Report Prepared for:

Scorpio Gold Corporation

Updated Feasibility Study and National Instrument 43-101 Technical Report: Mineral Ridge Project

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GLOSSARY

UNITS OF MEASURE

acres	ac
annum (year)	a
centimetres	cm
cubic foot	ft^3
cubic metre	m^3
cubic yard	yd^3
day	d
days per year	d/a

degrees	°
degrees Celsius	°C
degrees Fahrenheit	°F
foot	ft
gallon	gal
gallons per minute	gpm
grams	g
grams per ton	g/t
hectares	ha
horse power	hp
hour	h
inch	in
kilogram	kg
kilometres	km
kiloton	kt
kilovolt	kV
kilowatt hour	kWh
litre	l
mega volt ampere	MVA
metres	m
microns	µm
milligram	mg
millimetre	mm
million gallons	Mgal
million tons	Mt
million years	Ma
minute	min
ounces	oz
ounces per ton	opt
percentage	%
plus/minus	±
pound	lb
square metre	m^2
tons	t
tons per day	t/d
tons per year	t/a
tonnes	T
US Dollars	US$ or $
volt	V
watt	W
yard	yd

ABBREVIATIONS AND ACRONYMS

absorption-desorption-recovery	ADR
Acid Base Accounting	ABA
ALS Global	ALS
aluminum	Al
American Assay Laboratories	AAL
arsenic	As
atomic absorption spectroscopy	AAS
barium	Ba
Best Management Practice	BMP
bismuth	Bi
Boart Longyear	Boart
Bond ball mill work index	B_{Wi}
Bureau of Air Pollution Control	BAPC
Bureau of Land Management (US Department of the Interior)	BLM
Bureau of Mining Regulation and Reclamation	BMRR
Bureau of Water Pollution Control	BWPC
Bureau Veritas	BV
Canadian Imperial Bank of Commerce	CIBC
Canadian Institute of Mining, Metallurgy, and Petroleum	CIM
Canadian Institute of Mining, Metallurgy and Petroleum Definition Standards, 2014	2014 CIM Definition Standards
capital expenditure estimate	CAPEX
carbon	C
carbon dioxide equivalent	CO_2e
carbon-in-leach	CIL
certified reference material	CRM
copper	Cu
close side setting	CSS
cyanide	CN
Delong Drilling	Delong
diamond drilling	DD
discounted cash flow	DCF
Drinkwater high wall	Drinkwater HW
Elevon, LLC	Elevon
earnings before interest, taxes, depreciation, amortization and net proceeds of mining tax	EBITDA
engineering, procurement, and construction management	EPCM

Environmental Assessment	EA
Falcon Drilling Inc.	Falcon
factor of safety	FOS
Final Plan for Permanent Closure	FPPC
Florin Analytical Services	Florin
general and administrative	G&A
global navigation satellite system	GNSS
global positioning system	GPS
greenhouse gas	GHG
gold	Au
Golden Phoenix Minerals	Golden Phoenix
Hard Rock Exploration, Inc.	Hard Rock Exploration
hazardous air pollutant	HAP
Hazardous Materials Permit	HMP
Hazen Research, Inc.	Hazen
heating, ventilation, and air conditioning	HVAC
Herd Management Area	HMA
Homestead Minerals Corp.	Homestead
inductively coupled plasma-optical emission spectrophotometer	ICP-OES
internal rate of return	IRR
International Electrotechnical Committee	IEC
International Organization for Standardization	ISO
inverse distance	ID
inverse distance to the second power	ID^2
Kappes, Cassiday & Associates	KCA
Kevin Haskew PLS	Kevin Haskew
Key Observation Point	KOP
Large Quantity Generator	LQG
life-of-mine	LOM
life-of-mine plan	LOMP
Mary Last Chance	Mary LC
material take-offs	MTOs
mercury	Hg
Micon International Limited	Micon
Migratory Bird Treaty Act	MBTA
Mine Technical Services Ltd.	MTS
Mineral Resources Development Inc.	MRDI
Mineral Ridge Gold Heap Leach Recovery Project	the Project
Mineral Ridge Gold, LLC	MRG
Mineral Ridge Open-pit Mine	the Property
Mineral Ridge Resources, Inc.	MRRI

National Environmental Policy Act	NEPA
National Instrument 43-101	NI 43-101
nearest-neighbor	NN
net operating loss	NOL
net present value	NPV
net smelter return	NSR
consumer price index	CPI
Nevada Department of Wildlife	NDOW
Nevada Division of Environmental Protection	NDEP
Nevada Division of Water Resources	NDWR
Nevada Pollution Discharge elimination System	NPDES
NewFields Companies, LLC	NewFields
north	N
North American Datum	NAD
Novus Engineering Inc.	Novus
operating expenditure estimate	OPEX
ordinary kriging	OK
Piedmont Engineering	Piedmont
Plan of Operations	PoO
Pocock Industrial Inc.	Pocock
potassium amyl xanthate	PAX
potentially acid generating	PAG
Programmatic Agreement	PA
Qualified Person	QP
quality assurance	QA
quality control	QC
real-time kinematic	RTK
Reno/Tahoe International Airport	RNO
reverse circulation	RC
run-of-mine	ROM
silver	Ag
Scorpio Gold (US) Corporation	Scorpio Gold
sodium cyanide	NaCN
solid-liquid separation	SLS
standard reference material	SRM
sonic	SS
sulfur	S
tailings management facility	TMF
Tentative Plan for Permanent Closure	TPPC
Timberline Drilling Inc.	Timberline
US Army Corps of Engineers	USACE
Uniform Building Code	UBC

US Code	USC
Nevada Revised Statutes	NRS
Code of Federal Regulations	CFR
United States of America	US
Universal Transverse Mercator	UTM
Vista Gold Corp.	Vista Gold
Visual Resource Management	VRM
waste rock storage facility	WRSF
Water Pollution Control Permit	WPCP
Waterton Global Value, LP	Waterton
World Geodetic System	WGS
west	W
Zephyr Resources Inc.	Zephyr

1.0 SUMMARY

1.1 INTRODUCTION

This Feasibility Study and National Instrument 43-101 (NI 43-101) Technical Report provides a technical and economic evaluation for the recovery of gold and silver from processed heap leach material and also additional open-pit-able reserves at the mine (the Property) operated by Mineral Ridge Gold, LLC (MRG). The Mineral Ridge Gold Heap Leach Recovery Project (the Project) is derived from the current and ongoing MRG operation, which is an open-pit mining and processing operation located in southwestern Nevada, in the United States of America (US), approximately 35 air miles (56 km) southwest of the town of Tonopah, Nevada. Scorpio Gold (US) Corporation (Scorpio Gold) commissioned Novus Engineering Inc. (Novus) to lead a team of professionals from the following companies to complete this Feasibility Study and Technical Report:

- Novus: Mineral processing and metallurgy, site infrastructure, process capital and operating cost estimation, and report preparation
- Mine Technical Services Ltd. (MTS): Geology, Mineral Resources and Mineral Reserves, mining methods, mining capital and operating cost estimation, economic analysis
- NewFields Companies, LLC (NewFields): Geotechnical evaluation, environmental studies and permitting.

For the purposes of this report, all currency (including metal prices) is expressed in US dollars, unless otherwise noted. Most measurements are expressed in both US imperial units and metric units, unless otherwise noted.

1.2 PROJECT DESCRIPTION

The existing operations at MRG consist of open-pit mining, followed by four-stage crushing, agglomeration, heap leaching, and off-site recovery of gold and silver from loaded carbon. Independent laboratory testing of samples taken from processed material on the heap leach pad show that further extraction of gold and silver is possible by comminution through grinding, and leaching via the carbon-in-leach (CIL) process. Scorpio Gold commissioned Novus and others to update a NI 43-101 Technical Report completed in November 2017 to evaluate the technical and economic viability of reprocessing the heap leach material in conjunction with mining additional Mineral Reserves using open-pit mining methods.

The heap leach material will be mined with the use of earth-moving equipment; it will then be slurried and then pumped to a new processing facility that will consist of two ball mills, a pre-leach thickener, a CIL circuit, and tailings thickener and filtration. Loaded carbon will be shipped off-site for the recovery of gold and silver.

Mineralization within areas immediately adjacent to some of the existing open pits (remnant areas) is anticipated to be mined using conventional open-pit mining methods, crushed in the existing crushing plant, sent to the new processing facilities, and then treated in a similar manner as the heap leach ore.

Since MRG is an existing operation, the existing on-site infrastructure is in good repair and useful for the Project. Compared to other similar-sized projects with no existing infrastructure, only a small amount of capital will be required to upgrade the existing infrastructure, which is a clear benefit to the economics of the Project. To process the run-of-mine (ROM) material, the existing crushing circuit will be modified, and crushed material will feed directly into the grinding circuit. The processing plant design has been updated to accommodate the processing of ROM material.

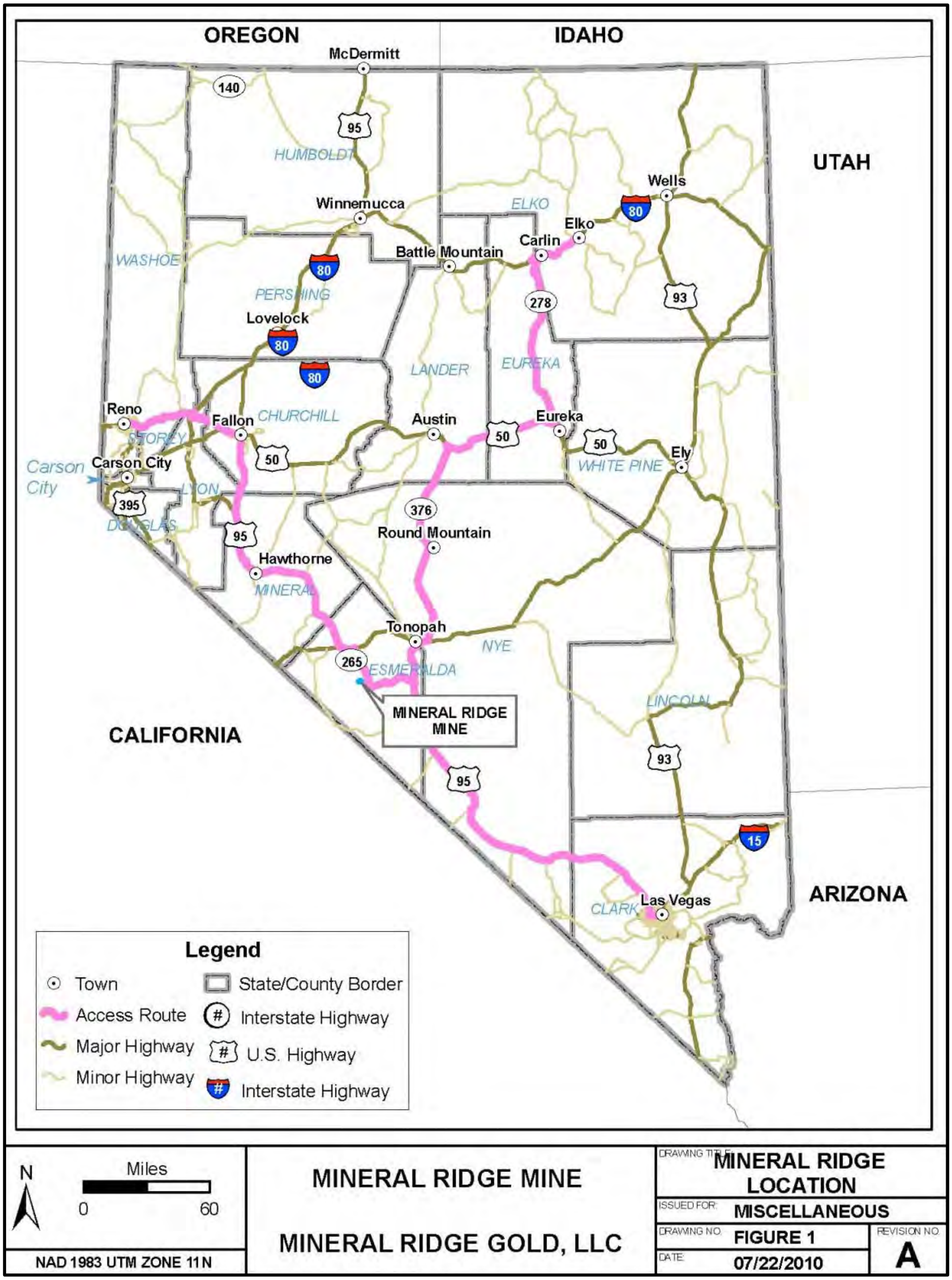
1.3 PROJECT SETTING

The Project is located in southwestern Nevada in the United States of America, approximately 35 air miles (56 km) southwest of the town of Tonopah, at approximately 37º47'54"N, and 117º42'28"W.

The Project is accessed by US Highway 95 from either Las Vegas or Reno, Nevada. The town of Silver Peak can be accessed via paved road from US Highway 95 from Coaldale Junction via State Highway 265. There is also a gravel access road from US Highway 95 between Tonopah and Goldfield, east of Silver Peak. Within the Project area, exploration sites can be accessed using four-wheel drives along steep dirt tracks (Figure 1.1).

The climate is typical of the Great Basin area, with hot, dry summers and cool, dry winters. Mining activities have been conducted year-round, and future remnant area mining and processing is expected to also be undertaken on a year-round basis. Exploration is possible year-round, though snow levels in winter and wet conditions in late autumn and in spring can make travel on unpaved roads difficult.

Figure 1.1: Mineral Ridge Property Location Map



1.4 MINERAL TENURE, SURFACE RIGHTS, WATER RIGHTS, ROYALTIES AND AGREEMENTS

Subject to the paramount interests of the United States the Project is wholly-owned by MRG. Seventy percent of MRG is owned by Scorpio Gold, a wholly-owned subsidiary of Scorpio Gold Corporation; the remaining 30% is held by Elevon, LLC (Elevon), an affiliate of Waterton Global Value, LP (Waterton). Even though Scorpio Gold maintains a 70% interest in MRG, its right to receive cash distributions from the Project is 80%.

The Mineral Ridge Project consists of: 60 patented claims totaling 859.18 ac (347.7 ha); two fee simple and two town lots collectively known as the Fee Lands, totaling 122.65 ac (49.65 ha); two water rights; and 677 unpatented lode claims and one unpatented millsite claim totaling 12,896.88 ac (5,221.40 ha) for a total of 13,878.71 ac (5,618.9 ha). All property is held in the name of MRG.

The Federal Government has given full title of both surface and minerals for all patented claims. Unpatented lode claims or placer claims on public lands are for mineral prospecting, mining or processing operations, and other reasonably related uses.

The authorized Plan of Operations (PoO) area encompasses approximately 2,700 ac. Of this, the Bureau of Land Management (BLM) administers approximately 2,044 ac of public land while approximately 656 ac are private land controlled by Scorpio Gold. No US Forest Service land or state lands are located within the PoO area.

Four royalties are payable, with the rate to be paid depending on the claim.

Scorpio Gold advised that to the extent known, there are no other significant factors and risks other than those discussed in this Feasibility Study and Technical Report that may affect access, title, or right or ability to perform work on the Project.

1.5 GEOLOGY AND MINERALIZATION

Based on current published explanations for the Mineral Ridge mineralization, it appears that a structurally-controlled orogenic model may be the most applicable to the deposits.

The Mineral Ridge gold deposits are located on the northeast flank of the Silver Peak Mountain Range. The major lithological units include the Wyman Formation, Reed Dolomite, and the Deep Springs Formation. The Wyman Formation is underlain and intruded by an Eocene granodiorite and related alaskite, aplite, and pegmatite intrusive rocks. The contact is highly irregular in detail, due in part to structural contortions within the Wyman Formation.

Four main structural corridors have been defined, trending north–northwest, northwest, north–northeast, and northeast. The structural setting is marked by high shearing and flattening strain zones. The strain regime also resulted in extreme grainsize reduction of pegmatites, local development of mylonites, and abundant, locally chaotic, transposition in calcareous rocks. In addition, intense foliation developed in all rock types.

The currently-known mineralized zones occur over an area of approximately 14,000 ft (4,300 m) north–south and 15,000 ft (4,600 m) east–west. Gold deposits in the Project area are hosted within a structural envelope in the lower unit of the Wyman Formation near its contact with the crystalline core rocks. Quartz and felsic intrusive rock boundaries are common in this structural zone. Elongate, braided, ductile shear zones surround the boundaries, with these shear zones being preferentially in-filled by milky quartz veining associated with mineralization and the better gold grades. Internal to the mineralized envelope, other, smaller-scale fault and fold sets occur, which correspond to higher grade mineralized shoots.

Gold is present as native gold and electrum that occurs as irregular shaped intergrowths in quartz associated with interstitial space and small fractures. Gold also occurs as irregularly-shaped intergrowths and as fracture fillings associated with goethite. Locally, minor amounts of galena, graphitic to carbonaceous material, sphalerite and anglesite/cerrusite have been observed, with galena and graphite appearing to be associated with higher-grade gold values. Gold particle size varies from 1 to 2 µm to about 700 µm, but most of the particles are in the 5 to 50 µm size range. Gold to silver ratios are typically in the 2:1 range.

1.6 HISTORY AND EXPLORATION

Gold was initially discovered in 1864–1965. Mechanized open-pit mining feeding a heap leach pad commenced in 1989, and to 2008, operations were variously conducted by Zephyr Resources Inc. (Zephyr), Homestead Minerals Corp. (Homestead), Mineral Ridge Resources, Inc. (MRRI), Vista Gold Corp. (Vista Gold), and Golden Phoenix Minerals (Golden Phoenix). Production in this period is estimated at 1,942,527 t at 0.058 opt for about 60,802 gold oz. Scorpio Gold acquired the property in 2009, and conducted open-pit mining operations feeding a heap leach pad to November, 2017. Scorpio has produced, to end November 2017, 7,368,722 t grading 0.055 opt for 277,653 gold oz.

Exploration activities completed have included: geological mapping; rock chip and geochemical sampling; limited geophysical surveys; sonic, reverse circulation (RC) and core drilling; analytical and metallurgical testwork; and mining and technical studies.

Four targets for further exploration have been identified. Additional exploration potential remains within the Project, with exploration targets defined by a combination of geological mapping and drilling.

1.7 DRILLING AND SAMPLING

Exploration drilling prior to Scorpio Gold's involvement in the Project spans from 1939 to 2008, and totals 310,739 ft (94,713 m) in 1,794 drillholes. Of this total, 554 holes were drilled using diamond core tools for a total of 63,238 ft (19,275 m), and 1,240 holes were drilled by RC methods for a total of 247,501 ft (83,668 m).

Scorpio Gold completed a confirmation drilling campaign at Mineral Ridge in 2009, and development and exploration drilling campaigns from 2010 to 2017. Drilling by Scorpio Gold from 2009 to July 31, 2017 totals 679,059 ft (206,978 m) in 2,118 RC, core and sonic drillholes.

Data collected at Mineral Ridge for RC and core drillholes includes, but is not limited to, collar surveys, downhole surveys, logging (lithology, structure, alteration, and mineralization), and geotechnical information. Sonic drillholes testing the leach pad were not logged. All core has been photographed, and RC chip trays are retained as a record for the RC drillholes.

Sample recovery for RC drillholes was not estimated. Core recovery for the 2014 to 2016 diamond core campaigns was good. Scorpio Gold notes that core recovery was generally greater than 94%. Sonic core recovery was not estimated, but generally observed by Scorpio Gold geologists as very good.

Collar surveys have been conducted either by Scorpio Gold staff or by Kevin Haskew, a professional land surveyor with Advanced Surveying & Professional Services in Tonopah, Nevada. Collars are picked up using global positioning system (GPS) instruments.

Down-hole surveys may not be performed on all drillholes, and survey intervals have varied by program, from a single survey per drill hole in the 2010 drill programs to 50 ft (15 m) intervals in more recent drilling. Recent RC holes are only down-hole surveyed if they are greater than 400 ft in depth. The sonic drillholes in the leach pad area did not have down-hole surveys performed.

RC samples were collected on approximately 5 ft (1.5 m) intervals, from a rotating wet splitter assembly attached to the drill rig. Core sample intervals were collected on 5 ft (1.5 m) intervals within homogeneous zones or on 2 to 7 ft (0.6 to 2.1 m) intervals where dictated by lithology. Sonic drill core from the leach pad drilling was placed in plastic bags in nominal 2.5 ft (0.76 m) intervals.

Bulk density determinations were conducted as part of early mining technical studies in 1995–1996. Checks were made using a metallurgical laboratory in 2010. Scorpio Gold checked values using truck count data. MTS recommended that a 13 ft^3/t ton value for in-situ rock be used for estimation purposes in this Report. If any blocks were encountered that were determined to be fill, then a bulk density value of 17.2 ft^3/t should be applied. These values are consistent with the collected density data and the mining operational observations.

American Assay Laboratories (AAL), located in Reno, Nevada, has been the primary laboratory for a majority of the exploration drill campaigns, and is independent of Scorpio Gold. The laboratory performs both sample preparation and analysis. Most recently, AAL was used as a primary laboratory used in the 2014 and 2017 analytical campaigns. AAL holds International Organization for Standardization (ISO)/International Electrotechnical Committee (IEC) 17025:2005 certification for testing laboratories. During 2014 and 2016, ALS Global (ALS) was used as a primary laboratory. Sample preparation was conducted at ALS Reno, and analysis was completed by ALS Vancouver, Canada. ALS holds ISO/IEC 17025:2005 certification. In 2015 and 2016, Bureau Veritas (BV), in Sparks, Nevada was used as a primary laboratory, and undertook both sample preparation and analysis. The BV laboratory holds ISO/IEC 17025:2005 certification.

At AAL, gold was determined by 30 g fire assay atomic absorption spectroscopy (AAS). AAL typically reassayed samples reporting greater than 2.5 g/t gold by fire assay gravimetric finish on a separate 30 g pulp split. The analytical method requested from ALS was Au-AA123, whereby gold was determined by 30 g fire assay AAS. A gravimetric method was used for samples returning greater than 0.08 opt gold for non-pulp samples. The BV analytical method was a 30 g fire assay for gold.

Florin Analytical Services (Florin) was the laboratory used for the analysis of the leach pad sonic drilling completed in 2017. Florin is the Kappes, Cassiday & Associates (KCA) analytical arm in Reno, Nevada and participates in round-robin analyses with several professional organizations. Florin is not certified by an independent standards organization.

Gold was analyzed at Florin via a one assay ton fire assay using AAS finish, silver was assayed using four-acid digestion and an AAS finish.

The Scorpio Gold onsite assay laboratory is owned, operated, and staffed by Scorpio Gold, and is not certified by an independent standards organization. Scorpio Gold assayed some exploration RC drill samples at the onsite Scorpio Gold assay facility, if there was sufficient capacity given the primary role of the laboratory was for run-of-mine assaying. If the analytical results showed anomalous gold values, the anomalous intervals were submitted to an external laboratory.

Gold was assayed at the mine laboratory by fire assay gravimetric finish on a one assay ton sub-sample. Samples reporting greater than 0.01 opt, plus samples representing the preceding and following 10 ft (3 m) of drilling, were subsequently sent to an external laboratory (typically AAL) for gold assay. The external laboratory gold assay results from these samples replace the Scorpio Gold assays in the Project database used for Mineral Resource and Mineral Reserve estimation. Silver assays were not routinely performed, and silver is not estimated for the remnant areas.

Scorpio Gold employed a quality assurance (QA)/quality control (QC) program of certified reference materials (CRMs), blanks, and field duplicates inserted in the Project sample stream at the rate of approximately one control for every 20 Project samples. The same QA/QC program was generally employed for all samples submitted to each laboratory and the Scorpio Gold on-site assay laboratory.

1.8 DATA VERIFICATION

All data that are stored in the Project database are verified by Scorpio Gold staff via software verification before final entry into the database. These routines are aimed at preventing entry of extraneous data such as incorrect lithology codes or overlapping assay intervals into the database. In addition, geological staff check for typical data entry errors, identify discrepancies, and correct the data where necessary.

Third-party audits were performed in support of mining technical studies by Mineral Resource Development Inc. (1994–1995), Behre Dolbear (1996), Pincock, Allen, and Holt (1996), Micon International Limited (Micon) (1997), and Behre Dolbear (2003). This work supported that the data collected and reviewed by the third-party auditors were acceptable to support Mineral Resource and Mineral Reserve estimation at the time of the review.

Third-party reviews were performed in support of compilation of NI 43-101 technical reports by Micon (2009, 2010), AMEC (2012), and Telesto (2013, 2014). No significant issues that would affect Mineral Resource and Mineral Reserve estimation or mine planning were identified.

MTS reviewed the sonic drill program for the leach pad, and drilling that would be used to support estimation in the remnant areas. No material issues that would affect Mineral Resource and Mineral Reserve estimation or mine planning were identified.

1.9 MINERAL RESOURCES

1.9.1 LEACH PAD

The Mineral Resources comprise material contained entirely within the heap leach pad as of June 29, 2017. The entire leach pad forms the basis for the mineralized volume. Sample data consist of 34 drillholes identified as HP17001 through to HP17034, and 375 samples at 10 ft length intervals, plus a residual length for the final sample of each hole. There were no values that were considered to be outliers, and neither was any outlier restriction considered necessary. Samples were initially composited into both 10 ft length composites and 10 ft bench composites.

The leach pad was split into seven areas which correspond to the historical/individual leach pad cells. The pad was further split vertically to approximate the elevation of the pad at the time of the change of ownership from Golden Phoenix to Scorpio Gold. An elevation of 7,209 ft was used as a vertical boundary.

A global tonnage factor of 17.61 ft^3/t was used to calculate tonnage.

Ordinary kriging (OK) was performed as the main gold estimation methodology with inverse distance (ID), inverse distance weighting to the second power (ID^2), and nearest-neighbor (NN) estimates serving as validation models. Silver estimates were run using a single ID model and an NN estimate as a validation model. The resource block model was validated by means of visual inspection, checks of composite versus model statistics and swath plots. No areas of significant bias were noted.

Blocks were considered to have reasonable prospects of economic extraction considering the gold grade only. A gold price of $1,216/oz was used, this represents the three-year trailing average price through June 2017. The process recovery of 95% for gold is that obtained by KCA testwork using reasonable mill-scenario. The processing cost was provided by Scorpio Gold using actual Mineral Ridge Mine labour costs, and conceptual mill processing costs estimated by Novus for a 4,000 t/d mill operation.

1.9.2 REMNANT AREAS

Remnant areas were identified at the Brodie, Oromonte, Drinkwater high wall (Drinkwater HW), Mary and Last Chance (Mary LC), Bunkhouse, and Custer areas. The drill hole database consists of drill data from drilling campaigns completed between 2008–2017, comprising 2,011 drillholes and 122,611 sample intervals.

Existing MineSight block models produced by Scorpio Gold staff were reviewed, but the modelling process and detailed supporting documentation were lacking, and it was, therefore, decided to re-model the estimates using a similar estimation strategy to that used by Scorpio Gold. MTS produced a new estimate using Isatis software for the same areas that had originally been modelled by Scorpio Gold.

MTS used the existing grade shells, extracted from the Scorpio Gold MineSight project, as the basis for the high-grade zones which correspond to the mineralized lenses. In the case of the Drinkwater HW area, a new set of grade shells was provided by Scorpio Gold which took into account recent 2017 drilling data. These grade shells were used to extract a set of high-grade composites which honored the grade shell intersections. Similarly, a set of low-grade composites were derived for the areas outside of the grade shells.

A single bulk density factor of 13 ft^3/t was assigned to all blocks that represent in-situ rock and was used in the Mineral Resource estimates. Blocks coded as fill were assigned a bulk density 17.2 ft^3/t. Blocks coded with a percentage volume inside an underground working used a tonnage factor of zero applied to that portion of the block.

A gold capping value of 1.0 opt was selected as the appropriate capping value. This represents 33 assays that were capped to a maximum value of 1.0 opt for the grade estimation process. Of these 33 assays, only 16 are contained within the grade shells. An outlier restriction was used to restrict the range of influence of the high-grade gold values within the ordinary kriging grade block model to a threshold value of 1.0 opt gold and a distance of 30 ft.

Samples were composited to 10 ft intervals using the grade shells as the controlling boundary. Based on the common direction of dip and strike of the mineralized areas, the grade shells were grouped into three zones comprising Custer; Brodie and Oromonte; and Drinkwater HW, Mary LC, and Bunkhouse.

Block selections were created for blocks either contained within the grade shell wireframes or for blocks that were on the edge of the wireframes. Block selection was based on a proportional selection of 1%, i.e., if as little as 1% of the block intersected a wireframe, then the block would be estimated. An estimate for the high-grade portion of the block (using the high-grade composites within the grade shell), as well as a low-grade estimate for the same block using the low-grade composites (those composites outside of the grade shell), was then run. A final "Au diluted" grade was calculated for these fringe blocks based on the formula:

Au Diluted = Au high-grade estimate x Proportion of block within the wireframe + Au low-grade estimate x Proportion of block outside the wireframe.

A three-pass strategy was used for the main OK estimate and a single pass strategy for the ID^2 and NN validation model estimates. The resource block model was validated by means of visual inspection, checks of composite versus model statistics and swath plots. No areas of significant bias were noted.

Blocks were classified according to the estimation pass, with the first pass corresponding to Measured Mineral Resources, and the second and third passes corresponding to Indicated and Inferred Mineral Resource respectively.

The heap leach pad material was considered to have reasonable prospects for economic extraction considering the gold grade only, and under the assumption that the pad would be processed in its entirety. A gold price of $1,216/oz was used, this represents the three-year trailing average price through June 2017. The process recovery of 95% for gold is that obtained by KCA testwork using reasonable mill-scenarios. The processing cost was provided by Scorpio Gold using actual MRG labor costs, and conceptual mill processing costs estimated by Novus for a 4,000 t/d mill operation.

The remnant areas are considered to be amenable to open-pit mining. Reasonable prospects for eventual economic extraction for these areas were derived from material within a conceptual Whittle pit shell based on the following parameter assumptions:

- Gold price $1,350/oz;
- Ore haulage cost $1.86/t;
- Processing costs $7.60/t;
- General and administrative (G&A) $2.90/t;
- Metallurgical recoveries 95%;
- Refining and smelting costs $28.39/oz.

Based on the above criteria, a block-cut-off grade of 0.01 opt gold was used for blocks which would be considered for Mineral Resource estimation purposes. No contribution from silver is used in the assessment of reasonable prospects for eventual economic extraction for the remnant areas due to the limited number of silver assays available.

A sensitivity analysis was performed for various gold prices and cut-off grades. Metal price sensitivities were tested from $1,080–$1,690, which included the gold price assumption used in the leach pad considerations of reasonable prospects for eventual economic extraction. Cut-off grade sensitivities tested ranged from 0.008 to 0.012 opt gold. As the resource estimate is already contained within a high-grade grade shell, these parameters had a very limited influence on the resulting Mineral Resources.

1.9.3 MINERAL RESOURCE STATEMENT

The Mineral Resource estimate for the material on the heap leach pad that is directly amenable to processing is provided in Table 1.1. No cut-off criteria have been applied since there will be no selectivity of areas to be processed and the leach pad will be processed in its entirety. The Mineral Resources are reported inclusive of Mineral Reserves and have an effective date of 29 June 2017. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability. The Qualified Person (QP) for the estimate is Mr. Ian Crundwell, P.Geo.

The Mineral Resource estimate for the remnant material is provided in Table 1.2 (Measured and Indicated) and Table 1.3 (Inferred). The Mineral Resources are reported inclusive of Mineral Reserves and have an effective date of 30 November 2017. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability. The Qualified Person for the estimate is Mr. Ian Crundwell, P.Geo.

Table 1.1: Mineral Resource Estimate for Mineralization Contained within the Heap Leach Pad

Mineral Resource Classification	Tons ('000)	Gold (opt)	Silver (opt)	Contained Gold ('000 oz)	Contained Silver ('000 oz)
Measured	2,895	0.017	0.016	48.5	46.4
Indicated	4,220	0.017	0.018	73.2	74.1
Measured & Indicated	**7,117**	**0.017**	**0.017**	**121.7**	**120.4**
Inferred	76	0.016	0.027	1.2	2.0

Notes: The effective date of the Mineral Resource estimate is June 29, 2017. The QP for the estimate is Mr. Ian Crundwell, P.Geo.
Mineral Resources are quoted inclusive of Mineral Reserves. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
Mineral Resources are contained within the Mineral Ridge leach pad facility with the following assumptions: a long-term gold price of $1,216/oz; assumed process costs of $11/t; and metallurgical recovery for gold of 91%.
Silver was not used in the consideration of reasonable prospects for eventual economic extraction. Silver recoveries from heap leach pad material are projected to be 24%.
Rounding may result in apparent differences when summing tons, grade and contained metal content.
Tonnage and grade measurements are in Imperial units. Grades are reported in ounces per ton.

Table 1.2: Measured and Indicated Mineral Resource Tabulation for Remnant Areas

Area	Classification	Tons ('000)	Gold Grade (opt)	Contained Gold ('000 oz)
Brodie	Measured	455.7	0.063	28.6
	Indicated	237.9	0.056	13.4
	Subtotal Measured and Indicated	**693.6**	**0.060**	**41.9**
Custer	Measured	147.8	0.083	12.3
	Indicated	75.4	0.088	6.6
	Subtotal Measured and Indicated	**223.2**	**0.085**	**18.9**
Drinkwater HW	Measured	527.3	0.046	24.3
	Indicated	209.2	0.049	10.3
	Subtotal Measured and Indicated	**736.6**	**0.047**	**34.6**
Mary LC & Bunkhouse	Measured	721.4	0.072	51.7
	Indicated	403.3	0.074	29.8
	Subtotal Measured and Indicated	**1,124.7**	**0.072**	**81.5**
Oromonte	Measured	235.8	0.162	38.3
	Indicated	169.0	0.074	12.6
	Subtotal Measured and Indicated	**404.8**	**0.126**	**50.9**
Combined	Measured	2,088.0	0.074	155.2
	Indicated	1,094.8	0.066	72.6
	Total Measured and Indicated	**3,182.8**	**0.072**	**227.8**

Note: The effective date of the Mineral Resource estimate is November 30, 2017. The QP for the estimate is Mr. Ian Crundwell, P.Geo.
Mineral Resources are reported inclusive of Mineral Reserves at a gold cut-off grade of 0.01 opt. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
Mineral Resources are constrained to the area within the grade-shell wireframes. The areas outside of these grade shells are assumed to be at zero grade.
These Mineral Resource are considered to be amenable to open-pit mining. Conceptual Whittle pit shells used the following assumptions: a long-term gold price of $1,350/oz; assumed combined operating costs of $12.36/t (mining, process, general and administrative); metallurgical recovery for gold of 95%, and variable pit slope angles that ranged from 38–42º.
Rounding may result in apparent differences between when summing tons, grade and contained metal content.
Tonnage and grade measurements are in Imperial units. Grades are reported in ounces per ton.

Table 1.3: Inferred Mineral Resource Tabulation for Remnant Areas

Area	Classification	Tons ('000)	Gold Grade (opt)	Contained Gold ('000 oz)
Brodie	Inferred	2.4	0.034	0.08
Custer	Inferred	--	--	--
Drinkwater HW	Inferred	180.1	0.059	10.61
Mary LC & Bunkhouse	Inferred	0.1	0.061	0.01
Oromonte	Inferred	0.4	0.092	0.03
Combined	**Total Inferred**	**182.9**	**0.059**	**10.73**

Note: The effective date of the Mineral Resource estimate is November 30, 2017. The QP for the estimate is Mr. Ian Crundwell, P.Geo.
Mineral Resources are reported inclusive of Mineral Reserves at a gold cut-off grade of 0.01 opt. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
Mineral Resources are constrained to the area within the grade-shell wireframes. The areas outside of these grade shells are assumed to be at zero grade.
These Mineral Resource are considered to be amenable to open-pit mining. Conceptual Whittle pit shells used the following assumptions: a long-term gold price of $1,350/oz; assumed combined operating costs of $12.36/t (mining, process, general and administrative); metallurgical recovery for gold of 95%, and variable pit slope angles that ranged from 38–42º.
Rounding may result in apparent differences between when summing tons, grade and contained metal content.
Tonnage and grade measurements are in Imperial units. Grades are reported in ounces per ton.

Factors that may affect the Mineral Resources estimated for the leach pad include:

- Since the sonic drills were not permitted to penetrate the leach pad membrane, it was not possible to sample right up to the base of the leach pad. The majority of this material at the extreme edges of the resource model was classified as Inferred Mineral Resources. The true grade of the leached material at the extreme edges of the volume has some uncertainty;
- Local estimates of the leach pad grade have some uncertainty due to the repeatability of certain samples, and therefore selective mining (processing) of the pad should not be attempted using the current grade block model.

Factors that may affect the Mineral Resources estimated for the remnant areas include:

- Changes to geological or grade interpretations, including grade shell considerations;
- Changes to the modelling method or approach;
- Changes to the input parameters to the conceptual Whittle shells used to constrain the Mineral Resources;
- Changes to geotechnical assumptions, in particular, pit slope angles;
- Changes to metallurgical recovery assumptions;
- Changes to any of the social, political, economic, permitting, and environmental assumptions considered when evaluating reasonable prospects for eventual economic extraction.

Based on mine production data provided by Scorpio Gold, a total of 115,000 t grading 0.045 opt gold was placed on the leach pad between July and November 2017. This material represents upside potential for the leach pad retreatment plan.

Only gold was considered when evaluating reasonable prospects for eventual economic extraction in the remnant areas, as there were insufficient silver assays to support estimation. Silver has historically been produced in doré from the Mineral Ridge deposits, and represents a minor upside for the Project.

1.10 MINERAL RESERVES

Conversion from Mineral Resources to Mineral Reserves is relatively straightforward. Given the nature of the reclaimed material on the heap leach pad and the mining method, the assumption is that all material will be mined and processed, less any material left in place due to permit restrictions and facility location. Allowance has been made for facility location to exclude 260,000 t of material, which must remain in place, according to the heap material mining and tailings placement design completed by NewFields. An overall metallurgical recover of 91% for gold and 24% silver was assumed.

Open-pit mine designs have been completed on the Brodie, Custer, Drinkwater HW, Mary LC, Bunkhouse and Oromonte deposits. All Inferred material has been classified as waste and scheduled to the appropriate waste rock storage facility (WRSF). The Mineral Reserves are reported using a 0.010 opt gold cutoff inside designed pits.

Using the results of past studies and current highwall conditions, the pit designs for reporting the Mineral Reserves were completed at a 47º inter ramp slope angle, with 20 ft catch benches every 40 ft. This results in a bench face angle of 66.6º. The use of preshear drillholes along the highwall has been added to the mine plan so this will also help with preserving the highwall integrity.

Based on reconciliation reports provided by Scorpio Gold, no ore loss has been included in the Mineral Reserve estimate as the reports show a consistent result of the mine producing more gold ounces than is predicted by the resource models.

The Mineral Resources for the remnant areas were evaluated using a Lerchs–Grossmann pit optimizer to generate optimized pit shells. Pit shells were generated based on varying metal prices with a base gold price of $1,300/oz. A total of 51 pit shells were generated to determine optimal break points in the pit phases and the final pit phase for each deposit. An overall average metallurgical gold recovery of 93% was assumed.

1.10.1 MINERAL RESERVE STATEMENT

The Mineral Reserve estimates were prepared with reference to the 2014 Canadian Institute of Mining, Metallurgy and Petroleum (CIM) Definition Standards (2014 CIM Definition Standards) and the 2003 CIM Best Practice Guidelines. The Qualified Person for the estimate is Mr. Jeffery Choquette P.E.

The Mineral Reserve estimate for the material on the heap leach pad is provided in Table 1.4. The estimate has an effective date of June 29, 2017.

Proven and Probable Mineral Reserves for the remnant area material are reported within the final pit design used for the mine production schedule and are shown in Table 1.5. The estimate has an effective date of November 30, 2017.

Table 1.4: Mineral Reserve Estimate for the Heap Leach Pad

Mineral Reserve Classification	Tons ('000)	Gold (opt)	Silver (opt)	Contained Gold ('000 oz)	Contained Silver ('000 oz)
Proven	2,895	0.017	0.016	48.5	46.4
Probable	4,220	0.017	0.018	73.2	74.1
Less Material Remaining in Place due to facility designs	(260)	0.017	0.017	(4.5)	(4.6)
Total Proven & Probable	**6,855**	**0.017**	**0.017**	**117.2**	**115.9**

Notes: The Mineral Reserves have an effective date of June 29, 2017. The QP for the estimate is Mr. Jeffery Choquette P.E.

Mineral Reserves are contained within the Project leach pad facility with the following assumptions: long-term gold price of $1,300/oz; assumed total ore process costs of $10.59/t; metallurgical recovery for gold of 91%, and 24% for silver, refining and smelting cost of $28.39/oz of gold. Allowance has been made for the facility location which excludes 260,000 t; this material must remain in-place, based on the to the heap material mining and tailings placement design.

Rounding as required by reporting guidelines may result in summation differences.

Table 1.5: Mineral Reserve Estimate for the Remnant Areas

Pit Area	Mineral Reserve Classification	Tons ('000)	Gold (opt)	Contained Gold ('000 oz)
Brodie	Proven	51	0.042	2.1
	Probable	12	0.027	0.3
	Subtotal Proven and Probable	**63**	**0.039**	**2.5**
Custer	Proven	314	0.047	14.8
	Probable	144	0.032	4.6
	Subtotal Proven and Probable	**459**	**0.042**	**19.4**
Drinkwater	Proven	836	0.038	32.1
	Probable	352	0.033	11.7
	Subtotal Proven and Probable	**1,189**	**0.037**	**43.7**
Mary LC	Proven	470	0.035	16.3
	Probable	276	0.035	9.7
	Subtotal Proven and Probable	**746**	**0.035**	**26.0**
Bunkhouse	Proven	239	0.047	11.1
	Probable	4	0.021	0.1
	Subtotal Proven and Probable	**243**	**0.046**	**11.2**
Oromonte	Proven	563	0.071	39.8
	Probable	449	0.030	13.7
	Subtotal Proven and Probable	**1,012**	**0.053**	**53.5**
Total Combined	Proven	2,474	0.047	116.2
	Probable	1,239	0.032	40.1
	Total Proven and Probable	**3,713**	**0.042**	**156.3**

Notes: The Mineral Reserves have an effective date of November 30, 2017. The Qualified Person for the estimate is Mr. Jeffery Choquette P.E.
Mineral Reserves are reported within the pit designs at a 0.01 opt gold cut-off grade. Pit designs incorporate the following considerations: base case gold price of $1,300/oz; pit slope angles that range from 38–47º; average life-of-mine metallurgical recovery assumption of 93%; crushing costs of $1.81/t, process cost of $5.79/t, general and administrative and tax costs of $2.90/t; and average mining costs of $1.42/t mined.
Rounding as required by reporting guidelines may result in summation differences.

1.11 MINERAL PROCESSING

The proposed processing plant will be a conventional design, and will re-process gold heap leach residual material at a rate of 4,000 t/d with an equipment availability of 92% (365 d/a). The process flowsheet developed for the heap leach material is a combination of conventional comminution using ball mills, and CIL cyanidation to recover gold and silver. The process plant will produce a gold and silver loaded-activated carbon product from the CIL circuit. The estimated gold and silver recoveries in the CIL circuit from the heap material are 91% and 24%, respectively. The loaded carbon will be shipped off-site to a refinery to recover the gold and silver. Refinery recovery is estimated at 99.4%.

The process plant will consist of:

- reclaiming area including mixing and holding tanks
- grinding circuit consisting of two parallel ball mills
- a pre-leach thickener
- CIL cyanidation
- tailings thickening and filtration.

The process flowsheet was developed based on parameters established from test work conducted by KCA mainly from 2014 through 2017, as well as Novus' engineering experience. The size selection of the grinding mills was based on the amenability of the reclaimed ore to grinding determined through test programs performed by laboratories. The CIL tank sizing was based on leaching times determined by test work and using scale-up factors and experience.

Test programs evaluated several options for treating the reclaimed MRG heap leach material. Samples showed regular to poor responses to conventional flotation. The CIL process was chosen as the best available alternative due to higher gold recoveries. As part of the study, several areas for optimization and simplification were identified in the process plant design, which reduced operational and capital requirements.

The major criteria used in the plant design to process 4,000 t/d equivalent to 1,460,000 t/a is outlined in Table 1.6.

Table 1.6: Major Process Design Criteria

Criteria	Unit	Heap Leach	ROM
Daily Processing Rate	t/d	4,000	
Operating Days per Year	d/a	365	
Operating Schedule	shifts/d	2	
	h/shift	12	
Mill Feed Grade – Average	opt	0.0171	0.04
Metal Recovery - CIL	% gold	91	93
Metal Recovery - CIL	% silver	24	38
Refining Recovery - Au & Ag	%	99.4	
Feed Particle Size, 80% Passing	in	0.14	0.39
Grinding/CIL Availability	%	92	
Milling and CIL Process Rate	t/h	181.2	
Ball Mill Grinding Particle Size, 80% Passing	mesh	200	
Ball Mill Circulating Load	%	300	
Bond Ball Mill Work Index	kWh/t	15.3	
CIL Slurry Feed Density	%	45	
CIL Residence Time	h	36	
Final Tailings Cake Moisture	%	15	

Note: Au = gold; Ag = silver

At the beginning of the operation, the grinding plant will receive material from the heap leaching pads. This material will be reclaimed, scalped to remove trash, and mixed with water to form slurry of approximately 55% solids. The slurry will then be transferred to a holding tank and pumped to the ball mill pump box.

The ROM (remnant) material will be delivered to the crushing plant by front-end loader, to a grizzly which will control the maximum rock size reporting to the jaw crusher to 24 in. The existing rock breaker will break apart any oversize material reporting from the mining operation.

The grinding circuit design will include two ball mills operating in parallel, with a shared pump box for both mills and dedicated cyclone clusters for each ball mill. The cyclone overflow will have a design 80% passing size of 200 mesh (74 µm), and will feed a pre-leach linear trash screen. The cyclone underflow will return to the two ball mills. The mills will be designed to process 2,000 t/d each. The linear trash screen undersize will report by gravity to the pre-leach high-rate thickener, where the slurry will be flocculated and thickened to a density of 60% solids. The thickener overflow will be recycled to the process water pond for reuse and the thickener underflow reports to the leaching circuit.

The leaching circuit will consist of four tanks operating in series with a total residence time of 36 hours. The slurry density will be adjusted by recycling the overflow from the tailings thickener for the CIL circuit to operate at 45% solids. It is expected that the slurry will arrive at the CIL circuit at a pH of 10.5; adjustments will be made to maintain the required pH level, as necessary. Slurry will flow by gravity to each tank. Dissolved gold and silver in the slurry will be adsorbed onto activated carbon and discharged from the circuit at a designed rate of two tons per day. Every 14 days bagged loaded carbon will be transported to an external facility for final gold and silver recovery, and carbon regeneration and recycling. The current operation at MRG is a heap-leach operation, which uses reactivated carbon to adsorb gold from the pregnant leach solution. The existing activated carbon handling infrastructure, which includes carbon receiving, attritioning, sizing, sampling, and loading is suitable for the new process.

The CIL tailings will pass through a carbon safety screen to capture fugitive loaded carbon, and will report to a tailings thickener for cyanide solution recovery. The tailings thickener overflow will be recycled to the leach feed while the underflow will be sent to the tailings filters, where additional cyanide solution will be recovered. The filter cake at a designed moisture of 15% will be transported by existing grasshopper conveyors to the tailings pad. The tailings filter cake will be placed on the lined heap leach pad.

1.12 MINING METHODS

Production of mineralized material from the heap and pit area is planned at a nominal rate of 4,000 t/d. Due to the timing of building a new pad storage area for the heap leach material, the heap leach material has to be processed before the mining of the pit areas to allow room for the additional material from the open pits. Mining and processing of the heap ore will take a little over five years and mining and processing of the open-pit ores will take three years for a total projected operating mine life of seven-and-one-half years.

Mining activities for the heap leach pad portion of this Feasibility Study and Technical Report do not require traditional open-pit or underground mining methods. No drilling or blasting is anticipated as the reclaim leach material is unconsolidated. A hopper and solution mixing system will be constructed on the leach pad in order to pump material directly from the leach pad to the mill. After materials are processed through the milling operation, the tailings leaving the mill will be placed back on the pad using conveyor stackers. Given this method of mining, there will be no opportunity to selectively mine the reclaim material. Some of the tailings will be mined with the leached material, and about 260,000 t of reclaim material will remain on the pad because it is impractical to remove it. This material is situated in the bottom and center of the existing heap.

The Oromonte pit was designed in two phases, due to the large strip that would be required for this area. All other areas were designed in one pit phase, but the Custer, Mary LC and Drinkwater HW areas were designed with two different pits. The Custer pit has a small satellite pit referred to as the South Custer pit, the Mary LC pit has a small satellite pit referred to as the West Mary pit, and the Drinkwater HW pit has a small satellite pit referred to as the South Drinkwater pit.

The method of material transport for the remnant areas will be open-pit mining using two to three 16-yd^3 front-end loaders as the main loading units; a 6.6-yd^3 excavator will be used for sorting out narrow ore zones. The open-pit mineralized material will be loaded into 100-t haul trucks and transported to the crushing site next to the mill. Waste material will be transported to a designated WRSF for each pit. Open-pit mining in the past has been conducted using contract mining; this study is based on Owner mining and assumes a new production fleet will be purchased for all future mining activity. Mining is currently planned on 20 ft levels, but areas that contain ore zones are designed to be mined in approximately 10 ft levels.

The current open pits on site are all dry and do not require any dewatering of the working areas. Considerations to minimize hazards when mining through historic underground workings (voids) were included in the mine design.

The WRSFs were designed in order to minimize surface disturbance and backfill mined-out pits where future mining is not anticipated. There is sufficient capacity between the WRSFs and pits to store the projected waste tonnage.

The pre-production requirements at the Project are minimal given the presence of mineable mineralization near the bedrock surface. The majority of the haul roads are in place from past mining operations, and only the Drinkwater, Custer and Oromonte phase 2 pits will require construction of access roads to the top of each area to commence mining.

Mining is planned on a seven day per week schedule, with two 12 hour shifts per day. During the mining of pit ore, the peak mineralized material and waste production is estimated at 79,000 t/d and an average production rate of 52,400 t/d. An ore stockpile that reaches a peak capacity of 450,000 t is planned near the crusher and also on the past contractors lay down area. The stockpile will be used to supplement mill feed during high stripping periods of the pit phases. The average life of mine stripping ratio is estimated to be 13.6:1 for the open pit remnant material, and 4.79:1 if the heap ore is included in the calculation.

The amount of equipment required to meet the scheduled tonnages is calculated based on the mine schedule, equipment availabilities, usages and haul and loading times for the equipment. The mining of the heap leach pad will require a dozer, loader and scraper. The remnant area open pit operation will require, at peak, one excavator, three loaders, three production drills, a preshear drill, and 10 haul trucks. Support equipment will include dozers, a road grader, water truck, lube vehicle, maintenance service vehicle equipped with a mobile crane, and lighting plants.

For years one through six the mine manpower for the heap leach mining is estimated to be eight people, four crews of two people per crew. At peak, the open pit mining operation will require 100 persons.

1.13 INFRASTRUCTURE

1.13.1 MINING

No new roads are envisioned to support the Project, except for a temporary access road that will be required during the mining of the Bunkhouse pit.

An ore storage stockpile that reaches a capacity of 450,000 t is planned on the open pit mining schedule. Approximately 150,000 t of this material will be stored near the crusher and the remaining tons will be stored in the flat area previously used as a laydown by the mining contractor.

1.13.2 PROCESS

The proposed Project is derived from the current and ongoing MRG open-pit mining project (Figure 1.2). Accordingly, a significant portion of the infrastructure required to accommodate the proposed Project is already in-place an in good working condition. A general list of infrastructure, including existing items, is provided below.

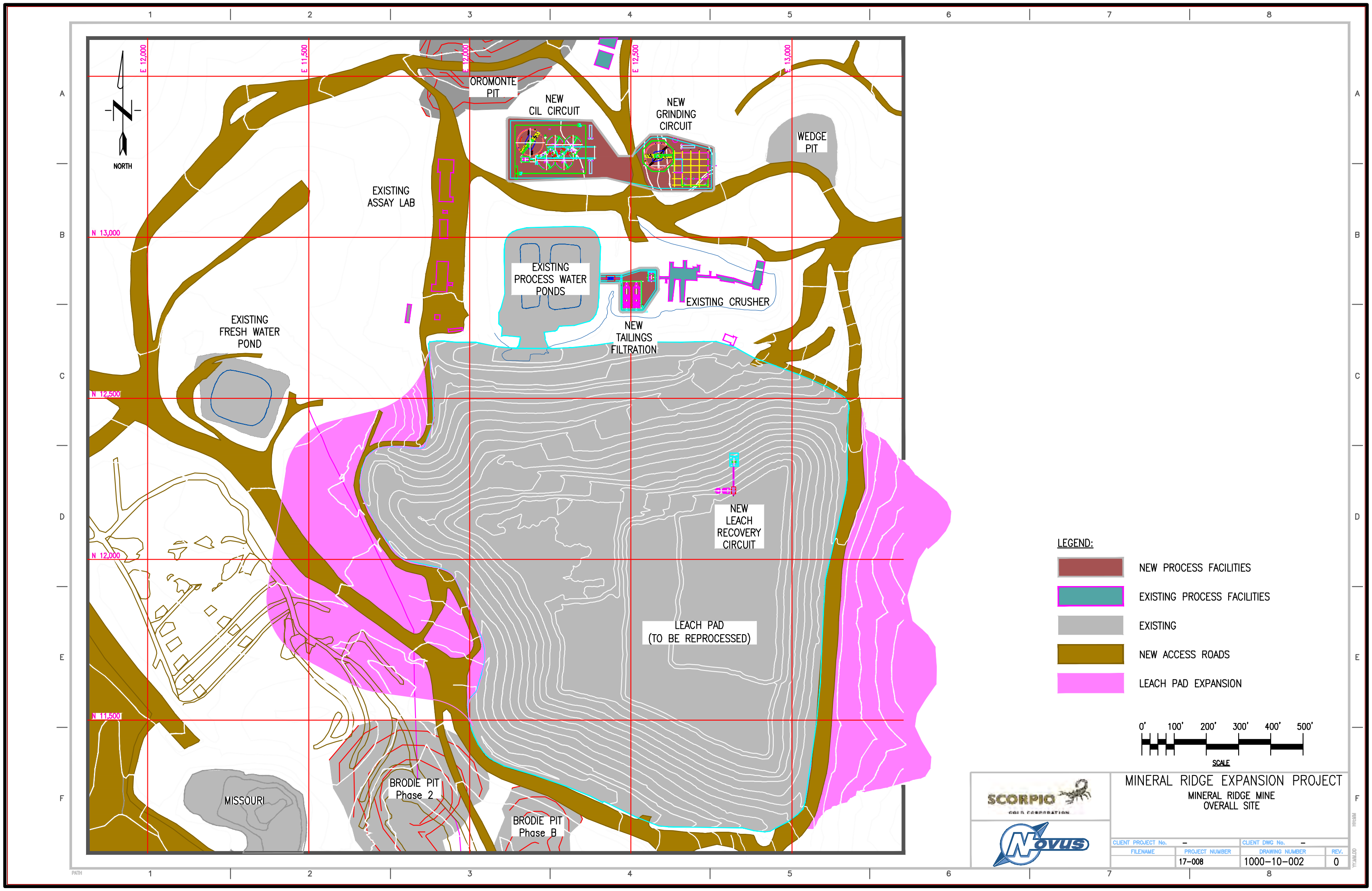
- **Substation and power distribution**: additional distribution costs were considered in the capital expenditure estimate (CAPEX). The main substation was found suitable to support the Project;
- **Maintenance facilities**: no expansion necessary;
- **Fuel storage**: suitable as is;
- **Roads**: suitable as is;
- **Water Supply and Management**: suitable as is;
- **Assay Laboratory**: suitable as is;

- **Offices**: suitable as is;
- **Lined pad for tailings storage**: expansion required and included in the CAPEX;
- **Carbon-handling facility**: suitable as is.

1.13.3 LEACH PAD LINER

The process tailings will be filtered and placed on the lined heap-leach pad, which will be expanded to allow for heap-leach material mining and tailings placement.

Figure 1.2: Mineral Ridge Site Layout



1.14 MARKETS AND CONTRACTS

Gold and silver doré can be readily sold on numerous markets throughout the world and its market price can be ascertained on demand.

Scorpio Gold entered into a life-of-mine (LOM) gold and silver supply agreement (the Supply Agreement) with Waterton in May 2011 to sell refined gold and silver. Under the terms of the Supply Agreement, Scorpio Gold committed to sell the gold and silver produced from the Mineral Ridge mine to Waterton at a price equal to 99.5% of the lesser of the 30-day trailing average price or the prior day settlement price, less $0.50/oz of gold and $0.01/oz of silver. The Supply Agreement will apply to all gold produced from the retreatment of the heap leach pad and the remnant areas. Scorpio Gold considers that the Supply Agreement is generally in line with industry norms.

While Waterton is required to purchase the doré, should it fail to, then Scorpio Gold could sell the Project production to gold bullion dealers or smelters on a competitive basis at spot prices. This approach is typical of, and consistent with, standard industry practices.

The gold price used in the financial model is based on consensus pricing of US$1,250/oz, derived from a study performed in 2017 by MPA Morrison Park Advisors Inc. on behalf of Scorpio Gold.

The silver price is based on consensus pricing from a June 2017 (Canadian Imperial Bank of Commerce (CIBC) market forecast study. The QP has reviewed these studies and methodologies, and considers them to be reasonable based on his professional experience.

1.15 ECONOMIC ANALYSIS

The results of the economic analyses discussed in this section represent forward-looking information as defined under Canadian securities law. The results depend on inputs that 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. Information that is forward-looking includes:

- Mineral Resource and Mineral Reserve estimates;
- Assumed commodity prices and exchange rates;
- Proposed mine production plan;
- Projected mining and process recovery rates;
- Assumptions as to mining dilution;
- Sustaining costs and proposed operating costs;

- Assumptions as to closure costs and closure requirements;
- Assumptions as to environmental, permitting and social risks.

Additional risks to the forward-looking information include:

- Changes to costs of production from what is assumed;
- Unrecognized environmental risks;
- Unanticipated reclamation expenses;
- Unexpected variations in quantity of mineralized material, grade or recovery rates;
- Geotechnical or hydrogeological considerations during mining being different from what was assumed;
- Failure of plant, equipment or processes to operate as anticipated;
- Changes to assumptions as to salvage values;
- Ability to maintain the social license to operate;
- Accidents, labor disputes and other risks of the mining industry;
- Changes to interest rates;
- Changes to tax rates, including federal, state and county income and property tax rates.

The economic viability of the project has been evaluated using constant dollar, unleveraged (no financing), after-tax discounted cash flow (DCF) methodology. This valuation method requires projecting material balances estimated from operations and calculating resulting economics. Economic value is calculated from sales of metal, plus net equipment salvage value and bond collateral less cash outflows such as operating costs, management fees, capital costs, working capital changes, any applicable taxes and reclamation costs. Resulting annual cash flows are used to calculate the net present value (NPV) and internal rate of return (IRR) of the Project.

The economic evaluation is based on the estimated Mineral Reserves on the heap leach pad as of June 29, 2017, plus the Mineral Reserves estimated in remnant areas that can be mined using open pit methods. Since the Project entails use of infrastructure active up to, and including, the time of capital investment, continuity of administrative and certain operational activities is expected, which allows general and administrative and site infrastructure-related costs to be based on actual cost history. Otherwise, operating and capital costs for proposed new activities have been derived by third-party engineers.

During the Project life (one year of initial capital investment and seven-and-one-half years of operation), the site will undergo further evaluation to extend its operating life, and as such, no end-of-project reclamation is included in this Project analysis.

The open-pit mining equipment is assumed to be acquired through a capital lease. The lease is modeled at a four-year term at 6% interest. Interest payments are reported as cash operating costs, principal payments reduce cash as a financing activity and costs are booked as assets on the balance sheet.

The Project returns a NPV 5% of $35.1 million and an IRR of 30.0%, and achieves payback in 2.9 years after the start of operations (Table 1.7).

