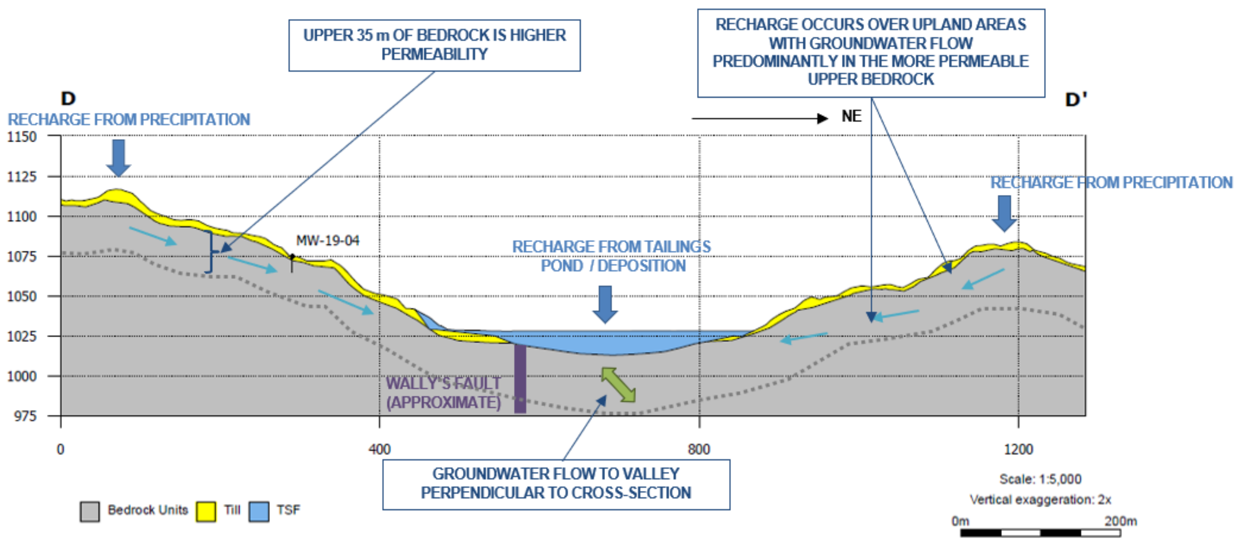


Figure 16-10: Groundwater recharge and discharge – QR Mill area (Golder, 2021a)

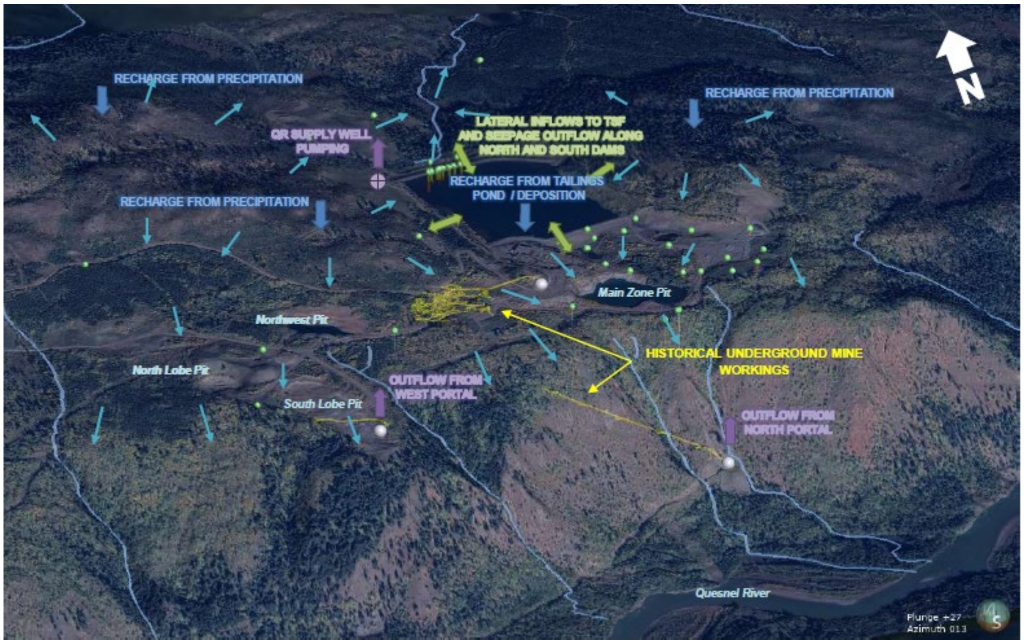


Figure 16-11: Inferred groundwater flow direction – QR Mill area (Golder, 2021a)

16.4.3. Groundwater Inflow Predictions – Mine Site Complex Area

Two groundwater numerical flow models were developed for the Project to quantify changes in groundwater quantity within the Mine Site Complex area (Mine Site Model) and the QR Mill area (QR Model). The Mine Site Model (Golder 2021b), which was calibrated to hydraulic head and stream base flow estimates for existing conditions, was used to estimate groundwater discharge to the underground workings during the mine construction and operations.

- Transient model simulations were prepared to simulate the progressive development of the underground mine over the LOM for a 6,000 tpd scenario, with the prediction results presented in Table 16-6. Although the transient simulations of the 8,000 tpd mine plan has not been completed, a steady-state simulation was prepared for the ultimate mine extent and the more conservative alternative scenario. Predicted inflow was within approximately 3% of the predicted values in Table 16-6 (12,500 m^3/day respectively). Considering that the method used to simulate the underground biases the flow high (See Section 16.4.3) this is considered a negligible change. The predictions were made for two scenarios:
- Base Case – Model simulation with calibrated model values.
- Alternative Scenario – Hydraulic conductivity of bedrock increased by a factor of two.

Dewatering of the existing underground was assumed to occur concurrent with the development of the proposed underground. It was assumed that the dewatering target for the existing underground would be 50 m lower than the maximum depth of the Project underground to minimize groundwater inflows to the new workings. The mine plan development and changes in dewatering were implemented on an annual basis.

A summary of average dewatering rates for the mine workings is provided in Table 16-6 for each year of development. Inflows to the underground ramp up quickly as the maximum depth of dewatering/mine development is reached, and then decrease and stabilize as storage effects diminish.

Inflow estimates were made for the development of a starter zone in Shaft and Mosquito zones from the Island Mountain portal and the advancement of a ramp from the Cow Mountain area's Valley Portal to wards Island Mountain prior to the operational mine plan. For this period of development a combined inflow of up to 910 m^3/day was estimated.

At the end of mining, operation of the mine will result in pressure drawdown of approximately 450 m in the immediate vicinity of the mine workings compared to existing conditions and diminish away from the mine workings. In the area of the Wells Aquifer, water level drawdown is predicted to change by 5 m or less, and is mitigated by the valley being a groundwater discharge zone, and recharge from Jack of Clubs Lake and Willow River.

Table 16-10: Predicted Mine groundwater inflows m3/day

Year	Base Case	Alternative Scenario (Higher Bedrock Hydraulic Conductivity)
1	8,650	11,925
2	9,650	12,775
3	9,250	12,375
4	9,375	12,650
5	9,275	12,600
6	9,200	12,525
7	9,175	12,500
8	9,150	12,500
9	9,150	12,500
10	9,175	12,500
11	9,150	12,500
12	9,150	12,500
Note: predictions are for 6000 tons per day Mine Plan		

The following is noted regarding the change in the simulated hydrogeological conditions because of the development of the Project:

- The dewatering of the historical workings, and excavation and dewatering of the new underground development, are expected to lower groundwater levels in the Mine Site Complex area, with local depressurization of over 450 m near the workings.
- The underground workings will act as a hydraulic sink, reducing baseflow to some surface water features.
- The annual average for year 2, representing the highest inflows were predicted to be 9,650 m^3/day (402 m^3/hr) for the Base Case and 12,775 m^3/day (532 m^3/hr) for the alternative scenario with higher assumed bedrock hydraulic conductivity.

The presented seepage estimates are based on assumed conditions during development of the Project. The actual groundwater inflows could however vary from those presented due to general uncertainty associated with the subsurface conditions in the Mine Site Complex area, and recognized gaps in the data.

16.4.4. Limitations of Inflow Predictions

Key assumptions and limitations relevant to the numerical groundwater model of mine dewatering include the following:

- The historical and Project workings have been represented using discrete feature elements of high hydraulic conductivity (1 m/s). This method effectively simulates the connection of flooded mine workings across the study area; however, use of discrete feature elements can result in artificially high negative pressures in the unsaturated zone through the equalization of hydraulic head across both the saturated and unsaturated workings. The negative pressure can increase flow to the underground above that which would occur and result in lower hydraulic heads. This will bias changes in streamflow and flow to the underground to be conservatively high (i.e., overestimate groundwater inflow to the underground and overestimate baseflow loses). To understand environmental effects of the Project (maximum underground water management and stream base flow changes), the limitation of the adopted method is considered conservative.
- Inflow predictions were completed for the 6,000 tpd mine plan. When defined, the transient 8,000 tpd mine plan should be simulated and used to verify life of mine groundwater inflow and changes in groundwater flow conditions. Although the transient simulations of the 8,000 tpd mine plan has not been completed, a steady-state simulation was prepared for the ultimate mine extent and the more conservative alternative scenario. Predicted inflow was within approximately 3% of the predicted values in Table 16-6 (12,500 m^3/day respectively).

Considering that the method used to simulated the underground biases the flow high this is considered a negligible change.

- It is assumed that all mapped historical workings remain open, and water may flow unimpeded through the network, which represents a worst-case scenario in terms of dewatering.
- The simulated mine dewatering rates represent the rates required to maintain a dry working environment throughout the entire extent of both the historical and new mine workings.

The simulated mine dewatering rates represent the rates required to maintain a dry working environment throughout the entire extent of both the historical and new mine workings.

16.5. Underground Mining Method

The mining method is longitudinal retreat long-hole stoping using a combination of cemented rockfill ("CRF") and paste fill. This decision was driven by the average vein width, contained metal (value), and ground conditions. See Figure 16-12 for an illustration of the selected method.

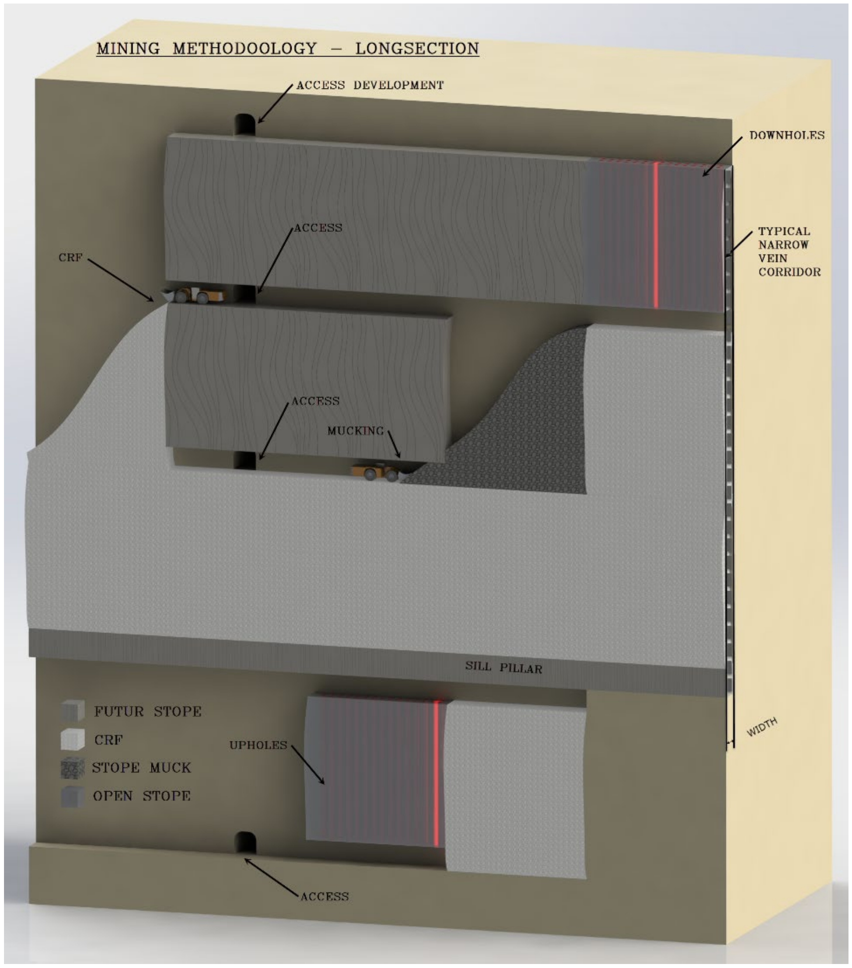


Figure 16-12: Longitudinal longhole retreat – Long section

The range of stope dimensions for the mine is shown in Table 16-11.

16.5.1. Selection of Economical Material for Life of Mine

Minable Shape Optimiser® ("MSO") was used to determine the correlation between cut-off grade and the resulting mineable envelope. The optimization is driven by the following inputs:

- Cut-off grade;
- Mining extents;
- Min and max stope width;
- Level spacing;
- Min and max dip angle;
- Dilution Parameters.

Table 16-11 illustrates general input parameters used in the MSO runs.

Table 16-11: MSO input parameters

Parameters	Unit	Value
Cut-off grade	g/t Au	1.7
Min mining width	m	3.7
Level spacing	m	30
Section spacing	m	5
Min trans pillar width	m	5
Min dip angle	deg	45
Max dip angle	deg	135
Max strike angle	deg	45
Max strike angle change	deg	45

MSO shapes were generated by InnovExplo Inc. ("InnovExplo"). Internal checks on the stope shapes were made to account for proximity to mined old workings and maintaining an adequate buffer for surface crown pillars. The refined MSO results were used for mine development design using Deswik CAD and integrated in an Excel spreadsheet to sequence and schedule the mine life. Final mine design and scheduling was revised by InnovExplo. Inventory quantities along with cut-off grade and modifying factors can be found in Section 16.8.

16.5.2. Cut-off Grade Calculation

The following cut-off grades were used for the final mine design:

- 2.5 grams per tonne ("g/t") gold ("Au") mineralized material envelopes for potential minable stopes design. These core envelopes were used for the main mine design (ramps, access, etc.).
- 1.7 g/t Au mineralized material - included if only additional minor developments in mineralized material were required.

16.6. Mine Design

The Project comprises five main zones:

- Shaft Zone;
- Valley Zone;
- Cow Zone;
- Mosquito Zone;
- Lowhee Zone.

The vertical extent of all mineable blocks is 660 m and is open at depth and along strike. The mineralized zone is comprised of discrete, parallel mineralized material lenses. These lenses strike northwest and dip predominantly sub-vertically. The mine is accessed by three portals from surface directly connecting to Cow Zone, Shaft Zone, and Valley Zone. A series of internal ramps connected to the main ramps provide access to all mining zones, as illustrated in Figure 16-13.

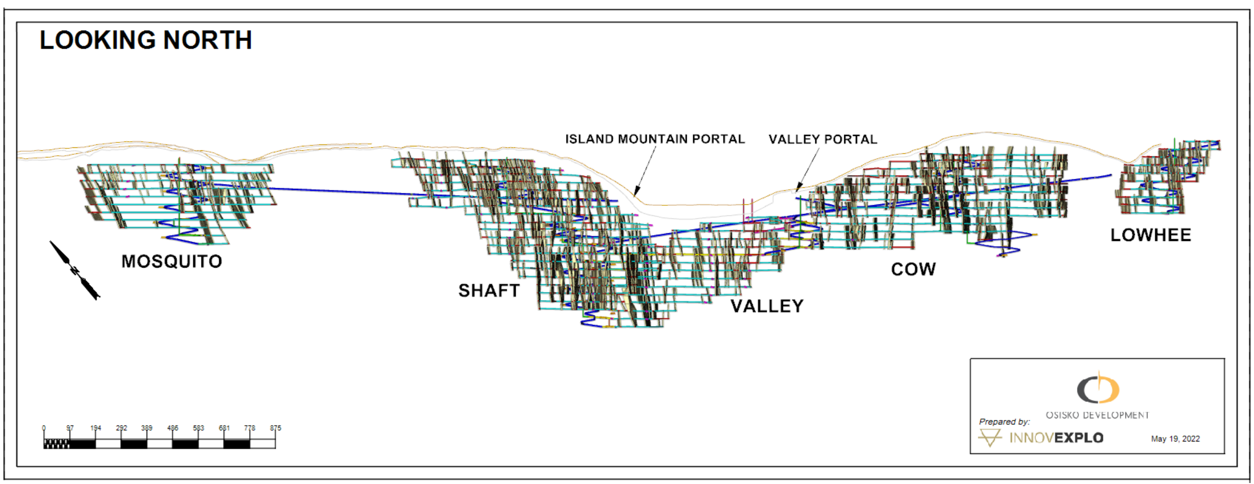


Figure 16-13: Cariboo Gold Project – Longitudinal Section Looking North

16.6.1. Development Design

Level accesses and development will be excavated using conventional drill and blast techniques and decline and inter-zone ramp development will be developed with road headers.

Declines and inter-zone ramps linking the different portals to the five main mining zones are strategically placed throughout the mine to facilitate efficient material movement by trucks. The development profiles by type are listed below in Table 16-12.

Table 16-12: Lateral development dimensions and cost category

Development type	Development profile	Capital/ Operating
Main ramp	5.8mH x 5.3mW	Capital
Ramp re-muck	5.8mH x 5.3mW	Capital
Level access	5.8mH x 5.3mW	Capital
Truck Loading/Unloading bay	7.5mH x 5.3mW	Capital
Level haulage	4.3mH x 4.3mW	Capital
Paste transfer bay	5.3mH x 5.3mW	Capital
Pump station	5.3mH x 5.3mW	Capital
Refuge station	5.3mH x 5.3mW	Capital
Level re-muck	5.3mH x 5.3mW	Capital
Sump	5.3mH x 5.3mW	Capital
Vent access	4.3mH x 4.3mW	Capital
Truck load-out	5.3mH x 5.3mW	Capital
Electrical sub station	5.3mH x 6.0mW	Capital
Mineralized material drift	4.0mH x 3.7mW	Operating

16.6.2. Main Infrastructure

The main infrastructures for the Project include the main ramp, the maintenance shop, the battery service bay, the sumps and pumping stations, electrical substations, powder and cap magazines, rock breaker and crushing facility, and the material sorter waste handling facility.

The crushing facility is designed to handle 8,000 tonnes ("t") of mineralized material per day. It is located along the main Valley ramp in the eastern extent of Valley Zone, as shown in Figure 16-14.

The Mine Site Complex will include two tunnel portals to access the underground mine. Valley Portal is located on the southern limit of the Mine Site Complex while Island Mountain Portal is located across the Willow River Bridge and on the north side of Highway 26. The development of both portals will require excavation of overburden and rock, and the Valley Portal will require the removal of historic concrete structures including a foundation and tunnel portal.

The Valley Portal ramp will be used for development in pre-production mode and as an access road for material sorter waste transportation to the BFA. Valley Portal excavation slopes will include a series of benches and may require rock support measures. The ramp progresses direct to the Cow Zone with a ninety-degree, three-way intersection leading to the Valley Zone. This layout allows for traffic alleviation after the intersection proceeding to the two zones. This ramp will be the main access ramp for services. A backfilled multi-plate arch structure will provide tunnel access, as a mitigation of surface water ingress and snow accumulation along the length of the portal excavation.

The Island Mountain Portal will be the main underground access for Shaft Zone and Mosquito Zone during the initial phase of mine development. Once the Valley Portal is connected to the Island Mountain Portal via the underground ramp, the Valley Portal will become the main access portal for production. Subsequently, use of the Island Mountain Portal will be for an emergency egress.

The associated infrastructure at each portal during the development period will include an electrical substation, temporary ventilation fans and heater, and water management infrastructure.

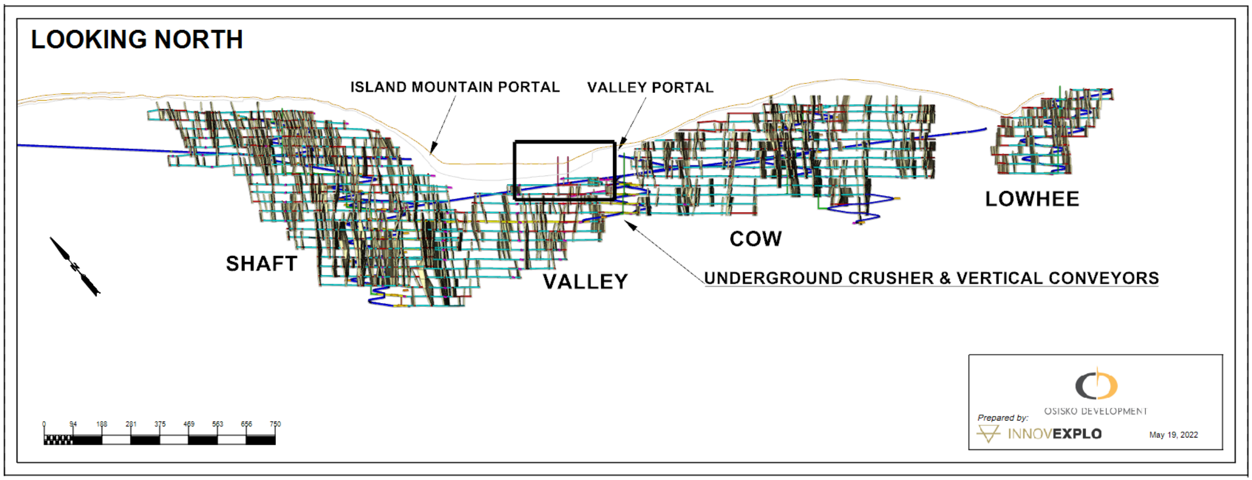


Figure 16-14: Location of crushing facility and vertical conveyor

16.6.3. Level Layout Design

The typical level layout of the mine consists of the level access, ventilation access, loading bay, sump, electrical substation ("ESS"), refuge station, haulage drift, and mineralized material drift. The typical mine level is shown in Figure 167. Minor variations exist between levels due to the trend of the mineralized material veins, logistic, or needed infrastructure.

Specific areas mainly pertaining in the vicinity of the level access will be capitalized as per Figure 16-15 (blue, green, and cyan), with remaining development categorized as operating development (pink).

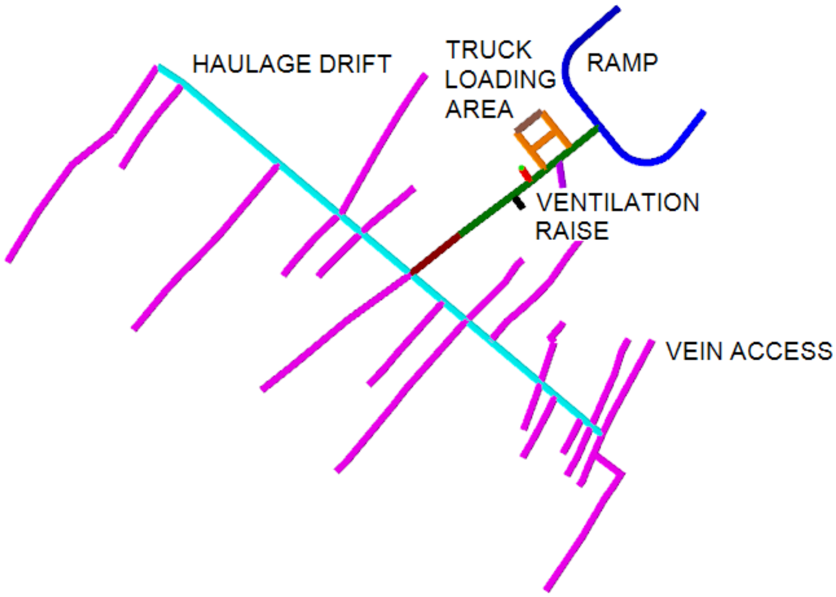


Figure 16-15: Plan view of typical level layout

The level access will be excavated to the same dimensions as the main ramp, 5. 8 metres high ("mH") x 5.3 metres wide ("mW") to allow for truck access. The typical electrical substation is located near the level entrance, with a sump located further into the level along the level access.

The level access typically intersects the haulage drift (4.3 mH x 4.3 mW), allowing for access of a 10-t capacity scooptram load haul dump ("LHD") into the mineralized material drives. The smaller profile dimension serves as a safeguard restricting haul trucks to operating in the level access and truck loading complex.

The haul drift is typically linked to mineralized material drives (4.0 mH x 3.7 mW), providing access to the production stopes. These drifts are generally positioned in the center of the veins to allow maximum stopes availability for production. The production drilling equipment has been selected to allow operation within the smaller profile dimensions and minimize dilution.

Operating development portions of levels were designed with no gradient for the purposes of this PEA evaluation, while the capital portions of levels were designed with gradients. Sumps were placed at a low point along the access to facilitate drainage. Both sumps and electrical substations will be 5.3 mH x 5.3 mW, however, the sump will have a length of 12 m and a gradient of -15%; while the electrical substations will have a length of 18 m.

A truck loading and unloading area is planned for all levels that will produce mineralized material. This area includes a 33 m long truck turnaround and dumping (7.5 mH x 5.3 mW), with a parallel 33 m long loading access drift (5.3 mH x 5.3 mW) and one perpendicular drift (6.0 mH x 5.3 mW) serving as a loading bay.

The truck loading access drift will be excavated at a +2% gradient with the parallel loading access drift to be excavated at a 2% gradient. The loading bay will be excavated at a +8% gradient to provide an elevated offset allowing a loaded LHD to dump material directly into a truck from above. Figure 16-16 provides a typical truck loadout area.

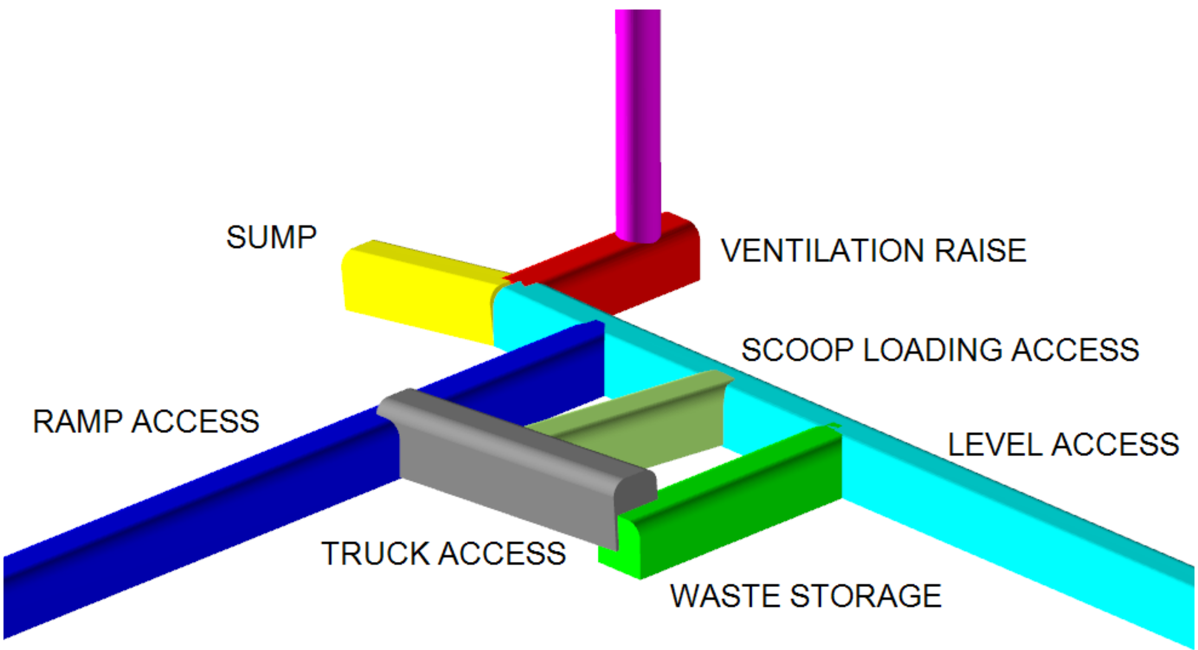


Figure 16-16: Isometric view of typical truck loading area

16.6.4. Production Stopes

Production stopes will consist of a set of 89 millimetres ("mm") or 102 mm blasthole rings configured on a dice five pattern adapted for each zone. All blastholes will be loaded with emulsion along with detonator, booster and stemming in each hole. A slot area consisting of a slot raise utilizing a contractor V30 and 102 mm raise holes drilled is located in the middle of the stopes. Blastholes will be drilled using a longhole drill from the top sill down to the undercut drift. Figure 16-17 and Figure 16-18 details the specific drill configuration for production stopes in each zone. Typical stope blasting will be in two blasts: a primary opening to achieve 20% void indices and a final blast.

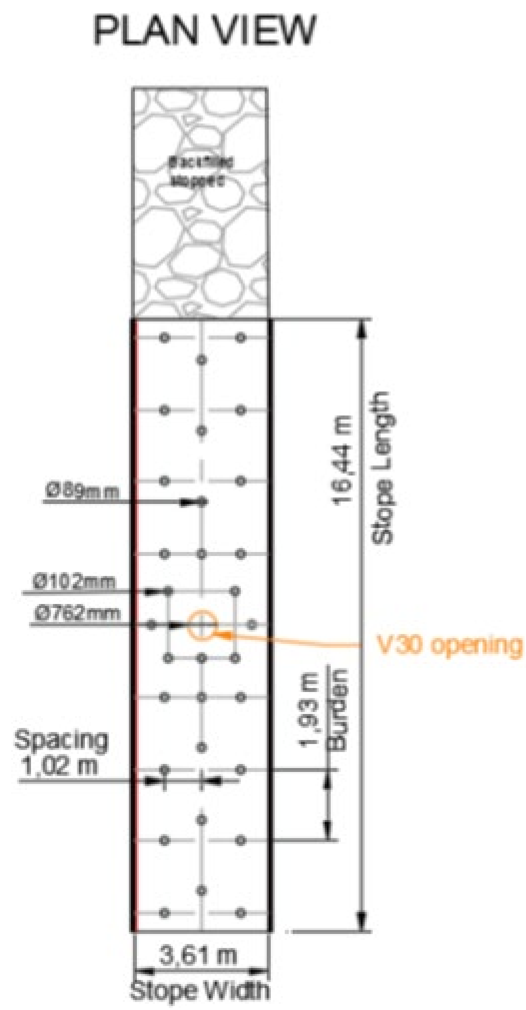


Figure 16-17: Typical drilling configuration for Valley Zone, plan view

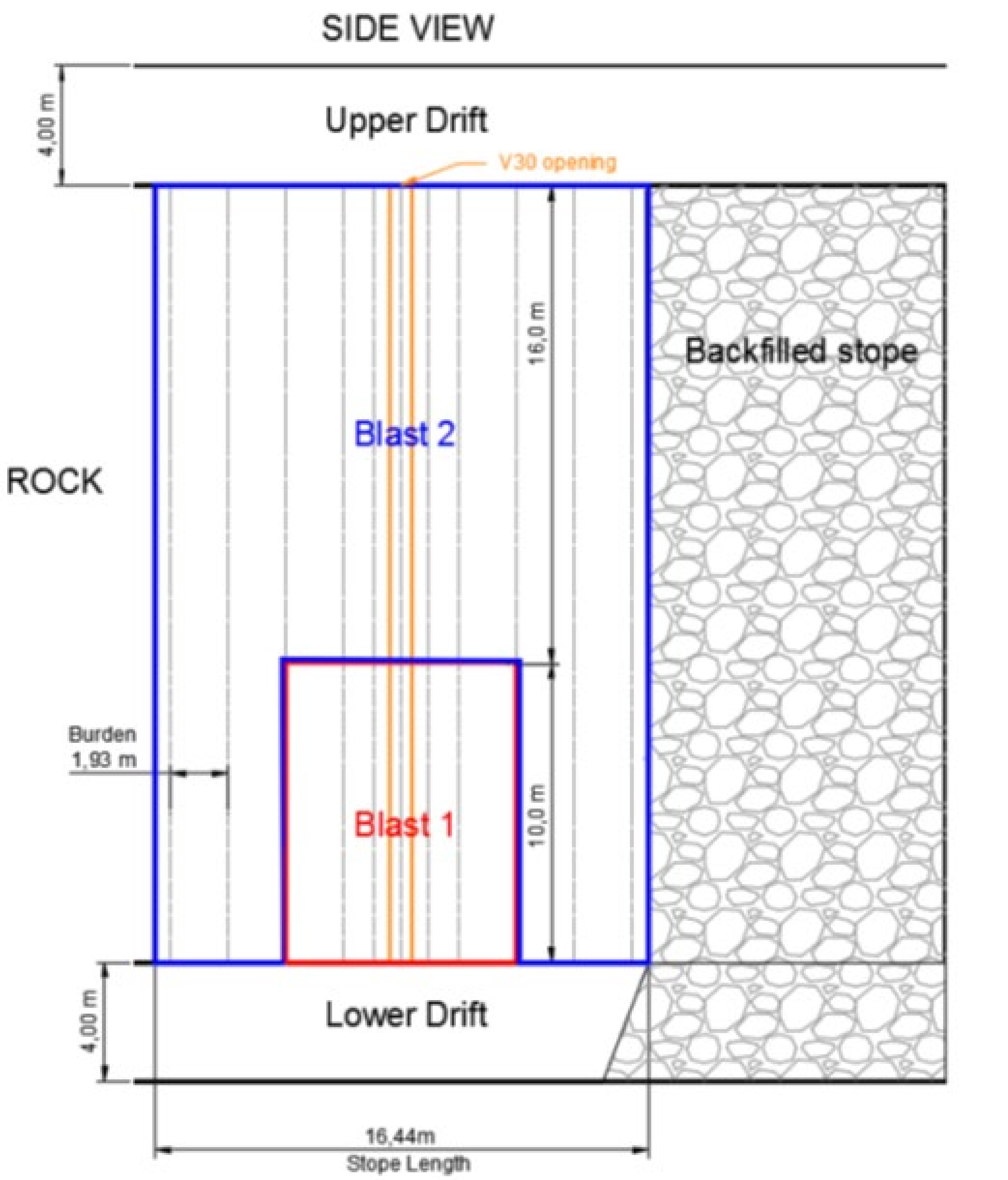


Figure 16-18: Typical drilling configuration for Valley Zone, side view

16.6.5. Shaft Zone

The largest zone of the Project (by inventory tonnage) is the Shaft Zone. This zone encompasses 20 levels from Level 760 to Level 1370 at a sublevel spacing of 30 m floor-to-floor, with its lowest level currently reaching a mean sea level ("msl") depth of approximately 760 m. Given the mountainous terrain above the zone, the depth from surface is highly variable. The zone's horizontal extent stretches approximately 1 kilometre ("km") along strike.

The average stope widths in this zone is 4.3m with a lengths from 8 m to 15 m on strike. Stope strike length refers to the length of the stope along the strike of the mineralized zone that can remain open for a certain period before being backfilled, due to geomechanical considerations. This is most often due to maximum hydraulic radius dictated by local ground conditions surrounding the stopes.

Shaft Zone is expected to contribute 12.7 million tonnes ("Mt") at an average grade of 3.72 g/t to the mine production over the life of the mine. Additional information on stope dimensions can be found in Section 16.2-Rock Engineering. A longitudinal view of the zone is included in Figure 16-19 below. The Shaft Zone is intersected along strike by the Aurum Fault dipping approximately 50 degrees northeast; flanked by the Shaft Zone Fault 1 to the east and the Jack of Clubs Fault to the southeast as shown in Figure 16-20.

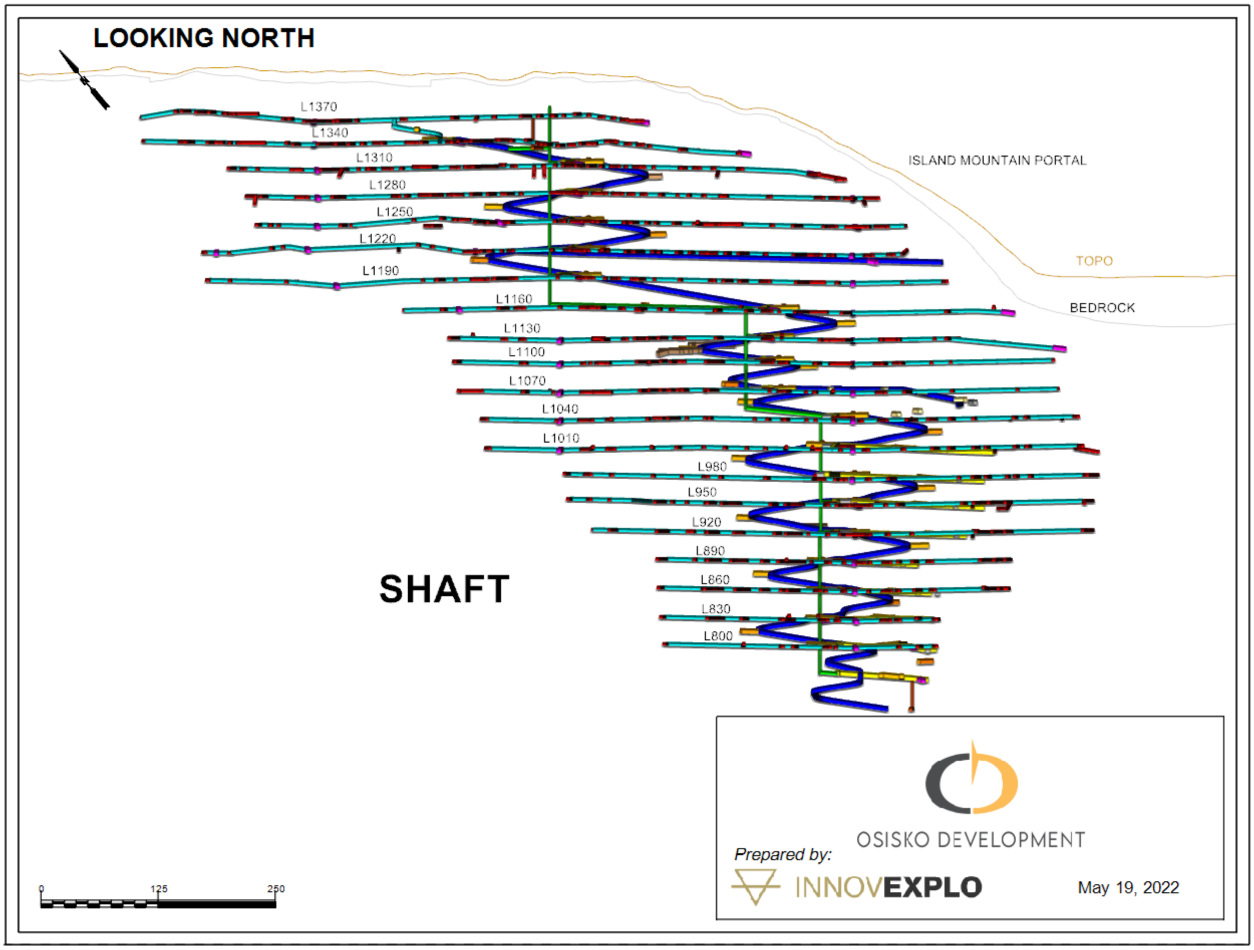


Figure 16-19: Longitudinal section of Shaft Zone looking north

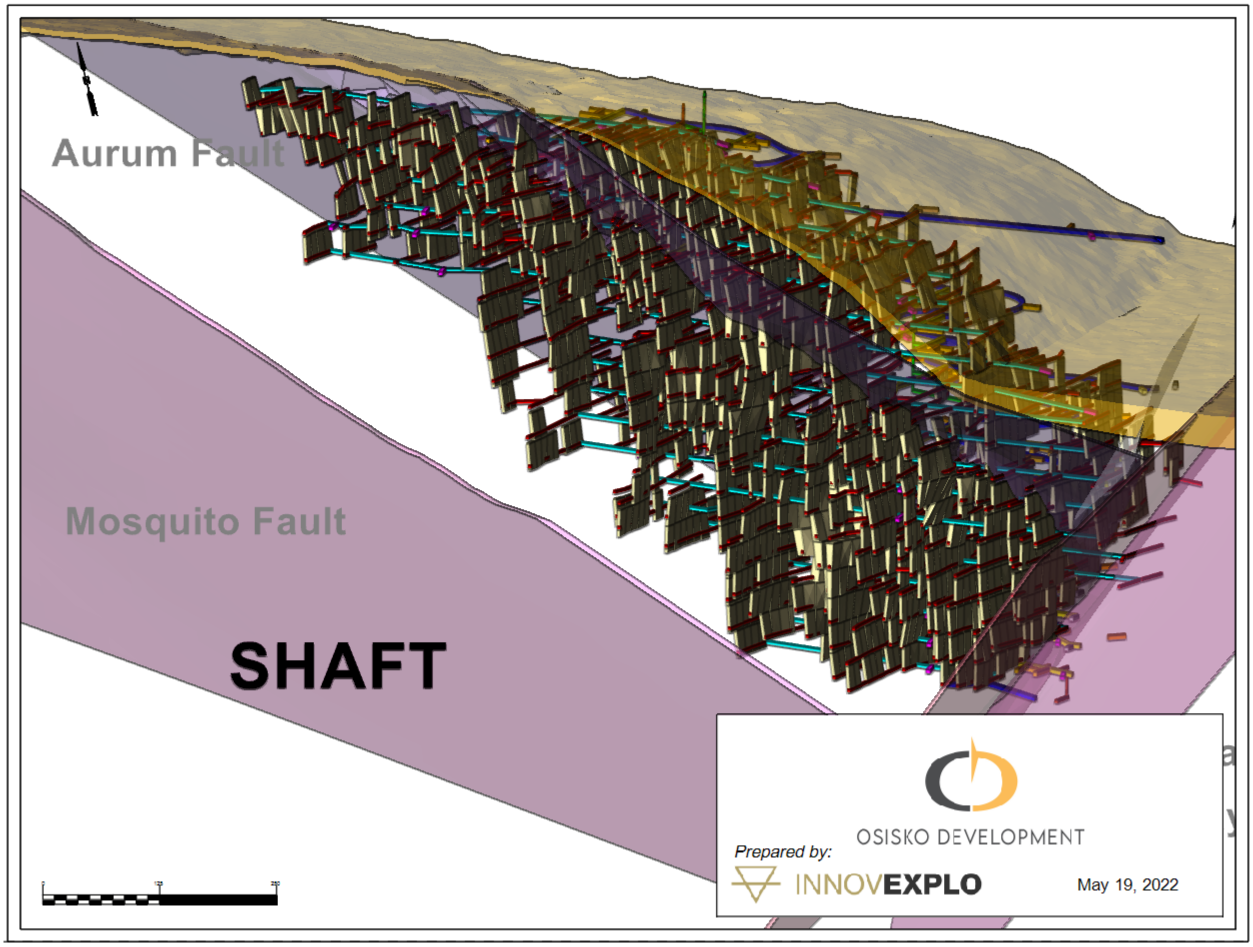


Figure 16-20: Perspective view of Shaft Zone showing traversing fault structures, looking north

16.6.6. Valley Zone

The Valley Zone comprises 15 levels from Level 740 to Level 1160 at 30 m floor-to-floor and reaches a depth of around 740 m msl. The Valley Zone spans 570 m along strike. Stope widths in Valley Zone average 4 m in the upper section and average 4.4m in the lower section. Stope length on strike averages 16 m for all veins in the zone. The Valley Zone is expected to contribute 4.4 Mt at an average grade of 3.31g/t to production over the life of the mine. A longitudinal view of the zone is included in Figure 16-21.

The Valley Zone is bisected horizontally at its mid elevation by Shaft Zone Fault 1 dipping at approximately 75 degrees east; and has minor intersection with the Jack of Clubs Fault Damage Zone on the western extent, while the Aurum Fault crosses the lower five levels of the zone. The fault structures are shown in Figure 16-22.

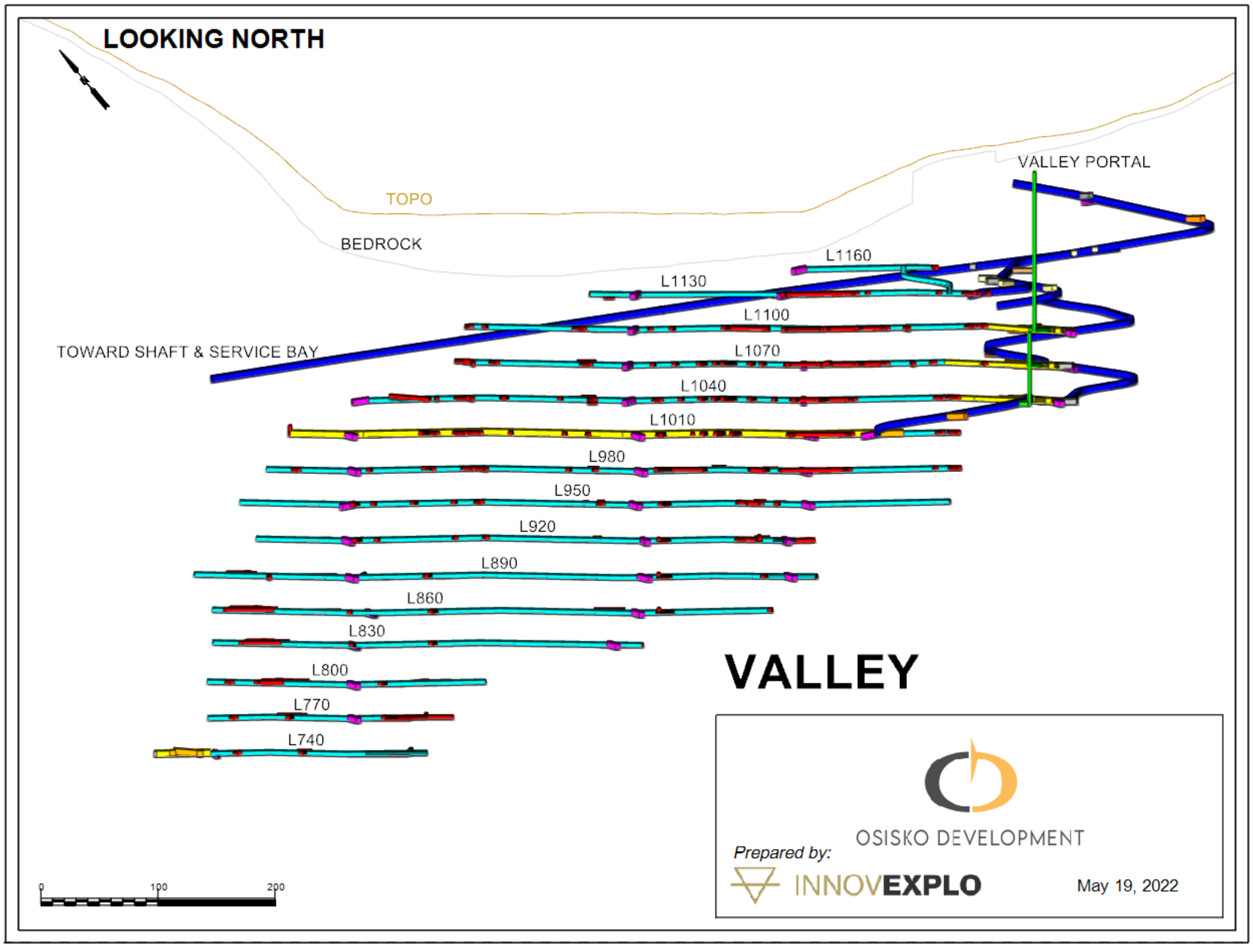


Figure 16-21: Longitudinal section of Valley Zone looking north

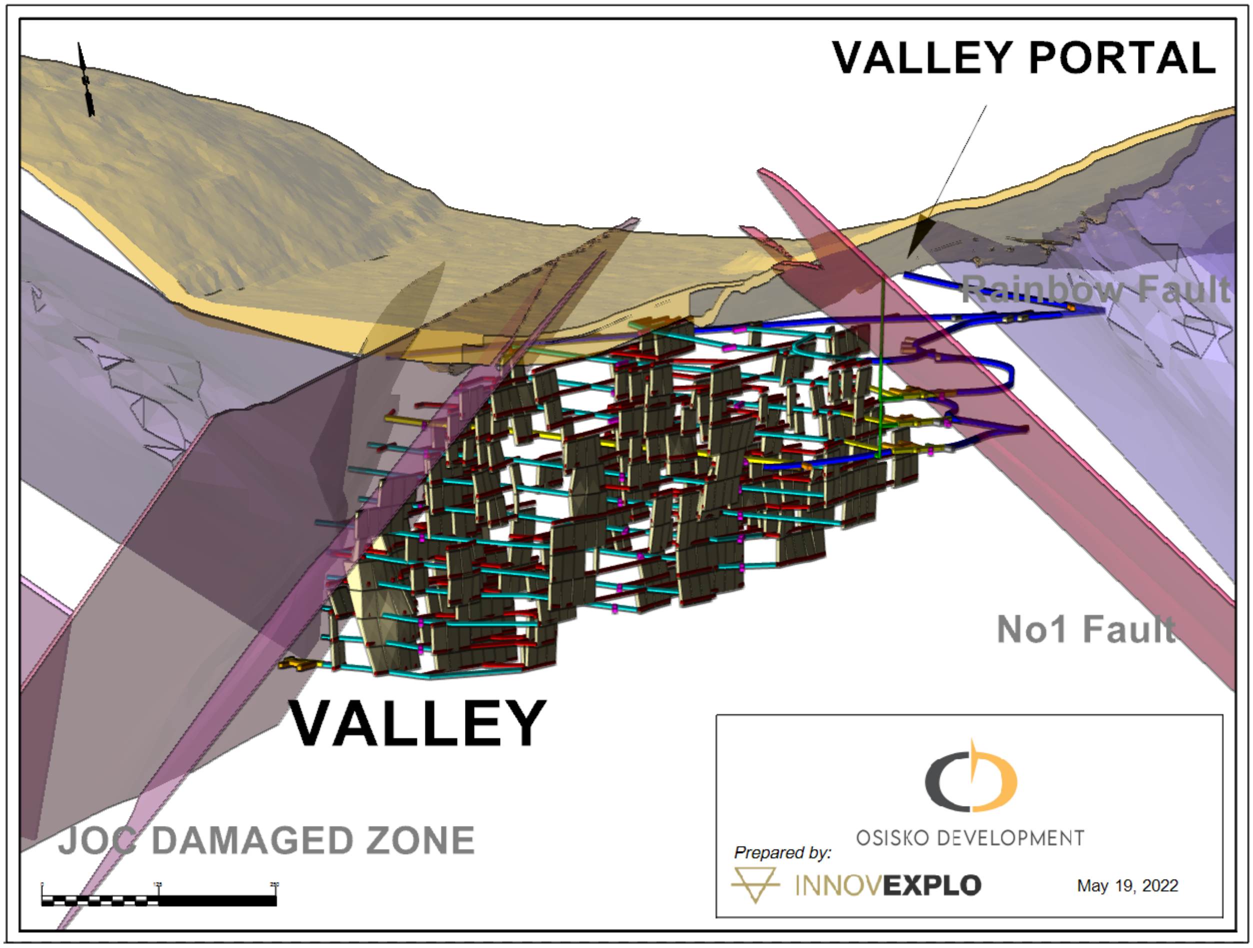


Figure 16-22: View of Valley Zone showing traversing fault structures, looking north

16.6.7. Cow Zone

The Cow Zone encompasses 13 levels from Level 1040 to Level 1385 at 30 m spacing floor-to-floor to a depth of approximately 1,040 m msl. The zone spans almost a kilometre along strike with stope widths averaging 4 m. Stope length on strike averages 15 m for all veins. The Cow Zone is expected to contribute 6.8 Mt at an average grade of 3.03 g/t to production over the life of the mine. A longitudinal view of the zone is included in Figure 16-23.

The levels are intersected by four distinct faults striking offset by about 25 to 35 degrees from the zone axis as shown in Figure 16-24. The No1 Fault cuts across the northwest corner of the zone, intersecting the six lower levels of Cow North and creating the least amount of contact out of the four traversing faults. The Lowhee Fault, Sanders Fault, and Rainbow Fault cut across most of the zone and access ramp.

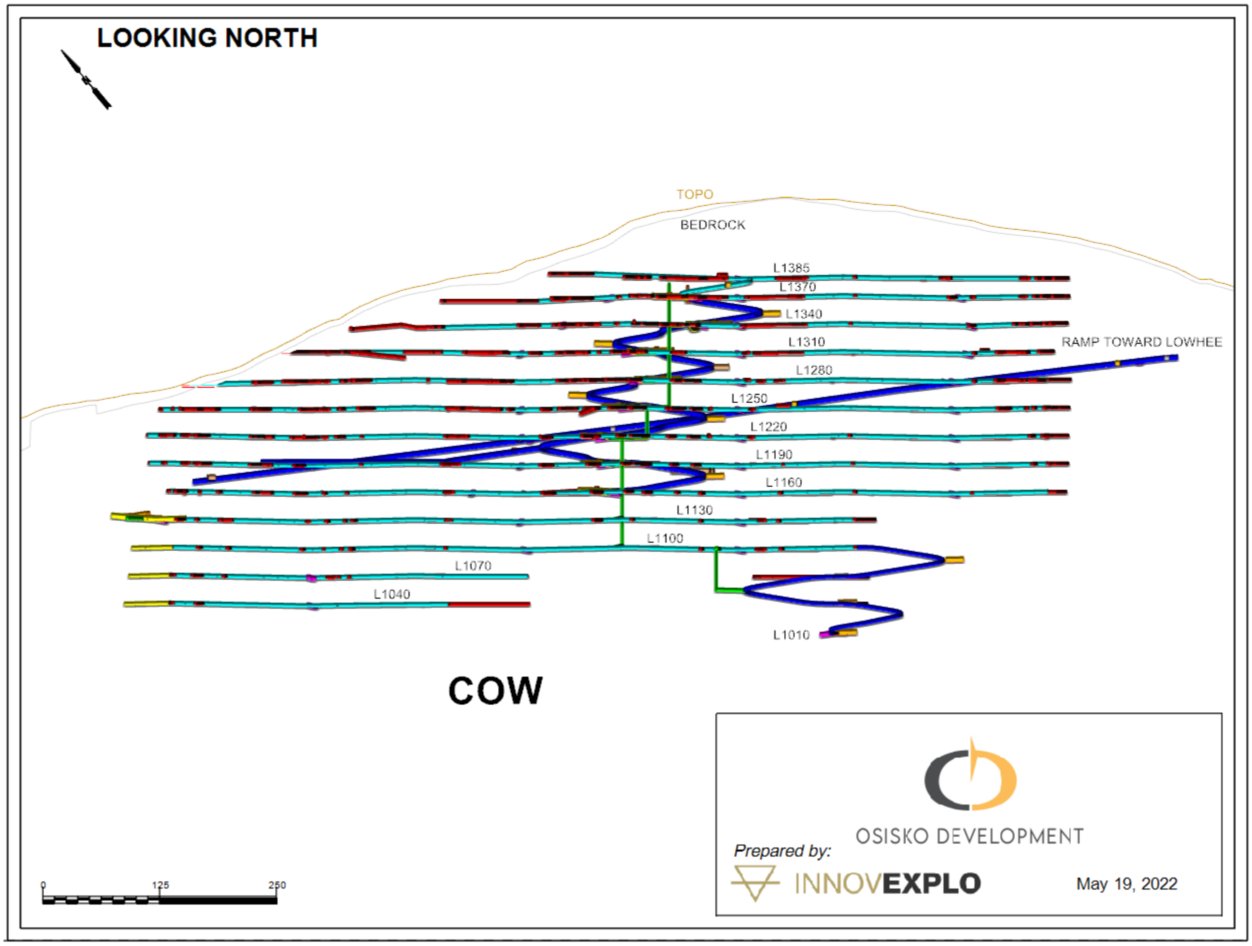


Figure 16-23: Longitudinal section of Cow Zone looking north

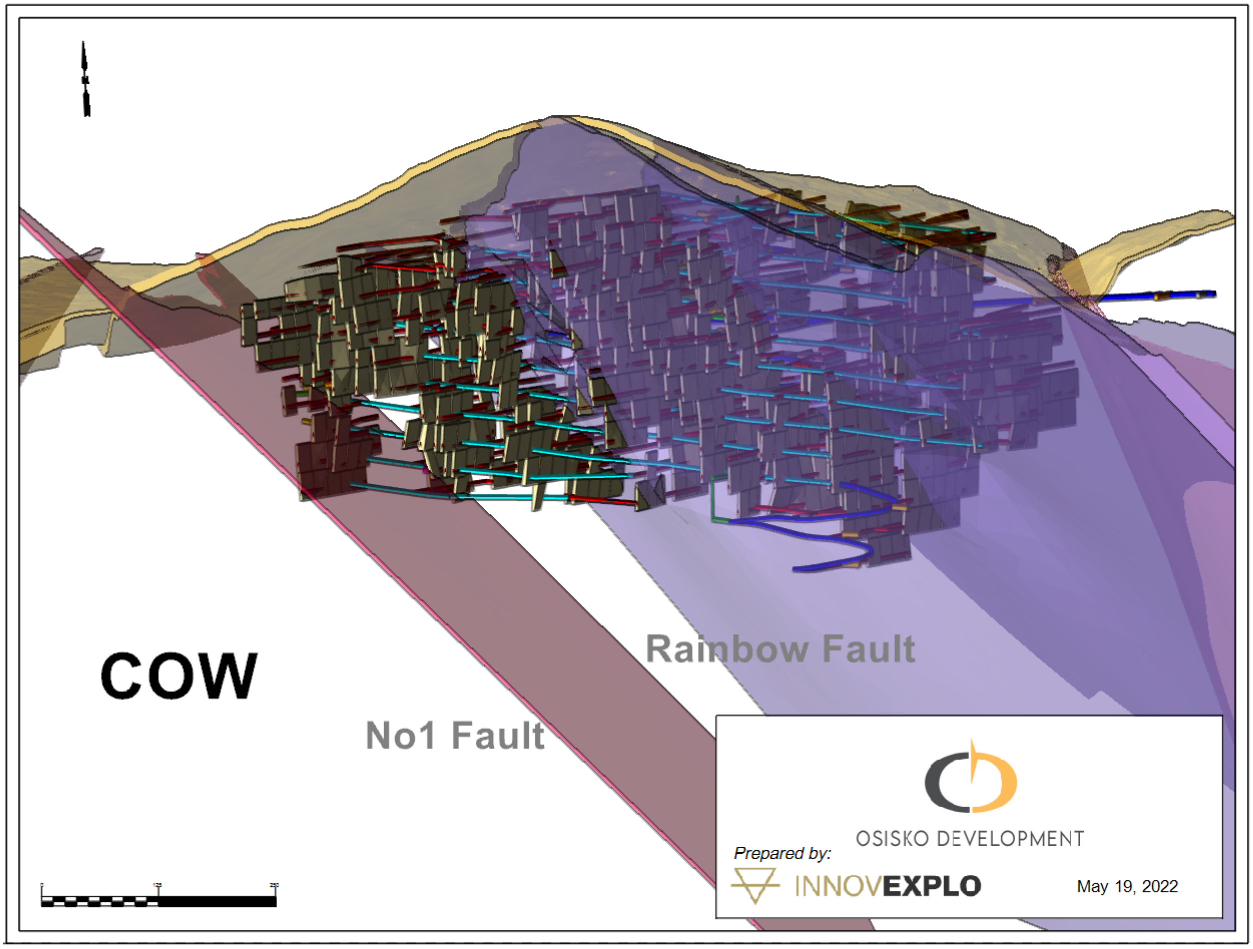


Figure 16-24: Perspective view of Cow Zone looking northeast showing fault structures

16.6.8. Lowhee Zone

The Lowhee Zone encompasses 10 levels from Level 1160 to Level 1430 at 30 m spacing floor-to-floor to a depth of approximately 1,160 m msl. The zone spans almost a kilometre along strike with stope widths averaging 4 m. Stope length on strike averages 15 m for all veins. The Lowhee Zone is expected to contribute 1.6 Mt at an average grade of 2.93 g/t to production over the life of the mine (see Figure 16-25 and Figure 16-26)

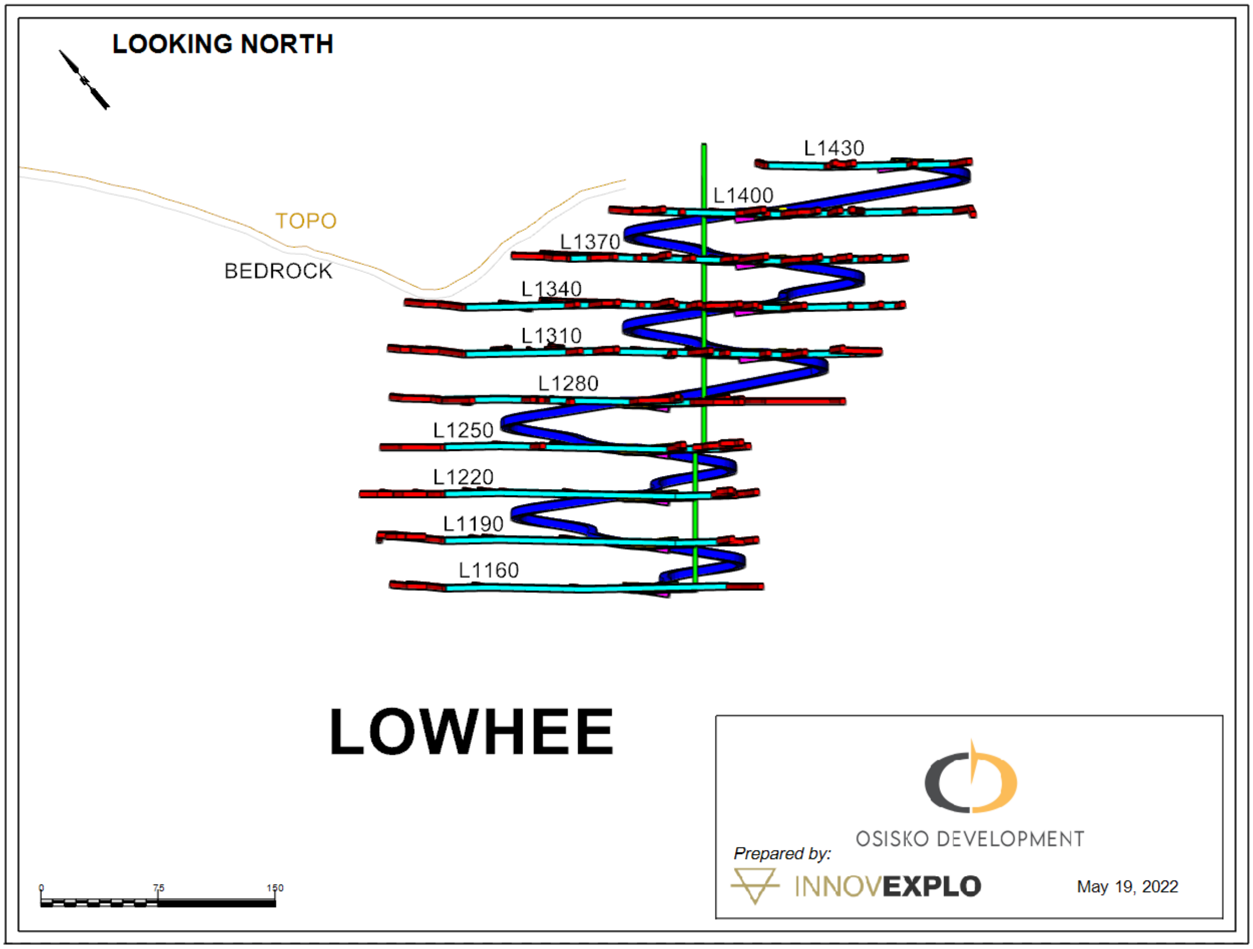


Figure 16-25: Longitudinal section of Lowhee Zone looking north

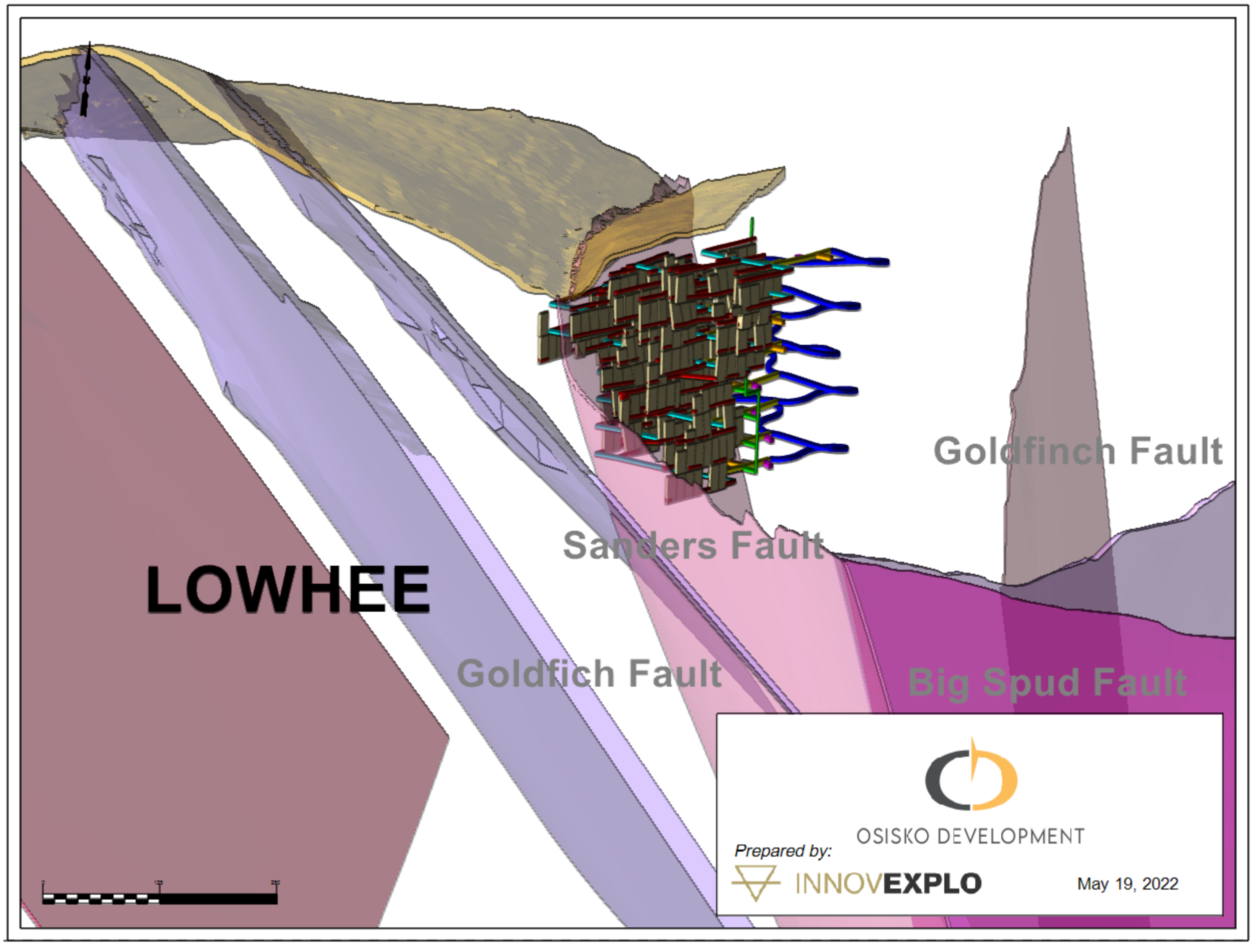


Figure 16-26: Perspective view of Lowhee Zone looking northeast showing fault structures

16.6.9. Mosquito Zone

The Mosquito Zone encompasses 11 levels from Level 1050 to Level 1340 at 30 m spacing floor-to-floor to a depth of approximately 1,050 m msl. The zone spans over 700 m along strike. Stope length on strike averages 13 m for all veins. The Mosquito Zone is expected to contribute 2.5 Mt at an average grade of 3.29g/t to production over the life of the mine. A longitudinal view of the zone is included in Figure 16-27. The zone is traversed diagonally along strike by the Mosquito Fault running NW-SE. The fault dips approximately 45 degrees northeast as shown in Figure 16-28.