Table 1.7: Economic Parameters

Area	Unit	Total/Average
Construction Period	years	1
Operating Period	years	7.5
Heap Leach Pad Material Milled	'000 t	6,855
Average Leach Pad Gold Grade	opt	0.017
ROM Material Milled	'000 t	3,712
ROM Material Gold Grade	opt	0.042
Recovery After Process and Refining	%	91.6
Life of Project Gold Sold	'000 oz	250.5
Average Annual Gold Sold	'000 oz/a	33.4
Gold Price	$/oz	1,250
Realized Gold Price	$/oz	1,249.50
Average Silver Grade	opt	0.017
Average Annual Silver Sold	'000 oz/a	3.7
Realized Silver Price (Average)	$/oz	19.81
Total Cash Cost	$/oz	805
Initial Capital Expenditures	$ million	34.9
Remnant Ore Capital Expenditures (Ops Year 6)	$ million	32.6
Total After-Tax Net Cash Flow	$ million	53.5
Net Salvage Value	$ million	13.1
NPV of Net Cash Flow Discounted at 5%	$ million	35.1
IRR	%	30.0
Payback from End of Construction	years	2.9

1.15.1 SENSITIVITY ANALYSIS

Project sensitivity to variations in operating costs, capital costs, gold grade and metals price was evaluated with respect to the NPV. The NPV5% (after-tax) of the Project is more sensitive to changes in metal price and metal grade, as compared to changes in CAPEX and operating expenditure estimate (OPEX). For example, at a gold price of $1,100/oz, a 12% decrease, the NPV5% (after-tax) decreases to $10 million and the IRR declines to 13%. At a gold price of

$1,400/oz, a 12% increase, the NPV5% (after-tax) increases to $58 million and the IRR increases to 43%.

1.16 CONCLUSIONS

1.16.1 DRILLING

A drill program to test the exploration targets is warranted. This could consist of approximately 195 RC holes, with an average length of 450 ft. The overall program estimate assumes 90,000 ft (including contingency) of drilling, at an all-in cost of $30.11/ft, for an estimated program cost of $2.7 million.

1.16.2 PROCESSING

Based on the updated Feasibility Study, the Project, as defined in this report, is technically and economically viable. It is therefore recommended that Scorpio Gold construct the new processing facilities as described, to process the heap leach material as well as the reported open-pit reserves at the Property.

2.0 INTRODUCTION

The MRG mine is an operating gold mine, which utilizes conventional open-pit mining and heap-leaching to extract gold and silver. MRG is jointly owned by Scorpio Gold, who has a 70% stake in the ownership and is the operator of the mine, and Elevon, with a 30% stake. Loaded carbon from MRG is shipped offsite for extraction of gold and silver by a third party.

This report evaluates the continued recovery of economic material using a combination of two methods: the mining of remnant material adjacent to existing mined-out open pits (using open-pit mining methods); and retreatment of heap-leach materials through a combination of conventional comminution using ball mills, and CIL cyanidation to recover gold and silver.

Until the first week of November 2017, the MRG mine was an operating conventional open-pit mining operation, treating mined ore through a heap leach pad. As of the week ended November 10, 2017, all previously reported Mineral Reserves for the open-pit operations had been mined out. Gold is still being produced from the material stacked on the leach pad.

2.1 TERMS OF REFERENCE

This report was prepared by Novus for Scorpio Gold Corporation following the guidelines established in NI 43-101 and Form 43-101F1. Mineral Resources and Mineral Reserves are reported with reference to the CIM Definition Standards for Mineral Resources and Mineral Reserves (May 2014; the 2014 CIM Definition Standards) and the CIM Estimation of Mineral Resources and Mineral Reserves Best Practice Guidelines (November 2003; 2003 CIM Best Practice Guidelines).

For the purposes of this Feasibility Study and Technical Report, work performed by the subsidiary, MRG, and Scorpio Gold is referred to interchangeably as being performed by the parent company, Scorpio Gold.

2.2 SCOPE OF WORK

The following independent consulting firms have contributed in the completion of this Feasibility Study and Technical Report:

- Novus: Mineral processing and metallurgy, site infrastructure, process capital and operating cost estimation, and report preparation;
- MTS: Geology, Mineral Resources and Reserves, mine CAPEX and OPEX estimation, and economic analysis;
- NewFields: Geotechnical evaluation, and environmental studies and permitting.

2.3 QUALIFICATIONS AND RESPONSIBILITIES

The QPs who have either prepared or supervised the preparation of this Feasibility Study and Technical Report are defined as QPs per the definition established in NI 43-101.

The QPs who have contributed to the completion of this report have been compensated through accepted professional consulting practices of being paid a fee. The conclusions or recommendations of the report have not been influenced by any prior agreements between the QPs and Scorpio Gold, and have been arrived at through unbiased professional review and work.

Table 2.1 lists the QPs for specific sections of the report.

Table 2.1: List of Qualified Persons

Qualified Person	Company	Responsibility
Mr. Todd Wakefield, RM-SME	MTS	Sections 1.7, 1.8, 3.2, 11.1.4, 11.4.3, 11.5.3, 11.9, 12.3.1, 12.4, 25.4, and 27.0 (for Sections 10 and 11)
Ms. Stella Searston, RM-SME	MTS	Sections 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.16.1, 2.5, 3.1, 3.2, 4.0, 5.0, 6.0, 7.0, 8.0, 9.0, 10, 11.1.1, 11.1.2, 11.1.3, 11.1.5, 11.2, 11.3, 11.4.1, 11.4.2, 11.5.1, 11.5.2, 11.6, 11.7, 11.8, 11.9, 12.1, 12.2, 12.3.2, 12.4, 23.0, 25.2, 25.3, 25.4, 26.2, and 27.0 (for Sections 4, 5, 6, 7, 8, 9, 10, 11 and 12)
Mr. Ian Crundwell, P. Geo.	MTS	Sections 1.9, 3.2, 9.6, 14.0, 25.5, and Section 27.0 (for Section 14)
Mr, Bruce Genereaux, RM-SME	MTS	Sections 1.14, 1.15, 3.2, 3.3, 3.4, 19.0, 22.0, 25.10, 25.11, and Section 27.0 (for Sections 19 and 22)
Mr. Jeff Choquette, P.E.	MTS	Sections 1.10, 1.12, 1.13.1, 3.2, 3.3, 3.4, 15.0, 16.0, 18.14, 25.6, 25.7, and 27.0 (for Sections 15 and 16)
Mr. Paul Kaplan, P.E.	NewFields	Sections 1.13.3, 18.15, 20.0, and 27.0 (for Section 20)
Mr. Gordon Cooper, P. Eng.	Novus	Sections 1.11, 13.0, 17.0, 25.8, 26.3, and 27.0 (for Section 13)
Mr. Amritpal Singh Gosal, P. Eng.	Novus	Section 1.1, 1.13.2, 1.16.2, 2.1, 2.2, 2.3, 2.4, 18.1, 18.2, 18.3, 18.4, 18.5, 18.6 18.7, 18.8, 18.9, 18.10, 18.11, 18.12, 18.13, 24.0, 25.1, 25.9, 25.12, 26.1

2.4 SITE INSPECTION BY QUALIFIED PERSONS

The following QPs have visited site, and their scope of personal inspection is as follows:

- Mr. Gordon Cooper visited site on August 30, 2017, during which he reviewed the history of the operations and metallurgical test work completed;
- Mr. Amritpal Gosal visited the site on August 30, 2017, during which reviewed the current infrastructure and site conditions;
- Mr. Todd Wakefield visited site on February 21, 2017, and again on April 5, 2017, during which he, he inspected the sonic drilling activities, and sampling and assay data;

- Mr. Jeff Choquette visited site from October 30 to November 2, 2017, during which he inspected the mined-out open pit areas, visited the mine laboratory, viewed the crushing, and leach pad operations, and discussed aspects of the mining operations with Scorpio Gold staff;
- Mr. Ian Crundwell visited site from October 30 to November 2, 2017, during which he inspected the mined-out open pit areas, visited the mine laboratory, viewed the crushing, and leach pad operations, and discussed aspects of resource estimation and sampling with Scorpio Gold staff;
- Ms. Stella Searston visited site from October 30 to November 2, 2017, during which she inspected the mined-out open pit areas, sites proposed for remnant mining activity, inspected drill pads and collars in the field, visited the mine laboratory, viewed the crushing, and leach pad operations, inspected logging and sample storage facilities, reviewed aspects of data storage, and discussed aspects of the geological setting, exploration programs, exploration potential, exploration drilling, and sampling with Scorpio Gold staff.

2.5 PREVIOUS TECHNICAL REPORTS

Scorpio Gold has previously filed the following technical reports on the Mineral Ridge area.

- Cooper, G.J., Crundwell, I., Gosal, A.S., Kaplan, P., Tschabrun, D., and Wakefield, T., 2017: Feasibility Study and National Instrument 43-101 Technical Report on the Mineral Ridge Gold Heap Leach Recovery Project: report prepared by Novus Engineering Inc. for Scorpio Gold, effective date October 10, 2017;
- Welsh, J.D., Willis, D.W., Martin, R.K., and Nesbitt, C.C., 2014: NI 43-101 Technical Report On The Mineral Ridge Project Life Of Mine Plan Esmeralda County, Nevada, USA: technical report prepared by Welsh Hagen Associates for Scorpio Gold, effective date August 29, 2014;
- Welsh, J.D., Maloney, P.A., Willis, D.W., Martin, R.K., and Nesbitt, C.C., 2014: Amended and restated NI 43-101 Technical Report on the Mineral Ridge Satellite Deposits, Esmeralda County, Nevada, USA: technical report prepared by Telesto Nevada for Scorpio Gold, effective date September 25, 2013, amended date April 4 2014;
- Drozd, M., Munroe, M., Tschabrun, D., and Wakefield, T., 2012: Scorpio Gold Corporation Mineral Ridge Project, Esmeralda County, Nevada USA, NI 43-101 Technical Report on Life on Mine Plan: technical report prepared by AMEC E&C Services Inc for Scorpio Gold, effective date July 15, 2012;
- Lewis, W.J., Godard, M., San Martin, A.J., and Murahwi, C., 2010. Technical Report on the Initial Mineral Resource Estimate for the Mineral Ridge Gold Project, Nevada, USA: technical report prepared by Micon International Limited for Scorpio Gold, effective date May 31, 2010.

3.0 RELIANCE ON OTHER EXPERTS

3.1 INTRODUCTION

The QPs, as authors of this Feasibility Study and Technical Report, are QPs for those areas as identified in the appropriate QP "Certificate of Qualified Person" included in this Feasibility Study and Technical Report. The authors have relied upon, and disclaim responsibility, for information derived from the following data:

3.2 MINERAL TENURE, ROYALTIES, SURFACE RIGHTS AND AGREEMENTS

The MTS QPs have not independently reviewed ownership of the Project area and any underlying property agreements, mineral tenure, surface rights, or royalties. The QPs have fully relied upon, and disclaim responsibility for, information derived from Scorpio Gold and experts retained by Scorpio Gold for this information through the following documents:

- Rice, T., 2017a: Mineral Ridge Project Esmeralda County, Nevada Title Report Update Dated September 5, 2017 Prepared for Mineral Ridge Gold, LLC: report prepared for Scorpio Gold, 5 September, 2017, 147 p.
- Rice, T., 2017b: RE: surface rights: emailed review of Section 4 content, with corrections: prepared for Scorpio Gold, 13 December, 2017, 4 p.

This information is used in Section 4.0 of the Report. The information is also used in support of the Mineral Resource estimate in Section 14.0, the Mineral Reserve estimate in Section 15.0, and the financial analysis in Section 22.0.

3.3 TAXATION

The MTS QPs have fully relied upon, and disclaim responsibility for, information related to taxation as applied to the financial model as follows:

- County of Esmeralda, 2016: Mineral Ridge Gold LLC Silver Peak, Personal Property Taxes for Fiscal Year 2016–2017: invoice prepared for Mineral Ridge Gold, 22 November, 2016, 1 p.
- County of Esmeralda, 2017: Property Tax Information: information posted to County of Esmeralda website, accessed 20 December, 2017, http://www.accessesmeralda.com/county_offices/assessor/property_tax_info.php
- State of Nevada Department of Taxation, 2017: Mining Taxpayer Forms and Instructions: information posted to State of Nevada Department of Taxation website, accessed 20 December, 2017, https://tax.nv.gov/LocalGovt/Net_Proceeds/Net_Proceeds_Mining_Instructions/.

This information is used in support of the Mineral Reserve estimate in Section 15.0, and the financial analysis in Section 22.0.

3.4 COMMODITY PRICES

The MTS QPs have fully relied upon, and disclaim responsibility for, information related to gold prices as applied to the Mineral Reserve estimates and financial model as follows:

- Altmann, S., 2017: Market Studies and Contracts: note prepared by MPA Morrison Park Advisors for Scorpio Gold, 3 p.

This information is used in support of the Mineral Reserve estimate in Section 15.0, and the financial analysis in Section 22.0.

The MTS QPs have relied upon information related to silver prices as applied to the Mineral Reserve estimates and financial model as follows:

- CIBC Global Mining Group, 2017: Analyst Consensus Commodity Price Forecasts, Commodity Consensus Forecast Summary: report dated 30 June, 2017.

This information is used in support of the Mineral Reserve estimate in Section 15.0, and the financial analysis in Section 22.0.

4.0 PROPERTY DESCRIPTION AND LOCATION

4.1 INTRODUCTION

The Project is located in southwestern Nevada in the United States of America, approximately 35 air miles (56 km) southwest of the town of Tonopah, at approximately 37º47’54”N, and 117º42’28”W.

4.2 PROPERTY AND TITLE IN NEVADA

Information in this sub-section has been compiled from Papke and Davis (2002). The QP has not independently verified this information, and has relied upon the Papke and Davis report, which is in the public domain, for the data presented.

4.2.1 MINERAL TITLE

Federal (30 USC and 43 CFR) and Nevada (NRS 517) laws concerning mining claims on Federal land are based on an 1872 Federal law titled “An Act to Promote the Development of Mineral Resources of the United States.” Mining claim procedures still are based on this law, but the original scope of the law has been reduced by several legislative changes.

The Mineral Leasing Act of 1920 (30 USC Chapter 3A) provided for leasing of some non-metallic materials; and the Multiple Mineral Development Act of 1954 (30 USC Chapter 12) allowed simultaneous use of public land for mining under the mining laws and for lease operation under the mineral leasing laws. Additionally, the Multiple Surface Use Act of 1955 (30 USC 611-615) made “common variety” materials non- locatable; the Geothermal Steam Act of 1970 (30 USC Chapter 23) provided for leasing of geothermal resources; and the Federal Land Policy and Management Act of 1976 (the “BLM Organic Act,” 43 USC Chapter 35) granted the Secretary of the Interior broad authority to manage public lands. Most details regarding procedures for locating claims on Federal lands have been left to individual states, providing that state laws do not conflict with Federal laws (30 USC 28; 43 CFR 3831.1).

Mineral deposits are located either by lode or placer claims (43 CFR 3840). The locator must decide whether a lode or placer claim should be used for a given material; the decision is not always easy but is critical. A lode claim is void if used to acquire a placer deposit, and a placer claim is void if used for a lode deposit. The 1872 Federal law requires a lode claim for “veins or lodes of quartz or other rock in place” (30 USC 26; 43 CFR 3841.1), and a placer claim for all “forms of deposit, excepting veins of quartz or other rock in place” (30 USC 35). The maximum size of a lode claim is 1,500 ft in length and 600 ft in width (20.66 ac), whereas an individual or company can locate a placer claim as much as 20 ac in area.

Claims may be patented or unpatented. A patented claim is a lode or placer claim or mill site for which a patent has been issued by the Federal Government, whereas an unpatented claim means a lode or placer claim, tunnel right or mill site located under the Federal (30 USC) act, for which a patent has not been issued.

4.2.2 SURFACE RIGHTS

About 85% of the land in Nevada is controlled by the Federal Government; most of this land is administered by the BLM, the US Forest Service, the US Department of Energy, or the US Department of Defense. Much of the land controlled by the BLM and Forest Service is open to prospecting and claim location. The distribution of public lands in Nevada is shown on the BLM "Land Status Map of Nevada" (1990) at scales of 1:500,000 and 1:1,000,000.

BLM regulations regarding surface disturbance and reclamation require that a notice be submitted to the appropriate Field Office of the Bureau of Land Management for exploration activities in which five acres or fewer are proposed for disturbance (43 CFR 3809.1-1 through 3809.1-4). A PoO is needed for all mining and processing activities, plus all activities exceeding five acres of proposed disturbance. A PoO is also needed for any bulk sampling in which 1,000 or more tons of presumed ore are proposed for removal (43 CFR 3802.1 through 3802.6, 3809.1-4, 3809.1-5). The BLM also requires the posting of bonds for reclamation for any surface disturbance caused by more than casual use (43 CFR 3809.500 through 3809.560). The Forest Service has regulations regarding land disturbance in forest lands (36 CFR Subpart A). Both agencies also have regulations pertaining to land disturbance in proposed wilderness areas.

4.2.3 ENVIRONMENTAL REGULATIONS

All surface management activities, including reclamation, must comply with all pertinent Federal laws and regulations, and all applicable State environmental laws and regulations. The fundamental requirement, implemented in 43 CFR 3809, is that all hard-rock mining under a PoO or Notice on the public lands must prevent unnecessary or undue degradation. The PoO and any modifications to the approved PoO must meet the requirement to prevent unnecessary or undue degradation.

Authorization to allow the release of effluents into the environment must be in compliance with the Clean Water Act, Safe Drinking Water Act, Endangered Species Act, other applicable Federal and State environmental laws, consistent with BLM's multiple-use responsibilities under the Federal Land Policy and Management Act and fully reviewed in the appropriate NEPA document.

4.2.4 FRASER INSTITUTE SURVEY

MTS has used the Investment Attractiveness Index from the Fraser Institute Annual Survey of Mining Companies 2016 (the Fraser Institute Survey) as a credible source for the assessment of the overall political risk facing an exploration or mining project in Nevada. The Fraser Institute

Survey is an attempt to assess how mineral endowments and public policy factors such as taxation and regulatory uncertainty affect exploration investment.

MTS has relied on the Fraser Institute Survey because it is globally regarded as an independent report-card style assessment to governments on how attractive their policies are from the point of view of an exploration manager or mining company, and forms a proxy for the assessment by industry of political risk in Nevada from the mining perspective.

Overall, Nevada ranked fourth out of the 104 jurisdictions in the survey in 2016.

4.3 PROJECT OWNERSHIP

Based on the information presented in the Title Report prepared by Tom Rice (Rice 2017a), subject to the paramount interests of the US the Project is wholly-owned by MRG.

Seventy percent of MRG is owned by Scorpio Gold; a wholly-owned subsidiary of Scorpio Gold Corporation; the remaining 30% is held by Elevon, an affiliate of Waterton Global Value, LP. Even though Scorpio Gold maintains a 70% interest in MRG, its right to receive cash distributions from the Project is 80%.

In connection with a loan with Waterton Precious Metals Fund II Cayman, LP, completed on August 14, 2015, Scorpio Gold modified the Mineral Ridge operating agreement so that Scorpio Gold would owe and accrue to Elevon an amount equal to 10% of aggregate amounts actually distributed to Scorpio Gold and Elevon by MRG (the Accrued Distribution Amount). The Accrued Distribution Amount shall become due and payable by Scorpio Gold upon a change of control of Scorpio Gold, or if the settlement price of gold on the London Bullion Market Association PM fix is equal to or exceeds $1,350/oz. Scorpio Gold and Elevon also agreed that following payment of the Accrued Distribution Amount, Elevon will remain entitled to receive 30% of all further distributions by MRG.

An Accrued Distribution Amount of $35,714 was paid to Elevon in early July 2016 after the settlement price of gold on the London Bullion Market Association PM exceeded $1,350/oz; consequently, Elevon is entitled to receive 30% of cash distributions from MRG.

4.4 MINERAL TENURE

The Project consists of: 60 patented claims totaling 859.18 ac (347.7 ha); two fee simple and two town lots collectively known as the Fee Lands, totaling 122.65 ac (49.65 ha); two water rights; and 677 unpatented lode claims and one unpatented millsite claim totaling 12,896.88 ac (5,221.40 ha) for a total of 13,878.71 ac (5,618.9 ha). All property is held in the name of MRG.

The Federal Government has given full title of both surface and minerals for all patented claims. Unpatented lode claims or placer claims on public lands are for mineral prospecting, mining or processing operations, and other reasonably related uses.

The patented and unpatented claims are listed in Table 4.1 and Table 4.2**,** respectively. A summary of the Project land position is shown on Figure 4.1. Figure 4.2 provides the claim outlines by claim. Figure 4.3 shows the locations of the claims in the North Springs area. An inset detailed claim map is provided in Figure 4.4 for the Vanderbilt claims.

Unpatented mining claims are kept active through payment of a maintenance fee due by September 1 of each year. Under Nevada law, each unpatented claim is marked on the ground, and does not require survey.

The Project has been maintained in the County through the 2017 State assessment year and the BLM through 2017–2018 Federal assessment year (Rice, 2017b).

Table 4.1: Mineral Ridge Patented Claims

Claim Name	Mineral Survey No.	Esmeralda County Parcel No.	Patent No.	Patent Date	County Book	County Page	Section(s)	Township Range	Acres
Mary (aka Home Steak MS 63)	64	000-000-94	18078	06/05/1891	3-B	207	6	2s39e	20.7
Elizabeth (aka Home Steak MS 63)	1927	000-000-94	35160	03/01/1902	2	64	1\6	2s38e \ 2s39e	20.4
Vanderbilt Millsite	37-B	000-000-94	3156	05/01/1979	M	1	22	2s39e	5.0
Last Chance Lode	42	000-000-94	3311	07/30/1879	M	32	6	2s39e	2.5
Western Soldier Lode	43	000-000-94	3312	07/30/1879	M	37	1\6	2s38e \ 2s39e	4.6
Glory Lode	44	000-000-94	3313	07/30/1879	M	42	1	2s38e	2.0
Crowning Glory Load	45	000-000-94	3314	07/30/1879	M	47	1	2s38e	2.7
Crowning Glory Lode 1st S, Ext.	46	000-000-94	3315	07/30/1879	M	52	1	2s38e	0.7
Drink Water Lode	47	000-000-94	3318	07/30/1879	M	58	1	2s38e	2.3
Valient	48	000-000-94	3160	05/29/1879	M	22	1	2s38e	0.9
New York Lode	49	000-000-94	3319	07/30/1879	M	65	1	2s38e	2.7
Chieftan Lode	50	000-000-94	3320	07/30/1879	M	68	1	2s38e	2.0
Defiance	59	000-000-94	24006	02/19/1894	V	560	1	2s38e	19.2
Sentinel	60	000-000-94	23857	01/17/1894	W	86	1	2s38e	19.8
Golden Gate	61	000-000-94	23858	01/17/1894	W	88	1	2s38e	20.7
Crown Lode	65-A	000-000-94	27739	12/23/1896	W	436	1	2s38e	2.9
Crown Millsite	65-B	000-000-94	27739	12/23/1896	W	436	8, 9	2s38e	5.0
Blair	66	000-006-22	19164	12/18/1891	V	407	1	2s38e	14.1
Antelope Mine	1736	000-000-94	28005	11/18/1897	X	23	1	2s38e	6.3
Nevada	1738	000-000-94	28806	11/18/1897	X	21	1	2s38e	10.3
Duplex	1739	000-000-94	29324	04/15/1898	X	25	36\1	1s38e \ 2s38e	16.8
Bangor	1740	000-000-94	29323	04/15/1898	X	27	1	2s38e	17.8
Manser Lode	1741	000-000-94	31286	03/01/1902	X	34	22	2s39e	4.6
Brooklyn	1742	000-000-94	28807	11/19/1897	X	19	1	2s38e	17.5
Mohawk	3068	000-000-94	216115	07/10/1911	3-B	202	6	2s39e	20.6
Mohawk #1	3068	000-000-94	216115	07/10/1911	3-B	202	6	2s39e	19.3
Mohawk #2	3068	000-000-94	216115	07/10/1911	3-B	202	1\6	2s38e \ 2s39e	18.0
Savage	3068	000-000-94	216115	07/10/1911	3-B	202	1\6	2s38e \ 2s39e	15.4

table continues…

Claim Name	Mineral Survey No.	Esmeralda County Parcel No.	Patent No.	Patent Date	County Book	County Page	Section(s)	Township Range	Acres
Oro Fino	3068	000-000-94	216115	07/10/1911	3-B	202	1	2s38e	8.0
Poor	3068	000-000-94	216115	07/10/1911	3-B	202	1	2s38e	10.4
Sapphire	3068	000-000-94	216115	07/10/1911	3-B	202	1\6	2s38e \ 2s39e	18.9
Snow Drift	3068	000-000-94	216115	07/10/1911	3-B	202	1	2s38e	15.0
Ophir	3068	000-000-94	216115	07/10/1911	3-B	202	1	2s38e	16.6
Mary Extension	3068	000-000-94	216115	07/10/1911	3-B	202	6	2s39e	13.5
Summit	3068	000-000-94	216115	07/10/1911	3-B	202	6	2s39e	15.1
April	3068	000-000-94	216115	07/10/1911	3-B	202	1\6	2s38e \ 2s39e	15.9
Canyon Crest	3068	000-000-94	216115	07/10/1911	3-B	202	6	2s39e	15.2
Horned Toad	3507	000-006-22	197172	05/11/1891	171	33	3, 4	1s39e	20.7
Spider	3507	000-006-22	197172	05/11/1891	171	33	4	1s39e	20.7
Scorpion	3507	000-006-22	197172	05/11/1891	171	33	4, 9	1s39e	20.7
Lizard	3507	000-006-22	197172	05/11/1891	171	33	4, 9	1s39e	20.7
Cactus	3507	000-006-22	197172	05/11/1891	171	33	4, 9	1s39e	20.7
Gnat	3507	000-006-22	197172	05/11/1891	171	33	9	1s39e	20.4
Rattlesnake	3507	000-006-22	197172	05/11/1891	171	33	4	1s39e	20.7
Pittsburg	3507	000-006-22	197172	05/11/1891	171	33	3, 4	1s39e	20.7
Columbus	2665	000-000-94	71074	07/18/1909	10	183	1	2s38e	17.0
Frank No. 2	2665	000-000-94	71074	07/18/1909	10	184	1	2s38e	16.9
Lincoln	2665	000-000-94	71074	07/18/1909	10	185	1	2s38e	18.7
Washington	2665	000-000-94	71074	07/18/1909	10	186	1	2s38e	18.0
Oregon	2665	000-000-94	71074	07/18/1909	10	187	1	2s38e	19.3
Peorto	2665	000-000-94	71074	07/18/1909	10	188	1, 2	2s38e	20.2
Solberry	2665	000-000-94	71074	07/18/1909	10	189	1, 2	2s38e	17.4
Gillespy	2665	000-000-94	71074	07/18/1909	10	190	2	2s38e	20.0
Soda Lake Lode	2689	000-000-94	7107	07/18/1909	10	191	1, 12	2s38e	20.7
Missouri	1986 A	000-00-700	37584	12/11/1903	n/a	n/a	1, 2, 12	2s38e	20.7
Paris	2688	n/a	71076	7/8/1909	n/a	n/a	35 / 2	1s / 2s 38e	20.0
Empire State Consolidated No. 1	53	n/a	9959	01/24/1885	n/a	n/a	17	2s 39e	20.7

table continues…

Claim Name	Mineral Survey No.	Esmeralda County Parcel No.	Patent No.	Patent Date	County Book	County Page	Section(s)	Township Range	Acres
Empire State Consolidated No. 3	54	n/a	10000	03/03/1885	n/a	n/a	17	2s 39e	19.5
Empire State Consolidated No. 5	55	n/a	9960	01/24/1885	n/a	n/a	17	2s 39e	20.7
Silver Eagle	38	n/a	3157	05/11/1879	n/a	n/a	20	2s 39e	1.2
Total Claims	**60**	-	-	-	-	-	-	**Total Acreage**	**859.2**

Table 4.2: Mineral Ridge Unpatented Claims

Claim Name	Section(s)	Township	Range	County Book	County Page	County Document Number	Location Date	BLM Serial Number	Acres
Bonanza #1 (aka Bonanza I)	6	2 S	39 E	1	314	141575	4/14/1960	89408	20.60
Bonanza #2 (aka Bonanza II) (aka Bonanza 11)	6	2 S	39 E	1	315	141575	4/14/1960	89409	20.60
T.W. No. 1	6	2 S	39 E	7	453	141576	7/14/1972	89406	20.60
Mark 1	36/1	1S/2S	38 E	9	419	49230	2/9/1973	89365	14.20
Mark 2	36/1	1S /2S	38 E	9	420	49231	2/9/1973	89366	20.66
Mark 3	1	2 S	38 E	9	421	49232	2/9/1973	89367	16.50
Mark 4	36/1	1S/2S	38 E	9	422	49233	2/9/1973	89368	20.66
Mark 5	36/1	1S/2S	38 E	9	423	49234	2/9/1973	89369	17.40
Mark 6	36	1 S	38 E	9	424	49235	2/9/1973	89370	20.66
Mark 7	36/1	1S/2S	38 E	9	425	49236	2/9/1973	89371	20.66
Mark 8	36	1 S	38 E	9	426	49237	2/9/1973	89372	20.66
Mark 9	36/31	1S/1S	38E/39E	9	427	49238	2/9/1973	89373	20.66
Mark 10	36	1 S	38E	9	428	49239	2/9/1973	89374	20.66
Mark 11	36/31	1S/1S	38E/39E	9	429	49240	2/9/1973	89375	20.66
Mark 12	36	1 S	38 E	9	430	49241	2/9/1973	89376	20.66
Mark 13	36/31	1S/1S	38E/39E	9	431	49242	2/9/1973	89377	20.66
Mark 14	36/31	1S /1S	38E/39E	9	432	49243	2/9/1973	89378	20.66
Mark 15	36/31	1S/1S	38E/39E	9	433	49244	2/9/1973	89379	20.66
Mark 16	36/31	1S/1S	38E/39E	9	434	49245	2/9/1973	89380	20.66
Mark 17	31	1 S	39 E	9	435	49246	2/9/1973	89381	20.66

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Claim Name	Section(s)	Township	Range	County Book	County Page	County Document Number	Location Date	BLM Serial Number	Acres
Mark 18	36/31	1S/1S	38E/39E	9	436	49247	2/9/1973	89382	20.66
Mark 19	31	1 S	39 E	9	437	49248	2/9/1973	89383	20.66
Mark 21	1/6	2 S	38 E/39 E	9	439	49250	2/12/1973	89385	8.20
Mark 22	31/1/6	1S /2S	39E/38E/39E	9	440	49251	2/12/1973	89386	15.20
Mark 23	31/6	1S/2S	39 E	9	441	49252	2/12/1973	89387	19.50
Mark 24	31/6	1S/2S	39 E	9	442	49253	2/12/1973	89388	19.90
Mark 25	31	1 S	39 E	9	443	49254	2/12/1973	89389	20.66
Mark 26	36/31/6	1S/2S	38E/39E/3E	9	444	49255	2/12/1973	89390	20.66
Mark 27	31	1 S	39 E	9	445	49256	2/12/1973	89391	20.66
Mark 28	31/6	1S/2S	39 E	9	446	49257	2/12/1973	89392	20.66
Mark 29	31	1 S	39 E	9	447	49258	2/12/1973	89393	20.66
Mark 30	31	1 S	38 E	9	448	49259	2/12/1973	89394	20.66
Mark 31	31	1 S	38 E	9	449	49260	2/12/1973	89395	20.66
Mark 32	31	1 S	38 E	9	450	49261	2/12/1973	89396	20.66
Mark 33	1	2 S	38 E	9	451	49262	2/13/1973	89397	17.00
Mark 34	1	2 S	38 E	9	452	49263	2/13/1973	89398	20.00
Mark 35	1, 12	2 S	38 E	9	453	49264	2/13/1973	89399	17.20
Mark 36	1	2 S	38 E	9	454	49265	2/13/1973	89400	18.20
Mark 37	1, 12	2 S	38 E	9	455	49266	2/13/1973	89401	11.90
Mark 38	1, 12	2 S	38 E	9	456	49267	2/13/1973	89402	10.90
Mark 39	s1/s6	2 S	38E / 39E	9	457	49268	2/13/1973	89403	8.60
Mark 40	1, 6	2 S	38E / 39E	9	44 458	49269	2/13/1973	89404	9.90
New Andrew V	1	2 S	38 E	94(182)	502(335)	145079	9/2/1984	324341	16.60
K-2	1, 2	2 S	38 E	94(192)	504(337)	145080	9/1/1984	324343	6.10
Wedge 5	1	2 S	38 E	111	330	109684	2/4/1987	403137	1.10
Wedge 10	35 / 2	1S / 2S	38E	111	335	109689	2/4/1987	403142	20.66
Wedge 11	2	2 S	38 E	111	338	109690	2/4/1987	403143	20.66
Mineral Ridge 1	1	2 S	38 E	113	407	110807	7/1/1987	420478	12.40
Mineral Ridge 2	1	2 S	38 E	113	408	110808	7/1/1987	420479	7.10

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Mineral Ridge 3	1	2 S	38 E	113(182)	409(339)	145081	7/1/1987	420480	13.00
DNG 1	36	1 S	38 E	175	87	141744	12/17/1993	694678	20.66
DNG 2	36/1	1S/2S	38 E	175	88	141745	12/17/1993	694679	18.10
DNG 3	35	1 S	38 E	175	89	141746	12/17/1993	694680	20.66
DNG 4	36/1	1S/2S	38 E	175	90	141747	12/17/1993	694681	13.50
DNG 9	1, 2	2 S	38 E	175	93	141751	12/17/1993	694685	0.60
DAN 1	1	2 S	38 E	175	95	141742	12/16/1993	694687	6.60
CDY 1	8	2 S	38 E	175	96	141754	12/17/1993	694689	20.66
CDY 2	5, 6	2 S	38 E	175	97	141755	12/17/1993	694690	20.66
CDY 3	6	2 S	38 E	175	98	141756	12/17/1993	694691	16.50
CDY 4	6	2 S	38 E	175	99	141757	12/17/1993	694692	20.66
CDY 5	6	2 S	38 E	175	100	141758	12/17/1993	694693	6.20
CDY 6	6	2 S	38 E	175	101	141758	12/17/1993	694694	20.66
CDY 7	6	2 S	38 E	175	102	141760	12/17/1993	694695	9.30
CDY 8	6	2 S	38 E	175	103	141759	12/17/1993	694696	20.66
CDY 9	6	2 S	38 E	175	104	141762	12/17/1993	694697	12.30
CDY 10	6	2 S	38 E	175	105	141760	12/17/1993	694698	20.20
CDY 11	6	2 S	38 E	175	106	141761	12/17/1993	694699	3.40
CDY 12	6	2 S	38 E	175	107	141762	12/17/1993	694700	17.70
CDY 13	6	2 S	38 E	175	108	141763	12/17/1993	694701	17.60
CDY 14	6, 7	2 S	38 E	175	109	141764	12/17/1993	694702	20.66
CDY 15	6	2 S	38 E	175	110	141768	12/17/1993	694703	3.30
Mark 200	1	2 S	38 E	175	85	141740	1/23/1994	694688	0.10
W.W. 2 * (millsite)	32	1 S	39 E	177	81	142676	7/15/1994	703679	4.00
MIK 2	1	2 S	38 E	182	343	145084	11/30/1995	725978	0.10
TRE 1	6	2 S	38 E	182	344	145085	11/30/1995	725979	2.30
TRE 2	s1/s6	2 S	38E / 39E	182	345	145086	11/30/1995	725980	12.20
TRE 3	6	2 S	38E	182	346	145087	11/30/1995	725981	10.00
Sue 1	2	2 S	38E	182	371	145113	11/29/1995	725982	20.66

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Sue 2	2	2 S	38E	182	372	145114	11/29/1995	725983	14.10
Sue 3	2	2 S	38E	182	373	145115	11/29/1995	725984	18.60
Sue 4	2	2 S	38 E	182	374	145116	11/29/1995	725985	20.66
Sue 5	2	2 S	38 E	182	375	145117	11/29/1995	725986	20.66
Sue 6	1, 2	2 S	38 E	182	376	145118	11/29/1995	725987	19.70
Sue 7	1, 2	2 S	38 E	182	377	145119	11/29/1995	725988	15.30
Sue 8	1	2 S	38 E	182	378	145120	11/29/1995	725989	10.00
NCY No. 1	11, 12	2 S	38 E	182	350	145092	11/28/1995	725990	20.66
NCY No. 2	1, 2, 11, 12	2 S	38 E	182	351	145093	11/28/1995	725991	20.66
NCY No. 3	12	2 S	38 E	182	352	145094	11/28/1995	725992	20.66
NCY No. 4	1, 12	2 S	38 E	182	353	145095	11/28/1995	725993	20.66
NCY No. 5	12	2 S	38 E	182	354	145096	11/28/1995	725994	20.66
NCY No. 6	12	2 S	38 E	182	355	145097	11/28/1995	725995	20.66
NCY No. 7	1, 12	2 S	38 E	182	356	145098	11/28/1995	725996	16.40
NCY No. 8	12	2 S	38 E	182	357	145099	11/28/1995	725997	20.66
NCY No. 9	1, 12	2 S	38 E	182	358	145100	11/28/1995	725998	17.40
NCY No. 10	12	2 S	38 E	182	359	145101	11/28/1995	725999	20.66
NCY No. 11	1, 12	2 S	38 E	182	360	145102	11/28/1995	726000	18.00
NCY No. 12	1, 12	2 S	38 E	182	361	145103	11/28/1995	726001	17.60
MIK No. 1	1	2 S	38 E	182	349	145091	11/29/1995	726013	3.30
BEN #1	1	2 S	38 E	184	312-313	145892	3/29/1996	735512	6.40
BEN #2	1	2 S	38 E	184	314-315	145893	3/29/1996	735513	0.70
BEN #3	1	2 S	38 E	184	316-317	145894	3/29/1996	735514	2.20
BEN #4	1, 2	2 S	38 E	194	318-319	145895	3/29/1996	735515	11.20
MR # 201	7, 8	2 S	39 E	218	209	157766	1/23/2003	846511	20.10
MR # 202	7, 8	2 S	39 E	218	210	157767	1/23/2003	846512	15.40
MR # 203	8	2 S	39 E	218	211	157768	1/23/2003	846513	13.30
MR # 204	8	2 S	39 E	218	212	157769	1/23/2003	846514	12.40
MR # 205	8	2 S	39 E	218	213	157770	1/23/2003	846515	12.30

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MR # 206	8	2 S	39 E	218	214	157771	1/23/2003	846516	19.30
MR # 207	8	2 S	39 E	218	215	157772	1/23/2003	846517	20.66
MR # 208	5, 8	2 S	39 E	218	216	157773	1/23/2003	846518	20.66
MR # 209	5, 8	2 S	39 E	218	217	157774	1/23/2003	846519	20.66
MR # 210	7, 8	2 S	39 E	218	218	157775	1/23/2003	846520	19.60
MR # 211	7, 8	2 S	39 E	218	219	157776	1/23/2003	846521	20.66
MR # 212	7, 8	2 S	39 E	218	220	157777	1/23/2003	846522	20.66
MR # 213	5, 6, 7, 8	2 S	39 E	218	221	157778	1/23/2003	846523	20.66
MR # 214	5, 8	2 S	39 E	218	222	157779	1/23/2003	846524	20.66
MR # 215	5	2 S	39 E	218	223	157780	1/23/2003	846525	20.66
MR # 216	5	2 S	39 E	218	224	157781	1/23/2003	846526	20.66
MR # 217	7	2 S	39 E	218	225	157782	1/31/2003	846527	16.50
MR # 218	6, 7	2 S	39 E	218	226	157783	1/31/2003	846528	16.50
MR # 219	6, 7	2 S	39 E	218	227	157784	1/31/2003	846529	20.66
MR # 220	5, 6, 7	2 S	39 E	218	228	157785	1/31/2003	846530	20.66
MR # 221	5, 6	2 S	39 E	218	229	157786	1/31/2003	846531	20.66
MR # 222	5, 6	2 S	39 E	218	230	157787	1/31/2003	846532	20.66
Vulcan # 55	32	1 S	39 E	226	57	159747	3/18/2004	865616	20.66
Vulcan # 56	32	1 S	39 E	226	58	159748	3/18/2004	865617	20.66
Vulcan # 58	32, 33	1 S	39 E	226	59	159749	3/18/2004	865618	20.66
Vulcan # 59	33	1 S	39 E	226	60	159750	3/18/2004	865619	20.66
Vulcan # 60	32	1 S	39 E	226	61	159751	3/18/2004	865620	20.66
Vulcan # 61	32	1 S	39 E	226	62	159752	3/18/2004	865621	20.66
Vulcan # 62	32	1 S	39 E	226	63	159753	3/18/2004	865622	20.66
Vulcan # 63	32	1 S	39 E	226	64	159754	3/18/2004	865623	20.66
Vulcan # 64	32	1 S	39 E	226	65	159755	3/18/2004	865624	20.66
Vulcan # 65	32, 33	1 S	39 E	226	66	159756	3/18/2004	865625	20.66
COY 1	2,3	2 S	38 E	279	202	174852	6/27/2009	1008840	20.66
COY 2	3	2 S	38 E	279	203	174853	6/28/2009	1008841	20.66

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COY 3	2,3	2 S	38 E	279	204	174854	6/27/2009	1008842	20.66
COY 4	3	2 S	38 E	279	205	174855	6/28/2009	1008843	20.66
COY 5	2,3	2 S	38 E	279	206	174856	6/27/2009	1008844	20.66
COY 6	3	2 S	38 E	279	207	174857	6/28/2009	1008845	20.66
COY 7	2, 3	2 S	38 E	279	208	174858	6/27/2009	1008846	20.66
COY 8	1	2 S	38 E	279	209	174859	6/28/2009	1008847	17.20
COY 9	2, 3, 10, 11	2 S	38 E	279	210	174860	6/28/2009	1008848	20.66
COY 10	10	2 S	38 E	279	211	174861	6/28/2009	1008849	11.70
COY 11	10, 11	2 S	38 E	279	212	174862	6/28/2009	1008850	20.00
COY 12	10	2 S	38 E	279	213	174863	6/28/2009	1008851	14.10
COY 13	10, 11	2 S	38 E	279	214	174864	6/28/2009	1008852	20.66
COY 14	10	2 S	38 E	279	215	174865	6/28/2009	1008853	20.66
COY 15	10, 11	2 S	38 E	279	216	174866	6/28/2009	1008854	20.66
COY 16	10	2 S	38 E	279	217	174867	6/26/2009	1008855	20.66
COY 17	10, 11	2 S	38 E	279	218	174868	6/26/2009	1008856	20.66
COY 18	10	2 S	38 E	287	46	177158	9/10/2009	1013327	20.66
COY 19	10, 11	2 S	38 E	287	47	177159	9/10/2009	1013328	19.60
COY 20	10	2 S	38 E	287	48	177160	9/10/2009	1013330	20.66
COY 21	10, 11	2 S	38 E	287	49	177161	9/10/2009	1013331	20.66
COY 22	10	2 S	38 E	287	50	177162	9/10/2009	1013332	20.66
COY 23	10, 11	2 S	38 E	287	51	177163	9/10/2009	1013333	20.66
COY 24	10	2 S	38 E	287	52	177164	9/10/2009	1013334	20.66
COY 25	10, 11	2 S	38 E	287	53	177165	9/10/2009	1013335	20.66
COY 26	10, 15	2 S	38 E	287	54	177166	9/10/2009	1013336	20.66
COY 27	10, 11, 14, 15	2 S	38 E	287	55	177167	9/10/2009	1013337	20.66
COY 28	15	2 S	38 E	287	56	177168	9/10/2009	1013338	20.66
COY 29	14, 15	2 S	38 E	287	57	177169	9/10/2009	1013339	20.66
COY 30	15	2 S	38 E	287	58	177170	9/10/2009	1013340	20.66
COY 31	14, 15	2 S	38 E	287	59	177171	9/10/2009	1013341	20.66

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COY 32	15	2 S	38 E	287	60	177172	9/10/2009	1013342	20.66
COY 33	14, 15	2 S	38 E	287	61	177173	9/10/2009	1013343	20.66
COY 34	15	2 S	38 E	287	62	177174	9/10/2009	1013344	20.66
COY 35	14, 15	2 S	38 E	287	63	177175	9/10/2009	1013345	20.66
COY 36	15	2 S	38 E	287	64	177176	9/10/2009	1013346	20.66
COY 37	14, 15	2 S	38 E	287	65	177177	9/10/2009	1013347	20.66
COY 38	14, 15	2 S	38 E	287	66	177178	9/10/2009	1013348	20.66
COY 39	14, 15	2 S	38 E	287	67	177179	9/10/2009	1013349	20.66
COY 40	14, 15	2 S	38 E	287	68	177180	9/10/2009	1013350	20.66
COY 41	14, 15, 22, 23	2 S	38 E	287	69	177181	9/10/2009	1013351	20.66
COY 42	2	2 S	38 E	279	219	174869	6/28/2009	1008857	14.50
COY 43	2	2 S	38 E	279	220	174870	6/28/2009	1008858	19.40
COY 44	2	2 S	38 E	279	221	174871	6/27/2009	1008859	20.66
COY 45	2	2 S	38 E	287	70	177182	9/12/2009	1013352	4.00
COY 46	2	2 S	38 E	279	222	174872	6/27/2009	1008860	20.66
COY 47	2	2 S	38 E	287	71	177183	9/12/2009	1013353	9.10
COY 48	2	2 S	38 E	279	223	174873	6/27/2009	1008861	20.66
COY 49	2	2 S	38 E	287	72	177184	9/12/2009	1013354	14.10
COY 50	2, 11	2 S	38 E	279	224	174874	6/27/2009	1008862	20.66
COY 51	2, 11	2 S	38 E	287	73	177185	9/12/2009	1013355	19.10
COY 52	11	2 S	38 E	279	225	174875	6/27/2009	1008863	20.66
COY 53	11	2 S	38 E	287	74	177186	9/12/2009	1013356	20.66
COY 54	11	1 S	39 E	279	226	174876	6/27/2009	1008864	20.66
COY 55	11	2 S	38 E	287	75	177187	9/12/2009	1013357	20.66
COY 56	11	2 S	38 E	279	227	174877	6/27/2009	1008865	20.66
COY 57	11	2 S	38 E	287	76	177188	9/12/2009	1013358	20.66
COY 58	11	2 S	38 E	279	228	174878	6/27/2009	1008866	20.66
COY 59	11	2 S	38 E	287	77	177189	9/12/2009	1013359	20.66
COY 60	11	2 S	38 E	287	78	177190	9/10/2009	1013360	20.66

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COY 61	11	2 S	38 E	287	79	177191	9/10/2009	1013361	20.66
COY 62	11	2 S	38 E	287	80	177192	9/10/2009	1013362	20.66
COY 63	11	2 S	38 E	287	81	177193	9/10/2009	1013363	20.66
COY 64	11	2 S	38 E	287	82	177194	9/10/2009	1013364	20.66
COY 65	11	2 S	38 E	287	83	177195	9/10/2009	1013365	20.66
COY 66	11	2 S	38 E	287	84	177196	9/10/2009	1013366	20.66
COY 67	11	2 S	38 E	287	85	177197	9/10/2009	1013367	20.66
COY 68	11	2 S	38 E	287	86	177198	9/10/2009	1013368	20.66
COY 69	11	2 S	38 E	287	87	177199	9/10/2009	1013369	20.66
COY 70	14	2 S	38 E	287	88	177200	9/10/2009	1013370	20.66
COY 71	14	2 S	38 E	287	89	177201	9/10/2009	1013371	20.66
COY 72	14	2 S	38 E	287	90	177202	9/10/2009	1013372	20.66
COY 73	14	2 S	38 E	287	91	177203	9/10/2009	1013373	20.66
COY 74	14	2 S	38 E	287	92	177204	9/10/2009	1013374	20.66
COY 75	14	2 S	38 E	287	93	177205	9/10/2009	1013375	20.66
COY 76	14	2 S	38 E	287	94	177206	9/10/2009	1013376	20.66
COY 77	14	2 S	38 E	287	95	177207	9/10/2009	1013377	20.66
COY 78	14	2 S	38 E	287	96	177208	9/10/2009	1013378	20.66
COY 79	14	2 S	38 E	287	97	177209	9/10/2009	1013379	20.66
COY 80	14	2 S	38 E	287	98	177210	9/10/2009	1013380	20.66
COY 81	14	2 S	38 E	287	99	177211	9/10/2009	1013381	20.66
COY 82	14	2 S	38 E	287	100	177212	9/10/2009	1013382	20.66
COY 83	14	2 S	38 E	287	101	177213	9/10/2009	1013383	20.66
COY 84	14, 23	2 S	38 E	287	102	177214	9/10/2009	1013384	20.66
COY 85	14, 23	2 S	38 E	287	103	177215	9/10/2009	1013385	20.66
COY 86	23	2 S	38 E	287	104	177216	9/10/2009	1013386	20.66
COY 87	23	2 S	38 E	287	105	177217	9/10/2009	1013387	20.66
COY 88	23	2 S	38 E	287	106	177218	9/10/2009	1013388	20.66
COY 89	23	2 S	38 E	287	107	177219	9/10/2009	1013389	20.66

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COY 90	23	2 S	38 E	287	108	177220	9/10/2009	1013390	20.66
COY 91	23	2 S	38 E	287	109	177221	9/10/2009	1013391	20.66
COY 92	23	2 S	38 E	287	110	177222	9/10/2009	1013392	20.66
COY 93	23	2 S	38 E	287	111	177223	9/10/2009	1013393	20.66
COY 94	23	2 S	38 E	287	112	177224	9/10/2009	1013394	20.66
COY 95	23	2 S	38 E	287	113	177225	9/10/2009	1013395	20.66
COY 96	11, 12	2 S	38 E	287	114	177226	9/12/2009	1013396	7.40
COY 97	11, 12	2 S	38 E	287	115	177227	9/12/2009	1013397	12.00
COY 98	11, 12	2 S	38 E	287	116	177228	9/12/2009	1013398	11.80
COY 99	11, 12	2 S	38 E	287	117	177229	9/12/2009	1013399	11.60
COY 100	11, 12	2 S	38 E	287	118	177230	9/12/2009	1013400	15.60
COY 101	11, 12	2 S	38 E	287	119	177231	9/12/2009	1013401	20.66
COY 102	11, 12	2 S	38 E	287	120	177232	9/12/2009	1013402	20.66
COY 103	11, 12	2 S	38 E	287	121	177233	9/12/2009	1013403	20.66
COY 104	11, 12, 13, 14	2 S	38 E	287	122	177234	9/12/2009	1013404	20.66
COY 105	13, 14	2 S	38 E	287	123	177235	9/12/2009	1013405	20.66
COY 106	13, 14	2 S	38 E	287	124	177236	9/12/2009	1013406	20.66
COY 107	13, 14	2 S	38 E	287	125	177237	9/12/2009	1013407	20.66
COY 108	13, 14	2 S	38 E	287	126	177238	9/12/2009	1013408	20.66
COY 109	13, 14	2 S	38 E	287	127	177239	9/12/2009	1013409	20.66
COY 110	13, 14	2 S	38 E	287	128	177240	9/12/2009	1013410	20.66
COY 111	13, 14	2 S	38 E	287	129	177241	9/12/2009	1013411	20.66
COY 112	13, 14	2 S	38 E	287	130	177242	9/12/2009	1013412	20.66
COY 113	13, 14, 23, 24	2 S	38 E	287	131	177243	9/12/2009	1013413	20.66
COY 114	23, 24	2 S	38 E	287	132	177244	9/12/2009	1013414	20.66
COY 115	23, 24	2 S	38 E	287	133	177245	9/12/2009	1013415	20.66
COY 116	12	2 S	38 E	287	134	177246	9/12/2009	1013416	20.10
COY 117	12, 13	2 S	38 E	287	135	177247	9/12/2009	1013417	20.66
COY 118	12	2 S	38 E	287	136	177248	9/12/2009	1013418	19.90

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Claim Name	Section(s)	Township	Range	County Book	County Page	County Document Number	Location Date	BLM Serial Number	Acres
COY 119	12, 13	2 S	38 E	287	137	177249	9/12/2009	1013419	20.66
COY 120	12	2 S	38 E	287	138	177250	9/12/2009	1013420	19.70
COY 121	12, 13	2 S	38 E	287	139	177251	9/12/2009	1013421	20.66
COY 122	12	2 S	38 E	287	140	177252	9/12/2009	1013422	19.60
COY 123	12, 13	2 S	38 E	287	141	177253	9/12/2009	1013423	20.66
COY 124	12	2 S	38 E	287	142	177254	9/12/2009	1013424	19.50
COY 125	12, 13	2 S	38 E	287	143	177255	9/12/2009	1013425	20.66
COY 126	12	2 S	38 E	287	144	177256	9/12/2009	1013426	20.66
COY 127	12, 13	2 S	38 E	287	145	177257	9/12/2009	1013427	20.66
COY 128	12	2 S	38 E	289	1	177864	11/9/2009	1018491	20.66
COY 129	12, 13	2 S	38 E	289	2	177865	11/9/2009	1018492	20.66
COY 130	s7 / s12	2 S	38 E	289	3	177866	11/9/2009	1018493	20.66
COY 131	7, 18 / 12, 13	2 S	38 E	289	4	177867	11/9/2009	1018494	20.66
COY 132	7	2 S	39 E	289	5	177868	11/9/2009	1018495	20.66
COY 133	7, 18	2 S	39 E	289	6	177869	11/9/2009	1018496	20.66
COY 134	7	2 S	39 E	289	7	177870	11/9/2009	1018497	20.66
COY 135	7, 18	2 S	39 E	289	8	177871	11/9/2009	1018498	20.66
COY 136	7	2 S	39 E	289	9	177872	11/9/2009	1018499	20.66
COY 137	7, 18	2 S	39 E	289	10	177873	11/9/2009	1018500	20.66
COY 138	7	2 S	39 E	289	11	177874	11/9/2009	1018501	20.66
COY 139	7, 18	2 S	39 E	289	12	177875	11/9/2009	1018502	20.66
COY 140	7	2 S	39 E	289	13	177876	11/9/2009	1018503	20.66
COY 141	7, 18	2 S	39 E	289	14	177877	11/9/2009	1018504	20.66
COY 142	7	2 S	39 E	289	15	177878	11/9/2009	1018505	20.66
COY 143	7, 18	2 S	39 E	289	16	177879	11/9/2009	1018506	20.66
COY 144	7	2 S	39 E	289	17	177880	11/9/2009	1018507	20.66
COY 145	7, 18	2 S	39 E	289	18	177881	11/9/2009	1018508	20.66
COY 146	12	2 S	38 E	289	19	177882	11/10/2009	1018509	19.30
COY 147	1, 12	2 S	38 E	289	20	177883	11/10/2009	1018510	17.80

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Claim Name	Section(s)	Township	Range	County Book	County Page	County Document Number	Location Date	BLM Serial Number	Acres
COY 148	12	2 S	38 E	289	21	177884	11/10/2009	1018511	20.66
COY 149	7, 6 / 1, 12	2 S	38 E / 39 E	289	22	177885	11/10/2009	1018512	18.40
COY 150	s7 / s12	2 S	38 E / 39 E	289	23	177886	11/10/2009	1018513	20.66
COY 151	6, 7	2 S	39 E	289	24	177887	11/10/2009	1018514	18.30
COY 152	7	2 S	39 E	289	25	177888	11/10/2009	1018515	20.66
COY 153	6, 7	2 S	39 E	289	26	177889	11/10/2009	1018516	18.20
COY 154	7	2 S	39 E	289	27	177890	11/10/2009	1018517	20.66
COY 155	6, 7	2 S	39 E	289	28	177891	11/10/2009	1018518	18.10
COY 156	7	2 S	39 E	289	29	177892	11/10/2009	1018519	20.66
COY 157	6, 7	2 S	39 E	289	30	177893	11/10/2009	1018520	14.50
COY 158	7	2 S	39 E	289	31	177894	11/10/2009	1018521	20.66
COY 159	6, 7	2 S	39 E	289	32	177895	11/10/2009	1018522	8.50
COY 160	7	2 S	39 E	289	33	177896	11/10/2009	1018523	20.66
COY 161	6, 7	2 S	39 E	289	34	177897	11/10/2009	1018524	2.40
COY 162	7	2 S	39 E	289	35	177898	11/10/2009	1018525	20.66
COY 163	7	2 S	39 E	289	36	177899	11/10/2009	1018526	16.90
COY 164	7	2 S	39 E	289	37	177900	11/10/2009	1018527	14.40
COY 165	13	2 S	38 E	289	38	177901	11/8/2009	1018528	20.66
COY 166	13	2 S	38 E	289	39	177902	11/8/2009	1018529	20.66
COY 167	13	2 S	38 E	289	40	177903	11/8/2009	1018530	20.66
COY 168	13	2 S	38 E	289	41	177904	11/8/2009	1018531	20.66
COY 169	13	2 S	38 E	289	42	177905	11/8/2009	1018532	20.66
COY 170	13	2 S	38 E	289	43	177906	11/8/2009	1018533	20.66
COY 171	13	2 S	38 E	289	44	177907	11/8/2009	1018534	20.66
COY 172	13	2 S	38 E	289	45	177908	11/8/2009	1018535	20.66
COY 173	13	2 S	38 E	289	46	177909	11/8/2009	1018536	20.66
COY 174	13	2 S	38 E	289	47	177910	11/8/2009	1018537	20.66
COY 175	13	2 S	38 E	289	48	177911	11/8/2009	1018538	20.66
COY 176	13	2 S	38 E	289	49	177912	11/8/2009	1018539	20.66

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Claim Name	Section(s)	Township	Range	County Book	County Page	County Document Number	Location Date	BLM Serial Number	Acres
COY 177	13	2 S	38 E	289	50	177913	11/8/2009	1018540	20.66
COY 178	13	2 S	38 E	289	51	177914	11/8/2009	1018541	20.66
COY 179	13	2 S	38 E	289	52	177915	11/8/2009	1018542	20.66
COY 180	13	2 S	38 E	289	53	177916	11/8/2009	1018543	20.66
COY 181	13	2 S	38 E	289	54	177917	11/8/2009	1018544	20.66
COY 182	s13 / s18	2 S	38 E / 39 E	289	55	177918	11/8/2009	1018545	20.66
COY 183	13	2 S	38 E	289	56	177919	11/8/2009	1018546	20.66
COY 184	13 / 18	2 S	38 E / 39 E	289	57	177920	11/8/2009	1018547	20.66
COY 185	13 / 18	2 S	38 E	289	58	177921	11/8/2009	1018548	20.66
COY 186	13 / 18	2 S	38 E / 39 E	289	59	177922	11/8/2009	1018549	20.66
COY 187	13	2 S	38 E	289	60	177923	11/8/2009	1018550	20.66
COY 188	13 / 18	2 S	38 E / 39 E	289	61	177924	11/8/2009	1018551	20.66
COY 189	13	2 S	38 E	289	62	177925	11/8/2009	1018552	20.66
COY 190	13 / 18	2 S	38 E / 39 E	289	63	177926	11/8/2009	1018553	20.66
COY 191	13	2 S	38 E	289	64	177927	11/8/2009	1018554	20.66
COY 192	13 / 18	2 S	38 E / 39 E	289	65	177928	11/8/2009	1018555	20.66
COY 193	13	2 S	38 E	289	66	177929	11/7/2009	1018556	20.66
COY 194	13 / 18	2 S	38 E / 39 E	289	67	177930	11/7/2009	1018557	20.66
COY 195	13	2 S	38 E	289	68	177931	11/7/2009	1018558	20.66
COY 196	13 / 18	2 S	38 E / 39 E	289	69	177932	11/7/2009	1018559	20.66
COY 197	13, 24	2 S	39 E	289	70	177933	11/7/2009	1018560	20.66
COY 198	13, 24/18, 19	2 S	38 E / 39 E	289	71	177934	11/7/2009	1018561	20.66
COY 199	24	2 S	39 E	289	72	177935	11/7/2009	1018562	20.66
COY 200	s24 / s19	2 S	38 E / 39 E	289	73	177936	11/7/2009	1018563	20.66
COY 201	s24 / s19	2 S	38 E / 39 E	289	74	177937	11/7/2009	1018564	20.66
COY 202	18	2 S	39 E	289	75	177938	11/7/2009	1018565	20.66
COY 203	18	2 S	39 E	289	76	177939	11/7/2009	1018566	20.66
COY 204	18	2 S	39 E	289	77	177940	11/7/2009	1018567	20.66
COY 205	18	2 S	39 E	289	78	177941	11/7/2009	1018568	20.66