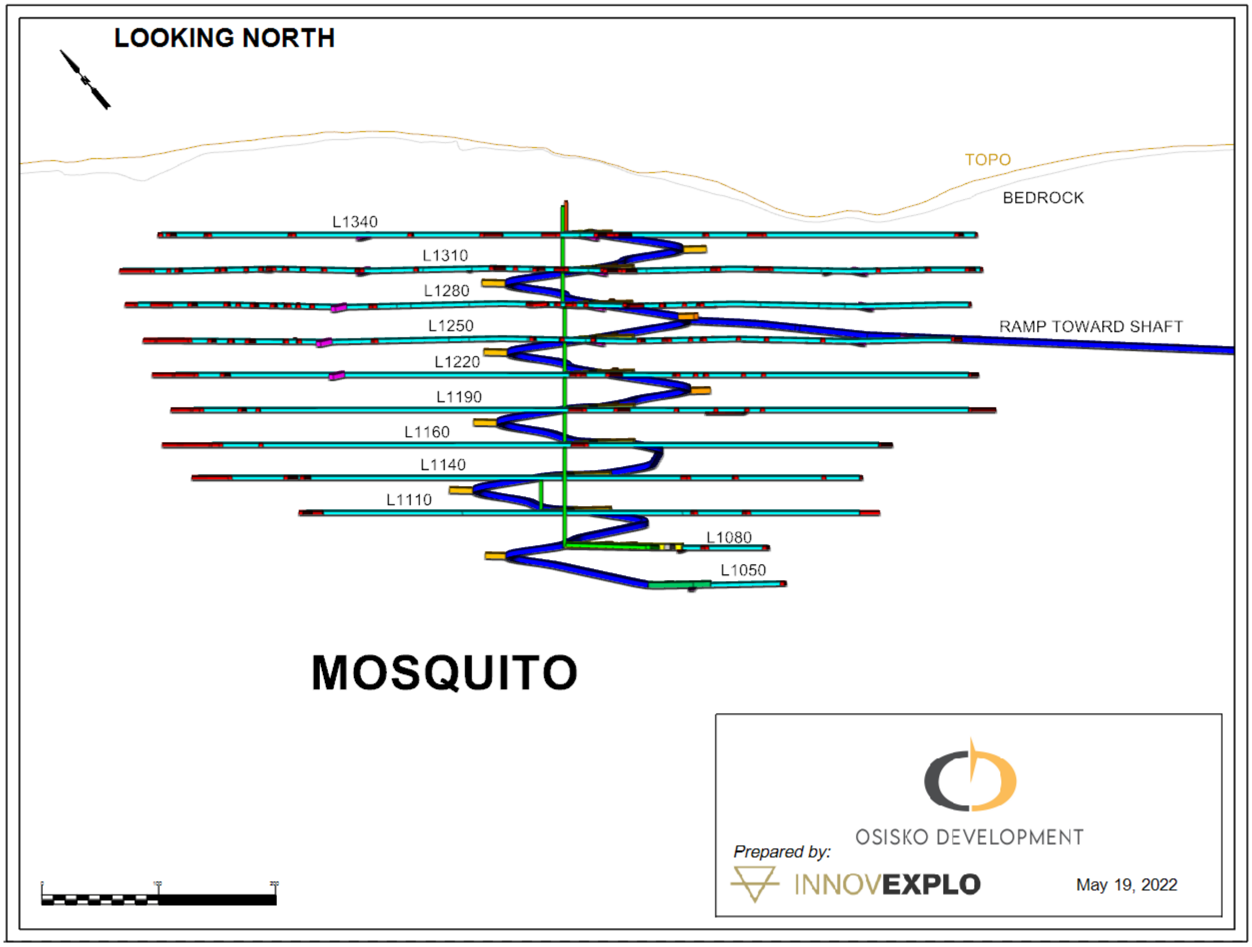


Figure 16-27: Longitudinal section of Mosquito Zone looking north

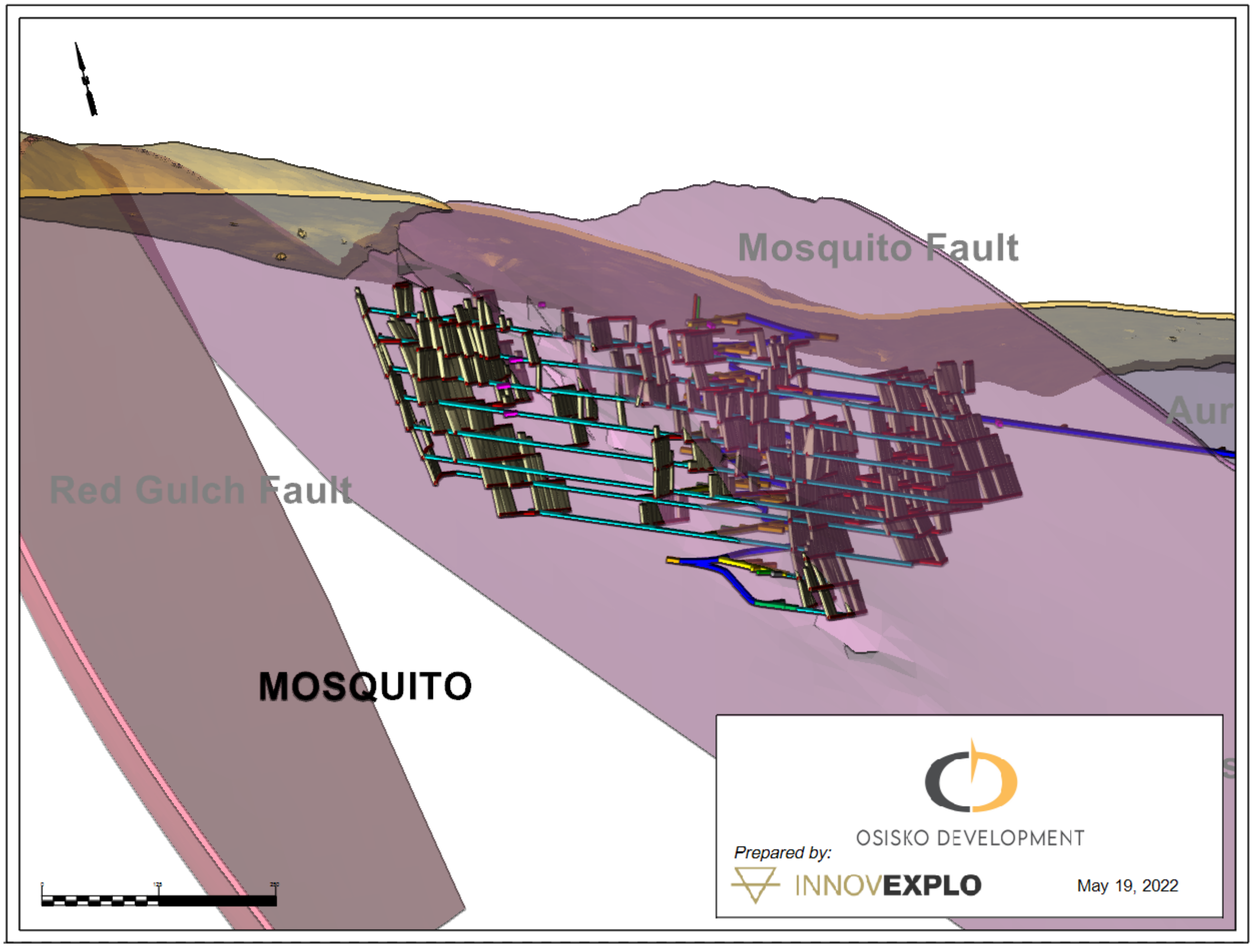


Figure 16-28: Perspective view of Mosquito Zone looking northeast showing fault structure

16.6.10. Mine Dilution and Recovery

In accordance with the geotechnical guidance developed by SRK (see Section 16.2), a strategy of under-drilling narrow stopes to experience 'internal' dilution within mineralized zones (sloughage will be mineralized) as part of the "total" dilution will be pursued. External mining dilution has been evaluated for each zone and considered by adding a specific ELOS distance in metres (Equivalent Linear Overbreak Sloughing) on the hanging wall and footwall. This strategy can be seen in Figure 16-29.

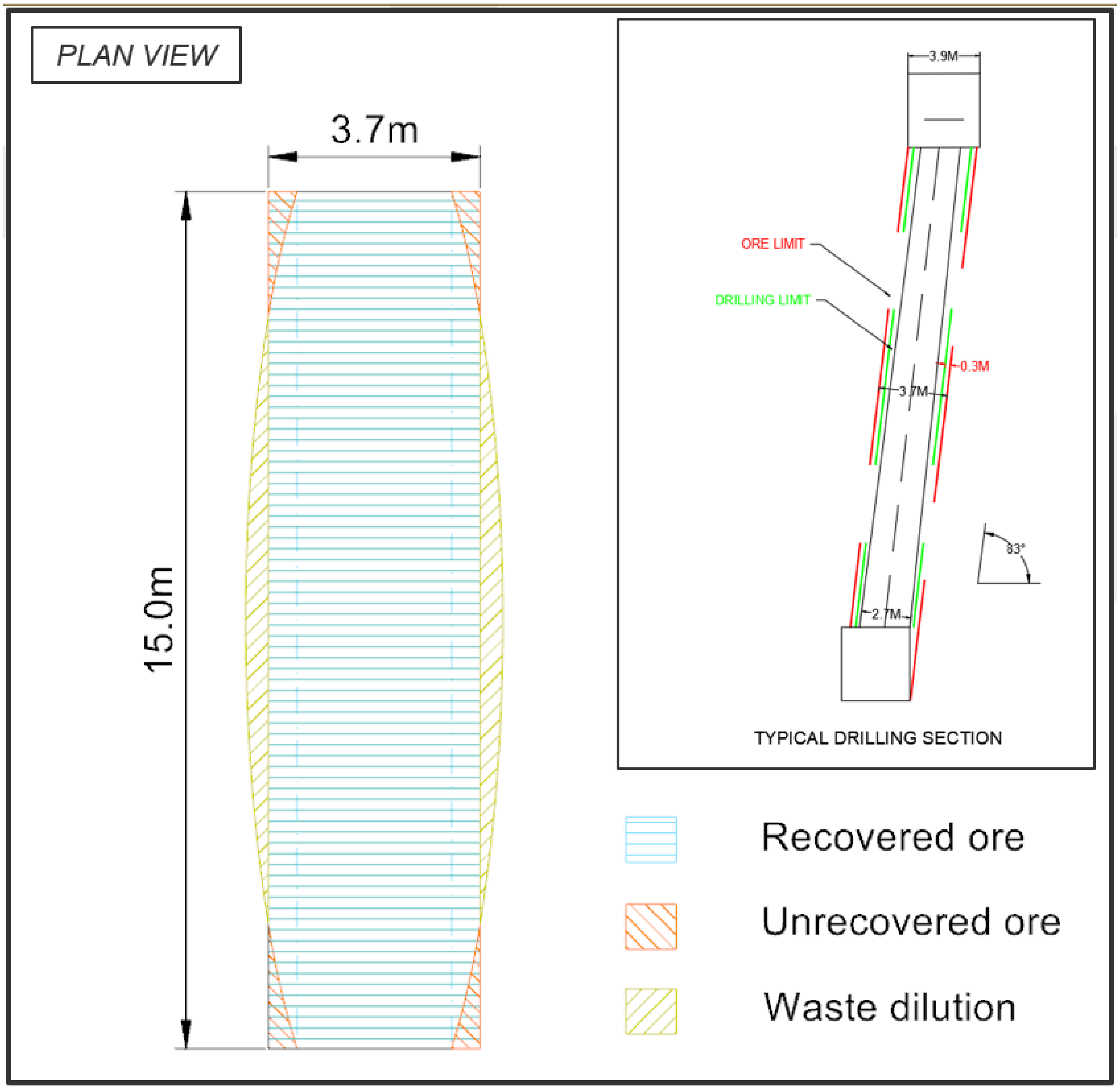


Figure 16-29: Internal dilutions strategy for stopes wider than the minimum mining width

Geotechnical considerations prevent some fraction of mineralization from being mined with the longhole method. As per Section 16.2, mineralization, categorized as Class 4 or Class 5, cannot be mined with longhole stoping. This categorization was provided as a systematic review of photo-logging for each zone. As these bad ground areas are disseminated in all veins, this tonnage was then removed to longhole stope tonnes, but not development tonnes, under the assumption that in practice a stope would be deemed un-mineable after top and bottom access has been established.

A mining recovery factor was then applied to the mined tonnes; mining recovery of all development was assumed to be 100% and mining recovery factor of stopes was applied at 95%.

16.6.11. Mine Physicals

The Project required approximately 242 km of development, including 2 km of vertical development. Of this development, 162 km occurs in mineralized material and 80 km in material considered as waste. The waste lateral development metres by zone are shown in Table 16-13. Lateral development metres occurring in material above cut-off grade ("CoG") are shown in Table 16-14.

Table 16-13: Lateral development of waste by zone

Zone	Metre	Tonne
Cow	37 044	1 976 419
Valley	22 524	1 158 638
Shaft	56 001	3 239 067
Mosquito	19 317	1 153 991
Lowhee	9 765	561 132
Infrastructure	2 630	197 642
Total	**147 281**	**8 286 890**

Table 16-14: Summary of total lateral development in mineralized material

Zone	Metre	Tonne	G/t Au
Cow	21 779	902 505	3.14
Valley	13 504	559 604	3.60
Shaft	44 494	1 843 824	3.59
Mosquito	7 987	330 995	3.40
Lowhee	5 317	220 327	2.86
Total	**93 080**	**3 857 255**	**3.43**

The Project has approximately 28.2 Mt of mineralized material. Of this material, approximately 24.3 Mt are from longhole production. The production distribution is illustrated in Table 16-15.

Table 16-15: Summary of total recovered production tonnes by zone

Zone	Tonne	g/t Au
Cow	6 844 260	3.03
Valley	4 426 745	3,31
Shaft	12 774 118	3,72
Mosquito	2 501 858	3,29
Lowhee	1 608 283	2,93
Total	**28 155 264**	**3.40**

16.7. Material Handling

The haul truck and LHD fleet will handle mineralized and waste rock material. Development headings on levels will be mucked with the 10 t scooptram LHDs. This material will be taken to level re-mucks where they will be transferred to the 50 t haulage trucks. Main decline or ramp headings will be mucked with the 14 t LHD fleet directly as they can accommodate the larger equipment. Waste material will be used as backfill material wherever possible, stored underground for later use ore hauled to the Bonanza Ledge Site waste rock storage facility ("WRSF").

Stopes will be mucked using the 10 t LHD fleet. Similarly, to development headings, the excavated material will be transferred to a level re-muck whereupon the material will be transferred to 50 t trucks using the 14 t LHD fleet. Mineralized material will be taken to the underground crusher. This crushed material will be transferred to the material sorting facility on surface using a vertical conveyor.

If required, the material sorting will produce waste material that will be returned underground, using a waste pass. This crushed waste material will be either used in cemented waste rock backfill or hauled to the Bonanza Ledge Site WRSF.

All LHDs and trucks will include automation options. LHDs will include tele-operated capability to allow mucking and re-handling operations to continue between shifts. Trucks will include autonomous driving mode to operate through shift changes. Mine communication system will enable tele-operated loading, autonomous hauling and autonomous dumping. This autonomous capability is expected to realize higher daily trucking productivities.

16.7.1. Material Handling Infrastructure

Haulage distances between zones and crushing facilities are long and autonomous truck haulage will be used. Mineralized material passes will store the feed for two parallel Valley crushing circuits. This system is designed to convey 8,000 tpd of mineralized material to the vertical conveyor. The infrastructure required to support the processing rate and the overall material handling is listed below:

- Grizzly and rock breaker stations;
- Mineralized Material Silos;
- Mineralized Material Chutes;
- Waste pass;
- Waste Pass Chute;
- Vibrating grizzly feeders;
- Pan Feeders;
- Belt Magnets;
- Dust Collectors;
- Electrical distribution and communication;
- Jaw crusher (x2);
- Cone crusher (x2);
- Vibrating screen deck (x2);
- Conveyors (x9);
- Vertical Conveyor.

Waste coming from the material sorting process on surface will return underground via a waste pass. This waste will be hauled to stopes as backfill or hauled to the Bonanza Ledge Site waste rock storage facility ("WRSF") using an additional 50 t truck fleet. Figure 16-30 is an elevation view of the mineralized material and waste handling facilities.

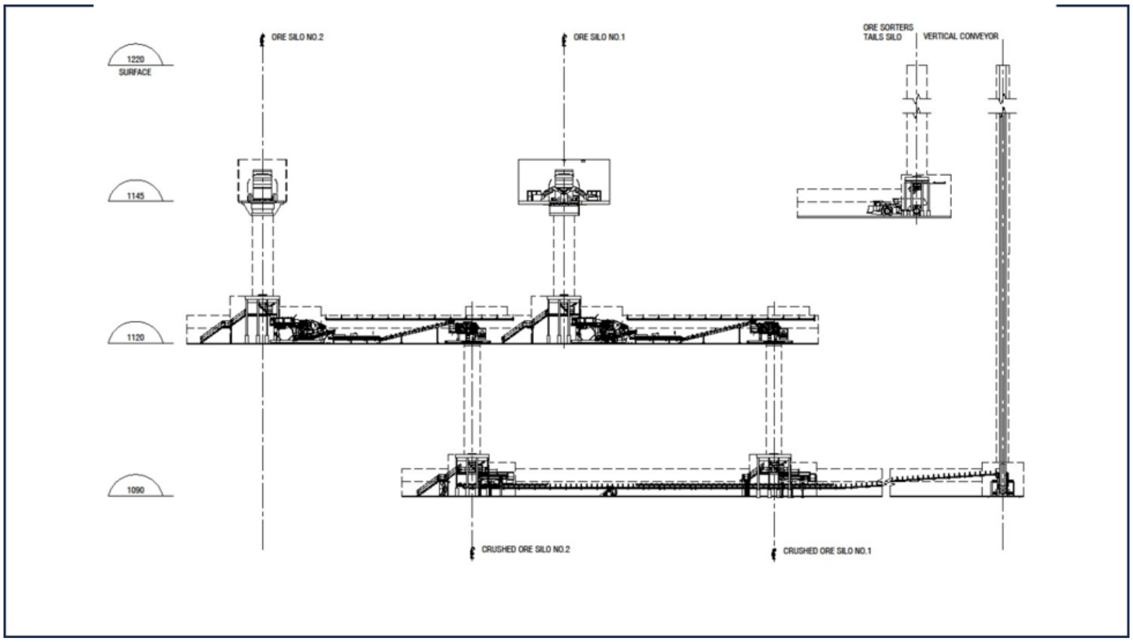


Figure 16-30: Elevation view of the U/G mineralized material and waste handling

Grizzly and Rock Breaker Stations

The material handling infrastructure includes two identical grizzly and rock breaker stations both with a capacity of 4,000 tpd. Both dump stations will be situated above the crusher level. Dump Station One will handle material from the Shaft and Mosquito Zones and Dump Station Two will handle material from Valley and Cow Zones.

The grizzly and rock breaker stations are designed for simultaneously dumping two trucks. Each opening of the grizzly has a dimension of 400 mm x 400 mm. Each of the dump stations will have 3 m diameter silo excavated below to feed ore to the primary crushing circuits. Each station is equipped with hydraulic hammers designed to fully cover the grizzly. The operator's cab will be installed to ensure the operator has an unobstructed view of the whole grizzly.

The rock breaker power unit is fed 600 Volt ("V") power from the crusher substation via boreholes. All electrical and control equipment will be in the workplace. The local loads are fed from a 400A distribution panel. The electrical loads in the area will be comprised of lighting, welding plugs and 120V outlets. The programmable logic controller ("PLC") control system has a local HMI, instrumentation, and fiber optic communication. A radar level transmitter provides the actual level of mineralized material to the control system and operator. Communication infrastructure will have sufficient bandwidth to permit remotely teleoperated and fully autonomous rock breaker operation.

Mineralized Material Feed Chute

The mineralized material feed chutes are located below their respective silos and ahead of the comminution circuits. The choke gates control the flow rate from the silo to the vibrating grizzly feeder.

Primary Crusher Station

The Primary Crusher consists of a Jaw Crusher that will reduce material to less than 90 mm in size. The system is designed for 240 tonnes per hour ("tph") to achieve an average daily production of 4,000 tpd circuit.

The crushed material is discharged onto a conveyor that delivers it to the screen decks. The material travels past a belt magnet to remove tramp steel while enroute to screening.

Sizing Station

A vibrating multi deck screen separates the mineralized material into oversize and undersize fractions. The undersize fraction discharges into the top of the crushed mineralized material silo. The oversize stream is conveyed to the secondary crushing stage for further size reduction.

Secondary Crushing Station

The Secondary Crushing station has a Cone Crusher reducing the material size to 22 mm or less. The secondary crusher products are conveyed to the Primary Crusher product conveyor and undergo sizing once again.

Crushed Mineralized Material Feed Chute

The Crushed Mineralized Material Feed chutes are located below their respective silos. The press frame gate controls the material flow rate from the silo to the vibrating pan feeder. The vibrating pan feeder metres the feed rate onto the Crushed Mineralized Material Feed Conveyor.

Crushed Mineralized Material Feed Conveyor

The Crushed Mineralized Material Feed Conveyor brings material from either, or both, Crushed Mineralized Material Feed Chutes moving the material to the second to last belt underground, the Crushed Mineralized Material Transfer Conveyor.

Crushed Mineralized Material Transfer Conveyor

The Crushed Mineralized Material Transfer Conveyor discharges into the Crushed Mineralized Material Transfer Chute feeding the vertical conveyor.

Vertical Conveyor

The Vertical Conveyor delivers mineralized material to surface from underground.

Dust Collection

Dust Collection and suction points will be located strategically along the processing to limit airborne dust contaminants.

Control System

All equipment will have local manual start, stop, and auto control stations. The stations connect to the larger command and remote-control system.

Fire Detection and Suppression

Fire detection and suppression system will be installed at critical points of the material handling system components.

Electrical Distribution and Communication

The power for the material sizing and handling system will be fed at 13.8 kilovolt ("kV") from the mine distribution. The power can be fed to junction boxes at 13.8 kV from two directions (Valley Zone and Shaft Zone), providing supply redundancy.

Three electrical rooms (one at the crushing stations, one in the middle on the ramp, and one close to the dump area) each includes a 2 megavolt-amperes ("MVA") 13.8/0.6 kV transformer, distribution panel, control cabinet and communication equipment. These substations provide the electrical and communication infrastructure necessary for the proper functioning of the rock breaker, loading station. The equipment and work included are those represented on the drawing and described in this section.

The main communication equipment includes fiber cables between each electrical room. The fiber optic cables serve the PLC system for rock breaker, loading station communication. At each electrical room, a communication panel will feed the local equipment.

For each area, a phone is provided, camera for remote monitoring, and minimal fire alarm system.

Waste Truck Chute

The truck chute is located at the bottom of the waste silo and is used to load trucks transporting waste from underground to Bonanza Ledge Waste Pile for final disposal, see Figure 16-31. The truck chute is designed to reduce the required infrastructure while increasing the capacity. The chute's flow is regulated by a press-frame with an arc gate. The press-frame is mounted to the excavation roof to maintain ease of access to the room.

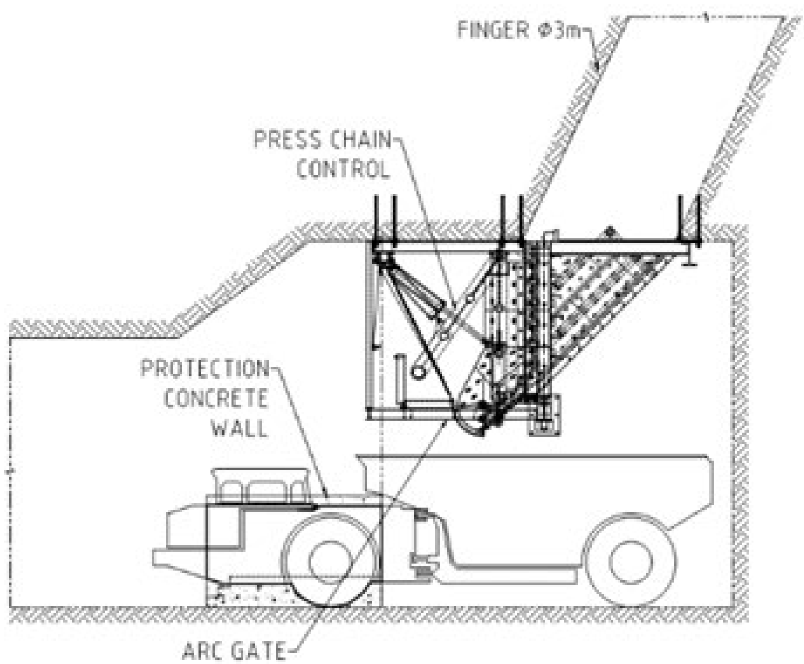


Figure 16-31: Waste truck chute

The waste chute area is fed 600 V power from the local substation and all electrical and control equipment will be in the field. A 400 A distribution panel will feed local loads.

Electrical loads in the area include lighting, welding plugs and 120 V outlets. The PLC based control system will have local HMI, communication with fiber optic and instrumentation. The HMI provides the truck operator information and control of the chute.

16.7.2. Backfill Strategy

Work relating to backfill operations was completed by WSP-Golder.

The mining method recommended is longitudinal retreat long hole mining. All stopes will be backfilled with a combination of cemented rock fill (CRF) or paste fill. Paste will also be used to fill old working area.

16.7.2.1. Pastefill

The paste primary network consists of cascading boreholes between levels and lateral level pipelines and will connect the surface paste plant to the secondary network of Valley Zone, Cow Zone, Shaft Zone, and Mosquito Zone. The primary network will have a total length of 9.4 km, approximately, and will allow the pastefill to be delivered to mine levels then to the mined-out stopes through the secondary and tertiary network. First, the primary network comprises a main fill line from the surface pastefill plant to the Valley Zone. Then, from the Valley Zone, piping will be installed in the connection ramps to send fill to the Shaft Zone and Cow Zone. A schematic of the paste distribution system is shown on Figure 16-32.

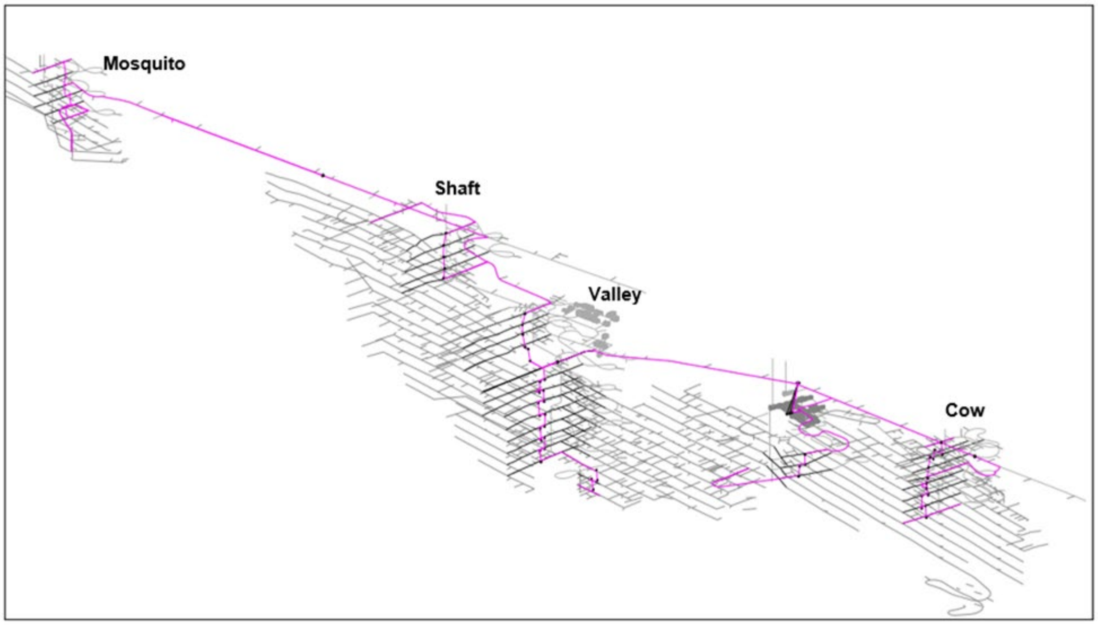


Figure 16-32: Longitudinal View of Paste Network for Cariboo Project

The piping system underground is comprised of 203 mm Schedule 80 piping for the primary network and 200 mm Schedule 80 piping for the secondary network, whereas the tertiary network (final pipe runs to stopes) will use 203 mm HDPE DR9 pipe. Knowing that no tailings ponds are planned for this project, paste productivity must be optimal. In order to facilitate paste fill operation readiness, the tertiary network will consist in HDPE pipe with Victaulic couplings. These pipes are easy to move and reinstall in the next sequenced stopes. Figure 16-33 shows a plan view of typical level paste line configuration of the Cow Zone with vertical the primary network in green, the lateral primary network in red, the secondary network in cyan, and the tertiary network in magenta.

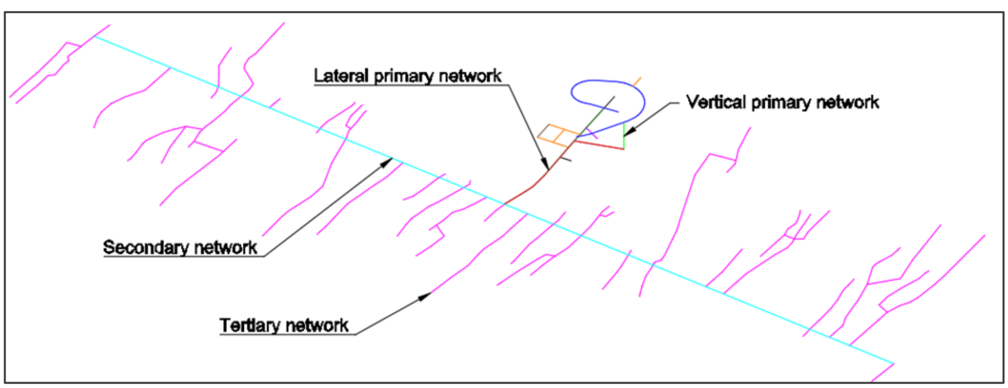


Figure 16-33: Isometric view of typical network distribution – Level 1240 (Cow Zone)

The paste fill will be extensively used and will have to be operated without any downtimes. The main and secondary lines will be doubled, in the event of breakdowns. These additional lines will allow operations continuity and avoid an expensive process plant shutdown. In case of site unavailability, the old historical workings will serve as backup. Table 16-16 presents a summary of pipe lengths by zone.

Table 16-16: Paste fill network distribution summary

Pastefill Network	Type	Backup Infr.	Valley (m)	Shaft (m)	Cow (m)	Mosquito (m)	Total (m)
Principal paste fill network - Vertical	203 mm Schedule 80	Double line	1,189	1,645	641	-	**3,476**
Principal paste fill network - Lateral	203 mm Schedule 80	Double line	4,46	6,8	4,099	-	**15,359**
Secondary paste fill network	203 mm Schedule 40	Double if length >200 m	4,806	14,321	10,441	1,287	**30,855**
Tertiary pastefill network (in sills)	203 mm HDPE DR9	Single	29,502	10,402	11,818	-	**51,722**

16.7.2.2. Network Pressure Loss

To validate the network's ability to reach the most remote stopes, pressure loss calculations were carried out. A loop test has been completed to validate the pressure loss in piping. Requirements for the booster stations and their positions will have been assessed.

In general, for a flow of 135 m^3/h, and with a 203 mm steel pipe we assume that the pressure loss will be about 6.3 kPa/m of piping. According to these calculations, no pressure drop issues are envisaged for the Valley zone at this step. This zone will be paste backfilled by gravity, meaning gravity in the vertical line develops enough load to allow the backfill to be displaced afterwards easily on the horizontal line.

To be able to backfill everywhere in the Shaft and Cow and Mosquito zones, three booster stations are needed (one for each zone). The typical booster station recommended for this matter is a Putzmeister stationary pump (Concrete pump 39Z.13 HDP) fully autonomous that can be powered by fuel or electricity. This pump will provide an output up to 138 m3/h and a delivery pressure 85 bar. The booster station for the Shaft Zone will be installed at Level 1160 (Shaft Zone) and will allow the paste, at the exit of the connection ramp between Valley and Shaft, to regain speed and to be able to backfill stopes up to Level 1340. Meanwhile, the booster station for Cow Zone will be installed at Level 1210 (Cow Zone) and will allow backfilling of mined out stopes up to Level 1360. A third booster will be required for the Mosquito Zone to have full coverage of the mineralized zones.

The network below the booster stations will be gravity backfilled and will not require pumping. Also, in order to flush the backfill lines and keep an operational network, a high-pressure flush system will be needed (booster pump on a mobile equipment), plugged on existing water line distribution to flush the backfill line. A quick flush plug is needed on each level to be effective when changing sites and to prevent clogging the line.

16.7.2.3. Design Criteria

It must be noted that a conservative approach has been considered at this stage of the Project for the paste plant design criteria. Preliminary testing results show some issues and risks to the paste production and distribution. Further exhaustive testing and a mitigation plan must be evaluated to confirm the paste plant design (see Section 25 Risks and Opportunities).

The conceptual design is based on the amenability to produce paste by using similar technologies as those used in comparable projects and on the main results obtained by WSP-Golder. The design criteria assumptions are provided in Table 16-7, below.

Table 16-17: Paste plant design criteria

Description	Unit	Value
Tailings production	tpd	4,144
Paste plant availability	%	92
Paste solid content	%	75
Paste binder content	%	2.75
Paste binder		Cement General Use (GU10)
Paste strength after 7 days	kPa	150
Paste production	m³/d	2,962

16.7.3. Cemented Rockfill

Cemented Rockfill ("CRF") will be used for stope backfilling complementary to the paste network.

A small mixing bay will be excavated on each level access will mix 4% of cement slurry. The mixing process will sufficiently coat the waste material with CRF, which will be delivered to the stopes via an LHD.

The choice for the mobile plant was supported by the forecasted demand for CRF; close to 23% of stopes will be backfilled using CRF/ uncemented rockfill ("URF") combination backfill. The Project is estimated to require approximately 680 tpd of CRF in the early production year when backfilling old workings with paste. This will decrease to an estimated 50 tpd when paste is fully available.

Sufficient curing time will be required for the CRF wedge prior to blasting an adjacent stope. This curing time has been assumed of 7 days and incorporated into the final production schedule. Shotcrete mobile equipment that possesses the flexibility to be converted for batching CRF is shown in Figure 16-34.

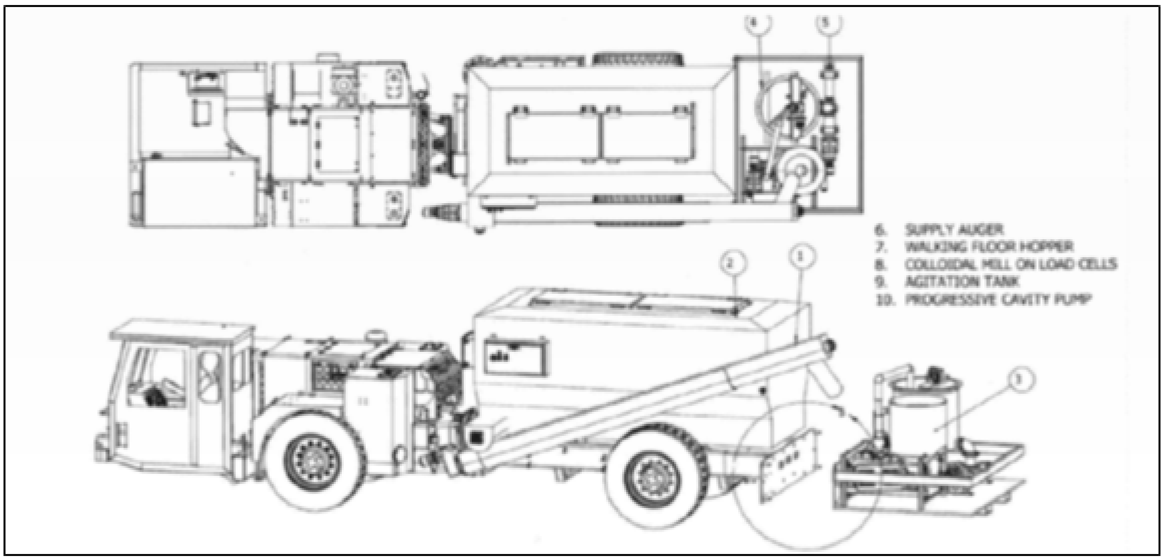


Figure 16-34: Convertible shotcrete mobile unit

16.8. Mine Schedule

16.8.1. Mine Sequence Methodology

The objectives of the mine sequencing have been to high-grade early in the LOM, and to expedite full production. The extraction sequence ensures a relatively clustered 'core' of the Valley Zone, Cow Zone, Shaft Zone, Lowhee Zone and Mosquito Zone are mined earliest which allows for full production as soon as possible. Later in the mine life, the sequence aims to balance extraction from the main zones and to maintain a smooth and constant production sequence. The scheduling goal was to maintain approximately a production of 3,500 tpd in Shaft Zone, complemented by 4,500 tpd with the remaining zones (Valley/Cow/Mosquito). Lowhee will be depleted by 2027, which will overlap with the start of the Mosquito Zone.

Further along in the mine sequence, development headings are prioritized to connect the Shaft / Mosquito Zone to the Valley /Cow Zone infrastructure. The first year of production (2024) will start with mining of Lowhee and Shaft Zones at 2,000 tpd and then, simultaneously extract from Shaft /Valley/Cow/Mosquito/Lowhee Zones to reach the 8,000 tpd production. Mining of Cow Zone starts in 2027.

All zones include multiple veins, which extend to the surface, though the highly uneven topography causes this to be variable between and within zones. Veins do not reliably extend the entire height of a zone. When a vein extends more than four sublevels, they are interrupted with a 5-m pillar for geotechnical stability. The mining sequence within a vein is bottom up, though along veins with pillars it is possible to open multiple mining fronts. Stopes along a vein on a level are universally mined in the retreat direction toward main access and then retreating to access level. Pillar levels are mined with blind uppers on retreat after the stopes above and below have been mined leaving a 5 m skin.

Stope sequencing per level is controlled by access constraints between veins. For pre-production and early in the mine life, veins with a higher grade were assigned a correspondingly higher priority.

Stopes are to be drilled from the top access, with the exception of pillars, which applies to both production drilling and V30 slot raise. Development on the top and bottom access is therefore required to be completed before the initiation of production drilling tasks.

16.8.2. Scheduling Rates

Daily production targets were specified at 2,000 tpd in the Phase I of production and at 8,000 tpd when flotation circuit is available in Phase II of production. Total economic material tonnage is therefore targeted to satisfy this daily production rate. All scheduling rates are based on experienced mining contractor feedback or typical rates for similar operations. Task rates referred to the productivity rate at which any given task can complete its operational scenario. Table 16-18summarizes the development task rates applied to the schedule.

Table 16-18: Schedule development rates

Development type	Task rate
Lateral jumbo development multi heading (5.3mx5.8m)	8.0 m/d
Lateral jumbo development multi heading (3.7m x 4.0m)	10.5 m/d
Lateral roadheader development single heading	6.7 m/d
Vertical development (average)	2.9m/d

All main ramp and level access development are planned to be excavated with a roadheader at a rate of 200 m per month per crew. All multi-heading development is planned to be excavated with jumbos at a rate of 239 m per month per crew for infrastructures and access and at a rate of 314 m per month per crew for haulage and mineralized drifts. This is illustrated in Table 16-19.

A Roadheader is already used for development in the operation of the Bonanza Ledge Mine and Cow Mountain Bulk Sample. Pre-production development and Phase I of production will be completed with a mining contractor, and in-house crews will begin to phase in as production ramps up at the end of the mine construction period. Between three and five standard development crews and two roadheader crews per day will be needed over the course of the LOM.

Table 16-19: Development resource rate scheduling parameters

Type	Rate (m/month)
Multi Face	314 or 239
Roadheader	200
Vertical (average)	86

Production tasks involving mucking, such as backfilling or mucking stopes, are based on the maximum rate a loader can operate in a day. The rate is based on an LHD being assigned the singular task. Production drilling and V30 slot raise are similarly based on the assignment of a single resource to complete a single task. The production rates are shown in Table 16-20.

Table 16-20: Summary of production rate tasks

Production task	Rate
Production drilling	194 m/d
Slot raising	10.7 m/d
Backfilling (Paste fill)	4,700 tpd
Mucking	1,004 tpd
Backfill curing time (CRF and paste)	7 days

16.8.3. Mine Production Schedule

The LOM production plan represents a 12-year mine life. Production ramp-up to steady state of 8,000 tpd is achievable in 2027, the third production year with completion of the flotation circuit. The average head grade for the LOM averages 3.4 g/t Au. All scheduled physicals and summary data presented in this section represents mined and recovered values. Figure 16-35 shows mined and recovered economic material tonnage and grade on an annual basis.

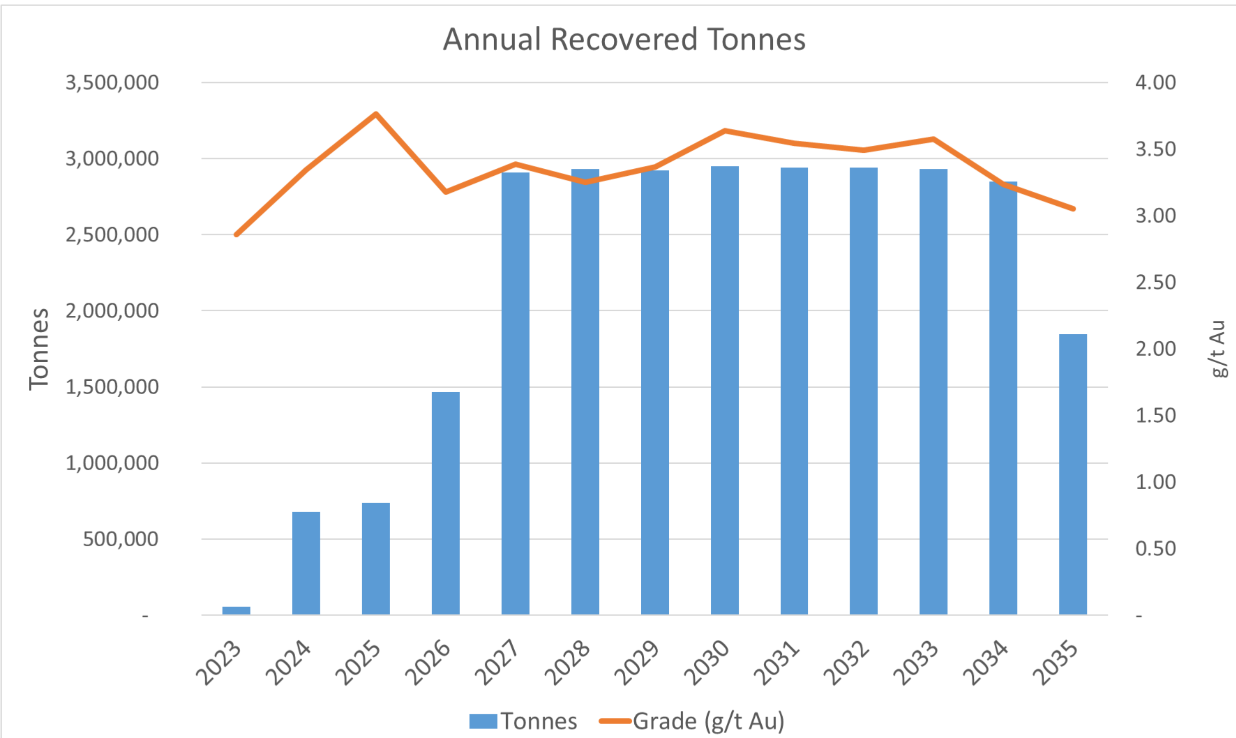


Figure 16-35: Annual total recovered tonnes of mineralized material

Table 16-21 presents a summary of mineralized material tonnage and grade by zone by year.

Table 16-21: Annual production of mineralized material

Year		2023	2024	2025	2026	2027	2028	2029
Lowhee	t	53,099	616,301	186,095	348,999	403,789	0.00	0.00
	g/t	2.86	3.32	2.65	2.61	2.76	0.00	0.00
Cow	t	0.00	0.00	0.00	57,647	684,812	730,964	811,506
	g/t	0.00	0.00	0.00	3.14	3.51	2.69	2.91
Valley Upper	t	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	g/t	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Valley Lower	t	0.00	0.00	0.00	431,435	625,551	549,000	360,175
	g/t	0.00	0.00	0.00	2.88	3.45	3.45	3.49
Shaft	t	0.00	62,098	553,712	629,754	1,143,684	1,289,902	1,294,069
	g/t	0.00	3.59	4.14	3.70	3.51	3.39	3.56
Mosquito	t	0.00	0.00	0.00	0.00	51,557	362,073	456,250
	g/t	0.00	0.00	0.00	0.00	3.40	3.57	3.51
Year		**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**
Lowhee	t	0.00	0.00	0.00	0.00	0.00	0.00	0.00
	g/t	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Cow	t	839,349	811,528	822,288	819,803	883,710	382,654	0.00
	g/t	3.10	3.01	3.10	3.03	3.03	2.76	0.00
Valley Upper	t	0.00	0.00	0.00	130,263	541,043	484,111	0.00
	g/t	0.00	0.00	0.00	3.16	3.11	2.95	0.00
Valler Lower	t	365,000	365,000	366,000	209,167	0.00	0.00	0.00
	g/t	3.24	3.88	3.61	3.22	0.00	0.00	0.00
Shaft	t	1,292,372	1,307,471	1,294,350	1,504,505	1,424,625	977,577	0.00
	g/t	4.19	3.84	3.86	4.13	3.41	3.21	0.00
Mosquito	t	451,887	456,250	456,650	267,192	0.00	0.00	0.00
	g/t	3.39	3.36	3.04	2.62	0.00	0.00	0.00

The Figure 16-36 below shows annual tonnes of mineralized material extracted by zone by year, while Figure 16-37 shows the pre-production period of the mine colour coded by year.

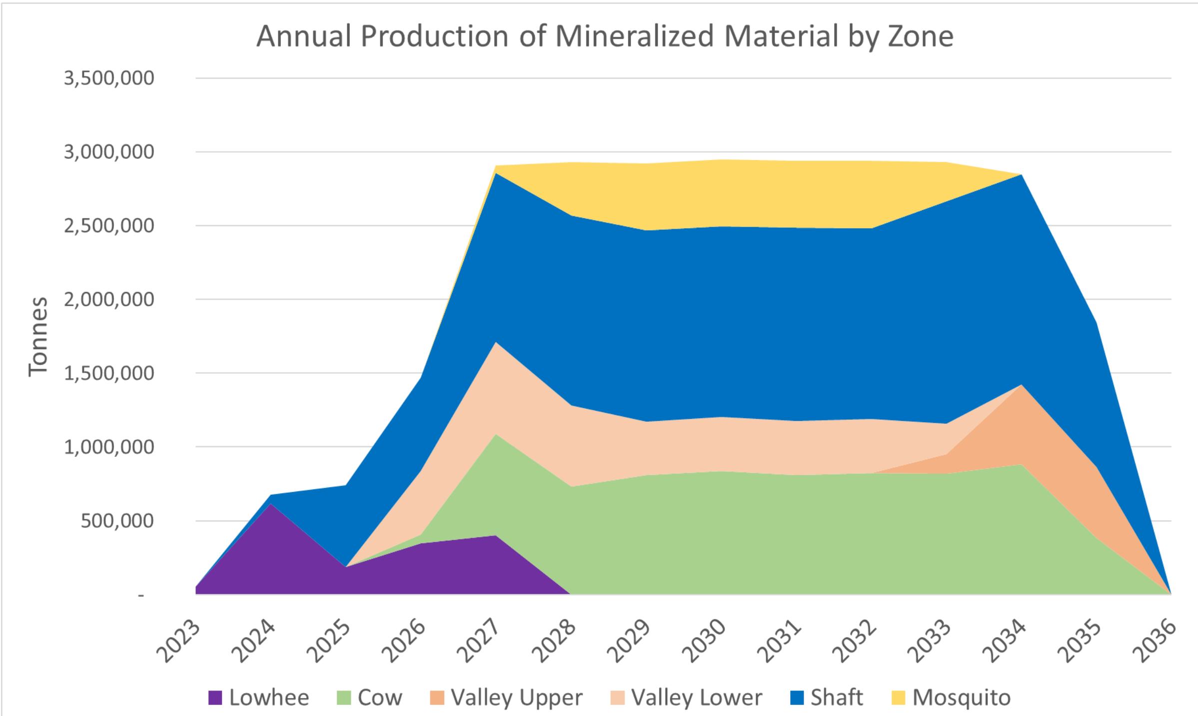


Figure 16-36: Annual production of mineralized material

Approximately 24.3 Mt of mineralized material is derived from stoping activity, with the remaining 3.9 Mt derived from development activity (14% of material generated). Figure 16-36 shows the annual potentially economic material tonnage production versus development. Lateral development averages 1,200 m per month mine wide for the LOM. Figure 16-36 shows annual development per zone per annum for the LOM. Development metres per zone per time span changes throughout the LOM. Table 1626 shows the development meter breakdown per zone from pre-production over the life of the mine.

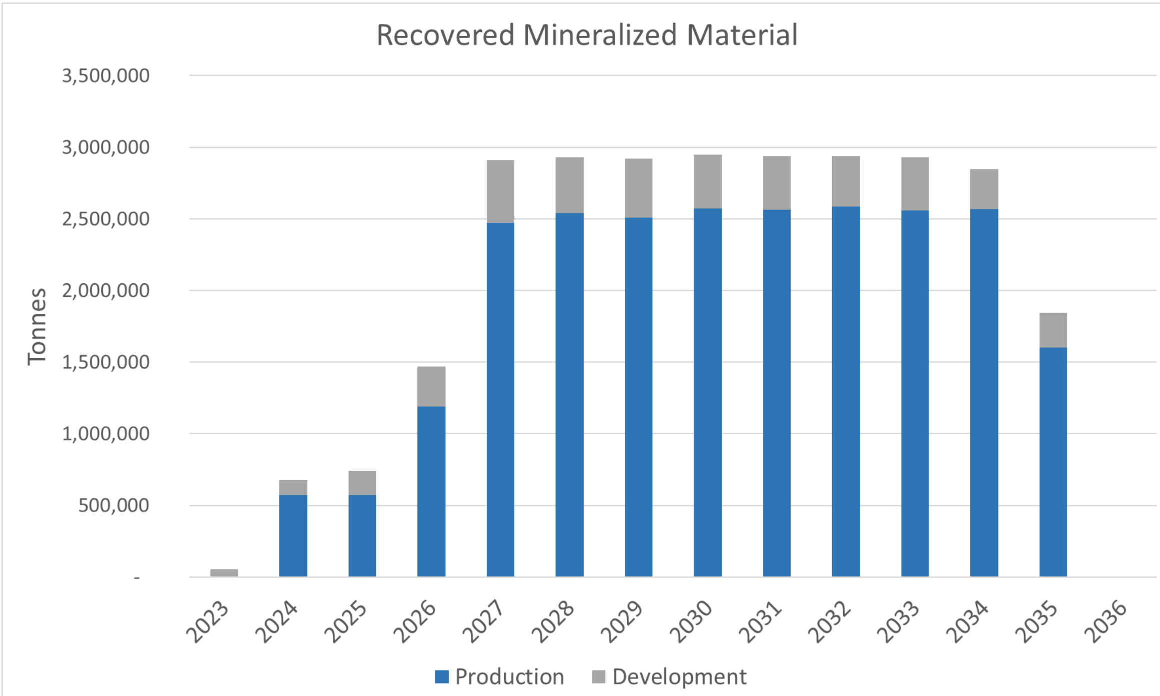


Figure 16-37: Recovered mineralized material by year by extraction method

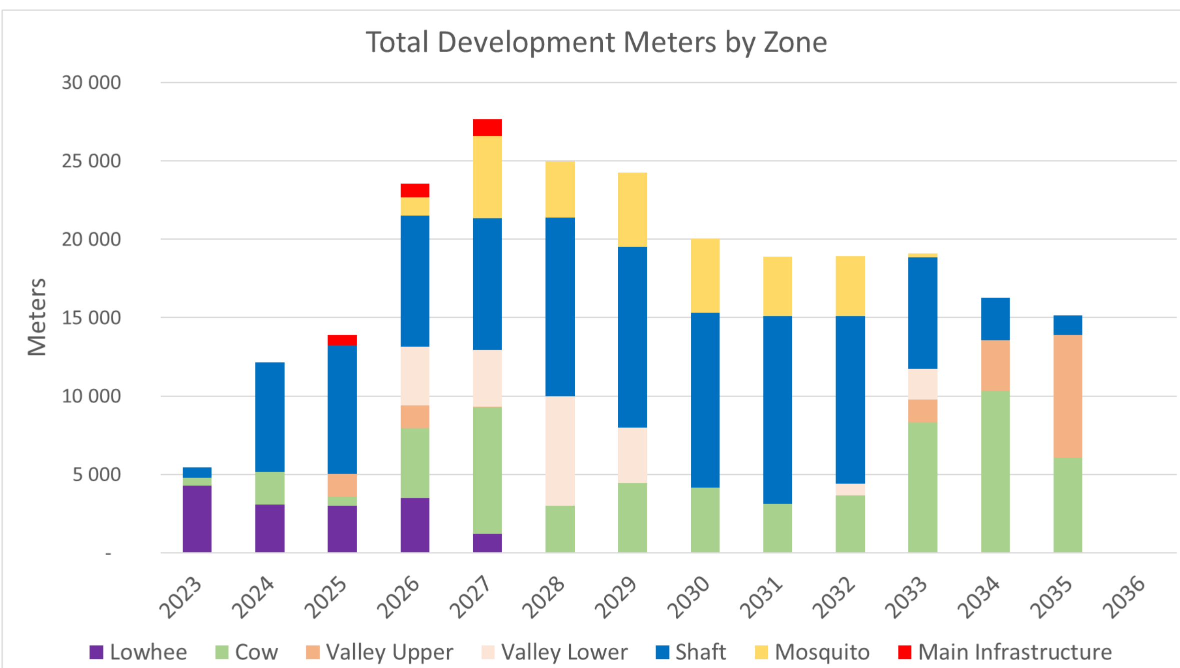


Figure 16-38: Total annual development by zone

Table 16-22: Development meter breakdown per zone per year

Year		2023	2024	2025	2026	2027	2028	2029
Lowhee	m	4 279	3 076	2 987	3 512	1 228	-	-
Cow	m	508	2 105	575	4 432	8 048	3 008	4 441
Valley Upper	m	-	-	1 457	1 442	63	-	-
Valler Lower	m	-	-	-	3 768	3 581	6 967	3 540
Shaft	m	660	6 977	8 220	8 335	8 440	11 430	11 534
Mosquito	m	-	-	-	1 201	5 230	3 562	4 733
Main Infra	m	-	-	663	869	1 098	-	-
Year		**2030**	**2031**	**2032**	**2033**	**2034**	**2035**	**2036**
Lowhee	m	-	-	-	-	-	-	-
Cow	m	4 171	3 124	3 658	8 337	10 337	6 079	-
Valley Upper	m	-	-	-	1 452	3 238	7 814	-
Valler Lower	m	-	-	760	1 946	-	-	-
Shaft	m	11 161	11 966	10 701	7 110	2 709	1 252	-
Mosquito	m	4 703	3 812	3 826	237	-	-	-
Main Infra	m	-	-	-	-	-	-	-

16.9. Mine Services

16.9.1. Ventilation

InnovExplo in collaboration with ODV was responsible for developing the strategy and estimating associated costs for an underground ("U/G") ventilation system. Howden were engaged to assist InnovExplo with the ventilation design work.

The fresh air requirement has been established for each of the mining zones: Cow, Valley, Shaft, Mosquito and Lowhee. The air requirement complies with the CSA prescribed ventilation rate plus a 20% contingency factor (leakage included). The minimum requirement to dilute emissions from the mobile machinery listed in Table 16-23 is 0.06 cubic metres per second per kilowatt ("m^3/s/kW") of diesel-powered equipment. In estimating the aggregate rate of fresh airflow for the entire mine, a utilization rate has been applied to account when machines may be mechanically unavailable, or simply not in use. ODV has chosen to use electric vehicles during production. This initiative enables to improve air quality underground while maintaining airflow requirements as per regulations.

Table 16-23: List of mobile equipment

Equipment Type	Power (kW)	Power (hp)	Quantity
Jumbo	110	147	5
Bolter	110	147	1
Bolter	100	133	6
Production Drill	74	99	6
Loader	Electric	Electric	13
Truck	Electric	Electric	15
Emulsion Charger	105	140	4
Scissor Lift	105	140	7
Boom Truck	160	213	4
Fuel-Lube	160	213	3
Mine Pickup	95	127	7
Mine tractor	44	59	4
Telehandler	97	129	1
Water truck	160	213	1
Personnel Carrier	160	213	1
Cassette Carrier	160	213	1
Mechanical Truck	110	147	3
Shotcrete sprayer	110	147	1
Cement mobile unit	160	213	1
Grader	102	136	2
Roadheader	129	172	2

Multiple iterations to the mine plan and equipment list were considered. The utilization rates are, 80% for production equipment, 50% for most service equipment, and 25% for machinery that operates primarily with electricity. Based on this utilization rate and the production rate per year, we established the total fan capacity and the fresh air demand. The fan capacity, which meets the demand required for all five zones, is 434.5 cubic metres per second ("m^3/s") (920.2 thousand cubic feet per minute ["kcfm"]). The fresh air demand for the years with greater production rate is 167.9 m^3/s (355.6 kcfm). This air requirement was scaled proportionally to all zones according to their tonnes percentage contribution to the production rate.