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Claim Name	Section(s)	Township	Range	County Book	County Page	County Document Number	Location Date	BLM Serial Number	Acres
COY 206	18	2 S	39 E	289	79	177942	11/7/2009	1018569	20.66
COY 207	18	2 S	39 E	289	80	177943	11/7/2009	1018570	20.66
COY 208	18	2 S	39 E	289	81	177944	11/7/2009	1018571	20.66
COY 209	18	2 S	39 E	289	82	177945	11/7/2009	1018572	20.66
COY 210	18	2 S	39 E	289	83	177946	11/7/2009	1018573	20.66
COY 211	18	2 S	39 E	289	84	177947	11/7/2009	1018574	20.66
COY 212	18	2 S	39 E	289	85	177948	11/7/2009	1018575	20.66
COY 213	18	2 S	39 E	289	86	177949	11/7/2009	1018576	20.66
COY 214	18	2 S	39 E	289	87	177950	11/7/2009	1018577	20.66
COY 215	18	2 S	39 E	289	88	177951	11/7/2009	1018578	20.66
COY 216	18	2 S	39 E	289	89	177952	11/7/2009	1018579	20.66
COY 217	18	2 S	39 E	289	90	177953	11/7/2009	1018580	20.66
COY 218	18, 19	2 S	39 E	289	91	177954	11/7/2009	1018581	20.66
COY 219	18, 19	2 S	39 E	289	92	177955	11/7/2009	1018582	20.66
COY 220	19	2 S	39 E	289	93	177956	11/7/2009	1018583	20.66
COY 221	19	2 S	39 E	289	94	177957	11/7/2009	1018584	20.66
COY 222	19	2 S	39 E	289	95	177958	11/7/2009	1018585	20.66
COY 223	19	2 S	39 E	289	96	177959	11/7/2009	1018586	20.66
COY 224	19	2 S	39 E	289	97	177960	11/7/2009	1018587	20.66
COY 225	19	2 S	39 E	289	98	177961	11/7/2009	1018588	20.66
COY 226	19	2 S	39 E	289	99	177962	11/7/2009	1018589	20.66
COY 227	19	2 S	39 E	289	100	177963	11/7/2009	1018590	20.66
COY 228	19	2 S	39 E	289	101	177964	11/7/2009	1018591	20.66
COY 229	19	2 S	39 E	289	102	177965	11/7/2009	1018592	20.66
COY 230	19	2 S	39 E	289	103	177966	11/7/2009	1018593	20.66
COY 231	19	2 S	39 E	289	104	177967	11/7/2009	1018594	20.66
COY 232	17, 18	2 S	39 E	289	105	177968	11/7/2009	1018595	20.66
COY 233	17	2 S	39 E	289	106	177969	11/7/2009	1018596	20.66
COY 234	17, 18	2 S	39 E	289	107	177970	11/7/2009	1018597	20.66

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Claim Name	Section(s)	Township	Range	County Book	County Page	County Document Number	Location Date	BLM Serial Number	Acres
COY 235	17	2 S	39 E	289	108	177971	11/7/2009	1018598	20.66
COY 236	17, 18, 19, 20	2 S	39 E	289	109	177972	11/7/2009	1018599	20.66
COY 237	17, 20	2 S	39 E	289	110	177973	11/7/2009	1018600	20.66
COY 238	19, 20	2 S	39 E	289	111	177974	11/7/2009	1018601	20.66
COY 239	20	2 S	39 E	289	112	177975	11/7/2009	1018602	20.66
COY 240	19, 20	2 S	39 E	289	113	177976	11/7/2009	1018603	20.66
COY 241	20	2 S	39 E	289	114	177977	11/7/2009	1018604	20.66
COY 242	19, 20	2 S	39 E	289	115	177978	11/7/2009	1018605	20.66
COY 243	20	2 S	39 E	289	116	177979	11/7/2009	1018606	20.66
COY 244	19, 20	2 S	39 E	289	117	177980	11/7/2009	1018607	20.66
COY 245	19, 20	2 S	39 E	289	118	177981	11/7/2009	1018608	20.66
COY 246	19, 20	2 S	39 E	289	119	177982	11/7/2009	1018609	20.66
COY 247	2, 3	2 S	38 E	289	120	177983	11/4/2009	1018610	20.66
COY 248	2	2 S	38 E	289	121	177984	11/4/2009	1018611	20.66
COY 249	2, 3	2 S	38 E	289	122	177985	11/4/2009	1018612	20.66
COY 250	2	2 S	38 E	289	123	177986	11/4/2009	1018613	20.66
COY 251	2, 3	2 S	38 E	289	124	177987	11/4/2009	1018614	20.66
COY 252	3	2 S	38 E	289	125	177988	11/4/2009	1018615	16.90
COY 253	2,3	2 S	38 E	289	126	177989	11/4/2009	1018616	20.66
COY 254	2	2 S	38 E	289	127	177990	11/4/2009	1018617	4.20
COY 255	2	2 S	38 E	289	128	177991	11/4/2009	1018618	6.50
COY 256	3	2 S	38 E	289	129	177992	11/4/2009	1018619	20.66
COY 257	3	2 S	38 E	289	130	177993	11/4/2009	1018620	20.66
COY 258	3, 10	2 S	38 E	289	131	177994	11/4/2009	1018621	20.66
COY 259	10	2 S	38 E	289	132	177995	11/4/2009	1018622	20.66
COY 260	10	2 S	38 E	289	133	177996	11/4/2009	1018623	20.66
COY 261	10	2 S	38 E	289	134	177997	11/4/2009	1018624	20.66
COY 262	10	2 S	38 E	289	135	177998	11/4/2009	1018625	20.66
COY 263	10	2 S	38 E	289	136	177999	11/4/2009	1018626	20.66

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COY 264	10	2 S	38 E	289	137	178000	11/4/2009	1018627	20.66
COY 265	10	2 S	38 E	289	138	178001	11/4/2009	1018628	20.66
COY 266	10	2 S	38 E	289	139	178002	11/4/2009	1018629	20.66
COY 267	10, 15	2 S	38 E	289	140	178003	11/4/2009	1018630	20.66
COY 268	15	2 S	38 E	289	141	178004	11/4/2009	1018631	20.66
COY 269	15	2 S	38 E	289	142	178005	11/4/2009	1018632	20.66
COY 270	15	2 S	38 E	289	143	178006	11/4/2009	1018633	20.66
MR 401	32	1 S	39 E	287	146	177259	9/23/2009	1013310	20.66
MR 402	32	1 S	39 E	287	147	177260	9/23/2009	1013311	12.00
MR 403	31, 32	1 S	39 E	287	148	177261	9/23/2009	1013312	20.66
MR 404	s32 / s 5	1 S / 2 S	39 E	287	149	177262	9/23/2009	1013313	20.66
MR 405	31, 32	1 S	39 E	287	150	177263	9/23/2009	1013314	20.66
MR 406	s32 / s 5	1 S / 2 S	39 E	287	151	177264	9/23/2009	1013315	20.66
MR 407	31, 32/ 5, 6	1 S / 2 S	39 E	287	152	177265	9/23/2009	1013316	20.66
MR 408	s32 / s 5	1 S / 2 S	39 E	287	153	177266	9/23/2009	1013317	20.66
MR 409	31 / 5, 6	1 S / 2 S	39 E	287	154	177267	9/23/2009	1013318	20.66
MR 410	5, 6	2 S	39 E	287	155	177268	9/23/2009	1013319	20.66
MR 411	s31 / s 6	1 S / 2S	39 E	287	156	177269	9/23/2009	1013320	20.66
MR 412	5, 6	2 S	39 E	287	157	177270	9/23/2009	1013321	20.66
MR 413	6	2 S	39 E	287	158	177271	9/23/2009	1013322	20.66
MR 414	5, 6	2 S	39 E	287	159	177272	9/23/2009	1013323	20.66
MR 415	32	1 S	39E	289	144	178007	11/11/2009	1018634	19.30
MR 416	33	1 S	39E	289	145	178008	11/9/2009	1018635	12.80
MR 417	32, 33	1 S	39E	289	146	178009	11/9/2009	1018636	12.10
MR 418	32, 33/ 4, 5	1 S / 2 S	39 E	289	147	178010	11/9/2009	1018637	18.40
MR 419	s32 / s5	1 S / 2 S	39 E	289	148	178011	11/9/2009	1018638	6.90
MR 420	32 / 4, 5	1 S / 2 S	39 E	289	149	178012	11/9/2009	1018639	20.66
MR 421	32 / 5	1 S / 2 S	39 E	289	150	178013	11/11/2009	1018640	15.90
MR 422	4, 5	2 S	39E	289	151	178014	11/11/2009	1018641	20.66

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Claim Name	Section(s)	Township	Range	County Book	County Page	County Document Number	Location Date	BLM Serial Number	Acres
MR 423	32 / 5	1 S / 2 S	39 E	289	152	178015	11/11/2009	1018642	20.66
MR 424	5	2 S	39E	289	153	178016	11/11/2009	1018643	20.66
MR 425	5	2 S	39E	289	154	178017	11/11/2009	1018644	20.66
MR 426	5	2 S	39E	289	155	178018	11/11/2009	1018645	20.66
MR 427	5	2 S	39E	289	156	178019	11/11/2009	1018646	20.66
MR 428	5	2 S	39E	289	157	178020	11/11/2009	1018647	20.66
MR 429	5	2 S	39E	289	158	178021	11/11/2009	1018648	20.66
MR 430	5	2 S	39E	289	159	178022	11/11/2009	1018649	20.66
MR 431	5	2 S	39E	289	160	178023	11/11/2009	1018650	20.66
MR 432	5	2 S	39E	289	161	178024	11/11/2009	1018651	20.66
MR 433	5	2 S	39E	289	162	178025	11/11/2009	1018652	20.66
MR 434	5	2 S	39E	289	163	178026	11/11/2009	1018653	20.66
MR 435	4, 5	2 S	39E	289	164	178027	11/11/2009	1018654	20.66
MR 436	4, 5	2 S	39E	289	165	178028	11/11/2009	1018655	20.66
MR 437	5	2 S	39E	289	166	178029	11/11/2009	1018656	20.66
MR 438	5	2 S	39E	289	167	178030	11/11/2009	1018657	20.66
MR 439	5	2 S	39E	289	168	178031	11/11/2009	1018658	20.66
MR 440	5, 8, 9	2 S	39E	289	169	178032	11/11/2009	1018659	20.66
MR 441	5, 8	2 S	39E	289	170	178033	11/11/2009	1018660	20.66
MR 442	8	2 S	39E	289	171	178034	11/11/2009	1018661	20.66
MR 443	8	2 S	39E	289	172	178035	11/11/2009	1018662	20.66
MR 444	8	2 S	39E	289	173	178036	11/11/2009	1018663	20.66
MR 445	8	2 S	39E	289	174	178037	11/11/2009	1018664	20.66
MR 446	8	2 S	39E	289	175	178038	11/11/2009	1018665	20.66
MR 447	8	2 S	39E	289	176	178039	11/11/2009	1018666	20.66
MR 448	32	1 S	39E	289	177	178040	11/9/2009	1018667	20.66
MR 449	33, 33	1 S	39E	289	178	178041	11/9/2009	1018668	20.66
MR 450	33	1 S	39E	289	179	178042	11/9/2009	1018669	20.66
YORK 1	s35 / s 2	1 S / 2 S	38 E	287	160	177273	9/23/2009	1013324	20.20

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Claim Name	Section(s)	Township	Range	County Book	County Page	County Document Number	Location Date	BLM Serial Number	Acres
YORK 2	35 / 1, 2	1 S / 2 S	38 E	287	161	177274	9/23/2009	1013325	15.30
YORK 3	35 / 2	1 S / 2 S	38 E	287	162	177275	9/23/2009	1013326	9.40
YORK 4	1, 2	2 S	38 E	287	163	177276	9/23/2009	1013329	20.30
YORK 5	25, 26	1 S	38 E	289	180	178043	11/6/2009	1018670	20.66
YORK 6	25	1 S	38 E	289	181	178044	11/6/2009	1018671	20.66
YORK 7	25, 26	1 S	38 E	289	182	178045	11/6/2009	1018672	20.66
YORK 8	25, 36	1 S	38 E	289	183	178046	11/6/2009	1018673	20.66
YORK 9	25, 26	1 S	38 E	289	184	178047	11/6/2009	1018674	20.66
YORK 10	25, 36	1 S	38 E	289	185	178048	11/6/2009	1018675	20.66
YORK 11	35, 36	1 S	38 E	289	186	178049	11/5/2009	1018676	20.66
YORK 12	35, 36	1 S	38 E	289	187	178050	11/5/2009	1018677	20.66
YORK 13	35, 36	1 S	38 E	289	188	178051	11/5/2009	1018678	20.66
YORK 14	25, 36	1 S	38 E	289	189	178052	11/5/2009	1018679	20.66
YORK 15	25, 36	1 S	38 E	289	190	178053	11/5/2009	1018680	20.66
YORK 16	25, 36	1 S	38 E	289	191	178054	11/5/2009	1018681	20.66
YORK 17	36	1 S	38 E	289	192	178055	11/5/2009	1018682	20.66
YORK 18	25, 36	1 S	38 E	289	193	178056	11/5/2009	1018683	20.66
YORK 19	36	1 S	38 E	289	194	178057	11/5/2009	1018684	20.66
YORK 20	36	1 S	38 E	289	195	178058	11/5/2009	1018685	20.66
YORK 21	36	1 S	38 E	289	196	178059	11/5/2009	1018686	20.66
YORK 22	36	1 S	38 E	289	197	178060	11/6/2009	1018687	20.66
YORK 23	36	1 S	38 E	289	198	178061	11/6/2009	1018688	20.66
YORK 24	36	1 S	38 E	289	199	178062	11/6/2009	1018689	20.66
YORK 25	36	1 S	38 E	289	200	178063	11/6/2009	1018690	20.66
YORK 26	36	1 S	38 E	289	201	178064	11/6/2009	1018691	20.66
YORK 27	36	1 S	38 E	289	202	178065	11/6/2009	1018692	20.66
YORK 28	35, 36	1 S	38 E	289	203	178066	11/6/2009	1018693	20.66
YORK 29	36	1 S	38 E	289	204	178067	11/6/2009	1018694	20.66
YORK 30	35, 36	1 S	38 E	289	205	178068	11/5/2009	1018695	20.66

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Claim Name	Section(s)	Township	Range	County Book	County Page	County Document Number	Location Date	BLM Serial Number	Acres
YORK 31	35, 36	1 S	38 E	289	206	178069	11/5/2009	1018696	20.66
YORK 32	1, 2	2 S	38 E	289	207	178070	11/20/2009	1018697	8.70
YORK 33	1	2 S	38 E	289	208	178071	11/20/2009	1018698	5.50
CSS 1	5	2 S	38 E	318	629	188594	1/6/2013	1089278	17.22
CSS 2	5	2 S	38 E	318	630	188595	1/6/2013	1089279	17.22
CSS 3	5	2 S	38 E	318	631	188596	1/6/2013	1089280	20.66
CSS 4	5	2 S	38 E	318	632	188597	1/6/2013	1089281	20.66
CSS 5	5	2 S	38 E	318	633	188598	1/6/2013	1089282	20.66
CSS 6	5	2 S	38 E	318	634	188599	1/6/2013	1089283	20.66
CSS 7	5	2 S	38 E	318	635	188600	1/6/2013	1089284	20.66
CSS 8	5	2 S	38 E	318	636	188601	1/6/2013	1089285	20.66
CSS 9	5	2 S	38 E	318	637	188602	1/6/2013	1089286	20.66
CSS 10	5	2 S	38 E	318	638	188603	1/6/2013	1089287	20.66
CSS 11	4, 5	2 S	38 E	318	639	188604	1/7/2013	1089288	20.05
CSS 12	4	2 S	38 E	318	640	188605	1/7/2013	1089289	20.02
CSS 13	4, 5	2 S	38 E	318	641	188606	1/7/2013	1089290	20.66
CSS 14	4	2 S	38 E	318	642	188607	1/7/2013	1089291	20.66
CSS 15	4, 5	2 S	38 E	318	643	188608	1/7/2013	1089292	20.66
CSS 16	4	2 S	38 E	318	644	188609	1/7/2013	1089293	20.66
CSS 17	4	2 S	38 E	318	645	188610	1/7/2013	1089294	20.66
CSS 18	4	2 S	38 E	318	646	188611	1/6/2013	1089295	16.41
CSS 19	4	2 S	38 E	318	647	188612	1/6/2013	1089296	17.22
CSS 20	4	2 S	38 E	318	648	188613	1/6/2013	1089297	19.69
CSS 21	4	2 S	38 E	318	649	188614	1/6/2013	1089298	20.66
CSS 22	4	2 S	38 E	318	650	188615	1/6/2013	1089299	19.71
CSS 23	4	2 S	38 E	318	651	188616	1/6/2013	1089300	20.66
CSS 24	4	2 S	38 E	318	652	188617	1/6/2013	1089301	19.71
CSS 25	4	2 S	38 E	318	653	188618	1/6/2013	1089302	20.66
CSS 26	4	2 S	38 E	318	654	188619	1/6/2013	1089303	20.63

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Claim Name	Section(s)	Township	Range	County Book	County Page	County Document Number	Location Date	BLM Serial Number	Acres
CSS 27	4	2 S	38 E	318	655	188620	1/6/2013	1089304	20.66
CSS 28	4	2 S	38 E	318	656	188621	1/6/2013	1089305	20.66
CSS 29	4	2 S	38 E	318	657	188622	1/6/2013	1089306	20.66
CSS 30	4	2 S	38 E	318	658	188623	1/6/2013	1089307	20.66
CSS 31	4	2 S	38 E	318	659	188624	1/6/2013	1089308	20.66
CSS 32	4	2 S	38 E	318	660	188625	1/6/2013	1089309	20.66
CSS 33	4	2 S	38 E	318	661	188626	1/6/2013	1089310	20.66
CSS 34	5	2 S	38 E	318	662	188627	1/7/2013	1089311	1.90
CSS 35	5	2 S	38 E	318	663	188628	1/7/2013	1089312	1.72
NSS 1	29	1 S	38 E	318	535	188500	1/6/2013	1089313	20.66
NSS 2	29	1 S	38 E	318	536	188501	1/6/2013	1089314	20.66
NSS 3	29	1 S	38 E	318	537	188502	1/6/2013	1089315	20.66
NSS 4	29	1 S	38 E	318	538	188503	1/6/2013	1089316	20.66
NSS 5	29, 32	1 S	38 E	318	539	188504	1/6/2013	1089317	16.96
NSS 6	32	1 S	38 E	318	540	188505	1/6/2013	1089318	4.04
NSS 7	32	1 S	38 E	318	541	188506	1/6/2013	1089319	3.57
NSS 8	32	1 S	38 E	318	542	188507	1/6/2013	1089320	8.42
NSS 9	32	1 S	38 E	318	543	188508	1/6/2013	1089321	13.17
NSS 10	32	1 S	38 E	318	544	188509	1/6/2013	1089322	17.86
NSS 11	32	1 S	38 E	318	545	188510	1/6/2013	1089323	20.64
NSS 12	32	1 S	38 E	318	546	188511	1/6/2013	1089324	19.64
NSS 13	5, 32	1 S	38 E	318	547	188512	1/6/2013	1089325	15.57
NSS 14	5	2 S	38 E	318	548	188513	1/6/2013	1089326	16.59
NSS 15	29	1 S	38 E	318	549	188514	1/5/2013	1089327	20.66
NSS 16	29	1 S	38 E	318	550	188515	1/5/2013	1089328	20.66
NSS 17	29	1 S	38 E	318	551	188516	1/5/2013	1089329	20.66
NSS 18	29	1 S	38 E	318	552	188517	1/5/2013	1089330	20.66
NSS 19	29	1 S	38 E	318	553	188518	1/5/2013	1089331	20.66
NSS 20	29	1 S	38 E	318	554	188519	1/5/2013	1089332	20.66

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Claim Name	Section(s)	Township	Range	County Book	County Page	County Document Number	Location Date	BLM Serial Number	Acres
NSS 21	29	1 S	38 E	318	555	188520	1/5/2013	1089333	19.99
NSS 22	29, 32	1 S	38 E	318	556	188521	1/5/2013	1089334	9.65
NSS 23	32	1 S	38 E	318	557	188522	1/5/2013	1089335	4.42
NSS 24	32	1 S	38 E	318	558	188523	1/5/2013	1089336	0.43
NSS 25	32	1 S	38 E	318	559	188524	1/5/2013	1089337	1.00
NSS 26	32	1 S	38 E	318	560	188525	1/5/2013	1089338	12.51
NSS 27	32	1 S	38 E	318	561	188526	1/5/2013	1089339	20.63
NSS 28	32	1 S	38 E	318	562	188527	1/5/2013	1089340	17.54
NSS 29	5, 32	1 S	38 E	318	563	188528	1/5/2013	1089341	5.09
NSS 30	5	2 S	38 E	318	564	188529	1/5/2013	1089342	8.22
NSS 31	29	1 S	38 E	318	565	188530	1/5/2013	1089343	20.66
NSS 32	29	1 S	38 E	318	566	188531	1/5/2013	1089344	20.66
NSS 33	29	1 S	38 E	318	567	188532	1/5/2013	1089345	20.66
NSS 34	28, 29	1 S	38 E	318	568	188533	1/5/2013	1089346	20.66
NSS 35	29	1 S	38 E	318	569	188534	1/5/2013	1089347	20.66
NSS 36	28, 29	1 S	38 E	318	570	188535	1/5/2013	1089348	20.66
NSS 37	29	1 S	38 E	318	571	188536	1/5/2013	1089349	20.66
NSS 38	28, 29	1 S	38 E	318	572	188537	1/5/2013	1089350	20.66
NSS 39	29	1 S	38 E	318	573	188538	1/5/2013	1089351	20.66
NSS 40	28, 29	1 S	38 E	318	574	188539	1/5/2013	1089352	20.66
NSS 41	29	1 S	38 E	318	575	188540	1/5/2013	1089353	20.66
NSS 42	28, 29	1 S	38 E	318	576	188541	1/5/2013	1089354	20.66
NSS 43	29,32	1 S	38 E	318	577	188542	1/5/2013	1089355	20.66
NSS 44	28, 29, 32, 33	1 S	38 E	318	578	188543	1/5/2013	1089356	20.66
NSS 45	32	1 S	38 E	318	579	188544	1/5/2013	1089357	20.66
NSS 46	32, 33	1 S	38 E	318	580	188545	1/5/2013	1089358	20.66
NSS 47	32	1 S	38 E	318	581	188546	1/5/2013	1089359	19.88
NSS 48	32, 33	1 S	38 E	318	582	188547	1/5/2013	1089360	20.66
NSS 49	32	1 S	38 E	318	583	188548	1/5/2013	1089361	15.54

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Claim Name	Section(s)	Township	Range	County Book	County Page	County Document Number	Location Date	BLM Serial Number	Acres
NSS 50	32, 33	1 S	38 E	318	584	188549	1/5/2013	1089362	20.66
NSS 51	32	1 S	38 E	318	585	188550	1/5/2013	1089363	17.91
NSS 52	32, 33	1 S	38 E	318	586	188551	1/5/2013	1089364	20.66
NSS 53	32	1 S	38 E	318	587	188552	1/5/2013	1089365	20.66
NSS 54	32, 33	1 S	38 E	318	588	188553	1/5/2013	1089366	20.66
NSS 55	32	1 S	38 E	318	589	188554	1/5/2013	1089367	20.66
NSS 56	32, 33	1 S	38 E	318	590	188555	1/5/2013	1089368	20.66
NSS 57	32	1 S	38 E	318	591	188556	1/5/2013	1089369	20.66
NSS 58	32, 33	1 S	38 E	318	592	188557	1/5/2013	1089370	20.66
NSS 59	5, 32	1 S	38 E	318	593	188558	1/5/2013	1089371	20.66
NSS 60	32, 33	1 S	38 E	318	594	188559	1/5/2013	1089372	20.66
NSS 61	5	2 S	38 E	318	595	188560	1/5/2013	1089373	19.82
NSS 62	4, 5, 32, 33	1 S	38 E	318	596	188561	1/5/2013	1089374	17.70
NSS 63	28	1 S	38 E	318	597	188562	1/6/2013	1089375	20.66
NSS 64	28	1 S	38 E	318	598	188563	1/6/2013	1089376	20.66
NSS 65	28, 33	1 S	38 E	318	599	188564	1/6/2013	1089377	20.66
NSS 66	28, 33	1 S	38 E	318	600	188565	1/6/2013	1089378	20.66
NSS 67	33	1 S	38 E	318	601	188566	1/6/2013	1089379	20.66
NSS 68	33	1 S	38 E	318	602	188567	1/6/2013	1089380	20.66
NSS 69	33	1 S	38 E	318	603	188568	1/6/2013	1089381	20.66
NSS 70	33	1 S	38 E	318	604	188569	1/6/2013	1089382	20.66
NSS 71	33	1 S	38 E	318	605	188570	1/6/2013	1089383	20.66
NSS 72	33	1 S	38 E	318	606	188571	1/6/2013	1089384	20.66
NSS 73	33	1 S	38 E	318	607	188572	1/6/2013	1089385	20.66
NSS 74	33	1 S	38 E	318	608	188573	1/6/2013	1089386	20.66
NSS 75	33	1 S	38 E	318	609	188574	1/6/2013	1089387	20.66
NSS 76	33	1 S	38 E	318	610	188575	1/6/2013	1089388	20.66
NSS 77	33	1 S	38 E	318	611	188576	1/6/2013	1089389	20.66
NSS 78	33	1 S	38 E	318	612	188577	1/6/2013	1089390	20.66

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Claim Name	Section(s)	Township	Range	County Book	County Page	County Document Number	Location Date	BLM Serial Number	Acres
NSS 79	33	1 S	38 E	318	613	188578	1/6/2013	1089391	20.66
NSS 80	33	1 S	38 E	318	614	188579	1/6/2013	1089392	20.66
NSS 81	33	1 S	38 E	318	615	188580	1/6/2013	1089393	20.66
NSS 82	33	1 S	38 E	318	616	188581	1/6/2013	1089394	20.66
NSS 83	4, 33	1 S	38 E	318	617	188582	1/6/2013	1089395	18.57
NSS 84	4, 33	1 S	38 E	318	618	188583	1/6/2013	1089396	20.66
NSS 85	28, 33, 34	1 S	38 E	318	619	188584	1/6/2013	1089397	20.66
NSS 86	33, 34	1 S	38 E	318	620	188585	1/6/2013	1089398	20.66
NSS 87	33, 34	1 S	38 E	318	621	188586	1/6/2013	1089399	20.66
NSS 88	33, 34	1 S	38 E	318	622	188587	1/6/2013	1089400	20.66
NSS 89	33, 34	1 S	38 E	318	623	188588	1/6/2013	1089401	20.66
NSS 90	33, 34	1 S	38 E	318	624	188589	1/6/2013	1089402	20.66
NSS 91	33, 34	1 S	38 E	318	625	188590	1/6/2013	1089403	20.66
NSS 92	33, 34	1 S	38 E	318	626	188591	1/6/2013	1089404	20.66
NSS 93	33, 34	1 S	38 E	318	627	188592	1/6/2013	1089405	20.66
NSS 94	3, 4, 33, 34	1 S	38 E	318	628	188593	1/6/2013	1089406	20.66
DNG #7R	1	2S	38E	n/a	n/a	193066	10/8/2014	1108234	1.72
NEW YORK 5	26	1 S	38 E	n/a	n/a	193154	11/26/2014	1108717	20.66
NEW YORK 6	26	1 S	38 E	n/a	n/a	193153	11/26/2014	1108718	20.66
NEW YORK 7	35	1 S	38 E	n/a	n/a	193152	11/26/2014	1108719	20.66
NEW YORK 8	35	1 S	38 E	n/a	n/a	193151	11/26/2014	1108720	20.66
NEW YORK 9	2	2 S	38 E	n/a	n/a	193150	11/26/2014	1108721	20.66
NEW YORK 10	26, 35	1 S	38 E	n/a	n/a	193149	12/23/2014	1108722	20.66
NEW YORK 11	35	1 S	38 E	n/a	n/a	193148	12/23/2014	1108723	20.66
NEW YORK 12	35 / 2	1 S / 2 S	38 E	n/a	n/a	193147	12/23/2014	1108724	20.66
NEW YORK 13	2	2 S	38 E	n/a	n/a	193146	12/23/2014	1108725	20.66
NEW YORK 14	1, 2	2 S	38 E	n/a	n/a	193145	12/23/2014	1108726	20.66
NEW YORK 15	1	2 S	38 E	n/a	n/a	193144	12/23/2014	1108727	20.66
VANDE 1	8	2S	39E	n/a	n/a	207798	3/15/2017	1143122	20.66

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Claim Name	Section(s)	Township	Range	County Book	County Page	County Document Number	Location Date	BLM Serial Number	Acres
VANDE 2	8	2S	39E	n/a	n/a	207799	3/15/2017	1143123	20.66
VANDE 3	8	2S	39E	n/a	n/a	207800	3/15/2017	1143124	20.66
VANDE 4	8	2S	39E	n/a	n/a	207801	3/15/2017	1143125	20.66
VANDE 5	8	2S	39E	n/a	n/a	207802	3/14/2017	1143126	20.66
VANDE 6	8	2S	39E	n/a	n/a	207803	3/14/2017	1143127	20.66
VANDE 7	8, 17	2S	39E	n/a	n/a	207804	3/14/2017	1143128	20.66
VANDE 8	7, 18	2S	39E	n/a	n/a	207805	3/15/2017	1143129	20.66
VANDE 9	7, 8, 17, 18	2S	39E	n/a	n/a	207806	3/15/2017	1143130	20.66
VANDE 10	8, 17	2S	39E	n/a	n/a	207807	3/15/2017	1143131	20.66
VANDE 11	8, 17	2S	39E	n/a	n/a	207808	3/15/2017	1143132	20.66
VANDE 12	8, 17	2S	39E	n/a	n/a	207809	3/15/2017	1143133	20.66
VANDE 13	8, 17	2S	39E	n/a	n/a	207810	3/15/2017	1143134	20.66
VANDE 14	8, 17	2S	39E	n/a	n/a	207811	3/14/2017	1143135	20.66
VANDE 15	8, 17	2S	39E	n/a	n/a	207812	3/14/2017	1143136	20.66
VANDE 16	8, 17	2S	39E	n/a	n/a	207813	3/14/2017	1143137	20.66
VANDE 17	17	2S	39E	n/a	n/a	207814	3/14/2017	1143138	20.66
VANDE 18	18	2S	39E	n/a	n/a	207815	3/17/2017	1143139	20.66
VANDE 19	17, 18	2S	39E	n/a	n/a	207816	3/17/2017	1143140	20.66
VANDE 20	17	2S	39E	n/a	n/a	207817	3/17/2017	1143141	20.66
VANDE 21	17	2S	39E	n/a	n/a	207818	3/17/2017	1143142	20.66
VANDE 22	17	2S	39E	n/a	n/a	207819	3/17/2017	1143143	20.66
VANDE 23	17	2S	39E	n/a	n/a	207820	3/17/2017	1143144	20.66
VANDE 24	17	2S	39E	n/a	n/a	207821	3/16/2017	1143145	20.66
VANDE 25	17	2S	39E	n/a	n/a	207822	3/16/2017	1143146	20.66
VANDE 26	17	2S	39E	n/a	n/a	207823	3/16/2017	1143147	20.66
VANDE 27	17	2S	39E	n/a	n/a	207824	3/16/2017	1143148	20.66
VANDE 28	18	2S	39E	n/a	n/a	207825	3/17/2017	1143149	20.66
VANDE 29	17, 18	2S	39E	n/a	n/a	207826	3/17/2017	1143150	20.66
VANDE 30	17	2S	39E	n/a	n/a	207827	3/17/2017	1143151	20.66

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Claim Name	Section(s)	Township	Range	County Book	County Page	County Document Number	Location Date	BLM Serial Number	Acres
VANDE 31	17	2S	39E	n/a	n/a	207828	3/17/2017	1143152	20.66
VANDE 32	17	2S	39E	n/a	n/a	207829	3/17/2017	1143153	20.66
VANDE 33	17	2S	39E	n/a	n/a	207830	3/17/2017	1143154	20.66
VANDE 34	17	2S	39E	n/a	n/a	207831	3/16/2017	1143155	20.66
VANDE 35	17	2S	39E	n/a	n/a	207832	3/16/2017	1143156	20.66
VANDE 36	17	2S	39E	n/a	n/a	207833	3/16/2017	1143157	20.66
VANDE 37	17, 20	2S	39E	n/a	n/a	207834	3/15/2017	1143158	20.66
VANDE 38	17, 20	2S	39E	n/a	n/a	207835	3/15/2017	1143159	20.66
VANDE 39	20	2S	39E	n/a	n/a	207836	3/15/2017	1143160	20.66
VANDE 40	20	2S	39E	n/a	n/a	207837	3/15/2017	1143161	20.66
VANDE 41	20	2S	39E	n/a	n/a	207838	3/15/2017	1143162	20.66
VANDE 42	20	2S	39E	n/a	n/a	207839	3/15/2017	1143163	20.66
VANDE 43	20	2S	39E	n/a	n/a	207840	3/15/2017	1143164	20.66
VANDE 44	20	2S	39E	n/a	n/a	207841	3/15/2017	1143165	20.66
VANDE 45	20	2S	39E	n/a	n/a	207842	3/15/2017	1143166	20.66
VANDE 46	20	2S	39E	n/a	n/a	207843	3/15/2017	1143167	20.66
VANDE 47	20	2S	39E	n/a	n/a	207844	3/15/2017	1143168	20.66
VANDE 48	20	2S	39E	n/a	n/a	207845	3/15/2017	1143169	20.66
VANDE 49	20	2S	39E	n/a	n/a	207846	3/15/2017	1143170	20.66
VANDE 50	20	2S	39E	n/a	n/a	207847	3/15/2017	1143171	8.26
Total:	**(678) Claims**							**Total Acreage**	**12,896.88**

Note: Comprising (677) unpatented lode claims and (1) mill site claim

Figure 4.1: Mineral Tenure Layout Plan

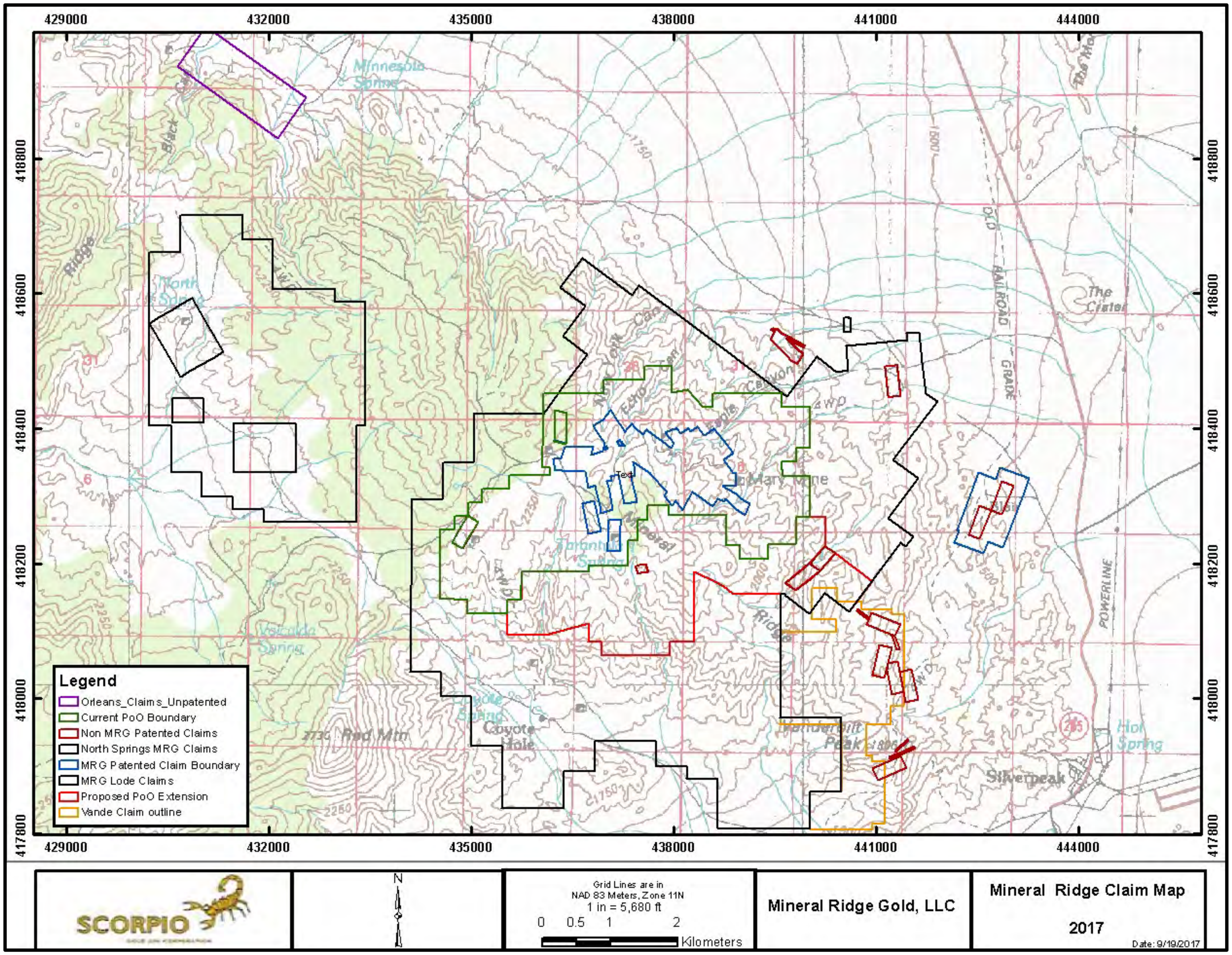
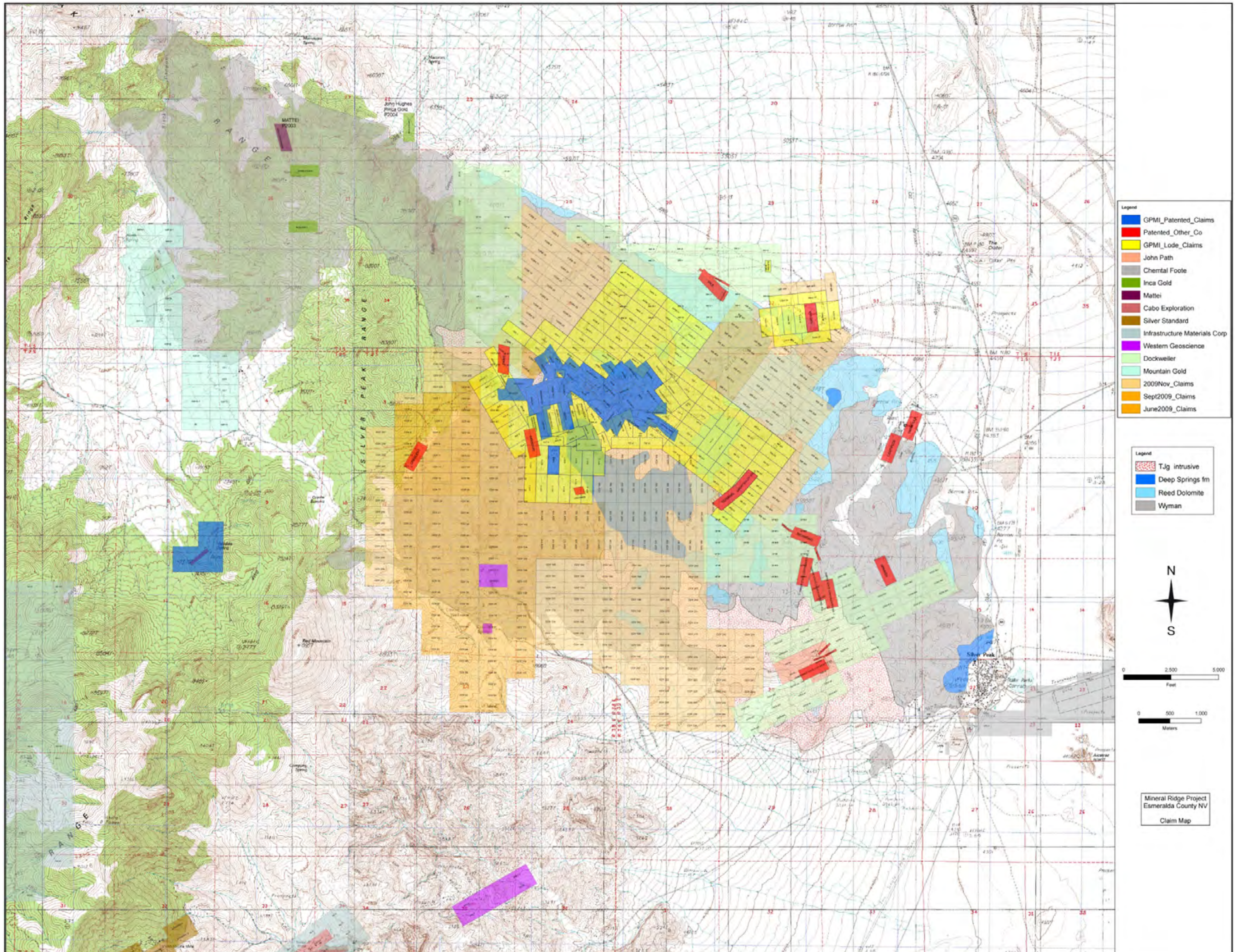
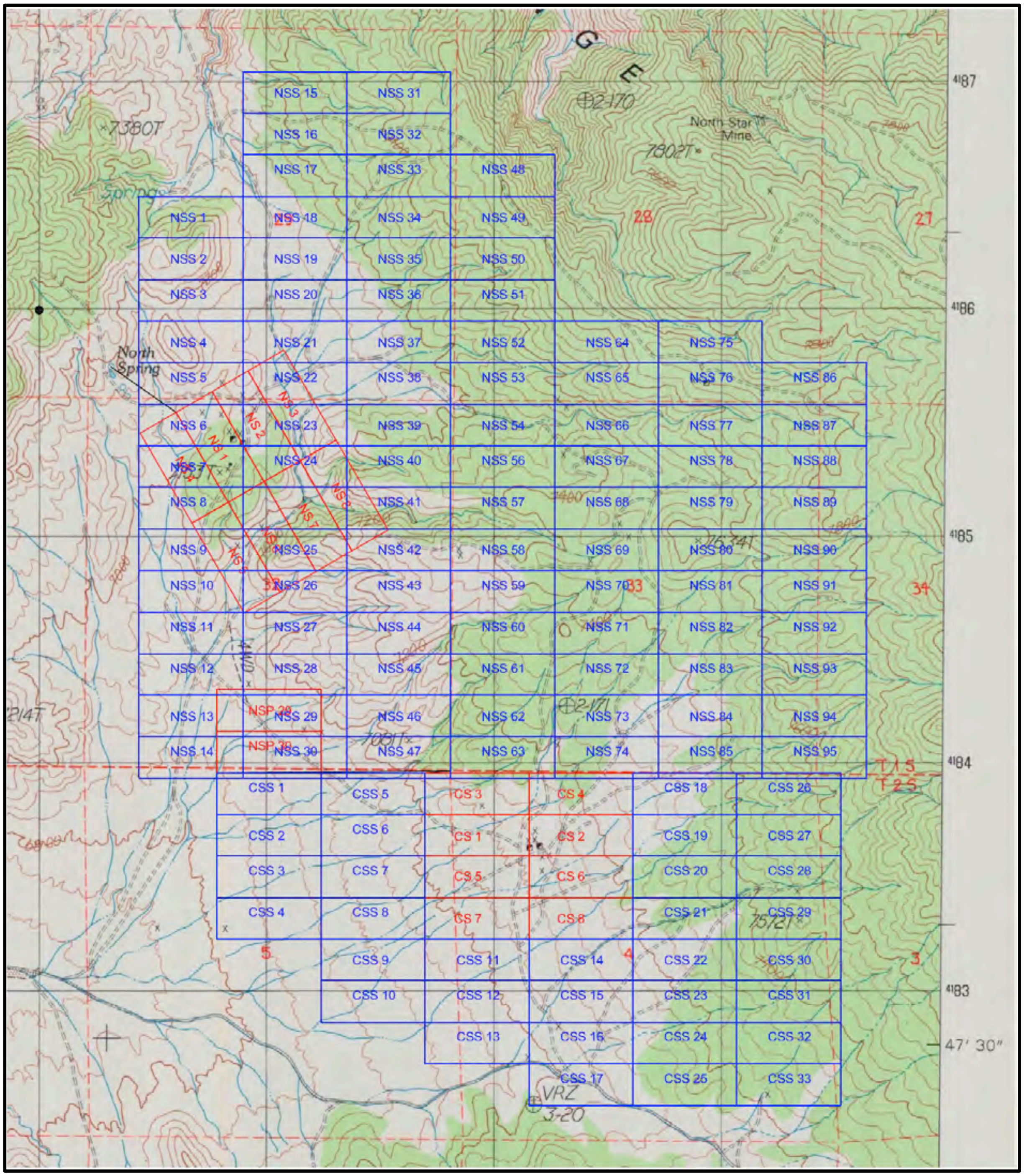


Figure 4.2: Claims Location Plan



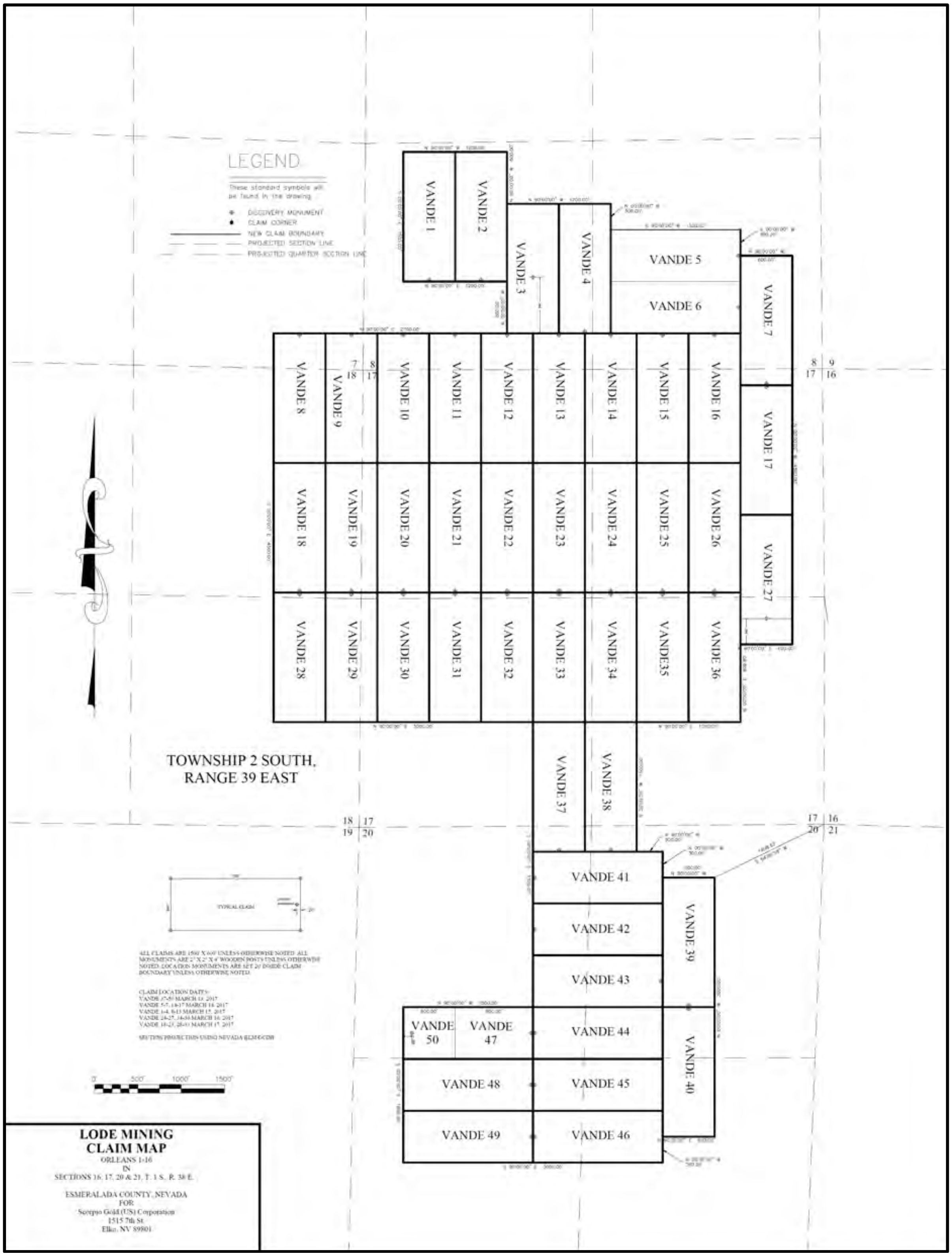
Note: Figure courtesy Scorpio Gold, 2017

Figure 4.3: North Spring Claims



Note: Figure courtesy Scorpio Gold, 2017. Map north is to top of figure

Figure 4.4: Vanderbilt Claims



Note: Figure courtesy Scorpio Gold, 2017

4.5 SURFACE RIGHTS

The authorized PoO area encompasses approximately 2,700 ac. Of this, the BLM administers approximately 2,044 ac of public land while approximately 656 ac are private land controlled by Scorpio Gold. No U.S. Forest Service land or state lands are located within the PoO area.

No easements or rights of way are required for access over public lands.

4.6 ROYALTIES AND ENCUMBRANCES

Four royalties are payable, depending on claim (refer to Table 4.1), as summarized in Table 4.3.

Table 4.3: Summary of Mineral Ridge Royalties

Claims	Claim Type	Royalty Description
Oregon, Peorto, and Soda	patented	Sliding scale NSR of 1.0 to 3.0 % adjusted to CPI
Solberry and Gilespy	patented	Sliding scale NSR of 0.6 to 1.8 % adjusted to CPI
Missouri	patented	4/6ths of 3% or effective 2% NSR

Note: NSR = net smelter return; CPI = Consumer Price Index

The material on the leach pad includes material that was mined from certain areas of the property that were subject to royalty payments. The royalty percentage has historically remained at the 3% rate except for three months in late 2015 when it was at 2.5%. Scorpio management believes that 3% going forward is reasonable (email communication, David LaCount, 2017); MTS used the 3% assumption in the financial analysis in Section 22.0.

4.7 PERMITTING CONSIDERATIONS

Mining operations have been conducted to date through an approved PoO. A summary of the PoO grant, subsequent amendments, and associated NEPA and 43 CFR 3809 surface management actions is provided in Table 4.4.

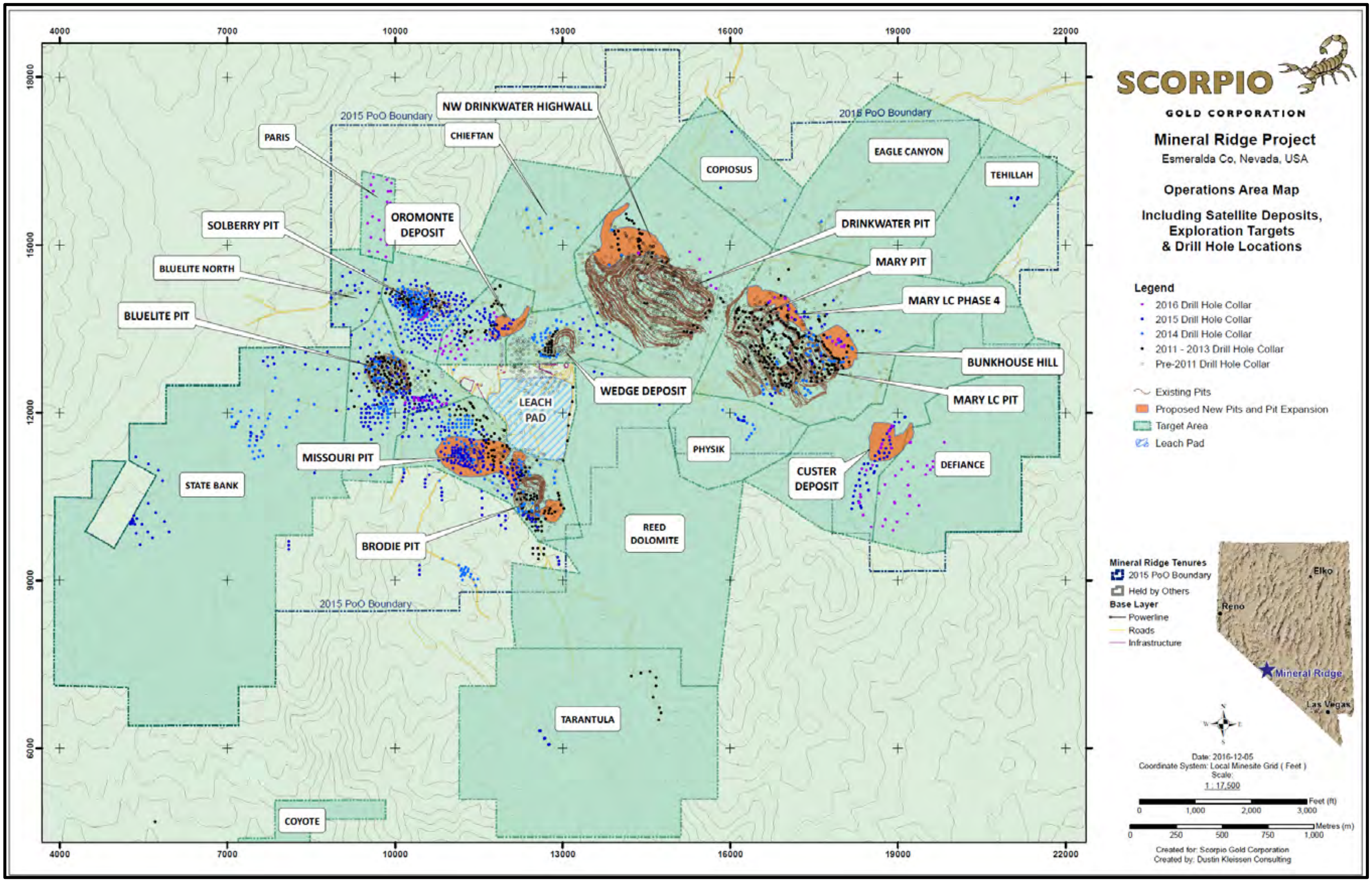
The mineralization within the current PoO, as amended, is summarized in Figure 4.5. This figure shows the locations of the mined out open pits, areas that are planned to be mined as described in this Report, and zones of known mineralization outside the main mining area.

Additional information on Project permitting is discussed in Section 20.0.

Table 4.4: Plan of Operations, Amendments, NEPA Actions and Actions under 43 CFR 3809

Project	43 CFR 3809 / NEPA Action	Date	No.
Mineral Ridge Mine	Environmental Assessment	June 1996	N65-96-001P
	Decision Record	July 1996	NV65-EA96-024
	Plan of Operations / Reclamation Permit	February 2001	NVN -73109 / 0103
	Plan of Operations / Reclamation Permit Amendment	July 2002	NVN -73109 / 0103
	Plan of Operations / Reclamation Permit Amendment	February 2003	NVN -73109 / 0103
	Plan of Operations / Reclamation Permit Amendment	April 2003	NVN -73109 / 0103
	Plan of Operations / Reclamation Permit Amendment	December 2010	NVN -73109 / 0103
Mary Drinkwater Exploration	Exploration Permit	1994	0034
	Exploration Permit Amendment	2003	-
	Exploration Permit Amendment	2005	-
	Exploration Permit Amendment	2008	-
Mineral Ridge Mine (combined with the Mary Drinkwater Exploration)	Mineral Ridge Mine (NVN 73109/Reclamation Permit 01030 and Mary Drinkwater (Reclamation Permit 0034): Plan of Operations Amendment	October 2011	NVN -73109 / 0103
	Amendment to the Mineral Ridge Mine 2003 Plan of Operations Environmental Assessment	October 2011	DOI-BLM-NVB020-2010-0135-EA
	Mineral Ridge Mine (NVN-73109/Reclamation Permit 103):Plan of Operations Water Well Amendment	December 2011	-
	Mineral Ridge Mine Water Well Environmental Assessment	April 2012	DOI-BLM-NVB020-2012-0230-EA
	Mineral Ridge Mine (NVN-73109/Reclamation Permit 0103):Pit Expansion Plan of Operations Amendment	November 2013	-
	An Environmental Assessment of Mineral Ridge Gold's Proposed Plan of Operations Amendment	February 2014	DOI-BLM-NVB020-2014-0002-EA
	Mineral Ridge Mine: Bat Protection Measures	March 2014	-
	Mineral Ridge Mine Bat Exclusions Determination of NEPA Adequacy	April 2014	DOI-BLM-NVB020-2014-0020-DNA
	Mineral Ridge Mine (NVN-73109/Reclamation Permit 0103): Mary/LC Expansion and Satellite Deposits Plan of Operations Amendment.	March 2015	-
	Mineral Ridge Mine Mary/LC and Satellite Deposits Environmental Assessment	March 2015	DOI-BLM-NVB020-2015-0030-EA
Proposed Action	Mineral Ridge Mine (NVN-73109/Reclamation Permit 0103): Custer Plan of Operations Amendment	December 2016	Under review

Figure 4.5: Mineralization within Current Plan of Operations Area



4.8 ENVIRONMENTAL CONSIDERATIONS

Evidence of extensive historical mining, both underground and open pit, is prevalent throughout the Project area. Mining has been conducted in the Mineral Ridge area intermittently since the 1860s. Old adits, shafts and prospect pits are common, along with remnants of old ore chutes and processing facilities. Many of these are heritage sites.

The environmental considerations relevant to the Project are discussed in Section 20.0.

4.9 SOCIAL LICENSE CONSIDERATIONS

The social considerations relevant to the Project are discussed in Section 20.0.

4.10 COMMENTS ON PROPERTY DESCRIPTION AND LOCATION

The expert opinion and information from Scorpio Gold experts supports the following:

- Information from experts supports that the mining tenure held is valid and is sufficient to support declaration of Mineral Resources and Mineral Reserves;
- Mineral tenure is held by way of patented and unpatented claims;
- Royalties are associated with some of the patented claims;
- Under Nevada law, each unpatented claim is marked on the ground, and does not require survey;
- MTS was supplied with expert opinion that indicates the annual claim maintenance fees have been paid for assessment year beginning September 1, 2017;
- Mining operations have been conducted to date through an approved PoO (as amended);
- Additional permits, and potentially environmental studies and public consultation may be required prior to commencement of the milling operation and remnant mining activity.

Scorpio Gold advised that to the extent known, there are no other significant factors and risks other than those discussed in this Feasibility Study and Technical Report that may affect access, title, or right or ability to perform work on the Project.

5.0 ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE AND PHYSIOGRAPHY

5.1 ACCESSIBILITY

The Project is accessed by US Highway 95 from either Las Vegas or Reno, Nevada. The town of Silver Peak can be accessed via paved road from US Highway 95 from Coaldale Junction via State Highway 265. There is also a gravel access road from US Highway 95 between Tonopah and Goldfield, east of Silver Peak. The mine site is accessed through Silver Peak, either by the Coyote Canyon Road or Eagle Canyon Road (both county-maintained gravel roads) north of Silver Peak. Commercial vehicle access is also available from Fish Lake valley via State Highway 264, west of the Project.

Within the Project area, exploration sites can be accessed using four-wheel drives along steep dirt tracks.

5.2 CLIMATE

The climate is typical of the Great Basin area, with hot, dry summers and cool, dry winters. Maximum daytime summer temperatures are generally less than 100ºF (38ºC) and summer night time temperatures are generally above 40ºF (4ºC). Winter temperature extremes vary between highs of 50ºF (10ºC) and a low of -10°F (-23ºC). The high elevation and proximity of the mountains contribute to the wide temperature range.

Records from 1984 through 1993 at Silver Peak indicate an annual average of four inches (10 cm) of precipitation. Because the Project site is at a considerably higher elevation than the town of Silver Peak, precipitation levels are higher. Evaporation rates exceed annual precipitation rates in the Project area by an approximate ratio of 14:1.

Prevailing winds are from the southwest.

Mining activities have been conducted year-round, and future remnant mining and processing is expected to also be undertaken on a year-round basis. Exploration is possible year-round, though snow levels in winter and wet conditions in late autumn and in spring can make travel on unpaved roads difficult.

5.3 LOCAL RESOURCES AND INFRASTRUCTURE

The Project area is located in Esmeralda County south of US Highway 95, about four miles (6 km) northwest of Silver Peak, Nevada, and about 35 miles (56 km) southwest of the town of Tonopah, Nevada.

Silver Peak is an unincorporated community in Esmeralda County, with a 2009 estimated population of 376. Tonopah is the county seat of Nye County, which had a population 2,627 in 2000.

The Reno/Tahoe International Airport (RNO) in Reno, Nevada, is approximately 175 miles (282 km) northwest of Tonopah, and approximately 165 miles (266 km) northwest of the Project area.

Additional information on infrastructure is provided in Section 18.0 of this Report.

5.4 PHYSIOGRAPHY

The Project is located on the northeastern flank of the Silver Peak range in an area of rugged relief with drainage into the adjacent Clayton Valley. Elevations range from 5,800 to 7,400 ft (1,768 to 2,256 m) above sea level, with the terrain ranging from hilly to steep in the immediate Project area. Red Mountain, located four miles (6 km) from the Project, reaches an elevation of 8,957 ft (2,730 m) above sea level.

The Project area is very dry. There are no natural sources of standing water within the Project boundaries and no running water in the drainages, other than that which briefly follows infrequent storms. As a result, vegetation in the area is mostly sparse, consisting of desert shrubs, succulent grasses and forbs (e.g., Spiny Mendoza, Shadscale, Hopsage, Budsage, Galleta) in the lower portions, giving way to black Sage and Pinion Pine, locally, in the higher areas. Wildlife species and habitats are typical of desert areas within the southern Great Basin. There are a few springs in the area which provide water for the local wildlife, but do not flow far downstream.