Two methods were analyzed to determine the worst-case scenario of each zone: maximum number of active levels per zone assuming a worst-case truck air demand of 15.6 m^3/s (33 kcfm) and the percentage of the maximum production rate per year ("tpy") per zone multiplied by the total air demand based on the machinery with the above-mentioned utilization rate.

The different fan operating points for each zone are shown in Table 16-24.

Table 16-24: Fresh air and pressure requirement per zone

Zone	Max Fresh Air Req	Max Collar Pressure Req
	m3/s (kcfm)	Pa (in. w.g.)
Cow	62 (132)	896 (3.6)
Valley	66 (139)	423 (1.7)
Shaft	116 (245)	747 (3)
Mosquito	78 (165)	623 (2.5)
Lowhee	113 (239)	797 (3.2)
Total	435 (920)	-

16.9.2. The Project Ventilation Network and Infrastructure Description

The Project ventilation system consists of five independent air intakes for the five mining areas: Cow, Valley (Upper and Lower Valley), Shaft, Mosquito, and Lowhee. Each zone is supplied with fresh air through a raise breaking through each production level. Bulkheads with drop board regulators and automated regulators will control the fresh air entering the production levels. The exhaust air will be directed towards the portals at Valley, Shaft and Lowhee.

Figure 16-39 shows a longitudinal view of the Project ventilation network.

The ventilation raises have been sized as follows:

- Cow, Upper Valley, and Mosquito Zones, 2.4 m (7.9 feet [ft]) diameter.
- Shaft and Lower Valley Zone, 3.5 m (11.5 ft) diameter.
- Lowhee Zone, 2.8 m (9.2 ft) diameter.
- Cow, Shaft, and Mosquito Zone escape ways, 3 m (9.8 ft) diameter

All the raises are equipped with ladder escape ways (in a duct enclosure).

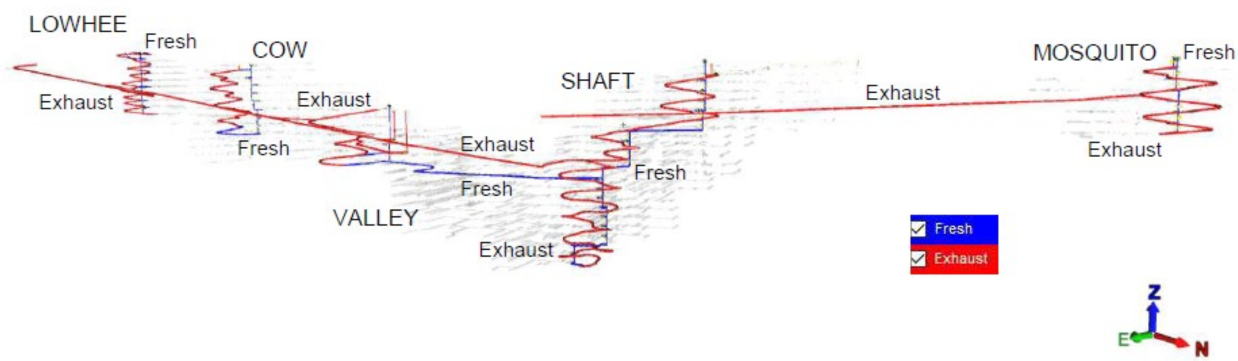


Figure 16-39: General view of the Cariboo ventilation network (N-E view)

The network was created to meet the total fresh air requirement. Given the shifting production profile from each zone, the total required airflow in each zone changes over time. Fans will therefore be equipped with variable speed drives to be able to accommodate advanced ventilation controls to optimize its speed and consequently reduce energy costs.

16.9.3. Dewatering

InnovExplo, in collaboration with the pump distributor Technosub, and ODV, was responsible for establishing a dewatering strategy for the Project.

The design basis, assumptions, and work performed by InnovExplo as it relates to dewatering operations has been summarized as follows. The dewatering solution must incorporate strategies for management of all sources of water:

- Flooded historic workings – It is assumed that all old workings are flooded below 1,202 m elevation ("EL"). It is estimated to contain a total of ~685,000 cubic metres ("m^3") of water based on water level observed on the field (Figure 16-40). Technosub, in collaboration with ODV team, did a water level measurement in the historic Mosquito shaft and InnovExplo revised old working excavation volumes;
- Groundwater inflow – all existing and new excavations are assumed to be drain cells into which groundwater can flow;
- Process water – all water required for mine operations; including water requirements for mobile equipment, backfilling, U/G crushing and mineral sorting, dust suppression, etc.

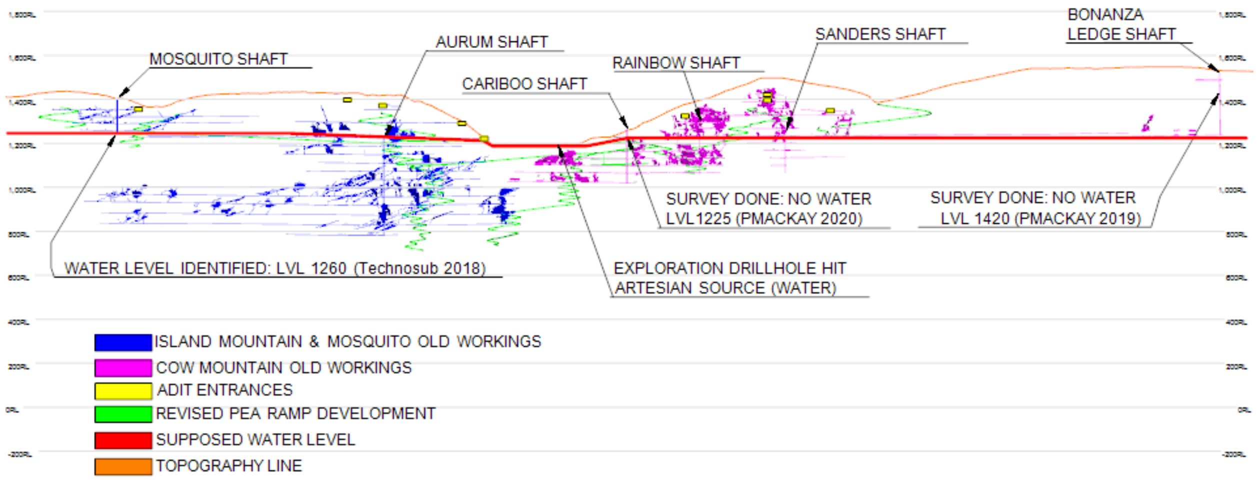


Figure 16-40: Flooded historic workings and water level

For the permanent dewatering solution, excess water that cannot be re-used underground will be pumped to surface where it will feed into a water treatment facility. Surface infrastructure associated with water management was developed by WSP-Golder and shown in Chapter 18.

Two separate dewatering strategies were considered for old workings dewatering: Surface and Underground.

- Surface dewatering: Initial dewatering from surface via existing shaft(s) or via a borehole. It was also deemed as valuable to keep the system as a backup during operation; however, this method fell out of favour due to poor conditions of the existing shafts.
- Underground dewatering: This was the preferred method for dewatering old workings. It will be carried out one level ahead of capital development using boreholes drilled from underground and a mobile pumping station.

Initial dewatering regiment of flooded workings proposed by TechnoSub operates by means of deep well pumping via boreholes. Underground dewatering occurs through a series of sump pumps in conjunction with larger mobile Pump Stations at specific levels as shown in Figure 16-41. The proposed mud handling solution to filter dirty water prior to recirculation of process water will be achieved by Mudwizard™ equipment.

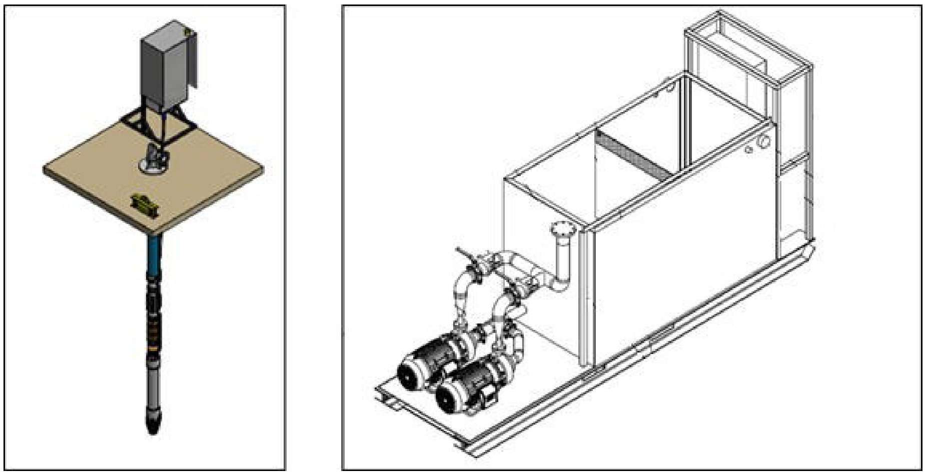


Figure 16-41: TechnoSub proposed solution for flooded workings – Deepwell pump (left) and U/G pump station (right)

16.9.3.1. General Dewatering Design

The levels having pumps are referred as "Pumping Levels". Pumping Levels have different kinds of sumps than other levels.

- Sumps with drain holes (water drains into a lower sump);
- Sump with submersible 15 horsepower ("hp") pumps (water could be pumped on another sump or another level through the ramp (on a shorter distance);
- Portable sumps with tank on a skid with stationary pumps from 60-350 hp (this kind of sump collects the water from higher and lower levels from secondary sumps and sends the water to higher levels.

16.9.3.2. Water Clarification System

Water from the pumping stations is delivered to a set of settling cones connected to the dewatering reticulation through the MudWizard™ system. This system is designed to reduce the ratio of mine sludge in the water by a factor of 10 to 1 allowing for water to be re-used in mine processes. From there, the discharge reports to the settling cones, which are equipped with peristaltic pumps feeding the slurry discharge.

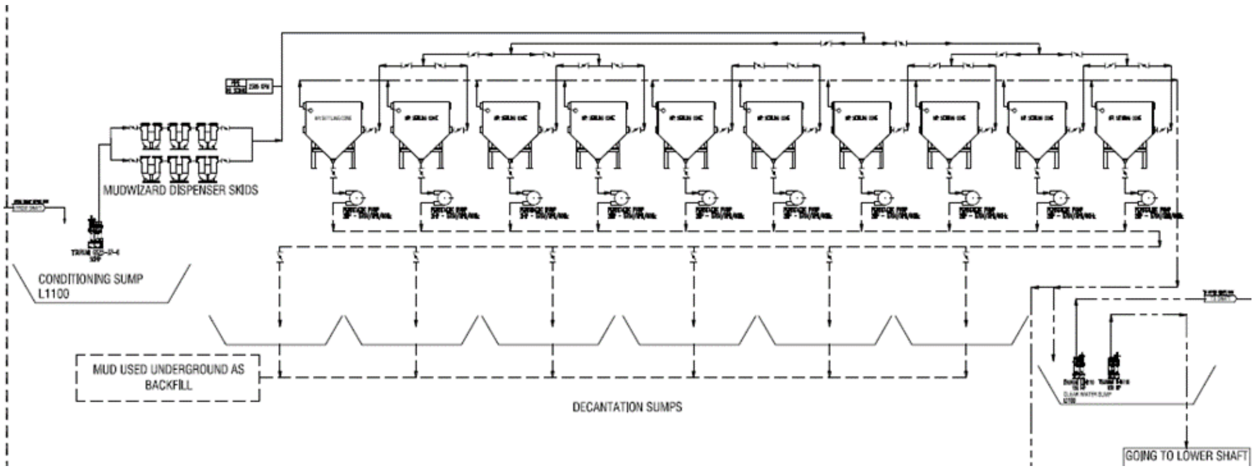


Figure 16-42: Clarification System Schematic (Partial)

16.9.4. Electrical Distribution

InnovExplo was responsible for developing the strategy for the U/G electrical distribution system. Meglab Electronique were engaged to assist InnovExplo with the electrical design work.

U/G power distribution will be distributed at 13.8 kV throughout the mine. The U/G power distribution topology will be implemented as a redundant system. A 13.8 kV feeder from the main substation will feed the electrical loads for the Valley and Cow zone, and a separate 13.8 kV feeder will feed the electrical loads of the Mosquito and Shaft zone. An interconnecting 13.8 kV tie feeder will interconnect the two zones, and allow redundancy and load balancing in the mine.

For the various equipment of the mine, the voltages required are 600 V and 1,000V. For low voltage, lighting and services, 120V/208V was used. The Project scope for the PEA included high-level single line drawings, load list, bill of material listing the major equipment and major cabling with their associated costs.

The design basis for the underground mine electrical equipment and systems is as follows:

- U/G main distribution voltage: 13.8 kV equipment;
- U/G equipment (fixed equipment, pumps, fans, mobile equipment and charging station) utilization voltage: 600 V and 1 000 V;
- U/G services voltage: 120/208 V;
- Junction boxes, starters, variable frequency drives, grounding, cables and auxiliaries for the above;
- Load List, Bill of Materials ("BOM"), costs, and cable run distances for the above, conformance to all applicable codes, standards and regulations.

The equipment electrical loads are assembled into the electrical load list assuming a reasonable amount of mining activity in all zones and most levels. Actual mining activity will be better defined as the mine production plan is developed and this will affect the load list moving forward to the next design stage. The present electrical load list reflects a high, but not excessive activity level and is a suitable model for moving forward with the design. Switchgears on surface and on levels were estimated. The PEA design includes 13.8 kV-600/1000V, 1.5 MVA or 2 MVA mine unit substations allocated for each level. As the mine development and production plan is further developed, the quantity and arrangement the unit substations can be better defined.

16.9.5. Underground Mine Equipment

Equipment selection was carried out based on the following criteria:

- Suitability for the planned size of the excavations;
- Ability to automate;
- Power output (kW) and associated ventilation requirements;
- Productivity;
- Average Mechanical Availability (%);
- Capital and operating costs.

InnovExplo, in collaboration with an independent, external consultant, Robert Hamilton, worked on the equipment selection. Robert Hamilton has a background in maintenance and equipment supply and created a Mobile Equipment Selection Matrix. An assessment matrix was used to compare various equipment companies' products with one another. It was expected that two variants would be required for selecting equipment types, i.e., to service both small and large excavation profiles.

A list detailing the equipment choices can be found in Table 16-23 Section 16.9.1 Ventilation. Equipment quantities have been estimated to achieve the steady state mining rate of 8,000 tpd with allowances for spares of critical equipment types.

Five, two-boom jumbos will be used to drill all rounds less than 5.3 m wide. Decline development, for main haulage and zone access, as well as capital level development will be handled by two roadheaders. Samples of different lithologies were sent to Sandvik laboratory in Austria to test and validate rock cutting performance with the road header. On that base, a conservative performance of 200 m per month was assumed taking account mucking, hauling and ground support cycle.

Mineralized material and waste will be hauled using 50 t electrical trucks. A fleet totalling 17 trucks will be required to satisfy material movement requirements. Five trucks will be used for development, four for production. Two fully automated trucks for mineralized material and waste transfer between Shaft Zone and Valley Zone, and four fully automated trucks for material sorter waste handling to surface. Operations will employ two types of LHD's. To accommodate for the smaller drift profile size 10 t LHD's will be used to move mineralized material or waste rock from the stope draw point or development heading into a re-muck stockpile. 18 t LHDs will then transport and load material from the re-muck to 50 t trucks at the truck turnaround area. All trucks, including eleven 10 t LHDs and three 18 t LHD's, from the fleet, will be equipped with automation hardware.

Stopes will be drilled using a longhole drill capable of drilling 89 mm blastholes up to 30 m. Contractor services will be employed to drill V30 slot raises and adjacent square holes.

All equipment productivities will be applied to nine hours of effective hours per shift (18 hours per day), except for load haul dump ("LHD") and trucks in automation mode where 20 hours per day will be accounted.

16.9.6. Communication Network Automation

As the Project is highly automated, the communication network is very important. Two master networks will be deployed from the surface by Island Portal and Valley Portal to every underground level. The first one is the LTE network which supports voice and data communication and will be deployed everywhere in the mine, where the second is the "FEMCO" security system deployed at every refuge and strategic site.

Fiber-Optic network who will be brought in every electrical substation, pumping stations, crushing stations and conveying site. Each level will have LTE distribution: LTE radio head connected to high quality Radiating cable (supporting till 2 GHz radio frequency). This one can support Channel aggregation ("CA") LTE exceeding 40 Mbps upstream bitrate for data and voice communication. Many options can be deployed like cameras, tracking, blasting with "SMART BLAST", Telemetry of heavy equipment and production, autonomous vehicles, teleoperated equipment, automation and others.

That will give a full control of pump stations, ventilation on demand, electrical station remote control operation (SCOOP, Drill, haul trucks, etc.) and monitoring.

In addition, the security asset will be higher when equipped with a tagging system that can give the position of every equipment and worker or visitor underground.

The main data network combined with the PLC and LTE system bring all the information and control signals in both ways from the surface to everywhere underground. This will be made possible to optimize the operation and cost.

The envisioned automation strategy for LHD units at the Cariboo mine encompasses teleoperated mucking from the stopes and level loading bay that includes a re-muck as transitional mineralized material storage. The concept of the loading bay separates the teleoperated equipment from the man operated equipment, thus respecting regulations and allowing teleoperation for extraction and also the loading of trucks at the load-out bays. This set-up can be seen in Section 16.6.3 Figure 16-16.

Truck hauling from the production levels will work autonomously during the 2-hour shift change when no personnel is in the mine. Automated trucks, controlled from surface by the LHD operators will travel to the load-out area where they will be remotely loaded with mineralized material and sent back to the dump point. By the end of 2026, all mucking operation on the production levels will be fully automated, with one operator for two scooptrams.

The basis for automation places strict demands on a robust communications network.

16.10. Mine Personnel

The Mine Site Complex will operate on two 12-hour shifts per day for automated operations and two10-hr shift per day for other underground activities. Operations will be carried through 7 days a week, 2 shifts per day. It was assumed that the mine will operate 365 days per year.

The mine will be operated using three different rosters. A combination of a 4/3 and 5/2 (days working/days off) will be used for salaried personnel. Hourly employees are scheduled on 14 days on, 14 days off roster on a fly-in fly-out (“FIFO”) schedule. The workforce will consist of maintenance crews, operating personnel, and contractor personnel.

The salaried staff will consist of 171 people per rotation, including 15 office personnel, 110 operators, and 46 maintenance personnel. At the peak point in the life, this results in 32 office personnel, 216 operators and 92 maintenance. This results in a maintenance: operator ratio of 43%. The contractor workforce will consist of 24 people per rotation, and a total of 48 (Table 16-25).

Table 16-25: Contractor workforce

Contractor Workforce	Schedule	Per rotation	Req. rotation	Number
Mine				
V30	14/14 D&N	2	4	8
Mobile backfill unit and shotcrete	14/14 D&N	2	2	4
Diamond Drilling	14/14 D&N	3	4	12

16.11. Recommendations

The opportunity exists to examine alternative mining methods that could be considered in certain areas of the mine. In veins of sufficient width and continuity, application of transverse longhole stoping could be considered. Investigation is also on-going of possibly mining high value areas with ground conditions not suitable for longhole mining using a cut & fill method.

17. Recovery Methods

17.1. Introduction

The Cariboo Gold Project ("the Project") will ramp up tonnage in two phases: Phase I, starting with a 2,000 tonnes per day ("tpd") mineral sorting and leaching flowsheet, followed by Phase II, an 8,000 tpd mineral sorting, flotation, and leaching flowsheet.

In CGP Phase I, the mineralized material will be processed in two stages at two sites. The Bonanza Ledge Site located at the current Bonanza Ledge Mine, and the Quesnel River Mill ("QR Mill") located 116 kilometres ("km") from the Bonanza Ledge Site.

For the initial throughput of 2,000 tpd, a pre-concentrator, including mobile crushing and mineral sorting, will be built at the Bonanza Ledge Site. The use of the Bonanza Ledge Site will reduce the overall operation and transportation costs. The crushing operation will be a mobile unit, operated by a sub-contractor, and the crushed product will be processed in a mineral sorting circuit. The concentrate from the sorted concentrate will be trucked to the QR Mill for further comminution, leaching, and refining.

The QR Mill is an existing plant with a daily capacity to treat 850 tonnes ("t") of mineralized material. The QR Mill will require modifications to increase capacity up to 1,040 tpd and to process the higher concentrate feed grades from the Project.

In CGP Phase II, the mineralized material will be processed in two stages at two sites. In CGP Phase II, the mineralized material will be processed in two stages at two sites. The Mine Site Complex, located in the District of Wells, British Columbia ("Wells"), and the QR Mill located 111 km west of the Mine Site Complex.

For the expanded throughput of 8,000 tpd, crushing will occur underground and will then be conveyed to the surface where mineral sorting, grinding, and flotation will be conducted in a Services Building at the Mine Site Complex. It is expected that it will take six months from start-up to ramp up to the full throughput. The Mine Site Complex, Services Building, and underground facility will serve as a pre-concentration step to reduce the overall operation and transportation costs. The primary crushing operation will be located underground, and the crushed product will be conveyed to the surface to feed a sizing screen. The sizing screen undersize will be discharged into a fine storage bin and the oversize will be sent to the mineral sorting circuit. The sorted concentrate will be combined with the fine storage bin material to feed a grinding and flotation circuit. The flotation concentrate will be trucked to the QR Mill for further comminution, leaching, and refining.

17.2. Concentrator Process Design Criteria

The process design criteria are presented in Table 17-1.

Table 17-1: Design criteria

Process design criteria	Unit	Design value	
		Phase I	Phase II
Bonanza Ledge Site			
Average feed grade	g Au/t	3.58	-
ROM tonnage	tpd	2,000	-
Fine mineralized material abrasion index	g	0.26	-
Mineral sorter concentrate abrasion index	g	0.34	-
Crushing fines content	%	30	-
Mineral sorter concentrate mass pull	%	40	-
Crushing and mineral sorting circuit gold recovery	%	97.0	-
Mine Site Complex			
Average feed grade	g Au/t	-	3.37
ROM tonnage	tpd	-	8,000
Fine mineralized material abrasion index	g	-	0.26
Mineral sorter concentrate abrasion index	g	-	0.34
Fine mineralized material bond ball mill work index	kWh/t	-	12.1
Mineral sorter concentrate bond ball mill work index	kWh/t	-	15.9
Crushing fines content	%	-	30
Mineral sorter concentrate mass pull	%	-	50
Crushing and mineral sorting circuit gold recovery	%	-	96.4
Mill throughput (design)	tpd	-	5,200
Mill availability	%	-	92
Grind size to flotation	µm	-	100
Flotation concentrate mass pull	%	-	20
Flotation Au recovery	%	-	99.2
Mine Site Complex Au recovery	%	-	95.6

Process design criteria	Unit	Design value	
		Phase I	Phase II
QR Mill			
Mill throughput	tpd	1,040	1,020
Mill availability	%	92	92
Grind size	µm	45	45
Leach retention time	hrs	40	40
Leach and CIP Au recovery	%	95.4	96.5
Stripping Au recovery	%	99	99
Carbon stripping, regeneration capacity	tonnes C	6	6
Overall Au recovery	%	92.3	92.2

17.3. Pre-concentrator at the Bonanza Ledge Site

The surface infrastructure at the Bonanza Ledge Site will be composed of three main areas: crushing and screening, mineral sorting, and stockpiling. The Bonanza Ledge Site concentrator simplified flowsheet is presented in Figure 17-1.

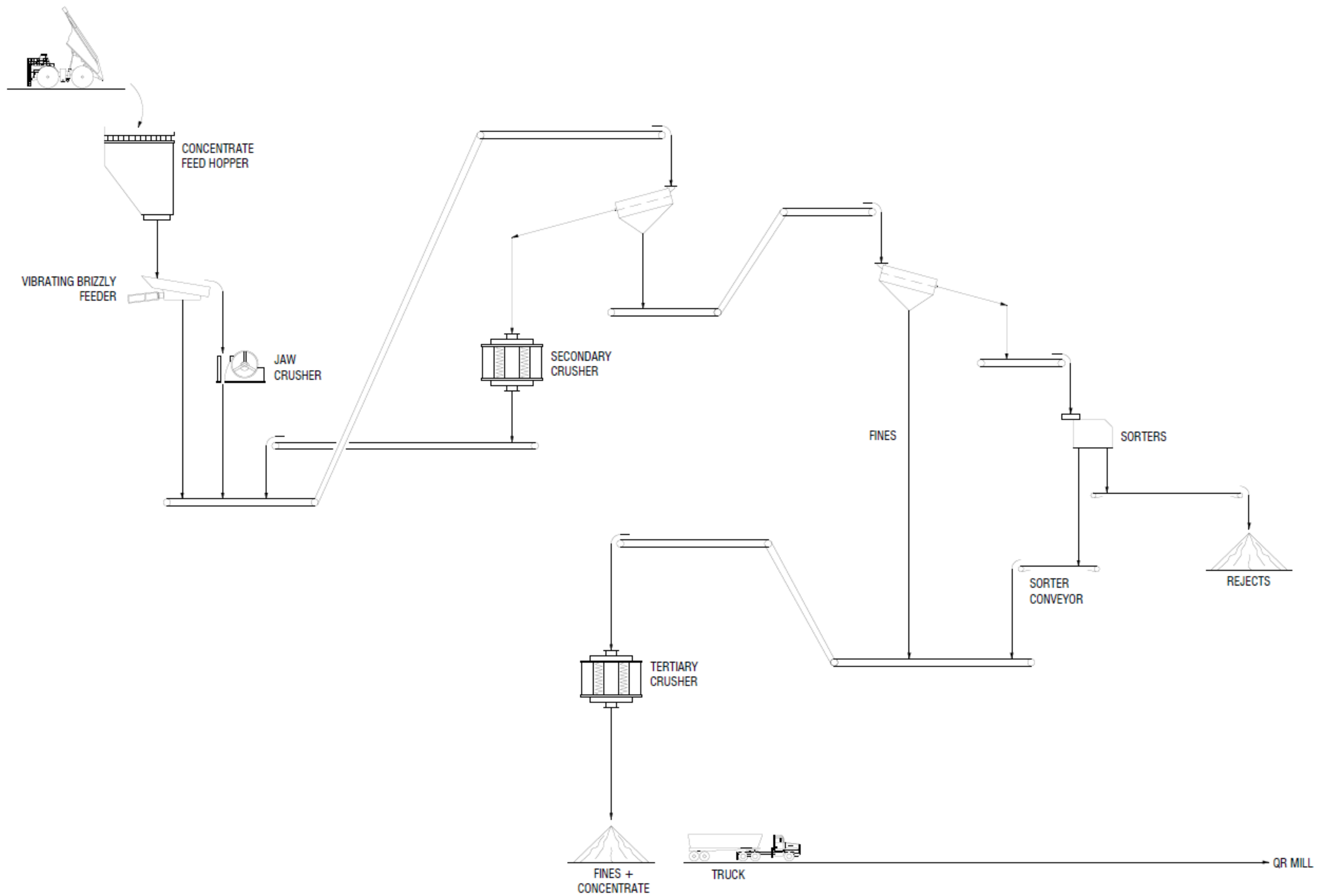


Figure 17-1: Bonanza Ledge Site simplified process flow diagram

17.3.1. Crushing and Screening

The crushing and screening circuit will be a mobile unit supplied by a sub-contractor. The unit will consist of a jaw crusher, two cone crushers, a vibrating grizzly, two screens, and the associated conveyors.

The run of mine ("ROM") material will be dumped into a hopper that will feed onto the vibrating grizzly. The grizzly oversize will be fed to a jaw crusher and the product will be fed into the first sizing screen. The secondary cone crusher will operate in a closed circuit. The secondary cone crusher will discharge into the first sizing screen, with the screen oversize feeding the crusher, and the screen undersize feeding the second sizing screen. The targeted particle size is 40 millimetres ("mm"). The second sizing screen has two decks: the top deck will have an opening size of 45 mm, and the bottom deck will have an opening size of 15 mm. The second sizing screen oversize will feed the mineral sorters, and the undersize will be combined with the mineral sorter concentrate and fed to the tertiary cone crusher. The tertiary cone crusher, targeted particle size of 10 mm. The tertiary crusher product will be stockpiled and hauled by truck to QR Mill.

17.3.2. Mineral Sorting Circuit

One existing mineral sorter from pilot unit and one new mineral sorter will be used. The mineral sorter technology used will be a twin sensor x-ray and laser technology. The mineral sorter concentrate will be sent to the tertiary crusher.

17.4. Quesnel River Mill

The QR Mill is located near the municipality of Quesnel. The plant started operation in the mid-1990s, with an initial flowsheet using grinding, gravity concentration, cyanide leaching, and carbon-in-pulp adsorption. The QR Mill will be upgraded to process the pre-concentrated material from both the Bonanza Ledge Site and Mine Site Complex concentrators. The QR Mill concentrator simplified flowsheet is presented in Figure 17-2.

The Carbon-in-Pulp Circuit and the tailings dewatering circuit will install a new building located at the side of the actual leach and detox circuit to allow gravity flow between the different circuit.

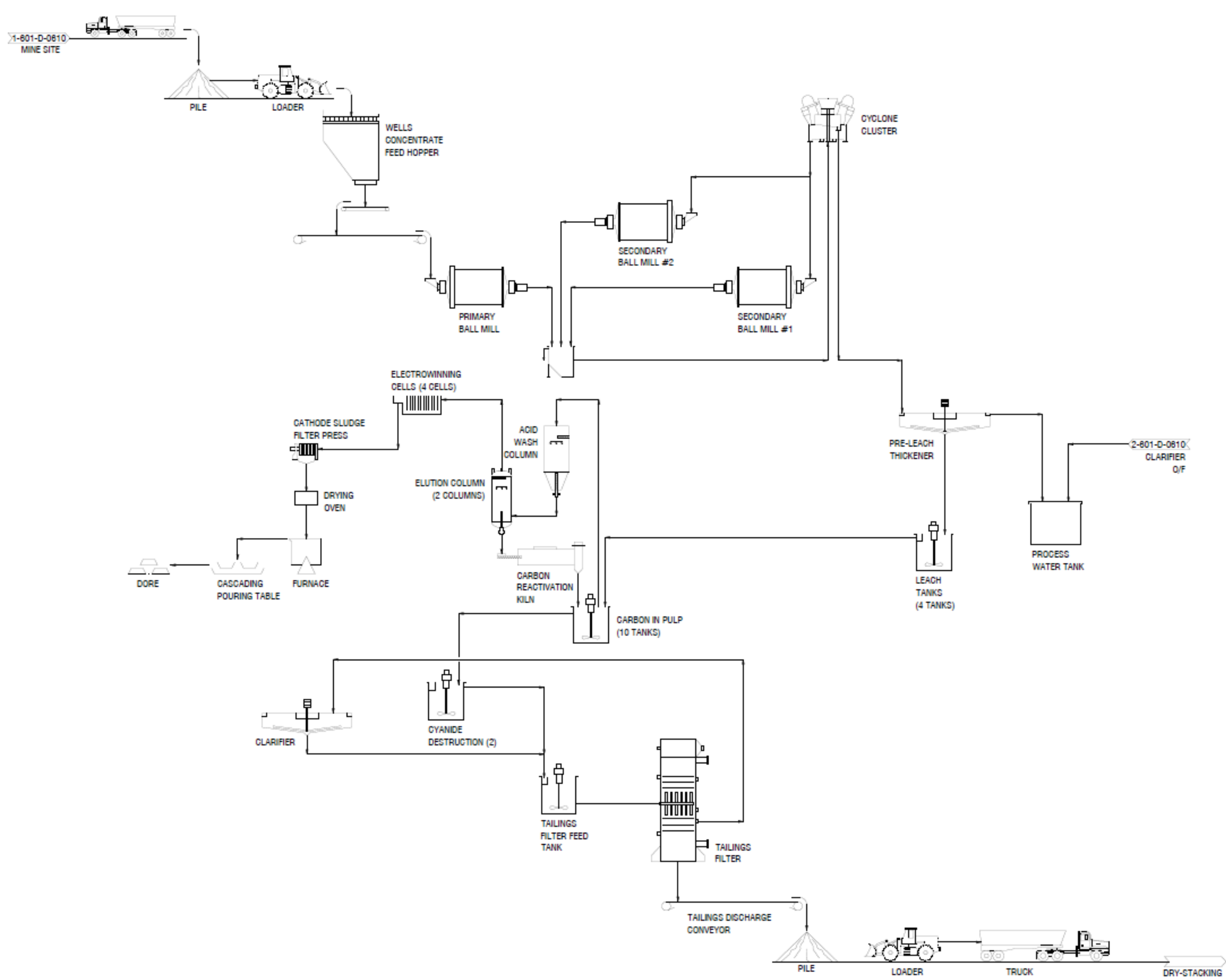


Figure 17-2: The QR Mill simplified process flow diagram

17.4.1. Concentrate Unloading, Storage, and Handling

The pre-concentrated material will be dumped by truck into a new storage shed with capacity to store 5 days worth of feed to the QR Mill. The material in the storage shed will be used to feed the QR Mill when the road between Wells and QR Mill is closed. A loader will be used to load the concentrate from the storage shed into the feed hopper.

The feed system includes a hopper and a feeder. The existing hopper will discharge directly onto the existing belt conveyor that feeds the primary ball mill.

17.4.2. Grinding Circuit

The grinding circuit is composed of two existing identical 3.96 metres ("m") long by 3.05 m diameter ball mills with single-pinion 450 kilowatt ("kW") motors, running in series and a new ball mill 350 kW in parallel of the secondary ball mill. The primary ball mill operates in open circuit is fed from the concentrate feed hopper and discharges into the cyclone feed pump box. The secondary circuit is composed of two ball mills in parallel operates in closed circuit with three new cyclones of 375 mm diameter. Two cyclones operating and one cyclone standby.

The average cyclone overflow product is designed to be a P_{80} of 45 microns ("µm") at a circulating load of 200% of fresh feed. The cyclone overflow is piped to flows by gravity to the pre-leaching thickener. The cyclone underflow will be returned to the secondary ball mills.

17.4.3. Thickening, Leaching, and Carbon-in-Pulp Circuits

The cyclone overflow flows to a new 10 m diameter high-rate thickener. Flocculant is added to the thickener feed box.

The thickener underflow will be pumped to the leaching circuit. The leaching circuit consisting of four existing 9.1 m diameter tanks where cyanide and lime are added. Slurry will flow from one tank to the other by gravity and each tank can be by-passed for maintenance. Each tank is equipped with an agitator mechanism and compressed air lines. The leach tanks will be refurbished at the rate of one per year for the first four years of the Project. The thickener overflow will be used as process water.

The discharge of the leaching circuit will feed by gravity into a new carousel-type carbon-in-pulp ("CIP") circuit. The circuit is composed of ten tanks. The carousel-type circuit allows the carbon to be removed from one single tank once per shift, for a total of two carbon removals per day with a total of six tonnes of carbon. The advantage of the carousel-type CIP is that it will reduce carbon attrition and allow for lower gold losses.

The CIP tails flow over a vibrating safety screen to recover any carbon particles before proceeding to detoxification.

17.4.4. Elution and Carbon Regeneration Circuits

The entire elution and carbon regeneration circuit will be replaced to increase the gold treatment capacity, except for the regeneration kiln and heating skid, which were replaced in early 2020.

This upgrade includes the following major equipment: the acid wash column, elution column, fine carbon tank, barren solution tank, acid wash tank, acid neutralization tank, quench tank, fine carbon filter press, attrition tank, and electrowinning cells.

The loaded carbon from the offline CIP tank will be pumped onto a screen, which returns the underflow slurry back to the CIP feed tank. The overflow carbon falls into a loaded carbon holding tank that will feed the acid wash column, which uses nitric acid to eliminate carbonates. The washed carbon will be transferred to one of two operating elution columns.

The elution column will operate in batch cycles using the ZADRA process which uses a high-temperature, high-pressure solution of sodium cyanide and caustic soda to desorb gold from the carbon. The elution solution will be prepared in the elution solution tank. The elution solution will be pumped through a lab heating heat exchanger and feed the elution column. Under the right temperature and pressure conditions in the elution column, gold desorbs from the loaded carbon and dissolves in the elution solution. The pregnant solution will flow out from the top of the elution column and will be cooled through the trim heat exchanger before being pumped to the electrowinning cells.

Carbon from the elution column is pumped to a dewatering screen where the oversize feeds the regeneration kiln and the undersize flows to the carbon fines tank. The regenerating kiln burns off organic contaminants absorbed onto the carbon surface.

The regenerated carbon from the kiln is cooled in a quench tank and returned to the carbon sizing screen that feeds the offline CIP tank. Fresh carbon will be fed to an agitated carbon attrition tank and pumped to carbon sizing screen as required. Carbon fines are collected in the fine carbon tank. Carbon fines are recovered at the bottom of the tank, filtered using a filter press, and bagged to be sold.

17.4.5. Refinery Circuit

The cooled pregnant solution from elution is pumped to the gold refinery into four new electrolysis cells running in parallel.

The electrowinning cells will operate at 9 volts ("V"). A fan will be used to evacuate fumes from both electrowinning cells.

The gold sludge from the electrowinning cells will be removed from the cathodes in a wash booth and will be pumped to the new sludge filter press. The filter cake will be dried and melted with flux in a propane furnace to produce doré.

17.4.6. Cyanide Destruction Circuit

The CIP tails from the safety screen underflow pump box will be pumped to two new cyanide destruction tanks where sodium metabisulfite and air are used to destroy the cyanide in solution. The new tanks will be installed in the same location of the existing tank.

SO_2/Air cyanide destruction method will be used to reduce cyanide concentrations to environmentally acceptable levels. Sodium metabisulphite ("SMBS") will be used as the SO_2 source oxygen as oxidation agent, copper sulfate as a catalyst and lime to control pH. Once the cyanide levels are reduced, the tailings slurry will be pumped in the dry stacking area.

17.4.7. Tailings and Dry Stacking Circuit

The new dry stacking circuit will be composed of one filter press, conveyors, and a clarifier. The Filter is equipped with two air compressors and an air receiver.

The tailings from the cyanide destruction circuit will be pumped to an agitated filter feed tank. Filtration will increase the slurry weight percent solid from 48% to 89%.

Filter cake will be discharged onto a belt conveyor located under the filter. From this conveyor, the filtered cake is discharged into a tailings storage building where it will be loaded by a loader into trucks to be hauled to the filtered stack tailings storage facility.

Reclaim water will be used to wash the press filter cloths. The cloth wash and the core wash water will be provided via the reclaim water tank. All water used for core and cloth wash is returned to the filtrate tank and sent to the clarifier.

The existing pre-leach thickened will be refurbished and repurposed to serve as a clarifier for the tailings filtrate water. The clarifier underflow will be pumped to the filter feed tank and the overflow will report to the process water tank.

17.4.8. Water and Air Services

The process water tank will collect water from the pre-leach thickener and clarifier overflow and supplemented with reclaim water when required. Process water will be used for the grinding circuit, flocculant and thickener dilution, screen wash water, carbon quench water, and for electrowinning tails.

The reclaim water tank will receive water from the water treatment plant, the south seepage pond, and the heat exchangers. Reclaim water will be used in the tailings filter as manifold and cloth wash water, gland seal water, reagent mixing, acid dilution, and for spray bars.

One new air dryer and instrument air receiver will be added to the existing process air system.

17.4.9. Reagent System

Anti-scalant will be received in totes and will be pumped by three pumps to the elution solution tank and the process and reclaim water tanks. The totes will be located near the delivery points to reduce the piping requirements.

The flocculant, copper sulphate, and SMBS systems will include a preparation unit consisting of an agitated mixing tank, a transfer pump, a distribution tank, and two operating metering pumps; the flocculant system will include one standby pump. The flocculant system will be used for both the pre-leach thickener and the clarifier.

Nitric acid will be delivered in drums and transferred into a storage tank. Any fumes will be exhausted with a fan to the atmosphere and a dedicated spillage pump will pump any spills back into the storage tank. A single pump will pump the acid to the acid wash tank.

The existing lime and cyanide circuits will be used.

17.5. Concentrator at the Mine Site Complex

The surface infrastructure at the Mine Site Complex is composed of four main areas: mineral sorting, grinding-flotation, concentrate dewatering, and the paste plant. The Mine Site Complex concentrator simplified flowsheet is presented in Figure 17-3.

The grinding-flotation concentrator is designed for a throughput up to 230 tonnes per hour (“tph”). The concentrate from the grinding-flotation circuits of Mine Site Complex will be discharged into trucks and transported to the QR Mill.

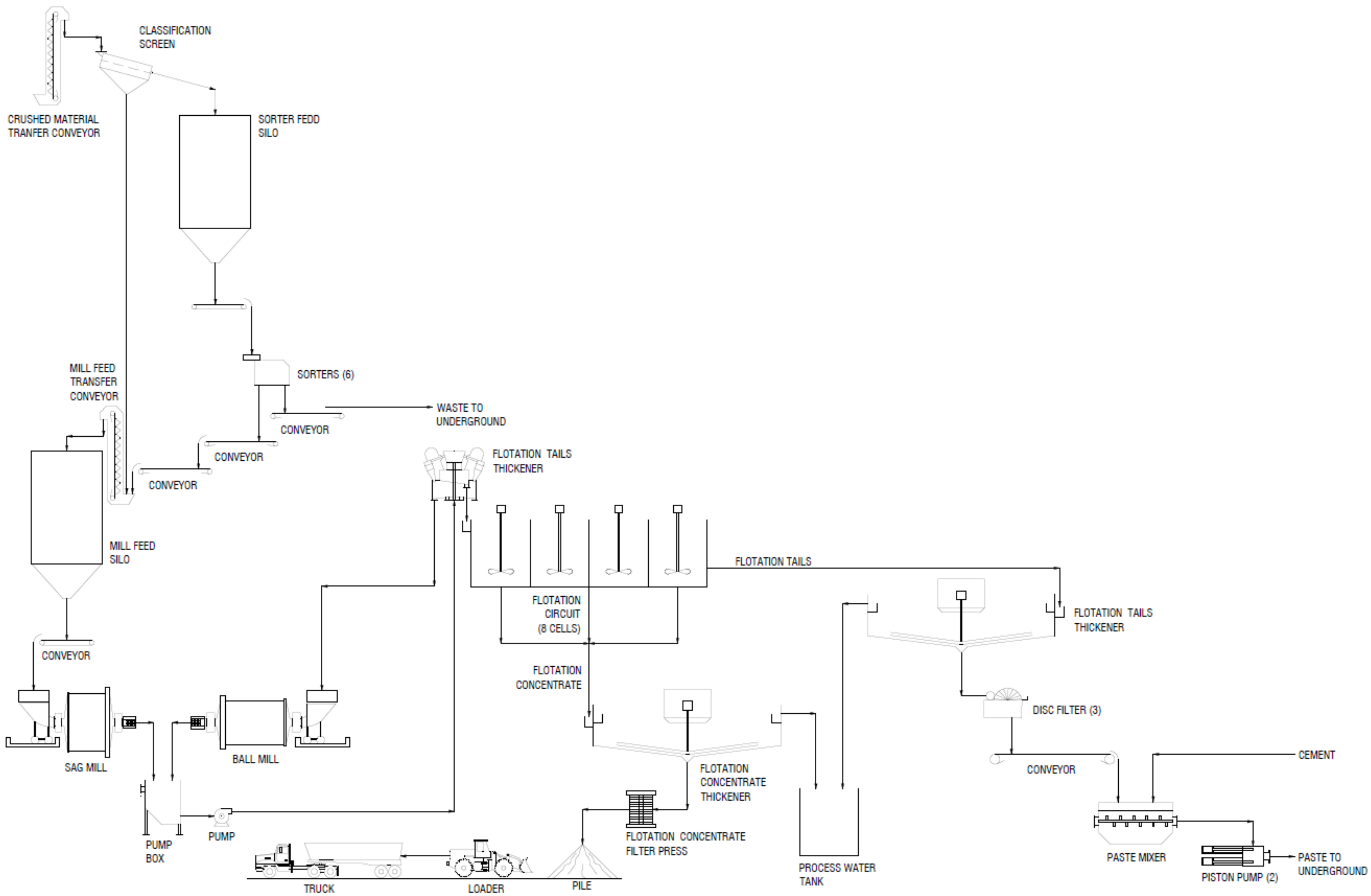


Figure 17-3: Mine Site Complex simplified flowsheet

17.5.1. Screening Circuit

The screening circuit consists of a vibrating screen that will be installed before the mineral sorting circuit. The vibrating screen will be fed with the crushed product from the underground crushers. The screen undersized portion (<15 mm) will fall on a belt conveyor to a fines storage bin. The screen oversized portion will be sent to the mineral sorter feed bin.

17.5.2. Mineral Sorting Circuit

The mineral sorting circuit is designed to sort up to 417 tph of coarse crushed mineralized material. The mineral sorter technology used will be a twin sensor x-ray and laser technology. The mineral sorter feed bin will discharge into six chutes, each chute will discharge onto its own belt feeder into a head chute and into one of six mineral sorters. Two of the six mineral sorters will be repurposed from the Bonanza Ledge Site and will be installed during the ramp up period. The mineral sorter concentrate mass pull is designed for 40%. The mineral sorter concentrate will be sent to the fine storage bin and feed the grinding circuit.

17.5.3. Grinding Circuit

The grinding circuit will be composed of a 3.12 m long by 6.70 m diameter semi-autogenous grinding ("SAG") mill with a 2,500 kW motor and an 8.23 m long by 4.57 m diameter ball mill with a 2,500 kW single motor. The ball mill will be operated in closed circuit with three cyclones of 720 mm diameter (two cyclones operating and one cyclone standby).

The grinding circuit will be fed by the fines from the screening circuit and mineral sorting concentrate. The production rate and availability are designed to be 230 tph and 92%.

The average cyclone overflow product is designed to be a P_{80} of 100 µm at a circulating load of 250% of fresh feed. The cyclone overflow gravity feed a conditioning tank prior to the flotation circuit. The cyclone underflow will be returned to the ball mill.

17.5.4. Flotation Circuit

Flotation reagents will be added to a conditioning tank. The conditioning tank retention time is designed at 4 minutes. From the conditioning tank, the slurry overflow by gravity into eight 30 cubic metre ("m^3") flotation tank cells with a total of 28 minutes retention time. The flotation circuit is designed to recover 20% of the feed mass.

The reagents used in the pyrite flotation process are MIBC (methyl isobutyl carbinol) as frother and PAX (potassium amyl xanthate) as collector. The flotation is performed at natural pH, which is between 7.5 to 8.5, no lime is added to the flotation.

The concentrate will be dewatered prior to trucking to QR Mill. The flotation tailings will be pumped to the paste plant thickener and used as paste backfill for the mine.

17.5.5. Flotation Concentrate Dewatering

The flotation concentrate will be pumped to a 15 m diameter high-rate thickener where the slurry will be thickened to 62% solids. A flocculant preparation system will supply flocculant to both the concentrate and paste plant thickeners.

The thickener supernatant water will overflow to the process water tank to be recycled into the process.

The thickened concentrate will be pumped to a filter feed tank. One vertical filter press operating in parallel will be used to dewater the concentrate to approximately 92% solids. The filter cake will be conveyed to the flotation concentrate stockpile. The concentrate will be loaded with a loader into trucks and sent to QR Mill. The filtrate will flow into the filtrate tank and will be pumped back to the thickener feed box.

17.5.6. Flotation Tailings Dewatering

The flotation tailings will be pumped to a 20 m diameter high-rate thickener where the slurry will be thickened to 62% solids. The flocculant will be supplied from the same system as for the concentrate dewatering.

The thickener supernatant water will overflow to the process water tank to be recycled into the process.

The thickened tailings will be pumped to a filter feed tank. Two operating and one standby by disc filters will be used to dewater the tailings to approximately 82% solids. The filtered cake will be conveyed directly into the paste mixer.

17.5.7. Paste Production

The filtered flotation tailings will be mixed with cement slurry to form a paste that will be pumped underground by one operating one standby piston pumps.

The dry cement will be stored in a silo outside and will be conveyed into a cement mixing tank where process water is added to create the cement slurry.

The paste mixer has a minimum residence time of 3 minutes and will discharge by overflow into the paste hoppers above the paste pumps. The paste hoppers have a residence time of 1 hour. The paste piston pumps have an operating pressure of 90 bar. The paste pumps will pump to one operating and two standby boreholes.

17.5.8. Water and Air Services

The process water tank will collect water from the paste plant and concentrate thickener overflow and supplemented with fresh water when required. Process water will be used for the grinding circuit (make-up water, trommel sprays), flotation launder water, flocculant dilution, filter press core and wash water, and paste plant (cement mix and make-up water). Any excess process water will be sent to the water treatment plant.

The freshwater tank will receive water from the underground mine. Fresh water will be used in the concentrate filters as compression water, gland seal water, reagent mixing, and for washing in the paste mixer.

One duty and one standby high-pressure air compressor will be installed to supply concentrator air. Instrumentation air will be supplied from the same air compressors connected to a common air dryer. Compressed air for each mineral sorter will be supplied by a dedicated air compressor, dryer, and receiver set. Compressed air for each concentrate filter press will be supplied by a dedicated air compressor and receiver set. One duty and one standby air compressor will be installed to supply the tailings disc filter air receivers, and one air receiver will be installed for each disc filter. Flotation air will be supplied by one duty and one standby air blower.

17.5.9. Reagent System

Flocculant and PAX systems will include a preparation unit consisting of an agitated mixing tank, a transfer pump, a distribution tank, and three metering pumps (two operating and one standby). The MIBC will be received in totes and will be distributed to the flotation circuit by three metering pumps (two operating and one standby).

17.6. Concentrator Personnel

A list of the planned concentrator personnel for the two concentrators is provided in Table 17-2.

The QR Mill will share staff with the Mine Site Complex concentrator. The superintendent, general foreman, metallurgist, and project engineers will be located at the QR Mill and will supervise the Mine Site Complex team in their respective fields of expertise.

Table 17-2: Concentrator personnel

Description	Total (Phase I)	Total (Phase II)	Bonanza Ledge Site	Wells Mill	QR mill
Mill Superintendent	1	2	-	1	1
Maintenance Superintendent	-	1	-	1	-
General Foreman	2	1	1	-	1
Administrative Support	1	2	-	1	1
Metallurgist	2	2	-	-	2
Metallurgical technician	2	4	-	2	2
Supervisor operation and maintenance	3	5	-	2	3
Mechanical planner	1	2	-	1	1
Automation and control technician	1	3	-	2	1
Subtotal staff	**13**	**22**	**1**	**10**	**12**
Mill shift leader (solutions)	4	4	-	-	4
Refiner	2	2	-	-	2
Mineral sorter operator	4	4	4	4	-
Grinding operator	4	8	-	4	4
Flotation operator	-	4	-	4	-
Dewatering and paste plant operator	-	4	-	4	-
Dewatering and tailings pond operator	4	4	-	-	4
Control Room operator	4	8	-	4	4
Mill helper	12	14	4	6	8
Loading station operator	4	6	-	2	4
Subtotal operations	**38**	**58**	**8**	**28**	**30**
Mechanic	14	32	2	20	12
Electrician	5	8	1	4	4
Subtotal maintenance	**19**	**40**	**3**	**24**	**16**
Total	**70**	**120**	**12**	**62**	**58**

17.7. Power, Reagents and Consumables

17.7.1. Fuel

The mobile crushing and screening circuit at Bonanza site will be operated on self-sufficient power and will not be connected to the grind power. Fuel consumption has been estimated 3,050 liter per day. Mineral sorter area will be connected to electrical distribution network.

17.7.2. Power

Power consumption for the concentrators has been estimated with new and existing equipment power.

Power consumption for Bonanza mineral sorter area and at the Wells Site pre-concentrator has been estimated using the load list and the expected utilization factors.

Historical power consumption at QR Mill has been used to estimate power consumption of existing equipment that will remain in the flowsheet. The power consumption of new equipment has been estimated using the load list, using expected utilization factors. Where new equipment is replacing existing equipment, the power consumption is estimated using the load list and the expected utilization factors.

The average power consumption has been estimated annual electrical consumption 240 kilowatt hours ("KWh") for the Bonanza Ledge Site, 24.5 gigawatt hours ("GWh") for QR Mill, and 106 GWh for the Mine Site Complex.

17.7.3. Reagents, Cement, and Consumables

Estimated consumption rates of reagents and consumables are listed in Table 17-3. It should be noted that the consumption has been estimated based on laboratory testwork and QR mill historical data.

Table 17-3: Consumption of reagents and consumables

Reagent or Consumable	Unit	Phase I	Phase II
Grinding media (4.5 in)	kg/t	-	0.56
Grinding media (2 in)	kg/t	-	0.81
Grinding media (1 in)	kg/t	3.10	1.70
Sodium cyanide (100% NaCN)	kg/t	0.91	1.23
Lime (CaO)	kg/t	0.71	1.48
Flocculant	kg/t	0.03	0.05
Carbon	kg/t	0.04	0.04
Caustic soda (NaOH 50%)	kg/t	0.97	0.97
Sodium metabisulphite (SMBS) ($Na_2S_2O_5$)	kg/t	1.30	1.30
Nitric acid (HNO_3)	kg/t	0.58	0.58
Copper sulphate ($CuSO_{4.5}H_2O$)	kg/t	0.03	0.03
MIBC	kg/t	-	0.04
PAX	kg/t	-	0.10
Oxygen	kg/t	1.20	1.20
Anti-scalant	kg/t	0.02	0.02
Cement (paste backfill)	kg/t tailings	-	29.8

18. Project Infrastructure

Osisko Development Corp.'s ("ODV") Cariboo Gold Project ("the Project") surface infrastructure and services are designed to support the operations at the Mine Site Complex and at the Quesnel River Mill ("QR Mill"). The Project also includes off-site infrastructure, such as a new 66 kV / 138 kV transmission line between the Barlow substation, near Quesnel, British Columbia ("BC"), and the Mine Site Complex, as well as a 66 kV / 138 kV step-up substation just outside of Quesnel, and within the proposed right of way. Warehousing for major components and consumables will be provided by third parties in Quesnel and / or Prince George.

The Project will be comprised of three different sites: the Mine Site Complex, near the District of Wells, BC ("Wells"), the Bonanza Ledge Site, and the QR Mill Figure 18-1. The Mine Site Complex is located 111 kilometres ("km") east of QR Mill and a distance of 3.5 km separates the Mine Site Complex from the Bonanza Ledge Site.

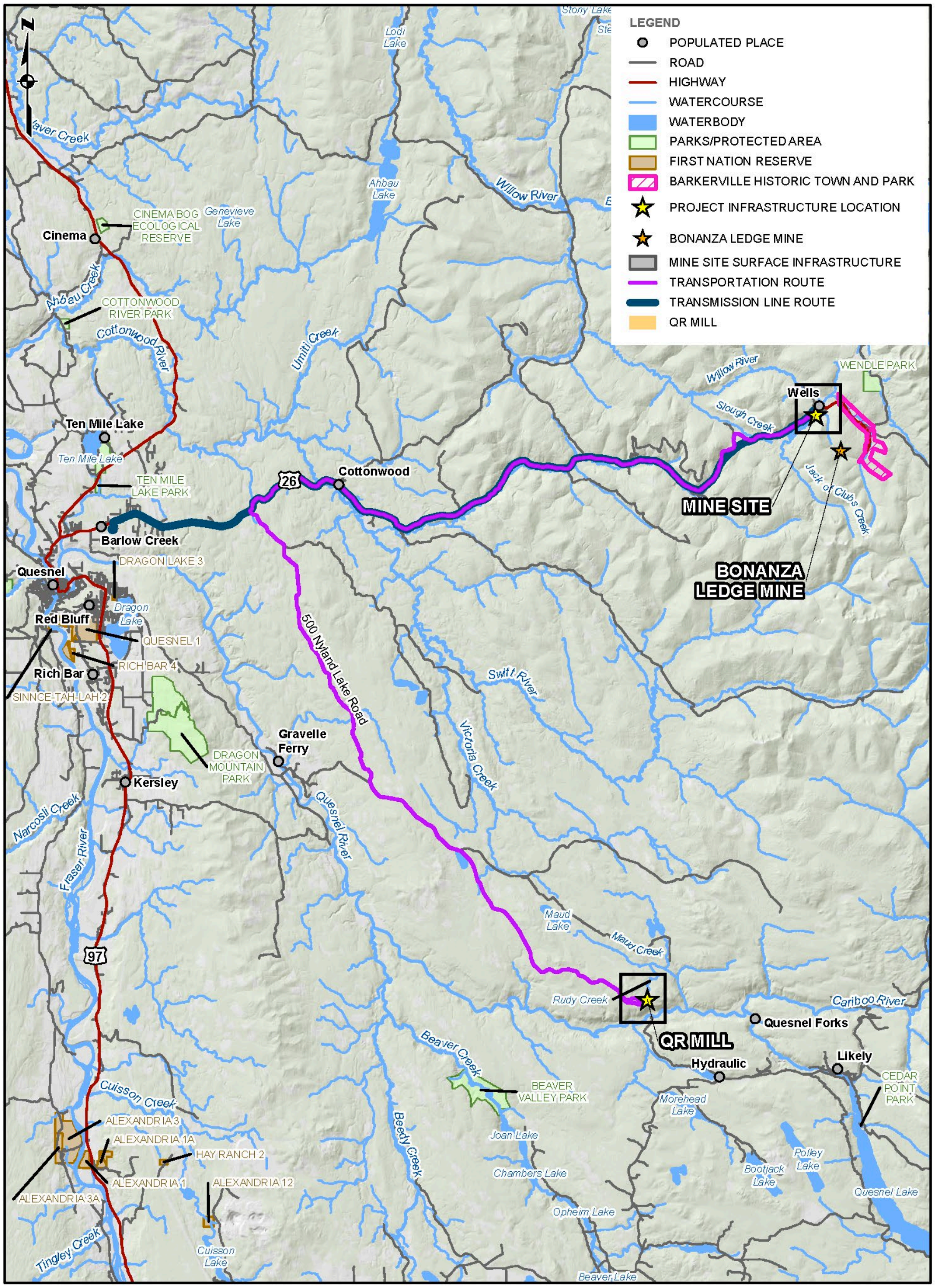


Figure 18-1: Regional setting

18.1 Overview Description

The Project envisions the construction and upgrades of the following key infrastructure items:

- Mine Site Complex (Wells):
  - Camp Access Road and Parking Areas;
  - Tunnel portals and arch structures for the underground mine;
  - Main Ventilation and Mine Heating Infrastructure;
  - A Services Building area including:
    - Vertical Conveyor moving material from the underground Crusher to surface;
    - Mineral Sorter;
    - Concentrator capable of producing a gold flotation concentrate;
    - Site offices;
    - Maintenance Shop and Warehouse Facilities;
    - Mine Dry and Mine Rescue Services.
  - Fuel Storage (diesel and propane) and Handling Facilities;
  - Worker Accommodation;
  - Electrical Substation;
  - Security Facilities and Main Entrance Gate;
  - Firewater Pumping Station and Firewater Distribution Piping System;
  - Treated Discharge Line from the Mine Site Water Treatment System ("WTS"), connecting to a diffuser in Jack of Clubs Lake;
  - New bridge over the Willow River ("Willow River Bridge");
  - Fiber Optic Network interconnecting the main areas of the Mine Site Complex;
  - New Potable Water Well and associated Potable Water Pipeline;
  - Sewage treatment system;
  - Island Mountain Portal Access Road;
  - Valley Portal and Island Mountain Portal;
  - Surface Water Diversion Channels, Collection Channels, Ponds, Pumping Stations, and Pipelines;
  - Bulk Fill Area ("BFA");
  - Site electrical distribution and lighting;

- Bonanza Ledge Site:
  - Waste rock storage facility ("WRSF");
  - Water management infrastructure - surface water diversion channels, collection channels, pumping stations, and pipelines;
  - Water treatment systems (expected to be retained from current operations), with appropriate upgrades, and revised water management plan.
- QR Mill:
  - Upgrade of the existing QR Mill to process the high-grade flotation concentrate from the concentrator at the Mine Site Complex;
  - Filtered Stack Tailings Storage Facility ("FSTSF");
  - Water management – surface water diversion channels and collection channels;
  - Water treatment systems (expected to be retained from current operations), with appropriate upgrades.18

18.2 Mine Site Complex

The Mine Site Complex is located in Wells, BC, approximately 80 km east of Quesnel, and approximately 350 metres ("m") west of the nearest permanent residents in Wells. A new camp is planned to be constructed for employees and contractors. Existing infrastructure that ODV owns in Wells will be used to accommodate the workforce required during construction and during operations. Access to the Mine Site Complex will be from Quesnel on Highway 26.

The following Table 18-1 summarizes the main Mine Site Complex surface components and their associated sub-components.

Table 18-1: Mine Site Complex Project components

Components	Sub-Components	
Surface	Fuel storage and handling facilities Worker accommodation Sewage and potable water treatment Mine dry and mine rescue services Maintenance shop and warehouse Offices & Dry	Main ventilation and mine heating infrastructure Main access road Security facilities and main entrance gate Fire water pumping station and fire water distribution piping system

Components	Sub-Components	
Mineral Processing	Surface concentrator, including mineral sorting, grinding and flotation process equipment, concentrate dewatering equipment, paste backfill plant, binder silo, and mineralized material	Metallurgical Lab to support process operations
Mine Waste Management Facilities	Overburden and soil stockpile	Bulk Fill Area;
Water Management Facilities:	Water storage and supply (potable and non-potable) Non-contact water diversions Contact water management structures	Pumps, pipelines, and collection systems for the water management systems Water treatment facilities Treated Water discharge
Power supply, IT & Telecom	Connection of the regional power grid through a 66 kV / 138 kV Transmission Line A 66kV / 138 kV substation at kilometer seven of the transmission line A 138 kV / 13.8 kV substation at the Mine Site Complex	Temporary Power Supply via diesel generator Emergency generators to maintain minimal site and underground services during a power outage A high-speed internet fibre optic connection An Integrated Local Operation Centre

18.2.1 Geotechnical Studies

18.2.1.1 Surficial Geology

The surficial geology of the Mine Site Complex, as well as most of the Canadian Cordillera, is controlled by the processes resulting from the piedmont glaciers.

18.2.1.2 Mine Site Complex Geotechnical Investigation

At the Mine Site Complex, a geotechnical site investigation was conducted, which included desktop study, intrusive drilling, and test pitting. Interpretation of results focused on the geochemical characterization of overburden, historical waste (waste rock and tailings) and in situ bedrock as well as to establish the depth and profiles of all of these material units to determine the suitability of such materials for foundation assessment and stability of both excavated and fill slopes. Geotechnical drilling and test pitting generally confirmed in situ surficial sediments are till. Historic waste rock is piled near the planned tunnel portal elevation. Beyond the toe of the pile, the low wetland area consists of a surficial layer of outwash material and deposited historic mill tailings.

18.2.2 Existing/Available Infrastructures at Mine Site Complex

ODV is currently operating the Bonanza Ledge Mine from an office complex set across Lowhee Creek from the District of Wells.

Existing infrastructure related to the Mine Site Complex include:

- Access road: In general, access to the site is from Highway 26, travelling east from Quesnel to Wells, BC. The Project access will require a new intersection located before the entrance of the community. The access road will cross the Willow River to the south over a new bridge structure ("Willow River Bridge") and then climb to the Services Building area and Workers Accommodation over a distance of 900 m. The new access road will provide two-lane access from Highway 26 to the Mine Site Complex.
- Mine Site Complex camp and offices: ODV has existing Worker Accommodations close to the current ODV office on Ski Hill Road and plans to use this accommodation area during Project construction.
- First Aid/Emergency service: The ODV First Aid/Emergency Services office will be located in the office complex of the Services Building. The existing First Aid/Emergency Services office located on Ski Hill Road in Wells will be used during construction until the new Services Building is operational. Bulk explosive storage and magazines: ODV has an existing explosive storage with adequate capacity to support exploration and pre-production development of the Project. Once the underground storage is built, the existing explosive storage area will no longer be used for operations.
- Telecommunication services: ODV's Bonanza Ledge Mine operations has existing telecommunication services available for construction activities at the Bonanza Ledge Site, including internet, telephone, and fibre optic, and they are available for the start of mine construction. Mine operating requirements and capacity have been defined and will require new communications services, described in Section 18.2.14.6.

18.2.3 Site Preparation at the Mine Site Complex

The Mine Site Complex is proposed to be constructed on site of the historical Cariboo Gold Quartz Mine. The site is covered by vegetation with limited immature coniferous and deciduous trees. All infrastructure will be new and will require minimal clearing to establish the Mine Site Complex footprint. Where possible, excavated material from the Services Building, Valley Portal, and Camp Access Road will be placed as backfill for civil works including the Camp Access Road, the Services Building pad, and water management infrastructure.

18.2.4 Roads

18.2.4.1 Camp (Main) Access Road

Following the Willow River Bridge, the Camp Access Road will be capped with gravel and will span to reach the Services Building area, where visitors and vehicles will go through a security check point before being granted access to the premises. Design of the Camp Access Road will account for on-highway rated traffic only; no off-road vehicle loading is expected.

The approximate total length of the Camp Access Road is 900 m, from Highway 26 through the Services Building area and ending at the Camp.

18.2.4.2 Crossing Structure

The Willow River Bridge is designed as a single span bridge made of steel girders with precast concrete deck of approximately 24 m.

18.2.4.3 Access Gate

The access gate will be located near the Services Building. The purpose of the access gate is to control incoming and outgoing traffic to/from the Mine Site Complex.

18.2.4.4 Light Vehicle Roads

The Camp Access Road from the Services Building area will climb past the Valley portal to the Workers Accommodation area. This portion of the Camp Access Road will be constructed as a local road for light vehicle traffic only.

18.2.4.5 Parking Area

Development of the Services Building area will include provision for parking of personnel vehicles. The parking area will be constructed according to applicable BC provincial regulation and safety standards.

The parking area will be located outside of the perimeter fence next to the Services Building.

18.2.5 Diesel Mobile Equipment

Mine Site Complex operations will require a select fleet of diesel mobile equipment on surface for the construction of the BFA, general maintenance of the site roads and operating spaces, the loading of concentrate into concentrate trucks, and for the other miscellaneous tasks in support of the underground mining operations. The following equipment are considered to support the operations:

- Front-end loader;
- Track Dozer;
- Motor Grader;
- Bobcat or skid steer;
- Forklift;
- Telehandler;
- Lighting Towers.

18.2.6 Mine Site Complex Operation Infrastructure

Mine Site Complex operation infrastructure will serve during mine construction and operation with sufficient area for material receiving and storage, tools, and work areas. The principal infrastructure includes:

- Valley Portal and Island Mountain Portal;
- Air Intake Raises;
- Services Building: Concentrator, Offices, Dry, Maintenance shop, and warehouse;
- Fuel storage and distribution (diesel and propane);
- Firewater for the Mine Site Complex.
- Sewage Treatment; and
- Potable Water Treatment and distribution.

18.2.6.1 Air Intake Raises

Ventilation raises will be installed for each of the underground zones. Each raise will include a fresh air intake fan and heater, a propane tank, and a concrete slab. Each ventilation raise area will be fenced for safety purposes. They will also serve as emergency egresses for the underground mine.

Existing access roads will be used to access the ventilation raises.

18.2.6.2 Fuel

The Mine Site Complex will be serviced by a 70,000 liter ("L") diesel fuel tank. The tank will be equipped with a pumping skid and a fuel unloading / loading concrete area to contain minor spills. The tank will be double-walled and a fuel metering system will allow the dispatch of fuel by operation area. A small 1,000 L gasoline tank will also be installed.

Propane tanks will be installed at multiple locations on site for to heat Worker Accommodation, the Services Building, and mineair. At the Services Building area, two tanks of 30,000 United States Water Gallons ("USWG") will be installed and used to feed Valley Portal fresh air intake heater and the Services Building with propane through underground buried propane lines. The following areas will also be equipped with propane tanks:

- Workers Accommodation – 1,000 USWG;
- Island Mountain Portal – 30,000 USWG;
- Mosquito Air Intake – 1,000 USWG; and
- Cow Air Intake – 1,000 USWG.

Arrangement of fuel storage will consider applicable regulations, such as required offsets, tertiary containment, and be covered by a prefabricated structure to mitigate accumulation of snow.

18.2.6.0 Firewater

A fire pump station will be located in the water treatment plant building. The water source for the fire water protection system will be the effluent of the water treatment plant, which will feed a 900 cubic metre ("m^3") steel tank, which will be equipped with a mechanical overfill to ensure the tank is always full. The tank will be connected to a pumping system comprised of a jockey pump, an electrical fire pump, and a diesel fire pump. A buried pipeline will distribute water to all main buildings, notably the Workers Accommodation and the Services Building.

18.2.6.1 Sewage Treatment

The sewage treatment system will be located south of the Services Building area. An underground sewage piping system will be established to collect sewage wastewater from the Workers Accommodation and the Services Building for treatment. A buried equalization tank next to the modularized sewage treatment system will collect wastewater from the underground piping system as well as from a vacuum truck. A feed pump will then pump the contents of the equalization tank to the sewage treatment plant, which will employ the membrane biological reactor ("MBR") technology with submerged ultrafiltration membranes. The effluent will meet the effluent standard limits of British Columbia.

18.2.6.2 Potable Water Treatment and Distribution

The Mine Site Complex will be serviced through an underground potable water distribution system. Raw water from a well located near the existing ODV exploration offices will provide the water source for potable water requirements for the Mine Site Complex. A submerged pump in the raw water well will pump raw water to a series of buffer tanks located in the potable water treatment plant. Water from the buffer tanks will then be treated with coagulant and sodium hypochloride, pressurized and sent to vessels containing greensand media. Following treatment through the sand filter, water will then undergo an ultraviolet ("UV") reactor treatment before being stored as potable water in distribution tanks. A set of pumps will pressurize the system and distribute water throughout the site via the underground buried piping network.

18.2.7 Services Building

The Services Building area on the Mine Site Complex houses the Concentrator, Offices, Dry, Maintenance shop, and warehouse.

18.2.7.1 Concentrator

The concentrator includes the following processing circuits: mineral sorting, milling, flotation, concentrate dewatering, paste backfill, and concentrate storage and loading for transportation of flotation concentrate to the QR Mill. The concentrator will be connected to the pre-fabricated offices and dry building through a corridor.

Figure 18-2 shows the layout of the concentrator area of the Services Building.

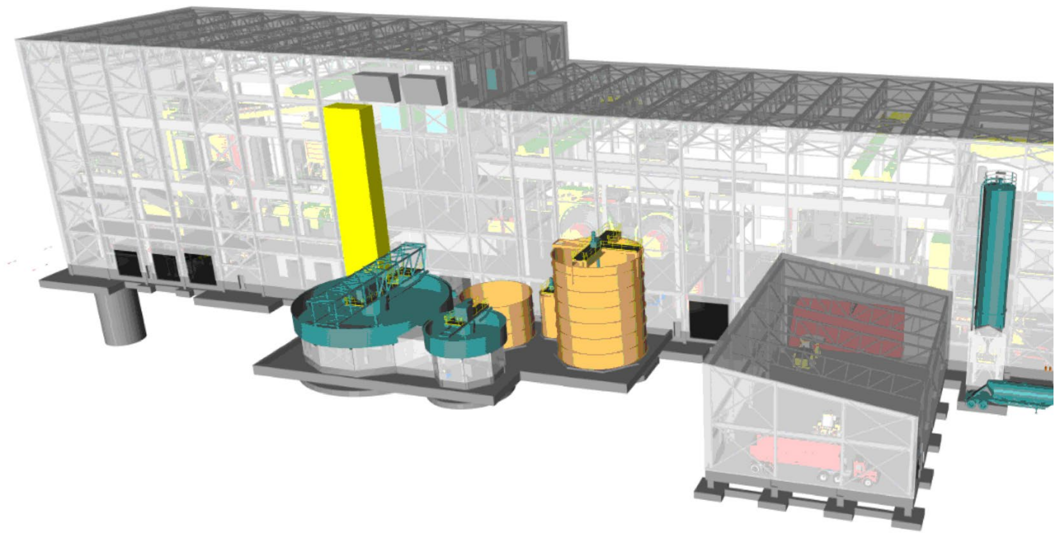


Figure 18-2: Concentrator area of Services Building Layout

18.2.7.2 Offices and Dry

The Services Building will be a two-storey, pre-engineered, and pre-fabricated modular building that will include site offices and dry. The offices, located on the first floor, will have an overall surface area of 1,400 square metres ("m^2"). Process and Mining operations will be headquarted in this building and supported by other departments such as health and safety, Information Technologies (IT), accounting, procurement, and security. The dry, having a surface area of 800 m^2, will be located on the second floor. The dry will be the buffer area between the process and mine facilities and the Workers Accommodation, which will be connected to the dry through an elevated walkway and staircase.

18.2.7.3 Maintenance shop and Warehouse

The surface maintenance shop and warehouse will be located in the Services Building. The building has a length of 36 m, and separated in two with a partition wall to separate the maintenance area from the warehousing area. The structure will be sized to provide working areas and space for secondary equipment. Both sections of the building will house offices and the maintenance shop will be serviced by a 5 tonne ("t") overhead crane.

18.2.8 Camp Infrastructure

Workers at the Mine Site Complex will be accommodated in a new camp ("Workers Accommodation") to be constructed on ODV property. The Workers Accommodation will be located uphill of the Services Building, to the southeast, and will be connected to the Services Building facilities through an elevated walkway. The Workers Accommodation will consist of 275 executive rooms, each with its own bathroom. There will be a main kitchen and dining room, a laundry facility, and a recreation center. The camp will be connected to services such as potable water, sewage, power and propane by buried services.

The planned location for the Worker Accommodations is currently occupied by ODV's drill core storage area. The banks of pallets with boxed drill core will be relocated to a new storage location to allow for the construction of the new camp.

18.2.9 Surface Water Management Strategy

The site is comprised of two main general areas:

- The Island Mountain Portal area, located north of the Highway 26 divide, which will include an access road up to the portal and an entry pad area next to the portal with separate lined area to be used as a temporary rock stockpile laydown area. This infrastructure will be constructed on partially exposed historical mine waste rock.
- The main Mine Site Complex / Valley Portal area, located south of the Highway 26 divide, which will include the BFA, the north and central mitigation berms, the proposed Mine Site Sediment Pond with retention dike and pump station, the proposed Camp Access Road (including the proposed bridge over the Willow River) and ramps that surround the BFA and provide entry to the Valley Portal, the Services Building (with associated concentrator), the WTS and nearby Workers Accommodation. The area will also include the downstream section of the proposed WRSF contact water pipeline from the Bonanza Ledge Site, which will ultimately discharge into the Mine Site Complex Sediment Pond, and the WTS diffuser pipeline that discharges treated effluent into Jack of Clubs Lake. The majority of Project infrastructure at this location will be located on brownfield sites that have been previously disturbed by historical mining operations; the water management layout will be designed such that existing patterns of seepage for the historical mine tailings and waste rock will remain separated from the project's proposed infrastructure as much as practical.

Both main areas within the Mine Site Complex will include surface water management systems, containing diversion channels to deflect upslope non-contact water from entering the site and collection channels to direct contact water within the site either to the proposed Mine Site Sediment Pond or other sumps. A Linear Low Density Polyethylene (LLDPE) liner will be installed at the contact between the existing ground and the proposed BFA, providing a low-permeability barrier as part of seepage and runoff management. The liner will extend to the sediment pond retention dike and is expected to be installed in advance of the BFA.

Contact water channels will be differentiated into either NPAG (Non-Potentially Acid Generating) or PAG (Potentially Acid Generating) pathways, depending on the type of material used to construct infrastructure within the catchments draining into these channels. PAG water will be directed to the proposed Mine Site Sediment Pond, while NPAG water will be monitored through smaller contact water sumps and may be discharged into the Willow River if relevant water quality criteria are met. For the purposes of this document however, NPAG water is assumed to be pumped to the proposed Mine Site Sediment Pond to be treated. The Mine Site Sediment Pond arrangement will include a pump station allowing water to be pumped to the WTS for treatment.

The proposed contact water treatment infrastructure for the Mine Site Complex at the WTS will be comprised of two specific treatment paths: a new proposed plant at the Mine Site Complex (referred to as Mine Site Complex WTS) with contact water treatment capacity of 600 m^3/hr primarily designed for treatment of the contact water pumped from the underground mine (see Section 18.2.11) as well as the surface contact water and the material sorter outflow, and the relocated Bonanza Ledge WTS (treatment capacity of 180 m^3/hr) that will be transferred to the Mine Site Complex once the Bonanza Ledge Site pipeline becomes operational, and will assist in the treatment of water on site. A combined maximum water treatment capacity of 780 m^3/hr will thus be available on site for both surface and underground water. Two main constant underground (U/G) dewatering rate scenarios for the underground workings were assessed in the preliminary water management structure design and water balance model: the average base case estimate of 382.5 m^3/hr and an upper hydraulic conductivity case of 532 m^3/hr (see Section 16.5).

The WTS will discharge treated water through a pipeline to the diffuser location, located approximately 200 m offshore into Jack of Clubs Lake. An emergency spillway channel will be constructed for the Mine Site Sediment Pond to safely discharge flows to Jack of Clubs Lake in the event of extreme conditions where the pond storage capacity would be exceeded. An option to discharge the treated effluent into Willow River near the outlet of the lake as a contingency in the event that there is interest in reducing loadings to Jack of Clubs Lake will be considered for the detailed design phase of the Project.

18.2.10 Water Management Infrastructure

This section summarizes the preliminary design basis for the proposed water management infrastructure needed to support the Project and preliminary sizing for the main basins proposed.

18.2.10.1 Design Events

18.2.10.1.1 Mine Site Water Conveyance Structures

Both the Joint Application Information Requirements and BC ENV Sediment Pond Design Guidelines (BC ENV 2015) identify the ability to convey the surface runoff from a 200-year return period storm event as a critical design criterion for mine surface water infrastructure. For the Mine Site Complex area of the Project, Golder (2021) compiled the maximum annual 24-hr precipitation depths from the ECCC published data for the Barkerville station (ECCC 2019a) and ran a frequency analysis to determine return period events for several yearly periods. Rainfall on snowmelt statistics are typically greater than rainfall only statistics at the Barkerville station, thus the 200-year return period rain on snow 24-hr event was retained as the criterion for the design of the surface water conveyance infrastructure.

18.2.10.1.2 Mine Site Water Retention Structures

The selection of an appropriate Environmental Design Flood (EDF) for contact water retention basins is site-specific according to the Canadian Dam Association (CDA) dam safety guidelines (CDA, 2019). The EDF return periods should typically range from 50 years to 200 years with no hard guideline on the specific event duration to use; the design criteria ultimately chosen depends on the assimilative capacity of the receiving environment and the capacity of the water treatment system.

The EDF design criteria chosen for the Mine Site Complex was a 200-year return period, rainfall on snowmelt event that will be managed within the Mine Site Sediment Pond, the Bonanza Ledge SCP and the Bonanza Ledge South Sump without overflow to the environment. A synthetic 200-year / 30-day duration rain on snowmelt event was created using the 200-year sub-daily to 30-day statistics in order to ensure the design would be based on the most critical event duration for each component of the water management system. Critical events duration for the three main ponds were found to be ranging from 3 to 15 days.

18.2.10.1.3 Climate Change Considerations

The climate resilience of the Project is currently being addressed by developing detailed, site-specific climate change projections for the Project and by using this climate information to develop modelling scenarios as part of the water balance work that will be prepared during the design and permitting stage, given that the majority of the infrastructure will likely remain active for several decades through post-closure.

At this preliminary stage of the Project, the potential climate change impact on the design event for the Mine Site Complex water conveyance structures was assessed by accounting for a 20% increase to the historical 200-year rainfall event, following Engineers & Geoscientists British Columbia (EGBC) Professional Practice Guidelines documentation for infrastructure design criteria influenced by climate change (EGBC 2020). Similarly, a 20% increase to the climate wet year determined from local historical daily precipitations was chosen to an additional climate change-inspired precipitation scenario was added to the Mine Site water balance simulations (wet-CC climate year; see Section 20 for more details), to test the modelled infrastructure under precipitation elevated beyond established historical levels.

For the Mine Site Complex water retention structures, the EDF criteria will be revisited once the climate change projections for the Project are finalized, during the detailed engineering phase of the Project.

18.2.10.2 Design Criteria

The following design criteria apply to the proposed bridges, collection ditches/channels, culverts, underdrain, sediment ponds and sumps at the Mine Site Complex.

18.2.10.2.1 Bridges

Bridges at river-road crossings will be designed based on the following hydraulic design criteria:

- Design flood of 100 years average recurrence interval (ARI).
- Freeboard between the Q200 water surface elevation (WSE) and bottom of the bridge girders: 0.5 m
- Flow reduction area: less than 20% of the river width at high water level.

18.2.10.2.2 Culverts

Culverts at channel/river-road crossings within the mine boundaries will be designed based on the following hydraulic design criteria:

- Design flood - surface runoff reporting from a 200-year, 24-hour storm event (i.e., rainfall on snowmelt, see Section 18.2.10.1.1), in accordance with BC ENV Sediment Pond Design Guidelines (BC ENV 2015).
- All culverts will be flowing at a maximum of 70% of their diameter for the design event (instantaneous flow).
- Embedment will be 150 mm: upstream and downstream inverts shall be 150 mm lower than channel bed.

- Minimum culvert diameter shall be 900 mm for ease of cleaning.
- Minimum culvert cover requirement to be evaluated based on maximum truck axle load design.

18.2.10.2.3 Contact Water Collection Ditches and Non-Contact water diversions

The ditch and channel design criteria presented in Table 18-2 apply to both contact and non-contact water infrastructure. The hydraulic capacity of all diversion and collection channels will safely convey the surface runoff reporting from a 200-year, 24-hour storm event (i.e., rainfall on snowmelt, see Section 18.2.10.1.1), in accordance with BC ENV Sediment Pond Design Guidelines (BC ENV 2015). Channel side slopes and invert will be designed to resist erosion for the same event.

Table 18-2: Design requirements for sizing ditches and channels

Parameter	Unit	Value
Minimum base width	m	0.5
Minimum freeboard	m	0.3
Minimum longitudinal slope	m/m	0.003
Maximum side slope (soil)	H:V	2.0:1
Maximum side slope (rock)	H:V	0.1:1
Maximum flow velocity	m/s	erosion protection dependant

18.2.10.2.4 Contact Water Sumps

- The Mine Site Complex contact water sumps will be designed to manage runoff from the 200-year, 24-hour storm event (i.e., rainfall on snowmelt, see Section 18.2.10.1.1) without overflowing to the environment.
- The sump pump system will be designed to dewater the sump over a maximum period of 24hrs following the end of the design event.

18.2.10.2.5 Sediment Pond and Spillway

- Environmental Design Flood ("EDF"): The Mine Site Complex and Bonanza Ledge Sediment Ponds will provide sufficient capacity to manage surface runoff reporting from a 200-year, 30-day storm event (i.e., rainfall on snowmelt, see Section 18.2.10.1.2), without overflow to the environment.

- The minimum design flow for settlement of the total suspended solids ("TSS") in the sediment pond water will correspond to the surface runoff reporting from a 10-year, 24-hour storm event.
- The inflow design flood (IDF) for pond emergency spillway design will be the surface runoff reporting from a 200-year, 24-hour storm event or longer return period, depending on the dam classification and according to the CDA guidelines.

The proposed Mine Site Sediment Pond will be located directly at the toe of the BFA and will include a perimeter dike, a pumping station with pipeline to the WTS and an armoured emergency spillway. The maximum available basin storage volume (i.e., the volume available at the spillway invert elevation) and outflow rate resulting from the preliminary EDF design modelling are presented in Table 18-3 for the Mine Site Sediment Pond. Note that the upper case U/G dewatering rate scenario was used for the EDF design modelling, which conservatively limits the outflow pumping rate from the sediment pond to the WTS (see Section 18.2.9).

Table 18-3: Maximum available pond storage volume and design flood outflow capacity (to WTS) for the Mine Site Complex

Basin	Receiving Structure	Basin Dead Storage (m^3)	Basin Maximum Available Storage Volume (m^3)(1)	Design Flood Outflow Capacity (m^3/hr - L/s)
Mine Site Sediment Pond	Mine Site WTS	1,500	65,000	291 – 81 (2)

(1) Based on total available storage volume, including dead storage.
(2) Refers to pumping capacity from the Mine Site Complex sediment pond to the WTS considering the upper-case dewatering flow rate.

18.2.11 Water Treatment

During the early works phase of the Project (prior to pre-operational and operational mine dewatering), a temporary water treatment system will be provided at the Mine Site Complex. The temporary water treatment system will be used to treat water collected from the Island Mountain portal (Starter and Ramp flows) and Mine Site (MS) sediment pond. It is assumed that the peak design flow of the temporary treatment system will be 69 cubic metres per hour ("m^3/h") for the first year of operation, and 138 m^3/h for the second year of operation, subject to further work. It is expected that the water that requires treatment will be of similar quality to the water being treated by the existing water treatment system at Bonanza Ledge Mine; therefore, the temporary water treatment system will use the same process as the current Bonanza Ledge Water Treatment System ("WTS"): sulphate precipitation, organo-sulphide precipitation, iron coprecipitation, lamella clarification, multimedia filtration, and sludge dewatering via geotubes.

The permanent Mine Site Complex water treatment system ("Mine Site Complex WTS") will consist of a conventional high-density sludge (HDS) lime neutralization, ferric coprecipitation, and organosulphide precipitation system, at a centralized location, with the former Bonanza Ledge modular water treatment system ("Bonanza Ledge WTS"). The former Bonanza Ledge WTS will be relocated to the central location at the Mine Site Complex (once the pipeline from Bonanza Ledge to Mine Site Complex is installed) and will be incorporated within the Mine Site Complex WTS process. In addition to the aforementioned, the Mine Site Complex WTS will include both nitrification and denitrification unit operations for the treatment of nitrogenous species.

The Mine Site Complex WTS system will predominantly treat the underground water for both pre-operational and operational mine dewatering. Other sources that will be treated (where the flows are more seasonal or inconsistent) are the surface contact water from the Mine Site Complex area, including historical and new waste rock storage facilities, excess process water from the concentrator facilities, and the residual drainage from the Bonanza Ledge Site via a gravity-fed pipeline once the Bonanza Ledge WTS is relocated from the Bonanza Ledge Site to the Mine Site Complex.

The underground dewatering flow at the Mine Site Complex for the fully developed mine is estimated at 372 m^3/h (Golder 2021a). The flow of contact surface water from the Mine Site Complex sedimentation pond is estimated to be 331 m^3/h in peak flow conditions in a wet year and 43 m^3/h in annual average flow conditions (Golder 2021a). The flow from the Bonanza Ledge Site to the central water treatment systems via the pipeline is expected to reach a peak of 163 m^3/h in average year, with an annual average flow of 16 m^3/h (Golder 2021b). The design flow for the pipeline from the Bonanza Ledge Site to the Mine Site Complex WTS is 450 m^3/h. The Mine Site Complex WTS is designed for a flow rate of 600 m^3/h, which allows for the underground dewatering flow from the fully developed mine and the attenuated contact surface water flows in a wet year.

The Mine Site Complex WTS will consist of three agitated tank reactors to allow for the oxidation of iron and arsenic species, the neutralization of acidity and precipitation of gypsum, and the precipitation of metal hydroxides, and organosulphide metals. The tank reactors are followed by a conventional clarifier to separate the precipitated materials from the treated water. Gypsum sludge from the process will be dewatered with two conventional filter presses. The clarifier overflow will be directed to MBBRs (for nitrification), followed by a Fluidized Bed Reactor (for denitrification). The effluent from the Fluidized Bed Reactor will be sent to a polishing MBBR to remove residual biochemical oxygen demand. The biosolids from the bioreactors will be removed by a Dissolved Air Flotation unit operation. A water treatment building will house the system that will include chemical dosing skids and chemical storage tanks.

Final treated effluent will be discharged to either the Jack of Clubs Lake or Willow River.

18.2.12 Bulk Fill Area

Waste rock from mine development during pre-production and during initial years of operations will be placed as a bulk fill material to add laydown space on the Mine Site Complex. Within the Mine Site Complex, a designated Bulk Fill Area ("BFA") will be prepared to accommodate approximately 1.1 million tonnes ("Mt") of waste rock material. The Services Building area and the BFA will be constructed on a liner to ensure separation from historic waste rock below.

A liner will be placed under the BFA and the sediment pond. The liner will be extended and keyed-in to the historic waste rock surface.

18.2.13 Overburden

Excavation of overburden will be required to construct surface infrastructure. Excavated overburden material will be reused as backfill during infrastructure construction. If any, excess excavated overburden will be placed within a designated portion of the BFA or at the Bonanza Ledge Site Waste Rock Storage Facility ("WRSF").

18.2.14 Power Supply

The power demand at the Mine Site Complex is approximately 25 megawatt ("MW") average power, and nearly 30 MW peak power. Electricity will be supplied to the site via a new transmission line of approximately 70 km of length which is supplied with electrical power from BC Hydro's Barlow substation near Quesnel. The Northern Transmission Line Route, located primarily along existing forest service roads and forestry cut blocks north of Highway 26, was chosen for the Project.

It is anticipated that mine construction and pre-production mine development will require installation of temporary power (see end of current sub-section).

18.2.14.1 Substations

The interconnection at BC Hydro's Barlow substation will be at 66 kilovolts ("kV"). A 66 kV / 138 kV step-up substation including two 30/40/50 MVA transformers may also be built seven kilometers away, within the transmission line right of way.

At the Mine Site Complex, the incoming transmission line will terminate on the structure within the main substation, located towards the north end of the Services Building area. The outdoor substation will lower the incoming voltage from 138 kV to 13.8 kV through two 30/40/50 MVA transformers. During normal operation, both transformers will share the load, but during maintenance or repair work, one transformer will be capable of supplying the entire load of the Mine Site Complex, thus increasing the overall electrical supply reliability.

18.2.14.2 Power Distribution

The output of the two main transformers will go into a 13.8 kV air insulated switchgear ("AIS") located in a pre-fabricated electrical room within the Mine Site Complex substation. All metering and protection apparatus will be mounted in this electrical room, as well as all other auxiliary systems such as the 125 VDC system. The substation's main switchgear will distribute power at 13.8 kV throughout the Mine Site Complex via power cables, both on surface and underground.

18.2.14.3 Site Lighting

Road lighting will be limited to minimal requirements at intersections. Exterior lighting will be present in pedestrian areas and in working or storage areas, mostly installed on the buildings. For all exterior lighting, LED fixtures will be used to reduce maintenance time and increase energy savings. Photocells will also be installed to reduce power consumption.

18.2.14.4 Emergency Power

Emergency power generators are planned to supply the critical equipment and installations when the main power from the regional grid is unavailable. Critical loads in the Services Building concentrator, the water treatment plant, and the underground mine will be able to be partially powered to ensure safety of workers and integrity of critical equipment. Two 1.8 MW diesel generators will be installed in the Mine Site Complex substation. The generators will be generating power at 4.16 kV, and connected to the main switchgear through a dedicated step-up transformer 4.16 kV/13.8 kV. The main substation's switchgear will have key interlocks allowing the transfer of the main power source from the transmission grid to the emergency generators. The operators will have an emergency power protocol to effectively rationalize power and dedicate it to the critical loads without exceeding the emergency power capacity.

18.2.14.5 Construction Power

During construction, power from the transmission line will not be available until it is energized, which is well into the construction phase of the Project. Therefore, the existing diesel power generating capacity at the Bonanza Ledge Mine will be supplemented with rental diesel generators during the construction period. Three 1.8 MW diesel generators will be added during construction.

18.2.14.6 Telecommunication and IT infrastructure

Public Internet access and telephony services will be provided to the Mine Site Complex via a primary WAN link composed of an aerial fibre optic cable running between Quesnel and the new Telus Telecommunication tower, which is situated near the Workers Accommodation area.

For redundancy, a secondary WAN link using a fibre optic cable running from Quesnel to BC Hydro Barlow substation (aerial on HWY97, then buried on HWY26) and then over the new 66 kV / 138 kV powerline that we will be built between Quesnel and the Mine Site Complex in Wells.

A redundant fibre optic campus area network will interconnect all facilities of the Mine Site Comples such as:

- Workers Accommodations;
- Security gate;
- Telecom tower;
- Main electrical substation;
- Services Building area;
- U/G networks;
- Portals, exhaust raise and main intake raises;
- Water treatment plant and pumping stations;
- Fire water pumping station.

The fibre optic campus area network will be shared between the following systems:

- Process and electrical grid industrial control system;
- Corporate network (administration, maintenance, and telephony);
- Fire detection;
- Security video surveillance and access control system.

Remote areas on the site could be serviced via Point-to-Multipoint microwave links when more cost effective than through fibre optic.

IT and networking equipment and software required for the Project will be deployed to service the different areas via wired or wireless networks where appropriate for administrative and industrial systems.

The architecture of the Telecom and IT infrastructure will be designed with resilience and cybersecurity in mind.

An underground private 4G/5G LTE and fibre optic network will be deployed to service the mine personnel and vehicles. Supported applications should include personnel and equipment geolocation for safety and ventilation on demand, remote operation, two-way radio communication, mining equipment predictive maintenance, pumps, and electrical distribution network control.

A Digital Mobile Radio ("DMR") system will provide Two-Way radio service for surface communications. To complement the DMR, a Push-to-Talk over Cellular ("PoC"), that can be used also over Wi-Fi, will be deployed to allow authorized workers, consultants and contractors to communicate with each other and with the DMR system users.

The telecom and IT infrastructure have been designed to allow for the potential future implementation of remote-control operation with a low latency communication connection.

18.3 Bonanza Ledge Site

Infrastructure at the Bonanza Ledge Site will consist of a waste rock storage facility ("WRSF"), associated water management infrastructure, and, during the Project Phase I ("Phase I") 2,000 tpd operation, a temporary surface crushing and mineral sorting facility and a Water Treatment System ("WTS")

Once the Services Building at the Mine Site Complex is operational for The Project Phase II ("Phase II") with production at 8,000 tpd, the temporary surface crushing and mineral sorting facility at the Bonanza Ledge Site will be dismantled, thus creating additional space for waste rock storage and required water management infrastructure.

18.3.1 Temporary Pre-Concentrator

For the initial mining production of 2,000 tpd, a pre-concentrator, including mobile crushing, and mineral sorting, will be built at the Bonanza Ledge Site. The use of the Bonanza Ledge Site will reduce the overall operation and transportation costs.

18.3.2 Waste Rock Storage Facility

A WRSF with approximately 14.0 Mt of storage capacity will be constructed in the northern limits of the Bonanza Ledge property, located approximately 3.5 km from the Mine Site Complex to the southeast.

18.3.3 Surface Water Management Strategy

The site will include the main Bonanza Ledge WRSF pile with inner access road and rerouting of the existing C Road, the existing Bonanza Ledge SCP with retention dike, a south contact water retention basin (i.e., the Bonanza Ledge South Sump) and a network of contact and non-contact water ditches. The Bonanza Ledge South Sump will also include an outlet system with associated pipeline that links downstream to the Mine Site Sediment Pond, which will be located at the Mine Site Complex.

Contact water from the existing Bonanza Ledge Mine to the south of the new Bonanza Ledge WRSF will continue being sent to the existing Bonanza Ledge Water Treatment System (WTS) while the new Bonanza Ledge WRSF is being developed and prepared. Contact water resulting from the early Bonanza Ledge WRSF pile will also collect in the existing Bonanza Ledge SCP and be treated at the Bonanza Ledge WTS, followed by discharge to Lowhee Creek. This situation will last until the Bonanza Ledge WRSF area overtakes the Bonanza Ledge WTS location; the Bonanza Ledge WTS will then be relocated to the Mine Site Complex to support the Mine Site Complex WTS, and the Bonanza Ledge South Sump will become operational to collect the contact water from the southern end of the Bonanza Ledge WRSF. Contact water collected at the Bonanza Ledge SCP will then be conveyed via pumping to the Bonanza Ledge South Pond, and then further transported via pipeline to the Mine Site Sediment Pond for storage prior to treatment at the Mine Site Complex WTS and discharge to the environment.

The surface water management system for the Bonanza Ledge Site will contain existing and proposed diversion channels to restrict upslope non-contact water from entering the site, and channels to direct contact water within the site either to the proposed Bonanza Ledge SCP or to the Bonanza Ledge South Sump. Collection channels may need to be staged and raised as deposition within the new Bonanza Ledge WRSF advances. The Bonanza Ledge WRSF will be constructed on top of a low permeability LLDPE liner that will extend under the entire footprint of the pile and include the Bonanza Ledge SCP and the Bonanza Ledge South Sump, to limit the potential for water infiltration to the underground aquifer.

18.3.4 Water Management Infrastructure

The design criteria that will be applied to design the water management infrastructure at the Bonanza Ledge Site are similar to the ones presented in Section 18.2.10.

The maximum available basin storage volume (i.e., the volume available at the spillway invert elevation) and outflow rate resulting from the preliminary EDF design modelling are presented in Table 18-4 for the Bonanza Ledge SCP and the Bonanza Ledge South Sump. Note that the upper case U/G dewatering rate scenario was used for the EDF design modelling, which conservatively limits the outflow pumping rate from the sediment pond to the WTS (See Section 18.2.9).

Table 18-4: Maximum available pond storage volume and proposed design flood outflow capacity: Bonanza Ledge Site

Basin	Receiving Structure	Basin Dead Storage (m^3)	Basin Maximum Available Storage Volume (m^3)(1)	Design Flood Outflow Capacity (m^3/hr - L/s)
Bonanza Ledge SCP	Bonanza Ledge South Sump	420	5,460	270 – 3.6
Bonanza Ledge South Sump	Mine Site Sediment Pond (through pipeline)	830	22,000	450 - 125

(1) Based on total available storage volume, including dead storage

18.3.5 Water Treatment

The existing Bonanza Ledge WTS will be used to treat contact water, prior to the installation of the pipeline from the Bonanza Ledge Site to the Mine Site Complex. The Bonanza Ledge WTS is designed to remove trace metals and selected oxyanions using chemical-physical treatment processes that include the following unit operations: sulphate precipitation, organo-sulphide precipitation, iron coprecipitation, lamella clarification, multimedia filtration, and sludge dewatering via geotubes.

The Bonanza Ledge WTS will be relocated and incorporated into the Mine Site Complex WTS after the pipeline to the Mine Site Compex is installed and operational.

18.4 QR Mill

The QR Mill is located approximately 111 km from the Mine Site Complex, 58 km southeast of Quesnel, and 17.5 km west northwest of Likely.

The QR Mill, as part of the Project, will consist of the components listed in Table 18-5.

Table 18-5: QR Mill Project components

Component	Components	
Site Infrastructure	Existing fuel and propane storage and handling facilities Existing worker accommodation	Sewage and septic work upgrades Existing offices
Mineral Processing	Gold concentrate and filtered tailings storage shelters Upgrade of the grinding, leaching, elution, and gold room circuits	New Ball Mill, Pre-Leach Thickener, Carbon-In-Pulp ("CIP"), Cyanide Destruction, Tailings dewatering, and filtering circuits
Tailings and Waste Management Facilities:	Filtered Stack Tailings Storage Facility ("FSTSF")	Overburden stockpile
Water Management Facilities:	Water storage and supply (potable and non-potable) Integration of new contact water management infrastructure from the Project to the existing water management infrastructure at QR Mill and upgrades as required	South Seepage Collection Pond ("SSCP") south of the FSTSF Existing water treatment system and discharge
Power supply	The QR Mill is currently connected to a transmission line that has sufficient power capacity for the Project's electrical requirements. Electrical equipment within the QR Mill will be upgraded and new equipment will be added as required	Electrical equipment upgrades within the QR Mill

18.4.1 Existing/Available Structures at QR Mill

The QR Mill is currently used to process Bonanza Ledge Mine mineralized material. The process tailings are currently being stored in the Main Zone Pit (MZP).

Existing infrastructure related to this operation include:

- Distribution Line: A 25 kV distribution line from BC Hydro supplies the QR Mill site with electrical power. The line was assessed and has sufficient capacity to service the QR Mill once upgraded. Site power distribution utilizes 25 kV overhead transmission line.
- Offices: QR Mill offices are functional and used for current operations. They will continue to be used for the Project.
- QR Mill: The gold flotation concentrate will be transported by trucks from the Mine Site Complex to the QR Mill's flotation concentrate storage area. The QR Mill will require the upgrades of existing process equipment as well as the construction of new circuits to meet the Project's requirements.
- IT and Telecommunication: the QR Mill has an existing IT and Telecommunication installation and services available, including internet, telephone and fibre optic. There will be upgrades to the IT and Telecommunication infrastructure to enable the deployment of faster data exchanges between sites, the corporate office and the potential development of remote operations in the future.
- Camp: The camp has 77 rooms, 38 of which were added in 2021. ODV plans to renovate and upgrade the 39 rooms from the older camp during the Project to support construction activities and the operations. Rooms will be renovated, and the capacity of the kitchen and the dining room will be increased.
- Sewage and potable water treatment: A sewage treatment system will be installed at the QR Mill to treat sewage streams from the camp and the mill. Additionally, a potable water treatment plant will be built on site to provide potable water for the camp and to the mill.
- Fuel and propane storage: There are two diesel fuel tank (4,200 L and 75,000 L), three propane tank (75,700 L) and 1 gasoline tank (4,200 L) on site. These are all existing storages that are considered sufficient for the Project.
- Tailings Storage Facility (TSF): The existing QR Mill TSF is currently used for water management. For the Project, the existing QR Mill TSF pond will be drained down, and tailings from the QR Mill will be dewatered prior to disposal in the FSTSF on top of the existing QR Mill TSF.
- Fire water: The QR Mill Fire Water system will mostly be refurbished with a new fire protection pump skid and increased fire protection coverage on site.
- Water management infrastructure.
- Water treatment plant: It is assumed the QR Mill will already be equipped with a water treatment system developed within the current operation that will be sufficient to meet the water treatment requirements of the Project.

18.4.2 QR Mill Upgrade

The QR Mill is currently being used to custom process mineralized material from the Bonanza Ledge Mine (under *Mines Act* Permit M-198), with process tailings disposed of in the Main Zone Pit. Once mining is finished at the Bonanza Ledge Mine, the QR Mill will shut down for several months in order to undertake the necessary upgrades required to process gold flotation concentrate from the Mine Site Complex.

The main upgrades to the process infrastructure at the QR Mill will be the

- Addition of a gold flotation concentrate storage shelter;
- The expansion of the existing process plant building;
- Construction of a filtered tailings storage shelter.

Further information regarding the QR Mill upgrade can be found in Chapter 17.

18.4.3 Filtered Stack Tailings Storage Facility for QR Mill

The filtered stack tailings methodology has been selected for the QR Mill, which will reduce the size of the required TSF footprint versus conventional slurry placement methods. Tailings produced from the QR Mill will be pressure filtered to 89% solids content (mass of solids over total mass of solids and water). The filtered tailings will be deposited in lifts and compacted over the existing tailings and waste rock surface in the existing TSF, forming the FSTSF. The FSTSF has a design capacity of 2.1 million cubic metres (Mm^3) of compacted filtered tailings.

The FSTSF will have 9H:1V slopes to the north, east and south, and 3H:1V slopes to west. At closure, the FSTSF will have a low-permeability closure cover to reduce infiltration, and ditches at the toe of the FSTSF will route runoff to the TSF Closure Spillway.

Prior to filtered tailings placement, the water in the existing TSF will be drained down, treated and discharged. The FSTSF Ephemeral Pond will be excavated in waste rock at the base of the existing TSF and be lined to provide flood storage in the FSTSF during operations.

During operations, filtered tailings placement will begin on the south side of the facility and progress northward over the mine life. Temporary liners will be placed over the daily tailings placement area and on the existing tailings and waste rock surface. The temporary liners will be removed when the next lift is placed. The temporary liners are intended to improve the water quality of runoff collected in the FSTSF Ephemeral Pond by intercepting surface runoff before it comes in contact with tailings. At all stages of tailings placement, the FSTSF will require proper grading to convey surface runoff to the lined collection ditches and to the lined Ephemeral Pond (KCB, 2022b).

18.4.4 Water Management Infrastructure for Filtered Stack Tailings Storage Facility

Water management infrastructure for the FSTSF will include (KCB, 2022a):

- The existing TSF East and West Diversion Ditches upslope of the FSTSF to divert non-contact runoff away from FSTSF;
- Proposed lined collection ditches and a lined FSTSF Ephemeral Pond to manage contact runoff within the FSTSF;
- A proposed South Seepage Collection Pond ("SSCP") to collect FSTSF seepage and to provide storage for flood and mill reclaim water;
- The existing North Seepage Collection Pond ("NSCP") and proposed groundwater interception wells to manage FSTSF seepage;
- A new Sediment Pond to manage runoff from the lined outer FSTSF slopes prior to discharging into Creek No. 3;
- The existing MZP to collect mine-influenced runoff from the surrounding area and pumped flows from the FSTSF Ephemeral Pond, SSCP, NSCP and groundwater interception wells; and
- A WTS to treat MZP water prior to discharging into Rudy Creek.

The QR Mill water management plan during the Project is described in Chapter 20. The WTS, FSTSF Ephemeral Pond, SSCP, and MZP are sized to manage the 1 in 50-year return period Environmental Design Flood (EDF) without offsite discharge.

Ditches and spillways at the QR Mill are sized to route the Inflow Design Flood (IDF) that correspond to their respective dam consequence and regulatory requirements. The IDF events for each water management structure are presented in Table 18-6.

Table 18-6 Water management structure IDF (KCB, 2022a)

Structure	IDF Event
TSF East and West Diversion Ditches	200-year 24-hour storm
Contact water ditches	200-year 24-hour storm
NSCP spillway	200-year 72-hour storm
SSCP spillway	Probable Maximum Flood (PMF) 72-hour storm
TSF/FSTSF Ephemeral Pond spillway	PMF 72-hour storm
MZP spillway	1/3 between the 1000-year and the PMF 72-hour storm
Sediment Pond spillway	200-year 24-hour storm

18.4.5 QR Mill Geotechnical Investigation

A site investigation program of the existing TSF and surrounding TSF areas was conducted in 2021:

- 14 drill holes, nine CPT soundings, and two electrical shear vane tests were conducted within the TSF pond to collect information to support the FSTSF design.
- Outside of the TSF pond, two drill holes, two monitoring wells, and four pumping wells were completed to verify the absence of glaciolacustrine sediments underlying the existing TSF dams and investigate the foundation conditions for the proposed SSCP and existing NSCP.
- Nine drill holes and four test pits were completed at the QR Mill area to characterize the foundation of the proposed QR Mill infrastructure expansion.

Based on the results of the investigations, the existing TSF was found to contain an upper tailings layer (up to 4 m thick) located stratigraphically above waste rock (5 m to 15 m thick) and a lower tailings layer located stratigraphically below the waste rock. The foundation of the TSF and QR Mill area is characterized by glacial till with minor, isolated, glaviofluvial outwash deposits overlying bedrock.

18.4.6 Water Treatment

For the purpose of the Preliminary Economic Assessment ("PEA"), it is assumed that when the Project starts, the QR Mill site will already be equipped with a water treatment system developed within the current operation. Contact water treatment systems associated with the current operation are assumed to be available for the Project and will meet the water treatment requirements of the Project.

18.4.7 Telecommunications and IT Infrastructure

Public Internet access and telephony services will be provided to the QR Mill site via a primary WAN link composed of a Microwave link between the ABC/Telus Morehead Tower and the QR Mill site new telecom tower.

For redundancy, a secondary WAN link will be provided via Starlink Premium Satellite service.

A redundant fibre optic campus area network will interconnect all facilities of the site such as:

- Camp complex accommodations and offices;
- Security gate;
- Telecom tower;
- Main electrical substation;

- Process plant;
- Effluent treatment plant and pumping stations; and
- Fire water pumping station.

The fibre optic campus area network will be shared between the following systems:

- Process and electrical grid industrial control system;
- Corporate network (administration, maintenance, and telephony);
- Fire detection; and
- Security video surveillance and access control system.

Remote areas on the site could be serviced via Point-to-Multipoint microwave links when more cost effective than through fibre optic.

IT and networking equipment and software required for the Project will be deployed to service the different areas via wired or wireless networks where appropriate for administrative and industrial systems.

The architecture of the Telecom and IT infrastructure will be designed with resilience and cybersecurity in mind.

A Digital Mobile Radio ("DMR") system will provide Two-Way radio service for surface communications. To complement the DMR, a Push-to-Talk over Cellular ("PoC"), that can be used also over Wi-Fi, will be deployed to allow authorized workers, consultants, and contractors to communicate with each other and with the DMR system users.

19. Market Studies and Contracts

It was assumed in this PEA and technical report that the Cariboo Gold Project (the "Project") will produce gold in the form of doré bars. The market for doré is well established and accessible to new producers. The doré bars will be refined in a certified North American refinery—of which there are many in the eastern United States and Canada—and the gold will be sold on the spot market.

19.1. Market Studies

No market studies have been conducted by Osisko Development Corp. ("ODV") or its consultants in relation to the gold doré that will be produced by the Project. Terms and conditions included as part of the sales contracts are expected to be typical for this commodity. Gold is bought and sold on many markets in the world, and it is not difficult to obtain a market price at any time. The gold market is very liquid with many buyers and sellers active at any given time.

19.2. Assumptions

The long-term price of gold and exchange rates were estimated on the basis of discussions with experts, trailing averages, consensus analyst estimates, and recently published economic studies that were deemed to be credible. For this report, a gold price of $1,750 USD/oz was assumed and a CAD:USD exchange rate of 1.00:0.79 was used. Table 19-1 outlines the refining and pricing assumptions used in the economic analysis as described in Chapter 22:

Table 19-1: Refining and pricing assumptions

Assumptions	Unit	Value
USD:CAD (CAD:USD)		0.79 (1.27)
Gold payable	%	100
Gold refining charge (including transportation cost)	USD/oz	5.00
Royalty payment	%	5.0
Gold price	USD/oz	1,750

19.3. Royalties

On February 5, 2016, Osisko Gold Royalties ("OGR") completed the acquisition of a 1.5% net smelter return ("NSR") royalty on the Project for a cash consideration of $25 million, with an option for OGR to purchase an additional 0.75% NSR royalty for $12.5 million. On April 19, 2017, OGR exercised the option, bringing its total NSR royalty on the Project to 2.25%. On September 5, 2018, OGR announced the purchase of an additional 1.75% NSR royalty on the Project for a cash consideration of $20 million, with an option for OGR to purchase an additional 1.0% NSR royalty for $13 million. OGR announced it would exercise the option on October 5, 2020, bringing its NSR for the Project to 5.0%. OGR's 5.0% NSR royalty is the only royalty that applies to the mineral resource area of the Project.

19.4. Contracts

Although, in the past, ODV's Barkerville Gold Mines was working with an American refiner, there are no refining agreements, sales contracts or other contracts currently in place that are relevant to this Technical Report. The doré produced by the Project will be shipped to a precious metals refinery for recovery of the gold into high purity bars meeting the minimum London Bullion Market Association ("LBMA") delivery standards.

20. Environmental Studies, Permitting, and Social or Community Impact

20.1. Environmental Studies

20.1.1. Introduction

The Cariboo Gold Project ("the Project") area is composed of a Transmission Line ("TL") and three main locations: the Mine Site Complex, the Quesnel River Mill ("QR Mill"), and the Bonanza Ledge Site. The Mine Site Complex and east portion of the transmission line route are located within the Columbia Highlands Ecoregion and Bowron Valley Ecosection. The QR Mill and the west portion of the transmission line route are located within the Fraser Plateau Ecoregion and Quesnel Lowlands Ecosection. The majority of the Project infrastructure at the Mine Site Complex and at the QR Mill will be located on brownfield sites and lands previously disturbed by historical mining and recent mining at Bonanza Ledge Mine (Morgan et al., 2019).

20.1.2. Air Quality

WSP Canada Inc. ("WSP") completed ambient air quality modelling for the Project and used Quesnel, British Columbia, as a conservative baseline. As a result of comments from the Environmental Assessment Office ("EAO") and the Technical Advisory Committee ("TAC") it is anticipated that further ambient air quality monitoring will be required for various parameters as well as meteorological components including but not limited to wind direction, wind speed, temperature, humidity, precipitation, and barometric pressure. The proposed ambient air quality monitoring stations would be: two located in the District of Wells ("Wells") and one located near the QR Mill (WSP, 2021).

20.1.3. Land Capability and Use

The Project does not overlap any protected areas or parks. The Project overlaps a few mineral occurrences (MINFILE). The overlapping mining and exploration interests include tenure holders of mineral claims, client holdings, placer claims, and placer leases.

The Project site also overlaps forestry and timber resources interests, including old growth management areas, Tree Farm Licenses, and different tenures (active, pending, and retired) such as Occupant Licenses to Cut, and numerous forest sector resources roads.

Hunting, trapping, and fishing are another land use in the Project area and are reflected in five guide outfitter certificate areas that overlap with one or more Project Study Areas.

20.1.4. Terrain and Soils

Soil characterization of existing conditions for the Project was conducted by WSP (ODV, 2021a) including field studies between 2016 and 2020, where information was collected from 740 sites regarding location, site characterization, and bioterrain information within the local study area ("LSA"). Of these sites, 490 included, at a minimum, a soil subgroup assignment. In addition, data from 17 points completed by GeoWest (2000) in 1996 was used to support bioterrain mapping (ODV, 2021a).

20.1.5. Vegetation

The Project spans two biogeoclimactic zones:

- Sub-Boreal Spruce ("SBS"): occurs throughout the QR Mill site, lower elevations at the Mine Site Complex, and large portions of the transmission line route;
- Engelmann Spruce-Subalpine Fir ("ESSF"): occurs the higher elevations along the Transmission Line route, and at the Mine Site.

Due to historical anthropogenic use, much of the Mine Site Complex, Bonanza Ledge Site, and QR Mill are not vegetated and consist of anthropogenic infrastructure such as road surfaces, mine spoils, and historic mines (Morgan et al., 2019).

Golder investigated vegetation existing conditions. During 2016, 2018, 2019, and 2020 (Golder, 2021c) conducted ecosystem-based subcomponent-field studies including Terrestrial Ecosystem Mapping, identification of listed species, traditional use plants, invasive and non-native plant species, and forage species for wildlife. The more recent studies carried out by Golder do not affect the existing conditions described in this section.

20.1.6. Wildlife and Wildlife Habitat

Waterbodies throughout the Project area provide suitable amphibian breeding habitat including Columbia spotted frog (*Rana luteiventris*), wood frog (*Lithobates sylvaticus*), western toad, and long-toed salamander (*Ambystoma macrodactylum*), while upland forested areas provide habitat for terrestrial amphibians.

Birds, such as passerines, raptors, and waterfowl, may utilize a variety of habitat types throughout the Project area, including forested habitat, riparian areas, clear-cuts, wetlands, and open waterbodies.

Shrub, forest, and wetland habitat provides suitable habitat for small mammals, ungulates, and small to large carnivores. Open waterbodies, wetlands, and rights-of-way throughout the Project area provide suitable foraging habitat for bats, while abandoned mine shafts and adits provide potential bat winter hibernacula. Suitable invertebrate habitat occurs throughout the Project area and includes wetlands, riparian areas, watercourses, forested habitat, and clear-cuts (Morgan et al., 2019).

In January 2022, the existing conditions report was updated (Golder, 2022a), to respond to comments by the TAC and Participating Indigenous nations to include the following:

- Boundaries of Barkerville caribou herd;
- Update to fisher – Columbia population provincial status;
- Inclusion of Habitat Stand structure Classification values for mule deer ungulate winter ranges ("UWR") in the Terrestrial RSA; and
- Updates to Barkerville herd status from stable to declining.

20.1.7. Fisheries and Aquatic Resources

Most recent fish and fish habitat surveys conducted between 2020 and 2021 by WSP include habitat reconnaissance for the TL, fish sampling and hydroacoustic survey on Jack of Clubs Lake ("JOC"), and review of Resources Information Standards Committee ("RISC") for TL and JOC, and a fish community survey in JOC (WSP, 2022).

Fish populations and fish habitat are found throughout the Project area near both the Mine Site Complex and QR Mill, with fish distribution typically limited by gradient, barriers and obstructions, flows, and habitat quality. The Mine Site Complex and Bonanza Ledge Site are located within the Willow River watershed and contain several tributaries, including Slough Creek, Mosquito Creek, Lowhee Creek, Williams Creek, and Jack of Clubs Creek. Twelve fish species have been recorded in watercourses within the Willow River watershed, including Bull Trout, which is a provincially blue-listed species (FIDQ, 2020; (BC CDC, 2011)).

The QR Mill is located within the Quesnel River watershed. Assessed watercourses in the vicinity of the QR Mill where fish are present are limited to Rudy Creek and Maud Creek, which flow into the nearby Quesnel River. Rainbow Trout, Northern Pikeminnow, Redside Shiner, and Longnose Sucker have been recorded in Maud Creek. Chinook salmon have been recorded in its lower reaches, near the confluence with the Quesnel River (FIDQ, 2020). Rainbow Trout, Lake Chub, and Sucker (General) have historically been identified in Rudy Creek (FIDQ, 2020). Quesnel River Chinook salmon were assessed as Endangered by the Committee on the Status of Endangered Wildlife in Canada. Twenty-two fish species are recorded in the Quesnel River watershed (FIDQ, 2020), with salmon species including Chinook, Coho, Sockeye, and Pink Salmon, although a canyon with a large cascade just outside the City of Quesnel was identified as a velocity barrier to Pink Salmon (FIDQ, 2020) (Morgan et al., 2019).

20.2. Environmental Liabilities

The Project has been designed to minimize short- and long-term environmental impacts, and to maximize lasting benefits to local communities, employees, and shareholders. Osisko Development Corp.'s ("ODV") goal is to create a sustainable operation that employs best available technology and practices in all aspects of the design and operation and considers both the short- and longer-term effect on the environment.

For the Project, a security bond was estimated at $18,484,755. This estimate does not include the current QR Mill and Bonanza Ledge Mine, which are currently approved under separate *Mines Act* permits, M-198 and M-238 respectively. Separate, detailed reclamation and closure plans and bonding estimates are maintained for those sites.

ODV is not aware of any significant factors and risks that may affect access, title, or the right or ability to perform the proposed work program on the Project Study Area.

20.3. Environmental Management and Monitoring

ODV has established environmental monitoring plans for a suite of valued components to respond to regulatory requirements and best management practices for the Project. The following subsections present management and monitoring activities connected to some of the key aspects of the Project such as waste rock, tailings, water, and other wastes.

20.3.1. Mineralized Material and Waste Rock Geochemistry

The mineralized material and waste rock geochemical characterization program included static testing of 228 waste rock samples and 17 samples of mineralized material, and kinetic testing of a subset of six waste rock samples (complete) and four samples of mineralized material (ongoing). The geochemical testing program is discussed in detail in the Geochemical Existing Conditions Report (Golder, 2022b).

The objective of the geochemical characterization program is to quantify the acid rock drainage ("ARD") and metal leaching ("ML") potential of each material type. The acid generation potential of waste rock and mineralized material was quantified using the results of acid base accounting ("ABA") and net acid generation ("NAG") testing, followed by kinetic tests (i.e., humidity cell tests ("HCT") on select samples. The results of ABA and NAG testing were used to quantify the proportion of potentially acid generating ("PAG") and non-potentially acid generating ("NPAG") samples, whereas HCT results were used to determine the rate of acid generation and ML samples of specific geochemical characteristics. The overall ML potential of a sample was determined using the results of mineralogical analysis, bulk metal analysis and short-term leach tests (including shake flask extraction ("SFE") and NAG leachate analysis). The rate of ML was then determined using kinetic test results from select samples.

The results of the geochemical tests outlined above were used to interpret ARD / ML potential by material type:

- Waste Rock:
  - According to the results of ABA, 5% of the waste rock samples are classified as PAG. The waste rock is anticipated to be NPAG; although some lithologies have some minor potential to generate acidic conditions, there is sufficient neutralization potential within the overall waste rock material. Results from the HCTs generally support the ARD classifications based on the static ABA data for the waste rock samples.
  - The calcareous sandstone and sandstone samples contain the greatest ML potential among the waste rock samples. All materials tested contain elevated solid-phase and leachable arsenic concentrations, and this element is anticipated to be a constituent of primary concern in leachate or seepage with neutral pH conditions. Metal leaching of aluminum, cobalt, copper, iron, lead, nickel, and zinc will likely be pH dependent, and leaching of these constituents is expected to increase under acidic pH conditions. Results from the kinetic testing support that long-term ML of most constituents of concern under neutral pH conditions will be relatively low, except for arsenic.
- Mineralized Material:
  - The results of ABA indicate that 18% of the mineralized material samples are classified as PAG. The mineralized material was considered to have an uncertain potential to generate acidic conditions due to high sulphide content and high neutralization potential. The kinetic test results for the mineralized material samples suggested a potential for acid generation from samples classified as NPAG from the static testing, although analysis of carbonate molar ratios for the mineral sorter waste samples indicate that the rate of neutralization depletion in the HCTs is likely being overestimated.
  - The mineralized material had moderate propensity for ML, with arsenic being the constituent of primary concern.

20.3.2. Mineralized Material Management Strategy

Mineralized material will be stored underground in stopes and in underground silos prior to underground crushing and conveying to surface for processing. Coarse mined mineralized material will feed the mineral sorter while the finer mineralized material will be directly sent to the flotation circuits in the concentrator at the Mine Site Complex. A final concentrate product will be stored in a silo in the concentrator building awaiting transportation to QR Mill. Mineralized material arriving at QR Mill via the transportation route will be fed directly to the mill using the existing truck dump hopper or it will be loaded into a mineralized material storage covered structure, to be fed into the mill feed system when required.

20.3.3. Waste Rock Management Strategy

Waste rock will be used as fill for the Bulk Fill Area ("BFA"), to build up the surface and expand the surface area at the Mine Site Complex. The remaining waste rock will be transported to and permanently stored at the Bonanza Ledge Site Waste Rock Storage Facility ("WRSF"), or used for either underground construction or backfill material. Further milling, gold recovery, and tailings management will be undertaken at the QR Mill.

The following three streams of waste will be generated at the Mine Site Complex:

- Mine development waste rock, to be used as construction fill material for the BFA and backfill during the construction and operations phases or stored in the BFA or Bonanza Ledge Site;
- Mineral sorter waste generated during operations; and
- Flotation tailings produced at the Mine Site Complex through operations.

Based on the planned mining methods, significant portions of the mine waste streams will be used for underground backfilling materials throughout the operations of the Project. The use of flotation tailings for underground paste backfill, along with the use of other mine development waste rock materials for cemented rockfill and un-cemented rockfill, will reduce the required footprint for the Project's surface mine waste storage requirements.

The Bonanza Ledge Site will have an approximate capacity of 14.0 Mt. Both the Bonanza Ledge Site and BFA will include non-contact water diversion structures, a liner beneath the facilities, and collection of contact water in sedimentation ponds (new Mine Sediment Pond at the Mine Site Complex and an existing sediment pond and a future seepage pond at Bonanza Ledge prior to treatment and discharge (ODV, 2021b.). The Bonanza Ledge Site and BFA are described thoroughly in Chapter 18.

20.3.4. Tailings Geochemistry

Two tailings streams will be generated from the Project: 1) flotation tails from the milling in the Mine Site Services Building, which will be returned underground as paste backfill; and 2) process tailings from the QR Mill which will be stored at surface in the Filtered Stack Tailings Storage Facility ("FSTSF"). Tailings samples were submitted for ABA and NAG testing to confirm acid generation potential, and HCT to determine the rate of acid generation. Metal leaching potential was confirmed using the results of mineralogical analysis, bulk metal analysis, short term leach testing, and HCT.

The geochemical characteristics of the tailings are as follows:

Flotation Tailings:

- Flotation tailings from the milling in the Mine Site Services Building have a low potential for acid generation, due to a low sulphur content.
- These materials have a lower metal leaching potential than QR Mill tailings.
- Geochemical testing of cemented paste backfill, which will be created using the flotation tailings, is underway to confirm the long-term acid generation and metal leaching potential of cemented tailings (if any).

QR Mill tailings:

- The QR Mill tailings samples have a high potential for acid generation.
- The greater potential for acid generation in these samples also corresponds to a greater potential for metal leaching from pH sensitive constituents such as aluminum, copper, cobalt, iron, lead, nickel, sulphate, and zinc.
- Column tests are currently being conducted on the QR Mill tailings to assess long term ARD and ML potential. Preliminary results suggest that initial leachate may be acidic, with elevated metals due to stored acidity within the tailings. In addition, the neutralization potential within the QR Mill tailings will be depleted within a few years once sulphide oxidation begins. The QR Mill tailings are considered likely to become PAG in the long-term (less than 50 years) (Golder, 2022b).