5.5 SEISMICITY

The site area has been rated as a Uniform Building Code (UBC) Zone 4 for seismic design.

5.6 COMMENTS ON ACCESSIBILITY, CLIMATE, LOCAL RESOURCES, INFRASTRUCTURE, AND PHYSIOGRAPHY

There is sufficient suitable land available within the mineral tenure held by Mineral Ridge for waste disposal, and installations such as the proposed process plant and supporting mine infrastructure. Much of the necessary primary infrastructure has been built on site and is sufficient for the projected life-of-mine plan (LOMP). The LOMP requires a new process plant to be constructed; this is planned to be located adjacent the existing crusher (refer to discussions in Sections 16.0 to 20.0).

A review of the existing power and water sources, manpower availability, and transport options (see Sections 18.0 and 20.0), indicates that there are reasonable expectations that sufficient labor and infrastructure will continue to be available to support declaration of Mineral Resources, Mineral Reserves, and the proposed LOMP.

6.0 HISTORY

6.1 EXPLORATION HISTORY

A summary of the Project history is provided in Table 6.1.

6.2 PRODUCTION

An estimated 406,000 oz of gold from 1.5 Mt of mined material was produced from the early underground workings at Mineral Ridge (MRDI, 1995). From 1989 to 1992, Zephyr and Homestead mined and milled 1.4 Mt of ore grading 0.082 opt gold (113,961 oz of contained gold). A total of 112,000 oz from 1.9 Mt of mined material was produced during 1993 to 2005. Table 6.2 summarizes the production from 1993 to November 2017.

Table 6.1: Project History

Year	Operator	Comment
1864–1865	Robinson brothers	Gold discovered by Robinson brothers; mill operating by 1865; The earliest exploitation of the deposits was by underground mining along high-grade quartz veins
1865–1915	Various operators, including Silver Peak Gold Mining Company	Underground mining
1942	--	Mining ceased on order of the War Production Board
1945–1987	--	Small scale mining may have occurred, but is not documented
1989–1990	Zephyr	Operated Mineral Ridge as an open pit, trucking ore 17 miles to the 16:1 mill
1990–1992	Homestead	Purchased Zephyr's interests in the area and continued mining Mineral Ridge until early 1992. The costs of trucking ore to the 16:1 mill proved to be unsupportable and Homestead declared bankruptcy in mid-1992.
1993–2005	MRRI, Vista Gold, and Golden Phoenix	Open pit mining and heap leach processing. Golden Phoenix drained and rinsed the leach pad in 2005
2008	Golden Phoenix	Drilled 54 exploration holes in the Brodie, Blue Lite, Mary, and Oromonte/Wedge areas; focus of this campaign was on drill holes of 600 to 1,000 ft in depth, to determine structural controls and the potential for mineralized zones at depth, below known mineralization. Significant intercepts were encountered at Blue Lite, Brodie, and Mary
2009–2010	Scorpio Gold	Entered into the MRG joint venture with Golden Phoenix, and in March 2010, MRG became project operator
2009–2012	Scorpio Gold	Completed a confirmation drilling campaign at Mineral Ridge in 2009, and MRG completed infill and exploration drilling campaigns in 2010, 2011, and 2012. Drilling by Scorpio Gold and MRG from 2009 to July 15, 2012, totaled 123,731 ft in 452 drill holes
2011–2017	Scorpio Gold	Open pit mining and heap leach operation
September 2017	Scorpio Gold	Completion of a feasibility study to evaluate treatment of heap leach pad material using a combination of conventional comminution using ball mills, and CIL cyanidation to recover gold and silver
October to November 2017	Scorpio Gold	Commissioned a study to determine the feasibility of mining mineralization from remnant areas adjacent mined-out open pits

Table 6.2: Production Summary, 1993–November 2017

Production Source	Material Mined/Placed on Leach Pad			
	Tons	Gold Grade (opt)	Contained Gold (oz)	Recovered Gold (oz)
Mineral Ridge Resources	644,587	0.062	40,076	23,645
Vista	1,010,940	0.052	52,367	32,232
Golden Phoenix	287,000	0.068	19,516	4,925
Total Historical Production	**1,942,527**	**0.058**	**111,959**	**60,802**
Previously Placed Ounces Recovered by MRG	--	--	--	4,021
MRG Production Through 2013	2,064,755	0.066	136,136 7	7,138
Actual 2014	1,013,644	0.053	53,979	40,814
Actual 2015	1,085,592	0.040	43,539	39,690
Actual 2016	826,944	0.047	39,084	36,879
2017 through November	435,260	0.046	20,140	18,309
Ending Stockpile	--	--	--	--
Total MRG Production	5,426,195	0.054	292,878	214,196
Total Leach Pad Production	7,368,722	0.055	404,837	277,653
Ending inventory - ADR	--	--	--	921
Ending inventory - Metals Research	--	--	--	445

7.0 GEOLOGICAL SETTING AND MINERALIZATION

7.1 REGIONAL GEOLOGY

The Mineral Ridge gold deposits are located on the northeast flank of the Silver Peak Mountain Range. This range lies in the southern reaches of the Great Basin, within the Walker Lane structural corridor. Walker Lane is a 100-km-wide region of right lateral, wrench-faulting which separates the Sierra Nevada batholith to the west and southwest and the Great Basin to the east and northeast (Figure 7.1). Figure 7.2 provides a regional geological summary map.

7.2 PROJECT GEOLOGY

Figure 7.3 is a stratigraphic column for the lithologies in the general Project area. Figure 7.4 is a geological plan of the deposits in the main area of recent mining activity.

7.2.1 SEDIMENTARY LITHOLOGIES

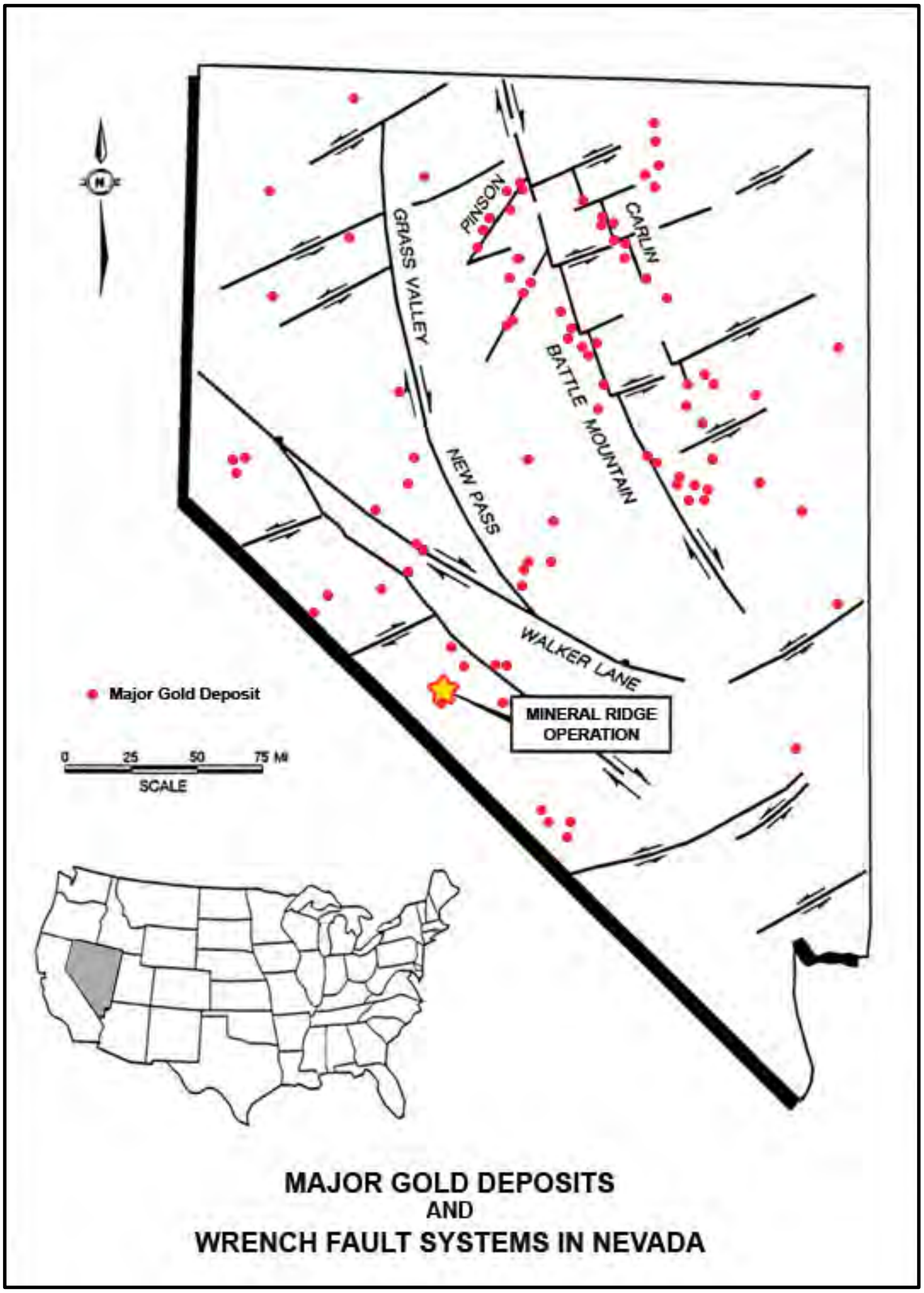
Within the Mineral Ridge area, starting from the structural base, the Wyman Formation is overlain, in sequence, by the Reed Dolomite, a tan to white, massive bedded and commonly re-crystallized dolomite unit, and the Deep Springs Formation, a grey to dark-grey, micritic, massively bedded limestone commonly cross-cut by calcite veining. The Reed Dolomite and the Deep Springs Formation only occur as remnants within the Project area. The metasedimentary rocks are folded in a doubly-plunging, open, upright anticline that trends northwest–southeast. The key sedimentary lithological units within the Mineral Ridge Project area are summarized in Table 7.1, using nomenclature commonly used in previous technical reports (e.g. Wakefield et al., 2012).

Locally, there has been some contact metamorphism related to the intrusion of the sedimentary rocks and meta-sedimentary rocks by granodiorite, alaskite, and pegmatite bodies. This has resulted in the formation of some semi-conformable jasper bodies, and may be partially responsible for the re-crystallization of some of the limestone into calc-silicate.

7.2.2 INTRUSIVE LITHOLOGIES

The Wyman Formation is underlain and intruded by an Eocene granodiorite and related alaskite, aplite, and pegmatite intrusive rocks. The contact is highly irregular in detail, due in part to structural contortions within the Wyman Formation.

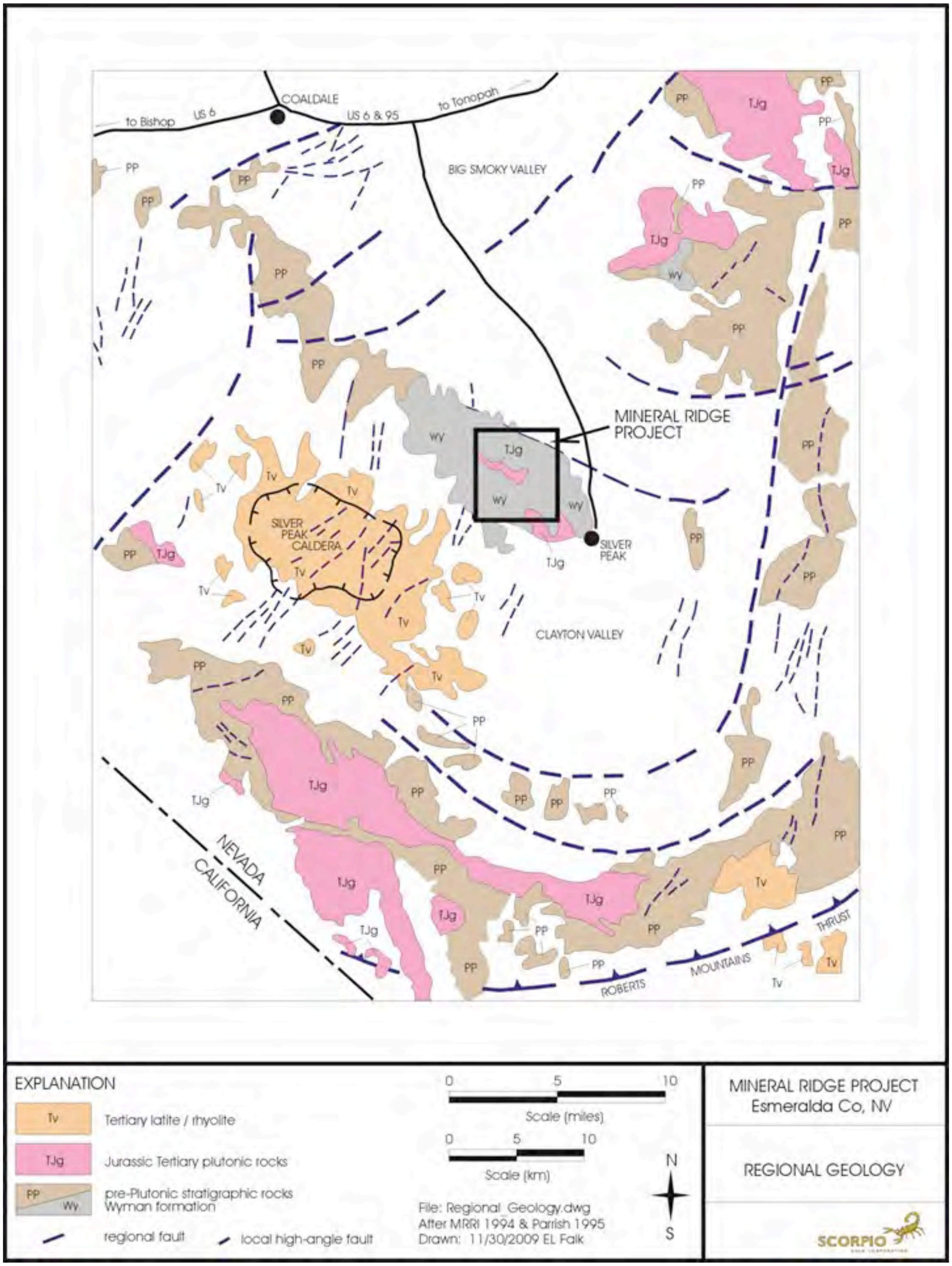
Figure 7.1: Project Structural Setting



Note: Figure courtesy Scorpio Gold, 2017

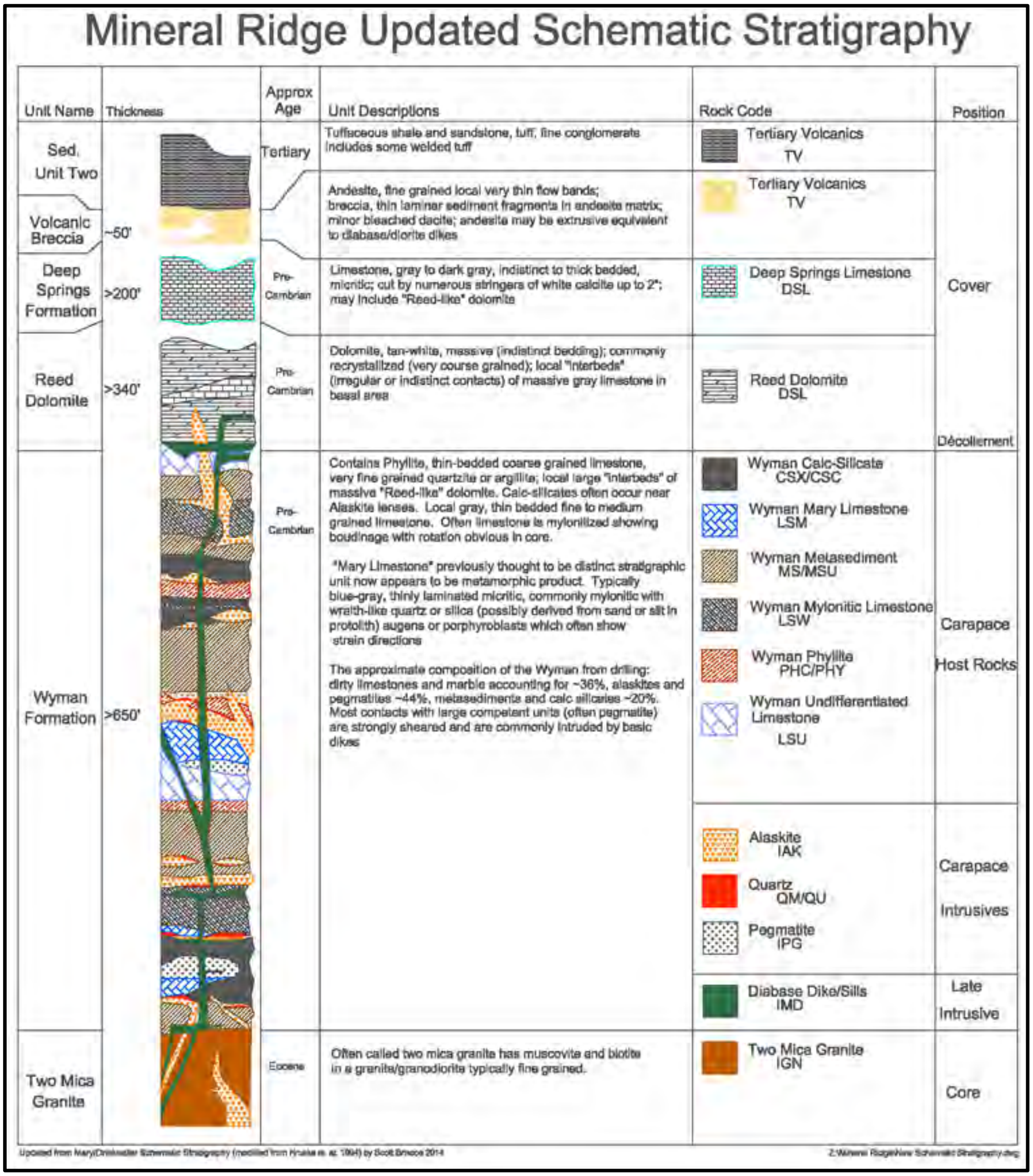
Spur (1906) describes the intrusive units as mineralogically and chemically the same, varying only in crystal size and muscovite content. Spur also described the alaskite as grading into milky quartz-rich rock by a reduction in the amount of feldspar in the rock (Spur, 1906).

Figure 7.2: Generalized Regional Geology Map of the Mineral Ridge Project



Note: Figure courtesy Scorpio Gold, 2017.

Figure 7.3: Stratigraphic Column of the Mineral Ridge Area



Note: Figure courtesy Scorpio Gold, 2017.

Figure 7.4: Mining Area Geology Plan

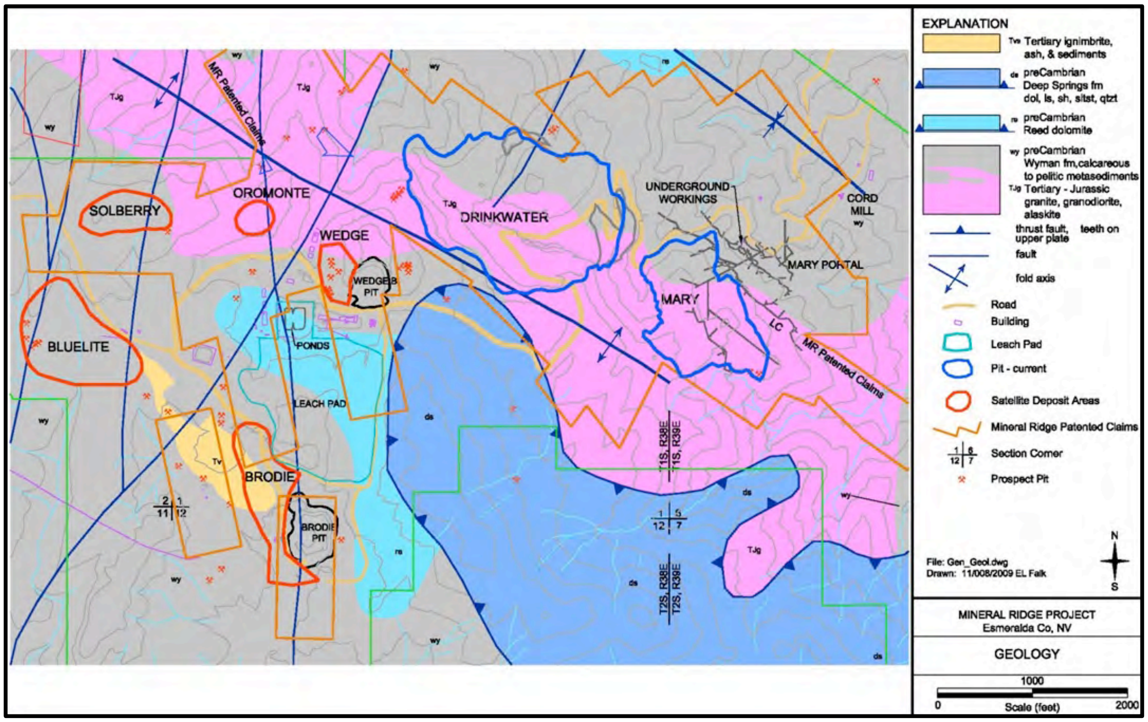


Table 7.1: Sedimentary Lithological Units

Unit	Description
Wyman Formation	Consists of phyllite, calc-silicate, marble, limestone, and minor, fine-grained quartzite. The formation has been regionally metamorphosed to almandine-amphibolite facies with some sillimanite. Locally, there has also been some contact metamorphism related to the intrusion of the sedimentary rocks and meta-sedimentary rocks by granodiorite, alaskite, pegmatite, and aplite. This has resulted in the formation of some semi-conformable jasper and is possibly responsible for the re-crystallization of some of the limestone into calc-silicate. Milky "bull" quartz is ubiquitous within low-angle shear zones near the base of the Wyman Formation, with the quartz likely being emplaced in conjunction with the extensional event.
Unit 1, Lower Cataclastic Unit	Dominated by the sheared "Mary Limestone", which is the main host for the Mineral Ridge mineralization. The "Mary Limestone" is blue–grey in color, finely crystalline, and commonly sheared by regional, low-angle, ductile, extensional deformation. The unit commonly contains boudins of alaskite, pegmatite, and granodiorite and is otherwise re-crystallized into calc-silicates, and calcareous phyllites. The base of the unit is locally invaded by the felsic intrusive which decrease upward through the section. Diabase sills and several generations and types of barren and gold-bearing quartz have been emplaced in and follow the low-angle shear zones, increasing in thickness and mineralization grade in dilatancy zones located where the dip steepens on the shoulders of subordinate "strike anticlines".
Unit 2, Middle Unit	Consists of slightly calcareous phyllite, calc-silicates, minor gray limestone, and some intrusive alaskite, although in lesser quantities than in the lower unit. This unit is characterized by its brown weathering colour and extensive folding, both on a regional and local scale.
Unit 3, Upper Unit	Consists of phyllitic limestone, phyllite, dolomite and minor, very finely crystalline quartzite. Dolomite and phyllite are locally interleaved toward the contact with the overlying Reed Dolomite, suggesting a depositional transition.

The main intrusive units are:

- A two-mica granodiorite that form the core of the northwesterly trending Mineral Ridge antiform, and has been classified as a biotite–hornblende granodiorite;
- A set of fine grained micro-leucogranite (“alaskite”) bodies that form sills which intrude the metasedimentary packages;
- A set of variably micaceous quartz–feldspar pegmatites that intrude both the granodiorite pluton, and the metasedimentary rocks;
- A set of diabase dikes that intrude along high- and low-angle structures throughout Mineral Ridge. The dikes can follow the same structures as the gold-bearing quartz veins, but are unaltered and not mineralized.

7.2.3 STRUCTURE

The structural setting is marked by high shearing and flattening strain zones, which produced widespread, prominent shear indicators (shear bands, feldspar ‘fish’ augen, asymmetric boudins) at millimetre to greater than metre scales. The strain regime also resulted in extreme grainsize reduction of pegmatites, local development of mylonites, and abundant, locally chaotic, transposition in calcareous rocks. In addition, intense foliation developed in all rock types.

Recumbent isoclinal and transposed folds formed in the Wyman Formation rocks at centimetre to metre scales, and in Wyman Formation–alaskite–pegmatite packages at metre to hundred-metre-scales.

Four main structural corridors have been defined, trending north–northwest, northwest, north–northeast, and northeast.

Within the Drinkwater and Mary areas, the stratigraphy and mineralized horizons dip to the northeast at approximately 25º. On the opposite side of Mineral Ridge, the stratigraphy and mineralized zones are dip at about 10 to 15º. Mineralization occurs in the lower unit of the Wyman Formation where deformation resulting from regional metamorphism and extensive low-angle faulting has resulted in variable shearing of the unit. Low-angle faults generally parallel the stratigraphy and bound the mineralized horizons, and are considered to be both pre-mineralization and post- mineralization in age. Locally, high-angle faulting has been recognized; the most notable is the northeast-trending Mary/Drinkwater cross fault zone in the Drinkwater deposit area.

Gold deposits in the Project area are hosted within a structural envelope in the lower unit of the Wyman Formation near its contact with the crystalline core rocks. Quartz and felsic intrusive rock boundaries are common in this structural zone. These boundaries are elongate within, and sub-parallel to, the direction of extension as a whole and are exposed in outcrop and in the underground workings. Elongate, braided, ductile shear zones surround the boundaries, with these shear zones being preferentially in-filled by milky quartz veining associated with mineralization and the better gold grades. This zone of ductile shearing comprises the structural mineralized envelope, and is internal, and sub-parallel to the limits of the structural slab. Internal to the mineralized envelope, other, smaller-scale fault and fold sets occur, which correspond to higher grade mineralized shoots.

Based on mapping of the historical underground stopes within the Mary and Drinkwater deposits, some of the high-grade mineralized shoots historically exploited by underground methods were localized at the inflection point of small flexures where dilation zones were formed when the limb of the fold steepened. These shoots lie at an angle of 38° to 45° from the horizontal, versus the average 25º angle of the structural zone. It is believed that the highest-grade mineralized shoots are related to a second, perpendicular set of flexures accompanied by oblique faulting that intersects the dilation zones.

7.2.4 WEATHERING

Near the original topographic surface and throughout the Drinkwater and Mary areas, weathering has resulted in the partial to complete oxidation of the sulfides to iron oxides. The degree of oxidation decreases with depth in the deposits. Existing records show that cyanide assays versus fire assays did not indicate a recovery change with depth.

7.2.5 MINERALIZATION

The currently-known mineralized zones occur over an area of approximately 14,000 ft (4,300 m) north–south and 15,000 ft (4,600 m) east–west.

The gold mineralization at Mineral Ridge is primarily associated with milky quartz veins and lenses accompanied by local argillization and some sericitization. Prior to mining, the individual zones were as much as 50 ft (15 m) thick, typically consisting of a higher-grade quartz veins from five to 30 ft (9 m) thick, surrounded by a lower-grade envelope of mineralization. Two or more high grade zones are commonly observed stacked in en echelon patterns.

Gold deposition is structurally-controlled, and some of the highest-grade mineralization is found in shoots that are at an oblique angle to the direction of movement of extension (see Section 7.2.3).

Gold is present as native gold and electrum that occurs as irregular shaped intergrowths in quartz associated with interstitial space and small fractures. Gold also occurs as irregularly shaped intergrowths and as fracture fillings associated with goethite, much of which was derived from original pyrite. In partially oxidized mineralization, gold occurs with both pyrite and goethite. Locally, minor amounts of galena, graphitic to carbonaceous material, sphalerite and anglesite/cerrusite have been observed, with galena and graphite appearing to be associated with higher-grade gold values.

Gold particle size varies from 1 to 2 µm to about 700 µm, but most of the particles are in the 5 to 50 µm size range. Gold to silver ratios are typically in the 2:1 range.

7.3 DEPOSIT DESCRIPTIONS

Much of the known mineralization has been mined out in the Drinkwater, Mary LC, Wedge A, B, C, and D, Bluelite, Solberry, Missouri, Brodie, and underground portion of the Oromonte areas.

Five areas of remnant mineralization adjacent to the Drinkwater, Mary LC, Bunkhouse Hill, and Brodie open pits are considered to remain prospective for remnant open pit mining, as is the Custer area, which has no open pit mining history, situated to the southeast of Bunkhouse Hill. Four of these areas are on the eastern, Drinkwater, side of the Mineral Ridge antiform (Drinkwater, Mary LC, Bunkhouse Hill, Custer), and two, Oromonte and Brodie, are on the western limb of the antiform. Figure 7.5 shows the locations of these general areas.

Figure 7.6 to Figure 7.11 are cross-sections through the deposits. Figure 7.12 is the legend key to accompany the figures.

Figure 7.5: Deposit Location Plan

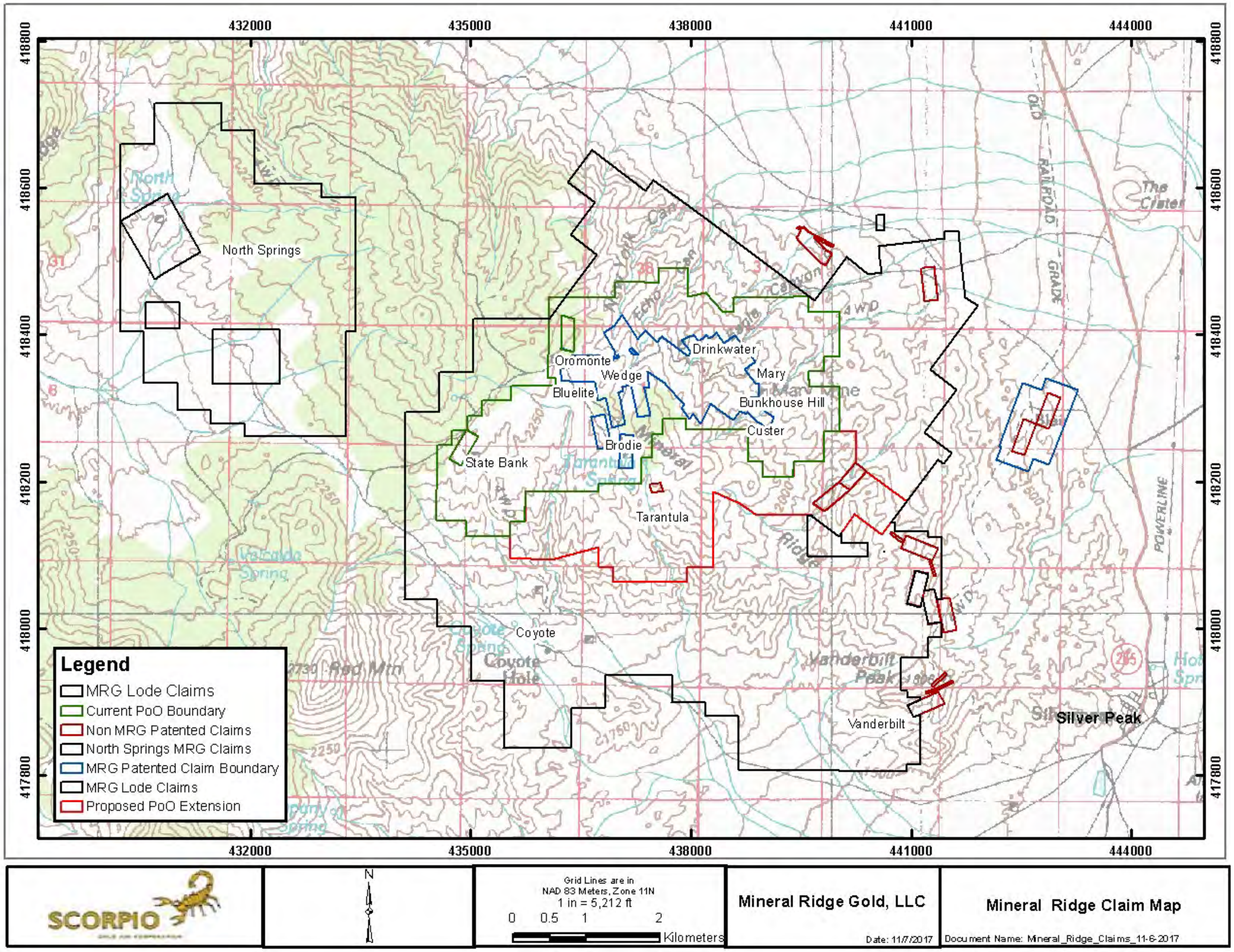
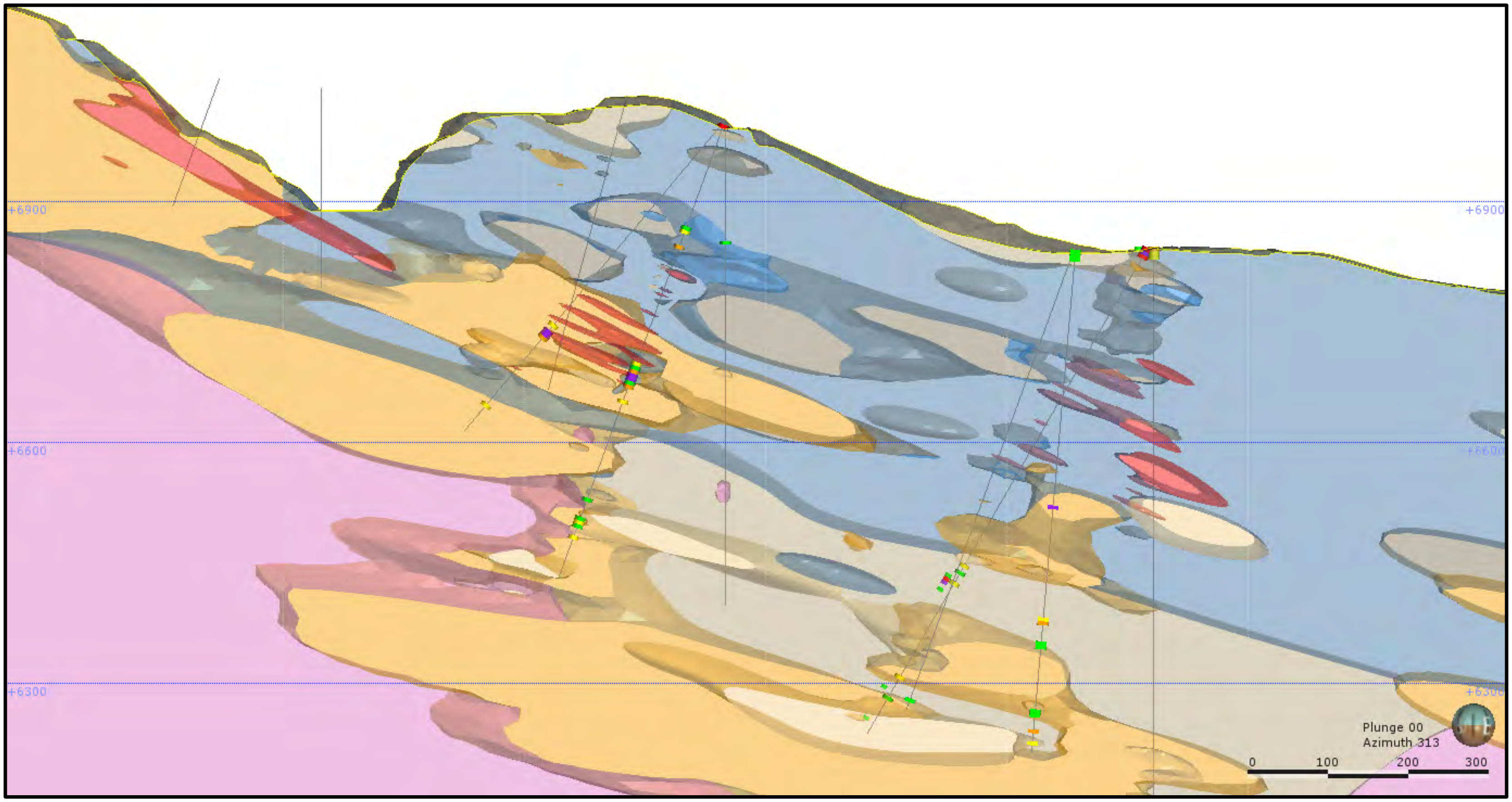
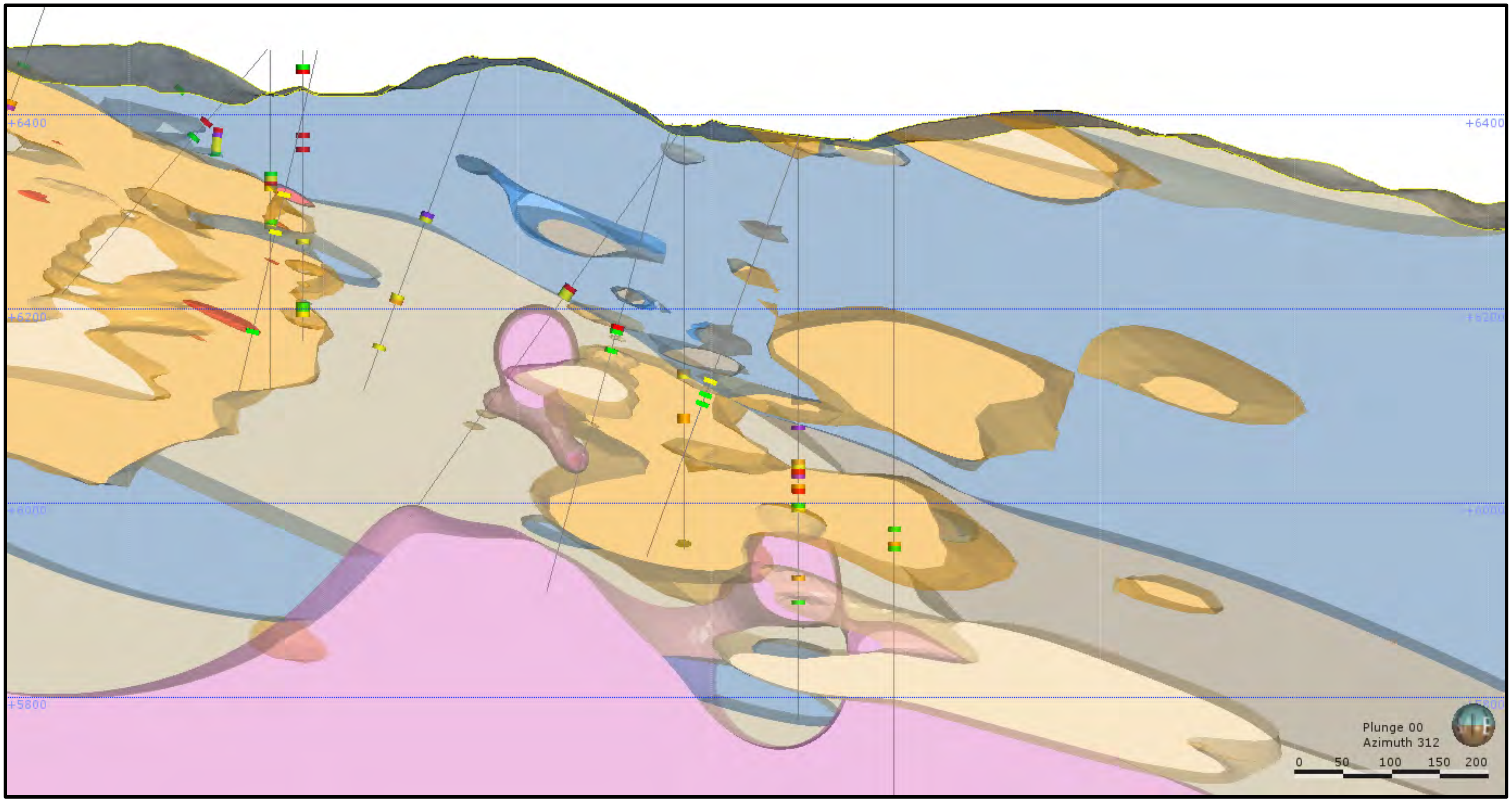


Figure 7.6: Cross-section, Drinkwater Deposit



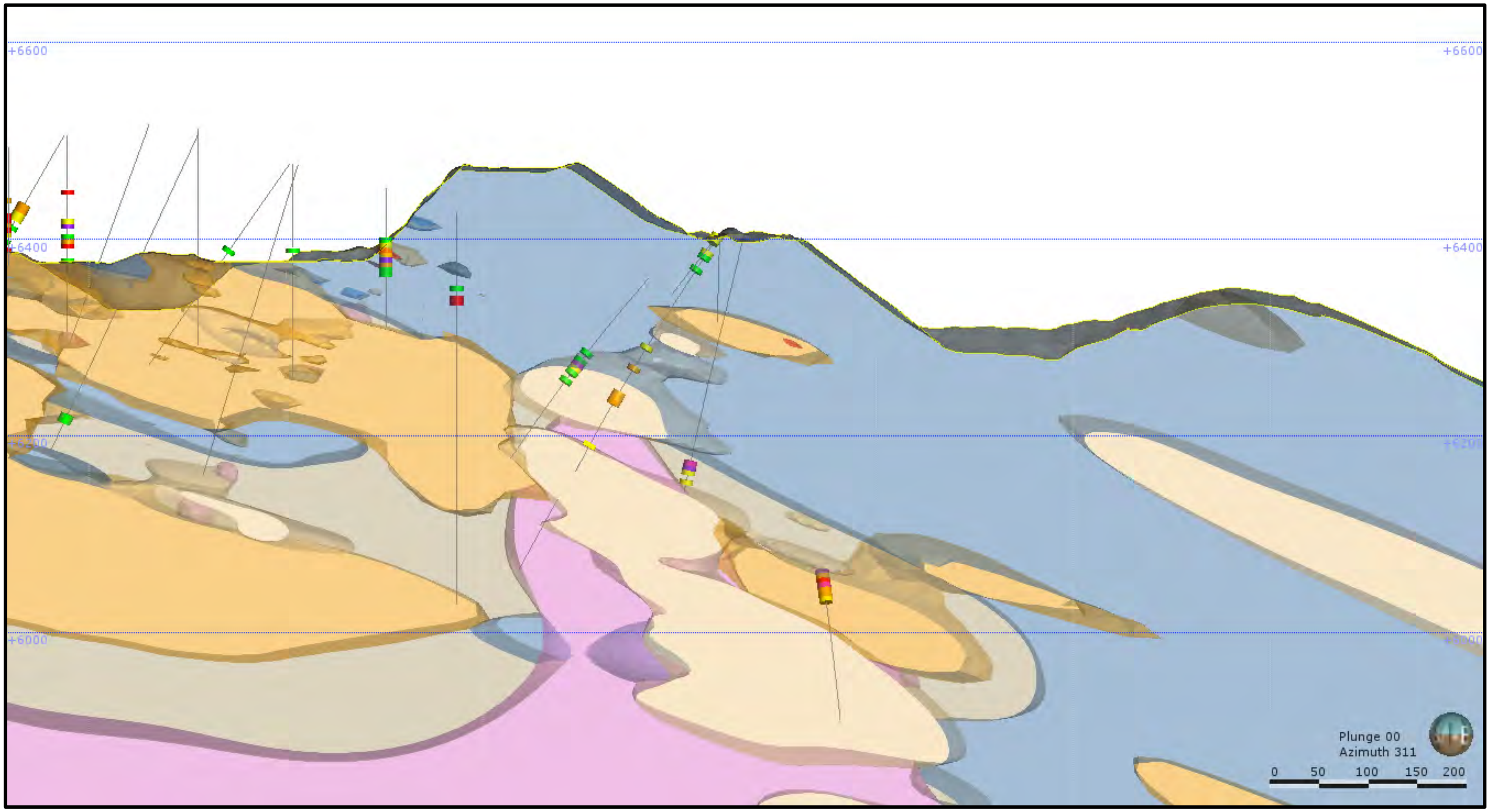
Note: Figure courtesy Scorpio Gold, 2017.

Figure 7.7: Cross-section, Mary LC Deposits



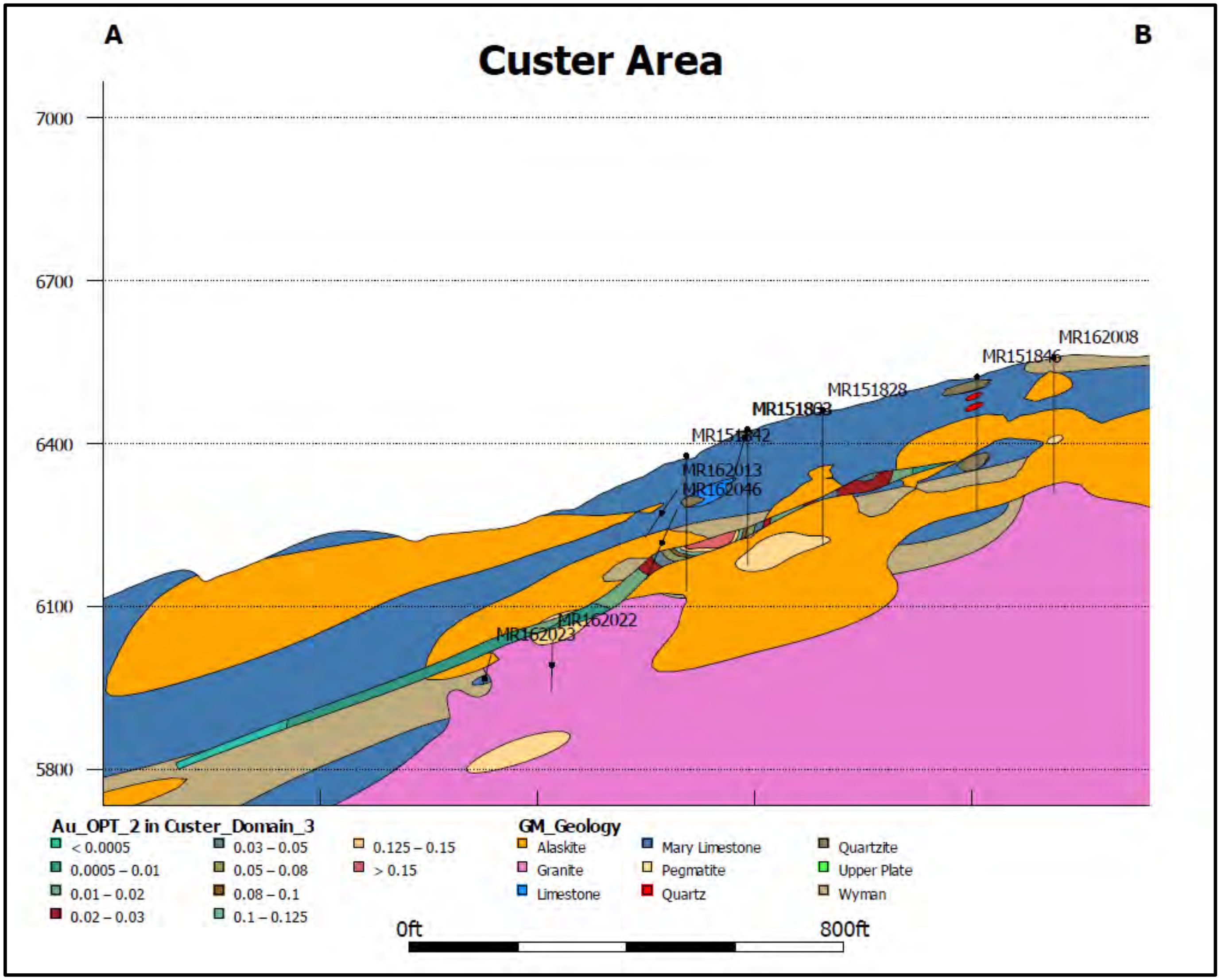
Note: Figure courtesy Scorpio Gold, 2017.

Figure 7.8: Cross-section, Bunkhouse Hill Deposit



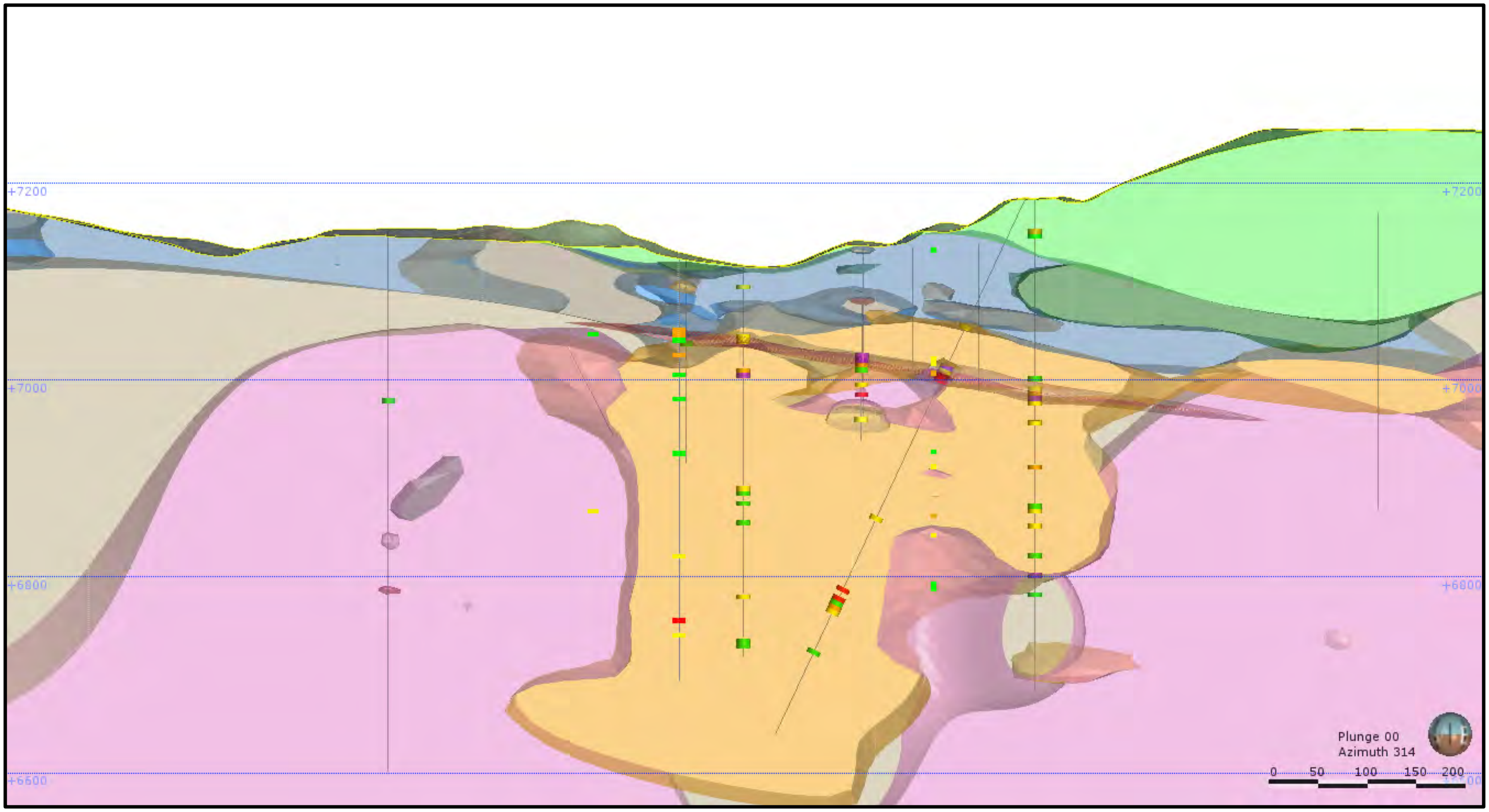
Note: Figure courtesy Scorpio Gold, 2017

Figure 7.9: Cross-section, Custer Deposit



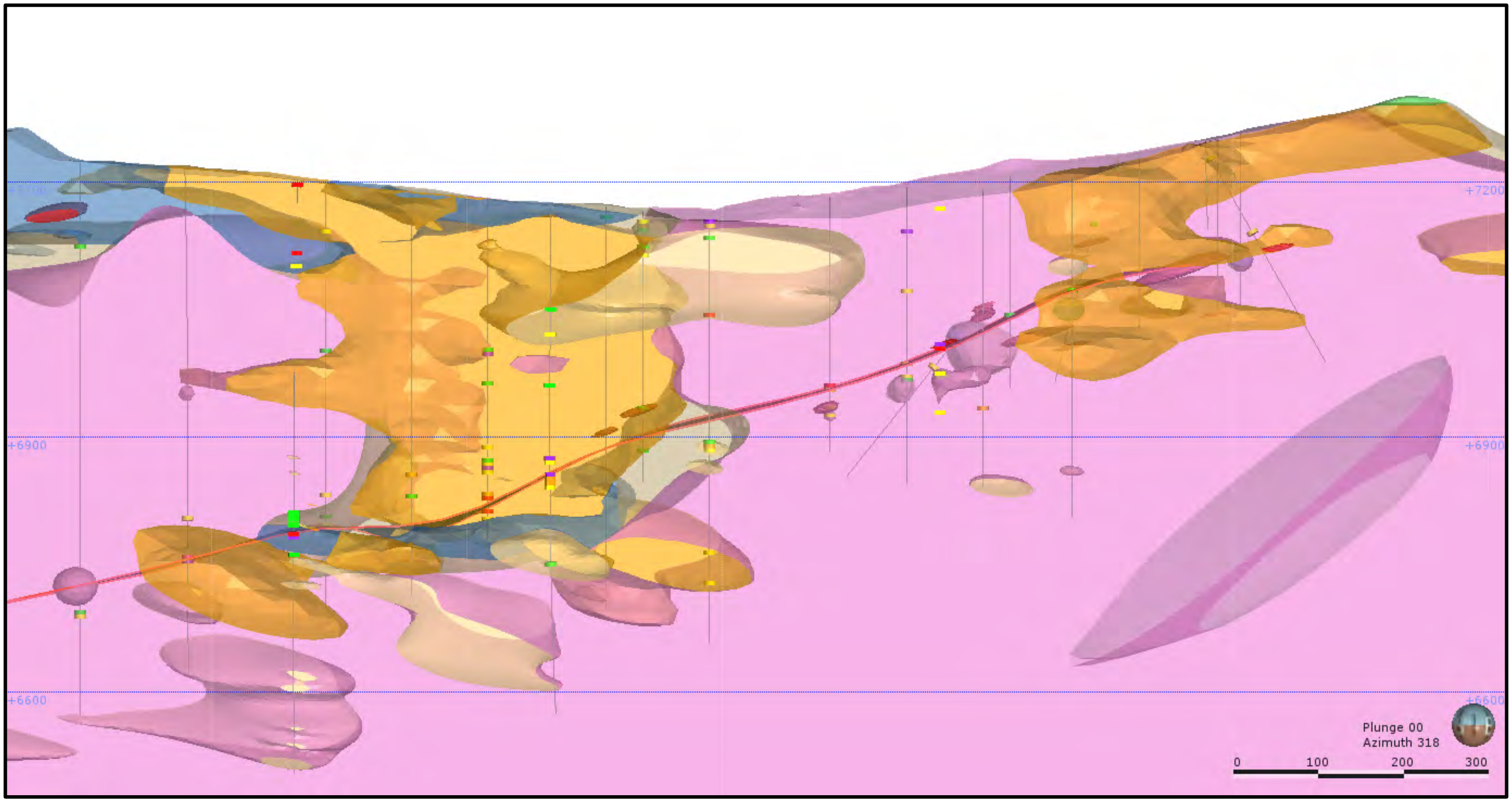
Note: Figure courtesy Scorpio Gold, 2017

Figure 7.10: Cross-section, Brodie Deposit



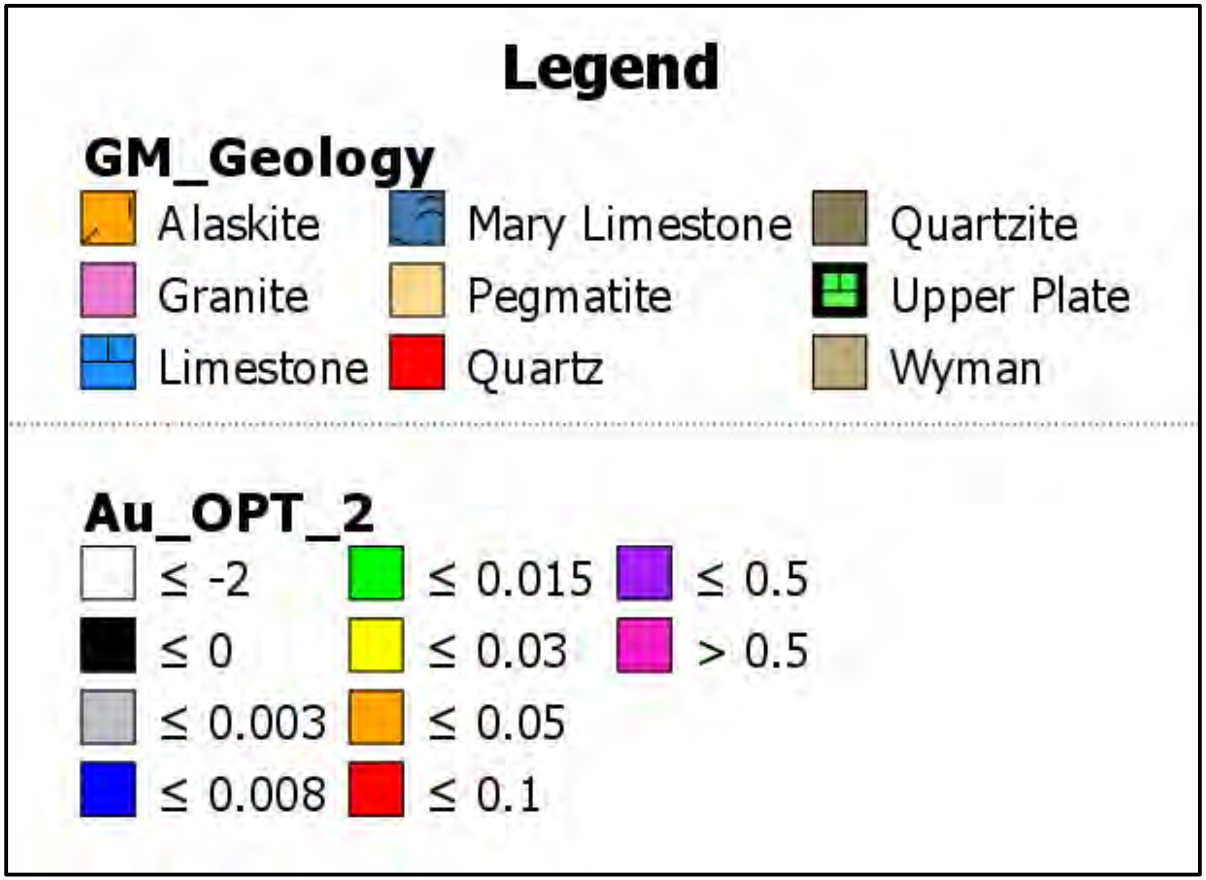
Note: Figure courtesy Scorpio Gold, 2017.

Figure 7.11: Cross-Section, Oromonte Deposit



Note: Figure courtesy Scorpio Gold, 2017.

Figure 7.12: Legend Key to Accompany Figure 7-6 to Figure 7-11.



Note: Figure courtesy Scorpio Gold, 2017.

7.3.1 DRINKWATER

An area remains to the northwest of the Drinkwater deposit, and currently forms the highwall of the Drinkwater pit. The mineralized zones in the Drinkwater deposit strike northwest–southeast and dip about 20–25º to the northeast. Mineralized zones are irregular in shape, and have variable thicknesses. In the Drinkwater remnant area there is a thick sequence of waste material that will require pre-stripping to access the mineralized horizon.

7.3.2 MARY LC (MARY LC PHASE 4 PIT)

The Mary LC deposit is located about 500 ft southeast of the Drinkwater deposit. The stratigraphy and mineralized horizons dip to the northeast at approximately 25º. The fourth proposed pit phase would extract mineralization contained in a zone on the northwest pit highwall.

7.3.3 BUNKHOUSE HILL

Geologically, the Bunkhouse Hill target is the immediate down-dip extension of the mineralization present in the Mary LC pit. The mineralization at Bunkhouse dips at about 39º NE, which is in contrast to the more typical 25–30º NE dip of the Mary LC mineralization. This dip change is spatially related to a change in geology, whereby the mineralized zone transitions from being hosted in felsic intrusive rocks to being hosted in Wyman Formation sedimentary rocks.

7.3.4 CUSTER

The Custer zone is situated south of the Mary open pit and the Bunkhouse Hill area. Structurally, Custer is very similar to the Drinkwater deposit, having far less of the post-mineral faulting and folding that was predominant in the Mary and Last Chance deposits.

7.3.5 BRODIE (BRODIE PHASE 2 PIT)

Mineralization at Brodie is more flat-lying than mineralization at Drinkwater and Mary. A second stage pushback is planned for the Brodie pit.

7.3.6 OROMONTE

Mineralization at Oromonte is located north of the Brodie pit area. Mineralization occurs in a down-dropped block located between the mined-out Solberry and Wedge pits

7.4 PROSPECTS/EXPLORATION TARGETS

Prospects and exploration potential are discussed in Section 9.0.