20.3.5. Tailings Management Strategy

ODV completed an alternatives assessment to select the best way to manage the approximately 3.7 Mt of tailings produced at the QR Mill over a 12-year mine life for the Project. For the alternatives assessment, "best" is defined as the feasible combination of technology, location, facility configuration, and operational practices that minimize the combined environmental, technical, social, and economic risks over the Project's life cycle. Potential tailings dewatering technologies, facility configurations, and facility locations were assessed as part of the pre-screening process. Three short-listed alternatives were developed to a conceptual level and evaluated against each other in a Multiple Accounts Analysis ("MAA"). The MAA identified Alternative C: Constructing a filtered stack tailings storage facility ("FSTSF") on the existing tailings storage facility ("TSF") as the preferred alternative for managing the Project tailings at QR Mill (ODV, 2021b.).

Refer to Chapter 18 for the FSTSF design summary.

20.3.6. Water Management

20.3.6.1. Water Management at Mine Site

The overall water management strategy for the Mine Site, comprised of the Mine Site Complex and the Bonanza Ledge Site, is to maximize diversion of non-contact water to the environment, while limiting the amount of contact water requiring collection, management, and treatment. The surface water management approach for the Project includes two elements:

- Water Management Plan ("WMP"): focuses on the assessment and design of the surface water management infrastructures at the Mine Site Complex and Bonanza Ledge Site.
- Water Balance Modelling ("WBM"): quantifies flow rates between different Project components and estimates, in particular volumes of water requiring treatment prior to discharge to the environment.

The Mine Site WMP/WBM will integrate both the Mine Site Complex and the Bonanza Ledge Site, as displayed in the WBM flow diagram of Figure 20-1.

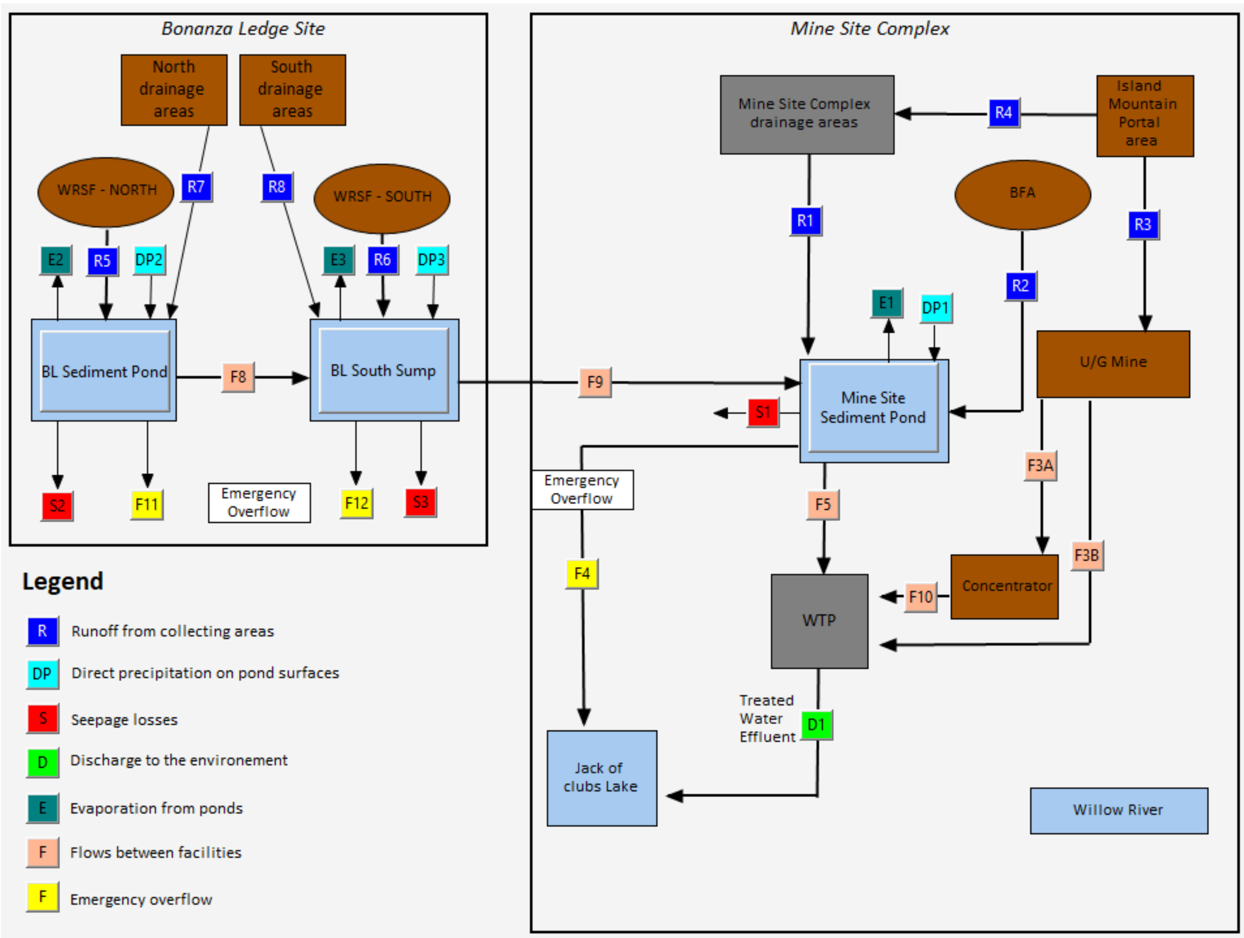


Figure 20-1: Flow diagram at Mine Site during operations

Water Management Plan

The water management plan for the Mine Site will consider best practices for water management and erosion and sediment control that will be put in place to manage runoff water from the Project infrastructure. Water management infrastructure will be constructed to manage contact and non-contact runoff on and around the proposed main mining infrastructure surface areas, which include:

- **The Island Mountain Portal area** (including a platform and access road). This infrastructure will be constructed on partially exposed historical mine waste rock. Contact water runoff will be collected in lined contact water ditches and sumps before pumping to the Mine Site Sediment Pond, or released to Willow River, if water quality obtained during monitoring is appropriate. The Island Mountain portal contact waters from a lined temporary laydown pad area may be pumped back into the underground water system.

- **The Mine Site Complex Worker Accommodations area** (including the adjacent Camp Access Road segment). This infrastructure will be developed in the location of the existing core farm which is not currently managed by drainage infrastructure. Most of the Camp Access Road segment will overlay an existing unpaved road. Currently the majority of runoff from the developed camp is flowing towards Lowhee Creek, while only the southern part of the developed camp and the existing road are flowing towards Jack of Clubs Lake. Contact water runoff will be collected in lined contact water ditches draining to the Mine Site Complex Sediment Pond and then treated prior to discharge.
- **The Mine Site Complex main area** which includes the BFA, the Services Building, the Mine Site Sediment Pond, the water treatment system ("WTS") area, a segment of the Camp Access Road serviced by the northern access road contact water ditches, and the Valley Portal. This infrastructure will be developed on top of tailings and waste rock that were deposited in Jack of Clubs Lake during historic mining operations. Most of the runoff from this area currently flows towards Jack of Clubs Lake, except for the north-western area (where a segment of the Camp Access Road is planned) that sees runoff flow towards the Willow River. A low permeability liner under the BFA will limit infiltration to ground while contact water runoff will be collected in lined contact water ditches. Most of the contact water runoff will drain to the Mine Site Sediment Pond, while contact water collected along the Camp Access Road will drain into a collection sump for sediment settlement and monitoring. Water collected within the collection sump will be released to Willow River if water quality is appropriate or will be pumped to the Mine Site Sediment Pond and treated prior to discharge. The Mine Site Complex will be designed such that existing patterns of seepage for the historical mine tailings and waste rock will continue with little to no interaction with proposed mine infrastructure. Underground water will be pumped to dewater existing workings from previous mining operations, and to lower the groundwater level to an elevation suitable for starting mining activities. There is provision to reuse water from underground for the concentrator process needs. This will generate an excess of water (concentrator bleed) once the paste backfill plant becomes available. This excess water will be pumped to the WTS before discharge to the environment.
- **The Bonanza Ledge Site area** which includes the main Bonanza Ledge WRSF pile with inner access road and rerouting of the existing C Road, the existing Bonanza Ledge Sediment Pond with its retention dike, a new south contact water retention basin (i.e., the Bonanza Ledge South Sump). Surface water from disturbed areas (i.e., around the Bonanza Ledge WRSF footprint) will be collected through a network of collection ditches and directed either to the Bonanza Ledge Sediment Pond or, later, to the Bonanza Ledge South Sump. The Bonanza Ledge South Sump will include an operational outflow system comprised of a pumping system and associated pipeline running to the Mine Site Sediment Pond at the Mine Site Complex. Contact water from the existing Bonanza Ledge Mine property (and the Bonanza Ledge Phase II mine) to the south of the new Bonanza Ledge WRSF will continue being sent to the existing Bonanza Ledge WTS while the new Bonanza Ledge WRSF is being developed and

prepared. Contact water resulting from the early Bonanza Ledge WRSF pile will also be collected in the existing Bonanza Ledge sediment Pond and be treated at the WTS, followed by a discharge to Lowhee Creek. This will continue until the Bonanza Ledge WRSF area overtakes the Bonanza Ledge WTS location. At this point, the Bonanza Ledge South Sump will be constructed and operational, and the Bonanza Ledge WTS will have been relocated to the Mine Site Complex to provide additional treatment capacity to the Mine Site WTS. Contact water collected at the Bonanza Ledge Site Sediment Pond will be pumped to the Bonanza Ledge Site South Pond, and then transported via pipeline to the Mine Site Sediment Pond for storage prior to treatment at the Mine Site WTS and discharged to the environment (i.e., Jack of Clubs Lake or a secondary discharge proposed in the Willow River).

Water Balance

Water balance results for the fully developed site (final configuration) for an average climate year and the selected wet year with climate change (wet-CC year; see Chapter 18) climate year conditions from Figure 20-1 flows are provided in Table 20-1 for the base case and upper case U/G dewatering scenarios (see Section 16.5 for information on dewatering rates).

Table 20-1: Mine Site water balance results: Base (upper) case U/G dewatering

Flow Description	Average Climate Year		Wet-CC Climate Year	
	Average Annual Rate m^3/hr	Maximum Daily Rate m^3/hr	Average Annual Rate m^3/hr	Maximum Daily Rate m^3/hr
Inflow to Bonanza Ledge Sediment Pond (R5 + R7)	10.9	123	22.4	245
Bonanza Ledge Sed Pond to Bonanza Ledge South Pond (F8)	11.2	126	22.9	251
Bonanza Ledge South Pond outflow to Mine Site Sed Pond (F9)	19.8	224	40.7	447
Inflow to Mine Site Sed Pond (R1 + R2)	15.2	174	31.5	335
Mine Site Sed Pond outflow (F5)	35.8	344 (291)	74.6	344 (291)
U/G Inflow to Concentrator (F3A)	63.2	63.2	63.2	63.2
U/G Inflow to WTS (F3B)	319 (469)	321 (471)	319 (469)	321 (471)
Concentrator inflow to WTS (F10)	20	20	20	20
WTS: U/G flow treated	319 (469)	321 (471)	319 (469)	321 (471)
WTS: Surface flow treated (F5 + F10)	55.9	364 (311)	94.6	364 (311)
Total treated water / discharge outflow (D1)	**375 (525)**	**685 (780)**	**414 (564)**	**685 (780)**

Note: Numbers in ( ) correspond to the upper case U/G dewatering rate.

Water Quality

The Mine Site water quality model ("WQM") was based on the Mine Site water balance; the conceptual approach is described in Golder (2022c) and includes both the Mine Site Complex and the Bonanza Ledge Site.

Water quality model inputs were developed to represent the geochemical reactivity of materials defined in the overall water quality conceptual model. The datasets that were used to develop inputs to the Mine Site WQM included:

- Mine site water quality monitoring data at the Bonanza Ledge Mine, including Pond A and EG-0.25;
- Mass loading rates for waste rock and mineralized material, developed using the results of short-term leach tests (SFE and NAG leachate analysis) and humidity cell tests.

To bracket the range of uncertainty within the existing databases, two scenarios were developed: base-case (average) and upper-case (95^{th} percentile).

The predicted Mine Site Sediment Pond and Bonanza Ledge SCP water qualities during the Project were compared with the British Columbia Water Quality Guidelines for Freshwater Aquatic Life ("BCWQG-AL") to highlight parameters that occur at concentrations greater than reference guidelines:

- Mine Site Complex Water Quality Predictions:
  - Base Case: Silver, aluminum, arsenic, copper and lead;
  - Upper Case: Base case parameters plus cadmium, nickel, selenium and zinc.
- Bonanza Ledge SCP Water Quality Predictions:
  - Base Case: Silver, aluminum, arsenic, copper, lead and zinc;
  - Upper Case: Base case parameters plus cadmium, copper, nickel, selenium and sulphate.

The complete water quality predictions were provided for consideration in the Mine Site Complex WTS design.

Underground water quality was evaluated as a distinct inflow within the water management scheme that would report directly to the Mine Site Complex WTS and, as such, was not included in the WQM predictions. Underground water quality was assessed based on the composition of available underground mine water samples. The initial screening of groundwater quality samples collected from the underground mine identified sulphate, iron, arsenic, aluminum, copper, cadmium, cobalt, manganese, zinc and lead as for the purpose of the water treatment design basis evaluation (Golder 2021a).

Nitrogen loadings were estimated using nominal blasting and waste rates; these values were used to predict nitrate and ammonia concentrations in mine water for the purpose of the water treatment evaluation.

20.3.6.2. Water Management at QR Mill Site

The general surface water management strategy at the QR Mill is as follows:

- Diverting non-contact water away from impoundments to minimize surplus water stored on site;
- Collecting disturbance-influenced contact water and implementing Surface Erosion and Sediment Control ("SESC") measures;
- Collecting and routing mine-influenced contact water that meets the permit criteria for discharge towards authorized discharge locations;
- Collecting and routing mine-influenced contact water that does not meet the permit criteria for discharge, to authorized storage locations prior to treatment and discharge towards authorized discharge locations.

The East and West TSF diversion channels will continue to divert non-contact runoff away from the FSTSF.

Runoff from the temporarily lined FSTSF surfaces will flow in lined ditches to the FSTSF Ephemeral Pond. Excess water from the FSTSF Ephemeral Pond will be pumped to a lime dosing station and then pumped to the Main Zone Pit ("MZP"). The non-contact water from the lined outer slopes of the closure cover on the FSTSF will be routed into the new Sediment Pond located east of the South Seepage Collection Pond ("SSCP"). The Sediment Pond will discharge into MZP Diversion and then into Creek No. 3 (via Weir 8), provided its water quality meets the permit criteria for discharge.

The SSCP will be enlarged to provide flood storage, for use as part of the mill circuit, and to collect FSTSF seepage that leaks through the Cross Dyke. A small amount of freshwater will be drawn from the Northwest Zone Pit ("NWP") for mill operations. Surplus water from the reclaim water tank / SSCP will be pumped and treated prior to discharge to the MZP.

The North Seepage Collection Pond ("NSCP") will collect FSTSF seepage, and this water will be pumped to the MZP. There will be groundwater interception wells downstream of the FSTSF and NSCP toe to intercept FSTSF seepage that bypasses the NSCP. This intercepted water will also be pumped back to the MZP.

The MZP will collect surface runoff from the QR Mill, camp, mineralized material pad and loading areas, and collect excess water from the FSTSF, NSCP, groundwater interception wells, and SSCP. The MZP pond will be maintained near its Minimum Normal Operating Water Level ("Minimum NOWL") to maximize its flood storage capacity. The Minimum NOWL is 0.5 m above the top of the tailings in the MZP to provide a water cover for the tailings. The MZP spillway invert will be raised by 1 m to increase the flood storage capacity in the MZP. Excess MZP water will be pumped to the water treatment system for treatment prior to discharge into the Rudy Creek watershed. The water treatment retentate stream will be treated at a desaturation unit. The solid waste stream from the desaturation unit will be dewatered and stored within the FSTSF; the liquid overflow will report to the MZP (KCB, 2022a).

Typical MZP water balance inflows and outflows for an average climate year and a 1-in-30-year wet climate year are provided in Table 20-2.

Table 20-2: QR Mill site MZP water balance results

Flow Description	Average Climate Year		30-Year Wet Year	
	Average Rate (m^3/hr)	Max daily rate (m^3/hr)	Average Rate (m^3/hr)	Max daily rate (m^3/hr)
FSTSF Ephemeral Pond Limed Flow	18.7	162.0	26.6	162.0
Pumping from SSCP	5.8	90.0	10.1	90.0
Pumping from NSCP	3.2	37.8	3.6	38.2
WTS retentate flow	26.3	47.9	22.7	47.9
MZP Diversion Weir 8 Leakage	1.4	24.8	5.0	27.4
Groundwater inflow	3.2	3.2	3.2	3.2
Leakage from MZP West Road	3.2	63.7	5.8	68.0
Precipitation over MZP pond	2.2	29.5	2.9	34.9
Local catchment runoff	1.8	33.8	2.9	33.5
SSCP to MZP Seepage	1.1	1.1	1.1	1.1
Total Inflow to MZP	**67.0**	**493.9**	**83.9**	**506.2**
Spillway discharge to Creek No. 3	0.0	0.0	7.9	1000.1
Evaporation losses	1.4	4.3	1.4	4.7
WTS inflow	65.2	119.9	55.1	119.9
Seepage losses	0.4	0.4	0.4	0.4
Pond volume change	0.0	369.4	19.1	-618.8
Total Outflow from MZP	**67.0**	**493.9**	**83.9**	**506.2**

Water Quality

The datasets that were reviewed or used in the QR Mill water quality model (KCB, 2022b) included:

- QR SW1, MZP, TSF, NSCP, SSCP, and NWP monthly water quality sampling data from 2012 to 2021;
- North Portal water quality data from 2012 to 2020;
- Water quality data for QR Mill effluent from 2021;
- Water quality data for the Project mill effluent after cyanide destruction, based on samples received in 2019;
- 2020 kinetic (laboratory) test result for the Project filtered tailings;
- Field leach barrel test results on the MZP waste rock pile ("WRP"), East WRP samples, MZP pit wall samples and NWP pit wall samples collected in 2020; and
- Kinetic (laboratory and field leach barrel) test result on the surface tailings samples collected from the MZP and TSF in 2020.

The predicted MZP and FSTSF Ephemeral Pond water qualities during the Project were compared with the British Columbia Water Quality Guidelines for Freshwater Aquatic Life (BCWQG-AL) to screen for COPCs. The constituents that exceeded BCWQG-ALs that would require water treatment are shown in Table 20-3.

Table 20-3 Potential Constituents of Concern

Based on Predicted MZP Water Quality during the Project	Based on Predicted FSTSF Ephemeral Pond Water Quality during the Project
Sulphate, nitrite, nitrate, ammonia, cyanide, antimony, chromium, cobalt, copper, manganese, molybdenum, nickel, selenium, and silver.	Sulphate, nitrite, nitrate, cyanide, antimony, cadmium, chromium, cobalt, copper, lead, manganese, molybdenum, nickel, selenium and silver, thallium, zinc.

20.3.7. Water Treatment

The Project entails the rental of a temporary water treatment system for use during the construction period and a new permanent contact water treatment system at the Mine Site Complex for use during operations.

Existing water treatment systems at the QR Mill and at the Bonanza Ledge Site (that will be relocated to the Mine Site Complex with the construction of a pipeline) will be utilized by the Project. These water treatment systems are discussed in Chapter 18.

20.3.8. Historical Waste Disposal Activities

As the Project consists of existing infrastructure that is both historical and operating, both the Mine Site Complex and the QR Mill are locations of historical waste disposal activities. In addition, a historical waste rock associated with the 1500 Level adit is also located on the northeast end of Jack of Clubs Lake, adjacent to the proposed Valley Portal. The remediation associated with the Cariboo Gold Quartz Mine operation, for tailings and waste rock, is under the jurisdiction of the Provincial Government (Crown Contaminated Sites Program in the Ministry of Forests, Lands, Natural Resource Operations and Rural Development[1] ("FLNRORD") in (ODV, 2021b.) ODV and the Province have signed a Memorandum of Understanding for collaboration on remediation.

20.4. Considerations of Social and Community Impacts

ODV is committed to meaningful and transparent engagement with Indigenous nations, the public, local community members, and other stakeholders. ODV has cultivated positive relationships with the three Participating Indigenous nations, within whose traditional territory the Project is located, and has developed relationship agreements and engagement protocols with them. ODV intends to maintain these relationships through all phases of the Project.

20.4.1. Social Setting

The Project is in the Wells-Barkerville area of the Cariboo Regional District ("CRD") in British Columbia (BC), with the nearest communities to the Project being the District of Wells ("Wells"), Barkerville Historic Town & Park, Quesnel, and Likely. A portion of the Mine Site Complex and other Project components are outside of the District of Wells and are located in Electoral Areas C and F of the CRD. There are several unincorporated communities in the area, including New Barkerville and other settlements along Highway 26.

The Participating Indigenous nations for the EA for the Project are Lhtako Dené Nation, Xat'śūll First Nation, and Williams Lake First Nation. Both Nazko First Nation and the TNG decided not to participate in the EA for the Project, however, are being notified and updated on the Project on a regular basis.

The Project is in an area known for its rich mining history, with several historical mines located near or overlapping the Project footprint, as well as a number of active exploration and mining projects.

[1] Since the writing of this report, the Ministry of Forests, Lands, Natural Resource Operations and Rural Development (FLNRORD) has been divided into two ministries. FLNRORD will continue to be used throughout this report where relevant to refer to either the Ministry of Forests (MoF) or the Ministry of Land, Water, and Resource Stewardship.

The primary employment industries in the area closest to the Project are Manufacturing and Construction, Wholesale and Retail Trade, and Accommodation and Food, however Other Services (repair and maintenance, personal and laundry services, private households, religious or social organizations etc.) also comprise a large proportion of employment in the Project area (Statistics Canada 2021).

20.4.2. Engagement and Consultation

Ongoing and future engagement measures by ODV have been developed through collaboration and relationships with the Participating Indigenous nations during the EA, guidance from the EAO, and in response to community and public inquiries. These measures will, at a minimum, comply with federal and provincial regulations and requirements for consultation and engagement.

20.4.3. Indigenous Nations

ODV has been actively engaging with Indigenous nations to understand their Indigenous interests in the Project and the areas influenced by the Project. During the Early Engagement Phase of the Environmental Assessment, the EAO confirmed that the Project is in the asserted traditional territory of Lhtako Dené Nation, Xat'śūll First Nation, and Williams Lake First Nation, and that each of these nations would be Participating Indigenous nations for the Environmental Assessment.

Engagement activities with Lhtako Dené Nation began in 2016, with Xat'śūll First Nation in 2017, and with Williams Lake First Nation in 2018. The focus of preliminary engagement has been to establish consistent points of contact with the authorized representatives of each Indigenous nation, inform Indigenous nations about the next steps in the regulatory review, and respond to questions and concerns raised by Indigenous nations about the Project and associated studies. ODV will have ongoing engagement through all Project phases with these nations.

ODV has reached Project-specific agreements that provide capacity funding to Lhtako Dené Nation, Xat'śūll First Nation, and Williams Lake First Nation to facilitate their participation in the Environmental Assessment and cover the costs of third-party technical review for each nation.

On October 2, 2020, ODV signed a life-of-project agreement to facilitate the development and full build-out of the Project with the ongoing consent and support of Lhtako Dené Nation during all stages of the Project.

20.4.4. Federal, Provincial and Municipal Governments

As part of the current EA process ODV has engaged with various provincial and local government agencies, to differing degrees and levels of engagement. The District of Wells, City of Quesnel, City of Prince George, City of Williams Lake, CRD and the Regional District of Fraser Fort George ("RDFFG"), as well as the North-Central Local Governments Association have been engaged by ODV since 2016, when the Project Planning phase was initiated. ODV will continue to engage and collaborate with federal, provincial, regional and municipal government bodies and representatives as necessary, with respect to the Project, land and resource management, heritage and protected areas, official community plans and associated priorities, infrastructure, land use and access, employment and training, and any other matters deemed relevant.

20.4.5. Public Stakeholders

Proactive engagement with the public and stakeholders was undertaken beginning in the Project Planning Phase initiated in 2016, to build awareness about the Project, understand the priorities of stakeholders, and current conditions in their communities, and to understand interests and concerns around the Project as a means through which issues could be avoided through design or mitigation.

The following public and stakeholders regularly received Project information:

- Local Residents;
- Community and Environmental Organizations and Interest Groups;
- Community Service Providers;
- Business and Economic Development Organizations;
- Landowners along the Transmission Line and other Project components;
- Tenure holders, including traplines, guide outfitters, mineral, forestry companies and water license holders;
- Heritage and Cultural Stakeholders;
- Tourism-related and other Businesses;
- ODV Employees; and
- Arts Organizations.

Public and stakeholder engagement has included community meetings (in person and virtual), one-on-one meetings with particular groups, workshops and technical meetings, surveys and feedback forms, site visits, community events, industry events and public displays.

Presentations regarding the Project are regularly made to the public on mitigation efforts and proposed strategies are developed by ODV to improve community relations, promote sustainability, and improve quality of life in the community while developing the Project and advancing through the permitting and EA application process. Feedback from the community and stakeholders is sought and obtained throughout the planning process.

20.5. Mine Closure Requirements

20.5.1. Mine Reclamation and Closure Plan

ODV has prepared various Reclamation and Closure Plans ("RCP") for elements of the Project to detail how the sites will be reclaimed to a safe, stable, and non-polluting condition. An updated RCP for the Project was provided as an appendix to the EA for the Project. RCPs will continue to be updated as mine plans evolve, regulatory guidelines change, and as required by permit conditions. These RCPs provide the basis to develop an integrated RCP for the Project including a reclamation cost estimate based on the most current assumptions regarding reclamation and closure of Project facilities and landforms.

20.5.2. Regulatory Framework

The Project mine closure is guided by several provincial acts and regulations:

- British Columbia *Mines Act* (Government of BC, 1996) and Health, Safety, and Reclamation Code for Mines in British Columbia (Government of BC, 2021);
- British Columbia *Environmental Management Act* (Government of BC, 2003);
- BC *Water Sustainability Act* (Government of BC, 2014);
- Regional Regulations – The Project is located within the Cariboo Regional District Electoral Area C (the Mine) and Area F (QR Mill) and is subject to the CCLUP and CRD North Cariboo Area Rural Land Use Bylaw (CRD, 2000);
- Federal Requirements – Federal Acts and Regulations that apply to the Project include the *Fisheries Act* (Government of BC, 1985) the *Migratory Birds Convention* Act (Government of Canada, 1994), the *Seeds Act* ((Government of Canada, 1985a), and the *Metal and Diamond Mining Effluent Regulations* ((Government of Canada, 2002) of the *Fisheries Act*.

20.5.3. Mine Closure Planning Approach

The Project footprint at each site has been divided into Master Areas by ODV to reflect disturbance types and proposed end land uses. Master Areas are generally divided by facility/landform types with common approaches to reclamation. Detailed closure and reclamation prescriptions are provided for each Master Area consisting of the following components:

- **Scope and Extent:** Defines location and extent of the Master Area;
- **Current Conditions:** Describes the Master Area conditions during operations including progressive reclamation that has already been done;
- **Future Conditions:** Describes the plan for the Master Area for future development and use prior to closure;
- **Closure Design Basis:** Lists regulations, permits, and RCP that should be followed to design the closure activities for the Master Area;
- **Closure Design Criteria/Constructability:** Presents activities and/or requirements to implement closure such as site preparation, progressive reclamation if applicable, revegetation, and post-closure monitoring/maintenance, as well as infrastructure decommissioning, and equipment/materials removal.

20.6. Permitting and Required Approvals

20.6.1. Regulatory Context

Depending on the scope of a proposed project, and whether it is expected to exceed thresholds, it can be subject to concurrent review through impact and environmental assessment processes at both the federal and provincial levels. At the provincial level, mineral mining projects that require review under the new BC *Environmental Assessment Act* (BCEAA; (Province of BC, 2018) exceed the following threshold under Part 3 (Table Six) of the Reviewable Projects Regulation: "A new mine facility that, during operations, will have a production capacity of > 75,000 tonnes per year of mineral ore" (Government of BC, 2020). The Project is currently undergoing and EA under the new provincial act, however, is not subject to federal review under the *Impact Assessment Act* (Government of Canada, 2019) as it does not exceed the relevant threshold specified in the Schedule of Physical Activities specified in the federal Physical Activities Regulations (SOR/2019-285. S. 18(c); (Government of Canada, 2019a).

The Project will require several permits, approvals, and authorizations from provincial, federal, and municipal agencies, which are summarized in Sections 20.6.2, 20.6.3, 20.6.4, and 20.6.5, respectively.

20.6.2. BC Environmental Assessment Regulations

As the Project is currently undergoing an EA under the *BCEAA* (2018), a number of regulations establish the legal framework for the process and are detailed in Table 20-4 below. The intention is that the Project will receive an EA Certificate from the EAO, under the *BCEAA* (2018) following the prescribed process and assessment phases.

Table 20-4: Summary of Regulations Supporting the BCEAA (2018)

Regulation	Description
Reviewable Project Regulation (2020)	The Reviewable Projects Regulation sets out the criteria and thresholds for projects required to undergo the EA process (EAO, 2019a). Reviewable proposed projects are primarily those with a higher potential for adverse environmental, economic, social, heritage, or health effects. Thresholds for both new projects and modifications to existing projects are provided.
Protected Areas Regulation (2019)	This regulation identifies prescribed protected areas (as defined in other enactments) for the purposes of the Reviewable Projects Regulation, which determines which projects must automatically undergo an EA. This regulation is also related to the Minister of Environment and Climate Change Strategy's authority to terminate a project from the EA process if it would have extraordinarily adverse effects on a listed protected area.
Environmental Assessment Fees Regulation (Province of BC, 2019a)	The EAO charges fees for a range of services, from undertaking EAs, through to compliance inspections. The fees provide partial recovery of the costs incurred by the EAO in delivering high-quality and timely EAs. Revenue from fees allows the organization to maintain appropriate staffing levels. The funding is also used to support other provincial agencies in their participation in the EA process.
Violation Ticket Administration and Fines Regulation (Province of BC, 2019b)	This regulation enables EAO Compliance and Enforcement Officers to issue tickets with associated monetary penalties to proponents who are not in compliance with their certificate conditions, or their exemption order conditions.
Administrative Penalties Regulation (Province of BC, 2020a)	Administrative Monetary Penalties are financial penalties that can be issued for prescribed contraventions of the Act or failures to comply with the Act, including failing to comply with the requirements of an EAC or an exemption order made under the Act. Regulated parties will be given prior notice of the EAO's intention to issue an administrative penalty and will be provided with an opportunity to respond before an administrative penalty is issued.

In October 2019, the EA process commenced with the submission of an initial Project Description and Engagement Plan, to the BC Environmental Assessment Office (the "EAO"), under the former BCEAA (2002). Following guidance from the EAO, in collaboration with ODV, and following regulatory requirements, it was decided the Project would continue the EA process under the new 2018 BCEAA. Subsequently, the Project Description submitted in October 2019 was accepted as fulfilling the requirements of the Initial Project Description as part of the new Act, in February 2020.

As the EA process continued, further exploration work and updates to the mineral resource estimate ("NI 43-101 Technical Report and Mineral Resource Estimate for the Cariboo Gold Project" (October 5, 2020)) supported an increase in the proposed production rate to 4,750 tpd.

The Project, proposed at a production rate of 4,750 tpd, is currently undergoing review as per the BC Environmental Assessment Act ("BCEAA") 2018, with issuance of an Environmental Assessment Certificate ("EAC") expected after successful review of the application.

Since submission of the EAC Application in July 2021, ongoing exploration work and updating of the mineral resource estimate supports an increase in the production rate to 8,000 tpd after the first 3 years of operations. Any changes to the Certified Project Description, resulting from the increased production rate will require an amendment to the Project EAC before proceeding to an updated detailed design and ensuing permit amendment applications.

20.6.3. Federal Permits, Approvals, Licences and Authorizations

Federal permits, approvals and authorizations that could potentially be applicable to the Project are summarized in Table 20-5. As the Project proceeds, specific permit requirements will be determined based on discussions with federal agencies. ODV does not currently hold any federal permits in relation to their operations in the Project area.

Table 20-5: Federal permits and approvals potentially applicable to the proposed Project

Permit / Approval	Responsible Agencies	Federal Statute	Project Activity/Regulatory Context
Fisheries Act Authorization (Government of Canada, 1985b)	Fisheries and Oceans Canada ("DFO")	*Fisheries Act*	No person shall carry on any work, undertaking, or activity other than fishing that results in the death of fish. No person shall carry on any work, undertaking, or activity that results in the harmful alteration, disruption, or destruction (HADD) of fish habitat. If the death of fish or a HADD cannot be avoided during any part of the Project, an Authorization under Section 35 may be required.

Permit / Approval	Responsible Agencies	Federal Statute	Project Activity/Regulatory Context
Migratory Birds Convention Act Authorization (Government of Canada, 1994)	Environment and Climate Change Canada ("ECCC")	*Migratory Birds Convention Act*	*Deposit of substances harmful to migratory birds or vegetation clearing for the Project during the migratory bird nesting season as outlined by ECCC (May 1 to July 15, Zone A4).* Permits may be issued to eliminate dangerous conditions or damage to property caused by migratory birds or their nests.
Navigation Protection Program Notification and/or Approval	Transport Canada	*Canadian Navigable Waters Act*	Notification and information to the Minister for works that are in, on, over, under, through, or across any navigable water. Application for approval from the Minister is required for works (other than minor works) that are in, on, over, under, through, or across any navigable water and that may interfere with navigation.
Species at Risk Act Authorizations (if required; Government of Canada, 2002)	ECCC, DFO, and Parks Canada	*Species at Risk Act* ("SARA")	The Competent Minister may issue a SARA permit authorizing activity that will affect a listed wildlife species, any part of its critical habitat, or the residences of its individuals.
Explosive Licences and Permits (Government of Canada, 1985a)	Natural Resources Canada	*Explosives Act*, and Regulations	Explosive Licence required for factories and magazines. Explosive Permit required for vehicles used for the transportation of explosives.
Transportation of Dangerous Goods Regulation (Government of Canada, 2001) (Government of Canada, 1982)	Transport Canada	*Transportation of Dangerous Goods Act*	This Act addresses the classification, documentation, marking, means of containment, required training, emergency response, accidental release, protective measures and permits required for the transportation of dangerous goods by road, rail or air.

20.6.4. Provincial Permits, Approvals and Licences

Provincial permits, approvals, authorizations, and licences that could potentially be applicable to the proposed Project are summarized in Table 20-6. The Project will be located on Crown lands at the Mine Site Complex and the QR Mill, as well as on a parcel of private land owned by ODV at the Mine Site Complex. A *Mines Act* permit approving the mine plan and reclamation program will be required for the Project, as well as amendments to existing provincial permits (e.g., *Mines Act* and *Environmental Management Act*) for the QR Mine and Bonanza Ledge Mine properties. As the Project proceeds, specific permit requirements will be determined based on discussions with provincial regulatory agencies.

Table 20-6: Provincial permits and approvals potentially applicable to the proposed Project

Permit / Approval	Responsible Agency	Provincial Statute
Mines Act Permit	Ministry of Energy, Mines, and Low Carbon Innovation ("EMLI")	*Mines Act*
Effluent Discharge Permit	BC Ministry of Environment and Climate Change Strategy ("ENV")	*Environmental Management Act*
Emissions Discharge Permit	ENV	*Environmental Management Act*
Refuse Permit and Waste Storage Approval	ENV	*Environmental Management Act*
Heritage Conservation Act Permit	Ministry of Forests, Lands, Natural Resource Operations and Rural Development ("FLNRORD"), Archaeology Branch	*Heritage Conservation Act* (Government of BC, 1996a)
Heritage Conservation Act Concurrence letters	FLNRORD, Archaeology Branch	*Heritage Conservation Act*
License of Occupation	FLNRORD	*Land Act* (Government of BC, 1996b)
Statutory Right of Way	FLNRORD, Surveyor Generals Office, MOTI	*Land Act*
Wildlife Act Permit	FLNRORD, Resource Stewardship Division	*Wildlife Act* (Government of BC, 1996c)
Sewer System Regulation Approval	BC Ministry of Health, Interior Health Authority ("IHA"), Northern Health Authority ("NHA")	*Public Health Act* (Government of BC, 2008)
Construction Permit for a Potable Water Well	BC Ministry of Health, NHA	*Drinking Water Protection Act* (Government of BC, 2001)

Permit / Approval	Responsible Agency	Provincial Statute
Water System Construction Permit	BC Ministry of Health, NHA	*Drinking Water Protection Act*
Drinking Water System Operations Permit	BC Ministry of Health, NHA	*Drinking Water Protection Act*
Short Term Use of Water Permit *Water Sustainability Act* Section 10	FLNRORD, Water Stewardship Branch	*Water Sustainability Act* (Government of BC, 2014)
Change Approval (for changes in and about a stream), *Water Sustainability Act* Section 11	FLNRORD, Water Stewardship Branch	*Water Sustainability Act*
Water Licence (Diversion, storage, and use of water) *Water Sustainability Act* Sections 7 and 9 (Government of BC, 2014)	FLNRORD, Water Stewardship Branch	*Water Sustainability Act*
Licences to Cut and Special Use Permit	FLNRORD, Forest Tenures Branch	*Forest Act* (Government of BC, 1996d)
Industrial Access Permit	BC Ministry of Transportation and Infrastructure ("MOTI")	*Transportation Act* (Government of BC, 2004)
Permit for regulated activities	Ministry of Health	*Public Health Act*
Explosives Magazine Storage and Use Permit	EMLI	*Mines Act*

In addition, two pieces of Provincial climate action legislation have direct impacts on the EAO review of the Project, and could impact the operation of the Project, should it be approved. The *Climate Change Accountability Act*, 2019 (Government of BC, 2019a) and the *Greenhouse Gas Industrial Reporting and Control Act,* 2016 (Government of BC, 2014) and associated reporting regulations. The Project is expected to have annual direct GHG emissions exceeding 25,000 tCO_2e, meaning that it would be subject to both the emissions reporting and verification requirements in the above acts.

20.6.5. Local Government Permits

The Project facilities include areas within the jurisdictions of the CRD and the District of Wells, for the Mine Site Complex specifically. Both jurisdictions have passed bylaws that may pertain to Project activities/operations and property ownership or business operations, including:

- CRD Invasive Plant Management Regulation Bylaw, No. 4949, 2015, regarding the management of invasive plants;
- CRD Untidy and Unsightly Premises Regulatory Bylaw, No. 4628, regarding the management of untidy/unsightly properties;
- District of Wells Noise Control Bylaw, No. 93, 2018 limiting hours of noise during operations/ construction; and
- District of Wells Traffic and Streets Bylaw, No. 68, addressing traffic and provides load and size restrictions.

Other Wells bylaws are applicable to utility connections and municipal service fees related to property development (water, sewer, garbage). These bylaws would be addressed through direct applications with the District of Wells.

21. Capital and Operating Costs

The capital and operating cost estimates presented in this Preliminary Economic Assessment Study ("PEA") for Osisko Development Corp.'s ("ODV") Cariboo Gold Project (the "Project") are based on the construction of:

- Pre-concentrator including a crushing circuit and mineral sorting at the Bonanza Ledge Site;
- Quesnel River Mill ("QR Mill") and Tailings Management Facility ("TMF") upgrade at QR Mill;
- An underground mine including a primary and secondary crushing circuit;
- A concentrator consisting of mineral sorting, grinding, flotation and a paste backfill at the Mine Site Complex; and
- Ancillary infrastructure at the Mine Site Complex to support operation, such as a camp, offices and dry, and a Water Treatment Plant.

All capital and operating cost estimates cited in this Report are referenced in Canadian dollars.

21.1. Capital Costs

21.1.1. Summary

The total initial capital cost expenditures ("CAPEX") to bring the Project to a capacity of 2,000 tonnes per day ("tpd") is estimated at $121.5 million ("M"), including contingencies and indirect costs. The total expansion CAPEX to increase the Project's capacity to 8,000 tpd is estimated at $716.1M. The cumulative life of mine capital expenditure including costs for initial, expansion, sustaining is estimated to be $1,364.8M, as illustrated in Figure 21-1

Table 21-1: Project capital cost summary

Area	Cost Area Description	Initial capital cost ($M)	Expansion capital cost ($M)	Sustaining capital cost ($M)	Total capital cost ($M)
000	Mobile Equipment (non-mining)	3.2	1.8	5.6	10.6
200	Underground Mine	16.2	114.9	375.9	507.0
300	Water & Waste Management	2.6	88.6	9.9	101.1
400	Electrical & Communication	13.1	57.4	67.0	137.5
500	Surface Infrastructure	3.8	53.3	60.6	117.7
500	Mine Surface Infrastructure	2.1	2.5	5.7	10.4
600	Process Plant - Wells	1.5	189.1	-	190.6
600	Process Plant - QR Mill	37.6	17.1	2.4	57.0
700	Construction Indirect Costs	20.8	66.1	0	86.9
800	Owner's Costs	3.7	27.2	0.1	31.0
999	Contingency	0.5	98.1	-	98.7
-	Capitalized Operating Costs	16.4	-	-	16.4
	Total	**121.5**	**716.1**	**527.2**	**1,364.8**
	Site Reclamation and Closure	-	-	18.5	18.5
	Salvage Value	-	-	-61.1	-61.1
	Total – Forecast to Spend	**121.5**	**716.1**	**484.6**	**1,322.2**

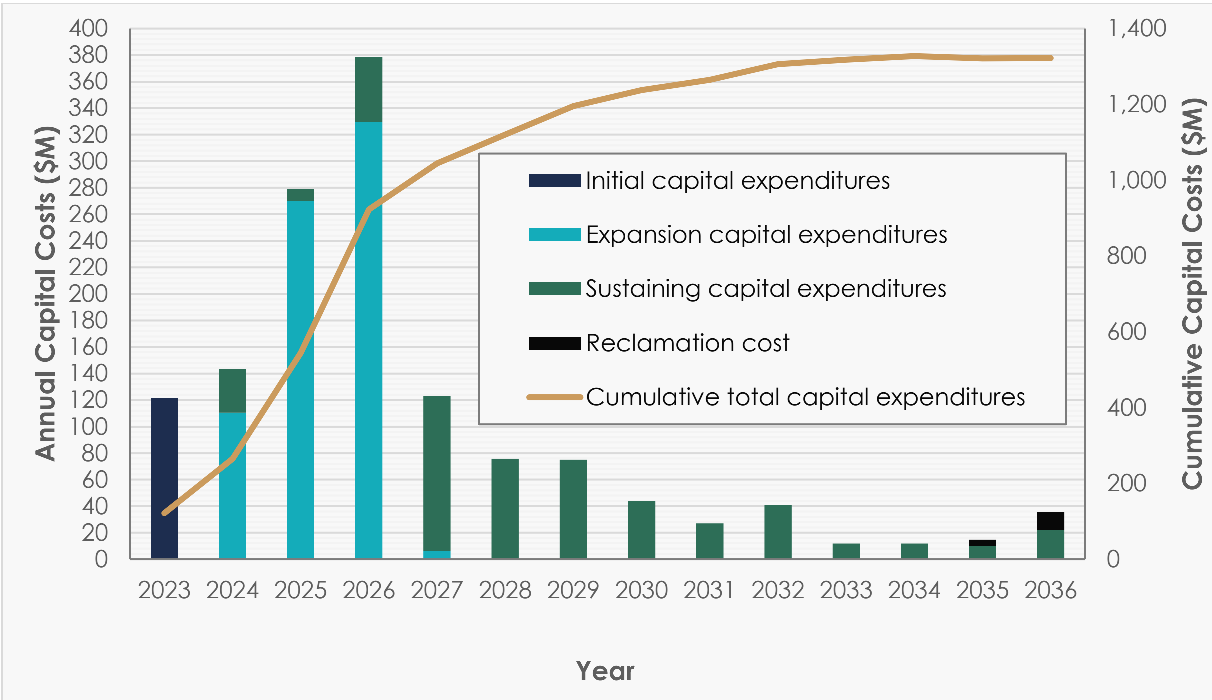


Figure 21-1: Annual and cumulative project capital costs

21.1.2. Scope and Structure of Capital Cost Estimate

The capital costs estimated for the life of mine ("LOM") were divided into three categories: initial, expansion and sustaining. Initial capital is comprised of capital costs incurred from 2023 to 2024 to initiate production at a capacity of 2,000 tpd. Expansion capital is incurred between 2024 and 2026 and is used to increase the Project's capacity to 8,000 tpd. Sustaining capital are all costs required to maintain the 8,000 tpd production profile through the LOM following the initial and expansion capital periods.

The overall capital cost estimate developed in this PEA generally meets the American Association of Cost Engineers ("AACE") Class 4 requirements and has an accuracy range of between -30% and +30%. The capital cost estimate for this study forms the basis for the approval of further development of the Project by means of a Feasibility Study. The various sections have been developed at different levels of engineering definition. Some sections are as low as 5%, whereas others are up to 30%.

The capital cost estimate abides by the following criteria:

- Reflects general accepted practices in the cost engineering profession;
- Assumes contracts will be awarded to reputable contractors on a cost-reimbursable basis;
- Labour costs are based on the current British Columbia Industrial Construction Collective Bargaining Agreement;
- Winter conditions are expected between the months of October and April. This is incorporated within the Project productivity factors;
- Preproduction capital costs are expressed in constant Q2 2022 Canadian dollars ("CAD"); with an exchange rate of 1.00 CAD for 0.79 US dollar ("USD" or "US$").

The Project schedule, from the Feasibility Study, detailed engineering to start-up, was also used in the estimate preparation. Refer to Chapter 24 for the execution plan and key Project milestones. Any capital expenditures before detailed engineering phase are considered "Early Works" (work plan capital) and are not included in this capital cost estimate.

21.1.3. Work Breakdown Structure (WBS) and Estimate Responsibilities

The capital cost estimate was developed in accordance with ODV's work breakdown structure ("WBS"). Table 21-2 illustrates the WBS with the Qualified Persons associated with each Level 1 Area:

Table 21-2: CAPEX estimate responsibilities by WBS

Area	WBS description	Responsible entity
000	Mobile Equipment (non-mining)	BBA
200	Underground mine	WSP, InnovExplo
300	Waste and Water Management	Golder, KCB, WSP
400	Electrical & Communication	BBA
500	Surface Infrastructure	BBA, WSP
600	Process Plant (Mine Site Complex and QR Mill)	BBA
700	Construction Indirects	BBA
800	Owner's Cost (General administration)	BBA
900	Indirect Costs	BBA
999	Contingency	BBA
	Site closure and reclamation	Golder, KCB

The WBS differentiates the Project's costs (initial, expansion and sustaining) in the following categories:

21.1.4. Estimate Methodology

Direct Costs

- The cost for major equipment were received through multi-packages bids from equipment manufacturers;
- Labour hourly rates and productivity were benchmarked against other mining projects in Bristish Columbia'
- Concrete costs were established from budgetary quotes from established suppliers and based on concrete Material Take Offs ("MTO");
- Structural Steel costs for the main buildings were based on MTOs and associated budgetary quotes from various steel building suppliers for the Services Building;
- Pre-fabricated buildings such as at QR Mill site are supported by general layouts and specifications, and costs were requested from various suppliers;
- The Workers Accommodation, the 69 kV / 138 kV transmission line and associated substations were supported by firm bids with Lease-to-Own models.

Indirect Costs

- Engineering, procurement and construction management ("EPCM") were developed with a detailed organizational chart and on a monthly basis for the duration of the initial and expansion phases;
- Camp costs were based on current costing from the existing operations on both sites;
- Freight and Storage costs were factored on the direct costs;
- Temporary facilities and services were factored;

Contingency

- Contingency for initial and expansion capital were applied to each WBS area and based on their respective project definition level;
- Contingency for underground development were embedded in the direct costs;
- Contingency for sustaining capital were applied for civil works.

Sustaining Capital

- Sustaining Capital were assessed on a requirement basis within the preliminary design of infrastructure to support the LOM production profile of 8,000 tpd;
- Costs of the Lease-to-Own components of the Project, such as for the Workers Accommodation, part of the surface mobile equipment fleet, the transmission line, and the related substations were included in the sustaining capital estimate for the portion of payments over the initial and expansion capital periods;
- Also, sustaining capital include the financing arrangement for the U/G mobile mining equipment and the U/G crushers.

Closure Costs

The Project's tailings management strategy at QR Mill is to allow storage of the Project tailings within the existing tailings storage facility ("TSF"). This tailings management strategy will allow reclamation of the Project filtered stack tailings storage facility ("FSTSF") jointly with the existing TSF, eliminating costs related to reclaiming a new, separate filtered tailings facility. As such, expenses associated with reclamation and closure of the Project FSTSF are covered as part of the Bonanza Ledge Mine Phase II reclamation and closure costs for the existing TSF. The overall closure cost for the QR Mill has not yet been estimated, although it is expected to significantly decrease compared to the value proposed by Golder.

The reclamation cost estimate provided below comprises reclamation costs for the Mine Site Complex, the Bonanza Ledge Site, and the updated QR Mill.

It is to be noted that a 25% contingency was applied to reclamation unit rates, lump sum items, and post-closure monitoring and maintenance to reflect the current level of the Project planning. It is expected the level of cost accuracy will improve as engineering design for key reclamation and closure components and structures is completed as the Project develops.

Reclamation and closure costs for all three sites were updated by Golder and estimated to total $18.5M. Reclamation will start in the second half of 2038 after the end of the mine production. The remaining rehabilitation activities are expected to be performed for a period of two years.

Salvage Value

- Salvage Value for mobile mining equipment, process equipment, electrical equipment and structural steel was estimated at $61.1M.

21.1.5. Exclusions

The following items were excluded from the capital cost estimate:

- Licensing costs;
- Financing costs other than for components having been described as financed or as Lease-to-Own;
- Foreign exchange variations;
- Project development costs incurred to date, including studies, equipment purchases, and early works;
- Permitting costs;
- Taxes (included in the financial model);
- Geotechnical anomalies (must be considered as risk);
- Operating costs.

21.2. Operating Costs

21.2.1. Summary

The average operating cost expenditures ("OPEX") over the 12-year mine life is estimated to be $94.0 per tonne ("$/t") mined or $933.3 per ounce ("$/oz") (CAD). Table 21-3, below, provides the breakdown of the projected operating costs by cost area for the Project.

Table 21-3: Cariboo Gold Project operating cost summary

Area	Cost area description	LOM ($M)	Annual average cost ($M)	Average LOM ($/tonne mined)	Average LOM ($/oz)	OPEX (%)
000	Mineralized material transport	108.5	9.0	3.9	38.2	4.1
200	Underground mining	1,499.9	125.0	53.3	528.8	56.7
300	Water and Waste Management	163.5	13.6	5.8	57.6	6.2
600	Processing – Mine Site Complex and QR Mill	675.8	56.3	24.0	238.2	25.5
800	Owner's Costs (G&A)	216.0	18.0	7.7	76.2	8.2
	Capitalized Operating Costs	-16.4	-1.4	-0.6	-5.8	-0.6
	Total	**2,647.3**	**220.6**	**94.0**	**933.3**	**100**

21.2.2. Basis of Operating Cost Estimate

The operating cost estimate was based on Q2 2022 assumptions. The estimate has been deemed to be of an accuracy within alignment with a PEA level of study. All operating cost estimates are in CAD. Many items of the operating cost estimate are based on budget quotations, allowances are based on in-house data and salaries are based on ODV's projected salary chart.

The operating cost estimate is based on the mine schedule indicative tonnage per time period that was produced in collaboration between ODV and InnovExplo in May 2022 and is inclusive of site costs to final Project close-out ("LOM") including waste management facilities. Refer to Chapter 16 for more context on the genesis of the mine plan and validation process.

Assumptions and Exclusions

The following items were assumed:

- Some equipment and materials would be refurbished and re-used;
- The labour rate build-up will be based on the statutory laws governing benefits to workers that were in effect at the time of the estimate;
- Freight estimates are based on vendor supplied freight quotations or in-house data. Freight for reagents is included in the price of those commodities. Freight for steel consumables is included in the price of that material. Freight for spare parts is calculated as a percentage of equipment cost expected to be used annually;
- No contingency is assumed;
- No cost escalation (or de-escalation) is assumed;
- No costs relating to certain agreements with third parties.

The following items were specifically excluded from the operating cost estimate, unless identified by the Owner's team and included in the Owner's costs:

- Cost of financing and interest;
- Pre start-up operations and maintenance training;
- Transport and handling of doré from the plant (included in the financial analysis).

Estimate Responsibilities

The overall operating cost estimate combined inputs from a number of sources including InnovExplo, Falkirk, Golder, WSP, KCB, and BBA as summarized in Table 21-4.

Table 21-4: OPEX estimate responsibilities

Cost area	Responsible entity
Underground Mining	InnovExplo
Mineralized material transport	BBA
Processing (Mine Site Complex and QR Mill)	BBA
Tailings, waste and water management and environment	Falkirk, KCB, Golder
General and administration	BBA

General Unit Rates

General rates used in the operating cost estimate are summarized in Table 21-5.

The following items were assumed for general rates:

- Propane, gas, and diesel unit prices do not consider the carbon tax, which was calculated separately along with mining taxes and corporate income taxes;
- Power unit price at Mine Site Complex in 2022 includes a voltage loss;
- Transfer of ownership of the powerline to Mine Site Complex to BC Hydro in September 2023, alleviating the voltage loss.

Table 21-5: General rate and unit cost assumptions

Parameter	Unit	Value
Average Daily LOM Tonnage (initial)	tpd	2,000
Average Daily LOM Tonnage (after expansion)	tpd	8,000
Years of operations	Years	12
LOM production	M tonnes	28.2
LOM gold grade	Au g/t	3.40
LOM gold production	M oz	2.8
BC Hydro grid power at Mine Site complex	$/kWh	0.064
BC Hydro grid power at QR Mill	$/kWh	0.078
Generator power	$/kWh	0.35
Propane	$/litre	0.66
Diesel	$/litre	1.20

21.2.3. Mining

InnovExplo provided estimates for all underground mine operating costs. The total underground mine operating cost is $1,499.9M for the Project. The operating unit costs were calculated over the total mineralized material mined from development and from production, including the marginal tonnages during pre-production. The unit cost is $53.27/t mined.

Mining operating costs are mostly composed of wages, electric power, consumables, fuel and equipment maintenance. Equipment lease payments have not been included in operating costs, as they have been included as sustaining capital expenditures. All stope access development, have been allocated to operating cost.

Table 21-6 summarizes the underground operating costs for the Project and provides a breakdown per item.

Table 21-6: Underground mining operating costs

Operating costs		Total LOM cost	Average LOM cost	OPEX
Activity	**Sub-activity**	**($M)**	**($/t)**	**(%)**
Grade control	Grade control - Definition drilling	42.1	1.49	2.8
Mine development	Mine development	324.6	11.53	21.6
Production	Stope support/preparation	31.6	1.12	2.1
	Drilling & blasting	435.8	15.48	29.1
	Mucking/hauling	123.8	4.40	8.3
	Backfill	142.7	5.07	9.5
Services	UG services	107.9	3.83	7.2
	Energy	56.4	2.00	3.8
	Maintenance	235.0	8.35	15.7
Total operating costs		**1,499.9**	**53.27**	**100**

21.2.4. Mineralized Material Transport

The cost to transport mineralized material from the Mine Site Complex in the District of Wells ("Wells") to the QR Mill, was estimated based on a quote from supplier. An average of approximately 900 tpd of mineralized material will be transported from the Mine Site Complex to the QR Mill over a distance of 111 kilometres ("km"). For the PEA, it was assumed that the mineralized material transport would be provided by a bulk transport company using 46 tonne ("t") trucks on a contracted basis. The average operating costs for mineralized material transport (truck loading, transport, dumping and administration) was calculated to be $3.85/t mined ($28.81/t transported to the QR Mill), which includes a provision for road maintenance.

Table 21-7: Material transport operating costs

Cost area	LOM cost ($M)	Annual cost ($M)	Cost per tonne mined ($/t)	OPEX (%)
Transport Mineralized Material from the Mine Site Complex to QR Mill	108.5	9.04	3.85	100
Total	**108.5**	**9.04**	**3.85**	**100**

21.2.5. Processing

The average processing operating costs were calculated over the LOM for both the Mine Site Complex and QR Mill. The operating cost was estimated to be $37.50/t mined during the Project's initial 2,000 tpd phase and $20.80/t mined during the Project's 8,000 tpd phase resulting in a LOM cost of $24.00/t mined.

The steady-state operating costs include reagents, grinding media, plant maintenance materials, vehicle fuel, rental and maintenance, laboratory operating fees, energy (electricity, propane and diesel), and personnel required for operating both mills and the paste plant. A breakdown of the steady-state processing operating costs for both Phase 1 and 11, without contingency, is presented in Table 21-8 and Table 21-8.

Table 21-8: Phase I Mill Operating Costs

Cost area	Average Annual cost	LOM cost	Cost per tonne mined	OPEX
	($M)	($M)	($/t)	(%)
Contractual Crushing and Sorting	7.93	15.9	10.8	29%
Reagents	3.83	7.67	5.21	14%
Cement	0.00	0.00	0.00	0%
Maintenance, Parts and Materials	1.80	3.59	2.44	7%
Major Equipment Consumables	0.33	0.66	0.45	1%
Grinding Media	2.42	4.85	3.30	9%
Personnel and Contractors	6.61	13.2	9.00	24%
Utilities	2.93	5.86	3.98	11%
Miscellaneous	1.72	3.44	2.34	6%
Total	**27.6**	**55.1**	**37.50**	**100%**

Table 21-9: Phase II Mill Operating Costs

Cost area	Average Annual cost	LOM cost	Cost per tonne mined	OPEX
	($M)	($M)	($/t)	(%)
Underground Crushing and Handling	5.62	56.2	2.13	9%
Reagents	4.5	45	1.69	7%
Cement	9.9	99	3.71	16%

Maintenance, Parts and Materials	6.41	64.1	2.4	10%
Major Equipment Consumables	2.03	20.3	0.76	3%
Grinding Media	4.97	49.7	1.86	8%
Personnel and Contractors	13.4	134	5.03	22%
Utilities	12	120	4.48	19%
Miscellaneous	3.14	31.4	1.18	5%
Total	**61.97**	**619.7**	**23.24**	**100%**

Reagents

Reagent and grinding media consumptions were reported in Section 17.7. Budget quotes were obtained from suppliers in 2022. A factor was added to the budgetary prices to cover transportation expenses.

A summary of the average annual reagent costs is presented in Table 21-10 for both phases.

Table 21-10: Phase I and Phase II Reagent costs

Cost area	Phase 1				Phase 2			
	Average annual cost	LOM cost	Cost per tonne mined	OPEX	Average annual cost	LOM cost	Cost per tonne mined	OPEX
	($M)	($M)	($/t)	(%)	($M)	($M)	($/t)	(%)
PAX	0	0	0	0%	0.65	6.55	0.25	15%
MIBC	0	0	0	0%	0.23	2.33	0.09	5%
Flocculant	0	0	0	0%	0.29	2.86	0.11	6%
Sodium cyanide (NaCN 100%)	1.09	2.19	1.49	29%	1.16	11.6	0.44	26%
Sodium hydroxide (NaOH 50%)	0.4	0.8	0.54	10%	0.31	3.13	0.12	7%
Lime (CaO)	0.14	0.28	0.19	4%	0.23	2.27	0.08	5%
Flocculant	0.29	0.58	0.39	8%	0.06	0.58	0.02	1%
Sodium metabisulfite (Na2S2O5)	0.82	1.64	1.12	21%	0.65	6.47	0.24	14%
Copper sulfate (CuSO4.5H2O)	0.07	0.14	0.09	2%	0.05	0.55	0.02	1%
Nitric acid	0.4	0.8	0.54	10%	0.32	3.15	0.12	7%
Carbon	0.09	0.18	0.12	2%	0.07	0.7	0.03	2%
Oxygen	0.49	0.98	0.67	13%	0.39	3.86	0.14	9%
Refinery reagents	0.02	0.04	0.03	1%	0.07	0.75	0.03	2%
Antiscalant	0.03	0.05	0.03	1%	0.02	0.2	0.01	0%
Total	**3.83**	**7.67**	**5.21**	**100%**	**4.50**	**45**	**1.69**	**100%**

The average annual cost of reagents was calculated to be $4.4M, or $1.87/t mined.

Personnel and Contractors

A total of 70 workers are required for processing in Phase I, including 13 salaried staff and 57 hourly workers divided amongst management and technical services, operations, and maintenance departments.

For Phase II, a total of 120 workers are required: 22 salaried staff and 98 hourly. Of the 120 workers, 62 are associated to the Mine Site Complex and 58 to QR Mill. The list of personnel, along with the salaries and benefits, including bonuses where applicable, associated with each position was provided by ODV.

The contractor and consultant costs for processing include items such as special projects and research and development ("R&D") were add to operation and maintenance personnel cost.

The labour and contractor cost is estimated at an average cost of $12.3M per year or $5.23/t mined.

Maintenance Materials

QR Mill maintenance materials were estimated per previous operational experience and with a percentage of new equipment capital cost. Allowances were also added to cover miscellaneous expenses.

Maintenance materials for the Mine Site Complex concentrator were estimated based on the equipment capital cost per area. Allowances were added for general materials, miscellaneous mechanical, piping, electrical, and instrumentation materials.

The total cost for these items was estimated to average $5.6M per year or $2.41/t mined.

Grinding Media

The Project process flowsheet requires three different sizes of steel media for the mills. For QR Mill it was calculated based on past operational data. The consumption rates for the media at Mine Site Complex was calculated based on similar operation, whereas budgetary quotations were obtained for each type of media used. The average annual cost of media for was estimated to be $4.5M or $1.94/t mined, which represents 9% of the processing operating costs.

Energy

Estimate of electrical energy consumption was reported in Section 17.7, and is based on the preliminary load list. The cost of electricity was calculated based on BC Hydro average cost of 7.8 cents per kilowatt hour ("¢/kWh") for QR Mill, and an average cost of 6.4 ¢/kWh for the concentrator at the Mine Site Complex and the Bonanza Ledge Site mineral sorter.

The propane consumption (used for heating) was estimated based on the historical billing at QR Mill.

The diesel consumption for the mobile crushing and screening circuit at the Bonanza Ledge Site was estimated be a similar operation. The diesel consumption for gensets at QR Mill and Mine Site Complex were estimated based on weekly tests and 72 hours of annual power outages.

The energy costs represent approximately 21% of the total process operating costs, at an average yearly cost of $10.5M or $4.64/t mined.

Mobile Equipment and Laboratory Fees

Mobile equipment will be required at both sites for operations and maintenance. QR Mill will rent four pickup trucks and the Mine Site Complex will rent four more. Maintenance and fuel costs for other vehicles (small loader, bobcat, forklift, aerial platform, backhoe) have also been included.

Laboratory fees are estimated at $0.9M. The analysis laboratory will be sub-contracted. The samples collected include slurries from various stages of the flowsheet or the metallurgical laboratory; both high- and low-grade solution samples, carbon, bullion, and slag. Fees for round-robin are also included.

The mobile equipment and laboratory costs represent approximately 4% of the total process operating costs, at an average yearly cost of $2.2M or $0.93/t mined.

21.2.6. Tailings, Water Treatment and Environment

The water treatment and environmental operating costs for the three sites were based on PEA level estimates provided by Golder and ODV. The annual average steady-state operating costs were determined to be $13.6M per year or $5.81/t mined.

This area includes the following operating costs:

- Labour costs (10 staff and 10 labour positions);
- Water treatment plant operations, maintenance, and consumables;
- FSTSF operating costs;

- Environmental services group labour costs and associated expenses estimated such as:
  - Recycling and waste disposal fees;
  - Permitting costs;
  - Equipment rental;
  - Sampling and analytical fees;
  - Consulting and contract services.

A breakdown of the steady-state costs, without contingency, is presented in Table 21-11.

Table 21-11: Tailings, water treatment and environment operating cost summary

Cost Area	LOM Cost ($M)	Cost per tonne mined ($/t)	OPEX (%)
Environment Department Labour	46.5	1.65	28.4
Consumables	117.0	4.16	71.6
Total	**163.5**	**5.81**	**100.0**

The labour for the Environmental Department manpower includes eleven employees.

Waste management at both the Mine Site Complex and the Bonanza Ledge Site were estimated by WSP Golder using database unit rates for placement and checked by the ODV Technical Team using the updated waste schedule. Transportation of waste from the Mine Site Complex to the Bonanza Ledge Site is assumed to have been included in the mining operating costs.

Water management operating costs for both the Mine Site Complex and the Bonanza Ledge Site were estimated by WSP Golder, while a provisional cost allowance for the QR Mill water management costs was included by ODV.

Tailings placement at QR Mill operating costs were estimated by ODV based on similar internal unit rates for labour and equipment.

The water treatment operating costs for the three sites were based on PEA level estimates provided by WSP Golder. The cost estimate includes water treatment plant operations, maintenance, labour, and consumables.

Water treatment operating cost estimates are based on limited data for feed water quality and estimated yearly water volumes. Therefore, operating cost estimates are subject to revision during subsequent design phases. Operating cost estimates include an allowance for management of sludges, but do not include the cost of disposal, if applicable. The water treatment waste sludges are expected to be geochemically stable and are assumed to be suitable for on-site disposal; however, more work is recommended to refine the sludge disposal plan as the Project proceeds.

21.2.7. General and Administration

General and Administrative ("G&A") costs are expenses not directly related to the production of goods and encompass items not included in the mining, processing, refining, and transportation costs of the Project. These costs were developed based on the BBA's past project experience in similar sized operations.

The G&A cost area includes the following items:

- Site administration and management labour;
- Administration
  - Insurance
  - Quesnel Office rental
  - Office and cleaning services
  - Camp and Administration building electricity
  - Municipal and school taxes
- Human Resources and Community Support
  - Training
  - Community and IBA commitments
  - Sponsorships and association fees
- Information Technology
  - Communication service fees
  - IT equipment and supplies
- Health and safety
  - Personal protective equipment and first aid kits
  - Medical consultations
  - Mine rescue training
- Technical Services
  - Equipment and software licenses
  - Specialised consultants
- Site Services
  - Roads and building maintenance
  - Snow clearing
  - Mobile equipment operations and maintenance
- Camp and Food Services
  - Management and maintenance
  - Food supply
- Employee Bus Transport

The labour included in the G&A includes 2 management employees, 11 administration (Accounting, IT, and Warehousing) employees, 11 employees in site services and maintenance, 3 employees in Human Resources, 10 employees in Health and Safety, and 27 employees dedicated to Technical Services (Mine Engineering and Geology). The employee total for the Overall G&A services is 64.

In general, the management and administrative staff will work 40 hours per week on day shift. Warehousing and health and safety personnel will work a 12-hour shift per day.

On an annual basis, the G&A costs are estimated to be $18M/year or approximately $216M over the LOM. The G&A cost on a per tonne mined basis is $7.67/t mined (LOM). Approximately $1.3M in G&A costs will be capitalised in 2023.

The major costs broken down by item within the G&A category are shown in Table 21-12. The greatest cost within the G&A category is labour representing approximately 35% followed by Camp and food services contract services representing approximately 27%.

Table 21-12: General administration operating costs

Item	Total LOM ($M)	Average LOM ($/tonne mined)	OPEX (%)
Labour	75.7	2.69	35.1
Administration	24.1	0.86	11.1
Human Resources and Community Support	12.1	0.43	5.6
Communication and Information Technology	4.7	0.17	2.2
Health and Safety	11.7	0.42	5.4
Technical Services	5.4	0.19	2.5
Site Services	20.9	0.74	9.7
Camp and Food Services	57.9	2.06	26.8
Employee Bus Transport	3.7	0.13	1.7
Total	**216.0**	**7.67**	**100**

21.3. Site Personnel Summary – All Areas

It is anticipated that 592 employees (staff and labour) will be required at the peak of operations during Phase II. A summary of labour in all areas is shown in Table 21-13.

Table 21-13: Summary of personnel – All areas

Facility Area	Role	Total
General & Administration	Administration & Management	13
	Human resources and Community relations	3
	Health and safety	10
	Surface operations	11
	Technical Services (mine and geology)	27
	Subtotal	**64**
Underground Mine	Staff & Supervision	32
	Operations	250
	Maintenance & Services	106
	Subtotal	**388**
Processing	Staff & Supervision	22
	Operations and Maintenance	98
	Subtotal	**120**
Tailings, Waste & Water management	Staff & Supervision	10
	Operations and Maintenance	10
	Subtotal	**20**
Cariboo Gold Project	**Total**	**592**

22. Economic Analysis

The economic/financial assessment of the Cariboo Gold Project (the Project") for Osisko Development Corp. ("ODV") was carried out using a discounted cash flow approach on a pre-tax and after-tax basis, based on consensus equity research long-term commodity price projections in the United States currency and cost estimates in Canadian currency. An exchange rate of USD 0.79 per CAD 1.00 was assumed to convert USD market price projections and particular components of the capital cost estimates into Canadian Dollars ("CAD"). No provision was made for the effects of inflation. Current Canadian tax regulations were applied to assess the corporate tax liabilities, while the most recent provincial regulations were applied to assess the British Columbia mining tax liabilities.

The internal rate of return ("IRR") on total investment was calculated based on 100% equity financing, even though ODV may decide in the future to finance part of the Project with debt financing. The net present value ("NPV") was calculated from the cash flow generated by the Project, using a discount rate of 5%. The simple payback period, and payback period after start of operations, are based on the undiscounted annual cash flow of the Project, are also indicated as a financial measure. Furthermore, a sensitivity analysis has been performed for the after-tax base case to assess the impact of variations in the Project capital costs, USD:CAD exchange rate, price of gold, and operating costs.

The economic analysis presented in this section contains forward-looking information with regard to the mineral resource estimates, commodity prices, exchange rates, proposed mine production plan, projected recovery rates, operating costs, construction costs, and the Project schedule. The results of the economic analysis are subject to a number of known and unknown risks, uncertainties and other factors that may cause actual results to differ materially from those presented here. The reader is cautioned that this Preliminary Economic Assessment ("PEA") is preliminary in nature and includes the use of Inferred Mineral Resources that are considered too speculative geologically to have the economic considerations applied to them that would enable them to be categorized as Mineral Reserves and, as such, there is no certainty that the PEA economics will be realized.

22.1. Assumptions and Basis

The economic analysis was performed using the following assumptions and basis:

- The Project Executive Schedule developed in Chapter 24, taking into consideration key Project milestones;
- Commercial production start-up is scheduled to begin in the first quarter (Q1) of 2024. The first full year of production is therefore 2024. Operations are estimated to span a period of approximately twelve years;
- The base case gold price is USD 1,750 per ounce ("USD/oz");
- The long-term price of gold was estimated on the basis of discussions with experts, consensus analyst estimates and recently-published economic studies. The forecasts used are meant to reflect the average metal price expectation over the life of the Project. No price inflation or escalation factors were taken into account. It is understood that commodity prices can be volatile and that there is the potential for deviation from the life of mine ("LOM") forecasts;
- The United States to Canadian dollar exchange rate has been assumed to be USD 0.79: CAD 1.00 over the life of mine (CAD:USD exchange rate of 1.27);
- All cost estimates are in constant Q2 2022 Canadian dollars with no inflation or escalation factors taken into account;
- All metal products are assumed sold in the same year they are produced;
- Class specific Capital Cost Allowance rates are used for the purpose of determining the allowable taxable income;
- Final rehabilitation and closure costs will start in 2035 (Year 12) and be completely spent in 2036 (Year 13);
- An overall salvage value has been estimated at 61.1 M based on 20% of the original cost of mining mobile equipment, process equipment, electrical equipment and structural steel;
- Project revenue is derived from the sale of gold doré into the international marketplace. No contractual arrangements for doré smelting or refining exist at this time.

This financial analysis was performed on both a pre-tax basis and after-tax basis. The general assumptions used for this financial model, LOM plan tonnage, and grade estimates are summarized in Table 22-1 and capital costs are outlined in Figure 22-1.

Table 22-1: Financial model parameters

Description	Unit	Value
Long Term Gold Price	USD/oz	1,750
Exchange Rate	USD:CAD	0.79
Discount Rate	%	5.0
Mine Life	year	12
Total Mined	Mt	28.2
Gold Grade	g/t	3.40
Process Overall Gold Recovery	%	92.1
Underground Mining Operating Cost	$/t mined	53.27
Processing (including paste backfill) Operating Cost	$/t mined	24.00
Material Transport Operating Cost	$/t mined	3.85
Tailings and Water Management Operating Cost	$/t mined	5.81
General and Administration Operating Cost	$/t mined	7.67
Capitalized Operating Costs	$/t mined	-0.58
Royalties	% NSR	5.0
Initial Capital Cost	$M	121.5
Expansion Capital Cost	$M	716.1
Sustaining Capital Cost	$M	527.2
Reclamation and Closure Cost	$M	18.5
Salvage Value	$M	-61.1

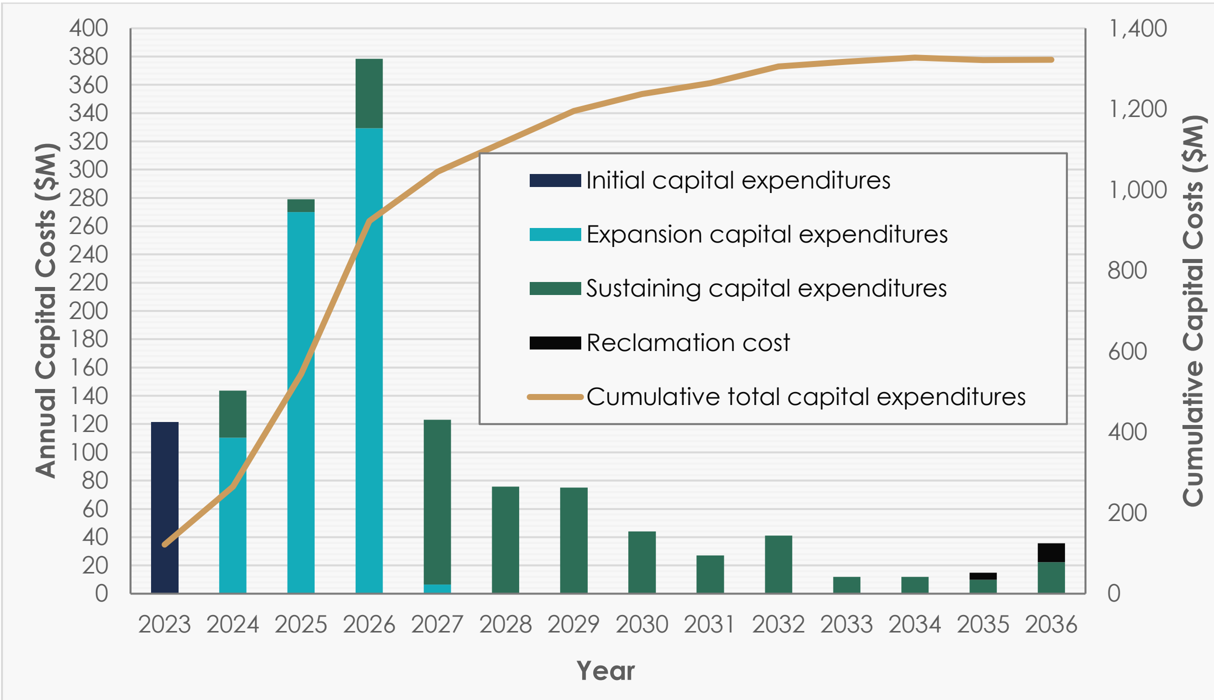


Figure 22-1: Overall Cariboo Gold Project capital cost profile

22.2. Royalties

Over the life of the Project, based on the agreement in place, a 5% net smelter return ("NSR") royalty has been assumed for the Project. It is estimated that approximately $314.3 million in royalties are expected to be paid based on the base case metal prices and project assumptions.

22.3. Taxation

The taxation calculations for the Project were compiled with the assistance of ODV and their financial advisors.

At the time of the report, the Project was subject to the following tax regime:

- The Canadian Corporate Income Tax system consists of the federal income tax (modelled at a rate of 15%) and the provincial (British Columbia) income tax (modelled at a rate of 12%);
- The British Columbia Minerals Tax was modelled using a net current proceeds rate of 2% and a net revenue tax rate of 13%.

The tax calculations are underpinned by the following key assumptions:

- The calculations are based on the tax regime as at the date of the PEA. Future changes in tax laws could impact the calculations;
- A total of $506.3M in tax attributes has been considered based on information provided by ODV;
- The Project is held 100% by a corporate entity and the after-tax analysis does not attempt to reflect any future changes in corporate structure or property ownership;
- Assumes 100% equity financing and therefore does not consider interest and financing expenses;
- BC Minerals Tax is deductible for federal and provincial income tax purposes;
- Payments projected relating to NSR royalties are allowed as a deduction for federal and provincial income tax purposes, but are added back for BC Minerals Tax purposes;
- Actual taxes payable will be affected by corporate activities, and current and future tax benefits, with respect that these activities have not been considered.

The combined effect on the Project of the two levels of taxation, including the elements described above, is an approximate cumulative effective tax rate of 33%, based on project earnings (earnings before interest and tax "EBIT"). It is anticipated, based on the Project assumptions, that ODV will pay approximately $203.1M in Canadian Corporate Income Tax, $162.5M in British Columbia Corporate Income Tax and $272.3M in British Columbia Minerals Tax over the life of the Project.

Companies operating in British Columbia are taxed based on their annual greenhouse gas emissions. Carbon taxes for Scope 1 emissions have been applied to the tonnes of CO_2 equivalent ("t CO_2eq") amounts of the consumed fossil fuels such as diesel, gasoline, propane, and emulsion. The carbon tax rate is $50/t CO_2eq in 2022 and was assumed to escalate by $15 per year up to a maximum of $170/t CO_2eq. A total of 171 kt CO_2eq will be produced over the LOM costing $22.8M in carbon taxes. The carbon tax amount is applied against the gross revenue when calculating federal and BC provincial income taxes.

22.4. Financial Analysis Summary

A 5% discount rate was applied to the cash flow to derive the NPV for the Project on a pre-tax and after-tax basis. Cash flows have been discounted to 2023 under the assumption that the Project permit will be issued by the end of 2022 and major project financing would be carried out at this time. The summary of the financial evaluation for the base case of the Project is presented in Table 22-2.

Table 22-2: Financial analysis summary (pre-tax and after-tax)

Description		Unit	Base case
Pre-Tax	Net Present Value (0% disc)	$M	2,002.5
	Net Present Value (5% disc)	$M	1,195.3
	Internal Rate of Return	%	26.7
	Simple Payback Period	Year	6.8
	Payback Period (after start of operations)	Year	5.8
After-Tax	Net Present Value (0% disc)	$M	1,341.7
	Net Present Value (5% disc)	$M	763.8
	Internal Rate of Return	%	21.4
	Simple Payback Period	Year	7.0
	Payback Period (after start of operations)	Year	6.0

The pre-tax base case financial model resulted in an IRR of 26.7% and a NPV of $1,195.3M with a discount rate of 5%. The simple pre-tax payback period is 6.8 years. On an after-tax basis, the base case financial model resulted in an IRR of 21.4% and a NPV of $763.8M with a discount rate of 5%. The simple after-tax payback period is 7.0 years.

The summary of the Project discounted cash flow financial model (pre-tax and after-tax) is presented in Table 22-3.

Table 22-3: Summary of the Project discounted cash flow financial model

Year	Unit	-1	1	2	3	4	5	6	7	8	9	10	11	12	13	Total
		2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033	2034	2035	2036	
Production Summary																
Total Tonnes Mined	kt	53.1	678.4	739.8	1,467.8	2,909.4	2,931.9	2,922.0	2,948.6	2,940.2	2,939.3	2,930.9	2,849.4	1,844.3	-	28,155.3
Total Tonnes Processed	kt	-	731.5	739.8	1,467.8	2,909.4	2,931.9	2,922.0	2,948.6	2,940.2	2,939.3	2,930.9	2,849.4	1,844.3	-	28,155.3
Head Grade Au	g/t	-	3.35	3.80	3.17	3.38	3.23	3.36	3.65	3.55	3.50	3.57	3.23	3.04	-	3.40
Payable Gold	koz	-	72.2	84.0	139.7	293.5	279.6	288.6	315.8	306.9	302.4	310.1	275.6	168.2	-	2,836.6
Revenue																
Exchange Rate	USD:CAD	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79	0.79
Gross Revenue	$M	-	159.9	186.1	309.5	650.4	619.5	639.6	699.9	680.2	670.2	687.3	610.7	372.9	-	6,286.3
Operating Expenditures																
Mining	$M	15.2	55.2	68.8	88.5	147.5	148.7	148.4	148.0	147.3	146.3	149.4	142.9	93.8	-	1,499.9
Processing	$M	-	28.1	28.0	50.0	64.9	65.7	64.5	64.9	64.7	64.9	64.4	63.4	52.1	-	675.8
Material Transport	$M	-	11.0	11.0	4.7	9.3	9.5	9.6	9.7	9.6	9.6	9.5	9.1	5.9	-	108.5
Tailings, Waste & Water Management	$M	-	9.3	11.2	12.6	16.9	14.4	14.4	14.4	14.4	14.4	14.4	14.4	12.8	-	163.5
General and Administration	$M	1.3	9.8	9.6	16.4	20.6	20.6	20.6	20.6	20.6	20.6	20.6	19.7	14.8	-	216.0
Capitalized Operating Costs	$M	-16.4	-	-	-	-	-	-	-	-	-	-	-	-	-	-16.4
Operating Costs	**$M**	**-**	**113.3**	**128.7**	**172.2**	**259.2**	**259.0**	**257.5**	**257.6**	**256.6**	**255.9**	**258.3**	**249.5**	**179.3**	**-**	**2,647.3**
Royalty Payments	$M	-	8.0	9.3	15.5	32.5	31.0	32.0	35.0	34.0	33.5	34.4	30.5	18.6	-	314.3
Capital Expenditures																
Initial	$M	121.5	-	-	-	-	-	-	-	-	-	-	-	-	-	121.5
Expansion	$M	-	110.4	269.9	329.4	6.4	-	-	-	-	-	-	-	-	-	716.1
Sustaining	$M	-	33.2	9.2	49.2	116.8	75.8	75.2	44.0	27.0	41.1	11.9	11.8	9.9	22.3	527.2
Reclamation and Closure	$M	-	-	-	-	-	-	-	-	-	-	-	-	5.0	13.5	18.5
Salvage Value	$M	-	-	-	-	-1.4	-	-	-2.0	-	-	-	-2.0	-20.8	-35.0	-61.1
Total Capital Costs	**$M**	**121.5**	**143.6**	**279.1**	**378.5**	**121.8**	**75.8**	**75.2**	**42.0**	**27.0**	**41.1**	**11.9**	**9.9**	**-6.0**	**0.8**	**1,322.2**
Changes in Working Capital	$M	-	4.1	0.5	1.0	1.0	0.3	- 0.3	-0.6	0.1	0.1	- 0.0	0.3	-1.2	-5.3	-
Pre-Tax Cash Flow																
Pre-Tax Cash flow	$M	-121.5	-101.0	- 230.5	-255.8	237.9	254.0	274.7	364.7	362.7	339.8	382.7	321.1	179.7	-6.0	2,002.5
Cumulative Pre-Tax Cash Flow	**$M**	**-121.5**	**-222.5**	**- 453.0**	**-708.7**	**-470.8**	**- 16.8**	**58.0**	**422.6**	**785.3**	**1,125.1**	**1,507.8**	**1,828.8**	**2,008.5**	**2,002.5**	
Taxes and Duties																
British Columbia Mining Duties	$M	-	0.9	1.1	2.7	7.8	7.2	7.6	19.5	51.5	48.3	54.0	45.4	25.9	0.4	272.3
Federal Corporate Income Tax	$M	-	-	-	-	-	-	9.1	40.9	36.3	37.8	41.1	35.1	18.4	-15.6	203.2
British Columbia Corporate Income Tax	$M	-	-	-	-	-	-	7.3	32.7	29.1	30.2	32.9	28.1	14.7	-12.5	162.5
Carbon Tax	$M	0.7	1.5	1.9	1.4	1.6	1.7	1.9	2.0	2.0	2.0	2.0	2.0	1.9	-	22.8
Total Taxes and Duties	**$M**	**0.7**	**2.4**	**3.0**	**4.1**	**9.4**	**8.9**	**25.8**	**95.2**	**119.0**	**118.3**	**130.0**	**110.7**	**60.9**	**-27.6**	**660.8**
After-Tax Cash Flow																
After-Tax Cash flow	$M	-122.2	-103.4	-233.5	-259.8	228.5	245.1	248.9	269.5	243.7	221.5	252.7	210.4	118.8	21.6	1,341.7
Cumulative After-Tax Cash Flow	**$M**	**-122.2**	**-225.7**	**-459.1**	**-719.0**	**-490.5**	**-245.3**	**3.6**	**273.1**	**516.8**	**738.3**	**990.9**	**1,201.3**	**1,320.1**	**1,341.7**	

Figure 22-2 shows the cumulative cash flows for the Project projected for the LOM on a pre-tax and after-tax basis.

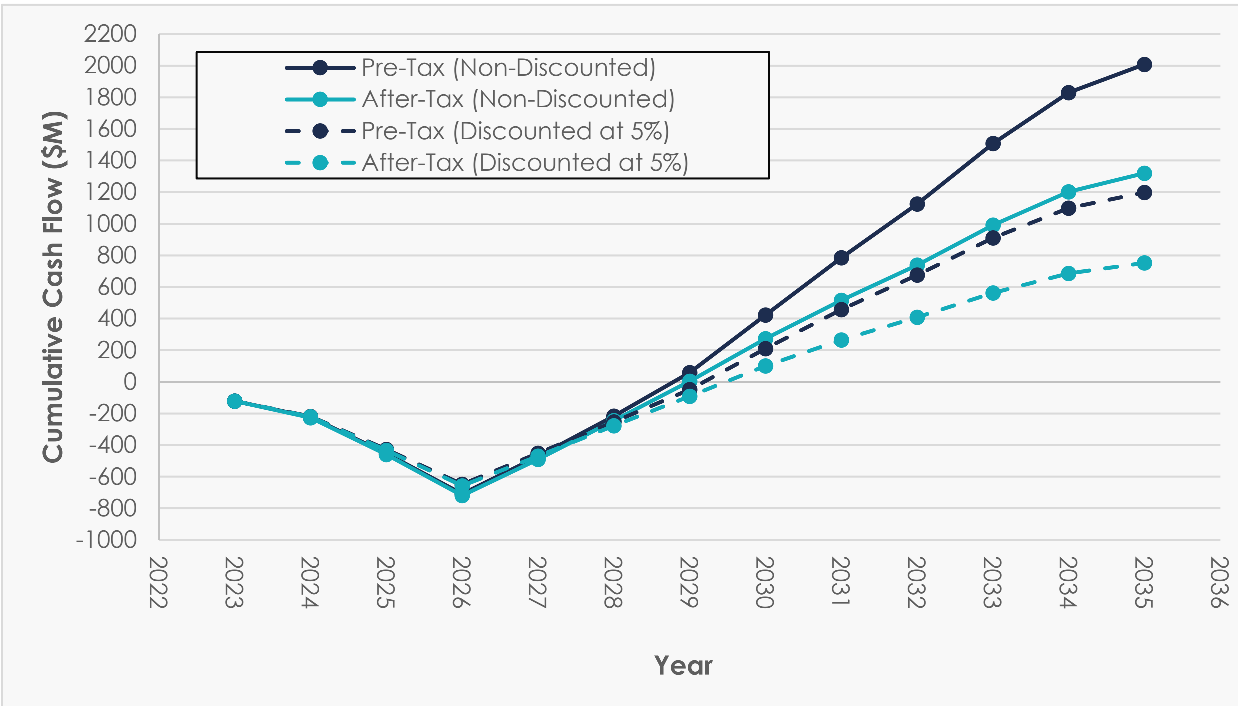


Figure 22-2: Life of mine cash flow projection (cumulative, pre-tax and after-tax)

22.5. Production Costs

A summary of the Project's production costs is provided in Table 22-4. All costs are in USD. Total cash costs are calculated per ounce on a payable basis using the costs of mining, material transport, processing, tailings, waste and water treatment, on-site general and administrative expenses ("G&A"), refining and smelting, and royalties.

The LOM operating cash cost per ounce is USD 827.1/oz gold ("Au"). The LOM all-in sustaining cost ("AISC"[1]) per ounce is USD 961.6/oz Au derived from the total cash costs plus sustaining capital, and closure costs. The operating margin over the LOM has been estimated to be USD 788.4/oz Au based on a gold price of USD 1,750/oz.

[1] All-in Sustaining Costs are presented as defined by the World Gold Council ("WGC") less Corporate G&A.

Table 22-4: Production cost summary

Description	Unit	LOM
Metal Production		
Gold	Moz	2.8
Costs and Royalties		
Mining	USD M	1,181.0
Material Transport	USD M	85.4
Processing	USD M	532.1
General and Administration (G&A)	USD M	170.1
Tailings and Environment	USD M	128.8
Refining and Smelting	USD M	14.2
Royalties	USD M	247.5
Capitalized OPEX Expenditures	USD M	- 12.9
Total Operating Cost (after Credit)	USD M	2,346.1
AISC and Profit Margins (per oz payable)		
Gold Price	USD/oz	1,750
Cash Cost (Operating)	USD/oz	827.1
Sustaining and Closure Costs	USD M	381.6
Total Costs (Operating and Sustaining)	USD M	2,727.7
AISC	USD/oz	961.6
Operating Margin	USD/oz	788.4

22.6. Value Drivers

Figure 22-3 presents the primary project value drivers in the form of a waterfall chart discounted at 5%. The main value drivers (over $250M) of the Project are processing recovery losses, mining operating expenses, processing operating costs, mining capital expenditures and taxes.

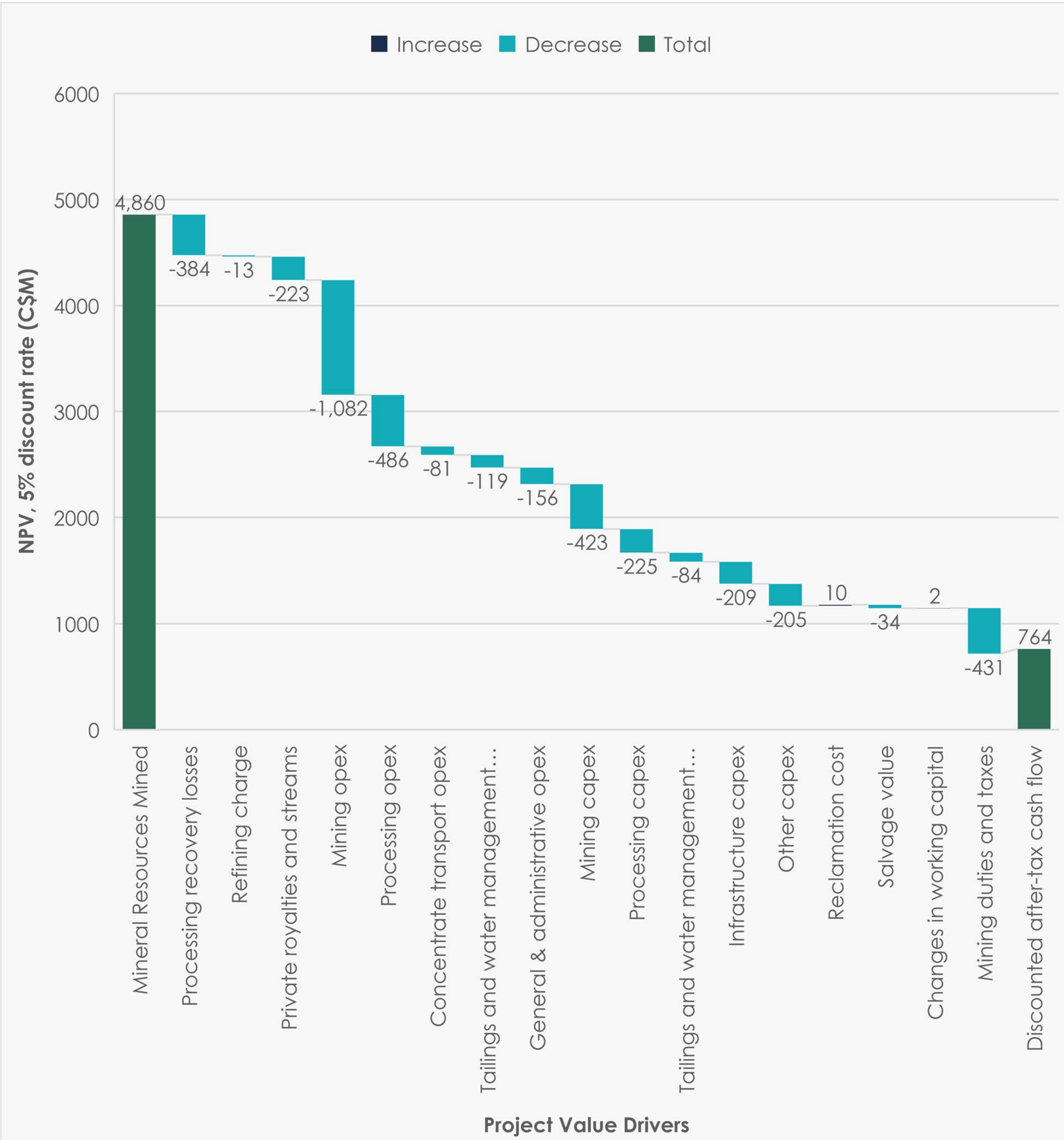


Figure 22-3: Main value drivers (discounted at 5%)

22.7. Sensitivity Analysis

A financial sensitivity analysis was conducted on the base case after-tax cash flow NPV ($M) and IRR of the Project, using the following variables: capital costs, operating costs, USD:CAD exchange rate, price of gold, and discount rate. The after-tax results for the Project IRR and NPV ($M) based on the sensitivity analysis are summarized in Table 22-5 through Table 22-9.

Table 22-5: NPV sensitivity results (after-tax) for metal price and exchange rate variations

USD:CAD	Gold Price (USD/ounce)							
	1,300	**1,450**	**1,600**	**1,750**	**1,900**	**2,050**	**2,200**	**2,350**
0.72	243.3	506.2	764.9	1,021.5	1,276.0	1,530.2	1,783.1	2,035.9
0.74	193.6	452.2	706.0	957.2	1,206.6	1,455.7	1,703.2	1,950.6
0.75	143.6	397.6	646.6	892.7	1,137.3	1,380.8	1,623.4	1,865.3
0.77	93.2	342.9	587.0	828.3	1,067.9	1,305.9	1,543.5	1,780.0
0.79	42.4	288.2	527.4	763.8	998.3	1,231.0	1,463.5	1,694.7
0.81	-17.5	232.8	467.9	699.4	928.4	1,156.1	1,383.2	1,609.4
0.83	-88.0	177.3	407.8	634.3	858.4	1,081.2	1,302.8	1,524.0

Table 22-6: IRR sensitivity results (after-tax) for metal price and exchange rate variations

USD:CAD	Gold Price (USD/ounce)							
	1,300	**1,450**	**1,600**	**1,750**	**1,900**	**2,050**	**2,200**	**2,350**
0.72	10.2%	15.9%	21.4%	26.8%	32.1%	37.5%	42.7%	48.2%
0.74	9.1%	14.7%	20.1%	25.4%	30.7%	35.9%	41.1%	46.3%
0.75	8.1%	13.5%	18.9%	24.1%	29.2%	34.3%	39.4%	44.5%
0.77	7.0%	12.4%	17.6%	22.7%	27.8%	32.7%	37.7%	42.7%
0.79	5.9%	11.2%	16.3%	21.4%	26.3%	31.2%	36.1%	40.9%
0.81	4.6%	10.0%	15.1%	20.0%	24.8%	29.6%	34.4%	39.1%
0.83	3.1%	8.8%	13.8%	18.6%	23.4%	28.0%	32.7%	37.3%

Table 22-7: NPV sensitivity results (after-tax) for capital (LOM) and operating costs variations

OPEX	CAPEX						
	-30%	-20%	-10%	0%	10%	20%	30%
-30%	1,371.0	1,292.4	1,213.1	1,134.5	1,055.0	975.2	894.9
-20%	1,248.8	1,169.6	1,090.3	1,011.5	931.5	851.2	770.8
-10%	1,126.0	1,046.7	967.4	887.9	807.5	727.1	645.8
0%	1,003.1	923.7	843.4	763.8	683.2	601.8	520.4
10%	879.8	799.6	719.4	639.2	557.7	476.3	394.0
20%	755.8	675.4	594.4	513.7	432.0	349.4	266.8
30%	631.2	550.2	468.9	387.4	304.8	221.5	137.8

Table 22-8: IRR sensitivity results (after-tax) for capital (LOM) and operating costs variations

OPEX	CAPEX						
	-30%	-20%	-10%	0%	10%	20%	30%
-30%	46.0%	39.5%	34.3%	30.0%	26.5%	23.4%	20.8%
-20%	41.7%	35.7%	31.0%	27.1%	23.8%	21.0%	18.5%
-10%	37.5%	32.1%	27.8%	24.2%	21.1%	18.5%	16.2%
0%	33.5%	28.7%	24.7%	21.4%	18.5%	16.1%	14.0%
10%	29.6%	25.2%	21.6%	18.6%	16.0%	13.7%	11.7%
20%	25.9%	21.9%	18.6%	15.8%	13.4%	11.3%	9.5%
30%	22.2%	18.6%	15.6%	13.0%	10.9%	9.0%	7.3%

Table 22-9: NPV sensitivity results (after-tax) for discount rate

	Discount rate				
	0%	3%	5%	8%	10%
NPV (M$)	1,341.7	961.7	763.8	529.3	405.5

The graphical representations of the financial sensitivity analysis are depicted below in Figure 22-4 for the Project's NPV and Figure 22-5 for the Project's IRR.

The sensitivity analysis reveals that the USD:CAD exchange rate and gold price have the most significant influence on both NPV and IRR compared to the other parameters, based on the range of values evaluated. After the USD:CAD exchange rates and gold price, NPV was most impacted by changes in operating costs and then, to a lesser extent, capital costs. It should be noted that the economic viability of the Project will not be significantly negatively impacted by variations in the capital cost, within the margins of error associated with the PEA capital cost estimate.

After the USD:CAD exchange rate and gold price, the Project's IRR was most impacted by variation in capital costs and to a lesser extent by the operating costs.

Overall, the NPV and IRR of the Project are positive over most of the range of values used for the sensitivity analysis when analyzed individually.

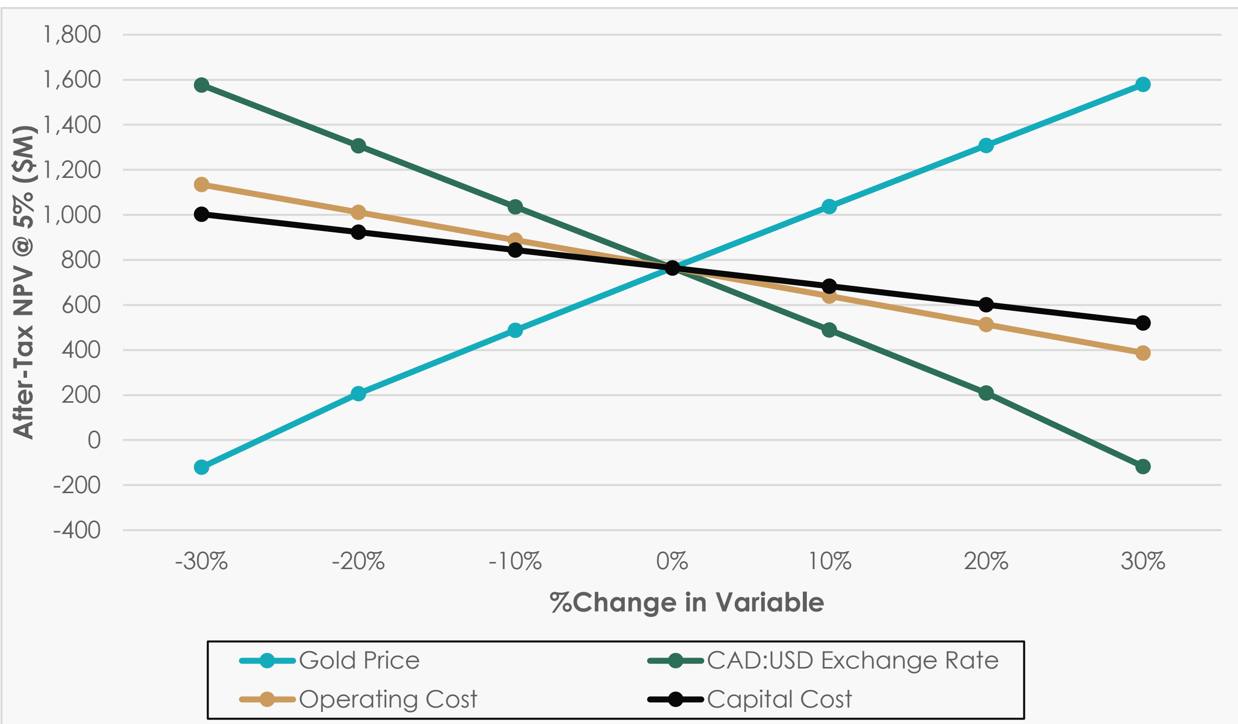


Figure 22-4: Sensitivity of the net present value (after-tax) to financial variables

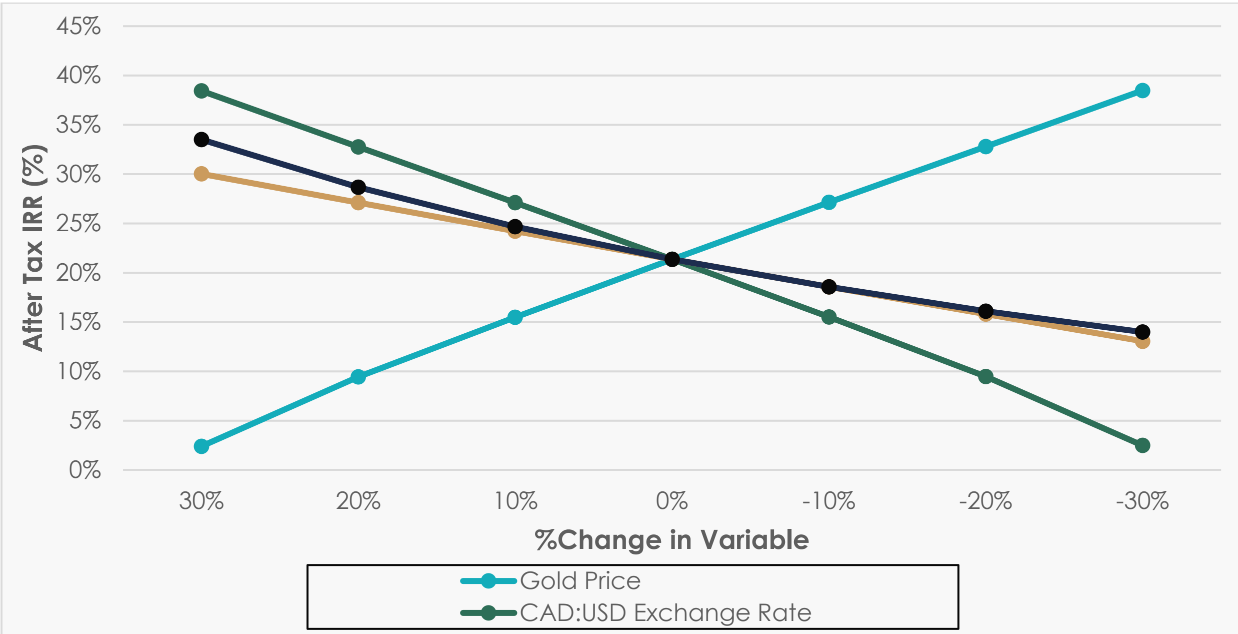


Figure 22-5: Sensitivity of the internal rate of return (after-tax) to financial variables

23. Adjacent Properties

There are no adjacent properties that would provide significant information relating to the Cariboo Gold Project ("the Project"). Osisko Development Corp. ("ODV") maintains a significant land position in the Cariboo Regional District ("CRD") of British Columbia ("BC"), and the District of Wells historical lode mines are located mainly within the boundaries of the Project.

24. Other Relevant Data and Information

24.1. Project Execution Plan

24.1.1. Introduction

The Cariboo Gold Project ("the Project") will be developed by Osisko Development Corp. ("ODV") in a two-phase approach ("CGP Phase I" and "CGP Phase II") to favour early production and reduce the financing requirement of the overall project. CGP Phase I will focus on upgrading the existing facility at the Bonanza Ledge Site and Quesnel River Mill ("QR Mill") to a 2,000 tonnes per day ("tpd") mineral sorting and leaching flowsheet respectively, followed by CGP Phase II at the Mine Site Complex in the District of Wells ("Wells") with the construction of an 8,000 tpd concentrator producing a gold flotation concentrate, which will then be transported to the QR Mill for final processing.

The Project is composed of the following three sites where development and construction activities will occur: the Mine Site Complex, the Bonanza Ledge Site, and the QR Mill.

The Project organization and execution philosophy profits from the existing facilities and experience gained with the current operation at the Bonanza Ledge Mine and QR Mill. During the construction period, it is estimated that a workforce of 330 persons will be required.

24.1.2. Main Activities

The main activities associated with the technical development of the Project are:

- Cow Mountain Bulk Sample:
  - The Cow Mountain Bulk Sample is one of the key components the Project Development Team ("PDT") is working on. The bulk sample will consist of up to 10,000 t of mineralized material over 2,303 m of development. The bulk sample will be used to support advanced metallurgical testing and further validate geological and geotechnical information to support the Project into a feasibility study ("FS").
- Feasibility study:
  - The FS will incorporate the results from the bulk sample program and advance the work on the remainder of the Project areas. It will be key to focus on the preliminary technical specifications and scope of work documents to support budgetary Requests for Proposals ("RFP") for major equipment, materials and services. The 3D modelling and other engineering deliverables of key infrastructure will be essential to develop a Basis of Estimate ("BOE") which will then drive the material take-offs ("MTO") process and support the establishment of the costs of the Project. The FS will continue to optimize the

overall Project design considering the concerns of the stakeholders and improving the overall economic, social, and environmental performance of the Project.

- Execution:
  - The execution stage will cover detailed engineering, procurement, and construction management. Engineering will generate technical specifications and increase the accuracy and definition of the RFPs issued during the FS for final and firm price bids from vendors. Technical and economical evaluations on firm-price quotations will be performed, and the adjudication process for equipment, material, and services contracts will be finalized. Construction Management will then, with the support of the engineering and procurement teams, proceed with the installation of the materials and equipment, under the quality standards established in the engineering documents.

The main environmental and permitting activities associated with the Project are:

- Provincial Environmental Assessment ("EA") under the new BC *Environmental Assessment Act* (BCEAA; [Province of BC, 2018]):
  - The work will continue to advance the efforts of the EA until the EA Certificate for the 4,750 tpd proposed Project is received. This will involve continued work to address the concerns and impacts flagged by reviewers and stakeholders of the Project.
- Federal and Provincial permits, approvals, authorizations, and licences:
  - The work will continue to gather information and data to optimize the design until all required permits, approvals, authorizations, and licenses have been obtained to operate the Project.

The main development and construction activities associated with the Project are:

- Bonanza Ledge Site:
  - As part of the initial phase, an expansion of the existing mineral sorting concentrator facility will increase its capacity to treat 2,000 tpd run of mine ("ROM") to produce a mineral pre-concentrate that will be trucked to the QR Mill. To support the expanded processing capacity at Bonanza Ledge Site, there will be upgrades to the water management infrastructure and water treatment system, and the construction of a new waste rock storage facility ("WRSF").
- QR Mill:
  - As part of the CGP Phase I, an expansion of the existing QR Mill will increase the processing capacity to 1,040 tpd. The upgraded QR Mill will be capable of processing the pre-concentrated material from the Bonanza Ledge Site mineral sorting operation and subsequently the gold flotation concentrate from the operations of the Mine Site Complex. To support the increased capacity there will be upgrades to the surface and

water management infrastructures, and the construction of a filtered stack tailings storage facility ("FSTSF").

- Mine Site Complex:
  - As part of the CGP Phase II, a new Services Building will be constructed to process 8,000 tpd ROM material. The Services Building includes the concentrator, as well as the associated facilities required to support the operations on site. To support the operation, new surface and water management infrastructure will be required, as well as Worker Accommodations for the workforce. A main electrical substation and site electrical distribution will be constructed to support the operation.
- Transmission Line:
  - As part of CGP Phase II, a 69 kV/138 kV transmission line from the Barlow Substation near Quesnel, BC, to the Mine Site Complex will be constructed and will include the clearing of the right of way over a distance of 69 kilometres ("km"). The transmission line will connect into the Mine Site Complex main electrical substation for transformation and distribution.

24.1.3. Project Organization

ODV has the personnel and experience to bring the Project from exploration to production. All Project activities, including the feasibility study, detailed engineering, procurement, pre-production, and construction activities will be under the direction of the Chief Operating Officer ("COO") of ODV.

ODV will establish an Integrated Project Team ("IPT") consisting of the ODV Project Development Team ("PDT"), the Construction Management Team ("CMT"), and the Site Services Team ("SST"). The PDT is responsible for the management, engineering, procurement, environment, permitting, and financing activities of the Project. The Project design and development strategy is under the PDT's supervision. The CMT will be responsible for the execution of construction activities on site, both underground and on surface. Finally, the SST will provide services during the execution phase on site, such as managing infrastructure maintenance, lodging, logistics, and personnel travelling. The SST will leverage the experience gained from existing operational personnel to support the PDT and the CMT.

Additional support will be provided by ODV's senior management, which benefits from an experienced technical and construction team that has successfully designed and built several projects in Canada, Latin America, Africa, and Europe. The IPT will be comprised of direct employees, contractors, and consultants overseeing the successful execution of the Project.

24.1.4. Project Development Team

The PDT will supervise the feasibility study and will manage all aspects of the Project, including engineering, procurement and logistics, project controls, as well as overseeing the environmental assessment and permitting activities. The requirement for an early works program will be evaluated and planned during the early stages of Project development. Specialized engineering firms will be selected for each portion of the Project to assemble a strong integrated design and execution team.

The PDT is responsible for the following activities in the respective phases:

- Feasibility study:
  - Development of the Project definition to a level between 10-15%;
  - General layouts, process flowsheets, and piping and instrumentation drawings;
  - Detailed Work Breakdown Structure ("WBS");
  - Budgetary Request for Proposals;
  - Direct and Indirect costs estimates;
  - Project execution plan.
- Detailed Engineering
  - Management of engineering activities for all project components
- Procurement and Logistics
  - RFPs for equipment and material;
  - Purchasing and contracting;
- Project Controls and Execution
  - Cost Control;
  - Scheduling and establishment of critical paths;
  - Earned Value Management for Project performance assessment.
- Permitting:
  - Current Operations;
  - Bulk Sample;
  - Early Works;
  - Project permits.
- Compliance:
  - Integration to Operations;
  - Reporting.

- Environmental Assessment:
  - Application Development;
  - Government Relations;
  - Reception of EA Certificate;
  - Condition Management.

24.1.5. Construction Management Team

In the feasibility study stage of the Project, the CMT will contribute to the Project design with constructability reviews. The CMT will be responsible for the following services:

- Constructability reviews;
- Site supervision of construction activities;
- Reporting;
- Health, safety, and environment ("HSE");
- Contract administration.

It is recognized that an effective health and safety program during the Project is a necessity. The success of the Construction Safety Program is contingent upon its enforcement at all stages of the Project, including design, construction planning, construction execution, and start-up and commissioning. The CMT will work closely with each group to ensure proper implementation and functional results.

The CMT will also follow ODV's procedures and work methods to ensure the protection of the environment. Furthermore, the CMT will work closely with each department of the operations group to ensure proper installation and functional results. During the construction phase, personnel from operations will be integrated into the construction team as coordinators and supervisors.

24.1.6. Site Services Team

The current operations group at the Bonanza Ledge Mine and QR Mill will support the CMT for the following services during the construction phase:

- Staff payroll;
- Accounting support;
- IT support;
- Site security;
- Integration of upgrade to QR Mill;
- Public relations;

- Environmental and permitting;
- Medical and first aid;
- Site Maintenance;
- Site logistics.

24.2. Project Execution Schedule

The preliminary Project execution plan is developed to a PEA level and therefore conceptual in nature. The execution plan and schedule will be further developed and detailed during the next stages of Project development. The preliminary Project execution schedule, developed in this PEA and described herein, covers the period from the end of the PEA (Q2 2022) up to the achievement of expanded operations at 8,000 tpd (Q1 2027), pending permitting.

Major Project milestones for the Project activities are shown in Table 24-1.

Table 24-1: Project Key Milestones (preliminary)

Activity	Date
Complete revised PEA study	Q2 2022
Collect bulk sample	Q2 2022
The Project Environmental Assessment Certificate ("EAC") for 4,750 tpd application and reception of certificate	Q4 2022
Start of dismantling activities as part of Care and Maintenance for Bonanza Ledge 3	Q4 2022
Start FS and Execution stage work (parallel activities)	Q4 2022
Start of Major Construction at QR Mill	Q1 2023
Transmission Line License of Occupation	Q3 2023
Receive permits for the 4,750 tpd Project	Q3 2023
Island Mountain Portal Construction & Development	Q3 2023
Early Works at Mine Site Complex	Q1 2024
Commissioning of QR Mill	Q1 2024
Start of Transmission Line Clearing and Construction	Q1 2024
Start of Major Construction at Mine Site Complex	Q1 2025
CGP Phase I 2,000 tpd achieved	Q4 2024
Commissioning of Mine Site Complex	Q3 2026
CGP Phase II 8,000 tpd achieved (pending permit amendment)	Q1 2027

25. Interpretation and Conclusions

25.1. Data Verification and Mineral Resources

The Cariboo Gold Project ("the Project") combines the deposits of three contiguous mountains separated by valleys: Cow Mountain (Cow and Valley), Island Mountain (Shaft and Mosquito) and Barkerville Mountain (Bonanza Ledge, BC Vein, KL, and Lowhee). The qualified professionals ("QP") consider the 2022 Mineral Resource Estimate ("2022 MRE") to be reliable, thorough, based on quality data, reasonable hypotheses and parameters.

The following conclusions are based on the QPs detailed review of all pertinent information and the 2022 MRE results:

- The results demonstrate the geological and grade continuities for all eight gold deposits in the Cow-Island-Barkerville Mountain Corridor.
- In a potential underground scenario, the Cariboo Gold Project contains an estimated Measured Resource of 8,000 ounces of gold, and Indicated Resource of 3,463,000 ounces, and an Inferred Resource of 1,621,000 ounces.
- The resource estimates for the Mosquito, Shaft, Valley, Cow, and Lowhee deposits were updated using the 2021 drill results.
- The resource estimates for the BC Vein and KL deposits were not drilled in 2021, but the search ellipse and search distances were altered to match the other deposits. Also, the BC Vein deposit has been depleted since the 2020 MRE.
- No change is reported for the Bonanza Ledge deposits.
- To report the 2022 MRE for the Project, conceptual mining shapes were used as constraints to demonstrate that the "reasonable prospects for eventual economic extraction" criteria is met.
- Additional diamond drilling on multiple zones would likely increase the Inferred Resources and upgrade some of the Inferred Resources to Indicated Resources.

25.2. Mineral Processing and Metallurgical Testing

Former testwork performed during the "NI 43-101 Technical Report, Preliminary Economic Assessment of the Cariboo Gold Project, Effective date of August 18, 2019" (Morgan et al, 2019), was considered for the process design. Further testwork was completed in support of this Study with an effective date of April 25, 2022. These testworks consisted of an investigation into the amenability of mineral sorting to pre-concentrate the run of mine ("ROM") prior to milling, chemical characterization, a preliminary evaluation of comminution characteristics, flotation and leaching tests, cyanide destruction testing as well as preliminary thickening and rheology tests.

The selected flowsheet for processing material from the deposits includes mineral sorting, grinding, flotation and leaching. The process at the Mine Site Complex produces a pre-concentrate consisting of mineral sorting concentrate in Phase I and in Phase II mineral sorting and flotation concentrate both Phases concentrates are transported to the QR Mill for further milling and leaching.

The average metallurgical recovery per site are reported in Table 25-1. Based on the testwork results and the proposed mining plan at the time, the overall projected Au recovery is 92.1%. The annual recovery projections are expected to differ from the average testwork results according to the final mine proportions of mineralized material zones.

Table 25-1: Average gold recovery and process step

Process Step	Average Au Stage Recovery (%)
Bonanza Site	97.0
Mine Site Complex	95.6
QR Mill	95.4
Overall Au Recovery	**92.1**

25.3. Mining Methods

The Project is planned to begin production at 2,000 tonnes per day ("tpd") in 2024 and ramp up in 2027 to produce approximately 8,000 tpd of mineralized material from narrow vein gold mining utilizing a longitudinal retreat long hole extraction method at 30 m sublevel spacing and using cemented rockfill ("CRF") and pastefill backfill. The property has a history of active mining between 1877-1969 resulting in legacy excavations and potentially difficult ground conditions locally. The Project design encompasses a 4,400 m strike length and an average vertical extent of 660 m (depth from surface highly variable due to the terrain) culminating in total scheduled lateral development of 240 km. Total inventory of potentially mineable mineralized material has been estimated at 28.2 Mt @ 3.4 g/t Au. The mineable inventory exists within 182 discrete mineralized lenses spread across five zones, each requiring development access to accommodate the longitudinal extraction method. The Project mine layout demonstrates a development intensive stope access requirement and therefore has a high development meter per tonne of mineralized material ratio.

These factors may pose a challenge to successful implementation of the mine plan given the restrictive geotechnical parameters and intrinsically lower productivities of the mining method. However, through diligent planning and adherence to proper work procedures, sufficient active headings and stoping areas should meet daily production requirements. Furthermore, the use of innovative technologies and techniques may improve productivity. One such example would be to extend the use of a roadheader. The roadheader mechanically excavates lateral development, with lower wear in poor ground conditions, and is anticipated to have a higher monthly advance rate compared to traditional jumbo advance rates as stated by solicited contractors. A second example is the inclusion of automated truck hauling and mucking between shifts to achieve higher productivities per calendar day.

25.4. Environmental Studies

The environmental baseline work completed to date is sufficient to support a PEA. Further work is underway, as required, to support the Environmental Assessment process and permit applications for the Project.

25.5. Infrastructure

The information and assumptions used in the design of the Mine Site Complex infrastructure are sufficient to support a PEA. Further work is underway and recommended to support subsequent design phases.

25.6. Capital and Operating Costs

The total capital costs (initial, expansion and sustaining) for the Project were estimated at $1,365 million ("M"). The initial capital costs were estimated at $121.5M. Expansion capital costs were estimated at $716.1M. Sustaining capital costs were estimated at $527.2M. Closure costs were evaluated at $18.5M and salvage value at $61.1M.

The overall capital cost estimate developed in this study meets the AACE class 4 requirements and has an accuracy range of –30% and +30%. Items such as sales taxes, land acquisition, permitting, licensing, feasibility studies and financing costs are not included in the cost estimate.

The Project capital cost summary is outlined in Table 25-2.

Table 25-2: Project capital cost summary

Area	Cost Area Description	Initial capital cost ($M)	Expansion capital cost ($M)	Sustaining capital cost ($M)	Total capital cost ($M)
000	Mobile Equipment (non-mining)	3.2	1.8	5.6	10.6
200	Underground Mine	16.2	114.9	375.9	507.0
300	Water & Waste Management	2.6	88.6	9.9	101.1
400	Electrical & Communication	13.1	57.4	67.0	137.5
500	Surface Infrastructure	3.8	53.3	60.6	117.7
500	Mine Surface Infrastructure	2.1	2.5	5.7	10.4
600	Process Plant - Wells	1.5	189.1	-	190.6
600	Process Plant - QR Mill	37.6	17.1	2.4	57.0
700	Construction Indirect costs	20.8	66.1	0	86.9
800	Owner's Costs	3.7	27.2	0.1	31.0
999	Contingency	0.5	98.1	-	98.7
-	Capitalized Operating Costs	16.4	-	-	16.4
	Total	**121.5**	**716.1**	**527.2**	**1,364.8**
	Site Reclamation and Closure	-	-	18.5	18.5
	Salvage Value	-	-	-61.1	-61.1
	Total – Forecast to Spend	**121.5**	**716.1**	**484.6**	**1,322.2**

The average operating cost over the 12-year mine life is estimated to be $94.0/tonne mined. Table 25-3 presents the breakdown of the projected per-tonne mined operating costs for the Cariboo Gold Project. Mining costs are presented inclusive of costs related to backfilling, including paste backfilling. Processing costs are presented inclusive of costs related to underground crushing and subsequent handling of ore during Phase II of the Project, as well as the costs related to mineral sorting for both phases of the Project.

Table 25-3: Project operating costs

Area	Cost area description	LOM ($M)	Annual average cost ($M)	Average LOM ($/tonne mined)	Average LOM ($/oz)	OPEX (%)
000	General and administration	216.0	18.0	7.7	76.2	8.2
000	Mineralized material transport	108.5	9.0	3.9	38.2	4.1
200	Underground mining	1,499.9	125.0	53.3	528.8	56.7
600	Processing (Mine Site Complex and QR Mill)	675.8	56.3	24.0	238.2	25.5
800	Tailings, water treatment and environment	163.5	13.6	5.8	57.6	6.2
	Capitalized Operating Costs	-16.4	-1.4	-0.6	-5.8	-0.6
	Total	**2,647.3**	**220.6**	**94.0**	**933.3**	**100**

25.7. Indicative Economic Results

The financial analysis performed as part of this revised PEA using the base case assumptions results in an after-tax NPV 5% of $763.8 M and an internal rate of return of 21.4% (base case exchange rate of 0.79 CAD for 1.00 USD). The cumulative cash flow for the Project (after-tax) is $1,342 M and the payback period after start of operations is 6.0 years over the planned mine life of 12 years.

25.8. Project Risks and Opportunities

As with most mining projects, there are risks that could affect the economic viability of the Project. Many of these risks are based on a lack of detailed knowledge and can be managed as more sampling, testing, design, and engineering are conducted at the next study stages. Table 25-4 identifies what are currently deemed to be the most significant internal project risks, potential impacts, and possible mitigation approaches that could affect the technical feasibility, and economic outcome of the Project.

External risks are, to a certain extent, beyond the control of the Project proponents and are much more difficult to anticipate and mitigate, although, in many instances, some risk reduction can be achieved. External risks are things such as the political situation in the Project's region, metal prices, exchange rates and government legislation. These external risks are generally applicable to all mining projects. Negative variance to these items from the assumptions made in the economic model would reduce the profitability of the mine and the mineral resource estimates.

There are significant opportunities that could improve the economics, timing, and/or permitting potential of the Project. The major opportunities that have been identified at this time are summarized in Table 25-5 excluding those typical to all mining projects, such as changes in metal prices, exchange rates, etc. Further information and assessments are needed before these opportunities should be included in the Project economics.

Table 25-4: Project risks (Preliminary risk assessment)

Area	Risk Description and Potential Impact	Mitigation Approach
Geology and Mineral Resources	1. Potential lack of geological continuity of the resource due to a wide drill spacing in some areas.	1. Continue to use a multi-capping procedure approach until an underground access is developed into the mine zone. Continue infill drilling to upgrade a larger proportion of the mineral inventory to indicated and measured resources.
Underground Mine	1. Difficulty in attracting experienced professionals – The ability to attract and retain competent, experienced professionals is a key success factor. 2. Paste water bleed is unusual and impact the stability of the paste, the pumping and the distribution network. 3. Development and mining near old workings may conduct to unanticipated void, water inflow or saturated backfill 4. Roadheader's cost and viability. 5. High daily production rate from a narrow vein gold mine; potential for issues related to production capacity from each zone due to: geotechnical issues, interaction of equipment in each zone, any slowdown in mining cycle time (related to dewatering, backfill placement/curing, lead time for dewatering and materials handling). 6. Ground conditions are worse than anticipated based on geotechnical model. This could impact development and stoping operations. 7. Dewatering of the underground will result in formation of downward hydraulic gradients and the potential for existing contamination in the near surface aquifers to migrate into the underlying aquifers.	1. The early search for professionals will help identify and attract critical people. It may be necessary to provide accommodation for key people (not included in project costs). Test mining and processing is planned to restart in 2021 at BC Vein, which would provide a platform for training and attracting qualified personnel. 2. The network piping design should consider a higher velocity to avoid water bleed. 3. Review old mine plans, probe drilling for open voids, water level and saturated backfill in front of development heading. Monitor water level while dewatering. Add proper contingency in dewatering system. 4. Validate and test Road Header performance on Cow bulk sample. 5. Large amount of optionality from mining stopes, development must stay ahead of production. 6. Additional geotechnical data will be collected during underground development including; geotechnical mapping and underground geotechnical core drilling. 7. Monitor groundwater level and quality as the mine is developed and the dewatering advanced.