7.5 COMMENTS ON GEOLOGICAL SETTING AND MINERALIZATION

The Mineral Ridge deposits have had a number of different deposit type classifications assigned over time, including epithermal, skarn, metamorphic core complex, structurally-controlled (orogenic), and intrusive-related deposit types. The deposit origin and style for the Mineral Ridge mineralization within global mineralization classification models is still under some debate.

As a result of mining activity conducted between 2011 and 2017, Scorpio Gold is familiar with the lithologies and mineralization styles that will be encountered in the proposed remnant mining areas. This understanding is sufficient to support geological and grade continuity interpretations for resource modelling and mine planning purposes, and to support Mineral Resource and Mineral Reserve estimates.

8.0 DEPOSIT TYPES

8.1 DEPOSIT MODEL

Based on current published explanations for the Mineral Ridge mineralization, it appears that a structurally-controlled orogenic model may be the most applicable to the deposit.

The discussion below is sourced from Moritz (2000), Goldfarb et al., (2005), and Groves et al., (1998; 2003). Orogenic deposits have many synonyms, including mesozonal and hypozonal deposits, lode gold, shear zone-related quartz–carbonate deposits, or gold-only deposits.

Orogenic gold deposits occur in variably deformed metamorphic terranes formed during Middle Archaean to younger Precambrian, and continuously throughout the Phanerozoic. The host geological environments are typically volcano-plutonic or clastic sedimentary terranes, but gold deposits can be hosted by any rock type. There is a consistent spatial and temporal association with granitoids of a variety of compositions. Host rocks are metamorphosed to greenschist facies, but locally can achieve amphibolite or granulite facies conditions.

Global examples of these deposits include Muruntau (Uzbekistan), Golden Mile (Australia), Hollinger-McIntyre-Moneta (Canada), Jamestown (USA), and Obuasi (Ghana).

Gold deposition occurs adjacent to first-order, deep-crustal fault zones. These first-order faults, which can be hundreds of kilometers long and kilometers wide, show complex structural histories. Economic mineralization typically formed as vein fill of second- and third-order shears and faults, particularly at jogs or changes in strike along the crustal fault 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.

Mineralization can be disseminated, or vein hosted, and displays a timing that is structurally late, and is syn- to post-peak metamorphic. Quartz is the primary constituent of veins, with lesser carbonate and sulphide minerals. Minor accessory albite, chlorite, white mica (fuchsite in ultramafic host rocks), tourmaline, and scheelite can accompany the veins. Carbonates include calcite, dolomite, and ankerite. Sulphide minerals can include pyrite, pyrrhotite chalcopyrite, galena, sphalerite, and arsenopyrite. Gold is usually associated with sulphide minerals, but can occur as free gold. In volcano-plutonic settings, pyrite and pyrrhotite are the most common sulphide minerals in greenschist and amphibolite grade host rocks, respectively. Arsenopyrite can be the predominant sulphide mineral in mineralization hosted by sedimentary rocks. Gold to silver ratios typically range from 5:1 to 10:1 and, less commonly, the ratios can reach 1:1. Most orogenic gold deposits contain 2% to 5% sulphide minerals and gold fineness is greater than 900.

Alteration intensity is related to distance from the hydrothermal fluid source, and typically displays a zoned pattern. Scale, intensity, and mineralogy of the alteration are functions of wall rock composition and crustal level. The main alteration minerals include carbonate (calcite, dolomite, and ankerite), sulphides (pyrite, pyrrhotite or arsenopyrite), alkali-rich silicate minerals (sericite, fuchsite, albite, and less commonly, K-feldspar, biotite, paragonite), chlorite, and quartz.

The larger examples of orogenic deposits are generally 2 km to 10 km long, about 1 km wide, and can persist over 1 km to 2 km vertical extents.

8.2 COMMENTS ON DEPOSIT TYPES

The precious metal deposits at Mineral Ridge consist of structurally-controlled gold mineralization hosted by the lowermost unit of the Wyman Formation. Dilation resulting from multiple periods of dip-slip movement along a series of braided extensional faults created the conduits for the multi-stage emplacement of quartz and attendant gold mineralization.

Until additional research is completed that provides a more definitive explanation of the deposit genesis, a structurally-controlled orogenic deposit model is considered by MTS to be appropriate to be used to support exploration vectoring.

Alternate model elements that could also be considered during development of exploration programs include intrusion-related and metamorphic core-complex models.

9.0 EXPLORATION

9.1 GRIDS AND SURVEYS

The historical mine maps used a local mine grid in imperial units (ft). In the late 1980s, the mine operators added 10,000 ft (3,048 m) to the easting and northing coordinates for ease of use (Falk, 2012).

In the 1990s, MRRI contracted Piedmont Engineering of Silver City, Nevada to survey the patented and unpatented mining claim boundaries. Piedmont used Modified State Plane for the land maps and calculated the offset and rotation to bring the claim maps into the local mine grid. The Piedmont survey changed the elevations at the mine. The old mine maps were shown to be approximately 91 ft (28 m) higher than previously reported. The corrected elevations were applied to the network of survey control points at the mine, and control points were used to construct the current topographic maps.

This corrected coordinate system is the local mine grid which is currently used for almost all purposes, including Mineral Resource and Mineral Reserve estimation, mine design, and topography.

In 2010, Kevin Haskew, a licenced surveyor, of Goldfield, Nevada resurveyed the control point network over the mine and established points around the entire Mineral Ridge area. Data collected by Kevin Haskew was analyzed and World Geodetic System (WGS) 84 coordinates were calculated for a number of the local control points. North American Datum (NAD) 83 Universal Transverse Mercator (UTM) coordinates are calculated from the WGS coordinates. Some maps and data have been translated to NAD 83 UTM meters for permitting, other government reporting maps, and internal district maps. Reconnaissance work outside of the mine uses NAD 83 UTM meters for ease of data gathering with handheld global positioning systems.

The mine survey crew, during operations, has used two repeaters and a base station when generating survey data for active pits and exploration areas. A licenced surveyor may be used to pick up “out-of-area” points, for example where there is no ready view of the repeater towers or base stations.

A drone has been flown, since 2016, on an as-needs basis to support the mining operations. The drone is typically flown in sections or strips, and the resulting data have an accuracy of RMS 2/10 ft or better.

9.2 GEOLOGICAL MAPPING

In May 2010, Scorpio Gold purchased satellite imagery of the eastern half of the Silver Peak Range from PhotoSat Information Ltd. The scope of the imagery included signatures of unusual silica, clay, and iron, suggesting the presence of alteration related to mineralization, and consisted of multispectral surveys in commercially-available bands.

Reconnaissance geologic mapping of the Mineral Ridge area was initiated in late 2011. Mapping activity has been both seasonal and intermittent as the primary focus for geological staff to date has been mining operations support.

Early reconnaissance activities consisted of geological traverses that primarily recorded structural readings and interpretation, and documented observation point geology on the traverse. Traverse locations are heavily influenced by topography, and depending on elevations and the ruggedness of the terrain, could be conducted along mid-slopes, along drainages, or tracks. The information collected on the traverse lines still needs to be integrated and interpolated between traverse lines.

In 2016, a mapping grid was devised for the main property area, at a scale of 1:20,000. Map sheets within the grid correspond to an approximate A3 map sheet size (map squares are about 800 x 450 m); this was to ensure that any individual map sheet could be completed in 1–2 days, which was considered to be a manageable timeframe, given other staff geological commitments.

The detailed Project map will continue to be compiled as resources and time allow, and will integrate, where applicable, interpretations from the satellite imagery, traverse, and mapping data.

9.3 GEOCHEMICAL SAMPLING

From 2009 to 2010, Scorpio Gold collected 438 rock chip samples throughout the Project to guide exploration efforts both within the known mineralized areas and in the underexplored regions of the Project. Samples were assayed for gold and 36 additional elements by AAL in Reno, Nevada.

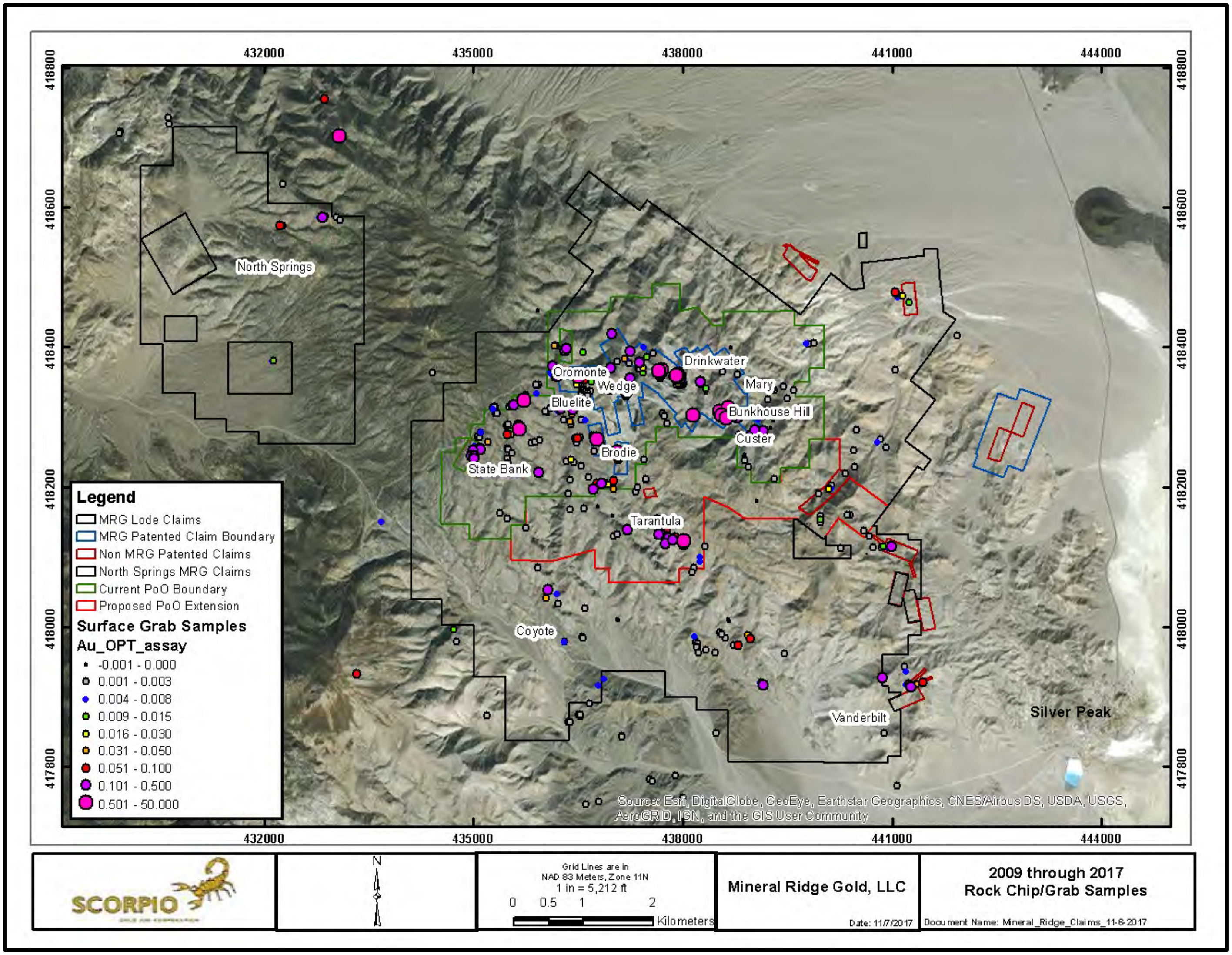
In 2011, a soil survey was carried out centered over the Mary area to guide exploration efforts. The survey was designed using an orthogonal grid, with a line azimuth of 030º (N30E), line sample spacing of 300 ft, and northwest line spacing of 600 ft. A total of 331 samples were collected in the field and assayed for gold and 36 additional elements by AAL.

From 2011 to 2014, Scorpio Gold and Apex Geoscience Ltd. of Vancouver, Canada collected over 1,500 predominantly soil, but also rock chip, samples from outcrops in or around potential exploration areas, and active pit highwalls. This was done to aid in identifying new targets, delimiting known targets, and defining controls to mineralization in current pits. All samples were assayed for gold either by AAL or on-site using the Scorpio Gold mine laboratory for pit samples.

From 2014 to 2017, Scorpio Gold has continued to collect rockchip and grab samples when field-mapping.

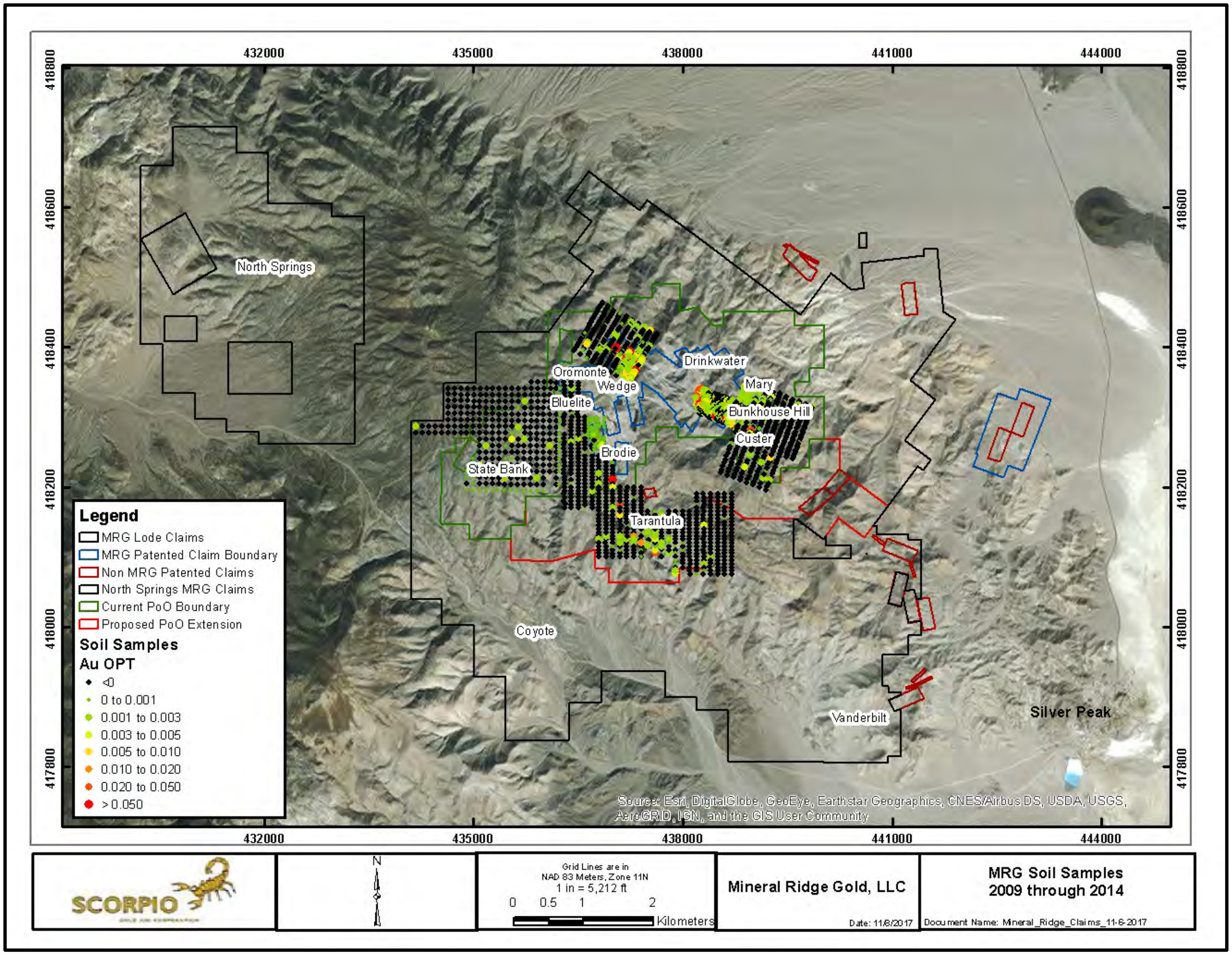
Figure 9.1 is a summary of the results of the rockchip sampling programs. Figure 9.2 shows the soil sampling results.

Figure 9.1: Rockchip Sampling



Note: Figure courtesy Scorpio Gold, 2017

Figure 9.2: Soil Sampling



Note: Figure courtesy Scorpio Gold, 2017

9.4 GEOPHYSICS

In 2013, Geotech Ltd. from Ontario, Canada conducted a time-domain electromagnetic and versatile time-domain electromagnetic airborne geophysical survey. The survey was conducted using 100 m spacing lines over the flanks of the Mineral Ridge antiform, and the top of Silver Peak mountain range. The aim of the survey was to assist in identifying potential exploration targets outside of known mineralized areas. Figure 9.3 illustrates the responses in the areas of known mineralization.

Scorpio Gold has conducted limited orientation in-house electromagnetic surveys to determine mineralization signatures that may be able to be used for exploration vectoring. Results of this work remain to be incorporated with the mapping project.

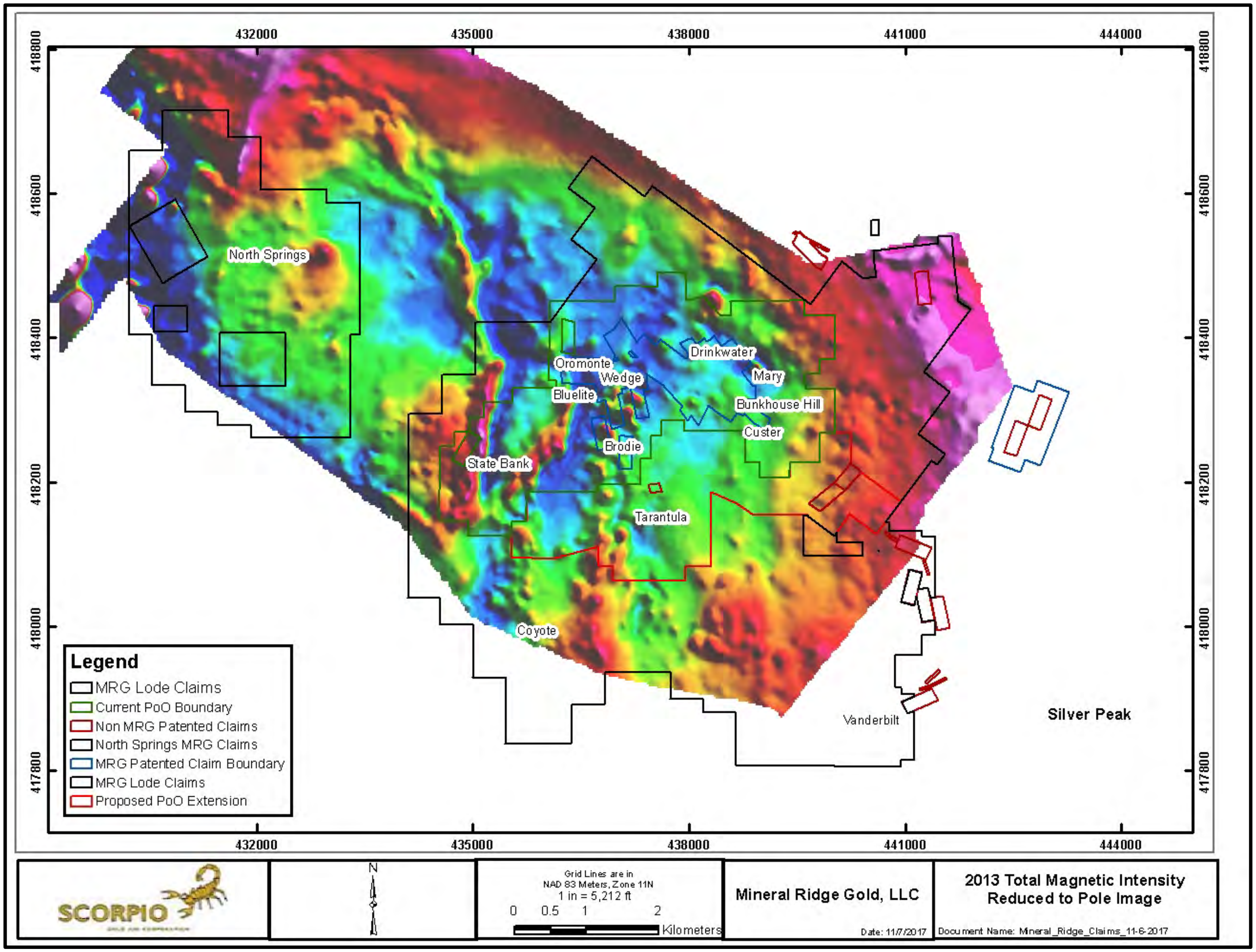
9.5 RESEARCH STUDIES

During 2016, Scorpio Gold retained structural geologist Nick Oliver of Holcombe, Coughlin, Oliver and Valenta to undertake a structural and hydrothermal analysis of the Mineral Ridge mineralizing systems. The work involved review of current research into the regional geology, examination of exposures in open pits and in the field, and a structural mapping exercise.

Interpretations with respect to mineralization formation (Oliver, 2016) included:

- *"Gold lodes formed in response to release of reduced HCOS fluids from the crystallizing intrusions, as evidenced by the spatial co-association of pegmatites, alaskites, and gold-bearing quartz veins;*
- *The distinctly shallow, planar and locally distended/boudinaged nature of the richest lodes is inferred to be a consequence of the emplacement of gold-bearing quartz veins before and during the development of the highest shearing strains;*
- *Initial precipitation of gold most likely occurred in response to fluid pressure changes accompanying release of (pyrrhotite–graphite-stable) reduced fluids from the intrusions, and may have been assisted by downwards circulation of upper plate, relatively oxidized (pyrite–arsenopyrite–carbonate-stable) fluids;*
- *Synchronous and subsequent shearing was particularly focussed around vein/Wyman [Formation] and intrusion/Wyman [Formation] contacts, resulting in redistribution of gold into fractures, shears and boudin necks, but apparently remaining within tabular packages centered on the quartz veins (at meso scales)".*

Figure 9.3: Reduced to Pole Image



Note: Figure courtesy Scorpio Gold, 2017

Interpretations with respect to the structural controls on mineralization included (Oliver, 2016):

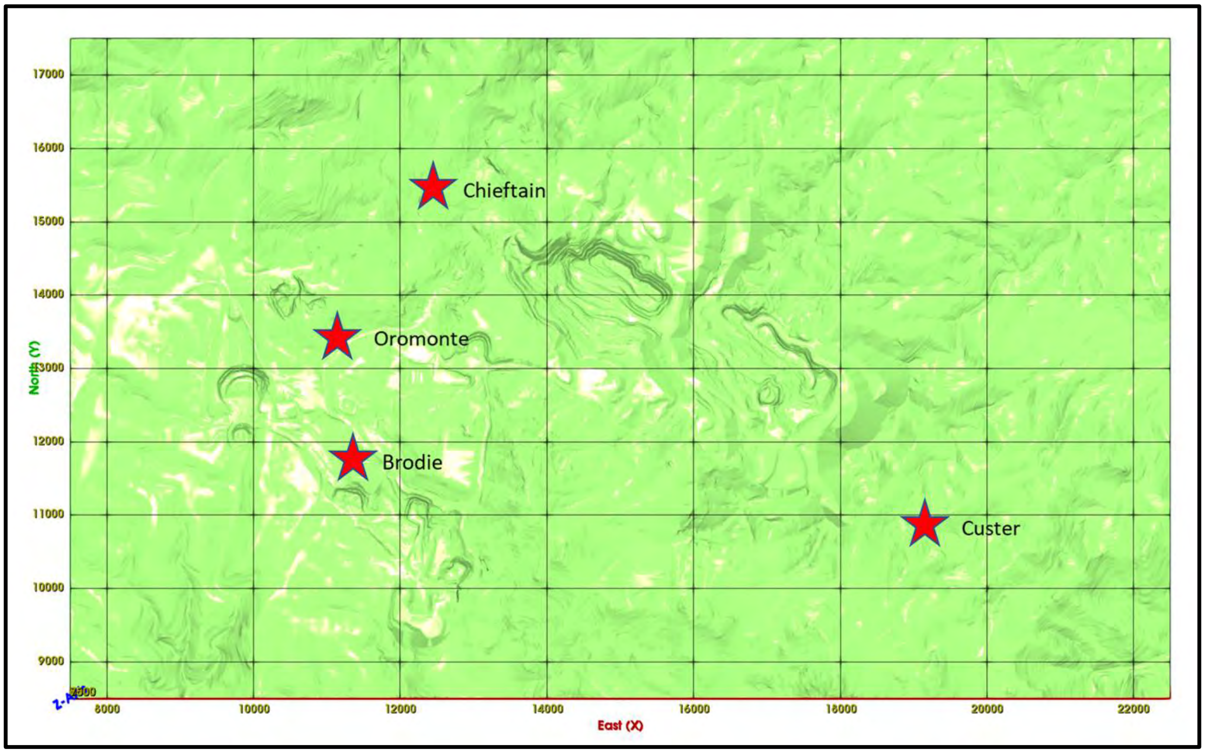
- *"Gold lodes are marked by a strong relationship between the intensity of ductile deformation and the 1- to 10 m-distribution of grade, but strongly deformed rocks are found outside the lodes, absent of quartz veins, pointing to a specific vein-gold connection;*
- *Within the lodes at scales more detailed than this, high gold grades are associated with syn- and post-foliation highly irregular sulfide-graphite stringers and blebs, with the highest grades being in necks and lateral shears of m-scale boudinaged quartz veins, and 10 cm- to 10 m-scale boudinaged alaskites and pegmatites;*
- *The deformed quartz veins and alaskite/pegmatite bodies commonly show irregularly corroded edges and truncation of vein-internal crack-seal banding, and stylolitic graphitic seams were observed in marbles and in veins within ore zones;*
- *Collectively these observations indicate that dissolution and reprecipitation of vein components (including gold) occurred during ongoing deformation, redistributing a probable (but poorly constrained) original vein-specific gold distribution (e.g. zoned, in specific vein position, or on vein walls) into structurally favourable sites during fluid-assisted deformation;*
- *Some gold is also found in younger planar-sided, foliation-discordant quartz veins in granites (and the other felsic intrusions). These are tension vein arrays that geometrically represent the brittle response to the top-to-north ductile shearing, and may have formed synchronously with the more irregular sulfide stringers in adjacent more ductilely deformed rocks. They could also represent another product of the cyclical dissolution/reprecipitation process proposed above, injecting silica and gold into rocks adjacent to the sheared vein packages as the deformation progressed."*

9.6 TARGETS FOR FURTHER EXPLORATION

Targets for further exploration have been identified outside the areas where Mineral Resources have been estimated. MTS cautions that the potential quantity and grade of these exploration targets is conceptual in nature. There has been insufficient exploration and/or study to define these exploration targets as a Mineral Resource. It is uncertain if additional exploration will result in these exploration targets being delineated as a Mineral Resource.

Four targets for further exploration have been identified (Figure 9.4), and are summarized in Table 9.1.

Figure 9.4: Targets for Further Exploration



Note: Figure prepared by MTS, 2017

Table 9.1: Targets for Further Exploration

	Lower Range		Upper Range	
Target	Tons (Mt)	Grade (oz/t)	Tons (Mt)	Grade (oz/t)
Brodie	4.7	0.087	7.8	0.031
Chieftain	0.06	0.057	0.09	0.020
Custer	0.75	0.172	1.25	0.062
Oromonte	0.04	0.665	0.07	0.239

The targets for further exploration were established using the following general process:

- Identify drillholes with reasonable grade or thickness intercepts;
- Review likelihood of geological and grade continuity;
- Construct a wireframe that must be informed by a minimum of five drillholes as a method of limiting the target extrapolation area;
- Check for the presence of any Mineral Resource shells that might fall within the conceptual wireframe; remove any areas of overlap;
- Create an interval selection for sample intervals greater than 0.01 oz/t gold for all holes within each wireframe;

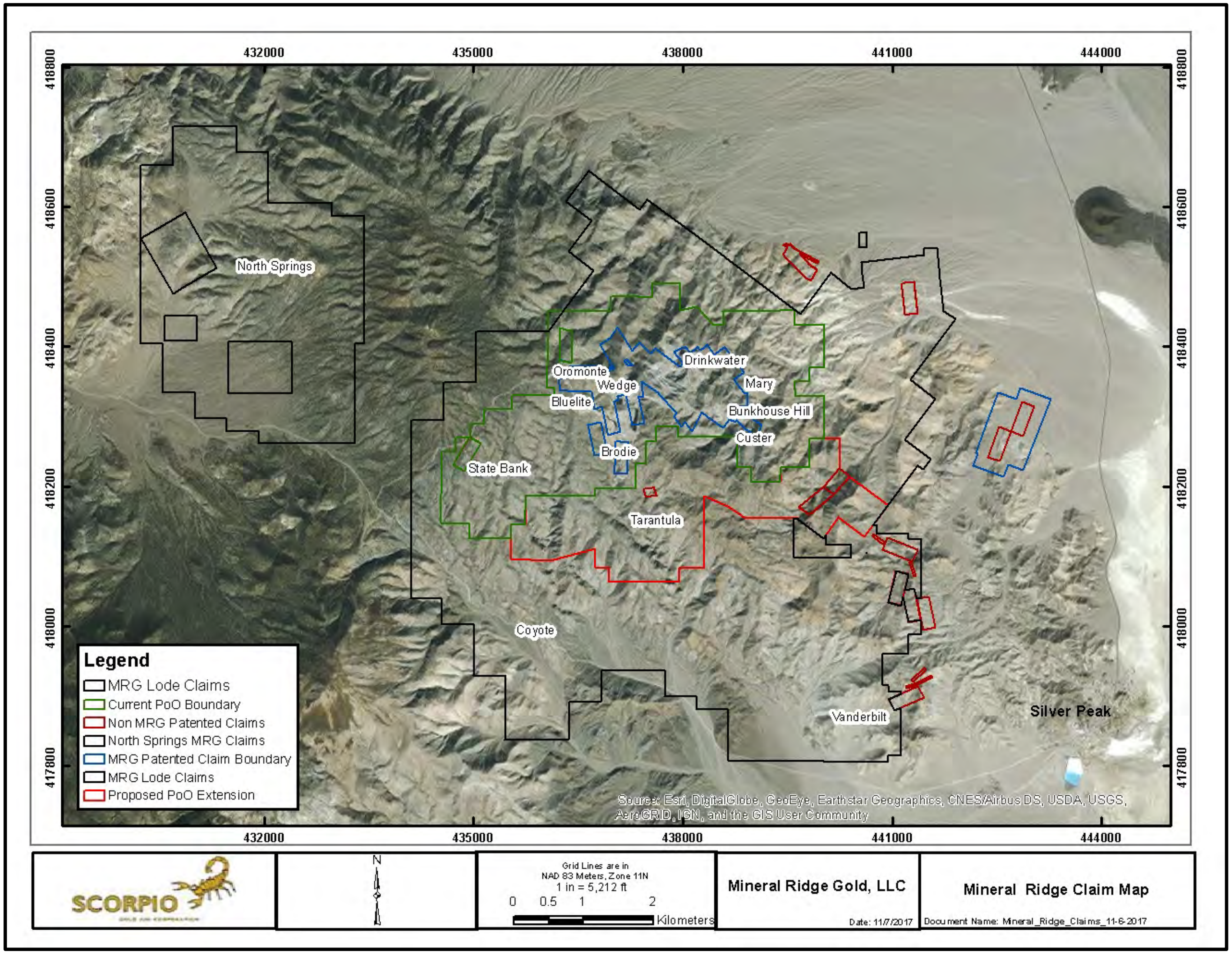
- Estimate a midpoint value for the selected target; bracketing this value with a ±25% range for tonnes, and ±25% range for grade;
- Compare these ranges to the known deposits in the vicinity of the target.

9.7 EXPLORATION POTENTIAL

The focus for Scorpio Gold geological staff during 2012–2017 has been on supporting mining operations, and as a result, there has been little in the way of concerted greenfields exploration activity.

The mineral tenure package retains good exploration potential, with a number of prospects defined away from the main mining zone, including the North Springs, State Bank, Coyote, Defiance, Vanderbilt and Tarantula areas/prospects (Figure 9.5).

Figure 9.5: Exploration Prospects



Note: Figure courtesy Scorpio Gold, 2017

9.7.1 NORTH SPRINGS

No active work has been done by Scorpio Gold on this tenement. It surrounds historic workings, and represents a grassroots exploration area for modern exploration techniques.

9.7.2 STATE BANK

The State Bank target area was chosen for initial investigation based upon a combination of soil geochemistry and rock chip samples, as well as geophysical interpretation and aster imagery. After the target areas were selected, field mapping was undertaken with a multitude of structural measurements collected. Based upon this mapping, a 3D model of the geology was created, and the drill target was further defined. The target concept was to drill the axis of observed folding which has been correlated with elevated gold grades in several deposits within the mining operations area. Favorable lithology units were observed in the target areas with multiple alaskite intrusions observed within metasedimentary units. During 2014 and 2015, 80 drillholes (26,620.3 ft) were completed. This drilling comprised 78 reverse circulation holes and two HQ core drillholes to test multiple targets in the approximately 0.84 square mile State Bank prospect area. Favorable lithologies matching the surface mapping were found in all of the drillholes. Oriented structural observations from the core holes enabled a first-pass geological model to be created. The highest-grade intercepts occurred along the observed fold axis lending credence to the conceptual model for this target.

9.7.3 DEFIANCE

The Defiance area is the adjacent, down dip, continuation of the Custer area southeast of the Mary LC open pit. The Defiance area contains the same lithological suite as the Custer, Mary LC, and Drinkwater open pits. The mineralized zone is well defined and remains open at depth.

Scorpio Gold completed 36 drillholes (20,100 ft) in 2016, which returned a number of gold-anomalous intervals. Much of the Defiance area is included in the Custer target for further exploration.

9.7.4 VANDERBILT

The Vanderbuilt area is located about 4 miles southeast of the Drinkwater open pit, on the southeastern flank of the Mineral Ridge antiform. Historic workings mined gold and silver mineralization in quartz veins following the foliation of the Wyman Formation phyllite and limestone metasedimentary and alaskite host rock. Diorite dikes are often found near the quartz veins, following the same structural weakness. No drilling has been completed by Scorpio Gold on this prospect.

9.7.5 COYOTE

Surface exploration in the Coyote area by Scorpio Gold outlined a 0.6 mile long, 500 to 600 ft wide, north–northeast-trending structural corridor. Structural features of the corridor are traceable on surface to the Brodie area; however, detailed surface prospecting and sampling has yet to be conducted over this extent due to the rugged terrain.

Numerous historical workings lie within the area, including seven shallow shafts, one adit, and six trenches. Surface grab sampling by Scorpio Gold has returned anomalous gold values.

Scorpio Gold completed 13 drillholes (8,200 ft) in the Coyote area in 2011, and intercepted significant widths of silver mineralization.

9.7.6 TARANTULA

The Tarantula prospect is located on western side of the anti-form so the mineralization dips to southwest. In 2009 and 2010, Scorpio Gold completed a rock chip sampling program in the area, sampling old mine workings and representative lithologies. A nine-hole drill campaign was completed in December 2012, with 3,810 ft drilled. During 2015, a nine-hole drill program (2,760 ft) was completed west of the 2012 drilling. The drilling results displayed similar lithologies as seen in the active mine area, with associated zones of low-grade gold.

9.8 COMMENTS ON EXPLORATION

The QP considers the type and amount of exploration to be appropriate for the type of deposits and prospects under evaluation. The land package retains exploration prospectivity as most of the recent work by Scorpio Gold geological staff was focused on support of the mining operations, and not on greenfields exploration. A number of prospects have been defined that warrant additional geological scrutiny and/or drill testing.

The exploration targets represent upside potential for the Project. Future work should investigate whether the mineralization in the areas could support Mineral Resource estimation assuming underground mining methods. This may require additional drill programs, consideration of metallurgical recoveries, documentation of historic workings, and conceptual underground mining scenarios.

10.0 DRILLING

10.1 INTRODUCTION

Exploration drilling prior to Scorpio Gold's involvement in the Project spans from 1939 to 2008, and totals 310,739 ft (94,713 m) in 1,794 drillholes. Of this total, 554 holes were drilled using diamond core tools for a total of 63,238 ft (19,275 m), and 1,240 holes were drilled by RC methods for a total of 247,501 ft (83,668 m). A summary of the drilling completed in the legacy Mineral Ridge exploration drilling campaigns is presented in Table 10.1.

Scorpio Gold completed a confirmation drilling campaign at Mineral Ridge in 2009, and development and exploration drilling campaigns from 2010 to 2017. Drilling by Scorpio Gold from 2009 to 31 July 2017 totals 679,059 ft (206,978 m) in 2,084 drillholes (Table 10.2).

Table 10.3 summarizes the targets of each of the Scorpio Gold campaigns. Scorpio Gold's drill programs represent approximately 54% of the total drillholes and 68% of the total drilling footage completed on the Project. A drill collar location plan for the exploration and infill drilling is provided in Figure 10.1.A specialized sonic drill program, comprising 34 sonic core drillholes (3,671 ft or 1,119 m) was completed from March 24 to April 7, 2017 by Boart Longyear of South Jordan, Utah (Boart) to test the grade of the leach pad material. The drillhole locations were designed to support a Mineral Resource classification guideline for feasibility-level studies whereby 40% of the Mineral Resources are classified as Measured and 60% are classified as Indicated. A drill spacing study completed by MTS recommended an approximate 150 ft by 150 ft (46 m by 46 m) grid drill spacing to achieve this classification. Figure 10.2 shows the locations of the sonic drilling to test the grade of the leach pad material.

Table 10.1: Summary of Historical Drilling Campaigns at the Mineral Ridge Project

Campaign	Timeframe	RC Drillholes	RC Drill Total (ft)	RC Drill Total (m)	Core Drillholes	Core Drill Total (ft)	Core Drill Total (m)
NDC/BC	1936-1941	--	--	--	464	36,780	11,211
Occidental	1973	3	291	89	4	821	250
Houston Oil	1977-1978	11	886	270	7	3,278	999
Callahan	1984	--	--	--	8	3,280	1,000
Inspiration	1985	--	--	--	11	3,050	930
FMC	1986	71	14,797	4,510	--	--	--
Sunshine	1986-1988	82	9,961	3,036	33	6,720	2,048
Zephyr	1989-1990	133	20,332	6,197	--	--	--
Homestead	1990-1992	115	20,915	6,375	--	--	--
Benquet	1990-1992	140	19,436	5,924	--	--	--
MRRI/Cornucopia	1993-1995	391	84,015	25,608	27	9,309	2,837
MRRI/Cornucopia	1996-1997	184	34,453	10,501	--	--	--
Vista Gold	1998-1999	56	11,445	3,488	--	--	--
Golden Phoenix	2008	54	30,970	9,440	--	--	--
Totals	**--**	**1,240**	**247,501**	**75,438**	**554**	**63,238**	**18,970**

Table 10.2: Summary of Scorpio Gold Drilling Campaigns

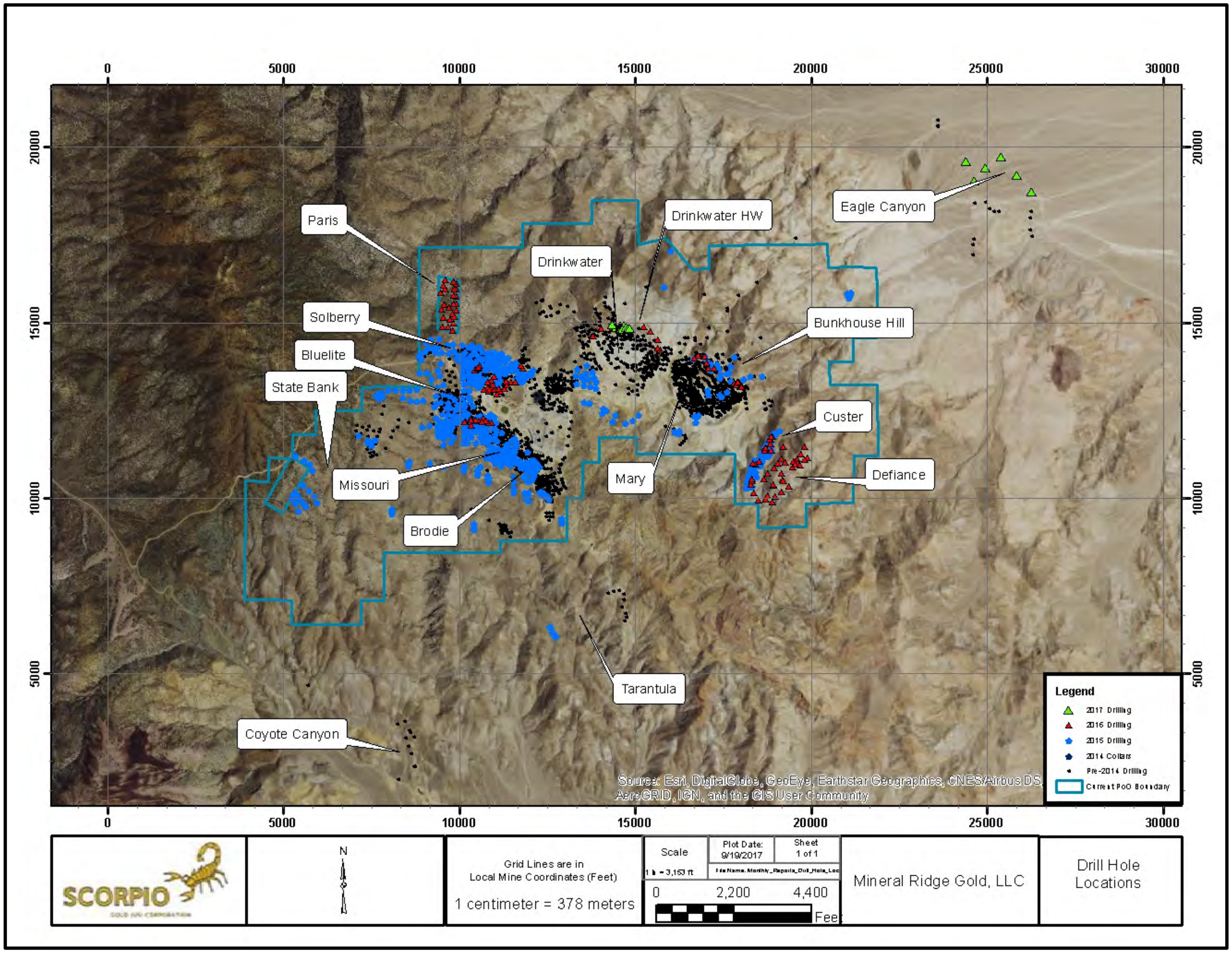
Campaign	RC Drillholes	RC Drill Total (ft)	RC Drill Total (m)	Core Drillholes	Core Drill Total (ft)	Core Drill Total (m)	Sonic Drillholes	Sonic Drill Total (ft)	Sonic Drill Total (m)
2009	31	6,700	2,042	10	2,026	618	--	--	--
2010	50	12,445	3,793	--	--	--	--	--	--
2011	259	64,955	19,798	--	--	--	--	--	--
2012	156	69,450	21,168	--	--	--	--	--	--
2013	256	78,320	23,872	--	--	--	--	--	--
2014	397	136,330	41,553	20	9,644	2,939	--	--	--
2015	671	207,565	63,266	9	1,250	381	--	--	--
2016	171	74,470	22,698	14	5,478	1,670	--	--	--
2017*	14	6,450	1,966	--	--	--	40	3,976	1,212
Totals	**2,025**	**656,685**	**200,158**	**53**	**18,398**	**5,608**	**6**	**3,976**	**1,212**

*Note: *Drilling totals through July 31, 2017*

Table 10.3: Scorpio Gold Drill Campaigns by Purpose

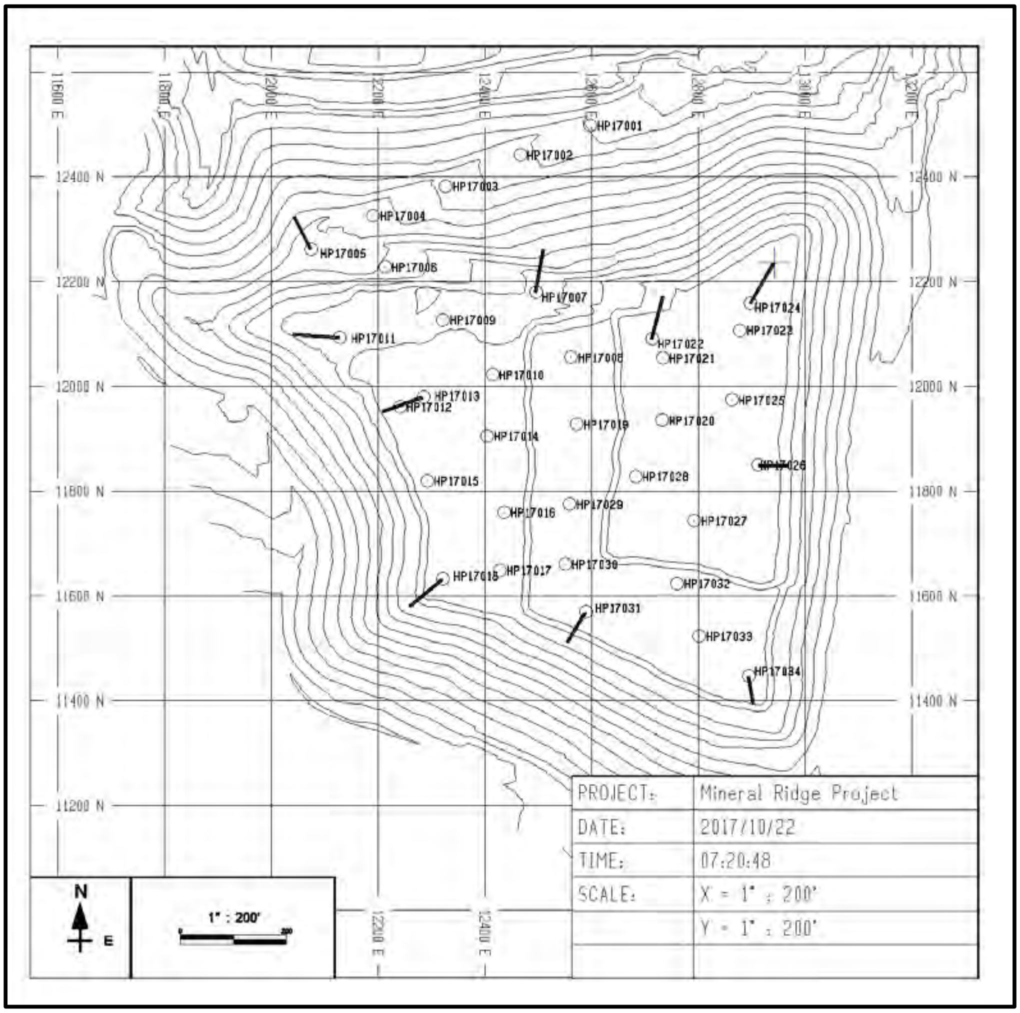
Year	Purpose
2009	As part of Scorpio Gold's due diligence review, and as part of completing the joint-venture agreement with Golden Phoenix, Scorpio Gold completed a RC drill program to confirm the accuracy of the legacy drill hole assays and to provide material for metallurgical test work. Drillholes were completed mainly in the Drinkwater and Mary areas and the results generally confirmed the results from earlier drilling campaigns. Scorpio Gold also completed metallurgical tests on bulk samples from the Drinkwater pit, 2009 drill core, 2009 RC cuttings, and Golden Phoenix stockpiles to verify historical metallurgical testwork results.
2010	Completed a drill campaign designed to infill areas of sparse drilling at Drinkwater and Mary in order to convert Mineral Resources classified in the Inferred Mineral Resources category in the March 2010 Mineral Resource estimate to the Measured and Indicated Mineral Resource categories. Also completed a total of 12,455 ft (3,796 m) of drilling in 50 RC drillholes during this campaign.
2011	Completed a RC drilling campaign including 242 drillholes focused on infill drilling in the Drinkwater and Mary areas, near-mine exploration areas, and satellite prospect areas. Of this total, 42 drillholes were completed in the Drinkwater area, where 28 were designed as infill holes, and 14 were designed to target down-dip extensions of known mineralization. At Mary, a total of 64 drillholes were completed; 57 as infill holes, and seven to target down-dip extensions. Exploration drilling was focused on the Mary LC, Gold Wedge/Oromonte, Gordon Brodie, Solberry, and Coyote prospects. MRG also completed three water monitor wells in the leach pad area to fulfill permitting requirements.
2012-2013	Work was focused primarily on infill and near mine exploration drilling at Drinkwater and Mary and satellite deposits.
2014	Completed drill campaigns in the Brodie and Missouri areas and Bluelite, Solberry, Oromonte, and Wedge areas. Drilling was also conducted in the Mary LC and Drinkwater areas, and the Physik and Chieftan areas close to the Drinkwater pit. This campaign included targeted diamond core holes in these exploration targets designed to provide lithologic and structural information to guide future exploration.
2015	RC drill campaign in the Solberry and Bluelite satellite areas. Near mine drill exploration continued and was focused on the larger Brodie–Bluelite–State Bank area, and the Missouri and Brodie areas. Exploration drilling was completed in the Oromonte, Custer, Wedge, Reed Dolomite, Copiosus target areas. Strategic drilling was completed around the Mary LC and Bunkhouse Hill areas. Geophysical targets were drilled in the Brodie South, Tarantula and Tehillah areas. Core holes were completed in the Brodie–Bluelite areas to help define lithology and structure.
2016	Continued drilling in the Custer area and extended this drilling into the Defiance area. Drilling was also completed in the Bluelite, Solberry, and Oromonte, Mary LC, Bunkhouse Hill, and Paris areas. Completed definition drilling in the Drinkwater area to better define the near pit extension of the Drinkwater mineralization. Core holes were completed in the Drinkwater highwall and Custer areas to help define lithology and structure.
2017	Completed drilling in the Drinkwater highwall area targeting the continuation of mineralization in the Drinkwater pit. Undertook a sonic drill program testing the leach pad to define the residual mineralization within the pad. Completed a sonic drill program in an area outside Eagle Canyon to determine the shallow bedrock stratigraphy.

Figure 10.1: Drillhole Locations



Note: Figure courtesy Scorpio Gold, 2017

Figure 10.2: Leach Pad Sonic Drill Collar Location Plan



Note: Figure courtesy Scorpio Gold, 2017

10.2 LEGACY DRILLING

Many drillholes were completed on the Project prior to Scorpio Gold's involvement. There is limited documentation regarding the drilling procedures employed for the legacy drilling campaigns. Drill logs for legacy drill campaigns were acquired by Scorpio Gold and in most cases, indicate drill method and sample interval. Indications of drilling contractor, drill rigs, and core tool diameter are generally absent.

The following information on the 1993 to 1999 drill programs is abstracted from Behre Dolbear (2003):

"Drill holes completed by Cornucopia were monitored by a company site-representative. RC holes were generally drilled using drill bits with a diameter of 4 to 5 inches, and were sampled on site at a 5 ft interval using a Jones-type splitter installed below a cyclone. Samples were collected using

a nominal 1/8th split (10 to 15 lb) in cloth bags marked with the sample number, and they were shipped directly to commercial assay laboratories. A small portion of the drill cuttings for each 5-ft interval was collected in chip boxes, and this was initially logged on site and later logged in detail in the company office in Silver Peak by a geologist. Information recorded on the drill log includes sample quality, sample split, rod change, formation/member, lithology, structure, alteration and mineralogy.

Cores from the diamond drill holes were shipped to the company office in Silver Peak, and sampled at an irregular interval from 1 to 6 ft based on geological information using a diamond core saw. One half of the core was sent for assay and the other half was retained in the original core boxes, which were stored securely near the office".

Golden Phoenix conducted approximately 9,000 ft of RC and auger drilling of the heap leach pad at the Mineral Ridge property in 2008 to determine the effectiveness of the leach process and to identify zones within the leach pad where viable ounces remained. Lewis et al. (2010) noted:

"A drill pattern consisting of 275 holes at 50 ft centres was surveyed for drilling to a termination depth 15-ft above the pad's gravel overliner. Samples were collected on 5-ft intervals and split through a Jones riffle splitter to obtain individual assay samples of 10 to 15 lbs. Samples were sent to American Assay Laboratories (AAL) in Sparks, Nevada for gold determination by fire assay/atomic adsorption spectrophotometer (FA/AAS). Results from the auger drilling of the minus 4-inch material placed by Golden Phoenix indicated that there was greater leach recovery from the fines portion of the samples collected. Samples collected by the auger were skewed toward the collection of finer material and a pit sampling program was designed to collect bulk samples for a more representative sample set. The bulk sampling program was carried out by Scorpio in 2009. The RC samples drilled and collected from the agglomerated fines placed by Cornucopia and Vista Gold were an excellent representation of the drill interval with nearly 100 percent recovery of each 5-ft interval. These samples were also field split to a manageable size of 10 to 15 lbs. Assay of these samples was conducted by AAL using the FA/AAS procedure."

Lewis et al., (2010) also noted, in relation to the exploration drilling conducted:

"Golden Phoenix drilled 54 exploration holes throughout areas of interest on the property. Targets included the Brodie pit, Blue Lite deposit, Mary pit zone, and Oromonte/Wedge structures. All drilling was limited to existing areas of disturbance within the patented claim blocks. The focus was on deeper drill holes of 600 to 1,000 ft to determine structural controls as well as the potential for mineralized zones at depths below the current open pit envelopes. Samples were collected at 5-ft intervals from a rotating wet splitter assembly attached to the drill rig. Fifty-three of the 54 holes were submitted for assay. The samples were submitted to AAL for FA/AAS gold determination.

Assay quality control for the 2008 drilling conducted by Golden Phoenix consisted of the insertion of Standard Reference Material (SRM) samples at a rate of 5% of samples submitted."

A discussion of the verification performed on the legacy drill hole geological, survey and assay data is provided in Section 12.0.

10.3 DRILL METHODS

Hard Rock Exploration, Inc. (Hard Rock Exploration) of Elko, Nevada, was the contractor for the 2009 and 2010 RC drilling programs. Hard Rock Exploration supplied all the labor and supplies for the program and utilized a TH60 drill rig. West-Core Drilling, LLC of Elko performed the 2009 core drilling using its CS14 drill mounted on Morookas track carriers. Diamond drilling used HQ (2.5 in 63.5 mm) diameter tools. The 2009 RC holes were vertical holes and the diamond core holes were angle holes. The 2010 RC holes were mostly vertical with approximately 20% of the holes inclined between 55 and 75° and oriented to the southwest, north, and southeast.

Boart completed all 2011 and 2012 RC drilling using a Foremost RPD 1500 track rig. Approximately 60% of the 2011 drillholes were oriented vertically, and 40% were inclined between 45 to 75° from vertical, and were oriented primarily to the southwest, north, and southeast. Approximately 52% of the 2012 drillholes were oriented vertically, and 48% were inclined between 45 to 85° from vertical, and were oriented primarily to the southwest, north, and southeast.

A summary of the drill contractors used by Scorpio Gold since 2014 is shown in Table 10.4. Boart and Delong Drilling of Winnemucca, Nevada completed RC drilling in 2014, 2015, 2016, and DeLong completed the RC drilling in 2017. Both Boart and Delong used a Foremost MPD 1500 track drill rig.

Timberline Drilling Inc. of Hayden Lake, Idaho completed the diamond core drilling in 2014 and 2016 using a LF90-02 truck-mounted drill rig and a U8-02 skid-mounted drill rig. Falcon Drilling Inc. of Mound House, Nevada completed the diamond core campaign in 2015 with a truck-mounted U8-02 drill rig.

Boart completed the sonic drilling in 2017 using a Trusonic mini sonic track-mounted drill rig equipped with 10 ft (3 m) drill casing and a 4.0 in (10.2 cm) diameter core barrel. Drill core was sampled at nominal 2.5 ft (0.76 m) intervals. The total length of the leach pad sonic drillholes varied from 25 to 155 ft (7.6 to 47.2 m). Most of the drillholes were oriented vertically, but 10 drillholes were inclined to acquire grade information near the perimeter of the leach pad.

Table 10.4: Summary of Drill Contractors from 2014 to 2017

Company	Rig	RIG	Type	2014 (from April 1/14) (ft)	2015 (ft)	2016 (ft)	2017 (to July 31/17) (ft)	Rig Total (ft)
Boart	MPD-1500	BOART576	RC	3,750	36,130	--	--	39,880
Boart	MPD-1500	BOART76	RC	54,200	88,205	31,550	--	173,955
DeLong	MPD-1500	DELONG26	RC	56,730	83,230	42,920	13,980	196,860
Falcon	F3000-1	F3000-1	DD	--	4,102	--	--	4,102
Timberline	LF90-02	LF90-02	DD	9,644	--	--	--	9644
Timberline	U8-02	U8-02	DD	--	--	5,478	--	5,478
Boart	LS-250	Boart SS	SS	--	--	--	3,976	3,976
Annual Total	**--**	**--**	**--**	**124,324**	**211,667**	**79,948**	**17,956**	**433,895**

Note: DD = diamond drill, SS = sonic

10.4 LOGGING PROCEDURES

Consistency in geological logging between legacy drill campaigns was recognized as a problem by MRDI in 1995. To address this problem, Scorpio Gold consolidated logging codes into a single system.

Drill core and cuttings were logged by Scorpio Gold staff at the Project site, except for the diamond core campaign in 2014 where the core was logged by contract geologists off site.

Logging includes items such as lithology, structure, alteration, and mineralization. Consistency of coding was maintained through use of a logging template and list of approved codes.

The leach pad sonic drillholes were not logged for lithology. The Eagle Canyon sonic drillholes were logged at the drill site.

During 2015 and 2016, oriented core was drill using the Reflex Act III orientation tool for structural data. Orientation data were collected by the geologists during the logging process.

Magnetic susceptibility readings were performed on each RC chip tray interval; the variations in the magnetic susceptibility aids in defining diabase dyke materials.

All core has been photographed; core photography used a stand arrangement from 2015 onward.

10.5 RECOVERY

Core recovery for the 2014 to 2016 diamond core campaigns was good. Scorpio Gold notes that core recovery was generally greater than 94%.

Sonic core recovery was not estimated, but generally observed by Scorpio Gold geologists as very good.

Sample recovery for RC drillholes was not estimated. Scorpio Gold staff did note that sample recovery was poor for some RC intervals, particularly for some drillholes completed late in the 2010 drill campaign by the track rig at Mary. Sample sizes as submitted to the laboratory were recorded at the laboratory. Where low sample sizes were recorded, this was typically attributed to lower recoveries when drilling through voids, fill, and coarse breccia zones.

10.6 COLLAR SURVEYS

The 2008 and 2009 drill collars were surveyed by Scorpio Gold staff using the Ashtech ProMark2 survey system. Surveys were collected using two GPS units, with one as a control point at a known location.

The 2010 drill collars were surveyed by Kevin Haskew, a professional land surveyor with Advanced Surveying & Professional Services in Tonopah, Nevada using a Trimble real-time kinematic (RTK) GPS unit. Coordinates are considered accurate to the nearest centimeter.

2011 and 2012 drill collars were surveyed by Scorpio Gold staff using a highly-accurate Trimble RTK global navigation satellite system (GNSS) GPS.

The 2014 through 2017 Scorpio Gold drill collars were surveyed by Scorpio Gold staff using the Trimble RTK GNSS GPS. Drillholes in the Eagle Canyon area outside the mine survey control were surveyed by Kevin Haskew using a Trimble RTK GPS unit. Coordinates are considered accurate to the nearest centimeter.

10.7 DOWNHOLE SURVEYS

In 2010, a single down-hole survey was conducted by drill contractor personnel at the bottom of each drill hole using the Reflex survey tool. In 2011, down-hole surveys were conducted by International Directional Surveys of Chandler, Arizona.

Beginning in 2015, downhole surveys were conducted for RC drillholes deeper than 400 ft. All downhole surveys were conducted by International Directional Surveys, of Chandler, Arizona, using a Reflex Gyro survey instrument. A survey was taken every 50 ft (15 m).

Core holes were surveyed by the driller using a Reflex EZ-Track with Reflex EZ-Com survey tool.

Sonic drillholes were shallow (25 to 155 ft (7.6 to 47.2 m) total length), and were not surveyed downhole.

10.8 SAMPLE LENGTH/TRUE THICKNESS

Mineralized zones at Mineral Ridge are irregular in shape and orientation, and true thickness is variable. Geological modeling and Mineral Resource estimation procedures take into account the intercept angles of drilling versus the geometry of mineralization. Mineralized intercepts in the Drinkwater and Mary areas typically ranged between 5 and 50 ft (1.5 to 15.0 m) in thickness.

Leach pad sonic drill core samples were collected on 2.5 ft (0.76 m) intervals and composited into 10 ft (3 m) intervals for assay. Vertical intercepts of the leach pad material are considered true thickness.

10.9 SUMMARY OF DRILL INTERCEPTS

Drilling on the Project has not been completed on a grid due to the rugged and rocky topography.

The approximate drill spacing in the Drinkwater and Mary areas is 75 ft by 75 ft (23 m by 23 m).

The average depth of drilling of the April 1, 2014 through July 31, 2017 drilling is 337 ft (103 m) below surface. The average length of legacy drilling is 164 ft (50 m). The deepest exploration hole on the Project is 1,800 ft (549 m).

Table 10.5 provides an example list of drill intercepts, with a focus on the remnant areas. The selection includes examples of low-grade, high-grade, and higher-grade intersections within an overall lower-grade interval.

10.10 COMMENTS ON DRILLING

The QPs note:

- Drilling procedures used by Scorpio Gold are consistent with industry practices at the time the drill campaigns were conducted;
- Collar location surveying is acceptable to provide sufficiently precise locations.
- Not all drillholes have been down hole surveyed; however, all recent exploration and infill drillholes deeper than 400 ft have been surveyed.
- Survey instruments were considered to be industry-standard instruments at the time they were in use and all are capable of sufficient accuracy and precision to support Mineral Resource estimation and mine planning;
- Core recovery is acceptable at an average 94% overall;
- Geological logging includes recording of items such as lithology, structure, alteration, and mineralization. These logs are acceptable to support Mineral Resource and Mineral Reserve estimation and mine planning.

Table 10.5: Selected Drill Intercepts Table

Area	Hole ID	Easting	Northing	Elevation	Dip (º)	Azimuth (º)	Total Depth (ft)	Depth From (ft)	Depth To (ft)	Down-Hole Intercept (ft)	Grade (opt Au)
Northwest Drinkwater	MR12466	14052.855	14807.724	6994.084	-50	225	500	325	330	5	0.018
								335	350	15	0.240
								455	460	5	0.018
	MR12473	14054.238	14809.311	6993.568	-70	225	600	0	5	5	0.054
								135	145	10	0.021
								160	165	5	0.041
								315	350	35	0.108
								365	370	5	0.021
								495	500	5	0.011
								520	535	15	0.018
								545	550	5	0.019
	MR11133	14519.95	14655.496	6759.174	-90	0	450	220	260	40	0.031
								335	340	5	0.013
	MR172116	14467.262	14846.36	6809.432	-70	225	500	340	365	25	0.217
Oromonte	MR151677	11970.859	13550.678	7115.526	-90	0	250	30	35	5	0.031
								65	85	20	0.242
								150	155	5	0.011
	MR151865	11969.375	13496.633	7116.118	-90	0	150	15	25	10	0.034
								85	100	15	0.027
								120	135	15	0.057
	MR151874	11919.878	13503.004	7118.907	-90	0	150	75	85	10	0.022
								100	120	20	0.022

table continues…

Area	Hole ID	Easting	Northing	Elevation	Dip (º)	Azimuth (º)	Total Depth (ft)	Depth From (ft)	Depth To (ft)	Down-Hole Intercept (ft)	Grade (opt Au)
North Brodie	MR13740	11774.364	11331.655	7142.313	-90	0	350	50	55	5	0.019
								125	145	20	0.069
								160	165	5	0.010
								205	210	5	0.018
								215	240	25	0.030
								255	260	5	0.010
								305	310	5	0.067
	MR09041	11902.54	11266.47	7137.2	-89.2	208.9	200	110	130	20	0.171
								140	145	5	0.021
								150	155	5	0.058
								175	180	5	0.016
	MR13765	11774.98	11128.973	7122.539	-90	0	430	70	85	15	0.024
								95	100	5	0.031
								115	120	5	0.012
								140	145	5	0.010
								195	200	5	0.010
								300	305	5	0.016
								365	370	5	0.056
								380	385	5	0.023
	MR13744	11789	11206	7116.6	-90	0	400	20	25	5	0.025
								70	80	10	0.020
								105	115	10	0.115
								225	235	10	0.014
								240	245	5	0.010
								260	265	5	0.010
								335	340	5	0.029
								380	390	10	0.012
	MR12382	11741.509	11224.031	7122.726	-90	0	500	85	90	5	0.028
								365	405	40	0.050
								425	430	5	0.037

table continues…

Area	Hole ID	Easting	Northing	Elevation	Dip (º)	Azimuth (º)	Total Depth (ft)	Depth From (ft)	Depth To (ft)	Down-Hole Intercept (ft)	Grade (opt Au)
MYLC 4	MR13647	17015.14	13724.829	6410.431	-50	225	300	0	20	20	0.041
								155	175	20	0.087
	MR13614	17062.21	13518.675	6469.536	-90	0	280	170	185	15	0.044
	MR151424	17162.152	13658.559	6394.366	-60	225	300	170	185	15	0.019
								200	205	5	0.020
								210	215	5	0.013
	MR162107	17266.878	13700.89	6377.126	-50.02	235.1	300	5	30	25	0.032
								220	225	5	0.992
								240	245	5	0.018
Bunkhouse Hill	MR12441	17689.418	13176.605	6441.129	-90	45	420	50	55	5	0.016
								60	65	5	0.016
								75	80	5	0.067
								95	100	5	0.010
								105	115	10	0.013
	MR141207	17811.939	12918.292	6451.622	-90	0	140	50	90	40	0.036
	MR141208	17864.57	12922.296	6449.32	-90	0	160	65	95	30	0.051
	MR151464	17981.93	13269.91	6369.219	-60	225	270	185	205	20	0.249
	MR162081	18042.698	13199.663	6403.438	-76.27	227.3	500	235	250	15	0.461
								255	260	5	0.016

table continues…

Area	Hole ID	Easting	Northing	Elevation	Dip (º)	Azimuth (º)	Total Depth (ft)	Depth From (ft)	Depth To (ft)	Down-Hole Intercept (ft)	Grade (opt Au)
Custer	MR151706	18713.366	11432.036	6445.866	-90	0	260	150	175	25	0.237
								180	185	5	0.011
								205	225	20	0.156
	MR151863	18786.329	11358.888	6425.595	-70	10	400	20	25	5	0.037
								40	45	5	0.011
								90	95	5	0.019
								205	245	40	0.282
	MR161950	18843.15	11670.051	6373.001	-50	250	400	95	100	5	0.012
								210	230	20	0.108
								300	305	5	0.016
	MR161952	18709.048	11428.553	6447.34	-65	300	400	190	195	5	0.067
								200	215	15	0.047
								380	385	5	0.010
	MR161984	18693.899	11374.891	6455.651	-81	118	300	100	105	5	0.011
								155	165	10	0.023
								205	210	5	0.013

11.0 SAMPLE PREPARATION, ANALYSIS AND SECURITY

11.1 SAMPLING METHODS

11.1.1 GEOCHEMICAL SAMPLING

Scorpio Gold personnel collected rock chip and soil samples on the Project to guide future exploration work. Written sampling procedures were developed by Scorpio Gold describing sample number sequences, collection and location methodology, and sample description protocol.

11.1.2 SCORPIO GOLD DRILLING, 2009 TO 2013

Samples were collected on 5 ft intervals from a rotating wet splitter assembly attached to the drill rig. Chip tray samples were collected from the reject side of the cyclone. The cyclone was adjusted to produce 20 to 30 lbs of sample material, which was riffle split at the rig to produce two 10 to 15 lb duplicate samples. Both samples were placed in separate lockable containers. One set of duplicate samples was submitted to Scorpio Gold's on-site assay laboratory or AAL in Sparks, Nevada for gold assay. One duplicate sample per 100 ft of drilling was submitted for assay along with the rest of the submission as a field duplicate. The remainder of the duplicate samples remained on site in a locked bin for future use.

RC samples were not weighed in the field. The weight of each sample received at the laboratory was reported for each sample.

To prevent sample contamination, the drilling was paused briefly at the end of each 5 ft sample interval while the air circulation was maintained to flush the drill string and clean the cyclone. The cyclone was cleaned after every sample. Sample bags were pre-marked and tied off immediately after filling and the riffle splitter was washed after each sample.

Under the supervision of the site geologist, RC samples were placed in sealed cloth sample bags and locked in enclosed transportation bins next to the Mineral Ridge security office until they were ready to be shipped to AAL. In addition to the field duplicates taken and submitted every 100 ft (20 samples), an envelope of certified reference material (CRM) and a prepared blank sample were also included in the bin at a rate of one per 100 ft (1 each per 20 samples). The laboratory's copies of the laboratory submittal were also included in the locked bin.

Upon loading the bins at the site, AAL and Scorpio Gold site personnel would remove the Scorpio Gold locks on the bins and replace them with AAL seals for transportation. AAL picked up and transported the bins with its dedicated truck to its laboratory in Reno. The enclosed transportation bins were provided by AAL, with a fresh supply of these bins left when the full ones were picked up.

11.1.3 SCORPIO GOLD DRILLING, 2014 TO 2017

Drill sampling by Scorpio during the 2014 to 2017 field seasons was conducted in the same manner as it was during the 2009 to 2013 field seasons. RC samples were collected on approximately 5 ft (1.5 m) intervals, from a rotating wet splitter assembly attached to the drill rig. Core sample intervals were collected on 5 ft (1.5 m) intervals within homogeneous zones or on 2 to 7 ft (0.6 to 2.1 m) intervals where dictated by lithology.

Core was sawn into symmetrical halves by Scorpio Gold personnel; one-half was sampled, and the other half was retained in the core box for future reference. Not all core may be sampled from production drill holes. Sampling could be taken only in the areas where mineralization was expected.

Samples destined for offsite analysis were, under the supervision of the site geologist, placed in sealed cloth sample bags and lockable transportation bins next to the Mineral Ridge security office until they were ready to be shipped to the laboratory. When the laboratory collection truck arrived at site, laboratory and Scorpio Gold site personnel inventoried the bins and supervised their unloading. Each laboratory collected and transported the bins with its dedicated truck to the laboratory facility.

Samples destined for onsite analysis were delivered in bar-coded, tie-sealed bags directly to the onsite assay laboratory. There, samples were logged into the system via barcode scanning and then cross-checked against sample lists provided by the geologist.

Upon receipt, each laboratory scanned the bar codes and logs in the samples. This sample list was checked against the submittal, and any discrepancies were noted. The computer-generated sample list included the random position of standards and blanks per sample batch submitted by Scorpio Gold. Each laboratory included additional random materials (for example, two standards, one blank) in its final sample report.

11.1.4 SCORPIO GOLD LEACH PAD SONIC DRILLING

Sonic drill core from the leach pad drilling was placed in plastic bags in nominal 2.5 ft (0.76 m) intervals at the drill rig by the drillers and transferred by Scorpio Gold geologists to the Scorpio Gold on-site assay laboratory for sample preparation.

11.1.5 SCORPIO GOLD EAGLE CANYON SONIC DRILLING

The Eagle Canyon sonic drill program samples were collected by the drill crew, and then taken to the sample staging area by Scorpio Gold geologists.

The 2.5 ft samples were selected by the geologist, and then transported to Florin for sieve test and gravity concentration of the sample before assay of the gravity tails for gold and silver.

The program results are not used in Mineral Resource estimation or in support of targets for further exploration.

11.2 DENSITY DETERMINATIONS

Initial bulk density determinations were performed as part of the 1995–1996 feasibility evaluations. A single bulk density factor of 13 ft^3/t was assigned to all blocks that represent in-situ rock and was used in the resource tonnage estimations. The bulk density was determined by MRRI and validated by MRDI in 1995. The calculation was based on 63 samples comprising 36 core samples from MRRI's 1993 to 1994 drilling campaign and an additional set of 27 samples from scattered locations throughout the open pit.

Behre Dolbear, in 2003, commented that "*Behre Dolbear believes that it is appropriate to use a tonnage factor of 13 (somewhat higher than the actual measurement average of 12.3) for reserve estimation and mine planning of the Mineral Ridge project because the unmeasured fractures in the ground can account for the difference between the tonnage factor used and the actual tonnage factor measurements.*"

Lewis et al., (2010), indicated that four bulk density tests were performed to verify the density assumption (Table 11.1). They noted that "*based on these results, 13.0 cubic feet per ton was chosen for all resource in-place tonnage calculations. This is the same tonnage factor used by the previous operators and in the 2000 model, which was the result of testwork done at that time and other historical testwork*."

KCA completed rock density tests on randomly selected pieces of ½ split HQ core from the Mary Pit Core composite material (KCA Sample No. 42818), the Drinkwater Core composite material (KCA Sample No. 42819) and the Brodie Core composite material (KCA Sample No. 42820) during 2010. The core pieces selected for rock density test work were approximately two to three inches in length. Results are summarized in Table 11.2.

Table 11.1: Drinkwater-Mary Density Testwork

Samples	Dry Wt (grams)	Specific Gravity (g/cm^3)	Weight (lb/ft^3)	Volume (ft^3/t)
Mary	621.08	2.6	162.31	12.32
Pegmatite	456.50	2.5	156.07	12.81
Alaskite	315.12	2.6	162.31	12.32
Quartz	697.89	2.7	168.56	11.87

Table 11.2: 2010 KCA Density Determinations

KCA Sample No.	Description	Average Density (g/cm^3)
42818	Mary Pit Core	2.65
42819	Drinkwater Core	2.62
42820	Brodie Core	2.68

AMEC, in 2012, assigned a bulk density factor of 13 ft^3/t to all blocks that represent in-situ rock, and blocks that were coded as fill were assigned a bulk density 17.2 ft^3/t. Blocks coded with a percentage inside an underground working used a tonnage factor of zero applied to that portion of the block.

During the November 2017 site visit, Scorpio Gold staff indicated that the 13 ft^3/t value for in-situ rock was representative of the density values reported from truck counts, whether the in-situ rock was derived from deposits on the east or west sides of the antiform.

As a result, MTS recommended that the 13 ft^3/t value for in-situ rock be used for estimation purposes in this Report. If any blocks were encountered that were determined to be fill, then the bulk density value of 17.2 ft^3/t should be applied.

11.3 ANALYTICAL AND TEST LABORATORIES

11.3.1 INDEPENDENT EXTERNAL LABORATORIES

AAL in Reno, Nevada, has been the primary laboratory for a majority of the exploration drill campaigns, and is independent of Scorpio Gold. The laboratory performs both sample preparation and analysis. Most recently, AAL was used as a primary laboratory used in the 2014 and 2017 analytical campaigns. AAL holds ISO/IEC 17025:2005 certification for testing laboratories.

During 2014 and 2016, ALS was used as a primary laboratory. Sample preparation was conducted at ALS Reno, and analysis was completed by ALS Vancouver, Canada. ALS holds ISO/IEC 17025:2005 certification.

In 2015 and 2016, BV, in Sparks, Nevada was used as a primary laboratory, and undertook both sample preparation and analysis. The BV laboratory holds ISO/IEC 17025:2005 certification.

Florin was the laboratory used for the analysis of the leach pad sonic drilling completed in 2017. Florin is the KCA analytical arm in Reno, Nevada and participates in round-robin analyses with several professional organizations. Florin is not certified by an independent standards organization.

11.3.2 ONSITE MINE LABORATORY

The Scorpio Gold onsite assay laboratory is owned, operated, and staffed by Scorpio Gold. The Scorpio Gold assay laboratory is not certified by an independent standards organization. The laboratory has instituted a comprehensive QA/QC program, including checks on sample receiving, sample preparation, internal CRMs and duplicates, and check assays to commercial laboratories. Internal CRMs covering low, medium, and high gold grades, and duplicates are added at an average rate of 10% of the Project samples. All internal controls are reviewed and investigated for protocol compliance. Assay quality against external international round robins shows acceptable performance. Differences between Scorpio Gold and exterior laboratories are analyzed by Scorpio Gold geology and laboratory staff on a quarterly basis.

11.4 SAMPLE PREPARATION AND ANALYSIS

11.4.1 GEOCHEMICAL SAMPLES

Rock and soil samples were prepared and assayed by the laboratory. Rock samples were first crushed to nominal 10 mesh size, and a 300 g split of this product is pulverized to nominal 150 mesh size. Soil samples were sieved to 100% passing 80 mesh. A 30 g sub-sample of material was then assayed for gold by fire assay followed by AAS. An additional 36 elements were determined by aqua regia digestion of a 0.5 g sub-sample followed by inductively coupled plasma.

11.4.2 SCORPIO GOLD EXPLORATION AND INFILL DRILLING

Collection and packaging of the samples was undertaken by Scorpio Gold employees and sample preparation and gold assays were generally performed by the external laboratory.

Sample preparation and analysis procedures by laboratory are provided in the following sub-sections.

11.4.2.1 AAL

Samples were first sorted, transferred into stainless steel pans, and then dried at 105°C in gas fired drying ovens. Dried samples were jaw crushed to 90% passing 10 mesh, then split using a Jones riffle splitter. The sub-samples (1.0 to 4.0 lb, 0.45 to 1.81 kg) were then pulverized in vertical spindle pulverizers to 120 to 150 mesh, and a 1.0 lb (0.45 kg) pulp was placed in a pre-labelled pulp packet for analysis.

Gold was determined by 30 g fire assay AAS. AAL typically reassayed samples reporting greater than 2.5 g/t gold by fire assay gravimetric finish on a separate 30 g pulp split.

11.4.2.2 ALS

Sample preparation was performed using the standard ALS Prep-31 method. Samples were dried, crushed to greater than 70% of the sample passing 2 mm, and pulverized to >85% of the sample passing 75 µm.

The analytical method requested was Au-AA123, whereby gold was determined by 30 g fire assay AAS. A gravimetric method was used for samples returning greater than 0.08 opt gold for non-pulp samples.

11.4.2.3 BUREAU VERITAS

The sample preparation method included drying, crushing to greater than 70% passing 10 mesh and pulverizing to greater than 85% passing 200 mesh.

The analytical method was a 30 g fire assay for gold.

11.4.2.4 MINE LABORATORY

Scorpio Gold assayed some exploration RC drill samples at the onsite Scorpio Gold assay facility, if there was sufficient capacity given the primary role of the laboratory was for run-of-mine assaying. If the analytical results showed anomalous gold values, the anomalous intervals were submitted to an external laboratory.

At the Scorpio Gold facility, samples were delivered to the Scorpio Gold on-site assay laboratory where they were dried at 350°F, crushed to 98% passing 3/8 in (1 cm), split to a 150 to 300 g sub-sample, and pulverized to 95% passing 140 mesh. Gold was assayed by fire assay gravimetric finish on a one assay ton sub-sample.

Samples reporting greater than 0.01 opt gold, plus samples representing the preceding and following 10 ft (3 m) of drilling, were subsequently sent to an external laboratory (typically AAL) for gold assay. The external laboratory gold assay results from these samples replace the Scorpio Gold assays in the Project database used for Mineral Resource and Mineral Reserve estimation.

11.4.3 SCORPIO GOLD SONIC DRILL SAMPLING CAMPAIGNS

At the on-site Scorpio Gold assay laboratory, the following procedure was followed for the sonic drill core samples:

- Material from the sample bags was composited into 10 ft (3 m) intervals;
- Samples were dried in the oven in metal sample trays until completely dry;
- Each composite sample was disaggregated and split in a series of Gilson splitters to produce a 500 g split for analysis;
- Each 500 g split was split in half with one half used for assay and the other added to a bulk composite sample for metallurgical purposes;
- Control samples (duplicates, blanks, and standards) were inserted at random intervals;
- Samples were sent to Florin in Reno, Nevada for gold and silver assay.

At Florin, the following procedures were performed:

- Pulverize the entire 250 g sample to 80% passing 75 µm using a ring-and-puck pulverizer;
- Homogenize each pulverized sample by rolling the entire sample 20 times on a rubber mat;
- Determine gold concentration by one assay ton fire assay using AAS finish;
- Determine silver concentration by four-acid digestion using AAS finish.

A second 250 g split for each sample was added to a bulk composite sample and sent to KCA for metallurgical testwork (see Section 13.0).

11.5 QUALITY ASSURANCE AND QUALITY CONTROL

Scorpio Gold employed a QA/QC program of CRMs, blanks, and field duplicates inserted in the Project sample stream at the rate of approximately one control for every 20 Project samples. The same QA/QC program was generally employed for all samples submitted to each laboratory and the Scorpio Gold on-site assay laboratory.

11.5.1 SCORPIO GOLD DRILLING (2009–2014)

To control the accuracy of the AAL gold results, Scorpio Gold used a series of Rocklabs CRMs with certified values between 0.006 opt gold and 0.120 opt gold. AMEC (2012) evaluated the 2010 to 2012 CRM data and found good agreement between certified values and gold results by AAL. AMEC also evaluated field duplicate and blank results from the 2010 to 2012 drilling campaigns and found acceptable precision of the AAL gold assays and no significant carryover contamination.

Telesto (2014) evaluated the CRM data from the 2013 to 2014 drill campaigns and found good agreement between certified values and average gold value results by AAL. Field duplicate results from the drilling campaigns showed acceptable precision of the AAL gold assays. Field blank samples also returned acceptable results and 98% of all blank samples returned gold assay values below the assay detection limit, while the remaining 2% returned gold assay values of 0.006 opt gold or less.

Scorpio Gold samples submitted to the Scorpio Gold on-site assay laboratory during this period followed the same standard insertion protocols that had been established for the external laboratories.

11.5.2 SCORPIO GOLD DRILLING (2015–2017)

Until 2016, all samples sent for analysis were labelled with a combination of the drill hole ID and the drilled interval in the sample bag. This was replaced for the 2016 program numbering sourced from an Microsoft® Excel spreadsheet that generated individual sample IDs. The Microsoft® Excel spreadsheet also identified where in the sample stream the blank, duplicate and standard QA/QC samples should be inserted. A total of 12 QA/QC samples were typically inserted in each batch of 100 samples (12% insertion rate).

Blank materials were sourced from a road cutting of Reed Formation dolomite on site. Thirty samples of material were tested to confirm that the dolomite was not gold mineralized. The bulk blank material was delivered to the Scorpio mine laboratory in supersacks where it was crushed and put into sample bags, then stored in the exploration storage area for insertion into the sample stream as needed. Prior to the use of this material, a store-bought lava rock had been used as an analytical blank.

Scorpio Gold samples submitted to the Scorpio Gold on-site assay laboratory in 2017 did not include independent control samples but instead relied on the internal facility QA/QC protocols.

MTS reviewed the blank analytical data available. Ninety-eight of all blank samples returned gold assay values at or below the assay detection limit, an acceptable result. Five samples showed elevated gold values, and are likely the result of sample switching or sample mislabelling. The remaining samples returned gold assay values of 0.008 opt gold or less.

The standard reference material (SRM) data were evaluated, and generally showed a reasonable agreement between the expected values and average gold value results for all standards except OXP76. MTS recommends that the data from this standard be investigated if the data are to support any future Mineral Resource estimates. Some SRM data in late September to mid-October 2015 indicated an issue with precision at AAL; subsequent investigation showed that, for the drilling supporting the Mineral Resources in the remnant areas and the targets for further exploration, only one drill hole at Oromonte was affected by the precision issue, and therefore it is not a concern for the purposes of this Report. MTS recommends that the data be investigated if the data are to support any future Mineral Resource estimates.

11.5.3 SCORPIO GOLD LEACH PAD SONIC DRILLING

Leach pad sonic drill samples were prepared by the Scorpio Gold on-site assay laboratory, and then sent to the Florin laboratory.

Blanks, standards, and duplicates were inserted into the sample sequence by Scorpio Gold prior to sending the samples to Florin for analysis. In total, 74 control samples were inserted with the 375 project samples for an insertion rate of 20%.

A total of 14 blank samples were inserted with the project samples and all returned acceptable values (less than five times the lower detection limit). A total of 26 standards with varying recommended values were inserted with the project samples and all except three returned acceptable results (± 10% of the recommended value). Florin reassayed project samples around the three failed control samples, and they returned similar results and were accepted into the database.

An analysis of the 34 coarse duplicates indicates that the assay precision for gold is poor. The precision of the duplicate pairs at the 90% confidence interval is ±108%, where the expected precision for coarse duplicates is ±20%.

Upon request by Scorpio Gold, Florin performed metallic screen analysis on two 1.0 kg sub-samples of the bulk composite sample to determine whether coarse gold was a contributing factor to the poor precision of the one assay ton fire assay results. The coarse fraction reported a significantly higher-grade assay than the fine fraction for Split A (0.0273 vs 0.0190 opt gold) and a slightly higher grade for Split B (0.0188 vs 0.01766 opt gold). These results suggest that coarse gold is likely a contributing factor in the poor precision of the duplicate results.

The implication of the poor assay precision for resource estimation is that the estimate for the entire leach pad will be accurate, but local estimates (individual blocks) are likely to be inaccurate (biased high or low). The implication for mining is that by applying a cut-off grade, there will be a significant risk of misclassification where ore is sent to the waste facility and waste is sent to the mill. If the entire leach pad is processed, this risk is mitigated.

In MTS' opinion, the 2017 Florin gold assay data are sufficiently accurate and precise for use in Mineral Resource estimation.

11.6 DATABASES

A number of database formats have been used over the Project history. Typically, prior to 2013, a significant portion of the data was retained as hard-copy drill logs or in Microsoft® Excel files.

In 2015, all available data were transferred to Geobank, the database format supported by Micromine. The Geobank database currently holds all of the relevant Project geological, survey, and assay data.

Drill data from 2009 to 2016 were recorded on paper logs and then transcribed into the database. From 2016, a palm logger was used, and the electronic logging data was directly uploaded.

Collar data were provided by survey personnel as collar co-ordinates in Microsoft® Excel format. These data are currently copied and pasted into Geobank format and imported into the database.

Downhole survey data were recorded by the drilling company, downhole survey company, or International Directional Surveys (IDS). Data are currently provided to the geological staff as an email attachment, as a hardcopy record, and digitally, via a memory stick. The co-ordinates are in Microsoft® Excel format. These data are copied and pasted into Geobank format and imported into the database.

Assay data are sent in .csv format from the laboratory, and subsequently uploaded into the database.

The Chief Geologist is the only person with read/write privileges, all other staff have read-only permissions.

Digital copies of the database network drives are routinely backed-up.

11.7 SAMPLE SECURITY

All samples are in bins within a secure area prior to being transported to the laboratory. Transportation to the laboratory is conducted using a truck provided by the laboratory or by company vehicles. Chain-of-custody procedures are followed whenever samples are moved between locations, to and from the laboratory, by filling out sample submittal forms.

11.8 SAMPLE STORAGE

Mineralized core from the early Scorpio Gold programs has been consumed during metallurgical testwork.

The main sample storage area for the current work programs is within the secure, gated, mine perimeter.

Currently, coarse reject samples are stored in barrels returned from the analytical laboratories located to the rear of the administration building. Duplicate samples, not sent out for assay, have been stored on pallets and are planned to be rehabilitated in the near-term, due to degradation.

Pulp duplicate samples from the recent Scorpio Gold programs are bar-coded, and stored in cardboard boxes in a storage shed and adjacent shipping containers, in the general same area as the coarse reject samples.

RC chip trays record each 5 ft (1.5 m), interval of the RC drill holes completed by Scorpio Gold, and are stored with the pulp rejects. All chip trays viewed during the site visit included drill hole ID and from-to indicators on the outside of the trays.

All core from the recent drill programs is currently stored in cardboard or plastic-lidded core trays, and stacked, in the open, by drill hole, and covered by heavy tarpaulin-style wraps.

11.9 COMMENTS ON SAMPLE PREPARATION AND ANALYSIS

MTS considers that:

- Sample preparation and analysis completed during legacy drill programs in the areas proposed for remnant mining, and the associated QA/QC and audit validation as discussed in Section 12.0, is considered adequate to support Mineral Resource and Mineral Reserve estimation and mine planning;
- Sample preparation and analysis at the Scorpio Gold onsite laboratory, AAL, ALS, BV and Florin laboratories completed during the 2014 to 2017 drill programs is generally adequate to support Mineral Resource estimation and mine planning;
- QA/QC procedures implemented during the 2014 to 2017 drill programs are generally acceptable to support the analytical precision and repeatability;
- Bulk density data are reasonable, and the tonnage factors derived from those data adequate to support Mineral Resource estimation and mine planning. The tonnage factors are supported by spot checks during mining operations;
- Sample security consists largely of the use of chain-of-custody forms to track core and sample movement.

The nature, extent, and results of the sample preparation, security, and analytical procedures, and the quality control procedures employed, and quality assurance actions taken by Scorpio Gold provide acceptable confidence in the drill hole data collection and processing to support Mineral Resource and Mineral Reserve estimation, and mine planning.

Gold and silver assays can be used to estimate Mineral Resources and Mineral Reserves for the heap leach pad. Silver was not routinely assayed for in the remnant area drill programs. As a result, only gold estimation can currently be supported for these areas.

12.0 DATA VERIFICATION

12.1 INTERNAL DATA VERIFICATION

All data that are stored in the Project database are verified via software verification before final entry into the database. These routines are aimed at preventing entry of extraneous data such as incorrect lithology codes or overlapping assay intervals into the database. In addition, geological staff checking the following items, identify discrepancies, and correct the data where necessary:

- Sample length problems;
- Maximum and minimum grade values;
- Negative values;
- Detection limits and null values;
- Drillhole surveys;
- Sample size;
- Gaps;
- Overlaps;
- Drillhole collars versus topography;
- Coordinate datum;
- Laboratory analysis certificates.

Prior to commencement of drill campaigns, Scorpio Gold personnel ensure that all drill sites are appropriately permitted. This includes completion of archaeological surveys to ensure that historical sites are not disturbed when constructing access roads or drill sites, and where applicable, such sites have appropriate buffer or exclusion zones. It can also include drill moratoriums during bird migration season if bird surveys indicate the presence of migratory species in the area. Where applicable, appropriate permissions are obtained from the BLM or other regulatory authorities during drill planning. Drillhole collars may be moved, in the active mine area, to ensure that the hole collar falls within the PoO.

12.2 EXTERNAL DATA VERIFICATION

12.2.1 PRE-SCORPIO GOLD AUDITS

Previous audits of the Mineral Ridge database have been carried out as follows:

- MRDI (1994–1995): reliability of the assay database, including drilling, surveying, sampling and assaying procedures;

- Behre Dolbear (1996): detailed evaluation of the assay database; Behre Dolbear's willingness to rely on the project assay database was partly supported by the fact that a portion of the deposit was mined, and the production from the mined-out area confirmed the Mineral Reserve that was supported by the database;
- Pincock, Allen, and Holt (1996): the database was suitable for estimation of Mineral Resources and Mineral Reserves and that the logging, sampling and assaying met the industry standards at that time and were reliable;
- Micon (1997): the database was suitable for estimation of Mineral Resources and Mineral Reserves and that the logging, sampling and assaying met the industry standards at that time and were reliable;
- Behre Dolbear (2003): reviewed the additional drilling conducted by Cornucopia and Vista Gold since the 1996 feasibility study; concluded that the current assay database of the Mineral Ridge project within Golden Phoenix's control was sufficient to support Golden Phoenix's Mineral Reserve estimates.

This work supported that the data collected and reviewed by the third-party auditors were acceptable to support Mineral Resource and Mineral Reserve estimation at the time of the review.

12.2.2 AUDITS COMPLETED IN SUPPORT OF TECHNICAL REPORTS FOR SCORPIO GOLD

The Project data have been audited as follows, in support of technical reports on the Project.

12.2.2.1 MICON (2009, 2010)

Micon conducted an inspection of the KCA metallurgical and AAL analytical facilities. Micon observed that, although both laboratories were not ISO accredited, they had industry standard sample preparation and analytical equipment to enable them to deliver reliable results. Both laboratories were noted to frequently participate in round robin exercises and were considered to be up to date with technological advances in analytical techniques which include in-house QA/QC systems.

Micon staff undertook a site visit to the project area for data review during which verification of topography and some of the drillhole collar positions, review of field procedures for the drilling program, review of the percussion chips and drill core logging and sampling procedures, review of facilities and security arrangements in place for samples and drill cores, visual verification of the mineralized units in pits and underground workings, verification of lithological successions in pit and underground exposures, and an independent assessment of the strike extensions of the mineralized units was undertaken.

Micon established the integrity of the resource database by completing a review of its construction, and the categories of information contained in it, to ensure that all the data necessary for the proper estimation of the resources have been assembled, and by undertaking a data validation step by checking assays against the original assay certificates.

12.2.2.2 AMEC (2012)

AMEC performed an audit of the Mineral Ridge drilling database, checking the database values against original documentation, focusing on the drilling completed from 2008 to 2010.

MRDI had removed select drillholes from the database where location information was missing or suspect. AMEC confirmed that these drillholes were excluded from the Scorpio Gold resource database.

AMEC checked collar coordinates from selected drillholes in the mineral resource database against collar coordinates from drill logs or collar survey records. All drillhole co-ordinates in the Mineral Resource database matched the coordinates from the original documentation, indicating no errors had occurred during data entry.

During the audit site visit, AMEC reviewed select 2009 and 2010 drillhole locations in the field in the Drinkwater and Mary resource areas and found them to be accurately located relative to site topography and roads.

Database down-hole survey records for the 2009 and 2010 campaigns were checked against the original down-hole survey tickets recorded by Hard Rock Drilling; no errors were encountered in the checked drillholes. Golden Phoenix's 2008 drillholes were not surveyed down-hole.

AMEC checked lithology codes in the database against the handwritten geological logs for select 2008, 2009, and 2010 drillholes. Errors identified occurred in the 2009 drillholes, and Scorpio Gold subsequently corrected 100% of the 2009 lithology records.

Select gold assay records in the database were checked against the original assay certificates for 2008, 2009, and 2010 drillholes. Of the records checked, and no data entry errors were found.

AMEC checked select legacy data against original documentation and against 1995 MRDI audit records. A total of 38 collar locations (2% of total), and 1,146 assay records (2% of total) were checked. No errors were found in the collar locations and three errors were found in the assay records (0.3% error rate).

AMEC considered a database error rate of less than 1.0% to be acceptable. In AMEC's opinion, the Mineral Ridge Mineral Resource database was adequately free of data entry errors and was acceptable for use in Mineral Resource estimation.

In July 2012, AMEC completed an audit of 2011 and 2012 Scorpio Gold drill assays that were material to the Drinkwater and Mary deposits, checking the database values against original documentation. Approximately 10% of the gold assay records in the database were checked against the original assay certificates for 2011 and 2012 drillholes. A total of 403 records were checked, and one data entry error was found for an error rate of 0.1%.

In AMEC's opinion, the Mineral Ridge Mineral Resource database was adequately free of data entry errors and was acceptable for use in Mineral Resource estimation.

12.2.2.3 TELESTO (2013, 2014)

SATELLITE DEPOSITS

An audit was performed on the database used for the Mineral Resource estimate. All original documentation of assay analyses was provided by Scorpio Gold to Telesto in the form of pdf images and Excel spreadsheets. Telesto's primary focus were on the areas then termed the "satellite deposits", which included the Bluelite, Solberry, Brodie, Wedge, and Oromonte zones.

For each satellite area, 25% of all certificates of analysis from independent laboratories and in-house laboratories and handwritten assay records were compared on a line-by-line basis to the electronic database provided by Scorpio Gold to ensure that the transcription of the data was accurate. Drillholes with no documentation were removed from estimation support.

A verification of the drillhole collar coordinate database was conducted. About 33% of the satellite area Scorpio Gold drillholes were cross-checked against original survey records and no errors were found. Telesto also conducted a detailed review of drillhole cross-sections to verify the pre-mining digital topography relative to drillhole collar elevations. The results of the review indicate that the drillhole collar locations are in agreement with the digital topographic surface.

To verify the accuracy of the drillhole coordinate database, a Telesto geologist used a held-held GPS receiver to measure one coordinate from a Scorpio Gold drillhole collar marked by a 4" by 4" wood collar marker and tagged with the drillhole identifier. The GPS tie coordinate was then transformed to the local mine grid by applying an AutoCAD conversion method provided by Scorpio Gold. The transformed GPS tie coordinate was accurate to 1.4 m with the collar coordinate used in the Mineral Resource estimate database. The precision of the GPS drillhole collar tie was considered to be within an acceptable tolerance to validate the drill collar locations.

All down-hole surveys performed by Scorpio Gold were checked on a line-by-line basis, and no errors were found.

MARY AND DRINKWATER DEPOSITS

Telesto conducted an independent data verification study of the Scorpio Gold drilling conducted in years 2010, 2011 and 2012 within the Mary and Drinkwater deposit areas. Assay certificates of analyses from a total of 20 drillholes and totaling 1,002 assay intervals within the Mary and Drinkwater deposit areas were cross-checked against the database. Of the 1,002 assay intervals checked there were three significant value errors representing an error rate of 0.3%. In the opinion of the Telesto, the error rate was within an acceptable tolerance and further data checks were not warranted.

Telesto conducted an independent review of drillhole collar coordinates and orientation. A total of 20 drillholes within the Mary and Drinkwater deposit areas were cross-checked against the Mineral Ridge database and no errors were found.

An independent review of QA/QC standards, duplicates and blank analyses from the Mary and Drinkwater deposit areas was conducted by Telesto and the results of the review indicated that laboratory assay quality was within industry standards.

The data supporting the Mineral Resource estimates of the Drinkwater and Mary deposits was considered by Telesto to be reliable and suitable to support Mineral Resource estimates for the Mary and Drinkwater deposits.

12.3 MTS REVIEWS (2017)

12.3.1 LEACH PAD

MTS designed and developed a Microsoft® Access database to store the sonic drillhole data collected in 2017. MTS loaded collar coordinates, drillhole azimuth and inclination, and sample interval data provided by Scorpio Gold. MTS also loaded the assay data from six Florin assay certificates received directly from Florin from June 5 to 12, 2017. No lithology or logging information was incorporated into the database. The final database contained 34 drillholes and 375 nominal 10 ft (3 m) assay intervals.

MTS exported collar, survey, and assay data from this database that was then used for estimation of the Mineral Resources within the leach pad.

MTS visited Mineral Ridge during the sonic drill program on April 5, 2017, and observed the drilling, sampling, and Scorpio Gold's sample preparation process.

12.3.2 REMNANT AREAS

MTS staff undertook a site visit to the Project area in November 2017 for data review purposes, which included:

- Discussing Scorpio Gold open pit mining practices with site staff;
- Inspecting the crushing and heap leach facilities;
- Inspecting the mine laboratory; although no samples were being processed at the time of the visit;

- Verifying the nature of the steep and rugged topography, which has necessitated careful selection of drill pads, and use of established drill pads for wedge holes to ensure that mineralization is adequately tested;
- Discussing the field procedures that were required to support the drilling programs in particularly rugged areas, such as road construction, with Scorpio Gold staff;
- Visiting and/or viewing drill pads in the Oromonte, Custer, Bunkhouse Hill, Drinkwater highwall, and Brodie areas to assess pad layouts, collar monumenting practices, and the current status of the collar monuments;
- Inspecting lithologies and mineralization visible in the mined-out open pits; including the current state of the highwalls and erosion;
- Reviewing exploration targets and greenfields exploration potential with Scorpio Gold staff.

Scorpio Gold provided MTS with a list of the drillholes that would be used to support Mineral Resource estimates for the remnant areas, a total of 287 RC and core holes completed between 1993 and 2017, with the majority of the drillholes being RC.

MTS reviewed the methodology and results of the data verification performed by MRDI on the 1993 to 1995 drilling, by Behre Dolbear on drilling completed between 1996 and 2003, by AMEC in 2012 on drilling completed between 2008–2012, by Telesto in 2014 on drilling completed between 2012–2014, and by MTS in 2017 on drilling completed between 2015–2017. These reviews covered aspects of data entry, geological logging, survey data, and analytical and QA/QC information, and indicated that the database information at the time of the review was acceptable to inform Mineral Resource estimates. MTS accepts these checks were appropriate to the data available at the time, and considers that any material issues with the data collection and transcription would have been identified in these programs.

MTS independently spot-checked selected drill logs against the database lithology entries, and found no errors.

MTS also spot-checked assay data from filed assay certificates against the assay values in the current database for selected drillholes from the Brodie phase 2, Drinkwater, Mary LC, and Bunkhouse Hill areas, which had a larger proportion of legacy drilling. It was noted that a portion of the gold analytical results from drillholes completed in the period 1997–1999 had been handwritten by the assay laboratory staff and there was no method of verifying if any transcription errors had occurred. Telesto had noted the same issue in their 2013–2014 audit. After consultation with Scorpio Gold staff, MTS decided to remove the analytical data for the affected holes from resource estimation support. This affected six drillholes at MYLC phase 4, four drillholes at Bunkhouse Hill, and one drillhole at Brodie phase 2. No other significant issues were noted. The remaining assay data were considered acceptable to support Mineral Resource estimation.

12.4 COMMENTS ON SECTION 12.0

The QPs reviewed the independent third-party data verification reports available at the Mineral Ridge minesite and the technical reports filed to date on the Project. The QPs rely upon this work for the data collected prior to Scorpio Gold's interest in the Project, and are of the opinion that the data verification programs undertaken adequately support the geological interpretations, the analytical and database quality, and therefore support the use of the data in Mineral Resource estimation in the remnant mining areas.

The QPs participated in the MTS data reviews, and performed a site visit. The QPs consider that a reasonable level of verification had been completed on the data collected by Scorpio Gold, and that no material issues would have been left unidentified from the programs undertaken that would affect estimation of the Mineral Resources in the remnant areas or heap leach pad, or estimation of targets for further exploration.

13.0 MINERAL PROCESSING AND METALLURGICAL TESTING

13.1 INTRODUCTION

This section presents the metallurgical testwork completed in support of the amenability of the heap leach pad material to retreatment through a conventional comminution (ball mills), and CIL cyanidation circuit, to be built on-site to recover gold and silver.

The section also presents the results of testwork completed on open pit mineralization, extensions of which will be mined from remnant pit areas, and treated through the planned process plant.

The metallurgical test program was overseen by Scorpio Gold's operations team. Metallurgical studies were carried out on samples taken from various zones on the existing heap leach pad at the Mineral Ridge property. For this Feasibility Study and Technical Report, KCA completed test work involving gold and silver recovery studies using flotation and conventional cyanide leaching (KCA 2017). ALS previously completed previous studies on cyanide leaching (ALS 2014); Hazen completed the grindability tests (KCA 2017), and Pocock completed the sedimentation and filtration tests (Pocock 2010).

13.2 METALLURGICAL TESTWORK 2017 - HEAD SAMPLE

Boart completed a total of 34 sonic core drillholes to test the grade of the leach pad. An LS 250 sonic drill rig, with 10 ft drill casing and a 4.0 in diameter core barrel, was utilized. The core from the sonic drillholes was placed in plastic bags in nominal 2.5 ft intervals at the drill rig, and then transferred to the on-site Mineral Ridge assay laboratory. Material from the sample bags was composited into 10 ft intervals and placed in metal sample trays, dried, disaggregated and split to produce one-quarter split. Each one-quarter split was processed in a smaller Gilson splitter to produce 500 g split samples. Each 500 g sample was finally split into two portions of 250 g each. One portion of each sample was sent to Florin for gold and silver assay, and the other 250 g split for each sample was added to a bulk composite sample and sent to KCA for metalurgicall testwork.

One partially filled drum containing a single composite sample of 95 kg from the Mineral Ridge pad drill cores was used for metallurgical testing at KCA. The material in the drum was weighed, blended, and then rotary-split into 5 kg portions. Four portions of 5 kg each were then split into 1 kg portions for head analyses and metallurgical testing.

The pad drill material was tested through gravity concentration, bottle roll leaching and flotation test methods. Gravity concentration was conducted on as-received and milled material. Leach testing was conducted on milled head material and gravity tailings. Flotation was conducted on gravity tailings.

Portions of the head material were ring and puck pulverized and analyzed for gold and silver by standard fire assay and wet chemistry methods. Head material was also assayed semi-quantitatively for an additional series of elements and for whole rock constituents. In addition to the semi-quantitative analyses, the head material was assayed by quantitative methods for carbon (C), sulfur (S), and mercury (Hg). A cyanide shake test was also conducted on a portion of the pulverized head material.

In addition to the analyses on pulverized head material, a portion of the as-received material was utilized for head screen analysis. A portion of the head material was also submitted to Hazen for Bond grindability test work.

Head analyses for carbon and sulfur were conducted utilizing a LECO CS 230 unit. In addition to total carbon and sulfur analyses, speciation for organic and inorganic carbon and speciation for sulfide and sulfate sulfur were conducted. The results of the head analyses for gold, silver, carbon, and sulphur are summarized in Table 13.1 and Table 13.2.

Table 13.1: Gold and Silver Head Analyses

Sample No.	Description	Split	Head Assay (opt)	Met. Screen (opt)	Average (opt)
Gold					
78343 A	Composite HP17001-HP17034	A	0.0144	0.0193	0.0169
78343 A	Composite HP17001-HP17034	B	0.0141	0.0177	0.0159
Silver					
78343 A	Composite HP17001-HP17034	A	0.035	0.036	0.036
78343 A	Composite HP17001-HP17034	B	0.035	0.036	0.036

Table 13.2: Carbon and Sulfur Head Assays

Sample No.	Description	Total Carbon (%)	Organic Carbon (%)	Inorganic Carbon (%)
78343 A	Composite HP17001-HP17034	1.61	0.08	1.53
		Total Sulfur (%)	**Sulfide Sulfur (%)**	**Sulfate Sulfur (%)**
		0.20	0.08	0.12

A metallic screen analysis was conducted by stage pulverizing approximately 1,000 g of material, using a limiting screen of 150 mesh Tyler until approximately 30 g of material was retained on the limiting screen. The retained material was then assayed to extinction for gold and silver. From the undersize material, four separate portions were split out and each portion was then individually assayed for gold content. The results of the metallic screen analyses are presented in Table 13.3.

Table 13.3: Metallic Screen Analyses for Gold and Silver

Sample No.	Size Fraction	Assay 1 Wt. (g)	Assay 2 Wt. (g)	Assay No.	Assay 1 (opt)	Assay 2 (opt)	Average (opt)
Gold							
78343 A	+ 150 mesh	33.37	27.13	Total	0.0273	0.0188	0.0231
78343 A	- 150 mesh	953.5	967	1	0.0253	0.0167	--
				2	0.0206	0.0173	--
				3	0.0157	0.0194	--
				4	0.0144	0.0171	--
				Average	0.0190	0.0176	0.0183
Total Head (Gold)		**986.9**	**994.1**	**Calc.**	**0.0193**	**0.0177**	**0.0185**
Silver							
78343 A	+ 150 mesh	33.37	27.13	Total	0.064	0.064	0.064
78343 A	- 150 mesh	953.5	967	1	0.035	0.035	0.035
Total Head (Silver)		**986.9**	**994.1**	**Calc.**	**0.036**	**0.036**	**0.036**

Head analyses for mercury were conducted utilizing cold vapor/atomic absorption methods. Total copper analyses were conducted utilizing inductively coupled argon plasma–optical emission spectrophotometer (ICAP-OES) as well as by flame atomic absorption spectrometer methods. The results of the mercury and copper analyses are presented in Table 13.4.

Table 13.4: Mercury and Copper Head Assays

Sample No.	Description	Total Hg (mg/kg)	Total Cu (mg/kg)	CN Soluble Cu (mg/kg)	CN Soluble Cu (%)
78343 A	Composite HP17001-HP17034	0.39	13	1.06	8

Note: Cu = copper; CN = cyanide

Semi-quantitative analyses were conducted by means of an ICAP-OES for a series of individual elements and whole rock constituents (lithium metaborate fusion/ICAP). The results of the multi-element analyses are presented in Table 13.5. The results of the whole rock analyses are presented in Table 13.6. Inductively-coupled analysis showed that typical contaminant elements such as arsenic, mercury, cadmium, lead or antimony are present at very low levels in the Mineral Ridge heap leach material.

Table 13.5: Inductively-coupled Multi-element Analyses

Constituent	Unit	Composite HP17001-HP17034 KCA Sample No. 78343 A
Al	%	5.69
As	mg/kg	75
Ba	mg/kg	614
Bi	mg/kg	<2
C_{total}	%	1.61
$C_{organic}$	%	0.08
$C_{inorganic}$	%	1.53
Ca	%	4.99
Cd	mg/kg	3
Co	mg/kg	7
Cr	mg/kg	108
Cu_{total}	mg/kg	13
$Cu_{cyanidesoluble}$	mg/kg	1.06
Fe	%	1.96
Hg	mg/kg	0.39
K	%	2.96
Mg	%	0.73
Mn	mg/kg	414
Mo	mg/kg	<1
Na	%	1.15
Ni	mg/kg	27
Pb	mg/kg	137
S_{total}	%	0.20
$S_{sulfide}$	%	0.08
$S_{sulfate}$	%	0.12
Sb	mg/kg	2
Se	mg/kg	<5
Sr	mg/kg	382
Te	mg/kg	3
Ti	%	0.13
V	mg/kg	46
W	mg/kg	<10
Zn	mg/kg	144

Table 13.6: Whole Rock Analyses (Lithium Metaborate Fusion)

Constituent	Unit	Composite HP17001-HP17034	KCA Sample No. 78343 A
SiO_2	%	65.4	-
Si	%	-	30.58
Al_2O_3	%	10.79	-
Al	%	-	5.71
Fe_2O_3	%	2.78	-
Fe	%	-	1.94
CaO	%	6.87	-
Ca	%	-	4.91
MgO	%	1.23	-
Mg	%	-	0.74
Na_2O	%	1.57	-
Na	%	-	1.16
K_2O	%	3.45	-
K	%	-	2.86
TiO_2	%	0.29	-
Ti	%	-	0.17
MnO	%	0.05	-
Mn	%	-	0.04
SrO	%	0.04	
Sr	%	-	0.03
BaO	%	0.07	-
Ba	%	-	0.06
Cr_2O_3	%	0.02	-
Cr	%	-	0.01
P_2O_5	%	0.11	-
P	%	-	0.05
$LOI_{2000°F}$	%	7.17	-
SUM	%	99.84	-

The objective of the testing program was to evaluate the gold and silver recovery of the heap leach material composite. The testing program was as follows:

- Gravity concentration: At 250, 325 and 400 mesh Tyler.
- Cyanide leaching:
  - Gravity tails leaching at 250, 325, and 400 mesh Tyler.
  - Direct leaching was performed at 150, 200, 250, 325, and 400 mesh Tyler.
- Flotation: At 250, 325 and 400 mesh Tyler.

13.3 METALLURGICAL TESTWORK 2014 – HEAD SAMPLE

Approximately 40 kg of heap leach composite was submitted to ALS for testing. Sample was crushed to minus 6 mesh Tyler (3.36 mm passing) and homogenized. The sample was split into 2 kg portions using a rotary splitter and stored until consumed in the test program. Head assay results are presented in Table 13.7.

Table 13.7: Heap Leach – Head Assay

Sample No.	Gold (opt)	Silver (opt)	S (%)	Sulfide S (%)	C (%)	Organic C (%)
Heap Leach Sample	0.023	0.03	0.20	0.17	1.59	0.09

This composite sample was tested for direct leaching at a nominal primary grind size of 80% passing 200 mesh Tyler (74 µm). The objective of the test was to evaluate the gold and silver recovery.

13.4 HEAD SAMPLE SCREEN ANALYSIS

One portion of composite sample prepared by KCA in 2017 was initially wet-screened at 325 mesh Tyler. The minus 325 mesh material was filtered and dried. The oversized material was dried and then dry screened at 0.25 in, 10, 28, 65, 100, 150, 200, 250 and 325 mesh Tyler. The dry screened minus 325 mesh material was then combined with the wet-screened material. Each separate size fraction was then weighed. Cumulative passing 80% was calculated at 0.14 in (3.56 mm). The head screen analysis is presented in Table 13.8. This particle size distribution was used in plant design.

Table 13.8: Head Screen Analysis – As Received Material

KCA Sample No.	Passing (in/mesh Tyler)	Retained (in/mesh Tyler)	Wet Screen Analysis			
			Sample Weight (g)	Weight Distribution (%)	Cumulative Weight Retained (%)	Cumulative Weight Passing (%)
78343 A	--	0.25	0.04	--	--	--
	0.25	10	383.48	38.7	38.7	100.0
	10	28	243.18	24.6	63.3	61.2
	28	65	133.32	13.5	76.8	36.7
	65	100	30.38	3.1	79.9	23.2
	100	150	27.38	2.8	82.6	20.1
	150	200	21.78	2.2	84.8	17.4
	200	250	8.78	0.9	85.7	15.2
	250	325	16.16	1.6	87.3	14.3
	325	Pan	125.21	12.7	100.0	12.7
Total	--	--	**989.71**	**100.0**	--	--

13.5 COMMINUTION TESTWORK

A portion of the composite material from the 2017 metallurgical testing was submitted to Hazen Research Inc. for a standard Bond ball mill work index (B_{Wi}) test. This work was commissioned to evaluate the comminution configuration and power requirements for the process plant design. Being a composite sample and under the assumption that all the material in the heap leach pad will have similar physical characteristics, a single test was executed.

The Mineral Ridge heap leach composite was tested with a closing sieve aperture of 200 mesh (74 µm) and the B_{Wi} was 15.3 kWh/T. Based on the B_{Wi} the material can be classified as medium hardness in terms of ball milling.

13.6 GRAVITY CONCENTRATION TESTWORK

Gravity concentration was conducted on 1,000 g portions of scalped as-received material and milled material. The scalped material was screened at 10 mesh Tyler (1.7 mm) before testing, and the oversize was assayed as a separate product. The gravity concentration tests utilized head material milled to a target grind size of 80% passing 250, 325 and 400 mesh Tyler (63, 44, and 37 µm, respectively).

The samples were then slurried with tap water and fed to a laboratory Knelson concentrator model KC-MD3. A single concentrate and tails was generated for each test. The concentrate was then hand panned to produce a final concentrate. The pan tails were returned to the Knelson tails.

Duplicate gravity concentration tests were conducted at each target grind size. The tails products from the first set of tests were dried, weighed and utilized for subsequent leach testing. The tails products from the second set of tests were utilized for subsequent flotation testing. The pan concentrates from each test were dried, weighed and assayed for gold and silver content.

On average, over the six tests performed by gravity concentration, 27.5% of the gold was recovered in the final gravity concentrate which contained 0.11% of the feed mass. The gold contents of these concentrates averaged 4.2 opt, ranging between 2.4 and 6.9 opt. Silver recovery into the gravity concentrate was poor reporting only 1.9% in average.

The results of the gravity concentration tests are summarized in Table 13.9.

Table 13.9: Summary of Gravity Concentration Tests

Sample No.	Test No.	Target P_{80} (mesh Tyler)	Con. Wt. (%)	Calc. Head (opt)	Con. (opt)	Recovery (%)
Gold						
78343 A	78378	Scalped As-Rec'd	0.2	0.0163	0.303	3.9
78343 A	79023	250	0.1	0.0143	4.154	28.8
78343 A	79030	250	0.2	0.0154	3.390	35.3
78343 A	79024	320	0.1	0.0104	2.380	22.7
78343 A	79031	320	0.1	0.0117	6.915	29.8
78343 A	79025	400	0.1	0.0113	4.208	25.9
78343 A	79032	400	0.1	0.0104	4.081	22.3
Silver						
78343 A	78378	Scalped As-Rec'd	0.2	-	-	-
78343 A	79023	250	0.1	0.032	<0.05	0.1
78343 A	79030	250	0.2	0.027	0.51	3.1
78343 A	79024	325	0.1	0.031	<0.05	0.1
78343 A	79031	325	0.1	0.028	4.35	8.0
78343 A	79025	400	0.1	0.032	<0.05	0.1
78343 A	79032	400	0.1	0.026	<0.05	0.1

13.7 CYANIDATION TESTWORK

13.7.1 CYANIDATION – TESTWORK 2017

A series of tests were completed with the composite from the metallurgical testwork done in 2017. Bottle roll leach testing was conducted on portions of the head feed material (direct cyanidation) and portions of the Knelson gravity tailings. For the direct leach tests, 1 kg portions of the head material were milled in a laboratory rod mill to a target size of 80% passing 150, 200, 250, 325 and 400 mesh Tyler. For the leach tests of the gravity tails, the entire gravity product material was utilized.

The bottle roll test procedure is outlined as follows: One portion of milled material or gravity tailings was placed into a 2.5l bottle and slurried with tap water to a total of 1.5l of added water. The slurry was mixed thoroughly and the pH of the slurry checked and adjusted, as required, to 10.5 to 11.0 with hydrated lime. Sodium cyanide was added to the slurry to a target amount of 1.0 g/l. The bottle was then placed onto a set of laboratory rolls. Rolling throughout the duration of the test also mixed the slurry. The slurry was sampled and checked at 2, 4, 24, 48, 72 and 96 h for pH, dissolved oxygen, sodium cyanide, gold, silver, and copper. Hydrated lime and sodium cyanide were added at each sample period, if required, to adjust the slurry to the target levels. After completion of the leach period, the slurry was filtered, washed, and dried.

From the dry tailings, duplicate portions were split out and individually pulverized to a target of 100% passing 150 mesh Tyler. The pulverized portions were then assayed for residual gold and silver content. The reject material was stored.

The best gold extraction for the head feed was found at 250 mesh with a total of 92% gold extracted. There was an apparent correlation between feed grind size and gold extraction from 150 to 250 mesh, but further grinding to 325 and 400 mesh did not improve the gold recovery reporting gold extractions of 88 and 89% respectively. The overall gold extraction for the gravity tailings was between 87 to 89% with no correlation between gold extraction and gravity tailings grind size.

Silver extraction for the head feed showed an apparent correlation with grind size with a maximum recovery of 29% at 400 mesh. The same correlation was not found for the gravity tailings with a highest silver extraction of 28% for both 250 and 400 mesh tests.

Cyanide consumption have not yet been optimized. Further testing should be done to confirm cyanide consumption during direct leaching of the heap leach material.

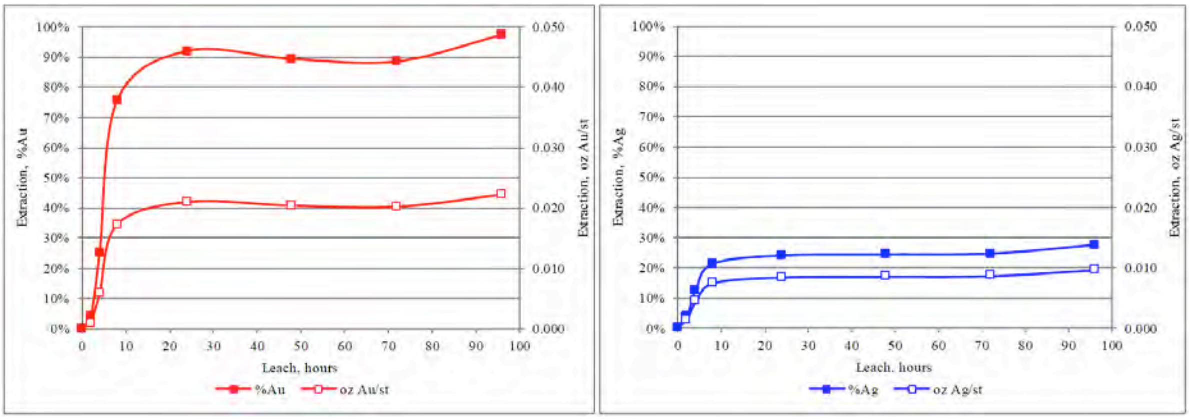
The gold and silver extraction results of the bottle roll test are summarized in Table 13.10.

Table 13.10: Bottle Roll Leach Test – Gold and Silver Extraction

Sample No.	Test No.	Material Type	Target P_{80} Size (mesh Tyler)	Met Screen Assay (opt)	Calculated Head (opt)	Extracted (opt)	Avg. Tails (opt)	Extracted (%)	Leach Time (h)	Consumption Sodium Cyanide (lb/t)	Addition Calcium Hydroxide (lb/t)
Gold											
78343 A	79069 A	Feed	150	0.0185	0.0128	0.0104	0.0025	81	96	0.31	1.00
78343 A	79069 B	Feed	200	0.0185	0.0139	0.0117	0.0022	84	96	0.75	1.00
78343 A	79001 A	Feed	250	0.0185	0.0227	0.0209	0.0018	92	96	2.24	1.00
78343 A	79001 B	Feed	325	0.0185	0.0152	0.0134	0.0018	88	96	2.24	1.00
78343 A	79001 C	Feed	400	0.0185	0.0149	0.0133	0.0016	89	96	2.79	1.00
79023 B	79049 A	Knelson tail	250	--	0.0102	0.0089	0.0013	88	96	0.20	2.00
79024 B	79049 B	Knelson tail	325	--	0.0080	0.0070	0.0011	87	96	0.09	2.00
79025 B	79049 C	Knelson tail	400	--	0.0084	0.0075	0.0010	89	96	0.59	2.00
Silver											
78343 A	79069 A	Feed	150	0.036	0.036	0.007	0.029	19	96	0.31	1.00
78343 A	79069 B	Feed	200	0.036	0.033	0.007	0.026	21	96	0.75	1.00
78343 A	79001 A	Feed	250	0.036	0.035	0.009	0.026	27	96	2.24	1.00
78343 A	79001 B	Feed	325	0.036	0.035	0.009	0.026	26	96	2.24	1.00
78343 A	79001 C	Feed	400	0.036	0.032	0.009	0.023	29	96	2.79	1.00
79023 B	79049 A	Knelson tail	250	--	0.032	0.009	0.023	28	96	0.20	2.00
79024 B	79049 B	Knelson tail	325	--	0.031	0.008	0.023	25	96	0.09	2.00
79025 B	79049 C	Knelson tail	400	--	0.032	0.009	0.023	28	96	0.59	2.00

Table 13.10 shows final extractions for gold and silver after 96 hours of leaching for all the tests, but the dissolution kinetics showed a drastic change after a few hours of testing. For example, Figure 13.1 shows the gold and silver dissolution kinetics for the head feed cyanidation at 250 mesh. The results indicated that around 30 hours are required for the gold to reach its maximum extraction. After that the dissolution kinetics decreases drastically. The same behaviour was observed for the silver extraction with an indication that around 20 h of dissolution is necessary for the silver to achieve its optimum extraction. Similar gold and silver dissolution kinetics behaviours were observed on the rest of the cyanidation tests.