Area	Risk Description and Potential Impact	Mitigation Approach
	8. The transient changes in groundwater inflow and groundwater flow conditions has not been predicted through steady-state simulations indicate flow likely similar.	8. Complete transient groundwater model simulation of the mine plan.
Mine Surface Infrastructure	1. Bedrock may not be near the surface beneath the overburden layer on Cow Mountain and Island Mountain, thus causing additional work for the ventilation raises connection at surface.	1. Include the ventilation raise locations in the next phase of surface geotechnical investigation and adjust locations if required.
Electrical & Communication	1. Electrical loads are based on capacity of underground and surface mechanical equipment. Changes to mechanical equipment may require changes to electrical equipment design 2. Transmission line construction delays due to BC Hydro at the Barlow Substation, MOTI, environmental issues or agreements with land owners in certain areas, etc. 3. Transmission line engineering delay due to lack of information (environment and social studies, LiDAR, geotechnical study, etc.). 4. Incertitude in Mine Substation technical parameter: Possible requirement for compensation. Could require additional cost.	1. Complete Mine Site area electrical system design including connection and distribution. 2. Coordination with BC Hydro and MOTI. Complete the environmental assessment and be proactive in reaching agreements with land owners along the transmission line corridor. 3. Complete these studies in 2022. 4. Some costs from the new BCH Mine Site substation might be transferred for this asset if required.
Site infrastructure	1. Final potable water supply location to be confirmed and permitted. 2. Mine Site Complex Camp Access Road intersection at Highway 26 requires MOTI to approve location. A change in location will change road length and Willow River bridge location. 3. Willow River Bridge foundation – abutment foundations consist of weak soils	1. Complete investigations to select final location and complete permit application. 2. Highway access permit application to be initiated to provide confirmation of intersection location and bridge foundation. 3. Consider bridge foundation using pilings.

Area	Risk Description and Potential Impact	Mitigation Approach
	4. Site clearing and levelling may encounter historic contamination and will require removal of historic structures including headframe, tanks and concrete foundation material. 5. Surface water quality – Mine Site Complex area foundation materials include historic waste rock and mill tailings and known groundwater contamination from metal leaching and upwelling of water in the historical tailings area. Additional piling of waste rock and construction may disturb historic materials and contribute to further groundwater contamination 6. Foundations for heavy structures or large rotating equipment may require deep foundation or ground improvement to support loads due to compact foundation materials. 7. Access road will follow existing roads from Mine Site Complex to Bonanza Ledge using upgraded roads. Road design standard to be determined according to waste rock haul design requirements. 8. Inability to use cut material at the Mine Site Complex or the construction of civil infrastructure.	4. Artesian conditions encountered while executing geotechnical drilling on the north site of Willow River. Strategy to be developed to investigate this area without environmental issues. 5. Assess likely areas of contamination and existing structures and establish a plan to: ▪ Mitigate upwelling water in the historic tailings area. ▪ Mitigate disturbance of contamination or dispose or remediate disturbed contaminants Dismantle structural elements and disposal of materials. 6. The BFA will be levelled, and a geomembrane placed to isolate new work from historical waste below and provide hydraulic cut-off mitigating infiltration of surface water to surrounding groundwater. The geomembrane will extend to the limits of the surface water management pond. Similarly, the contact water collection ditches and sumps will be lined with a low permeability geomembrane. 7. Assess condition of existing access road as part of subsequent geotechnical site assessment and determine upgrades to road arrangement and drainage. Also perform road trade-off to determine best routing. 8. Further define geochemical characterization of the Mine Site Complex materials.

Area	Risk Description and Potential Impact	Mitigation Approach
Mineral Processing and Metallurgy	1. Mineral sorting recoveries are based on limited testwork – Recovery might be lower than what is currently being assumed. 2. Impact of mineralized material dilution on mineral sorting recovery is unknown. 3. Percentage of fines from mined mineralized material is estimated based on limited samples. Lower percentage of fines could lead to a higher crushing and mineral sorting and subsequent equipment throughput requirement. 4. Limited testwork. 5. Metallurgical recoveries are based on fixed mineralized material zone blends and amount of gold in the tested fines. Recovery could be lower than what is currently being assumed.	1. Conduct additional mineral sorting tests. 2. Perform sorting tests with and without dilution to determine impact on recovery. 3. Perform a particle size distribution on a representative sample of chosen mining method. 4. Perform more variability testwork on the different zones. 5. Conduct additional metallurgical testwork to identify the response to feed variations.
Concentrator and QR Mill	General 1. Equipment sizing is incorrect due to lack of information, resulting in either higher than required capital costs or inability to achieve design throughput. 2. Freeze/thaw cycle will affect material handling between sites, and for filtered tailings material. 3. Dust generation in mineral sorting areas. Bonanza Ledge Site 4. Variation in mineral sorter mass pull resulting in either excess waste to send underground, or QR Mill circuit undersized resulting in poor gold recoveries.	General 1. Perform additional testwork. 2. Design transfer points and truck bins to reduce freezing in those areas, develop operational strategies to reduce the time material sits in transfer points, standard operating practices to keep material handling equipment clean, and use specialized reagents to help reduce clumping/freezing. 3. Use proper PPE and emphasis on cleaning. Bonanza Ledge Site 4. Perform additional mineral sorter testwork.

Area	Risk Description and Potential Impact	Mitigation Approach
	QR Mill Site 5. Inconsistent feed to QR Mill based on transportation challenges from the Mine Site Complex. 6. In case of filter press failure in the tailings dewatering circuit, no alternatives are available for disposing of the residues in the tailings facility, which will cause a shutdown at the QR Mill. Mine Site Complex 7. A variation of the flotation circuit's mass pull will have an impact on QR Mill and the backfill plant. 8. The Project does not have plans for a tailings area at the Mine Site Complex. The production of backfill paste is the only tailings disposal method. Should a failure happen at the backfill plant, the concentrator will shut down. 9. Shutdown process plant due to inability to place backfill underground due to mining challenges. 10. Technologies employed in the vertical conveyor are less common than that of horizontal conveyors. This could cause operational issues due to personnel's lack of training and additional maintenance. 11. Moist air from underground coming into the building from the vertical conveyor creating material handling challenges and poor mineral sorter performance.	QR Mill Site 5. A 5-day storage capacity to stockpile concentrate to stabilize feed rate was accounted for in the cost estimates. 6. The size of the filter feed tank allows for brief production halts, which can be used for planning shutdowns for maintenance and care of equipment. Mine Site Complex 7. Ensure that a mix of the mineralized material is done underground to respect the optimal proportions for mineral sorter feed and flotation mass pull. 8. The filter feed tank shall be used at 60% of its capacity, allowing the accumulation of 2 hours of production in case of equipment failure. A preventive maintenance program shall be put in place and planned shutdowns shall be coordinated in between the Mine Site concentrator and the paste plant. 9. Eight hours of surge capacity in the tailings circuit. 10. Benchmark from companies using this technology, visits and discussion with operators. Training program for operators and maintenance crew. 11. Design proper seals to reduce air flow from/to U/G from inside the building.

Area	Risk Description and Potential Impact	Mitigation Approach
Geochemistry and Water Quality Predictions	Mine Site Complex 1. Underground mine water quality was represented by groundwater samples collected from deep mine workings prior to 2020. The underground mine is not part of the Mine Site Complex water quality model. QR Mill Site 1. The QR Mill water quality model prediction is based on laboratory kinetic testing results from a small sample of filtered tailings which may not represent actual tailings properties and field condition. This could lead to under-estimation of treatment influent water quality and higher treatment cost. 2. The QR Mill effluent water quality is based on one testwork sample. This one sample does not consider reagent usage and may not represent the actual variability in the mill effluent water quality. This could lead to under-estimation of treatment influent water quality and higher treatment cost.	Mine Site Complex 1. Sampling of deep wells workings water quality should be included as part of future exploration drilling programs. In addition, geochemical testing is underway to refine water quality model inputs for the underground mine (e.g., cemented mine backfill). The Mine Site water quality model will be updated to include the underground mine. QR Mill Site 1. Implement laboratory testing, field leach barrel or field pad testing for the filtered tailings for additional geochemical characterization to refine source term prediction. 2. Improve programming and linkage of the mill components within the water quality model so that water treatment design basis can be refined.
Water Treatment	General 1. Changes in modelling predictions for flow or water quality to the treatment systems, may result in a change to the treatment processes and associated costs.	General 1. Perform sensitivity analysis in the next phase of the Project to assess impacts of changes in water quality and/or flow on the designs. Ongoing coordination with the water quality and water balance modelling teams. 2. Confirm the treatment limits in the next phase of the Project.

Area	Risk Description and Potential Impact	Mitigation Approach
	2. Changes in the proposed treatment limits (regulators and/or further changes/studies on the receiving environment) may result in a change to the treatment processes and associated costs. Mine Site Complex 3. Changes in the mine plan/Project staging may result in a change to the treatment processes and associated costs. 4. Water treatment costs for Mine Site Complex have been based on the treatment processes currently described in the Environmental Assessment ("EA"), with the addition of removal of nitrogen species associated with blasting. Concentrations of nitrogen species were predicted following the EA, using an explosive usage rate for the 6,000 tpd mine plan. These predictions were scaled up to the 8,000 tpd mine plan for the PEA. QR Mill Site 5. Water treatment costs for QR Mill have been based on the treatment processes currently described in the EA.	Mine Site Complex 3. Confirm the mine plan/project staging in the next phase of the Project. 4. Confirm the predicted influent water quality at Mine Site Complex in the next phase of the Project to understand if removal of any other secondary constituents is required or if any parts of the process can be simplified with further Project definition. QR Mill Site 5. Confirm the predicted influent water quality at the QR Mill in the next phase of the Project to understand if removal of any other secondary constituents is required or if any parts of the process can be simplified with further Project definition.
Mineralized Material, Waste, and Water Management	Mine Site Complex 1. Geochemical testing of waste rock is not complete. Assumed geochemical parameters may not be representative. 2. Existing contact diversion ditches at Bonanza Ledge may require extensive upgrades, leading to additional CAPEX	Mine Site Complex 1. All waste rock storage facilities have been planned with geomembrane liners. All water coming into contact with waste rock piles is assumed to require treatment before discharge to the environment. 2. A site inspection will be done to assess the level of upgrade needed and adjust CAPEX as required for the Feasibility design.

Area	Risk Description and Potential Impact	Mitigation Approach
	3. Water storage infrastructure at Bonanza Ledge is required south of the proposed waste rock storage facility. Pond location and concept will need refinement and may trigger substantial environmental impact assessment on the Stouts Gulch watercourse/watershed, leading to delay in the permitting process. 4. Risk of dewatering of Mine site historic workings could change with updates to the mine plan and additional investigative work. QR Mill site 5. Existing non-contact and contact ditches at QR Mill site may require upgrades for the Project and at closure.	3. Refinement of the Bonanza Ledge south pond sizing, concept and location is underway and the impact assessment specific to this infrastructure will be conducted without delay. 4. As the mine plan should be updated, the dewatering plan be adjusted after an update groundwater flow predictions in the next phase of the Project. QR Mill site 5. A site inspection will be done to assess the level of upgrade needed and adjust CAPEX as required for the Feasibility design.
Tailings Management Facility (TMF)	1. Covering the FSTSF and Existing TSF tailings with temporary liner to minimize tailings infiltration and limit runoff from contacting the tailings is not a proven mitigation measure. Failure of this mitigation method could lead to more water quality exceedances and higher water treatment cost. 2. There is currently limited contingency storage if the WTS is unable to operate or meet discharge criteria. 3. Once the TSF pond is dewatered, the existing tailings surface could vary from soft and non-trafficable to competent. The tailings surface will need to support liner installation and placement of filtered tailings. 4. Achieving adequate compaction during storm events may be operationally difficult, particularly in snowstorms when snow must be removed from the placement surface before tailings are placed.	1. Conduct options analysis for liner to make selected product meets requirements (such as resistance to UV, heat and/or acidic conditions), install the FSTSF Ephemeral Pond liner according to typical procedures, release small amounts of treated effluent water during low-flow periods, pump seepage water from the NSCP and groundwater interception wells to the MZP for treatment, and conduct a liner field trial to simulate the covering and water management for a representative active placement area. 2. Consider sizing the plant larger to increase water management flexibility, consider additional contingency storage locations such as an enlarged SSCP, maintain pumping system redundancy for the NSCP and FSTSF, develop a Trigger Action Response plan for in-pit treatment, maintain a supply of reagents to allow maximum treatment, and automate pumping and treatment systems.

Area	Risk Description and Potential Impact	Mitigation Approach
		3. Conduct a constructability review for the initial years of the filtered tailings placement. Conduct a trial on the existing tailings. 4. Provide covered storage for filtered tailings at QR Mill for periods of adverse weather when placement to specification is operationally difficult to achieve.
Construction (Costs and Schedule)	1. Proposed mega projects in BC (LNG facilities, Pipeline construction) may restrict construction labour and camp module availability. 2. Supply chain challenges due the COVID pandemic could impact sourcing schedule and increase material costs due to the inflationary environment	1. Keep informed of mega projects in BC and re-assess risk. 2. Secure long lead items and bulk materials ahead of schedule to keep them out of the Project's critical path
Environmental, Permitting and Social License	1. The most significant potential risks are permit acquisition and changes in regulatory requirements. 2. Permitting delays on increase to 8,000 tpd could delay start date of increased production.	1. Proactive and continuing engagement with regulators, Indigenous nations, and local stakeholders 2. Proactive and continuing engagement with regulators, Indigenous nations, and local stakeholders. Continued planning for permitting processes
Rehabilitation and Closure	1. Closure of Mine Site, Bonanza Ledge and QR Mill area may require grading of laydown area, adjustments to surface water management infrastructure, and capping of Waste Rock Storage Facility depending on geochemistry and water management planning. 2. Reflooding of the underground at closure may alter the quality of groundwater, including the discharge at historical openings in the Valley and Mosquito Creek area, discharge of water noted in the historical tailings area, and discharge to the overburden aquifers in the Wells Valley. Discharge to the valley may alter groundwater quality in the Wells aquifer which is used by the community of Wells for drinking water. Mitigations expected to be required, such as alternative drinking water supply for the community and or implementation of a hydraulic barrier to protect the drinking water well.	1. Design for closure concept was adopted for all waste and tailings management areas and have been incorporated in the reviewed Reclamation and Closure Plans for all sites. A water balance/water quality model has been developed and will be refined for permitting to appropriately assess closure concepts and their estimated efficiency. 2. Mitigations expected to be required, such as alternative drinking water supply for the community and or implementation of a hydraulic barrier to protect the drinking water well.

Table 25-5: Project opportunities

Area	Opportunity Explanation	Benefit
Geology and Mineral Resources	1. Surface definition diamond drilling - Potential to upgrade inferred resources to the indicated category. 2. Surface exploration drilling - Potential to identify additional inferred resources.	1. Adding indicated resources increases the economic value of the mining project. 2. Adding inferred resources increases the economic value of the mining project.
Underground Mine	1. Utilization of cut-and-fill for adverse ground. 2. Strategic placement of low-grade pillars to forego backfill.	1. Ability to recover mineralized material in adverse ground conditions not included in actual mine plan. 2. Reduction of binder usage and reduction of delays caused by cure times. Higher mineralized material grade recuperation.
Geotechnical and Hydrogeology	1. When geotechnical data is collected during development ground conditions and stope performance could be better than anticipated.	1. Decreased support costs for the development, increased strike lengths in the stopes and potentially decreased unplanned dilution in the stopes.
Mine Site Infrastructure	1. Bulk Fill Area – assess foundation conditions, arrangement and capacity. 2. Surface water quality at Bonanza Ledge – isolate toe of the Waste Rock Storage Facility from water pond so that piled rock is not saturated or exposed to fluctuating water levels.	1. Improve confidence on arrangement and costs. 2. Mitigate metal leaching and acid rock drainage from piled rock to improve surface water runoff quality and reduce effort for treatment prior to disposal beyond the Mine Site area boundary.
Mineral Processing and Metallurgy	1. Perform a bulk sample on zones other than Cow. 2. Perform additional testwork to support more advanced engineering studies.	1. A bulk sample testwork will allow to have a better understanding of the fine generation from the mining method and perform mineral sorter on larger scale sample. 2. Gain better understanding of parameters affecting equipment sizing and select the correct sized equipment.

Area	Opportunity Explanation	Benefit
Concentrator and QR Mill	1. Perform additional testwork on mineral sorter at the Mine Site Complex to optimize recovery (grinding and leaching) 2. Spend additional time to use existing mill building space for QR Mill upgrade	1. Delay capital in Phase II by delaying requirement for flotation 2. Reduce CAPEX at QR Mill
Water Treatment	1. Progress the high-level trade-off for the installation of a pipeline from Bonanza Ledge to Mine Site Complex vs. treat and discharge to environment at Bonanza Ledge. 2. Further analysis of the modelling predictions to identify efficiencies and simplifications in the selected treatment processes 3. Further analysis of the modelling predictions to identify mitigation measures at source 4. Seek opportunities for staged installation of the treatment processes	1. Lower CAPEX and OPEX. Reduction in environmental risks of a potential pipeline failure. Reduction in hydrologic impact to the watercourses flowing from BL. 2. Lower CAPEX and OPEX. Improve treatment efficiency. 3. Lower CAPEX and OPEX. 4. Lower CAPEX and OPEX.
Mineralized Material, Waste, and Water Management	1. Continue geochemical characterization of waste rock. Portions of the waste rock may be geochemically suitable for Mine Site Complex mass fill. Geomembrane quantities may also be reduced. 2. For this PEA CAPEX estimate, storage capacity south of Bonanza Ledge waste rock storage facility has been assumed to be achieved through two ponds built at different moment of the LOM (sustaining CAPEX), assuming fully excavated ponds. The storage concept will be refined to propose, if possible, a more cost effective solution, using for example a mix of excavation and berm/dyke, the existing Bonanza Ledge pit or storage underground using the portal.	1. Reduced CAPEX and improvements to construction logistics and schedule. 2. Reduced CAPEX and improvements to construction logistics, schedule and permitting.

Area	Opportunity Explanation	Benefit
Tailings Management Facility (TMF)	1. The ultimate configuration of the FSTSF could be optimized to simplify the post-closure water management strategy.	1. Reduced post-closure maintenance costs.
Construction (Costs and Schedule)	1. Staged construction of the FSTSF is part of the concept and will be developed during the Engineering Study.	1. Adjusted construction schedule and optimize water management for operating cost savings.
Environmental, Permitting and Social License	1. This aspect of the Project is under consideration. EA study is underway and is accompanied by regular public consultations	1. Maintain community support and relationship, maintain good communication with regulators and improve project for receiving permits on time and social license to operate.
Rehabilitation and Closure	1. Staged construction of the FSTSF will be incorporated with progressive closure. 2. Progressive reclamation of surfaces that are not active to limit areas and duration of periods during which contact water runoff needs to be managed.	1. Reduced Closure Costs at the end of the operation, and improved construction schedule. 2. Reduced OPEX and closure costs at the end of the operation.

26. Recommendations

This report was prepared and compiled by BBA Engineering Ltd. ("BBA") at the request of Osisko Development Corp. ("ODV"), with the support of experienced and competent independent consultants using accepted engineering methodologies and standards. It provides a summary of the results and findings from each major area of investigation including:

- Exploration;
- Geological modelling;
- Mineral resource;
- Mine design;
- Metallurgy;
- Process design;
- Infrastructure;
- Environmental management;
- Tailings and water management;
- Capital and operating costs;
- Economic analysis.

The level of investigation for each of these areas is consistent with, or surpassing, the level expected of a Preliminary Economic Analysis ("PEA").

The mutual conclusion of the Qualified Persons ("QPs") is that the Cariboo Gold Project ("the Project"), as summarized in this PEA, contains adequate detail and information to support the positive economic outcome shown. The results of this study indicate that the Project is technically feasible and has financial merit at the base case assumptions considered.

In summary, the QPs recommend that the Project proceeds to the Feasibility Study phase. It is also recommended that environmental and permitting continue as needed to support the Project's development plans and the Project schedule.

Concurrently, it is recommended that ODV continues its exploration program with drilling (infill and exploration), geological mapping, and grab sampling to test the extensions of known high-grade vein corridors and identify new targets.

A work program, including additional exploration drilling, an underground bulk sample, and a Mineral Resource Estimate ("MRE") update have been developed based on QPs' recommendations. The work program is estimated to cost approximately $64.8 million ("M") including a $10.8M contingency. A breakdown of this budget is summarized in Table 26-1.

Table 26-1: Work program budget

Work Program	Cost Estimate (CAD)
Infill and exploration drilling (130,000m)	30,000 000
Surface mapping and sampling	500,000
Bulk Sample	15,000,000
MRE update and Feasibility Study	8,500,000
Contingency (20%)	10,800,000
Total	**64,800,000**

Analysis of the results and findings from each major area of investigation completed as part of this PEA suggests numerous recommendations for further investigations to mitigate risks and/or improve the base case designs.

26.1. Drilling and Geology

For the future drilling, geology and Resource estimation activities, it is recommended to:

- Based on the results of the 2022 MRE, it is recommended that the Project deposit be advanced to the next phase. Additional exploration and delineation drilling, as well as further geological and structural interpretation, are recommended to determine the extents of the gold mineralization. The recommended geology work program is detailed below. Infill drilling in high-grade vein corridors (> 6.0 grams per tonne ["g/t"] gold ["Au"]) to potentially convert resources currently categorized as Inferred to Indicated category. A budget of 130,000 metres ("m") of drilling is recommended for this program.
- Exploration drilling to explore the true depth potential with 50 m step-outs downdip of high-grade vein corridors.
- Continue geological mapping and surface sampling programs to define and identify new targets.
- NI 43-101 MRE update on the Project and Feasibility Study. It is recommended to update the MRE after completing the drilling program. This update should be used to support the FS.
- Collect an underground bulk sample to test geological and grade continuities, metallurgical and geotechnical parameters.

26.2. Underground Mining

For rock engineering, it is recommended to:

- Collect additional geotechnical data to improve rock mass characterization in large infrastructure locations and in areas where no geotechnical logging was carried out. This should include geotechnical drilling from underground targeting critical areas of underground infrastructure such as the vent raise locations, the material sorter, and the other large excavations. This core should be logged, and laboratory rock strength testing conducted in representative samples.
- Validate site in situ stress assumptions once underground.
- Reassess crown pillar and ground support requirements and perform numerical modelling assessments once the mine layout is finalized. Numerical stress modelling of mining sequence and excavation interaction.
- Conduct geotechnical and geological mapping of the underground development as the development progresses. These data should be used to optimize and refine the geological and geotechnical understanding of the existing models. Further geological and structural interpretation is recommended to understand this influence of faults on mining.

Regarding the mine hydrogeology aspects, it is recommended to:

- Assess the requirement for additional investigative work such as packer testing and/or installation of multilevel piezometers in the Mosquito Creek in consideration of updated modelling in support of the environmental assessment and documentation of baseline conditions.
  - Obtain dewatering rates for the Bonanza Ledge Site operation to validate the groundwater model findings in this area and reduce uncertainty in predicted dewatering rates.
  - Obtain measurements of discharge quantity at existing mine openings in Valley and Mosquito Creek zones to validate the groundwater model findings in this area and reduce uncertainty in predicted dewatering rates.
  - Install multilevel piezometers in Cow, Valley, and Island Mountain zones to increase groundwater level monitoring coverage and to better characterize vertical gradients. These installations may be used in the future to verify and refine the model calibration, and to monitor the progress of mine dewatering.
  - Investigate the source of upwelling in the historical tailings area to support mitigation planning.
  - Assess location of new and existing drinking water wells for use in the Project and by the community of Wells.

To support the mine planning, it is recommended to:

- Complete additional research and detailed mapping of the old working drift and stopes to gain better understanding of the dewatering and improve mine design.
- Complete additional engineering work to refine mine design and production schedule:
  - Perform trade-off study(s) on ventilation raises to optimize number of separate raises (with associated set up costs and increased ventilation costs) against greater schedule flexibility;
  - Perform trade-off study(s) on additional or different pillar locations; increased schedule flexibility or ability to access higher grade stopes sooner may offset a small overall reduction in tonnes;
  - Further optimization of development schedule late in mine life, potential reduction of manpower or deferral of development may benefit project NPV.
- Complete additional engineering work to detail the CAPEX and OPEX of the underground mine.
- Further study material handling strategies both globally and in relation to automation assumptions. Potential advances in automatic tramming may remove the need for trucks to travel in convoys of three.
- Perform detailed engineering work for the electrical, dewatering and backfill systems.
- Investigate the interaction of the roadheaders and the ventilation circuit. Consider a reversal of the ventilation circuit such that the ramp is downcast and therefore avoid potentially high levels of dust. Similarly, investigate the use and costs of dust collection systems tied to roadheader usage. Investigate the use of roadheaders to mine higher-grade material in adverse ground conditions using the cut and fill method and validate roadheader advancement rates for development.
- Further study paste handling systems both underground and at surface.
- Investigate feasibility of a top down mining sequence with the use of up hole drilling.
- Further study pastefill distribution and whether piping, trucking or a combination of both would be optimal.
- Pursue discussions with various suppliers to negotiate agreements or precise submissions.

26.3. Mineral Processing and Metallurgical Testwork

It is recommended that the metallurgical test program continues in order to validate the results obtained from the PEA testwork campaigns. Additional testwork would allow for a more profound understanding of the lithological effect on metallurgical performance. The following tests are recommended:

- Additional mineral sorter testwork on each deposit, including life of mine ("LOM") composites and variability samples.
- Characterize the production of fines during crushing.
- Test the impact of dilution on mineral sorting performance as well as impact on down-stream process.
- Perform full flowsheet tests on any new deposits.
- Perform flotation and leach testwork on LOM composites and variability samples at process design conditions.
- Perform equipment specific testwork required to size key process equipment (settling, filtration, etc.).

26.4. Tailings, Waste and Water Management

A laboratory testing program should be carried out on additional samples of existing and new tailings to continue refining the understanding of their physical properties, including hydrogeological and geotechnical characterization. Settling, thickening, and filtration testing on tailings slurry should also be repeated. Testing for defining the potential bleed water quality should be completed.

The recommendations regarding the filtered stack tailings storage facility ("FSTSF") at QR Mill are:

- The staged development of the FSTSF should be assessed to provide a more accurate planning.
- The temporary covering of the FSTSF and existing TSF should be assessed and a liner field trial should be conducted.
- The trafficability of the existing tailings should be reviewed for its ability to support the Project tailings and liner installation.
- The most appropriate closure scenario should be defined including identification of the most appropriate low-permeability cover system and borrow sources.

The recommendations regarding surface water management at the Mine Site Complex, Bonanza Ledge Site and QR Mill are:

- Surface water management concept is to be assessed according to results of environmental site assessment and ensure compliance with the Project permitting or table of comments.
- Freeze concepts, construction staging and characterize soil types and depth to rock in the footprint of proposed water management infrastructure in order to progress through detailed design of contact water ponds, diversions, contact water ditches and sumps and spillway channels. This is needed to ensure stability and certainty of arrangement, and material quantities.

The recommendations related to geochemical characterization and the Mine Site Complex and Bonanza Ledge Site water quality predictions are as follows:

- Work in progress related to geochemical testing and water quality predictions should be considered in the context of the water treatment plant design. Work in progress includes the following:
  - Supplemental geochemical testing for the purpose of refining water quality inputs (i.e., source terms) to the site water quality model:
    - Additional characterization of unconsolidated overburden samples located at the Mine Site Complex has been initiated to aid in the understanding of the potential for Acid Rock Drainage ("ARD") and Metal Leaching ("ML"), and subsequently inform the material handling during construction at which time the materials will be disturbed onsite;
    - A laboratory testing program has been initiated for cemented paste tailings and cemented rockfill to understand the ARD/ML potential of the materials and refine water quality model ("WQM") source terms related to cemented materials stored in the underground;
    - Supplemental geochemical testing of waste rock and mineralized materials, including continuation of humidity cell tests to confirm assumptions related to ARD and ML.
  - General refinements to the Mine Site Water Balance and Water Quality Model ("WBWQM"):
    - Update the WBWQM to provide linkages between the mine life phases (i.e., Construction, Operations, Closure, and Post-Closure) on a temporal and spatial basis;
    - Review and/or refine lithological assignments within the WQM for the waste materials expected during the mine life;

- Refine the current modelling approach for the prediction of the underground water quality to include updated source terms using site-specific datasets and temporal / spatial information for mining operations. The predicted water quality of the underground mine water pool may be refined with the inclusion of updated water chemistry profiles for the following source-terms:
  - Water chemistry from opportunistic sampling of mine pool locations;
  - Nitrogen species due to blasting activities;
  - Cemented backfill materials;
  - Bedrock water chemistry;
  - Seepage from underground wall rock exposure.

- The recommendations related to the QR Mill WBWQM:
  - Continue to validate model predictions against site monitoring data;
  - Geochemical characterization for the 2021 field program samples is ongoing. Revise the model with updated source terms once the data is available;
  - Improve linkage between mill components and the rest of the site-wide WBWQM components such that water treatment design basis can be refined;
  - Implement field leach barrel or large scale field pad testing for the FSTSF tailings to assess the speciation and mineral saturation states under field conditions.

Recommendations related to Water Treatment Design are as follows:

- Progress the high-level trade-off for the installation of a pipeline from Bonanza Ledge Site to Mine Site Complex.
- Further analysis of the modelling predictions to identify efficiencies and simplifications in the selected treatment processes.
- Further analysis of the modelling predictions to identify mitigation measures at source.
- Seek opportunities for staged installation of the treatment processes.

26.5. Infrastructure

Additional activities are recommended to complete the next phase for the following infrastructure items:

- Mine Site Complex Camp Access Road:
  - Complete highway access permit to confirm intersection of Mine Site Complex Camp Access Road at Highway 26.

  - Willow River Bridge foundations should be designed to clarify uncertainty in foundation design and capital cost. Geotechnical Investigation should include Electronic Cone method, Seismic information ("CPTu"), review of lateral spreading and settlement and complete survey to confirm grade line. Environmental information/constraints should be well defined too.
  - Evaluate bearing capacity of foundation materials along the length of the road to determine if soil reinforcement is required to establish a stable road prism, where poor subgrade conditions exist.
- Mine Site Complex Preparation:
  - Assess requirements to dismantle and dispose of historic structures.
  - Undertake further assessment on the geochemical characterization of the material to be excavated at the Mine Site Complex to finalize the earthworks development strategy and assess potential and optional sources of structural backfill materials to ensure suitability for construction, improve certainty of unit cost, and initiate permitting or negotiation of rights of access to the source area.
- Mine Site Complex to Bonanza Ledge Site Roads:
  - Complete additional engineering work to optimize the construction and layout of on-site roads Between the Mine Site Complex and Bonanza Ledge Site;
- Waste at Mine Site Complex and Bonanza Ledge Site:
  - Characterize waste rock material geotechnical parameters to confirm stability and configuration and further carry out geochemical characterization.
- Structure Foundations at Mine Site Complex:
  - Undertake an additional geotechnical investigation to better map the bedrock profile and the assessment of volumes of overburden and historical waste material.
  - Additional assessment of the bearing capacity of the bedrock at the location of the concentrator;
- Overhead Transmission Line:
  - Finalize the process of permitting the Transmission Line as it is a critical component of the Project;
- Electrical System at Mine Site Complex
  - Continue developing the power distribution strategy at the Mine Site Complex, especially towards Bonanza Ledge Site;
- Waste Rock Storage Facility at Bonanza Ledge Site:
  - Geotechnical site investigation and assessment of foundation conditions and characterization of existing waste rock material confirm stability and configuration.

- QR Mill:
  - Identify and assess borrow source for construction of the South Seepage Collection Pond ("SSCP") infrastructure, waste and mineralized material pads, and related water management infrastructure.
- Workers Accommodation at the Mine Site Complex:
  - A detailed logistics plan for pre-production construction and mine development personnel, as well as ODV operations employees as they are hired, should be undertaken to ensure that the new camp, the existing camp and the various accommodations that ODV currently own in the District of Wells are sufficient to meet the labour requirements for the Project during the pre-production period.
- Workers Accommodation at the QR Mill:
  - The capacity and condition of the existing QR Mill Camp is adequate for construction personnel during the pre-production period, at which time the QR Mill operations personnel will transfer to the new camp. A detailed logistics plan should be developed to ensure adequate accommodations are available during the QR Mill upgrade work.

26.6. Environment and Permitting

The following are recommendations for environmental and permitting considerations:

- Environmental monitoring for the Project including updating existing environmental monitoring plans in alignment with regulatory requirements and best management practices.
- ODV's engagement with Indigenous nations, regulatory authorities and community stakeholders. This effort facilitates the permitting process and reduces schedule risks. ODV has been engaged with Indigenous nations, regulatory authorities, and community stakeholders, and has sought to gain consent and support for the Project.
- ODV to continue engagement with the Participating Indigenous nations in order to maintain sound relationships and incorporate their input.

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APPENDIX 1: LIST OF MINERAL CLAIMS AND LEASES

Title #	Type	Property	Owner	Issue Date	Good to Date	Area (ha)	Royalties
203991	Mineral Claim	Cariboo Gold	BGM (50%) and Imperial Metals Corp. (50%)	9/7/1976	7/15/2025	75	Osisko Gold Royalties Ltd. (5%)
204176	Mineral Claim	Cariboo Gold	BGM (50%) and Imperial Metals Corp. (50%)	8/14/1979	7/15/2025	25	Osisko Gold Royalties Ltd. (5%)
204177	Mineral Claim	Cariboo Gold	BGM (50%) and Imperial Metals Corp. (50%)	8/14/1979	7/15/2025	25	Osisko Gold Royalties Ltd. (5%)
204753	Mineral Claim	Cariboo Gold	BGM (50%) and Imperial Metals Corp. (50%)	7/11/1983	7/15/2025	25	Osisko Gold Royalties Ltd. (5%)
204754	Mineral Claim	Cariboo Gold	BGM (50%) and Imperial Metals Corp. (50%)	7/11/1983	7/15/2025	25	Osisko Gold Royalties Ltd. (5%)
204755	Mineral Claim	Cariboo Gold	BGM (50%) and Imperial Metals Corp. (50%)	7/11/1983	7/15/2025	25	Osisko Gold Royalties Ltd. (5%)
205247	Mineral Claim	Cariboo Gold	BGM (50%) and Imperial Metals Corp. (50%)	8/19/1986	7/15/2025	500	Osisko Gold Royalties Ltd. (5%)
205267	Mineral Claim	Cariboo Gold	BGM (50%) and Imperial Metals Corp. (50%)	9/18/1986	7/15/2025	300	Osisko Gold Royalties Ltd. (5%)
320752	Mineral Lease	QR	BGM (100%)	4/30/1994	4/30/2022	3164.4	Osisko Gold Royalties Ltd. (5%), Foxcorp Holdings Ltd. (NOP) (whole) (2.5%), Revolution Technologies Inc. (NOP) (whole), 2.5%, Newmont Goldcorp Corp. (whole) (1%)
367954	Mineral Claim	Cariboo Gold	BGM (100%)	2/23/1999	12/11/2030	25	Osisko Gold Royalties Ltd. (5%), Melvin Lee Zeiler (2%) (whole)
367955	Mineral Claim	Cariboo Gold	BGM (100%)	2/23/1999	12/11/2030	25	Osisko Gold Royalties Ltd. (5%), Melvin Lee Zeiler (2%) (whole)
369917	Mineral Claim	Cariboo Gold	BGM (100%)	7/3/1999	2/28/2030	25	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (whole) (2.5%)
369918	Mineral Claim	Cariboo Gold	BGM (100%)	7/3/1999	2/28/2030	25	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (whole) (2.5%)
370011	Mineral Claim	Cariboo Gold	BGM (100%)	7/6/1999	2/28/2030	25	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (whole) (2.5%)
370012	Mineral Claim	Cariboo Gold	BGM (100%)	7/6/1999	2/28/2030	25	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (whole) (2.5%)
370013	Mineral Claim	Cariboo Gold	BGM (100%)	7/6/1999	2/28/2030	25	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (whole) (2.5%)
370014	Mineral Claim	Cariboo Gold	BGM (100%)	7/6/1999	2/28/2030	25	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (whole) (2.5%)
370015	Mineral Claim	Cariboo Gold	BGM (100%)	7/6/1999	2/28/2030	25	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (whole) (2.5%)
370028	Mineral Claim	Cariboo Gold	BGM (100%)	7/6/1999	2/28/2030	25	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (whole) (2.5%)
370029	Mineral Claim	Cariboo Gold	BGM (100%)	7/6/1999	2/28/2030	25	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (whole) (2.5%)
370010	Mineral Claim	Cariboo Gold	BGM (100%)	7/7/1999	2/28/2030	500	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (whole) (2.5%)
370030	Mineral Claim	Cariboo Gold	BGM (100%)	7/7/1999	2/28/2030	25	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (whole) (2.5%)
370016	Mineral Claim	Cariboo Gold	BGM (100%)	7/8/1999	2/28/2030	25	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (whole) (2.5%)
370230	Mineral Claim	Cariboo Gold	BGM (100%)	7/14/1999	2/28/2030	25	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (whole) (2.5%)
370234	Mineral Claim	Cariboo Gold	BGM (100%)	7/15/1999	2/28/2030	25	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (whole) (2.5%)
374225	Mineral Claim	Cariboo Gold	BGM (100%)	1/13/2000	2/28/2030	25	Osisko Gold Royalties Ltd. (5%)
374226	Mineral Claim	Cariboo Gold	BGM (100%)	1/13/2000	2/28/2030	25	Osisko Gold Royalties Ltd. (5%)
374227	Mineral Claim	Cariboo Gold	BGM (100%)	1/13/2000	2/28/2030	25	Osisko Gold Royalties Ltd. (5%)
374228	Mineral Claim	Cariboo Gold	BGM (100%)	1/13/2000	2/28/2030	25	Osisko Gold Royalties Ltd. (5%)
374229	Mineral Claim	Cariboo Gold	BGM (100%)	1/13/2000	2/28/2030	25	Osisko Gold Royalties Ltd. (5%)
374230	Mineral Claim	Cariboo Gold	BGM (100%)	1/13/2000	2/28/2030	25	Osisko Gold Royalties Ltd. (5%)
374231	Mineral Claim	Cariboo Gold	BGM (100%)	1/13/2000	2/28/2030	25	Osisko Gold Royalties Ltd. (5%)
374232	Mineral Claim	Cariboo Gold	BGM (100%)	1/13/2000	2/28/2030	25	Osisko Gold Royalties Ltd. (5%)
374233	Mineral Claim	Cariboo Gold	BGM (100%)	1/13/2000	2/28/2030	25	Osisko Gold Royalties Ltd. (5%)
374234	Mineral Claim	Cariboo Gold	BGM (100%)	1/13/2000	2/28/2030	25	Osisko Gold Royalties Ltd. (5%)
374706	Mineral Claim	Cariboo Gold	BGM (100%)	3/8/2000	2/28/2030	25	Osisko Gold Royalties Ltd. (5%)
374707	Mineral Claim	Cariboo Gold	BGM (100%)	3/8/2000	2/28/2030	25	Osisko Gold Royalties Ltd. (5%)
374708	Mineral Claim	Cariboo Gold	BGM (100%)	3/8/2000	2/28/2030	25	Osisko Gold Royalties Ltd. (5%)
374709	Mineral Claim	Cariboo Gold	BGM (100%)	3/8/2000	2/28/2030	25	Osisko Gold Royalties Ltd. (5%)
374710	Mineral Claim	Cariboo Gold	BGM (100%)	3/8/2000	2/28/2030	25	Osisko Gold Royalties Ltd. (5%)

Title #	Type	Property	Owner	Issue Date	Good to Date	Area (ha)	Royalties
374711	Mineral Claim	Cariboo Gold	BGM (100%)	3/8/2000	2/28/2030	25	Osisko Gold Royalties Ltd. (5%)
374712	Mineral Claim	Cariboo Gold	BGM (100%)	3/8/2000	2/28/2030	25	Osisko Gold Royalties Ltd. (5%)
374713	Mineral Claim	Cariboo Gold	BGM (100%)	3/8/2000	2/28/2030	25	Osisko Gold Royalties Ltd. (5%)
375260	Mineral Claim	Cariboo Gold	BGM (50%) and Imperial Metals Corp. (50%)	4/9/2000	7/15/2025	400	Osisko Gold Royalties Ltd. (5%)
384112	Mineral Claim	Cariboo Gold	BGM (100%)	2/19/2001	12/11/2030	300	Osisko Gold Royalties Ltd. (5%), Melvin Lee Zeiler (2%) (whole)
384113	Mineral Claim	Cariboo Gold	BGM (100%)	2/19/2001	12/11/2030	400	Osisko Gold Royalties Ltd. (5%), Melvin Lee Zeiler (2%) (whole)
412065	Mineral Claim	Cariboo Gold	BGM (100%)	7/8/2004	2/28/2030	500	Osisko Gold Royalties Ltd. (5%), Estate of Bryan Muloin (whole) (remaining 3% of 2% NSR)
412066	Mineral Claim	Cariboo Gold	BGM (100%)	7/8/2004	2/28/2030	375	Osisko Gold Royalties Ltd. (5%), Estate of Bryan Muloin (whole) (remaining 3% of 2% NSR)
505901	Mineral Claim	Cariboo Gold	BGM (100%)	2/4/2005	12/11/2030	349.67	Osisko Gold Royalties Ltd. (5%)
505905	Mineral Claim	Cariboo Gold	BGM (100%)	2/4/2005	2/28/2030	972.78	Osisko Gold Royalties Ltd. (5%)
505910	Mineral Claim	Cariboo Gold	BGM (100%)	2/4/2005	2/28/2030	1265.76	Osisko Gold Royalties Ltd. (5%)
505914	Mineral Claim	Cariboo Gold	BGM (100%)	2/4/2005	2/28/2030	1399.53	Osisko Gold Royalties Ltd. (5%)
505916	Mineral Claim	Cariboo Gold	BGM (100%)	2/4/2005	2/28/2030	1164.1	Osisko Gold Royalties Ltd. (5%), Douglas Merrick & Harold Merrick (partial) (2%)
505917	Mineral Claim	Cariboo Gold	BGM (100%)	2/4/2005	2/28/2030	658.93	Osisko Gold Royalties Ltd. (5%), Douglas Merrick & Harold Merrick (partial) (2%)
505921	Mineral Claim	Cariboo Gold	BGM (100%)	2/4/2005	2/28/2030	914.78	Osisko Gold Royalties Ltd. (5%)
505922	Mineral Claim	Cariboo Gold	BGM (100%)	2/4/2005	2/28/2030	583.13	Osisko Gold Royalties Ltd. (5%)
505924	Mineral Claim	Cariboo Gold	BGM (100%)	2/4/2005	2/28/2030	543.58	Osisko Gold Royalties Ltd. (5%)
505925	Mineral Claim	Cariboo Gold	BGM (100%)	2/4/2005	2/28/2030	1066.31	Osisko Gold Royalties Ltd. (5%), Douglas Merrick & Harold Merrick (partial) (2%)
505926	Mineral Claim	Cariboo Gold	BGM (100%)	2/4/2005	2/28/2030	310.41	Osisko Gold Royalties Ltd. (5%), Douglas Merrick & Harold Merrick (partial) (2%)
505927	Mineral Claim	Cariboo Gold	BGM (100%)	2/4/2005	2/28/2030	738.06	Osisko Gold Royalties Ltd. (5%)
505936	Mineral Claim	Cariboo Gold	BGM (100%)	2/4/2005	2/28/2030	426.62	Osisko Gold Royalties Ltd. (5%), Douglas Merrick & Harold Merrick (partial) (2%)
506154	Mineral Claim	Cariboo Gold	BGM (100%)	2/7/2005	2/28/2030	155.56	Osisko Gold Royalties Ltd. (5%)
506236	Mineral Claim	Cariboo Gold	BGM (100%)	2/7/2005	2/28/2030	738.15	Osisko Gold Royalties Ltd. (5%)
506315	Mineral Claim	Cariboo Gold	BGM (100%)	2/8/2005	2/28/2030	894.11	Osisko Gold Royalties Ltd. (5%)
506436	Mineral Claim	Cariboo Gold	BGM (100%)	2/9/2005	2/28/2030	408.28	Osisko Gold Royalties Ltd. (5%)
506440	Mineral Claim	Cariboo Gold	BGM (100%)	2/9/2005	2/28/2030	972.35	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2%)
506489	Mineral Claim	Cariboo Gold	BGM (100%)	2/9/2005	2/28/2030	388.47	Osisko Gold Royalties Ltd. (5%)
506493	Mineral Claim	Cariboo Gold	BGM (100%)	2/9/2005	2/28/2030	1549.54	Osisko Gold Royalties Ltd. (5%)
506497	Mineral Claim	Cariboo Gold	BGM (100%)	2/9/2005	2/28/2030	853.84	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. / Osisko Gold Royalties Ltd (partial) (2%)
506614	Mineral Claim	Cariboo Gold	BGM (100%)	2/10/2005	12/11/2030	1167.7	Osisko Gold Royalties Ltd. (5%)
506618	Mineral Claim	Cariboo Gold	BGM (100%)	2/10/2005	2/28/2030	622.63	Osisko Gold Royalties Ltd. (5%)
506620	Mineral Claim	Cariboo Gold	BGM (100%)	2/10/2005	2/28/2030	933.89	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2%), Osisko Gold Royalties Ltd. (partial) (2%), Osisko Gold Royalties Ltd. (partial) (2%)
506630	Mineral Claim	Cariboo Gold	BGM (100%)	2/10/2005	2/28/2030	350.79	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd (partial) (2%)
506637	Mineral Claim	Cariboo Gold	BGM (100%)	2/10/2005	2/28/2030	1131.33	Osisko Gold Royalties Ltd. (5%), & Osisko Gold Royalties Ltd. (partial) (2%), Osisko Gold Royalties Ltd. (partial) (2.5%)
506658	Mineral Claim	Cariboo Gold	BGM (100%)	2/10/2005	2/28/2030	506.36	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2%)
506720	Mineral Claim	Cariboo Gold	BGM (100%)	2/10/2005	2/28/2030	1085.46	Osisko Gold Royalties Ltd. (5%), Charnobay/Wells Syndicate (partial) (3%)
506721	Mineral Claim	Cariboo Gold	BGM (100%)	2/10/2005	2/28/2030	1070.04	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2%), Osisko Gold Royalties Ltd. (partial) (2%)
506956	Mineral Claim	Cariboo Gold	BGM (100%)	2/11/2005	12/11/2030	1247.95	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2%), Osisko Gold Royalties Ltd. (partial) (2.5%)
507131	Mineral Claim	Cariboo Gold	BGM (85%), Starr Peak Exploration (12.5%), Shane Morgan Williams (2.5%)	2/14/2005	2/28/2030	562.74	Osisko Gold Royalties Ltd. (5%)

Title #	Type	Property	Owner	Issue Date	Good to Date	Area (ha)	Royalties
507132	Mineral Claim	Cariboo Gold	BGM (97.5%), Shane Morgan Williams (2.5%)	2/14/2005	2/28/2030	931.38	Osisko Gold Royalties Ltd. (5%), William G. Timmins (partial) (2.5%)
507133	Mineral Claim	Cariboo Gold	BGM (97.5%), Shane Morgan Williams (2.5%)	2/14/2005	2/28/2030	1339.02	Osisko Gold Royalties Ltd. (5%)
507134	Mineral Claim	Cariboo Gold	BGM (97.5%), Shane Morgan Williams (2.5%)	2/14/2005	2/28/2030	543.03	Osisko Gold Royalties Ltd. (5%), William G. Timmins (partial) (2.5%), Osisko Gold Royalties Ltd. (partial) (2%)
507135	Mineral Claim	Cariboo Gold	BGM (97.5%), Shane Morgan Williams (2.5%)	2/14/2005	2/28/2030	911.6	Osisko Gold Royalties Ltd. (5%)
507136	Mineral Claim	Cariboo Gold	BGM (97.5%), Shane Morgan Williams (2.5%)	2/14/2005	2/28/2030	872.37	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd, Osisko Gold Royalties Ltd. (partial) (2%)
507247	Mineral Claim	Cariboo Gold	BGM (100%)	2/15/2005	2/28/2030	698.82	Osisko Gold Royalties Ltd. (5%)
507248	Mineral Claim	Cariboo Gold	BGM (100%)	2/15/2005	2/28/2030	621.3	Osisko Gold Royalties Ltd. (5%)
507259	Mineral Claim	Cariboo Gold	BGM (100%)	2/15/2005	2/28/2030	252.33	Osisko Gold Royalties Ltd. (5%)
507260	Mineral Claim	Cariboo Gold	BGM (100%)	2/15/2005	2/28/2030	19.41	Osisko Gold Royalties Ltd. (5%)
507261	Mineral Claim	Cariboo Gold	BGM (100%)	2/15/2005	2/28/2030	620.63	Osisko Gold Royalties Ltd. (5%)
507264	Mineral Claim	Cariboo Gold	BGM (100%)	2/15/2005	2/28/2030	1026.62	Osisko Gold Royalties Ltd. (5%), Charnobay/Wells Syndicate (partial) (3%)
507265	Mineral Claim	Cariboo Gold	BGM (100%)	2/15/2005	2/28/2030	542.59	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd, Osisko Gold Royalties Ltd. (partial) (2%)
507288	Mineral Claim	Cariboo Gold	BGM (100%)	2/16/2005	2/28/2030	426.36	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd, Osisko Gold Royalties Ltd. (partial) (2%)
507304	Mineral Claim	Cariboo Gold	BGM (100%)	2/16/2005	2/28/2030	388.2	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. / Osisko Gold Royalties Ltd (partial) (2%)
507309	Mineral Claim	Cariboo Gold	BGM (100%)	2/16/2005	2/28/2030	1030.24	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (1%)
508778	Mineral Claim	Cariboo Gold	BGM (100%)	3/11/2005	2/28/2030	775.28	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd, Osisko Gold Royalties Ltd. (partial) (2%)
508905	Mineral Claim	Cariboo Gold	BGM (100%)	3/14/2005	2/28/2030	871.72	Osisko Gold Royalties Ltd. (5%)
509015	Mineral Claim	Cariboo Gold	BGM (100%)	3/16/2005	2/28/2030	193.86	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd, Osisko Gold Royalties Ltd. (partial) (2%)
509017	Mineral Claim	Cariboo Gold	BGM (100%)	3/16/2005	2/28/2030	639.85	Osisko Gold Royalties Ltd. (5%), William G. Timmins (partial) (2.5%), Osisko Gold Royalties Ltd. (partial) (2%)
509179	Mineral Claim	Cariboo Gold	BGM (100%)	3/17/2005	2/28/2030	833.23	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd, Osisko Gold Royalties Ltd. (partial) (2%)
511280	Mineral Claim	QR	BGM (100%)	4/20/2005	12/8/2024	588.13	Osisko Gold Royalties Ltd. (5%), Foxcorp Holdings Ltd. (NOP) (partial) (2.5%), Revolution Technologies Inc. (NOP) (partial) (2.5%), Newmont Goldcorp Corp. (partial) (1%)
512571	Mineral Claim	Cariboo Gold	BGM (85%), Starr Peak Exploration (12.5%), Shane Morgan Williams (2.5%)	5/14/2005	2/28/2030	484.93	Osisko Gold Royalties Ltd. (5%), William G. Timmins (partial) (2.5%)
512739	Mineral Claim	Cariboo Gold	BGM (100%)	5/16/2005	2/28/2030	877.72	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2.5%), Roundtop Exploration Inc. (partial) (2%), Osisko Gold Royalties Ltd & Osisko Gold Royalties Ltd. (partial) (2%)
512795	Mineral Claim	Cariboo Gold	BGM (97.5%), Shane Morgan Williams (2.5%)	5/17/2005	2/28/2030	155.22	Osisko Gold Royalties Ltd. (5%)
512954	Mineral Claim	QR	BGM (100%)	5/18/2005	12/8/2024	607.4	Osisko Gold Royalties Ltd. (5%), Foxcorp Holdings Ltd. (NOP) (partial) (2.5%), Revolution Technologies Inc. (NOP) (partial) (2.5%), Newmont Goldcorp Corp. (partial) (1%)
512957	Mineral Claim	QR	BGM (100%)	5/18/2005	12/8/2024	528.81	Osisko Gold Royalties Ltd. (5%)
513739	Mineral Claim	Cariboo Gold	BGM (100%)	6/1/2005	2/28/2030	484.88	Osisko Gold Royalties Ltd. (5%), William G. Timmins (partial) (2.5%)
514442	Mineral Claim	Cariboo Gold	BGM (100%)	6/13/2005	2/28/2030	155.75	Osisko Gold Royalties Ltd. (5%)
514446	Mineral Claim	Cariboo Gold	BGM (100%)	6/13/2005	2/28/2030	291.87	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2%)
517260	Mineral Claim	Cariboo Gold	BGM (100%)	7/12/2005	2/28/2030	38.87	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd.

Title #	Type	Property	Owner	Issue Date	Good to Date	Area (ha)	Royalties
							(partial) (1%)
517416	Mineral Claim	Cariboo Gold	BGM (100%)	7/12/2005	2/28/2030	58.28	Osisko Gold Royalties Ltd. (5%)
517423	Mineral Claim	Cariboo Gold	BGM (100%)	7/12/2005	2/28/2030	252.39	Osisko Gold Royalties Ltd. (5%)
517433	Mineral Claim	Cariboo Gold	BGM (100%)	7/12/2005	2/28/2030	19.41	Osisko Gold Royalties Ltd. (5%)
519556	Mineral Claim	Cariboo Gold	BGM (100%)	8/31/2005	2/28/2030	485.01	Osisko Gold Royalties Ltd. (5%)
519559	Mineral Claim	Cariboo Gold	BGM (100%)	8/31/2005	2/28/2030	484.79	Osisko Gold Royalties Ltd. (5%)
519563	Mineral Claim	Cariboo Gold	BGM (100%)	8/31/2005	2/28/2030	484.6	Osisko Gold Royalties Ltd. (5%)
520330	Mineral Claim	QR	BGM (100%)	9/22/2005	12/8/2024	78.44	Osisko Gold Royalties Ltd. (5%)
521241	Mineral Claim	Cariboo Gold	BGM (100%)	10/15/2005	2/28/2030	485.66	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (1%)
521242	Mineral Claim	Cariboo Gold	BGM (100%)	10/15/2005	2/28/2030	486.17	Osisko Gold Royalties Ltd. (5%)
521329	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	2/28/2030	486.72	Osisko Gold Royalties Ltd. (5%)
521330	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	2/28/2030	486.84	Osisko Gold Royalties Ltd. (5%)
521331	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	2/28/2030	487.11	Osisko Gold Royalties Ltd. (5%)
521332	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	12/11/2030	487.4	Osisko Gold Royalties Ltd. (5%)
521333	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	12/11/2030	487.63	Osisko Gold Royalties Ltd. (5%)
521336	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	12/11/2030	487.79	Osisko Gold Royalties Ltd. (5%)
521337	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	2/28/2030	486.69	Osisko Gold Royalties Ltd. (5%)
521338	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	12/11/2030	486.69	Osisko Gold Royalties Ltd. (5%)
521339	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	12/11/2030	488.08	Osisko Gold Royalties Ltd. (5%)
521340	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	2/28/2030	487.96	Osisko Gold Royalties Ltd. (5%)
521342	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	2/28/2030	486.75	Osisko Gold Royalties Ltd. (5%)
521346	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	2/28/2030	487.06	Osisko Gold Royalties Ltd. (5%)
521348	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	2/28/2030	487.04	Osisko Gold Royalties Ltd. (5%)
521349	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	12/11/2030	486.93	Osisko Gold Royalties Ltd. (5%)
521350	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	12/11/2030	486.94	Osisko Gold Royalties Ltd. (5%)
521351	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	12/11/2030	487.17	Osisko Gold Royalties Ltd. (5%)
521352	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	12/11/2030	487.35	Osisko Gold Royalties Ltd. (5%)
521353	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	12/11/2030	487.35	Osisko Gold Royalties Ltd. (5%)
521356	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	2/28/2030	487.43	Osisko Gold Royalties Ltd. (5%)
521357	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	2/28/2030	487.19	Osisko Gold Royalties Ltd. (5%)
521358	Mineral Claim	Cariboo Gold	BGM (100%)	10/19/2005	2/28/2030	428.52	Osisko Gold Royalties Ltd. (5%)
521829	Mineral Claim	Cariboo Gold	BGM (100%)	11/2/2005	12/11/2030	488.14	Osisko Gold Royalties Ltd. (5%)
521839	Mineral Claim	Cariboo Gold	BGM (100%)	11/2/2005	12/11/2030	488.2	Osisko Gold Royalties Ltd. (5%)
521844	Mineral Claim	Cariboo Gold	BGM (100%)	11/2/2005	2/28/2030	488.43	Osisko Gold Royalties Ltd. (5%)
521852	Mineral Claim	Cariboo Gold	BGM (100%)	11/2/2005	2/28/2030	488.19	Osisko Gold Royalties Ltd. (5%)
521872	Mineral Claim	Cariboo Gold	BGM (100%)	11/2/2005	2/28/2030	488.16	Osisko Gold Royalties Ltd. (5%)
521877	Mineral Claim	Cariboo Gold	BGM (100%)	11/2/2005	2/28/2030	488.45	Osisko Gold Royalties Ltd. (5%)
521880	Mineral Claim	Cariboo Gold	BGM (100%)	11/2/2005	2/28/2030	488.32	Osisko Gold Royalties Ltd. (5%)
521881	Mineral Claim	Cariboo Gold	BGM (100%)	11/2/2005	2/28/2030	488.65	Osisko Gold Royalties Ltd. (5%)

Title #	Type	Property	Owner	Issue Date	Good to Date	Area (ha)	Royalties
521883	Mineral Claim	Cariboo Gold	BGM (100%)	11/2/2005	2/28/2030	390.78	Osisko Gold Royalties Ltd. (5%)
522125	Mineral Claim	Cariboo Gold	BGM (100%)	11/8/2005	2/28/2030	581.01	Osisko Gold Royalties Ltd. (5%), Charnobay/Wells Syndicate (partial) (3%)
528996	Mineral Claim	Cariboo Gold	BGM (100%)	2/27/2006	2/28/2030	466.26	Osisko Gold Royalties Ltd. (5%)
529036	Mineral Claim	Cariboo Gold	BGM (100%)	2/27/2006	2/28/2030	19.41	Osisko Gold Royalties Ltd. (5%)
529712	Mineral Claim	Cariboo Gold	BGM (100%)	3/7/2006	2/28/2030	330.14	Osisko Gold Royalties Ltd. (5%)
529713	Mineral Claim	Cariboo Gold	BGM (100%)	3/7/2006	2/28/2030	720.92	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd (partial) (2%), Osisko Gold Royalties Ltd. (partial) (2.5%), Osisko Gold Royalties Ltd. (partial) (2%)
529715	Mineral Claim	Cariboo Gold	BGM (100%)	3/7/2006	2/28/2030	835.61	Osisko Gold Royalties Ltd. (5%)
529717	Mineral Claim	Cariboo Gold	BGM (100%)	3/7/2006	2/28/2030	545.68	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2.5%)
529719	Mineral Claim	Cariboo Gold	BGM (100%)	3/7/2006	2/28/2030	757.72	Osisko Gold Royalties Ltd. (5%), & Osisko Gold Royalties Ltd. (partial) (1%), Osisko Gold Royalties Ltd. (partial) (2%)
529720	Mineral Claim	Cariboo Gold	BGM (100%)	3/7/2006	2/28/2030	603.8	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2%)
529721	Mineral Claim	Cariboo Gold	BGM (100%)	3/7/2006	2/28/2030	1615.57	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2%), Osisko Gold Royalties Ltd. (partial) (2%)
529722	Mineral Claim	Cariboo Gold	BGM (100%)	3/7/2006	12/11/2030	507.38	Osisko Gold Royalties Ltd. (5%)
535526	Mineral Claim	Cariboo Gold	BGM (100%)	6/13/2006	2/28/2030	465.85	Osisko Gold Royalties Ltd. (5%)
535671	Mineral Claim	Cariboo Gold	BGM (100%)	6/14/2006	2/28/2030	953.05	Osisko Gold Royalties Ltd. (5%)
535855	Mineral Claim	Cariboo Gold	BGM (100%)	6/17/2006	2/28/2030	39.02	Osisko Gold Royalties Ltd. (5%)
536691	Mineral Claim	Cariboo Gold	BGM (100%)	7/7/2006	2/28/2030	467.11	Osisko Gold Royalties Ltd. (5%)
537354	Mineral Claim	Cariboo Gold	BGM (100%)	7/17/2006	2/28/2030	19.5	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2.5%)
546306	Mineral Claim	Cariboo Gold	BGM (100%)	12/1/2006	2/28/2030	331.89	Osisko Gold Royalties Ltd. (5%)
546307	Mineral Claim	Cariboo Gold	BGM (100%)	12/1/2006	2/28/2030	815.89	Osisko Gold Royalties Ltd. (5%)
546308	Mineral Claim	Cariboo Gold	BGM (100%)	12/1/2006	2/28/2030	504.85	Osisko Gold Royalties Ltd. (5%)
546309	Mineral Claim	Cariboo Gold	BGM (100%)	12/1/2006	2/28/2030	1438.5	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (1%), Osisko Gold Royalties Ltd. (partial) (2%), Osisko Gold Royalties Ltd. (partial) (2%)
546310	Mineral Claim	Cariboo Gold	BGM (100%)	12/1/2006	2/28/2030	854.59	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (1%)
546311	Mineral Claim	Cariboo Gold	BGM (100%)	12/1/2006	2/28/2030	563.12	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. / Osisko Gold Royalties Ltd (partial) (2%)
546314	Mineral Claim	Cariboo Gold	BGM (100%)	12/1/2006	2/28/2030	1299.19	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. / Osisko Gold Royalties Ltd (partial) (2%), Osisko Gold Royalties Ltd & Osisko Gold Royalties Ltd. (partial) (2%)
546315	Mineral Claim	Cariboo Gold	BGM (100%)	12/1/2006	2/28/2030	1027.11	Osisko Gold Royalties Ltd. (5%), Charnobay/Wells Syndicate (partial) (3%)
546611	Mineral Claim	Cariboo Gold	BGM (100%)	12/5/2006	2/28/2030	604.62	Osisko Gold Royalties Ltd. (5%)
546612	Mineral Claim	Cariboo Gold	BGM (100%)	12/5/2006	12/11/2030	719.15	Osisko Gold Royalties Ltd. (5%)
546613	Mineral Claim	Cariboo Gold	BGM (100%)	12/5/2006	2/28/2030	663.22	Osisko Gold Royalties Ltd. (5%)
546614	Mineral Claim	Cariboo Gold	BGM (100%)	12/5/2006	2/28/2030	619.46	Osisko Gold Royalties Ltd. (5%)
546617	Mineral Claim	Cariboo Gold	BGM (100%)	12/5/2006	2/28/2030	955.51	Osisko Gold Royalties Ltd. (5%), Estate of Bryan Muloin (partial) (remaining 3% of 2% NSR)
546620	Mineral Claim	Cariboo Gold	BGM (100%)	12/5/2006	2/28/2030	954.67	Osisko Gold Royalties Ltd. (5%), Estate of Bryan Muloin (partial) (remaining 3% of 2% NSR)
546722	Mineral Claim	Cariboo Gold	BGM (100%)	12/6/2006	2/28/2030	1147.58	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2%), Osisko Gold Royalties Ltd. (partial) (2%)
546723	Mineral Claim	Cariboo Gold	BGM (100%)	12/6/2006	2/28/2030	702.56	Osisko Gold Royalties Ltd. (5%)
546724	Mineral Claim	Cariboo Gold	BGM (100%)	12/6/2006	2/28/2030	837.09	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2%)