Figure 13.1: Gold and Silver Extraction – Direct Cyanidation Test at 250 mesh



13.7.2 CYANIDATION – TESTWORK 2014

ALS performed two cyanidation leaching tests with a grind sizing of 80% passing 200 mesh Tyler (74 µm). Bottle roll leach tests on Mineral Ridge's heap leach material were conducted for over 48 hours. Gold extractions of at least 92% were achieved for both tests after 48 hours of testing. Most of the gold leach extraction took place in the first 24 hours; afterwards, extraction kinetics decreased and gold extraction increased by only 1% on average until the test was completed. Whole ore cyanidation tests results are presented in Table 13.11.

Table 13.11: Direct Cyanide Leach – Gold

Sample No.	Test No.	P_{80} (mesh)	Calculated Head Grade Gold (opt)	Percentage Gold Extracted at Hours			
				2 h	6 h	24 h	48 h
Heap Leach 4	KM4300-25	200	0.0166	42.20	88.10	92.30	93.00
Heap Leach 4	RH189	200	0.0230	82.30	91.15	91.15	92.40

13.8 FLOTATION TESTWORK

Rougher flotation tests were conducted to determine the kinetic flotation characteristics of the gravity tailings material during the metallurgical testwork in 2017. MRG site water was delivered to KCA in five-gallon buckets for the flotation testwork.

Flotation tests were conducted using a laboratory-scale Denver flotation apparatus, using Mineral Ridge site water. Each gravity tailings sample was filtered but not dried. The wet filter cake was transferred to a flotation cell, brought up to volume with site water and conditioned for five minutes with collectors. A frother was added before the start of the air addition. The reagents utilized in this program were as follows: potassium amyl xanthate (PAX), Aerofloat 208 (mixture of dithiophosphate salts in water), cupric sulfate, and AF-70 (alcohol frother). Optimization of flotation reagents and conditions was not performed.

A total of five concentrates were generated over a 20-min period for each rougher flotation test: Con1 (0-1 min), Con2 (1-4 min), Con3 (4-10 min), Con4 (10-15 min) and Con5 (15-20 min). The concentrates were dried, weighed and assayed for gold and silver; as well as silver, sulfur speciation, and carbon speciation. The tails from each test were dried, weighed, pulverized briefly to break up the lumps, and then split to yield portions for assay. The tails were assayed for residual gold, silver, sulfur speciation, and carbon speciation.

Best flotation recoveries from the Mineral Ridge heap leach material were achieved at a P_{80} passing size of 325 mesh, reporting 72% and 48% for gold and silver respectively. Grinding finer than 325 mesh did not seem to improve the recovery of the targeted metals. Sulfide sulfur recoveries ranged between 82 to 94% being the highest recovery at 325 mesh test. The gold content in the concentrates averaged 0.058 opt contained in about 11% of the feed mass.

The extraction summary of the gravity tailings flotation tests is presented in Table 13.12. Kinetic results for the gold and silver dissolution are presented in Figure 13.2 and Figure 13.3.

Table 13.12: Summary of Flotation Test in Gravity Tailings

Sample No.	Test No.	Target P_{80} Size (meshTyler)	Reagents (lb/t)				Cum. Con. Wt. (%)	Calc. Head (opt)	Con. (opt)	Wt. (%)
			Calcium Hydroxide	PAX	Aero 208	AF 70				
Cumulative Gold										
79030 B	79055	250	0.31	0.15	0.07	0.05	9.2	0.0100	0.076	70
79031 B	79056	325	0.29	0.15	0.07	0.05	11.8	0.0082	0.050	72
79032 B	79057	400	0.29	0.14	0.07	0.05	11.9	0.0081	0.048	71
Cumulative Silver										
79030 B	79055	250	0.31	0.15	0.07	0.05	9.2	0.026	0.105	37
79031 B	79056	325	0.29	0.15	0.07	0.05	11.8	0.025	0.103	48
79032 B	79057	400	0.29	0.14	0.07	0.05	11.9	0.026	0.089	40
Cumulative Sulfide Sulfur										
79030 B	79055	250	0.31	0.15	0.07	0.05	9.2	0.04	0.41	89
79031 B	79056	325	0.29	0.15	0.07	0.05	11.8	0.08	0.64	94
79032 B	79057	400	0.29	0.14	0.07	0.05	11.9	0.02	0.17	82
Cumulative Organic Carbon										
79030 B	79055	250	0.31	0.15	0.07	0.05	9.2	0.08	0.42	46
79031 B	79056	325	0.29	0.15	0.07	0.05	11.8	0.10	0.31	36
79032 B	79057	400	0.29	0.14	0.07	0.05	11.9	0.11	0.33	34

Figure 13.2: Gold Recovery – Flotation Test at P_{80}: 250, 325 and 400 mesh

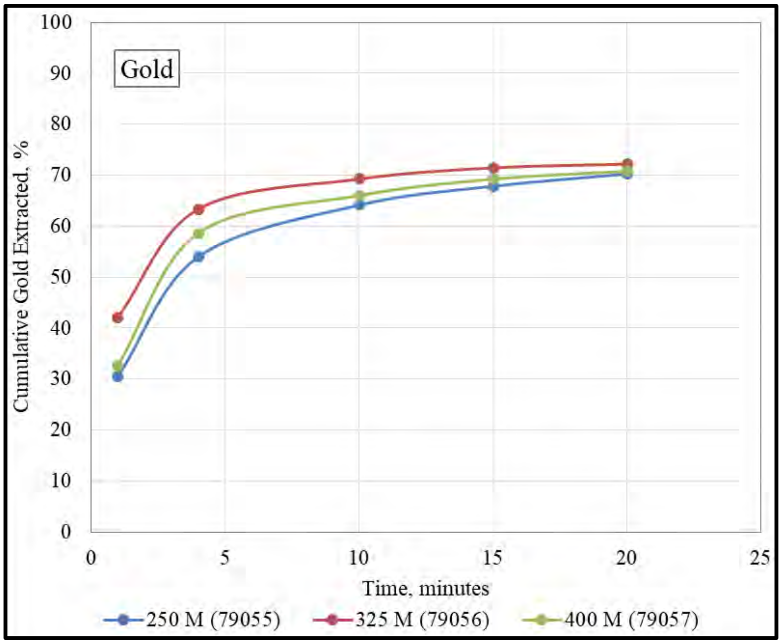
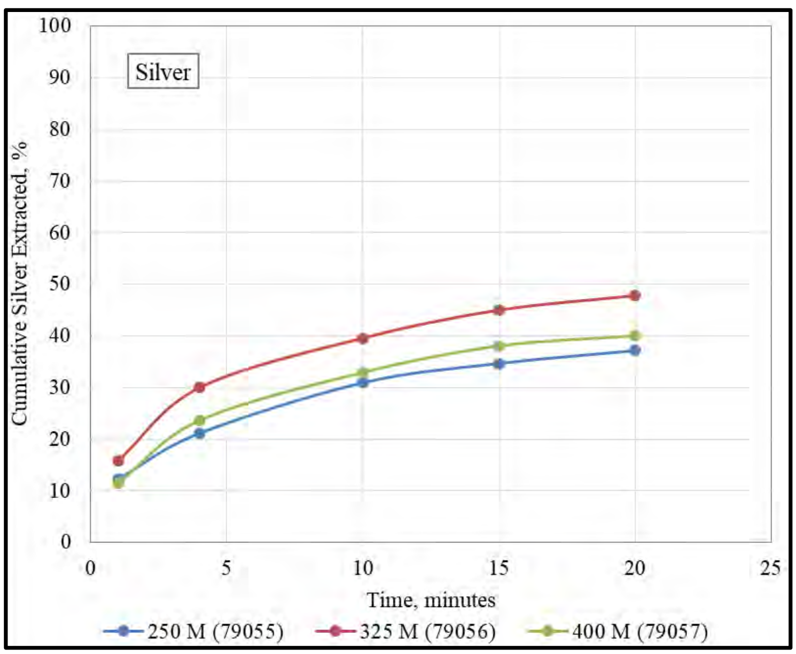


Figure 13.3: Silver Recovery – Flotation Test at P_{80}: 250, 325 and 400 mesh



13.9 OPEN PIT MATERIAL TESTWORK

Metallurgical testwork on ROM material was completed at KCA between September 2009 and January 2010. The materials received were utilized for various metallurgical testwork including physical test work, head analyses, bottle roll leach test work and column leach testwork. This metallurgical testing could support remnant ROM material to be process by the planned processing plant

Samples included:

- Alaskaite – ROM (KCA Sample No. 42801);
- Quartz – ROM (KCA Sample No. 42802;
- Mary Limestone (KCA Sample No. 42812);
- High Grade Quartz material (KCA Sample No. 42816);
- Mary Pit Core composite (KCA Sample No. 42818);
- Drinkwater Core composite (KCA Sample No. 42819);
- Brodie Core composite (KCA Sample No. 42820).

13.9.1 HEAD ANALYSIS

Head analyses were completed on portions of the Alaskaite - ROM material (KCA Sample No. 42801), the Quartz – ROM material (KCA Sample No. 42802), the Mary Limestone material (KCA Sample No. 42812), the High Grade Quartz material (KCA Sample No. 42816) and the Brodie Core composite material (KCA Sample No. 42820) pulverized to 80% passing 200 mesh Tyler. Head analyses for gold and silver were conducted on the received samples. Check assays were completed by AAL.

Head analyses were not completed on the Mary Pit Core composite material (KCA Sample No. 42818) or the Drinkwater Core composite material (KCA Sample No. 42819). A weighted average head assay for gold was provided by Scorpio Gold for each composite.

Head screen analysis with assays by size fraction were completed on portions of the Alaskaite - ROM material (KCA Sample No. 42801) crushed to nominal ¼ in, the Mary Limestone material (KCA Sample No. 42812) crushed to nominal ¼ in, the High Grade Quartz material (KCA Sample No. 42816) crushed to minus 1 in and ¼ in, and the Mary Pit Core composite material (KCA Sample No. 42818) crushed to minus ¾, ½, ⅜ and ¼ in.

The entire portion of material from each separate sample and crush size used for the head screen analysis was wet screen at 200 mesh Tyler. The minus 200 mesh material was filtered and dried. The oversized material was dried and then dry screened through a series of sieve sizes specific to the sample and crush size. The dry screened 200 mesh material was then combined with the dry wet screened material. Each size fraction was then weighed, and the weights reported. From each size fraction two portions were split out and pulverized individually to 80% passing 200 mesh Tyler. Each pulverized portion was then assayed for gold and silver. Results are shown in Table 13.13.

Table 13.13: Summary of Gold and Silver Head Screen Analyses

KCA Sample No.	Description	Calc. P_{80} Size (in)	Weighted Avg. Head (opt of gold)	Weighted Avg. Head Assay (opt of silver)
42801 B	Alaskaite - ROM	0.356	0.027	0.05
42812	Mary Limestone	0.468	0.078	0.05
42816 B	High Grade Quartz	0.617	0.269	0.06
42816 C	High Grade Quartz	0.327	0.280	0.07
42818 A	Mary Pit Core	0.485	0.084	0.09
42818 B	Mary Pit Core	0.388	0.092	0.05
42818 C	Mary Pit Core	0.311	0.091	0.10
42818 D	Mary Pit Core	0.134	0.091	0.10

13.9.2 COMMINUTION TESTS

A portion of crushed material (minus ¼ inch) from the Alaskaite material (KCA Sample No. 42801), the Mary Limestone material (KCA Sample No. 42812) and the High Grade Quartz material (KCA Sample No. 42816) were sent to Phillips Enterprises, LLC in Golden, Colorado for ball mill grindability tests.

The ball mill work index values generated at a 0.150 mm closing screen size are summarized in Table 13.14.

Table 13.14: Summary of Comminution Test Work

KCA Sample No.	Description	Ball Mill Work Index Values (0.150 millimeters) kW-hr/t
42801	Alaskaite - ROM	14.68
42812	Mary Limestone	16.33
42816	High Grade Quartz	14.67

13.9.3 BOTTLE ROLL TESTWORK

A series of bottle roll leach tests were completed on the Alaskaite - ROM material (KCA Sample No. 42801), the Mary Limestone material (KCA Sample No. 42812) and the High Grade Quartz material (KCA Sample No. 42816) using material milled to target grind sizes of 150, 200 and 270 mesh Tyler (105, 74 and 53 µm, respectively).

A single bottle roll leach test was conducted on the Mary Pit Core composite material (KCA Sample No. 42818) and the Drinkwater Core composite material (KCA Sample No. 42819) using material pulverized to 80% passing 200 mesh Tyler.

A series of bottle roll leach tests were completed on the Alaskaite - ROM material (KCA Sample No. 42801), the Mary Limestone material (KCA Sample No. 42812) and the High Grade Quartz material (KCA Sample No. 42816) using material milled to target grind sizes of 150, 200 and 270 mesh Tyler.

Table 13.15 and Table 13.16 summarize the bottle roll test results for gold and silver, respectively.

Table 13.15: Summary of Cyanide Bottle Roll Leach Tests for Gold

KCA Sample No.	KCA Test No.	Description	Material Type	Crush P_{80} Size (in/µm)	Head Average (opt Gold)	Weighted Avg. Screen Head (opt Gold)	Overall Avg. (opt Gold)	Calculated Head (opt Gold)	Extracted (opt Gold)	Avg. Tails (opt Gold)	Au Extracted (%)	Leach Time (h)	Consumption NaCN (lb/t)	Addition $Ca(OH)_2$ (lb/t)
42801	44165 A	Alaskaite - ROM	Milled	0.0053 / 135	0.019	0.027	0.023	0.023	0.021	0.003	89	96	0.59	2.00
42801	44165 B	Alaskaite - ROM	Milled	0.0037 / 94	0.019	0.027	0.023	0.021	0.018	0.003	88	96	0.74	2.00
42801	44165 C	Alaskaite - ROM	Milled	0.0027 / 69	0.019	0.027	0.023	0.024	0.022	0.002	92	96	0.98	2.00
42812	44166 A	Mary Limestone	Milled	0.0048 / 122	0.069	0.078	0.073	0.102	0.080	0.022	78	96	0.83	1.00
42812	44166 B	Mary Limestone	Milled	0.0041 / 104	0.069	0.078	0.073	0.103	0.084	0.020	81	96	1.20	1.00
42812	44166 C	Mary Limestone	Milled	0.0030 / 76	0.069	0.078	0.073	0.093	0.082	0.011	88	96	1.88	1.00
42816	44167 A	High Grade Quartz	Milled	0.0052 / 132	0.265	0.275	0.270	0.172	0.164	0.008	95	96	0.90	1.00
42816	44167 B	High Grade Quartz	Milled	0.0038 / 97	0.265	0.275	0.270	0.156	0.150	0.006	96	96	1.26	1.00
42816	44167 C	High Grade Quartz	Milled	0.0020 / 51	0.265	0.275	0.270	0.209	0.203	0.006	97	96	2.02	1.00
42818	43744 A	Mary Pit Core	Pulverized	0.003 / 76	0.116	0.090	0.090	0.067	0.062	0.005	93	72	1.09	1.00

Table 13.16: Summary of Cyanide Bottle Roll Leach Tests for Silver

KCA Sample No.	KCA Test No.	Description	Material Type	Crush P_{80} Size (in)	Head Average (opt Silver)	Weighted Avg. Screen Head (opt Silver)	Overall Avg. (opt Silver)	Calculated Head (opt Silver)	Extracted (opt Silver)	Avg. Tails (opt Silver)	Ag Extracted (%)	Leach Time (h)	Consumption NaCN (lb/t)	Addition $Ca(OH)_2$ (lb/t)
42801	44165 A	Alaskaite - ROM	Milled	0.0053	0.09	0.05	0.07	0.07	0.03	0.04	42	96	0.59	2.00
42801	44165 B	Alaskaite - ROM	Milled	0.0037	0.09	0.05	0.07	0.07	0.03	0.04	40	96	0.74	2.00
42801	44165 C	Alaskaite - ROM	Milled	0.0027	0.09	0.05	0.07	0.07	0.03	0.04	44	96	0.98	2.00
42812	44166 A	Mary Limestone	Milled	0.0048	0.12	0.05	0.09	0.06	0.02	0.04	36	96	0.83	1.00
42812	44166 B	Mary Limestone	Milled	0.0041	0.12	0.05	0.09	0.06	0.02	0.04	35	96	1.20	1.00
42812	44166 C	Mary Limestone	Milled	0.0030	0.12	0.05	0.09	0.06	0.02	0.04	33	96	1.88	1.00
42816	44167 A	High Grade Quartz	Milled	0.0052	0.06	0.07	0.06	0.08	0.06	0.02	80	96	0.90	1.00
42816	44167 B	High Grade Quartz	Milled	0.0038	0.06	0.07	0.06	0.07	0.06	0.01	85	96	1.26	1.00
42816	44167 C	High Grade Quartz	Milled	0.0020	0.06	0.07	0.06	0.08	0.07	0.01	88	96	2.02	1.00
42818	43744 A	Mary Pit Core	Pulverized	0.003	—	0.09	0.09	0.09	0.03	0.06	38	72	1.09	1.00

13.10 COLUMN LEACH TESTS

Column leach tests were completed on portions of the Alaskaite – ROM material (KCA Sample No. 42801) stage crushed to nominal ¼ in, the Mary Limestone material (KCA Sample No. 42812) stage crushed to nominal ¼ in and the High Grade Quartz material (KCA Sample No. 42816) stage crushed to minus 1 in and ¼ in.

Column leach tests were completed using material from the Mary Pit Core composite (KCA Sample No. 42818) and the Drinkwater Core composite (KCA Sample No. 42819) stage crushed to minus ¾ in, ½ in, ⅜ in and ¼ in. Column leach tests were completed using material from the Brodie Core composite (KCA Sample No. 42820) stage crushed to minus ⅜ in and ¼ in.

The column tests leached over a period of 129 to 140 days. The gold extraction curves for the column leach tests flatten out showing only a gradual increase in recovery between days 30 and 50 of the leach period. The solution application to the columns was stopped and the columns were allowed to rest for a period of several weeks in case a notable increase in extraction would occur when active leaching was re-started. Solution application was re-initialized however, only minor spikes in recoveries were observed. Active leaching periods and rest periods varied between the different column leach tests.

The average gold extraction from the duplicate column leach tests using the Alaskaite – ROM material stage crushed to an average of 80% passing 0.346 in was 44% after 140 days of leaching. This recovery was based upon an average calculated head grade of 0.027 oz gold/t. The average sodium cyanide consumption was 2.34 lbs/st and hydrated lime addition averaged 4.04 lbs/t.

Gold extraction from the duplicate column leach tests utilizing the Mary Limestone material stage crushed to an average of 80% passing 0.441 in averaged 32% after 140 days of leaching. This recovery was based upon an average calculated head grade of 0.068 oz gold/t. The average sodium cyanide consumption was 1.44 lbs/t and hydrated lime addition averaged 4.01 lbs/t.

The average gold extraction from the duplicate column leach tests using the High Grade Quartz material stage crushed to an average of 80% passing 0.605 in was 32% after 140 days of leaching. This recovery was based upon an average calculated head grade of 0.297 oz gold/t. The average sodium cyanide consumption was 1.31 lbs/t and hydrated lime addition averaged 3.99 lbs/t.

In comparison, the gold extraction from the duplicate column leach tests using the High Grade Quartz material stage crushed an average of 80% passing 0.283 in averaged 46% after 137 days of leaching. This recovery was based upon an average calculated head grade of 0.273 oz gold/t. The average sodium cyanide consumption was 1.55 lbs/t and hydrated lime addition averaged 4.03 lbs/t.

The Mary Pit Core material had gold extraction percentages ranging from 42% to 70% after a 140-day leach period. The increase in recovery trended with reduction in particle size. Calculated head grades ranged from 0.080 to 0.095 oz gold/t, with an average calculated head grade of 0.087 oz gold/t. Sodium cyanide consumption ranged from 2.75 to 3.49 lb/t.

Gold extraction percentages for the Drinkwater Core composite material ranged from 47% to 68% after a 140-day leach period. Increased recoveries trended with particle size reduction. Calculated head grades ranged from 0.074 to 0.094 oz gold/t, with an average calculated head grade of 0.087 oz gold/t. Sodium cyanide consumption ranged from 4.01 to 5.65 lbs/t.

The gold extraction from the column leach test utilizing the Brodie Core composite material stage crushed to minus ⅜ in was 54% after 140 days of leaching. This recovery was based upon a calculated head grade of 0.154 oz gold/t. The sodium cyanide consumption was 13.45 lbs/t and cement addition was 4.04 lbs/t.

In comparison, the gold extraction from the column leach test using the Brodie Core composite material stage crushed to nominal ¼ in was 58% after 140 days of leaching. This recovery was based upon a calculated head grade of 0.139 oz gold/t. The sodium cyanide consumption was 11.35 lbs/t and cement addition was 4.07 lbs/t.

The range of copper in solution obtained for the Mineral Ridge column leach tests is considered to be low.

13.11 SOLID–LIQUID SEPARATION TESTWORK

In 2010, Pocock conducted solid-liquid separation (SLS) test on flotation tailings samples from a metallurgical testwork performed by KCA in 2010 on Mineral Ridge fresh ore. The material prepared by KCA consisted of 50 individual intervals of coarse reject core samples. The individual intervals were combined to create a single composite. The composite was then screened, crushed, split into portions, and utilized for flotation tests. Flotation tests were conducted using material milled to 80% passing 100, 200 and 270 mesh Tyler or 149, 74 and 53 µm, respectively. Bulk tailings generated from the three flotation tests were then submitted to Pocock in 6 kg portions from each test for SLS testing. Although the samples used for SLS testing had not been subjected to heap leaching, SLS results from the Pocock 2010 testwork are considered representative for SLS equipment sizing as the material originated from the same ore deposit and is expected to behave similarly. Table 13.17 presents the measured particle size 80% passing for the three samples.

Table 13.17: Particle Size P_{80} SLS Tests

Sample No.	P_{80}, mesh (µm)		Fraction minus 400 mesh (38 µm) Wt. (%)
	Milled Target Pre-flotation	Actual Size Tailings	
45175	100 (149)	(169)	30
45176	200 (74)	(75)	51
45177	270 (53)	(60)	59

The results of the thickening tests are summarized in Table 13.18 and recommended thickener design parameters are presented in Table 13.19. The flocculant selected based on best overall performance was the Hychem AF 304, which is a medium to high molecular weight anionic polyacrylamide with a 15% charge density.

A feed solids concentration of approximately 15 to 20% is recommended for the sample at 75 µm. Using a conventional thickener under the recommended conditions, the unit area for the 75 µm sample is in the range of 0.15 to 0.25 m^2/T per day.

The recommended hydraulic rate is 3.0 to 4.0 m^3/m^2/h for a high rate thickener with a feed 80% passing of 75 µm, while the underflow solids concentration is suggested in the range of 62 to 66%.

Table 13.18: Conventional Thickening Test Results

Sample No.	Feed Solids (%)	Flocculant			Rise Rate (m^3/m^2 h)	Maximum Test Density / Time (%/min)	Solids Conc. Wt. (%)	Unit Area (m^2/T/d)
		Type	Dose (g/T)	Conc. (g/l)				
45175	15	Hychem AF 304	25	0.1	29.97	69.3 / 72	60, 65, 70	0.043, 0.052, 0.059
	20		20		14.23	71.8 / 60		0.043, 0.057, 0.068
	20		25		14.80	70.7 / 60		0.039, 0.053, 0.065
	20		30		13.67	70.2 / 60		0.044, 0.058, 0.070
	25		35		8.05	70.0 / 60		0.035, 0.055, 0.072
45176	15		35	0.1	11.67	62.8 / 60	55, 60, 65	0.118, 0.138, 0.154
	20		25		4.44	65.7 / 120		0.151, 0.187, 0.217
	20		30		4.01	64.8 / 65		0.156, 0.187, 0.214
	20		35		5.30	64.8 / 60		0.112, 0.143, 0.169
	25		35		1.73	65.1 / 120		0.137, 0.213, 0.277
45177	15		25	0.1	6.01	62.8 / 90	55, 60, 65	0.182, 0.208, 0.230
	20		20		4.09	63.0 / 90		0.235, 0.307, 0.369
	20		25		3.46	60.5 / 80		0.239, 0.297, 0.346
	20		30		4.90	61.7 / 70		0.212, 0.267, 0.313
	25		35		1.58	60.4 / 60		0.178, 0.253, 0.316

Table 13.19: Recommended Thickening Design Parameters

Sample No.	Approx. Material P_{80} (µm)	Maximum Feed Solids Conc. (%)	Minimum Flocculant Dose (g/T)	Maximum Underflow Solids Conc. (%)	Unit Area (m^2/T/d)	Maximum Design Net Feed Loading Rate ($m^3/m^2\cdot h$) (estimate)
45175	169	15 – 20	15 – 20	66 - 70	0.125	5.0 – 6.0
45176	75	15 – 20	25 – 30	62 - 66	0.15 – 0.25	3.0 – 4.0
45177	60	15 – 20	25 – 30	58 - 62	0.25 – 0.35	2.5 – 3.0

A summary of the filter sizing parameters for a horizontal recess plate type filter press based on underflow material tested is showed in Table 13.20. Final filter cake moisture was dependant of the sample particle size and filtration cycle time. For example, for the sample at 200 mesh (75 µm) grind size, the filter cake moisture range was between 12.1 to 15.8% for filtration cycles of 15 and 10 minutes respectively.

Table 13.20: Horizontal Recess Plate Filter Press Design Parameters

Sample No.	Dry Bulk Cake Density (kg/m^2)	Sizing Basis (m^3/T) dry solids	Recess Plate Depth (mm)	Chamber Spec. (Len./Vol./Area) ($mm/m^3/m^2$)	Filter Feed Solids (%)	Filter Cake Moist. (%)	Filter Cycle Time (min)
45175	1558.81	0.802	30	1500/0.105/3.62	69.2	14.5	10.0
						12.1	12.0
						10.8	15.0
45176	1486.6	0.841	30	1500/0.105/3.62	64.8	15.8	10.0
						13.5	2.0
						12.1	15.0
45177	1356.9	0.921	30	1500/0.105/3.62	64.3	17.5	10.0
						14.6	12.0
						13.0	15.0

These parameters have been used in plant design as a reasonable approximation of the pad material. Further testing, should be done to confirm the validity for detailed engineering.

13.12 FLOWSHEET SELECTION

13.12.1 HEAP LEACH MATERIAL

The highest overall gold extraction observed for the Mineral Ridge heap leach material at the 2017 testwork was 92%. These extractions were achieved through both the direct leaching of milled material at 250 mesh Tyler and leaching of gravity tailings at 400 mesh Tyler. Flotation recovery of gold from the gravity tails resulted in the lowest gold extractions with gold recoveries ranging from 77% to 81% at 400 and 250 mesh Tyler, respectively.

Direct leaching of milled material between 250 mesh and 400 mesh Tyler recovered 88% to 92% of the gold. Increasing the grind size to 200 mesh or 150 mesh Tyler reduced the gold extractions to 84% and 81%, respectively. For comparison, direct leaching testwork in 2014 at targeted grinding of 200 mesh, recovered 91.2% and 92.4% gold at 24 and 48 hours of leaching time respectively.

Based on a review of all test data generated in this project, the best opportunity to maximize overall gold recovery may lie in a further optimization of direct leaching grinding size. Therefore, it is expected that an overall gold recovery of 91% will be achieved by direct leaching at Mineral Ridge while reprocessing the heap leach material at targeted griding of 200 mesh.

The overall results of the laboratory extraction tests are presented graphically in Figure 13.4 and are summarized in Table 13.21.

Figure 13.4: Overall Gold Extraction in 2017 and 2014 Testwork

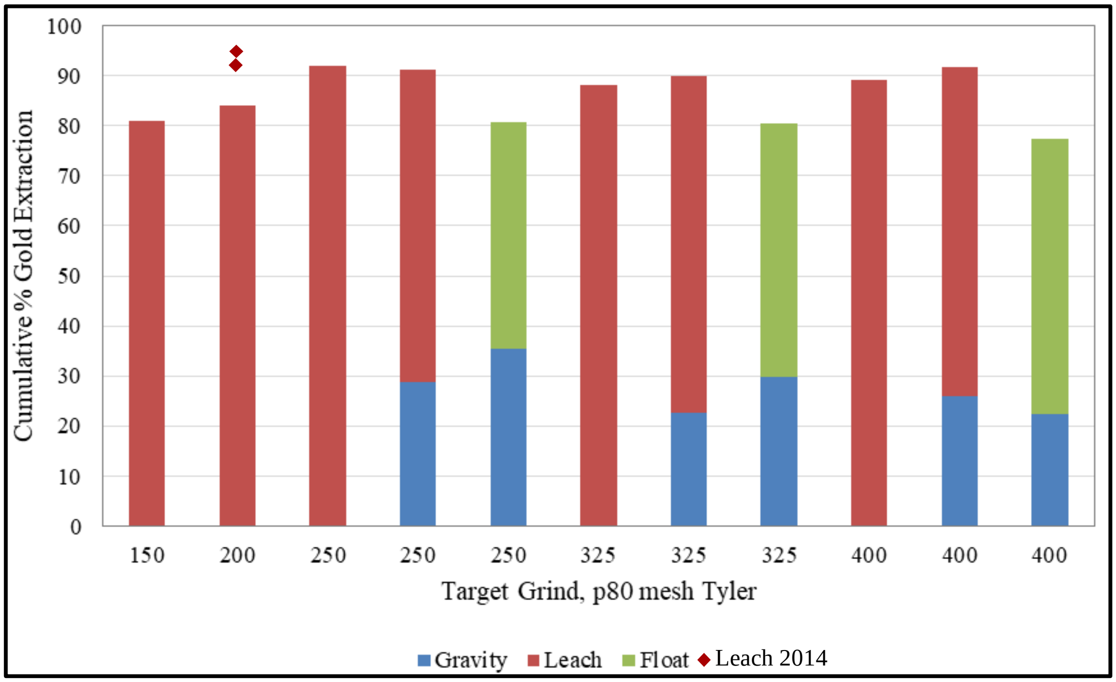


Table 13.21: Summary of Gold Extraction (in % Gold) for the Mineral Ridge Leaching Pad Material

Extraction Methods	Target P_{80} Grind Size (mesh Tyler)	Target P_{80} Grind Size (mm)	Gravity Stage		Leach Stage		Flotation Stage		Overall Extractions			
			Con.	Tail	Sol'n	Tail	Con.	Tail	Gravity	Leach	Flot	Total
Scalped Feed/Gravity	Scalped*	Scalped	4	96	--	--	--	--	4	--	--	4
Direct Leach	150	0.106	--	--	81	19	--	--	--	81	--	81
Direct Leach	200	0.075	--	--	84	16	--	--	--	84	--	84
Direct Leach (2014)	200	0.075	--	--	92	8	--	--	--	92	--	92
Direct Leach (2014)	200	0.075	--	--	93	7	--	--	--	93	--	93
Direct Leach	250	0.063	--	--	92	8	--	--	--	92	--	92
Gravity/Leach	250	0.063	29	71	88	12	--	--	29	62	--	91
Gravity/Flotation	250	0.063	35	65	--	--	70	30	35	--	45	81
Direct Leach	325	0.045	--	--	88	12	--	--	--	88	--	88
Gravity/Leach	325	0.045	23	77	87	13	--	--	23	67	--	90
Gravity/Flotation	325	0.045	30	70	--	--	72	28	30	--	51	80
Direct Leach	400	0.038	--	--	89	11	--	--	--	89	--	89
Gravity/Leach	400	0.038	26	74	89	11	--	--	26	66	--	92
Gravity/Flotation	400	0.038	22	78	--	--	71	29	22	--	55	77

*Note: *As received material, scalped under 10 mesh Tyler (1.7 mm)*

13.12.2 OPEN PIT MATERIAL

Direct leaching of the open pit material has shown to be suitable for gold and silver extraction. A conventional CIL circuit is recommended for treating both the heap leach and remnant ore materials. Considering the Mary pit core composite as the most representative sample of the remnant pit material, at a targeted 200 mesh grinding (74 µm) the gold and silver recoveries for the open pit material are expected at 93% and 38% respectively. These recoveries are anticipated at 36 hours of residence time and at a grind target size of 200 mesh Tyler P_{80}.

13.13 COMMENTS ON SECTION 13.0

In the opinion of the QP, the following interpretation and comments are appropriate:

- Metallurgical testwork and analytical procedures were performed by recognized testing facilities, and test performed were appropriate for the type of mineralization.
- Samples selected for testing were prepared as described in the previous chapter and are relied on as being representative. Samples for variability testing were not provided.
- Inconsistencies are noted in the calculated head assays for a number of tests. Probably the sample size was too small to be representative. Further tests should use larger samples.
- Optimization of reagents and leaching conditions has not been performed. Recovery and operating costs could be improved through optimization. It is recommended that further testing be performed for detailed plant design.
- Sedimentation and filtration testwork was based on fresh ore samples. It is recommended to perform solid liquid separation test on the heap leach material for detailed design.

14.0 MINERAL RESOURCE ESTIMATES

14.1 INTRODUCTION

The Mineral Resources reported in this Feasibility Study and Technical Report include the Mineral Resources that were the subject of an October 2017 technical report (Cooper et al., 2017). At that time the available validated information only supported Mineral Resource estimation for the heap leach pad material. Subsequently, the potential to include remnant material from the peripheries of mined-out open pits or from recently-drilled out prospects was investigated to determine if this material could support Mineral Resource estimation. In the following sub-sections, information has been reproduced from Cooper et al. (2017) for the leach pad estimates.

14.1.1 LEACH PAD

The Mineral Resources comprise material contained entirely within the heap leach pad as of June 29, 2017. While pad feed material from open pit mining operations continued to be placed on the heap leach pad through November 2017, material added during this period has not been included in the Mineral Resource estimate, because this material has not been validated as part of the estimate.

It is assumed that as the leach pad is re-treated, there will be no selectivity of the material to be processed, and therefore, the Mineral Resources presented represent a global estimate of the tonnage and grade.

14.1.2 REMNANT AREAS

MTS visited the Mineral Ridge property in November 2017, with the aim of revisiting the remnant areas to determine if any of this material could support Mineral Resource estimates. Remnant areas were identified at the Brodie, Oromonte, Drinkwater HW, Mary LC, Bunkhouse, and Custer areas.

Existing MineSight block models produced by Scorpio Gold staff were reviewed, but the modelling process and detailed supporting documentation were lacking, and it was, therefore, decided to re-model the estimates using a similar estimation strategy to that used by Scorpio Gold.

MTS produced a new estimate using Isatis software for the same areas that had originally been modelled by Scorpio Gold.

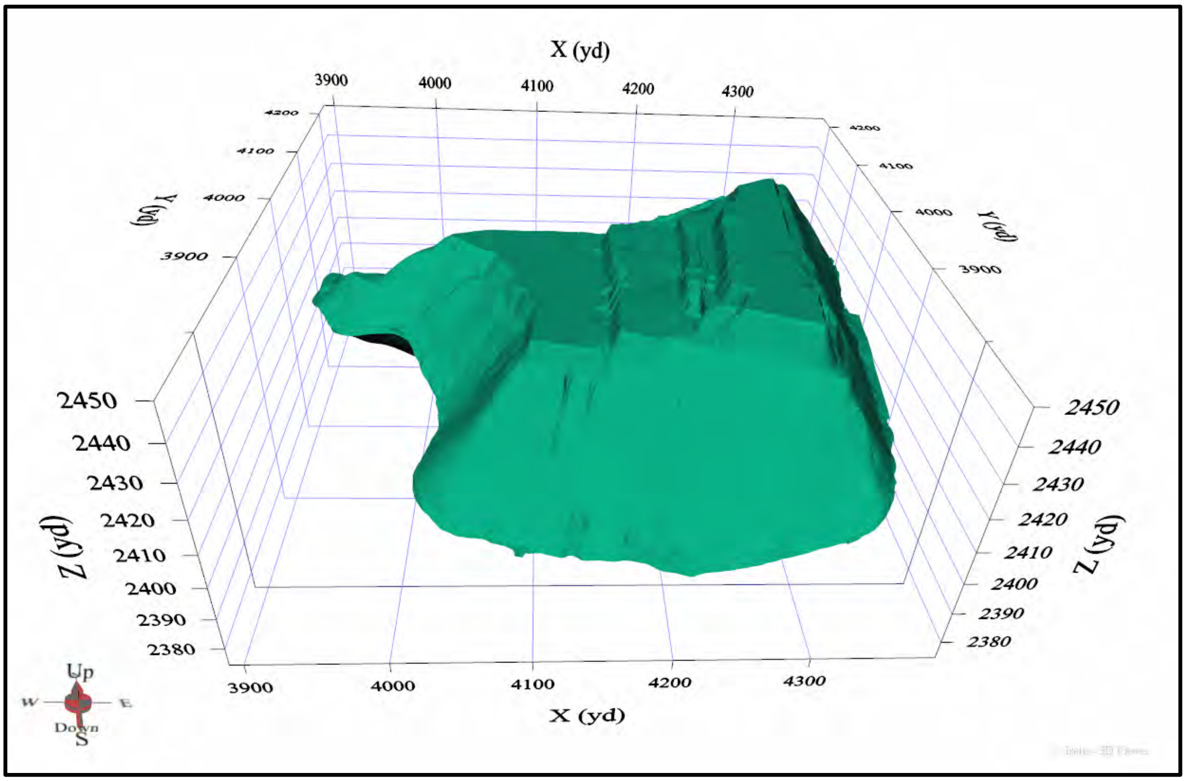
14.2 GEOLOGICAL MODELS

14.2.1 LEACH PAD

The entire leach pad forms the basis for the mineralized volume. Volumes are based on the triangulated surfaces provided by Scorpio Gold, bounded by the leach pad baseliner material (adjusted upwards by 3 ft to account for the base layer which will not be mined), and the May 2017 topographic surface.

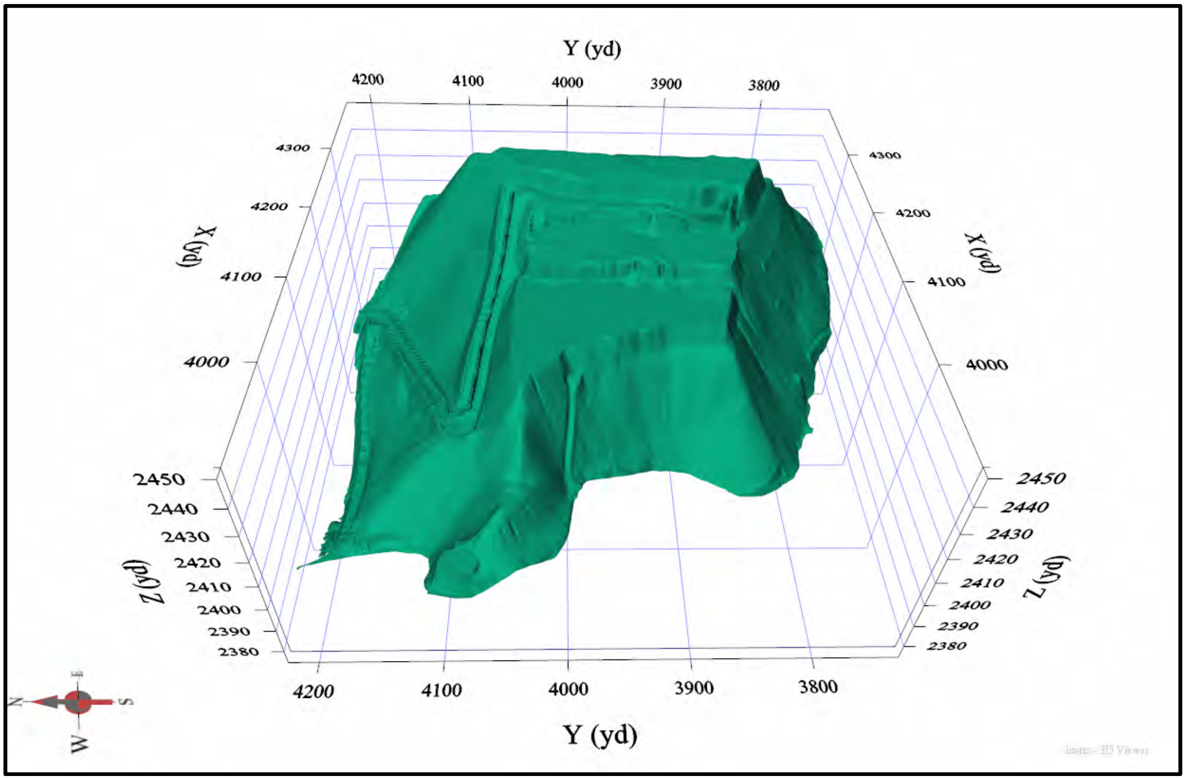
Figure 14.1 and Figure 14.2 show the extent of the leach pad that forms the basis of the current Mineral Resource (Note: vertical exaggeration = 2).

Figure 14.1: Scorpio Mineral Ridge Leach Pad (view looking north)



Note: Figure prepared by MTS, 2017.

Figure 14.2: Scorpio Mineral Ridge Leach Pad (view looking east)



Note: Figure prepared by MTS, 2017.

14.2.2 REMNANT AREAS

MTS used the existing grade shells, extracted from the Scorpio Gold MineSight project, as the basis for the high-grade zones which correspond to the mineralized lenses. These shapes were verified by Scorpio Gold personnel and by MTS to confirm that they corresponded to the high-grade areas based on the sampling data. In the case of the Drinkwater HW area, a new set of grade shells was provided by Scorpio Gold which took into account recent 2017 drilling data.

These grade shells were used to extract a set of high-grade composites which honored the grade shell intersections. Similarly, a set of low-grade composites were derived for the areas outside of the grade shells.

14.3 EXPLORATORY DATA ANALYSIS

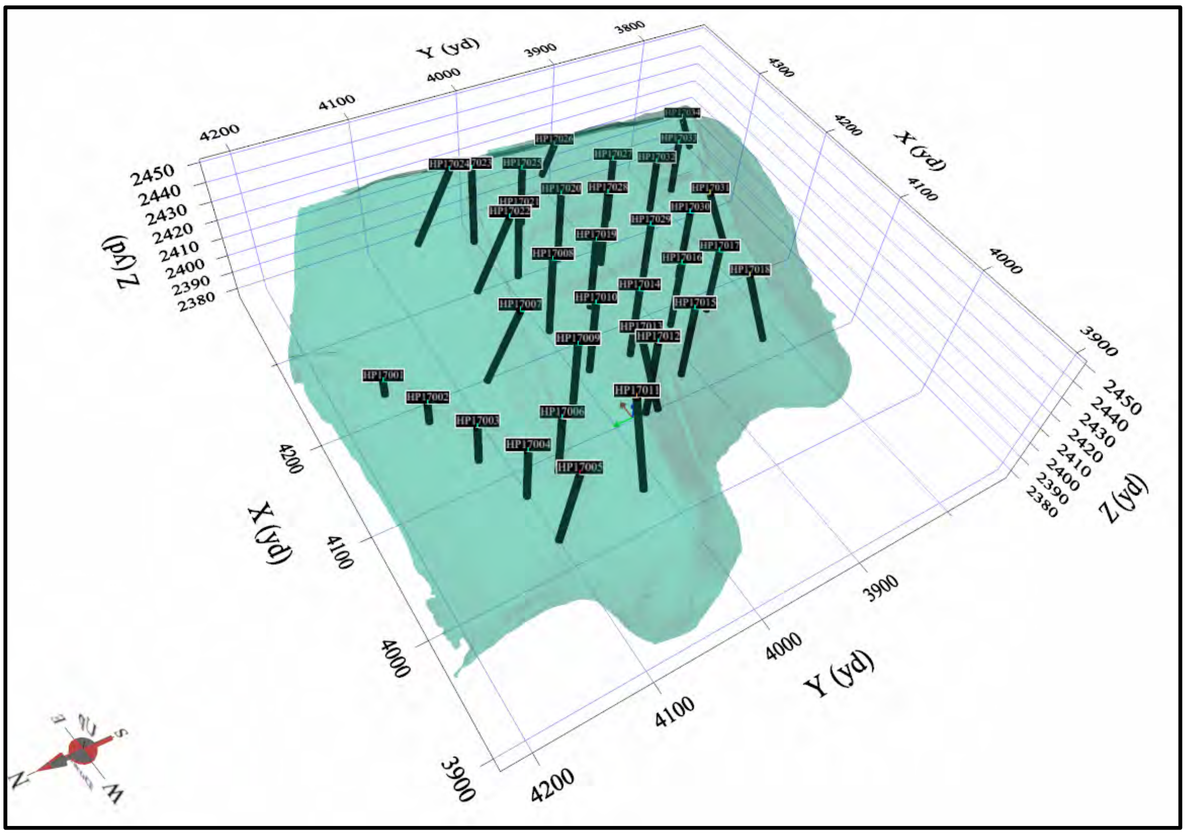
14.3.1 LEACH PAD

14.3.1.1 SAMPLE DATA

Sample data consists of 34 drillholes identified as HP17001 through to HP17034, and 375 samples at 10 ft length intervals, plus a residual length for the final sample of each hole. Assay results include gold and silver, expressed in ounces per ton (opt).

Figure 14.3 displays the leach pad with the drillholes that were used for the Mineral Resource estimate. Note that the holes towards the edge of the leach pad were angled away to maximize area coverage.

Figure 14.3: Isometric view of the Drillholes



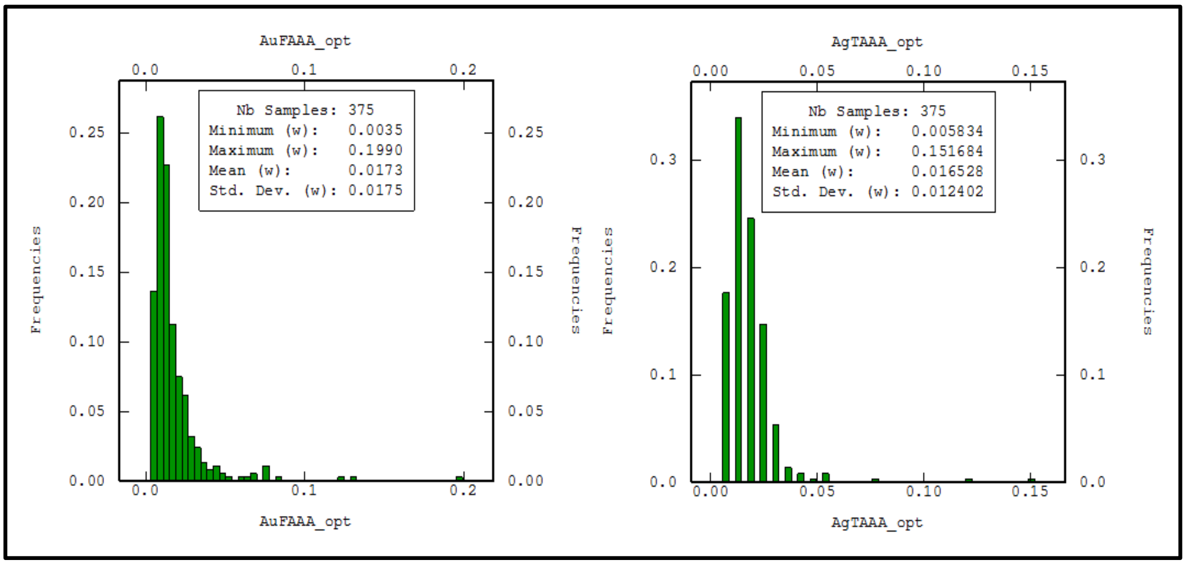
Note: Figure prepared by MTS, 2017.

14.3.1.2 RAW SAMPLE DATA

Histograms with summary statistics of the 10 ft length composites for gold and silver are shown in Figure 14.4Figure 14.4. Grade are lognormally distributed, with mean values of 0.0173 opt and 0.0165 opt for gold and silver, respectively.

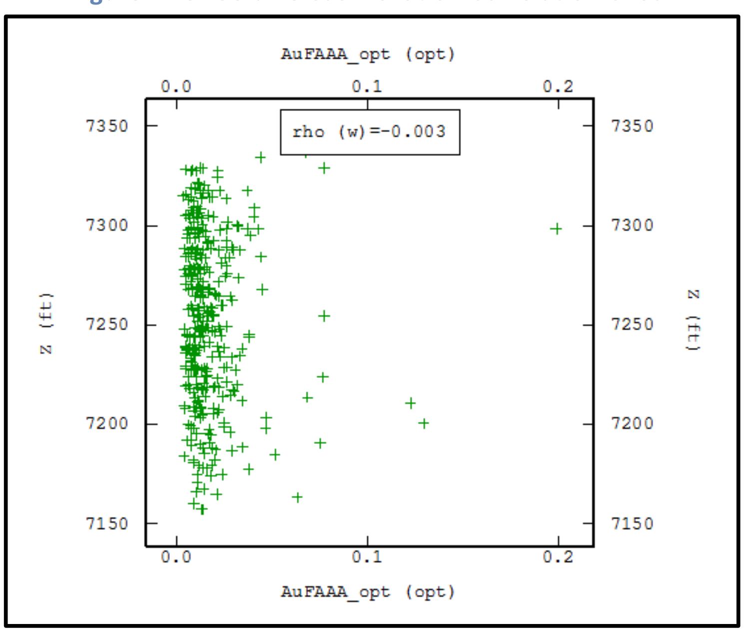
Checks were performed on the gold grade versus elevation to determine if there was any grade trend with elevation (Figure 14.5). No significant vertical trends were identified.

Figure 14.4: Histogram Plot of Gold and Silver Assay Data



Note: Figure prepared by MTS, 2017.

Figure 14.5: Gold versus Elevation Correlation Check

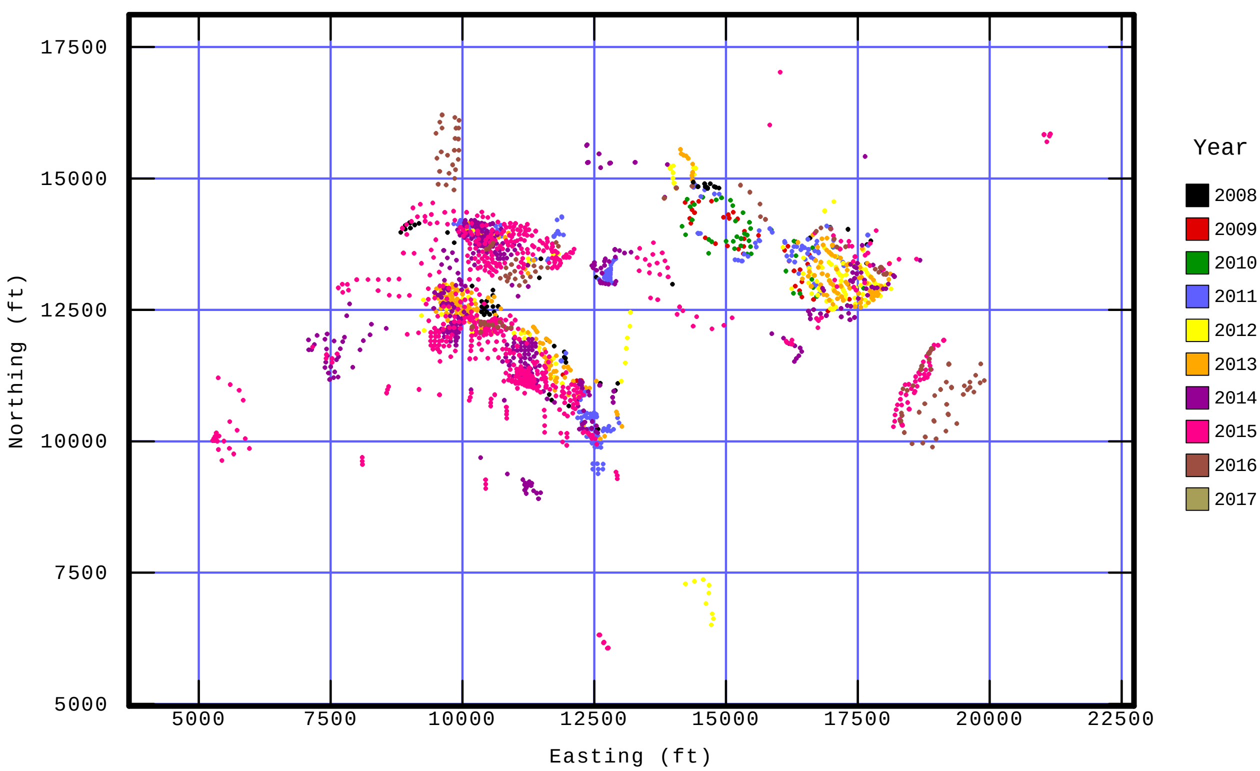


Note: Figure prepared by MTS, 2017.

14.3.2 REMNANT AREAS

The drillhole database consists of drill data from drilling campaigns completed between 2008-2017. Eleven holes were identified as problem holes and omitted from the database leaving 2,011 holes and 122,611 sample intervals. A total of 52 of the drillholes were from core drilling, and the remaining 1,959 were RC holes. The sample length was generally 5 ft. Sample intervals with missing or null grade values were set to -999 and not considered for the estimation. A total of 50,044 assays remained for the grade estimation process. Figure 14.6 shows the location of the drillholes used for the resource estimate.

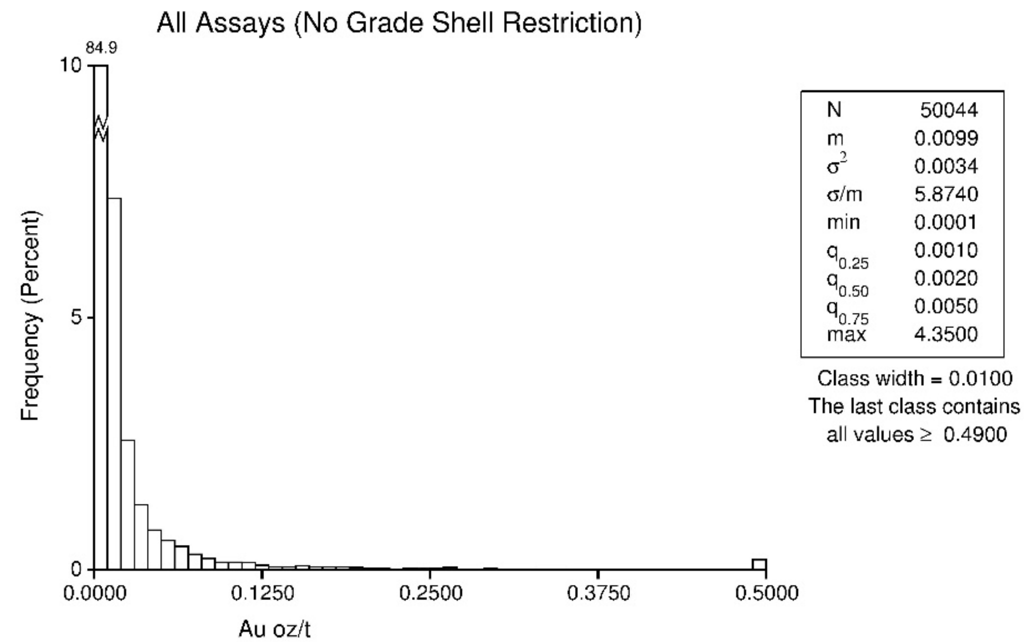
Figure 14.6: Drillhole Locations by Year Used for Resource Estimation

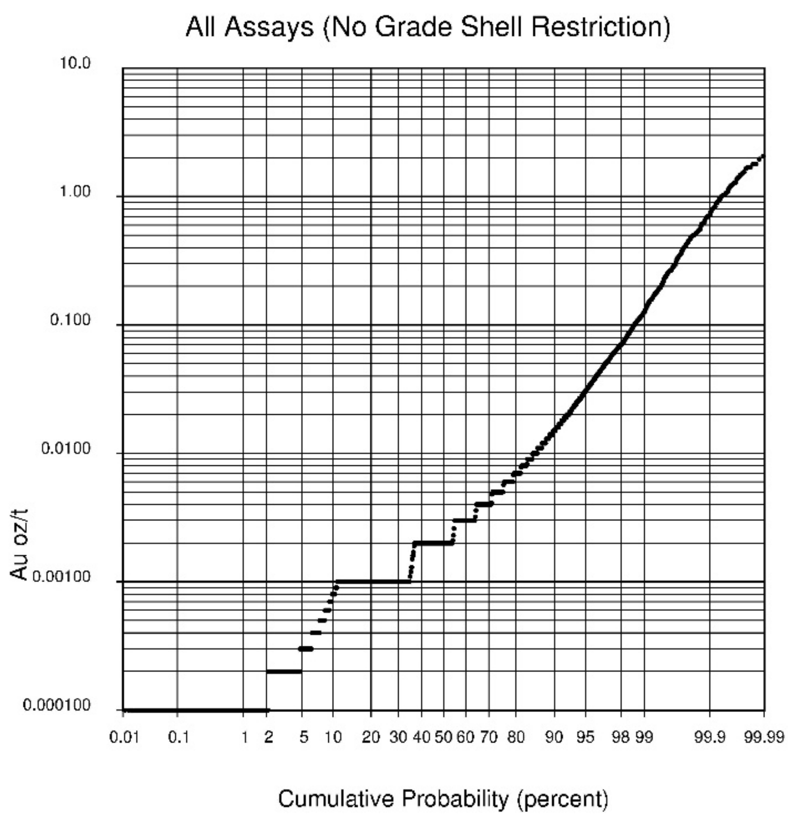


Note: Figure prepared by MTS, 2017.

Figure 14.7 shows the grade distribution of the raw assay values. The mean value is close to 0.01 opt, and the maximum value is 4.35 opt. Figure 14.8 displays the distribution of the assays contained within the high-grade grade shells. The mean value of the data within the combined wireframes increases to 0.071 opt.

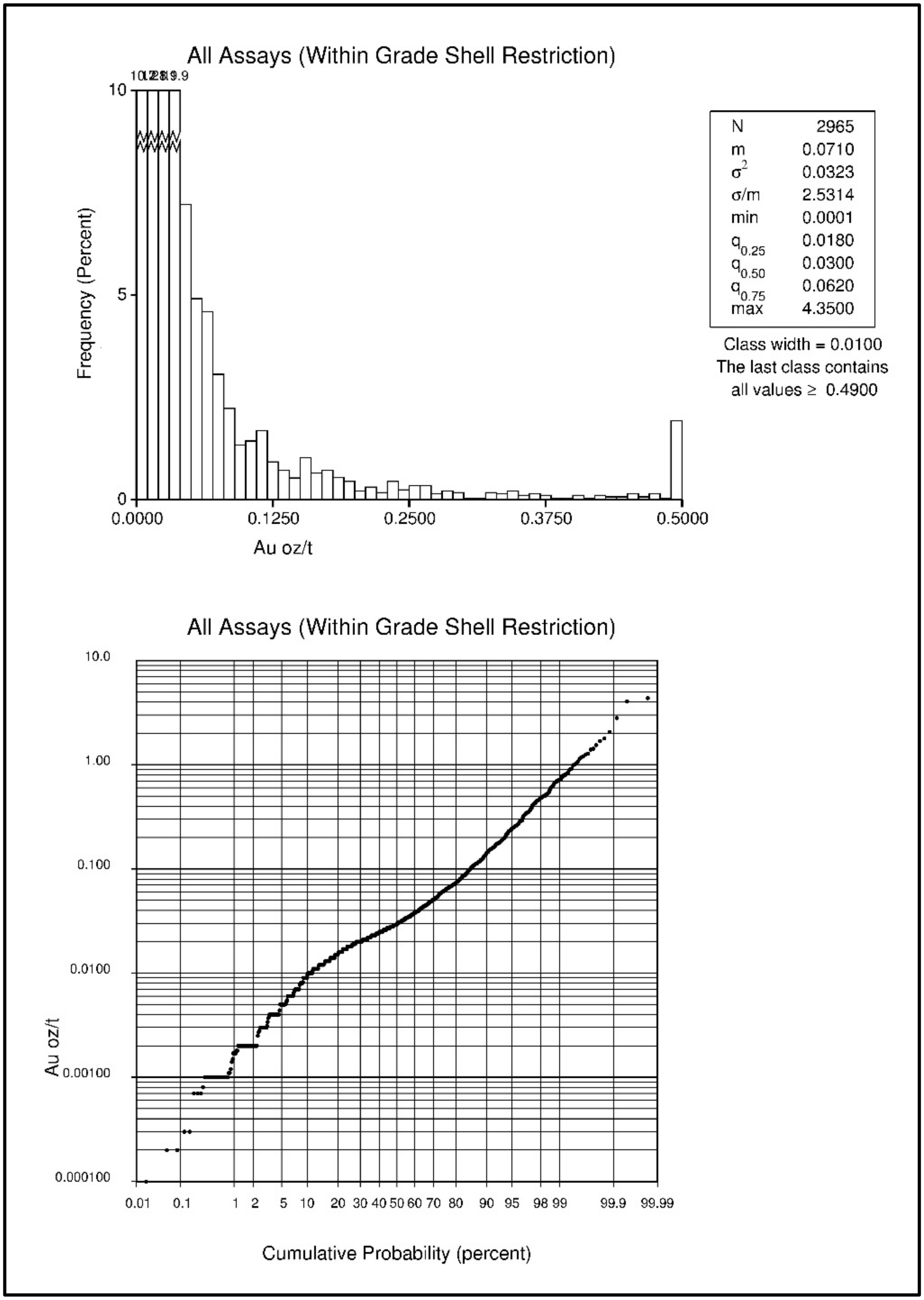
Figure 14.7: Grade Distribution of Uncapped Assay Gold Grades





Note: Figure prepared by MTS, 2017.