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546725	Mineral Claim	Cariboo Gold	BGM (100%)	12/6/2006	2/28/2030	953.6	Osisko Gold Royalties Ltd. (5%)
546726	Mineral Claim	Cariboo Gold	BGM (100%)	12/6/2006	2/28/2030	971.93	Osisko Gold Royalties Ltd. (5%)
546727	Mineral Claim	Cariboo Gold	BGM (100%)	12/6/2006	2/28/2030	952.84	Osisko Gold Royalties Ltd. (5%)
554735	Mineral Claim	Cariboo Gold	BGM (100%)	3/20/2007	2/28/2030	484.18	Osisko Gold Royalties Ltd. (5%)
554737	Mineral Claim	Cariboo Gold	BGM (100%)	3/20/2007	2/28/2030	484.18	Osisko Gold Royalties Ltd. (5%)
554739	Mineral Claim	Cariboo Gold	BGM (100%)	3/20/2007	2/28/2030	483.95	Osisko Gold Royalties Ltd. (5%)
554740	Mineral Claim	Cariboo Gold	BGM (100%)	3/20/2007	2/28/2030	483.95	Osisko Gold Royalties Ltd. (5%)
554741	Mineral Claim	Cariboo Gold	BGM (100%)	3/20/2007	2/28/2030	484.16	Osisko Gold Royalties Ltd. (5%)
554742	Mineral Claim	Cariboo Gold	BGM (100%)	3/20/2007	2/28/2030	483.93	Osisko Gold Royalties Ltd. (5%)
554743	Mineral Claim	Cariboo Gold	BGM (100%)	3/20/2007	2/28/2030	484.16	Osisko Gold Royalties Ltd. (5%)
554745	Mineral Claim	Cariboo Gold	BGM (100%)	3/20/2007	2/28/2030	483.7	Osisko Gold Royalties Ltd. (5%)
554746	Mineral Claim	Cariboo Gold	BGM (100%)	3/20/2007	2/28/2030	483.98	Osisko Gold Royalties Ltd. (5%)
554747	Mineral Claim	Cariboo Gold	BGM (100%)	3/20/2007	2/28/2030	484.12	Osisko Gold Royalties Ltd. (5%)
554748	Mineral Claim	Cariboo Gold	BGM (100%)	3/20/2007	2/28/2030	483.96	Osisko Gold Royalties Ltd. (5%)
554749	Mineral Claim	Cariboo Gold	BGM (100%)	3/20/2007	2/28/2030	483.74	Osisko Gold Royalties Ltd. (5%)
554750	Mineral Claim	Cariboo Gold	BGM (100%)	3/20/2007	2/28/2030	483.99	Osisko Gold Royalties Ltd. (5%)
554802	Mineral Claim	Cariboo Gold	BGM (100%)	3/21/2007	2/28/2030	38.71	Osisko Gold Royalties Ltd. (5%)
564597	Mineral Claim	Cariboo Gold	BGM (100%)	8/15/2007	2/28/2030	19.52	Osisko Gold Royalties Ltd. (5%)
564598	Mineral Claim	Cariboo Gold	BGM (100%)	8/15/2007	2/28/2030	19.5	Osisko Gold Royalties Ltd. (5%)
567677	Mineral Claim	Cariboo Gold	BGM (100%)	10/9/2007	2/28/2030	39	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2.5%)
567678	Mineral Claim	Cariboo Gold	BGM (100%)	10/9/2007	2/28/2030	19.5	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2.5%)
572001	Mineral Claim	Cariboo Gold	BGM (100%)	12/15/2007	2/28/2030	19.51	Osisko Gold Royalties Ltd. (5%)
572011	Mineral Claim	Cariboo Gold	BGM (100%)	12/16/2007	2/28/2030	19.51	Osisko Gold Royalties Ltd. (5%)
572348	Mineral Claim	Cariboo Gold	BGM (100%)	12/21/2007	2/28/2030	19.51	Osisko Gold Royalties Ltd. (5%)
572437	Mineral Claim	Cariboo Gold	BGM (100%)	12/23/2007	2/28/2030	19.5	Osisko Gold Royalties Ltd. (5%)
573880	Mineral Claim	Cariboo Gold	BGM (100%)	1/16/2008	2/28/2030	38.98	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2.5%)
577422	Mineral Claim	Cariboo Gold	BGM (100%)	2/28/2008	2/28/2030	349.9	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2%)
581059	Mineral Claim	Cariboo Gold	BGM (100%)	4/12/2008	12/11/2030	468.39	Osisko Gold Royalties Ltd. (5%), Dustin Alsager Rivard (whole) (2%)
592159	Mineral Claim	Cariboo Gold	BGM (100%)	9/29/2008	2/28/2030	350.74	Osisko Gold Royalties Ltd. (5%), Estate of Bryan Muloin (partial) (remaining 3% of 2% NSR)
593162	Mineral Claim	Cariboo Gold	BGM (100%)	10/20/2008	2/28/2030	58.29	Osisko Gold Royalties Ltd. (5%)
593959	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	2/28/2030	485.28	Osisko Gold Royalties Ltd. (5%)
593960	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	2/28/2030	485.04	Osisko Gold Royalties Ltd. (5%)
593961	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	2/28/2030	484.8	Osisko Gold Royalties Ltd. (5%)
593962	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	2/28/2030	484.79	Osisko Gold Royalties Ltd. (5%)
593963	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	2/28/2030	485.03	Osisko Gold Royalties Ltd. (5%)
593965	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	2/28/2030	485.27	Osisko Gold Royalties Ltd. (5%)
593966	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	2/28/2030	466.03	Osisko Gold Royalties Ltd. (5%)
593967	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	2/28/2030	465.87	Osisko Gold Royalties Ltd. (5%)
593968	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	2/28/2030	465.68	Osisko Gold Royalties Ltd. (5%)

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593969	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	2/28/2030	465.5	Osisko Gold Royalties Ltd. (5%)
593970	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	2/28/2030	465.21	Osisko Gold Royalties Ltd. (5%)
593971	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	2/28/2030	466	Osisko Gold Royalties Ltd. (5%)
593972	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	2/28/2030	465.34	Osisko Gold Royalties Ltd. (5%)
593973	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	2/28/2030	387.63	Osisko Gold Royalties Ltd. (5%)
593974	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	2/28/2030	77.64	Osisko Gold Royalties Ltd. (5%)
593975	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	2/28/2030	155.26	Osisko Gold Royalties Ltd. (5%)
593979	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	2/28/2030	485.22	Osisko Gold Royalties Ltd. (5%)
593980	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	2/28/2030	485	Osisko Gold Royalties Ltd. (5%)
593981	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	2/28/2030	484.77	Osisko Gold Royalties Ltd. (5%)
593982	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	2/28/2030	484.62	Osisko Gold Royalties Ltd. (5%)
593983	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	2/28/2030	484.62	Osisko Gold Royalties Ltd. (5%)
593984	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	2/28/2030	484.87	Osisko Gold Royalties Ltd. (5%)
593985	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	2/28/2030	484.87	Osisko Gold Royalties Ltd. (5%)
593986	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	2/28/2030	465.72	Osisko Gold Royalties Ltd. (5%)
593987	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	2/28/2030	485.19	Osisko Gold Royalties Ltd. (5%)
593988	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2008	2/28/2030	252.34	Osisko Gold Royalties Ltd. (5%)
594001	Mineral Claim	Cariboo Gold	BGM (100%)	11/7/2008	2/28/2030	58.18	Osisko Gold Royalties Ltd. (5%)
594002	Mineral Claim	Cariboo Gold	BGM (100%)	11/7/2008	2/28/2030	38.8	Osisko Gold Royalties Ltd. (5%)
594003	Mineral Claim	Cariboo Gold	BGM (100%)	11/7/2008	2/28/2030	38.81	Osisko Gold Royalties Ltd. (5%)
595151	Mineral Claim	Cariboo Gold	BGM (100%)	12/1/2008	2/28/2030	116.51	Osisko Gold Royalties Ltd. (5%)
595157	Mineral Claim	Cariboo Gold	BGM (100%)	12/1/2008	2/28/2030	388.25	Osisko Gold Royalties Ltd. (5%)
595164	Mineral Claim	Cariboo Gold	BGM (100%)	12/1/2008	2/28/2030	427.12	Osisko Gold Royalties Ltd. (5%)
595165	Mineral Claim	Cariboo Gold	BGM (100%)	12/1/2008	2/28/2030	116.53	Osisko Gold Royalties Ltd. (5%)
595166	Mineral Claim	Cariboo Gold	BGM (100%)	12/1/2008	2/28/2030	38.83	Osisko Gold Royalties Ltd. (5%)
595167	Mineral Claim	Cariboo Gold	BGM (100%)	12/1/2008	2/28/2030	77.68	Osisko Gold Royalties Ltd. (5%)
595168	Mineral Claim	Cariboo Gold	BGM (100%)	12/1/2008	2/28/2030	58.23	Osisko Gold Royalties Ltd. (5%)
596023	Mineral Claim	Cariboo Gold	BGM (100%)	12/13/2008	2/28/2030	77.5	Osisko Gold Royalties Ltd. (5%)
596024	Mineral Claim	Cariboo Gold	BGM (100%)	12/13/2008	2/28/2030	464.96	Osisko Gold Royalties Ltd. (5%), Douglas Merrick & Harold Merrick (partial) (2%)
596025	Mineral Claim	Cariboo Gold	BGM (100%)	12/13/2008	2/28/2030	58.13	Osisko Gold Royalties Ltd. (5%), Douglas Merrick & Harold Merrick (partial) (2%)
596144	Mineral Claim	Cariboo Gold	BGM (100%)	12/16/2008	2/28/2030	350.6	Osisko Gold Royalties Ltd. (5%)
598430	Mineral Claim	Cariboo Gold	BGM (100%)	2/1/2009	3/8/2023	97.64	Osisko Gold Royalties Ltd. (5%)
600139	Mineral Claim	Cariboo Gold	BGM (100%)	2/28/2009	2/28/2030	155.27	Osisko Gold Royalties Ltd. (5%)
600140	Mineral Claim	Cariboo Gold	BGM (100%)	2/28/2009	2/28/2030	38.82	Osisko Gold Royalties Ltd. (5%)
600141	Mineral Claim	Cariboo Gold	BGM (100%)	2/28/2009	2/28/2030	19.41	Osisko Gold Royalties Ltd. (5%)
600142	Mineral Claim	Cariboo Gold	BGM (100%)	2/28/2009	2/28/2030	135.93	Osisko Gold Royalties Ltd. (5%)
600143	Mineral Claim	Cariboo Gold	BGM (100%)	2/28/2009	2/28/2030	213.54	Osisko Gold Royalties Ltd. (5%)
600144	Mineral Claim	Cariboo Gold	BGM (100%)	2/28/2009	2/28/2030	19.41	Osisko Gold Royalties Ltd. (5%)
600145	Mineral Claim	Cariboo Gold	BGM (100%)	2/28/2009	2/28/2030	77.66	Osisko Gold Royalties Ltd. (5%)
624892	Mineral Claim	Cariboo Gold	BGM (100%)	8/27/2009	2/28/2030	116.51	Osisko Gold Royalties Ltd. (5%)

Title #	Type	Property	Owner	Issue Date	Good to Date	Area (ha)	Royalties
624894	Mineral Claim	Cariboo Gold	BGM (100%)	8/27/2009	2/28/2030	38.84	Osisko Gold Royalties Ltd. (5%)
624895	Mineral Claim	Cariboo Gold	BGM (100%)	8/27/2009	2/28/2030	19.42	Osisko Gold Royalties Ltd. (5%)
625567	Mineral Claim	Cariboo Gold	BGM (100%)	8/29/2009	2/28/2030	19.42	Osisko Gold Royalties Ltd. (5%)
667163	Mineral Claim	Cariboo Gold	BGM (100%)	11/10/2009	12/11/2030	77.77	Osisko Gold Royalties Ltd. (5%)
675423	Mineral Claim	QR	BGM (100%)	11/27/2009	12/8/2024	489.58	Osisko Gold Royalties Ltd. (5%)
675443	Mineral Claim	QR	BGM (100%)	11/27/2009	12/8/2024	489.35	Osisko Gold Royalties Ltd. (5%)
675444	Mineral Claim	QR	BGM (100%)	11/27/2009	12/8/2024	450.24	Osisko Gold Royalties Ltd. (5%)
675445	Mineral Claim	QR	BGM (100%)	11/27/2009	12/7/2024	469.74	Osisko Gold Royalties Ltd. (5%)
675448	Mineral Claim	QR	BGM (100%)	11/27/2009	12/7/2024	469.75	Osisko Gold Royalties Ltd. (5%)
755342	Mineral Claim	Cariboo Gold	BGM (100%)	4/23/2010	2/28/2030	389.34	Osisko Gold Royalties Ltd. (5%)
755362	Mineral Claim	Cariboo Gold	BGM (100%)	4/23/2010	2/28/2030	389.53	Osisko Gold Royalties Ltd. (5%)
755382	Mineral Claim	Cariboo Gold	BGM (100%)	4/23/2010	2/28/2030	467.64	Osisko Gold Royalties Ltd. (5%)
755402	Mineral Claim	Cariboo Gold	BGM (100%)	4/23/2010	2/28/2030	486.7	Osisko Gold Royalties Ltd. (5%)
755422	Mineral Claim	Cariboo Gold	BGM (100%)	4/23/2010	2/28/2030	486.94	Osisko Gold Royalties Ltd. (5%)
755442	Mineral Claim	Cariboo Gold	BGM (100%)	4/23/2010	2/28/2030	486.88	Osisko Gold Royalties Ltd. (5%)
755462	Mineral Claim	Cariboo Gold	BGM (100%)	4/23/2010	2/28/2030	467.43	Osisko Gold Royalties Ltd. (5%)
780203	Mineral Claim	QR	BGM (100%)	5/27/2010	12/7/2024	19.58	Osisko Gold Royalties Ltd. (5%)
780562	Mineral Claim	Cariboo Gold	BGM (100%)	5/27/2010	2/28/2030	193.97	Osisko Gold Royalties Ltd. (5%)
835729	Mineral Claim	Cariboo Gold	BGM (100%)	10/12/2010	2/28/2030	448.31	Osisko Gold Royalties Ltd. (5%)
835730	Mineral Claim	Cariboo Gold	BGM (100%)	10/12/2010	2/28/2030	487.49	Osisko Gold Royalties Ltd. (5%)
835731	Mineral Claim	Cariboo Gold	BGM (100%)	10/12/2010	2/28/2030	487.47	Osisko Gold Royalties Ltd. (5%)
835733	Mineral Claim	Cariboo Gold	BGM (100%)	10/12/2010	2/28/2030	390.22	Osisko Gold Royalties Ltd. (5%)
835734	Mineral Claim	Cariboo Gold	BGM (100%)	10/12/2010	2/28/2030	487.72	Osisko Gold Royalties Ltd. (5%)
837502	Mineral Claim	QR	BGM (100%)	11/4/2010	12/7/2024	156.89	Osisko Gold Royalties Ltd. (5%)
838953	Mineral Claim	QR	BGM (100%)	11/25/2010	12/7/2024	392.06	Osisko Gold Royalties Ltd. (5%)
838954	Mineral Claim	QR	BGM (100%)	11/25/2010	12/7/2024	391.86	Osisko Gold Royalties Ltd. (5%)
850212	Mineral Claim	QR	BGM (100%)	3/31/2011	12/7/2024	489.54	Osisko Gold Royalties Ltd. (5%)
850217	Mineral Claim	QR	BGM (100%)	3/31/2011	12/7/2024	176.21	Osisko Gold Royalties Ltd. (5%)
853622	Mineral Claim	Cariboo Gold	BGM (100%)	5/5/2011	2/28/2030	116.56	Osisko Gold Royalties Ltd. (5%)
854573	Mineral Claim	QR	BGM (100%)	5/16/2011	12/7/2024	489.63	Osisko Gold Royalties Ltd. (5%)
855732	Mineral Claim	QR	BGM (100%)	5/26/2011	12/7/2024	391.87	Osisko Gold Royalties Ltd. (5%)
856509	Mineral Claim	Cariboo Gold	BGM (100%)	6/9/2011	2/28/2030	407.82	Osisko Gold Royalties Ltd. (5%)
856510	Mineral Claim	Cariboo Gold	BGM (100%)	6/9/2011	2/28/2030	155.41	Osisko Gold Royalties Ltd. (5%)
896709	Mineral Claim	Cariboo Gold	BGM (100%)	9/13/2011	2/28/2030	913.22	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (1%)
928311	Mineral Claim	Cariboo Gold	BGM (100%)	11/6/2011	2/28/2030	487.33	Osisko Gold Royalties Ltd. (5%)
1013933	Mineral Claim	QR	BGM (100%)	10/23/2012	12/8/2024	39.18	Osisko Gold Royalties Ltd. (5%)
1013935	Mineral Claim	QR	BGM (100%)	10/23/2012	12/8/2024	39.18	Osisko Gold Royalties Ltd. (5%)
1014607	Mineral Claim	Cariboo Gold	BGM (100%)	11/19/2012	12/11/2030	19.52	Osisko Gold Royalties Ltd. (5%)
1017340	Mineral Claim	QR	BGM (100%)	3/1/2013	12/8/2024	58.78	Osisko Gold Royalties Ltd. (5%)

Title #	Type	Property	Owner	Issue Date	Good to Date	Area (ha)	Royalties
1019141	Mineral Claim	QR	BGM (100%)	5/2/2013	12/8/2024	274.7	Osisko Gold Royalties Ltd. (5%)
1019143	Mineral Claim	QR	BGM (100%)	5/2/2013	12/8/2024	470.94	Osisko Gold Royalties Ltd. (5%)
1019146	Mineral Claim	QR	BGM (100%)	5/2/2013	12/8/2024	157.01	Osisko Gold Royalties Ltd. (5%)
1019149	Mineral Claim	QR	BGM (100%)	5/2/2013	12/8/2024	137.32	Osisko Gold Royalties Ltd. (5%), Foxcorp Holdings Ltd. (NOP) (partial) (2.5%), Revolution Technologies Inc. (NOP) (partial) (2.5%), Newmont Goldcorp Corp. (partial) (1%)
1019151	Mineral Claim	QR	BGM (100%)	5/2/2013	12/8/2024	294.36	Osisko Gold Royalties Ltd. (5%)
1019154	Mineral Claim	QR	BGM (100%)	5/2/2013	12/8/2024	78.47	Osisko Gold Royalties Ltd. (5%)
1019158	Mineral Claim	QR	BGM (100%)	5/2/2013	12/8/2024	19.62	Osisko Gold Royalties Ltd. (5%)
1019172	Mineral Claim	QR	BGM (100%)	5/2/2013	12/8/2024	156.93	Osisko Gold Royalties Ltd. (5%), Foxcorp Holdings Ltd. (NOP) (partial) (2.5%), Revolution Technologies Inc. (NOP) (partial) (2.5%), Newmont Goldcorp Corp. (partial) (1%)
1020349	Mineral Claim	QR	BGM (100%)	6/16/2013	12/8/2024	293.75	Osisko Gold Royalties Ltd. (5%)
1020538	Mineral Claim	QR	BGM (100%)	6/26/2013	12/8/2024	195.88	Osisko Gold Royalties Ltd. (5%)
1022111	Mineral Claim	QR	BGM (100%)	9/5/2013	12/8/2024	137.15	Osisko Gold Royalties Ltd. (5%)
1023288	Mineral Claim	QR	BGM (100%)	10/24/2013	12/8/2024	78.38	Osisko Gold Royalties Ltd. (5%)
1027056	Mineral Claim	QR	BGM (100%)	3/31/2014	12/8/2024	117.57	Osisko Gold Royalties Ltd. (5%)
1027057	Mineral Claim	QR	BGM (100%)	3/31/2014	12/8/2024	78.47	Osisko Gold Royalties Ltd. (5%)
1027058	Mineral Claim	Cariboo Gold	BGM (100%)	3/31/2014	2/28/2030	77.66	Osisko Gold Royalties Ltd. (5%)
1033403	Mineral Claim	Cariboo Gold	BGM (100%)	4/16/2014	12/11/2030	97.64	Osisko Gold Royalties Ltd. (5%)
1033404	Mineral Claim	Cariboo Gold	BGM (100%)	4/16/2014	12/11/2030	136.67	Osisko Gold Royalties Ltd. (5%)
1028446	Mineral Claim	Cariboo Gold	BGM (100%)	5/23/2014	12/11/2030	19.52	Osisko Gold Royalties Ltd. (5%)
1028453	Mineral Claim	Cariboo Gold	BGM (100%)	5/23/2014	2/28/2030	19.52	Osisko Gold Royalties Ltd. (5%)
1028454	Mineral Claim	Cariboo Gold	BGM (100%)	5/23/2014	12/11/2030	78.08	Osisko Gold Royalties Ltd. (5%)
1028464	Mineral Claim	Cariboo Gold	BGM (100%)	5/23/2014	2/28/2030	175.33	Osisko Gold Royalties Ltd. (5%)
1029935	Mineral Claim	Cariboo Gold	BGM (100%)	7/30/2014	2/28/2030	19.49	Osisko Gold Royalties Ltd. (5%), Osisko Gold Royalties Ltd. (partial) (2.5%)
1033303	Mineral Claim	Cariboo Gold	BGM (100%)	1/11/2015	12/11/2030	19.52	Osisko Gold Royalties Ltd. (5%)
1039381	Mineral Claim	Cariboo Gold	BGM (100%)	10/18/2015	12/11/2030	19.52	Osisko Gold Royalties Ltd. (5%)
1042345	Mineral Claim	Cariboo Gold	BGM (100%)	2/26/2016	2/28/2030	1798.94	Osisko Gold Royalties Ltd. (5%)
1042346	Mineral Claim	Cariboo Gold	BGM (100%)	2/26/2016	2/28/2030	1933.33	Osisko Gold Royalties Ltd. (5%)
1042347	Mineral Claim	Cariboo Gold	BGM (100%)	2/26/2016	2/28/2030	1932.17	Osisko Gold Royalties Ltd. (5%)
1042348	Mineral Claim	Cariboo Gold	BGM (100%)	2/26/2016	2/28/2030	1351.8	Osisko Gold Royalties Ltd. (5%)
1045261	Mineral Claim	Cariboo Gold	BGM (100%)	7/11/2016	2/28/2030	38.87	Osisko Gold Royalties Ltd. (5%)
1045698	Mineral Claim	Cariboo Gold	BGM (100%)	7/31/2016	12/11/2030	19.52	Osisko Gold Royalties Ltd. (5%)
1045814	Mineral Claim	Cariboo Gold	BGM (100%)	8/7/2016	12/11/2030	78.11	Osisko Gold Royalties Ltd. (5%)
1050434	Mineral Claim	Cariboo Gold	BGM (100%)	2/28/2017	12/11/2030	330.42	Osisko Gold Royalties Ltd. (5%)
1050437	Mineral Claim	Cariboo Gold	BGM (100%)	2/28/2017	12/11/2030	58.29	Osisko Gold Royalties Ltd. (5%)
1050442	Mineral Claim	Cariboo Gold	BGM (100%)	2/28/2017	12/11/2030	252.61	Osisko Gold Royalties Ltd. (5%)
1050747	Mineral Claim	Cariboo Gold	BGM (100%)	3/14/2017	2/28/2030	408.25	Osisko Gold Royalties Ltd. (5%)
1050748	Mineral Claim	Cariboo Gold	BGM (100%)	3/14/2017	2/28/2030	525.22	Osisko Gold Royalties Ltd. (5%)
1050749	Mineral Claim	Cariboo Gold	BGM (100%)	3/14/2017	2/28/2030	583.41	Osisko Gold Royalties Ltd. (5%)
1050750	Mineral Claim	Cariboo Gold	BGM (100%)	3/14/2017	12/11/2030	233.36	Osisko Gold Royalties Ltd. (5%)
1050753	Mineral Claim	Cariboo Gold	BGM (100%)	3/14/2017	12/11/2030	291.72	Osisko Gold Royalties Ltd. (5%)
1050754	Mineral Claim	Cariboo Gold	BGM (100%)	3/14/2017	2/28/2030	1186.57	Osisko Gold Royalties Ltd. (5%)

Title #	Type	Property	Owner	Issue Date	Good to Date	Area (ha)	Royalties
1050755	Mineral Claim	Cariboo Gold	BGM (100%)	3/14/2017	12/11/2030	641.95	Osisko Gold Royalties Ltd. (5%)
1050768	Mineral Claim	Cariboo Gold	BGM (100%)	3/15/2017	12/11/2030	680.35	Osisko Gold Royalties Ltd. (5%)
1050769	Mineral Claim	Cariboo Gold	BGM (100%)	3/15/2017	2/28/2030	116.65	Osisko Gold Royalties Ltd. (5%)
1052290	Mineral Claim	Cariboo Gold	BGM (100%)	6/1/2017	2/28/2030	78.13	Osisko Gold Royalties Ltd. (5%)
1055004	Mineral Claim	Cariboo Gold	BGM (100%)	9/19/2017	2/28/2030	19.53	Osisko Gold Royalties Ltd. (5%)
1055005	Mineral Claim	Cariboo Gold	BGM (100%)	9/19/2017	12/11/2030	58.6	Osisko Gold Royalties Ltd. (5%)
1055083	Mineral Claim	Cariboo Gold	BGM (100%)	9/21/2017	12/11/2030	195.3	Osisko Gold Royalties Ltd. (5%)
1055084	Mineral Claim	Cariboo Gold	BGM (100%)	9/21/2017	2/28/2030	214.87	Osisko Gold Royalties Ltd. (5%)
1057242	Mineral Claim	Cariboo Gold	BGM (100%)	12/26/2017	2/28/2030	58.28	Osisko Gold Royalties Ltd. (5%)
1060121	Mineral Claim	Cariboo Gold	BGM (100%)	4/18/2018	2/28/2030	1942.27	Osisko Gold Royalties Ltd. (5%)
1060157	Mineral Claim	Cariboo Gold	BGM (100%)	4/19/2018	2/28/2030	58.61	Osisko Gold Royalties Ltd. (5%)
1060160	Mineral Claim	Cariboo Gold	BGM (100%)	4/19/2018	2/28/2030	716.9	Osisko Gold Royalties Ltd. (5%)
1060183	Mineral Claim	Cariboo Gold	BGM (100%)	4/20/2018	12/11/2030	175.75	Osisko Gold Royalties Ltd. (5%)
1069588	Mineral Claim	Cariboo Gold	BGM (100%)	7/10/2019	7/10/2022	19.5	Osisko Gold Royalties Ltd. (5%)
1072306	Mineral Claim	Cariboo Gold	BGM (100%)	10/31/2019	2/28/2030	19.4	Osisko Gold Royalties Ltd. (5%)
1072307	Mineral Claim	Cariboo Gold	BGM (100%)	10/31/2019	2/28/2030	19.4	Osisko Gold Royalties Ltd. (5%)
1092808	Mineral Claim	QR	BGM (100%)	1/31/2022	1/31/2023	333.3	Osisko Gold Royalties Ltd. (5%)

APPENDIX 2: LIST OF PLACER CLAIMS AND LEASES

Title #	Type	Property	Owner	Issue Date	Good to Date	Area (ha)	Royalties
367303	Placer Lease	Cariboo Gold	BGM (100%)	2/5/1999	2/5/2022	161.77	Osisko Gold Royalties Ltd. (5%)
370373	Placer Lease	Cariboo Gold	BGM (100%)	10/19/1999	10/19/2022	46.26	Osisko Gold Royalties Ltd. (5%)
384442	Placer Lease	Cariboo Gold	BGM (100%)	5/15/2001	5/15/2022	254.86	Osisko Gold Royalties Ltd. (5%)
394333	Placer Lease	Cariboo Gold	BGM (100%)	8/19/2002	8/19/2022	518.8	Osisko Gold Royalties Ltd. (5%)
395284	Placer Lease	Cariboo Gold	BGM (100%)	8/28/2002	8/28/2022	524.7	Osisko Gold Royalties Ltd. (5%)
396850	Placer Lease	Cariboo Gold	BGM (100%)	1/20/2003	1/20/2022	271.1	Osisko Gold Royalties Ltd. (5%)
401442	Placer Lease	Cariboo Gold	BGM (100%)	5/16/2003	5/16/2022	282.36	Osisko Gold Royalties Ltd. (5%)
401340	Placer Lease	Cariboo Gold	BGM (100%)	5/16/2003	5/16/2022	17	Osisko Gold Royalties Ltd. (5%)
401342	Placer Lease	Cariboo Gold	BGM (100%)	5/16/2003	5/16/2022	124.55	Osisko Gold Royalties Ltd. (5%)
404854	Placer Lease	Cariboo Gold	BGM (100%)	11/24/2003	11/24/2022	29.1	Osisko Gold Royalties Ltd. (5%)
514441	Placer Lease	Cariboo Gold	BGM (100%)	6/13/2005	6/13/2022	104.8	Osisko Gold Royalties Ltd. (5%)
541435	Placer Lease	Cariboo Gold	BGM (100%)	9/15/2006	9/15/2022	24.76	Osisko Gold Royalties Ltd. (5%)
545967	Placer Lease	Cariboo Gold	BGM (100%)	11/27/2006	11/27/2021	35.69	Osisko Gold Royalties Ltd. (5%)
560453	Placer Claim	Cariboo Gold	BGM (100%)	6/11/2007	11/15/2022	19.43	Osisko Gold Royalties Ltd. (5%)
606644	Placer Claim	Cariboo Gold	BGM (100%)	6/26/2009	11/15/2022	97.23	Osisko Gold Royalties Ltd. (5%)
839402	Placer Claim	Cariboo Gold	BGM (100%)	12/1/2010	12/31/2021	19.41	Osisko Gold Royalties Ltd. (5%)
1038243	Placer Claim	Cariboo Gold	BGM (100%)	8/28/2015	8/26/2022	213.66	Osisko Gold Royalties Ltd. (5%)
1042111	Placer Claim	Cariboo Gold	BGM (100%)	2/17/2016	10/13/2022	174.75	Osisko Gold Royalties Ltd. (5%)
1042112	Placer Claim	Cariboo Gold	BGM (100%)	2/17/2016	10/13/2022	58.26	Osisko Gold Royalties Ltd. (5%)
1045734	Placer Claim	Cariboo Gold	BGM (100%)	8/3/2016	8/3/2022	38.8	Osisko Gold Royalties Ltd. (5%)
1046530	Placer Claim	Cariboo Gold	BGM (100%)	9/8/2016	9/8/2022	19.4	Osisko Gold Royalties Ltd. (5%)
1048024	Placer Claim	Cariboo Gold	BGM (100%)	11/24/2016	11/24/2022	19.4	Osisko Gold Royalties Ltd. (5%)
1049379	Placer Claim	Cariboo Gold	BGM (100%)	1/22/2017	1/22/2022	38.82	Osisko Gold Royalties Ltd. (5%)
1049537	Placer Claim	Cariboo Gold	BGM (100%)	1/27/2017	1/27/2022	19.43	Osisko Gold Royalties Ltd. (5%)
1050158	Placer Claim	Cariboo Gold	BGM (100%)	2/20/2017	2/20/2022	19.42	Osisko Gold Royalties Ltd. (5%)
1052277	Placer Claim	Cariboo Gold	BGM (100%)	5/31/2017	5/31/2022	19.41	Osisko Gold Royalties Ltd. (5%)
1052361	Placer Claim	Cariboo Gold	BGM (100%)	6/4/2017	6/4/2022	38.8	Osisko Gold Royalties Ltd. (5%)
1052637	Placer Claim	Cariboo Gold	BGM (100%)	6/18/2017	6/18/2022	19.42	Osisko Gold Royalties Ltd. (5%)
1055510	Placer Claim	Cariboo Gold	BGM (100%)	10/13/2017	10/13/2022	38.8	Osisko Gold Royalties Ltd. (5%)
1055674	Placer Claim	Cariboo Gold	BGM (100%)	10/20/2017	10/20/2022	19.42	Osisko Gold Royalties Ltd. (5%)
1057397	Placer Claim	Cariboo Gold	BGM (100%)	1/2/2018	10/18/2022	174.78	Osisko Gold Royalties Ltd. (5%)
1058336	Placer Claim	Cariboo Gold	BGM (100%)	2/6/2018	2/6/2022	19.42	Osisko Gold Royalties Ltd. (5%)
1058337	Placer Claim	Cariboo Gold	BGM (100%)	2/6/2018	2/6/2022	19.43	Osisko Gold Royalties Ltd. (5%)
1063142	Placer Claim	Cariboo Gold	BGM (100%)	9/16/2018	9/16/2022	19.41	Osisko Gold Royalties Ltd. (5%)
1063186	Placer Claim	Cariboo Gold	BGM (100%)	9/19/2018	5/19/2022	38.83	Osisko Gold Royalties Ltd. (5%)
1063528	Placer Claim	Cariboo Gold	BGM (100%)	10/2/2018	10/2/2022	38.85	Osisko Gold Royalties Ltd. (5%)
1063975	Placer Claim	Cariboo Gold	BGM (100%)	10/22/2018	10/22/2022	19.41	Osisko Gold Royalties Ltd. (5%)
1064018	Placer Claim	Cariboo Gold	BGM (100%)	10/24/2018	10/24/2022	19.41	Osisko Gold Royalties Ltd. (5%)
1064017	Placer Claim	Cariboo Gold	BGM (100%)	10/24/2018	10/24/2022	19.42	Osisko Gold Royalties Ltd. (5%)
1064016	Placer Claim	Cariboo Gold	BGM (100%)	10/24/2018	10/24/2022	19.41	Osisko Gold Royalties Ltd. (5%)
1067277	Placer Claim	Cariboo Gold	BGM (100%)	3/17/2019	3/17/2022	19.41	Osisko Gold Royalties Ltd. (5%)
1067348	Placer Claim	Cariboo Gold	BGM (100%)	3/20/2019	1/10/2025	698.63	Osisko Gold Royalties Ltd. (5%)
1068909	Placer Claim	Cariboo Gold	BGM (100%)	6/4/2019	6/4/2022	58.31	Osisko Gold Royalties Ltd. (5%)
1072073	Placer Claim	Cariboo Gold	BGM (100%)	10/23/2019	7/17/2022	58.23	Osisko Gold Royalties Ltd. (5%)
1072333	Placer Claim	Cariboo Gold	BGM (100%)	11/1/2019	11/1/2022	19.44	Osisko Gold Royalties Ltd. (5%)
1072338	Placer Claim	Cariboo Gold	BGM (100%)	11/1/2019	11/1/2022	19.43	Osisko Gold Royalties Ltd. (5%)
1072336	Placer Claim	Cariboo Gold	BGM (100%)	11/1/2019	11/1/2022	19.44	Osisko Gold Royalties Ltd. (5%)
1072335	Placer Claim	Cariboo Gold	BGM (100%)	11/1/2019	11/1/2022	19.44	Osisko Gold Royalties Ltd. (5%)
1072331	Placer Claim	Cariboo Gold	BGM (100%)	11/1/2019	11/1/2022	58.32	Osisko Gold Royalties Ltd. (5%)
1072332	Placer Claim	Cariboo Gold	BGM (100%)	11/1/2019	11/1/2022	19.43	Osisko Gold Royalties Ltd. (5%)
1072334	Placer Claim	Cariboo Gold	BGM (100%)	11/1/2019	11/1/2022	19.43	Osisko Gold Royalties Ltd. (5%)
1072337	Placer Claim	Cariboo Gold	BGM (100%)	11/1/2019	11/1/2022	19.43	Osisko Gold Royalties Ltd. (5%)
1074530	Placer Claim	Cariboo Gold	BGM (100%)	2/11/2020	1/10/2025	1340.98	Osisko Gold Royalties Ltd. (5%)
1074531	Placer Claim	Cariboo Gold	BGM (100%)	2/11/2020	1/10/2025	873.86	Osisko Gold Royalties Ltd. (5%)
1076725	Placer Claim	Cariboo Gold	BGM (100%)	6/12/2020	12/12/2021	19.41	Osisko Gold Royalties Ltd. (5%)
1079815	Placer Claim	Cariboo Gold	BGM (100%)	11/29/2020	11/29/2021	19.41	Osisko Gold Royalties Ltd. (5%)

APPENDIX 3: CROWN-GRANTED MINERAL CLAIMS

PID	Title #	CG #	Original Grantee	Fee Simple Owner	Undersurface Owner	Area (Acres)	Royalty
006-787-592	CA3322184	4215/55	ADA JANE BRUCE MASON	BARKERVILLE GOLD MINES LTD.	WHARF RESOURCES LTD.	0.42	OGR 5%
018-856-870	CA801713	4215/55	ADA JANE BRUCE MASON	BARKERVILLE GOLD MINES LTD.	WHARF RESOURCES LTD.	0.6	OGR 5%
023-677-007	PM47667	4215/55	ADA JANE BRUCE MASON	BARKERVILLE GOLD MINES LTD.	WHARF RESOURCES LTD. / THE CROWN IN RIGHT OF BRITSH COLUMBIA	1.25	OGR 5%
006-773-931	CA9231853	1036/97	ARCHIBALD MCINTYRE	BARKERVILLE GOLD MINES LTD.	WHARF RESOURCES LTD.	0.27	OGR 5%
013-778-366	CA9229300	1036/97	ARCHIBALD MCINTYRE	BARKERVILLE GOLD MINES LTD.	WHARF RESOURCES LTD.	0.15	OGR 5%
015-332-438	8407M	1036/97	ARCHIBALD MCINTYRE	THE LOWHEE MINING COMPANY LIMITED (NON-PERSONAL LIABILITY) (FORFEITED TO CROWN)	BARKERVILLE GOLD MINES LTD.	205.72	OGR 5%
018-328-288	CA8802577	1036/97	ARCHIBALD MCINTYRE	BARKERVILLE GOLD MINES LTD.	WHARF RESOURCES LTD.	0.45	OGR 5%
018-685-056	CA6190280	1036/97	ARCHIBALD MCINTYRE	BARKERVILLE GOLD MINES LTD.	WHARF RESOURCES LTD. / HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	0.36	OGR 5%
018-847-340	BX36213	1036/97	ARCHIBALD MCINTYRE	BARKERVILLE GOLD MINES LTD.	THE CROWN IN RIGHT OF BRITISH COLUMBIA	0.13	OGR 5%
031-410-812	CA9059926	1036/97	ARCHIBALD MCINTYRE	BARKERVILLE GOLD MINES LTD.	WHARF RESOURCES LTD.	0.1	OGR 5%
031-410-821	CA9059927	1036/97	ARCHIBALD MCINTYRE	BARKERVILLE GOLD MINES LTD.	WHARF RESOURCES LTD.	0.14	OGR 5%
013-700-812	PC17211	8769/858	BARKERVILLE MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	38.1	OGR 5%
013-700-839	PC17212	8770/858	BARKERVILLE MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	47.37	OGR 5%
013-700-847	PC17213	8771/858	BARKERVILLE MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	19.6	OGR 5%
013-700-863	PC17214	8772/858	BARKERVILLE MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	33.76	OGR 5%
013-700-871	PC17215	8767/858	BARKERVILLE MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	36.41	OGR 5%
013-700-880	PC17216	8768/858	BARKERVILLE MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	26.81	OGR 5%
015-282-163	31938M	8766/858	BARKERVILLE MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	13.03	OGR 5%
015-359-786	PD707	8761/858	BARKERVILLE MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	26.53	OGR 5%
015-359-891	PD706	8762/858	BARKERVILLE MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	42.64	OGR 5%
015-360-172	PD705	8763/858	BARKERVILLE MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	25.3	OGR 5%
015-360-202	PD704	8764/858	BARKERVILLE MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	36.07	OGR 5%
015-360-211	PD703	8765/858	BARKERVILLE MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	33.95	OGR 5%
013-699-253	PC17191	420/675	CARIBOO AMALGAMATED GOLD MINES LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	9.5	OGR 5%
013-699-598	PC17202	421/675	CARIBOO AMALGAMATED GOLD MINES LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	40.89	OGR 5%
013-699-652	PC17203	422/675	CARIBOO AMALGAMATED GOLD MINES LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.65	OGR 5%
013-699-695	PC17204	423/675	CARIBOO AMALGAMATED GOLD MINES LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.65	OGR 5%
013-699-709	PC17217	461/675	CARIBOO AMALGAMATED GOLD MINES LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	26.04	OGR 5%
013-699-733	PC17218	424/675	CARIBOO AMALGAMATED GOLD MINES LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.64	OGR 5%
013-699-784	PC17219	425/675	CARIBOO AMALGAMATED GOLD MINES LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	42.15	OGR 5%
013-699-822	PC17220	426/675	CARIBOO AMALGAMATED GOLD MINES LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	32.23	OGR 5%
013-699-903	PC17221	427/675	CARIBOO AMALGAMATED GOLD MINES LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	43.42	OGR 5%

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013-700-162	PC17222	428/675	CARIBOO AMALGAMATED GOLD MINES LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	24.8	OGR 5%
015-360-971	PD718	1193/682	CARIBOO CONSOLIDATED MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	39.83	OGR 5%
015-361-225	PD717	1192/682	CARIBOO CONSOLIDATED MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	18.66	OGR 5%
015-361-233	PD716	1191/682	CARIBOO CONSOLIDATED MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	30.1	OGR 5%
015-361-276	PD715	1190/682	CARIBOO CONSOLIDATED MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	45.17	OGR 5%
015-361-322	PD714	1189/682	CARIBOO CONSOLIDATED MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	31.76	OGR 5%
015-361-373	PD713	1188/682	CARIBOO CONSOLIDATED MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	7.02	OGR 5%
015-361-403	PD712	1187/682	CARIBOO CONSOLIDATED MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	37.62	OGR 5%
015-307-000	PC58825	3301/504	CHARLES JOHN SEYMOUR BAKER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.14	OGR 5%, FNV 3%
015-307-425	PC58826	3302/504	CHARLES JOHN SEYMOUR BAKER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.21	OGR 5%, FNV 3%
015-307-727	PC58827	3298/503	CHARLES JOHN SEYMOUR BAKER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	48.92	OGR 5%, FNV 3%
015-307-743	PC58828	3299/503	CHARLES JOHN SEYMOUR BAKER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.19	OGR 5%, FNV 3%
015-307-751	PC58829	3300/503	CHARLES JOHN SEYMOUR BAKER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.3	OGR 5%, FNV 3%
006-410-987	Y6520	2185/792	DALBY B. MORKILL	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	27.63	OGR 5%
006-411-070	Y6521	2186/792	DALBY B. MORKILL	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	49.76	OGR 5%
006-411-193	Y6522	2187/792	DALBY B. MORKILL	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	44.16	OGR 5%
006-411-215	Y6523	2188/792	DALBY B. MORKILL	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	43.54	OGR 5%
024-954-527	FB488576	3417/306	FRANK W. KIBBEE	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	2.56	OGR 5%
013-614-941	PC17398	2882/799	FREDERICK JAMES TREGILLUS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA MINISTER RESPONSIBLE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	26.14	OGR 5%
013-724-541	PC18149	216/673	FREDERICK JAMES TREGILLUS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	47.78	OGR 5%
013-724-631	PC18148	215/673	FREDERICK JAMES TREGILLUS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	29.08	OGR 5%
015-289-681	CA4347921	385/674	FREDERICK JAMES TREGILLUS	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	20.22	OGR 5%
015-291-391	12076M	387/674	FREDERICK JAMES TREGILLUS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	31.39	OGR 5%
015-291-413	12077M	388/674	FREDERICK JAMES TREGILLUS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	33.15	OGR 5%
015-291-481	12079M	389/674	FREDERICK JAMES TREGILLUS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	21.68	OGR 5%
015-292-304	11956M	214/673	FREDERICK JAMES TREGILLUS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	35.46	OGR 5%
015-292-312	11510M	9496/665	FREDERICK JAMES TREGILLUS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	35.78	OGR 5%

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015-292-509	12075M	386/674	FREDERICK JAMES TREGILLUS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	47.11	OGR 5%
015-939-197	11509M	9495/665	FREDERICK JAMES TREGILLUS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	49.08	OGR 5%
015-939-201	11508M	9493/665	FREDERICK JAMES TREGILLUS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	31.72	OGR 5%
015-939-251	PD15660	9494/665	FREDERICK JAMES TREGILLUS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	29.82	OGR 5%
015-939-278	PD15660	9494/665	FREDERICK JAMES TREGILLUS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	29.9	OGR 5%
015-939-324	PD15661	9497/665	FREDERICK JAMES TREGILLUS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	39.29	OGR 5%
015-939-375	PD15662	9497/665	FREDERICK JAMES TREGILLUS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	39.34	OGR 5%
015-939-243	PD15664	9498/665	FREDERICK JAMES TREGILLUS AND ALBERT JAMES BLAIR	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	4.61	OGR 5%
015-291-537	12080M	383/674	FREDERICK JAMES TREGILLUS AND THOMAS ALBERT BLAIR	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	2.16	OGR 5%
015-384-586	12073M	382/674	FREDERICK JAMES TREGILLUS AND THOMAS ALBERT BLAIR	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	42.49	OGR 5%
015-939-235	PD15663	9498/665	FREDERICK JAMES TREGILLUS AND THOMAS ALBERT BLAIR	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	4.69	OGR 5%
004-056-710	CA6623323	1F/34	GEORGE TRUMAN, GEORGE W. ROBINSON, FELIX NEUFELDER, A. COUTTS, JOHN JORDAN, FREDERICK STERITRY AND P. MANETTA	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	36.2	OGR 5%
004-086-872	PT5233, PC16246	20F/34	HILAIRE MOLLEUR, ANGELO PENDOLA, OLIVIER D'ARPENTIGNY AND ALEXANFDER GARANT	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	35.91	OGR 5%
005-537-541	CA8578737	5313/624 (U), 5763/628 (S)	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	1	OGR 5%
008-218-803	CA3393918	5313/624 (U), 5763/628 (S)	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	30.05	OGR 5%
010-422-862	PB12572	2683/697	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	50.8	OGR 5%, FNV 3%
013-699-326	PC17193	8323/654	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	14.16	OGR 5%
013-700-367	PC17223	5312/624	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.65	OGR 5%
013-700-715	PC17206	5972/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	34.63	OGR 5%
013-700-731	PC17207	5973/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	24.33	OGR 5%
013-700-740	PC17208	5974/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	25.22	OGR 5%
013-700-758	PC17209	5975/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	45.38	OGR 5%

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013-700-791	PC17210	5976/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	46.64	OGR 5%
013-707-850	PC17230	5322/624	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	0.49	OGR 5%
013-707-868	PC17224	5314/624	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.09	OGR 5%
013-707-876	PC17226	5316/624	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.11	OGR 5%
013-707-884	PC17227	5317/624	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	38.13	OGR 5%
013-707-892	PC17229	5319/624	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	4.17	OGR 5%
013-707-906	PC17231	5323/624	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	0.71	OGR 5%
013-707-914	PC17247	5320/624	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	35.21	OGR 5%
013-707-922	PC17228	5318/624	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	26.61	OGR 5%
013-707-965	PC17248	5987/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	4.63	OGR 5%
013-708-023	PC17249	5988/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	19.32	OGR 5%
013-708-058	PC17250	5988/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	19.32	OGR 5%
013-708-066	PC17251	5989/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	15.49	OGR 5%
013-708-074	PC17225	5315/624	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	48.22	OGR 5%
013-708-091	PC17232	5977/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	49.75	OGR 5%
013-708-104	PC17233	5978/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	37.95	OGR 5%
013-708-112	PC17234	5979/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	45.11	OGR 5%
013-708-121	PC17235	5980/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	34.76	OGR 5%
013-708-139	PC17239	5982/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	32.52	OGR 5%
013-708-155	PC17240	5983/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	44.8	OGR 5%
013-708-163	PC17241	5983/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	44.8	OGR 5%
013-708-171	PC17242	5984/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	46.31	OGR 5%
013-708-180	PC17243	5984/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	46.32	OGR 5%
013-708-198	PC17244	5985/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	2.79	OGR 5%
013-708-201	PC17245	5986/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	29.56	OGR 5%
013-708-210	PC17246	5986/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	29.56	OGR 5%
013-708-228	PC17237	5320/624	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	38.4	OGR 5%
013-708-236	PC17238	5321/624	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	38.4	OGR 5%
013-724-533	PC18150	8910/760	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	23.8	OGR 5%, FNV 3%
015-291-685	13451M	2677/697	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	48.47	OGR 5%, FNV 3%

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015-291-723	13452M	2678/697	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	46.66	OGR 5%, FNV 3%
015-291-766	13453M	2679/697	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.65	OGR 5%, FNV 3%
015-291-791	13454M	2680/697	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	20.31	OGR 5%, FNV 3%
015-291-804	13455M	2681/697	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	20.29	OGR 5%, FNV 3%
015-291-812	13456M	2682/697	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.62	OGR 5%, FNV 3%
015-291-839	13458M	2684/697	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	29.87	OGR 5%, FNV 3%
015-292-045	12368M	790/678	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	49.17	OGR 5%, FNV 3%
015-292-096	19027M	8396/754	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	6.35	OGR 5%, FNV 3%
015-292-274	9758M	6436/635	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	43.33	OGR 5%, FNV 3%
015-292-347	9756M	6437/635	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	19.16	OGR 5%, FNV 3%
015-292-363	9757M	6435/635	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	31.78	OGR 5%, FNV 3%
015-342-778	PD348	6433/635	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	44.6	OGR 5%, FNV 3%
015-342-824	PD349	6434/635	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	49.36	OGR 5%, FNV 3%
015-343-634	PD456	2683/697	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	50.8	OGR 5%, FNV 3%
016-016-114	15203M	4609/717	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	13.37	OGR 5%, FNV 3%
016-562-895	13459M	2685/697	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	4.83	OGR 5%, FNV 3%
016-563-051	13460M	2686/697	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	18.5	OGR 5%, FNV 3%
017-164-923	PC17236	5981/630	ISLAND MOUNTAIN MINES COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.68	OGR 5%
015-300-226	CA2741385	2099/1091	JAMES THOMAS WATT	BARKERVILLE GOLD MINES LTD.	NONE	1.6	OGR 5%
004-078-632	FB503371	5F/34	JOHN BOWRON, DANIEL CAREY, ANDREW FLETCHER, WESLEY HALL, WILLIAM JEFFARES, JOHN MCALISTER, DONALD	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	47.3	OGR 5%
004-086-902	PT5234, PC16247	30F/34	JOHN LAUYON, MICHAEL DRISCOLL AND WILLIAM P. WILLIAMS	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	35.91	OGR 5%
015-038-688	W21719	3268/154	JOHN PINKERTON	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	36.92	OGR 5%
015-286-649	S28511	3925/510	LAURENT MULLER	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.07	OGR 5%
004-056-752	CA4347922	32F/34	LEWIS WINTRIP	BARKERVILLE GOLD MINES LTD.	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA, MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	82.23	OGR 5%
004-933-206	CA71100	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	CLIFFORD CECIL COLLINS, SMALL ENGINE PROGRAM COORDINATOR	BARKERVILLE GOLD MINES LTD.	1.88	OGR 5%
009-497-463	CA6851547	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	BARKERVILLE GOLD MINES LTD.	WHARF RESOURCES LTD.	0.29	OGR 5%
013-100-572	CA6670546	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	BARKERVILLE GOLD MINES LTD.	WHARF RESOURCES LTD. / THE CROWN IN RIGHT OF BRITISH COLUMBIA	0.16	OGR 5%
014-385-732	CA3322183	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	6.58	OGR 5%
014-997-347	CA4769286	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	43.6	OGR 5%

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017-589-517	CA4545743	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	4.94	OGR 5%
019-113-854	CA6881775	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	BARKERVILLE GOLD MINES LTD.	WHARF RESOURCES LTD.	0.08	OGR 5%
026-025-906	BB1991819	2517/101	MARY AGNES MASON (TRANSFERRED TO LOWHEE MINING CO. LTD.)	BARKERVILLE GOLD MINES LTD.	WHARF RESOURCES LTD.	0.38	OGR 5%
004-078-560	CA332187	42F/34	PHILIP RICHARD TAYLOR LEACY AND JOHN BUTTS	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	10	OGR 5%
004-078-608	CA5682814	35F/34	ROBERT DRIUKALL	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	58	OGR 5%
004-087-054	PT5232, PC16245	39F/34	ROBERT JOHUS AND GEORGE HENRY JOHUS	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	35.91	OGR 5%
008-801-908	CA3322180	35/36 (B), 2672/597 (U)	THE BRITISH COLUMBIA MILLING AND MINING COMPANY (LIMITED)	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	20.6	OGR 5%
014-982-013	CA3322181	35/36	THE BRITISH COLUMBIA MILLING AND MINING COMPANY (LIMITED)	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	20	OGR 5%
015-306-992	PC58824	126/47	THE BRITISH COLUMBIA MILLING AND MINING COMPANY (LIMITED)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	20.53	OGR 5%, FNV 3%
014-385-759	CA3322179	4614/617 (S), 35/36 (B)	THE BRITISH COLUMBIA MILLING AND MINING COMPANY LIMITED (CG 36/36); CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY) (CG 4614/617)	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	19.88	OGR 5%
008-218-722	Y31875	6206/633	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	0.17	OGR 5%
008-222-762	PD44700	6206/633, 5313/624 (U), 5763/628 (S)	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	WELLS HISTORICAL SOCIETY	BARKERVILLE GOLD MINES LTD.	0.23	OGR 5%
013-699-148	PC17188	6207/633	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	50.34	OGR 5%
013-699-172	PC17205	6208/633	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	42	OGR 5%
013-699-181	PC17189	6209/633	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	41.34	OGR 5%
013-699-202	PC17190	6210/633	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	2.83	OGR 5%
013-699-288	PC17192	5448/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	9.78	OGR 5%
013-699-369	PC17194	6212/633	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	35.94	OGR 5%
013-699-385	PC17195	6213/633	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	43.95	OGR 5%
013-699-393	PC17196	6214/633	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	40.02	OGR 5%
013-699-415	PC17197	6215/633	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	31.67	OGR 5%
013-699-440	PC17198	6216/633	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.65	OGR 5%
013-699-491	PC17199	6217/633	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.65	OGR 5%
013-699-539	PC17200	6218/633	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.5	OGR 5%
013-699-563	PC17201	6527/636	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	38.89	OGR 5%
013-724-509	PC18151	4882/719	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	0.3	OGR 5%
014-385-643	CA3322188	5436/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	49.41	OGR 5%
014-385-686	CA3322189	5439/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	23.02	OGR 5%
015-133-702	W21889	6802/639	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	48.16	OGR 5%
015-133-991	W21853	9412/665	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.65	OGR 5%
015-134-008	W21852	6958/640	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	12.65	OGR 5%

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015-134-792	W21849	9413/665	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.76	OGR 5%
015-134-806	W21842	9411/665	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	0.84	OGR 5%
015-134-911	W21839	6959/640	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	9.33	OGR 5%
015-134-954	W21843	9418/665	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	12.19	OGR 5%
015-134-971	W21841	9417/665	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.49	OGR 5%
015-135-004	W21840	9415/665	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	29.1	OGR 5%
015-135-021	W21838	9416/665	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	37.87	OGR 5%
015-135-039	W21854	9414/665	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	30.5	OGR 5%
015-135-055	W21837	6969/640	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	0.03	OGR 5%
015-150-470	PC54208	6793/638	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	49.59	OGR 5%
015-150-640	PC54209	6798/638	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.65	OGR 5%
015-151-000	PC54210	6799/638	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	40.99	OGR 5%
015-151-018	PC54211	6800/638	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.65	OGR 5%
015-151-026	PC54212	6801/639	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.62	OGR 5%
015-151-093	PC54218	6963/640	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	47.52	OGR 5%
015-151-174	PC54219	6964/640	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	49.59	OGR 5%
015-151-301	PC54220	6965/640	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	49.74	OGR 5%
015-151-417	PC54221	6966/640	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	32.43	OGR 5%
015-151-450	PC54222	6967/640	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	51.65	OGR 5%
015-151-557	PC54228	6794/638	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	36.7	OGR 5%
015-151-590	PC54229	6795/638	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	21.11	OGR 5%
015-151-697	PC54230	6712/638	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	17.73	OGR 5%
015-151-727	PC54231	6796/638	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.6	OGR 5%
015-151-794	PC54232	6797/638	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.66	OGR 5%
015-151-859	PC54223	6957/640	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.04	OGR 5%

PID	Title #	CG #	Original Grantee	Fee Simple Owner	Undersurface Owner	Area (Acres)	Royalty
015-151-905	PC54224	6960/640	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	43.99	OGR 5%
015-151-930	PC54225	6961/640	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	19.96	OGR 5%
015-151-999	PC54226	6962/640	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.66	OGR 5%
015-152-049	PC54227	6968/640	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	34.57	OGR 5%
015-152-103	PC54213	6788/638	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	49.59	OGR 5%
015-152-294	PC54214	6789/638	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.65	OGR 5%
015-152-341	PC54215	6790/638	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.58	OGR 5%
015-152-367	PC54216	6791/638	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	37.01	OGR 5%
015-152-405	PC54217	6792/638	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	39.16	OGR 5%
015-193-845	U40887	5447/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.15	OGR 5%
015-193-934	U40886	5446/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	44.89	OGR 5%
015-193-942	U40885	5445/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	2.9	OGR 5%
015-193-951	U40884	5444/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	39.8	OGR 5%
015-193-969	U40883	5443/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	34.46	OGR 5%
015-193-977	U40882	5442/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	35.77	OGR 5%
015-193-985	U40881	5441/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	44.59	OGR 5%
015-194-027	U40880	5440/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.33	OGR 5%
015-194-116	U40879	5438/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	34.34	OGR 5%
015-194-141	U40875	5437/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	32.09	OGR 5%
015-194-167	U40878	5435/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.65	OGR 5%
015-194-183	U40877	5434/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	22.05	OGR 5%
015-282-074	15494M	4878/719	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	0.05	OGR 5%
015-282-082	15495M	4879/719	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	4.91	OGR 5%
015-282-104	15496M	4880/719	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	0.23	OGR 5%
015-282-147	15497M	4881/719	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	0.17	OGR 5%
015-282-155	15499M	4883/719	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	0.56	OGR 5%
015-287-131	U40874	6211/633	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	20.9	OGR 5%
015-289-800	W21851	211/673	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	16.49	OGR 5%

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016-292-987	PD30176	5433/625	THE CARIBOO GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	0.12	OGR 5%
014-385-741	CA3322182	535/92	THE ORIOLE SYNDICATE LIMITED	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	42.42	OGR 5%
015-307-603	PC58843	2085/130	THE ORIOLE SYNDICATE LIMITED	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	49.63	OGR 5%
015-307-654	PC58844	2088/130	THE ORIOLE SYNDICATE LIMITED	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	29.87	OGR 5%
015-307-662	PC58845	2087/130	THE ORIOLE SYNDICATE LIMITED	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	47.59	OGR 5%
015-291-448	12078M	384/674	THOMAS ALBERT BLAIR	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA C/O MINISTER RESPONSIBLE FOR THE HERITAGE CONSERVATION ACT	BARKERVILLE GOLD MINES LTD.	37.21	OGR 5%
004-056-582	BB1960681	41F/34	UNKNOWN (PRE-TANTALIS)	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	13.81	OGR 5%, FNV 3%
004-056-736	CA6623292	1B/35	UNKNOWN (PRE-TANTALIS)	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	12	OGR 5%
004-056-787	CA4347919	4B/35	UNKNOWN (PRE-TANTALIS)	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	10	OGR 5%
004-086-627	CA3393199	2B/35	UNKNOWN (PRE-TANTALIS)	BARKERVILLE GOLD MINES LTD.	NONE ON TITLE (UNDERSURFACE RIGHTS GRANTED GMA 1873)	23	OGR 5%
015-329-313	PD31	6287/633	WILLIAM A. SIMKINS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.65	OGR 5%, FNV 3%
015-329-330	PD32	6288/633	WILLIAM A. SIMKINS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.52	OGR 5%, FNV 3%
015-329-356	PD33	6289/633	WILLIAM A. SIMKINS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	11.32	OGR 5%, FNV 3%
015-329-372	PD34	6290/633	WILLIAM A. SIMKINS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	39.78	OGR 5%, FNV 3%
015-329-381	PD35	6291/633	WILLIAM A. SIMKINS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	18.93	OGR 5%, FNV 3%
015-329-399	PD36	6292/633	WILLIAM A. SIMKINS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	25.07	OGR 5%, FNV 3%
015-329-402	PD37	6293/633	WILLIAM A. SIMKINS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	22.4	OGR 5%, FNV 3%
015-329-411	PD38	6294/633	WILLIAM A. SIMKINS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	0.5	OGR 5%, FNV 3%
015-329-437	PD39	6295/633	WILLIAM A. SIMKINS	HER MAJESTY THE QUEEN IN RIGHT OF THE PROVINCE OF BRITISH COLUMBIA	BARKERVILLE GOLD MINES LTD.	51.16	OGR 5%, FNV 3%
004-078-543	CA3322186	2F/34	WILLIAM ANDREW MEACHAM AND ITHIEL BLAKE MASON	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	25.26	OGR 5%
004-078-578	CA3322185	17F/34	WILLIAM BOSWELL STEELE, THOMAS BELL, ANGELO PENDOLA, PETER MANETTA, JOSEPH HUOT DE ST. LAURENT, WILLIAM H. THOMPSON, OLIVIER D'ARPENTIGNY, NICOLAS CUNIO, JAMES BOYCE, JOHN MCLEAN, ANGUS MCPHERSON AND ISAAC BIRCH FISHER	BARKERVILLE GOLD MINES LTD. & GOLDEN CARIBOO RESOURCES LTD.	NONE ON TITLE (UNDERSURFACE RIGHTS GRANTED GMA 1873)	125	OGR 5%
004-087-097	PT5235, PC16248	38F/34	WILLIAM SAUDERS AND EDWARD COLLINS NEUFELDER	BARKERVILLE GOLD MINES LTD.	BARKERVILLE GOLD MINES LTD.	35.91	OGR 5%
013-614-959	24187M	213/673 (U), 2882/799 (S)	WILLIAMS CREEK GOLD QUARTZ MINING COMPANY LIMITED (NON-PERSONAL LIABILITY)	WILLIAMS CREEK GOLD QUARTZ MINING CO. LIMITED (FORFEITED TO CROWN L35148)	BARKERVILLE GOLD MINES LTD.	25.99	OGR 5%