Figure 14.8: Distribution of Uncapped Gold Values Within Combined Grade Shells



Note: Figure prepared by MTS, 2017.

14.4 DENSITY ASSIGNMENT

14.4.1 LEACH PAD

A global tonnage factor of 17.61 ft^3/t was used to calculate tonnage.

14.4.2 REMNANT AREAS

A single bulk density factor of 13 ft^3/t was assigned to all blocks that represent in-situ rock and was used in the Mineral Resource estimates. Blocks coded as fill were assigned a bulk density 17.2 ft^3/t. Blocks coded with a percentage volume inside an underground working used a tonnage factor of zero applied to that portion of the block.

14.5 GRADE CAPPING/OUTLIER RESTRICTIONS

14.5.1 LEACH PAD

There were no values that were considered to be outliers, and neither was any outlier restriction considered necessary. It should be noted that searches in the vertical direction were restricted to 15 ft in either direction which effectively reduced the influence of values in the vertical direction. This was done to overcome localized grade trends resulting from the leaching process.

14.5.2 REMNANT AREAS

The assay values for the Mineral Ridge deposits display the typical highly-skewed distribution commonly seen in gold deposits. Both the cumulative frequency plots and the decile analysis plots confirmed that it would be appropriate to apply a capping value to the gold assays. A capping value of 1.0 opt gold was selected as the appropriate capping value. This represents 33 assays that were capped to a maximum value of 1.0 opt gold for the grade estimation process. Of these 33 assays, only 16 are contained within the grade shells.

An additional capping value of 0.05 opt gold was selected and used exclusively in the variographic analysis to reduce the “noise” in the variogram models.

In addition to the grade capping, an outlier restriction was used to restrict the range of influence of the high-grade gold values within the ordinary kriging grade block model to a threshold value of 1.0 opt gold and a distance of 30 ft.

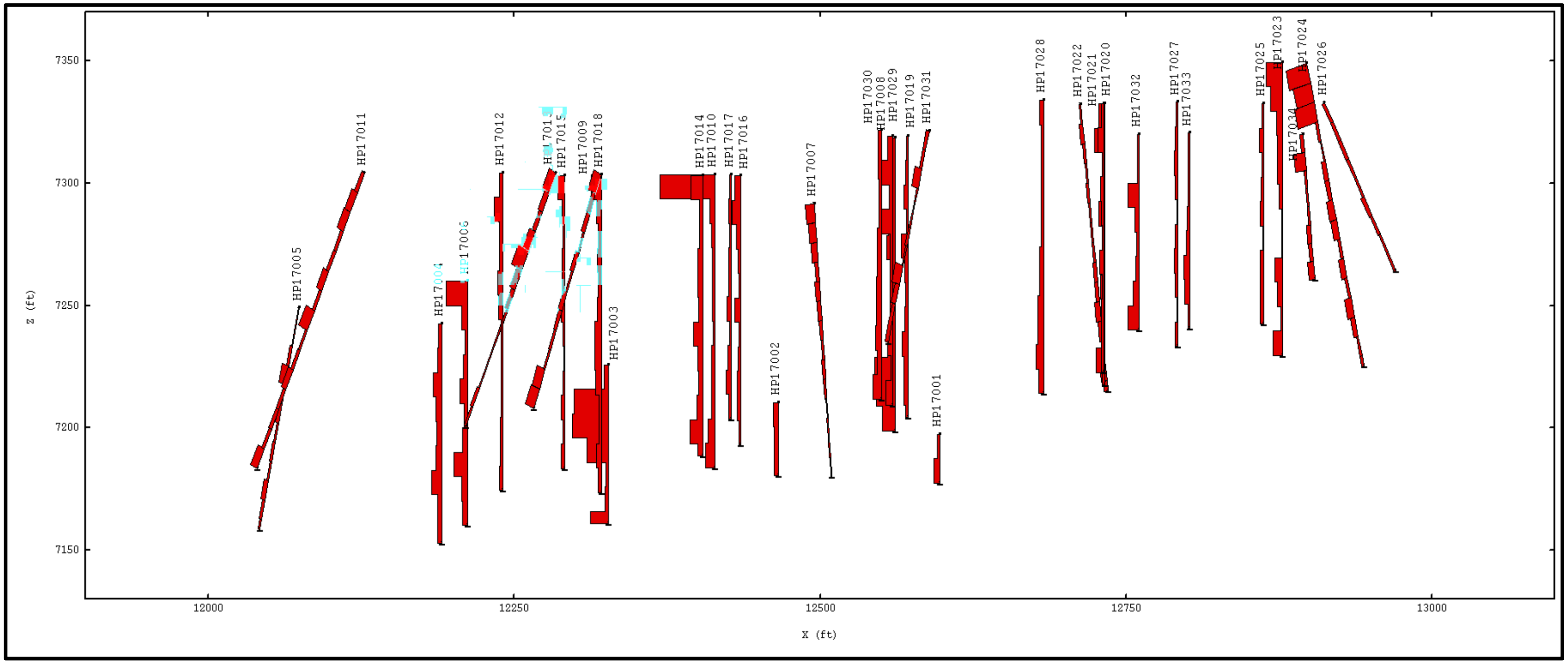
14.6 COMPOSITES

14.6.1 LEACH PAD

Samples were initially composited into both 10 ft length composites and 10 ft bench composites. Twenty-foot composites were also tested but were discarded since they resulted in a smoothing (averaging) effect on the data. Gold grade profiles using the 10 ft composites are shown in Figure 14.9 and Figure 14.10. Figure 14.11 shows an isometric view of the 10 ft composites.

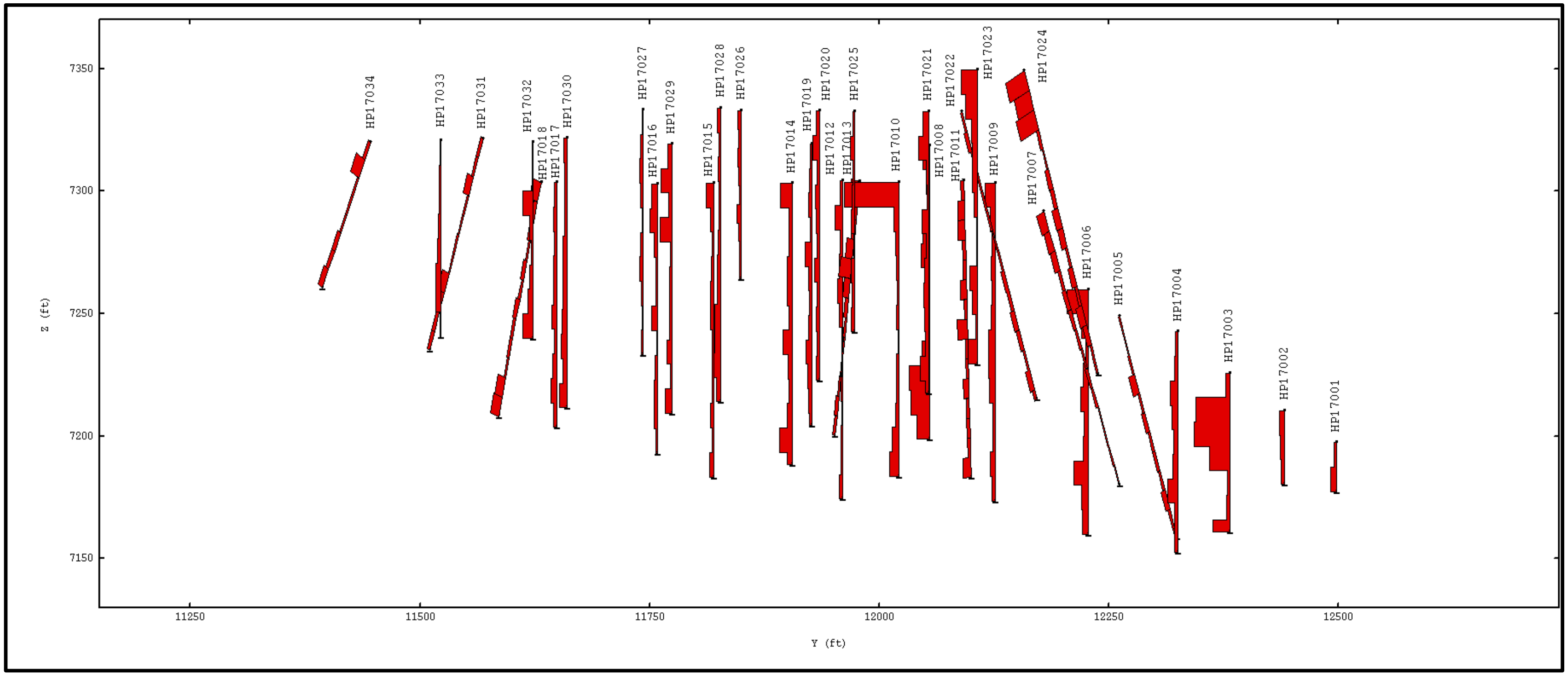
Ten-foot length composites were selected for running the resource estimation. Composite lengths are similar to the sample data length since the sample intervals are 10 ft. The difference is that the minimum composite length was set to 5 ft, and, as a result, samples less than this interval were disregarded for the estimation.

Figure 14.9: Gold Grade Profiles – View from South looking North



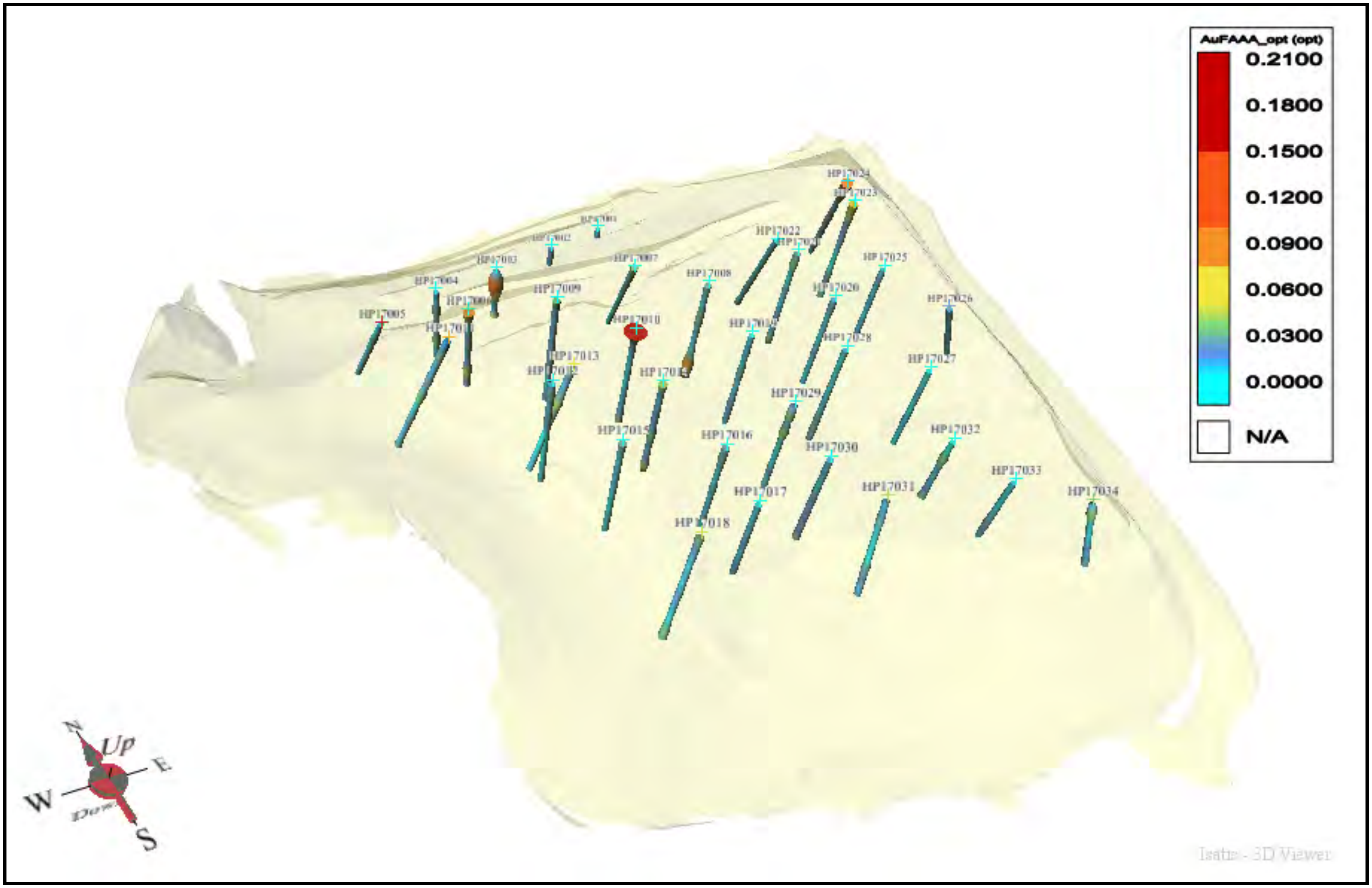
Note: Figure prepared by MTS, 2017.

Figure 14.10: Gold Grade Profiles – View looking from East to West (ramp is on right-hand side)



Note: Figure prepared by MTS, 2017.

Figure 14.11: Isometric View of 10 ft Composites Showing Gold Values



Note: Figure prepared by MTS, 2017.

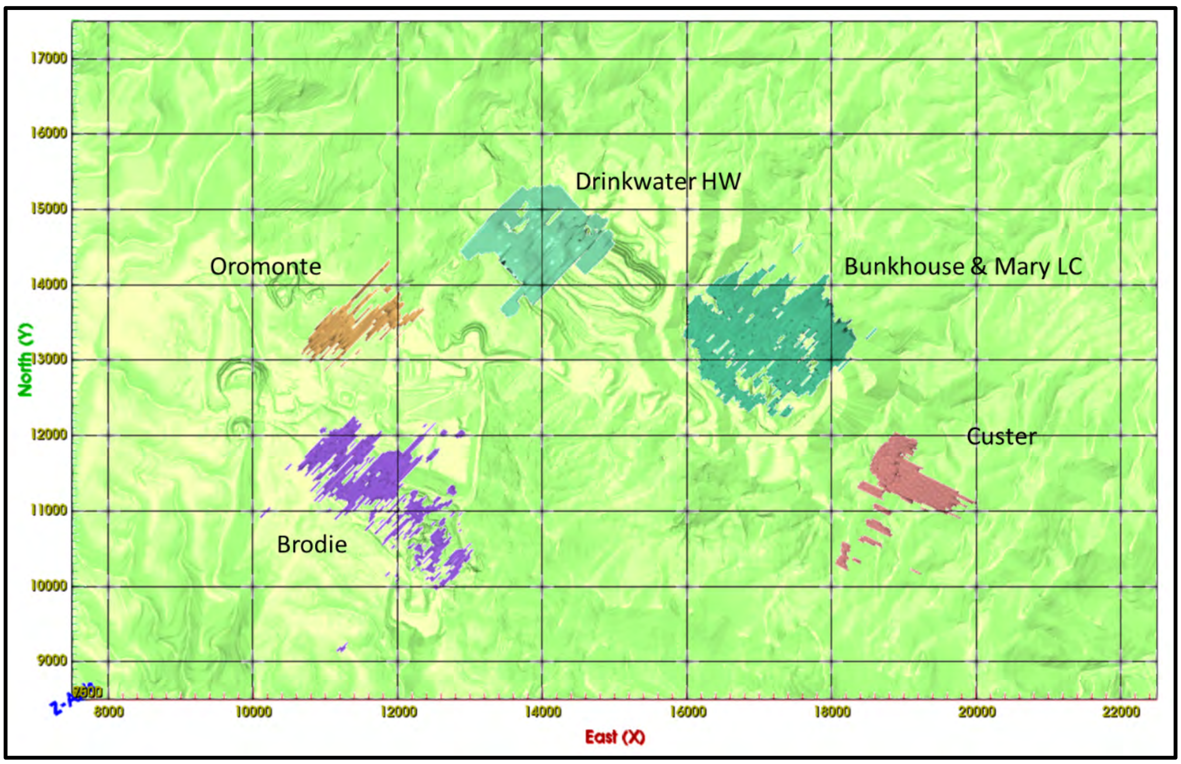
14.6.2 REMNANT AREAS

Samples were composited to 10 ft intervals using the grade shells as the controlling boundary. In other words, the composites are made in a way that a composite always starts and ends on a grade shell boundary. Residual lengths were merged into the previous composite interval if the analyzed length of the last core at the end of the line was smaller than 5 ft, alternatively, if the analyzed length of the last core was greater than 5 ft, it was kept as-is.

The process generated 10 ft composites within the grade shell for the high-grade domain, and 10 ft composites outside of the grade shells for the low-grade domain.

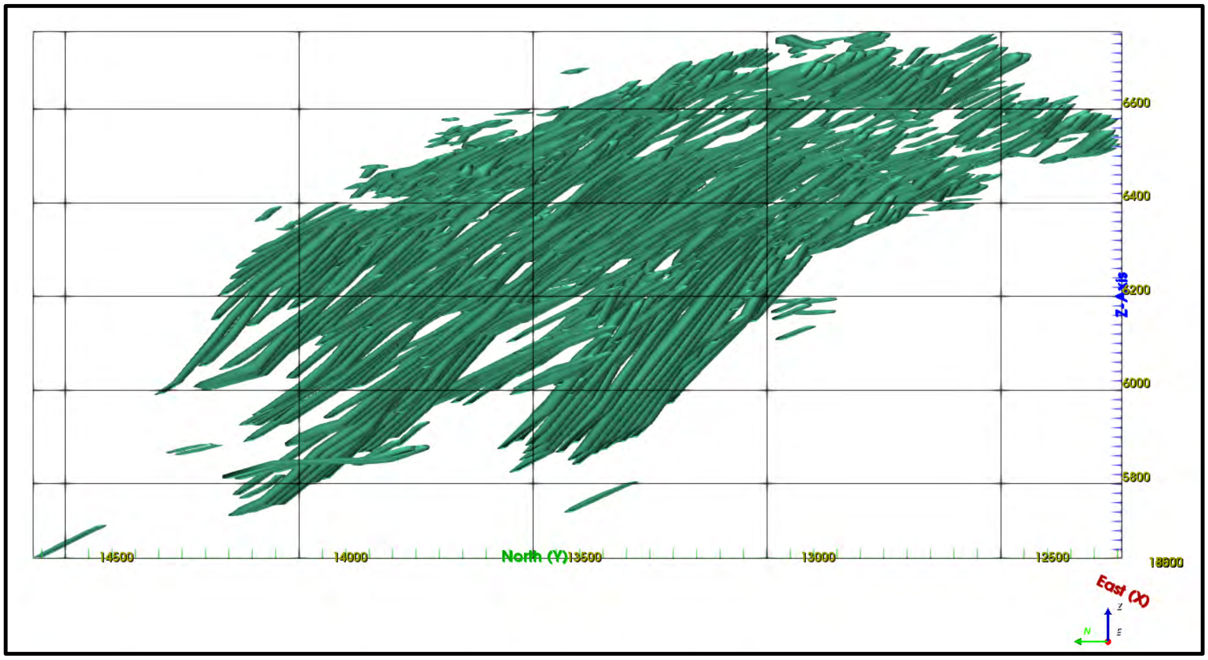
Figure 14.12 shows a plan view of the grade shells. The grade shells were generally generated along northeast–southwest-oriented strips at 25 ft spacing, and when viewed on edge, multiple wireframes were generated in the vertical dimension (Figure 14.13).

Figure 14.12: Plan View of Grade Shell Wireframes



Note: Figure prepared by MTS, 2017.

Figure 14.13: View looking East of Bunkhouse Grade Shells



Note: Figure prepared by MTS, 2017.

Based on the common direction of dip and strike of the mineralized areas, the grade shells were grouped into three zones comprising:

- Custer;
- Brodie & Oromonte;
- Drinkwater HW, Mary LC, and Bunkhouse.

These zones were used for the subsequent exploratory data analysis and variographic analysis.

Table 14.1 displays the composite statistics for the high- and low-grade domains for the six areas combined into three zones. The capped and uncapped gold values are shown for comparative purposes.

Table 14.1: Composite Statistics for High- and Low-Grade Domains

Area	Domain	Variable	No.	Min.	Max.	Mean	Standard Deviation	Variance
Custer	High-grade	Au (opt)	56	0.0007	0.4805	0.0851	0.0979	0.0096
		Au Cap (1.0 opt)	56	0.0007	0.4805	0.0851	0.0979	0.0096
	Low-grade	Au (opt)	24,108	0.0001	2.7990	0.0106	0.0487	0.0024
		Au Cap (1.0 opt)	24,108	0.0001	1.0000	0.0101	0.0359	0.0013
Oromont Brodie	High-grade	Au (opt)	623	0.0001	2.7990	0.0809	0.1881	0.0354
		Au Cap (1.0 opt)	623	0.0001	1.0000	0.0716	0.1029	0.0106
	Low-grade	Au (opt)	23,383	0.0001	1.4520	0.0087	0.0369	0.0014
		Au Cap (1.0 opt)	23,383	0.0001	0.9760	0.0084	0.0309	0.0010
Drinkwater HW Mary LC Bunkhouse	High-grade	Au (opt)	763	0.0003	1.7615	0.0642	0.1109	0.0123
		Au Cap (1.0 opt)	763	0.0003	0.9080	0.0623	0.0920	0.0085
	Low-grade	Au (opt)	23,357	0.0001	2.7990	0.0089	0.0450	0.0020
		Au Cap (1.0 opt)	23,357	0.0001	1.0000	0.0085	0.0317	0.0010

14.7 LEACH PAD DOMAIN INVESTIGATION

The leach pad was split into seven areas which correspond to the historical/individual leach pad cells (Figure 14.14). The pad was further split vertically to approximate the elevation of the pad at the time of the change of ownership from Golden Phoenix to Scorpio Gold. An elevation of 7,209 ft was used as a vertical boundary.

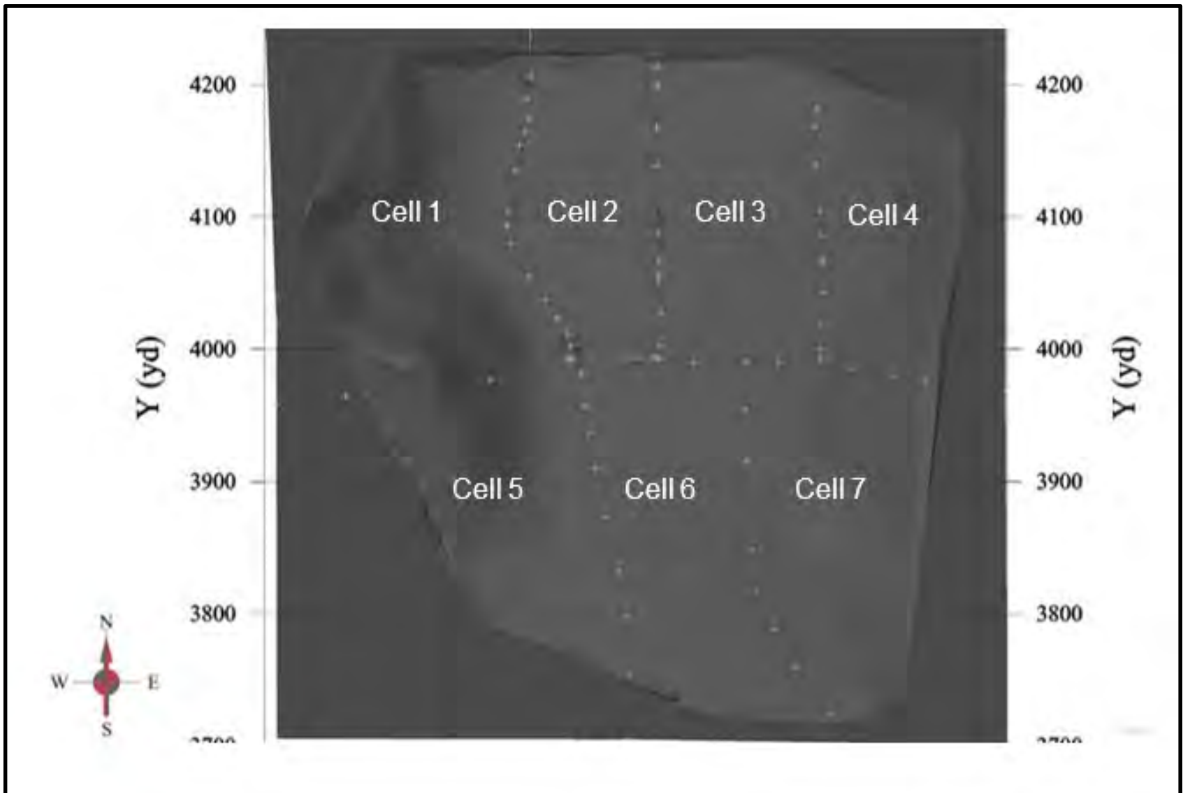
Domains were investigated for gold and silver on the 10 ft length composites. Boxplots of gold and silver for the lower and upper domains are shown in Figure 14.15 to Figure 14.18.

The gold values in the lower domains are more erratic due to a combination of fewer data, and potentially different leaching efficiencies before Scorpio Gold's involvement with the Project. The upper domains are more similar to the northern cells (Cells 1–4) showing a slightly higher average grade compared to cells 5–7.

The variography was tested for the domain combinations, but there was no clear improvement in the interpretation, likely due to the relatively low count of data for individual cells and combinations thereof. MTS, therefore, decided to run the variography analysis on the combined data.

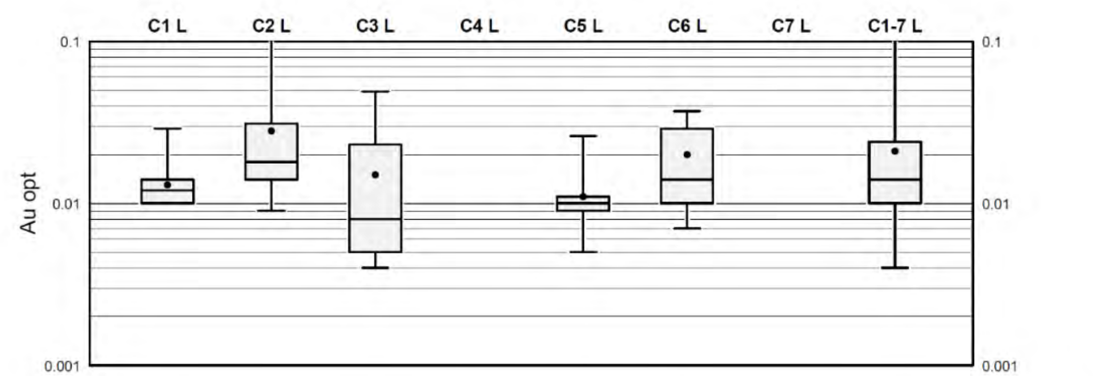
The upper and lower elevation domains and horizontal cell domains were treated as soft boundaries (blocks in one domain may be informed by composites in other domains). However, MTS decided to limit the searches in the vertical direction to effectively force a layered type estimation approach. This also reduced any potential influence of grade trends within individual holes.

Figure 14.14: Plan View of Leach Pad Base Showing Cell Boundaries



Note: Figure prepared by MTS, 2017.

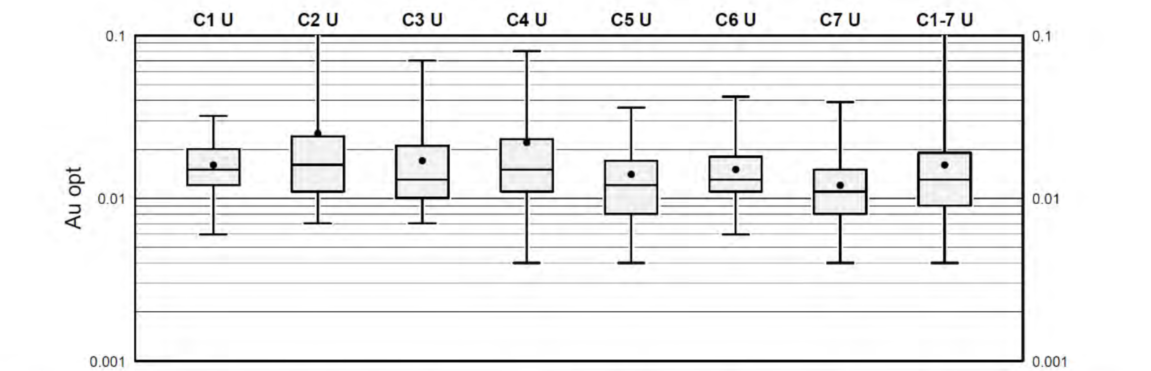
Figure 14.15: Boxplot of Gold – Lower Cell Domains



	C1 L	C2 L	C3 L	C4 L	C5 L	C6 L	C7 L	C1-7 L	
Number of data	8	27	8	0	9	6	0	58	Number of data
Mean	0.013	0.028	0.015	0.0	0.011	0.02	0.0	0.021	Mean
Maximum	0.029	0.126	0.049	0.0	0.026	0.037	0.0	0.126	Maximum
Upper quartile	0.014	0.031	0.023	0.0	0.011	0.029	0.0	0.024	Upper quartile
Median	0.012	0.018	0.008	0.0	0.01	0.014	0.0	0.014	Median
Lower quartile	0.01	0.014	0.005	0.0	0.009	0.01	0.0	0.01	Lower quartile
Minimum	0.01	0.009	0.004	0.0	0.005	0.007	0.0	0.004	Minimum
Variance	0.0	0.0007	0.0002	0.0	0.0	0.0001	0.0	0.0004	Variance
CV	0.385	0.937	0.987	0.0	0.482	0.558	0.0	0.997	CV
Skewness	2.24	2.592	1.409	0.0	1.988	0.537	0.0	3.377	Skewness

Note: Figure prepared by MTS, 2017.

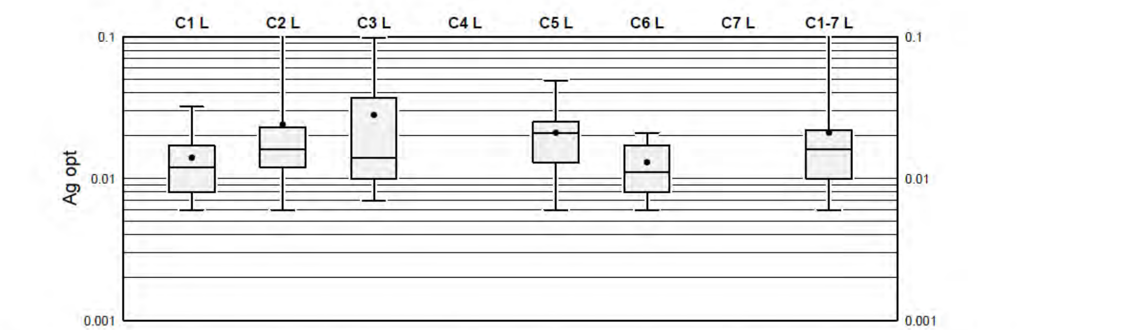
Figure 14.16: Boxplot of Gold – Upper Cell Domains



	C1 U	C2 U	C3 U	C4 U	C5 U	C6 U	C7 U	C1-7 U	
Number of data	15	28	42	34	36	69	62	286	Number of data
Mean	0.016	0.025	0.017	0.022	0.014	0.015	0.012	0.016	Mean
Maximum	0.032	0.135	0.07	0.08	0.036	0.042	0.039	0.135	Maximum
Upper quartile	0.02	0.024	0.021	0.023	0.017	0.018	0.015	0.019	Upper quartile
Median	0.015	0.016	0.013	0.015	0.012	0.013	0.011	0.013	Median
Lower quartile	0.012	0.011	0.01	0.011	0.008	0.011	0.008	0.009	Lower quartile
Minimum	0.006	0.007	0.007	0.004	0.004	0.006	0.004	0.004	Minimum
Variance	0.0001	0.0007	0.0002	0.0003	0.0001	0.0001	0.0	0.0002	Variance
CV	0.453	1.103	0.752	0.843	0.588	0.467	0.546	0.818	CV
Skewness	0.661	2.825	2.787	1.87	1.126	1.503	1.799	4.11	Skewness

Note: Figure prepared by MTS, 2017.

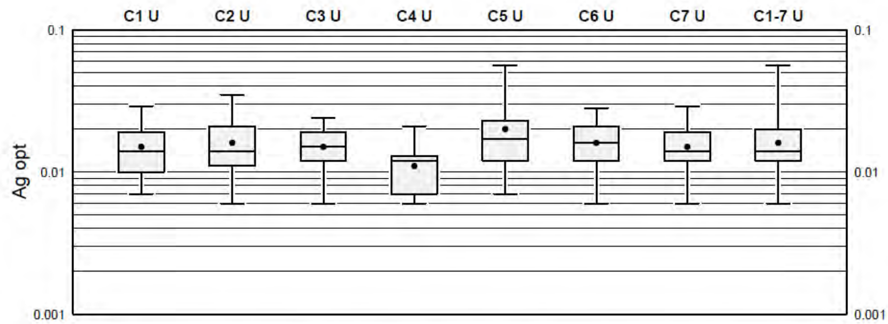
Figure 14.17: Boxplot of Ag – Lower Cell Domains



	C1 L	C2 L	C3 L	C4 L	C5 L	C6 L	C7 L	C1-7 L	
Number of data	8	27	8	0	9	6	0	58	Number of data
Mean	0.014	0.024	0.028	0.0	0.021	0.013	0.0	0.021	Mean
Maximum	0.032	0.147	0.098	0.0	0.049	0.021	0.0	0.147	Maximum
Upper quartile	0.017	0.023	0.037	0.0	0.025	0.017	0.0	0.022	Upper quartile
Median	0.012	0.016	0.014	0.0	0.021	0.011	0.0	0.016	Median
Lower quartile	0.008	0.012	0.01	0.0	0.013	0.008	0.0	0.01	Lower quartile
Minimum	0.006	0.006	0.007	0.0	0.006	0.006	0.0	0.006	Minimum
Variance	0.0001	0.0007	0.0009	0.0	0.0001	0.0	0.0	0.0005	Variance
CV	0.565	1.158	1.046	0.0	0.55	0.423	0.0	1.068	CV
Skewness	1.228	3.66	1.64	0.0	0.996	0.458	0.0	3.803	Skewness

Note: Figure prepared by MTS, 2017.

Figure 14.18: Boxplot of Ag – Upper Cell Domains



	C1 U	C2 U	C3 U	C4 U	C5 U	C6 U	C7 U	C1-7 U	
Number of data	15	28	42	34	36	69	62	286	Number of data
Mean	0.015	0.016	0.015	0.011	0.02	0.016	0.015	0.016	Mean
Maximum	0.029	0.035	0.024	0.021	0.056	0.028	0.029	0.056	Maximum
Upper quartile	0.019	0.021	0.019	0.013	0.023	0.021	0.019	0.02	Upper quartile
Median	0.014	0.014	0.015	0.012	0.017	0.016	0.014	0.014	Median
Lower quartile	0.01	0.011	0.012	0.007	0.012	0.012	0.012	0.012	Lower quartile
Minimum	0.007	0.006	0.006	0.006	0.007	0.006	0.006	0.006	Minimum
Variance	0.0	0.0001	0.0	0.0	0.0001	0.0	0.0	0.0	Variance
CV	0.393	0.465	0.349	0.355	0.498	0.351	0.388	0.433	CV
Skewness	0.586	0.78	0.021	0.402	1.666	0.073	0.375	1.274	Skewness

Note: Figure prepared by MTS, 2017.

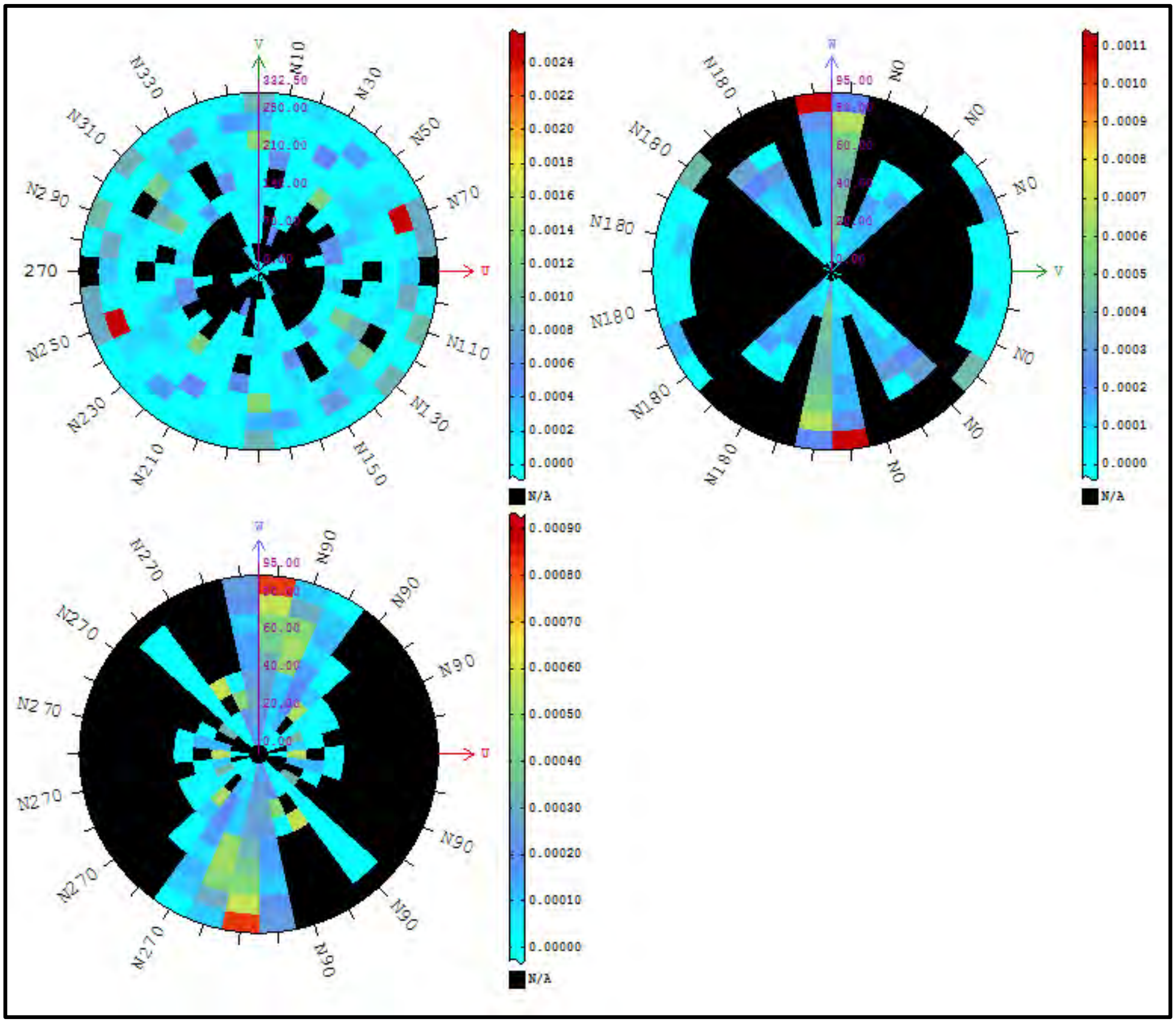
14.8 VARIOGRAPHY

14.8.1 LEACH PAD

A variogram map was created for gold based on 35 ft lags in the north-south direction, and 10 ft lags in the vertical direction (to correspond to the composite interval). The variogram map (Figure 14.19) shows isotropy for the northing and easting directions. The vertical directions indicate that variance increases beyond approximately 60 ft, but there is no preferential azimuth direction (plots are however influenced by the nature of the primarily vertical drillholes).

A traditional variogram was fitted to the 10 ft length composites after temporarily removing the influence of gold values greater than 0.1 opt (note these values were only removed during the analysis of the experimental variogram and were still used for the latter estimation process). An omnidirectional horizontal variogram was used for the long-range variography, and an orthogonal variogram (effectively a down-the-hole variogram) was used to determine the nugget effect and short-range variability based on the 10 ft composite intervals.

Figure 14.19: Variogram Map for Gold

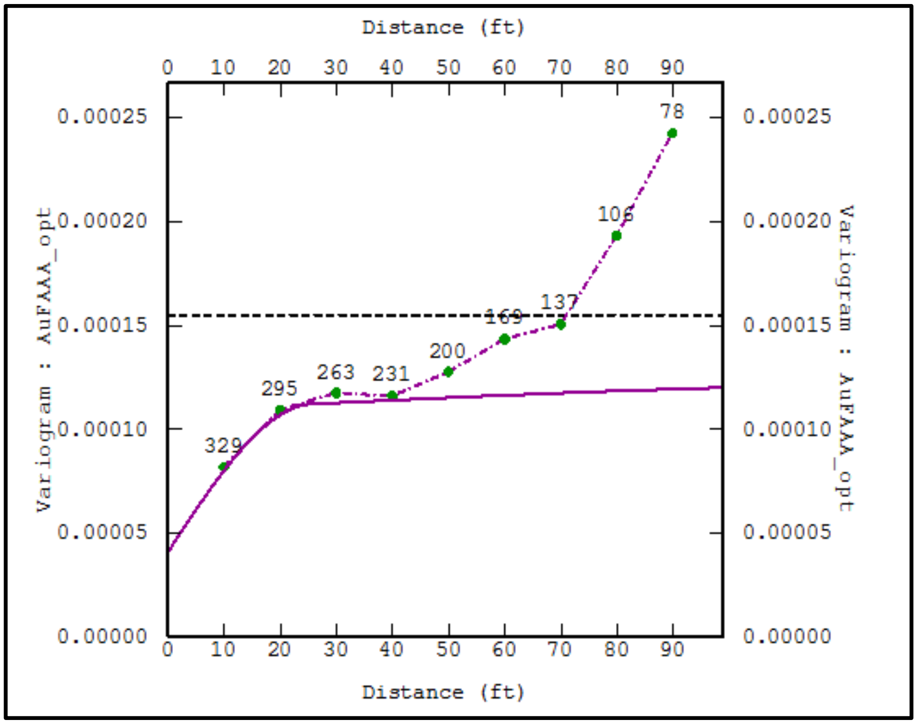


Note: Figure prepared by MTS, 2017.

Note that the orthogonal (vertical) variogram (Figure 14.20) displays increasing variance beyond 40 ft suggesting a vertical trend. As such the searches in the elevation direction were restricted to 15 ft in either direction. The nugget effect represents approximately 1/3 of the sill value.

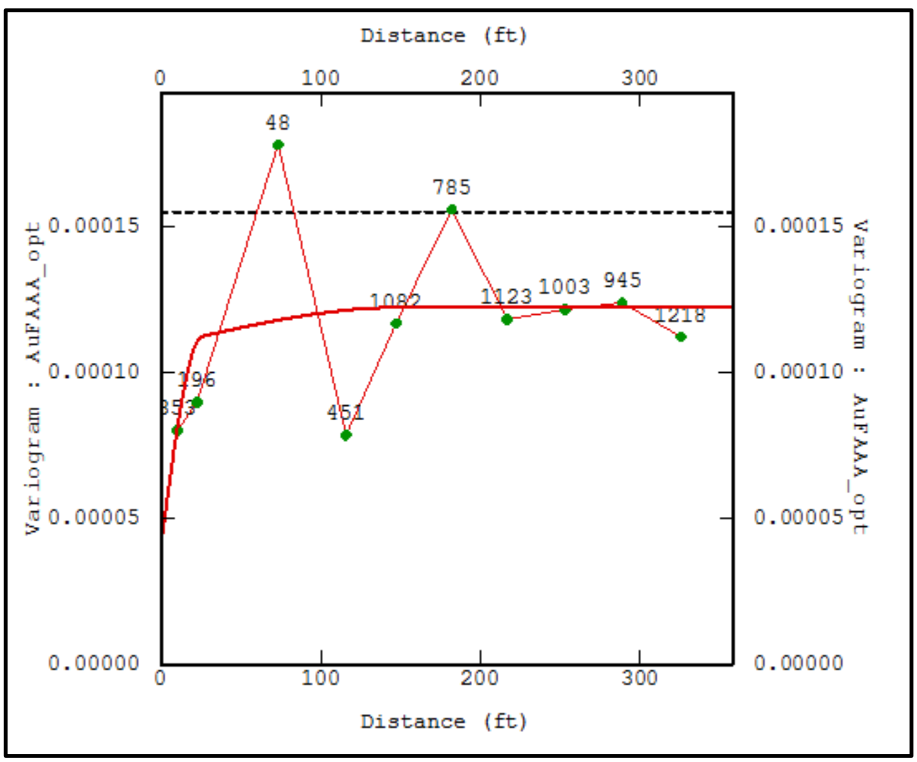
The maximum range of the horizontal variogram is 150 ft (Figure 14.21) which implies that samples separated beyond this distance are effectively averaged due to them getting the same weighting.

Figure 14.20: Vertical Variogram for Gold (Experimental and Fitted)



Note: Figure prepared by MTS, 2017.

Figure 14.21: Horizontal Variogram for Gold (Experimental and Fitted)



Note: Figure prepared by MTS, 2017.

A summary of the variogram structures for the leach pad is provided below:

- Structure 1: Nugget Effect (C0) 4.10128417e-005;
- Structure 2: Spherical, Range 25.488 ft, Sill 6.77613216e-005;
- Structure 3: Spherical, Range 150.412 ft, Sill 1.33496143e-005.

14.8.2 REMNANT AREAS

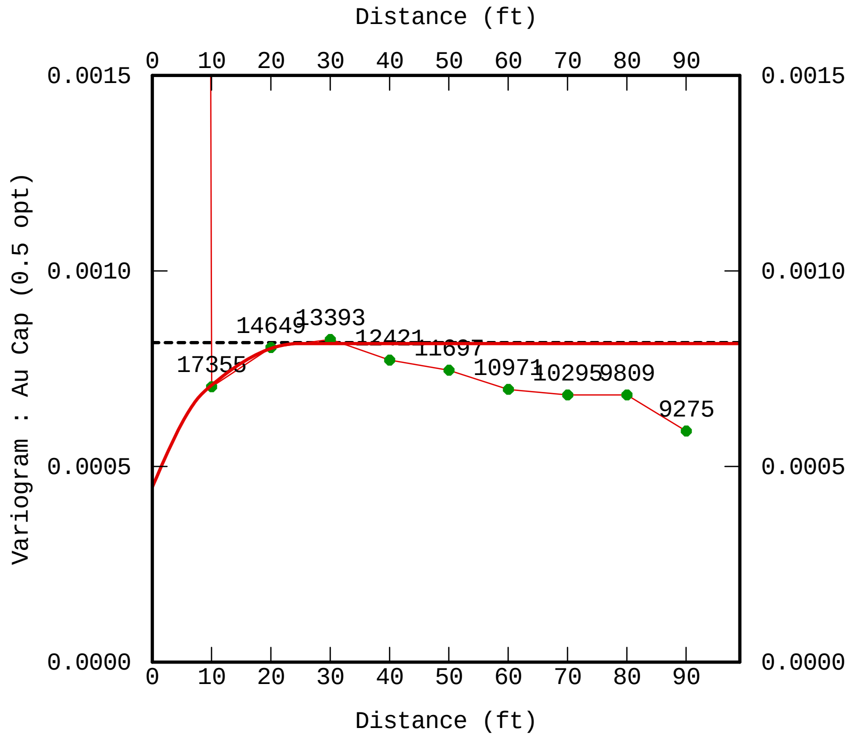
Variography was performed for the three sub-zones, Custer, Brodie/Oromonte, and Drinkwater HW/Mary LC/Bunkhouse. Downhole variograms were used to identify the short-range structure (nugget effect), and omnidirectional variograms were selected for the horizontal variograms. Directional variograms were tested, but no significant anisotropy was identified. Variograms were derived from a temporary capped gold value of 0.5 opt to reduce the "noise" of the experimental variograms (estimates were derived from the 1.0 opt cap value). The summarized fitted models are summarized in Table 14.2, and the corresponding variogram models are presented in Figure 14.22 to Figure 14.24.

The nugget effects are between one-half, and one-third of the total sill value and ranges vary from 25 ft to 40 ft.

Table 14.2: Summary of Variogram Models

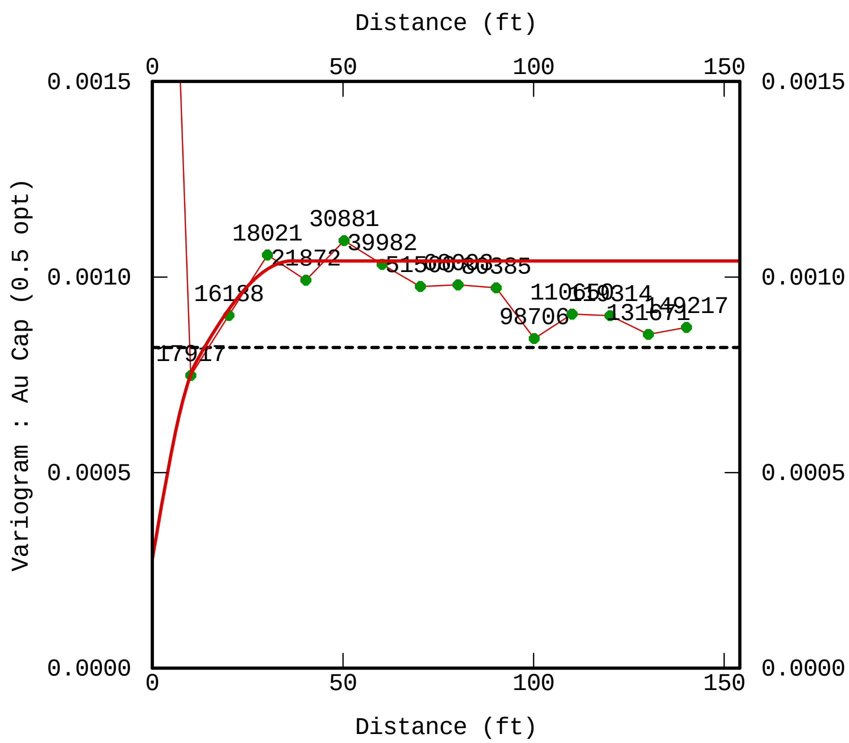
	Structure 1	Structure 2		Structure 3	
Sub-Zone	**Nugget Effect (Co)**	**Sill**	**Range**	**Sill**	**Range**
Custer	4.4742E-04	1.1629E-04	8.79	2.5047E-04	24.61
Brodie / Oromonte	2.7886E-04	2.8909E-04	11.48	4.7347E-04	36.72
Drinkwater HW / Mary LC / Bunkhouse	3.9499E-04	2.4752E-04	11.25	3.6651E-04	40.33

Figure 14.22: Fitted Variogram Model for Custer Zone



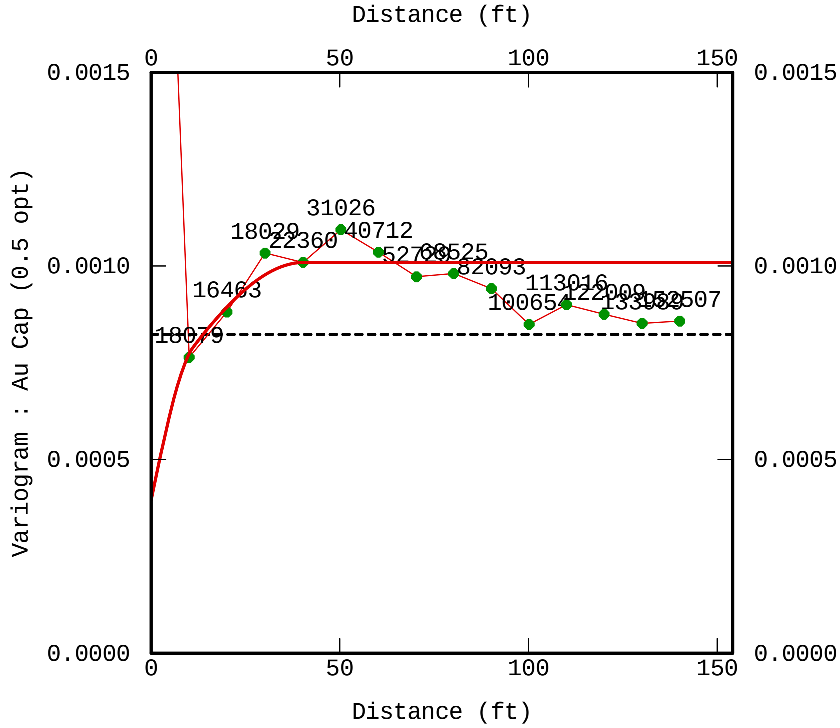
Note: *Figure prepared by MTS, 2017.*

Figure 14.23: Fitted Variogram Model for Brodie / Oromonte Zone



Note: *Figure prepared by MTS, 2017.*

Figure 14.24: Fitted Variogram Model for Drinkwater HW / Mary LC / Bunkhouse Zone



Note: Figure prepared by MTS, 2017.

14.9 ESTIMATION/INTERPOLATION METHODS

14.9.1 LEACH PAD

14.9.1.1 BLOCK MODEL SETUP

The block model was defined as:

- Origin (corner of lower left block):
  - X_o = 11,575 ft;
  - Y_o = 11,075 ft;
  - Z_o = 7,095 ft;
- Block Size: 50 ft x 50 ft x 10 ft;
- No. of Blocks In X, Y, Z direction: 35 x 35 x 30;
- Rotation: 0º.

14.9.1.2 ESTIMATION METHODOLOGY

OK was performed as the main gold estimation methodology with ID, ID^2, and NN estimates serving as validation models.

Silver estimates were run using a single ID model and an NN estimate as a validation model.

14.9.1.3 NEIGHBORHOOD DEFINITION

The selection of samples was forced to restrict the influence of samples from the same hole (vertically) and thus mimic a layered type estimation approach. This was done to reduce the influence of observed leaching vertical profiles, and hence to reduce the influence of any grade trend (non-stationarity).

The search parameters for the OK estimates are shown in Table 14.3, and the search parameters for the ID and NN estimates are shown in Table 14.4.

Table 14.3: Search Parameters for OK Estimates

Item	1st Pass	2nd Pass	3rd Pass
Search Ellipsoid Along X & Y (Easting & Northing)	200	400	600
Search Ellipsoid Along Z (Elevation)	15	30	30
Minimum No. of Samples	8	4	4
No. of Sectors	1	1	1
Optimum No. of Samples	12	8	8
Maximum No. of Samples per Hole per Sector	3	6	N/A

Table 14.4: Search Parameters for ID and NN Estimates

Item	ID and NN
Search Ellipsoid Along U & V (Easting & Northing)	600
Search Ellipsoid Along W (Elevation)	50
Minimum No. of Samples	4
No. of Sectors	4
Optimum No. of Samples	10
Maximum No. of Samples per Hole per Sector	N/A

14.9.2 REMNANT AREAS

Individual model extents were defined for each of the remnant areas. All blocks dimensions were 15 ft x 15 ft x 10 ft and the models were non-rotated. The block model parameters for each model are summarized in Table 14.5.

Table 14.5: Model Parameters for Remnant Model Areas

Model	Origin (ft)			No. of blocks		
	X	Y	Z	X	Y	Z
Brodie	10,000	9,000	6,500	225	250	80
Oromonte	10,500	12,750	6,500	150	140	85
Bunkhouse	15,750	12,100	5,750	200	160	105
Mary LC	15,750	12,100	5,750	200	160	105
Drinkwater HW	13,000	13,100	6,150	200	200	100
Custer	18,000	10,000	5,750	140	200	100

Block selections were created for blocks either contained within the grade shell wireframes or for blocks that were on the edge of the wireframes. Initially, a block selection was based on a proportional selection of 50%, i.e., if 50%, or greater, of the block, falls within the wireframe, the block will be included as part of the blocks to be estimated, otherwise not. This was subsequently tightened to 1%, i.e., if as little as 1% of the block intersected a wireframe, then the block would be estimated. An estimate for the high-grade portion of the block (using the high-grade composites within the grade shell), as well as a low-grade estimate for the same block using the low-grade composites (those composites outside of the grade shell), was then run. A final “Au diluted” grade was calculated for these fringe blocks based on the formula:

- *Au Diluted = Au high-grade estimate x Proportion of block within the wireframe + Au low-grade estimate x Proportion of block outside the wireframe.*

The “Au Diluted” value was used for the Mineral Reserve estimates, while the “Au High Grade” estimate was used together with the block percentage for the Mineral Resource estimates.

Blocks entirely within the wireframe have a zero dilution, and hence for these blocks, “Au diluted” = “Au high-grade”. Similarly, blocks that are near to 99% outside of the wireframe will have grades that will be close to the “Au low-grade” estimate.

A “block availability” value was also derived based on the proportion of the block mined out or “consumed” by old underground workings. In the case of this block availability percentage, if the block had a higher proportion consumed by the underground working compared to the block percentage within the wireframe, then the block availability would reduce to zero.

Blocks entirely outside of the high-grade grade shells are considered to have zero block availability value and therefore are not used in Mineral Resource estimation.

A three-pass strategy was used for the main OK estimate and a single pass strategy for the ID^2 and NN validation model estimates. The search parameters for the OK estimates and the ID^2 and NN estimates are presented in Table 14.6 and Table 14.7, respectively.

Table 14.6: Search Parameters for OK Estimates

Item	1st Pass	2nd Pass	3rd Pass
Search Ellipsoid Along X & Y (Easting & Northing)	100	300	1,500
Search Ellipsoid Along Z (Elevation)	50	100	500
Minimum No. of Samples	6	4	2
No. of Sectors	1	1	1
Optimum No. of Samples	10	10	10
Cutoff Value for Large Values	N/A	1 opt	1 opt
Cutoff Distance Threshold for Large Values	N/A	30 ft	30 ft

Table 14.7: Search Parameters for ID^2 and NN Estimates

Item	Single Pass
Search Ellipsoid Along X & Y (Easting & Northing)	1,500
Search Ellipsoid Along Z (Elevation)	500
Minimum No. of Samples	2
No. of Sectors	1
Optimum No. of Samples	10
Cutoff Value for Large Values	1 opt
Cutoff Distance Threshold for Large Values	30 ft

14.10 BLOCK MODEL VALIDATION

14.10.1 LEACH PAD

14.10.1.1 COMPOSITE VERSUS MODEL STATISTICS

Comparisons of the 10 ft composite grades (length weighted) and the estimated grades for gold and silver (within the leach pad volume) are shown in Table 14.8.

On a global basis, the gold estimate is within 0.5% of the average composite value, while the silver value is within 5.5% of the mean composite grade.

Table 14.8: Composite versus Model Statistics

Variable	Data	No.	Minimum	Maximum	Mean	Standard Deviation
Gold (opt)	Composites	367	0.0035	0.1990	0.0173	0.0176
	OK	6,482	0.0050	0.0548	0.0172	0.0064
	NN	6,482	0.0035	0.1350	0.0167	0.0135
	ID	6,482	0.0050	0.0424	0.0172	0.0044
	ID^2	6,482	0.0050	0.0604	0.0169	0.0056
Silver (opt)	Composites	367	0.0058	0.1517	0.0165	0.0125
	ID	6,482	0.0070	0.0556	0.0174	0.0061
	NN	6,482	0.0058	0.1473	0.0189	0.0170

14.10.1.2 SECTION AND PLAN VIEW VALIDATIONS

Sectional view validations were performed in 50 ft increments and plan view validations at 10 ft increments to verify that the block estimates and the composite values correlated and that there were no significant blowouts.

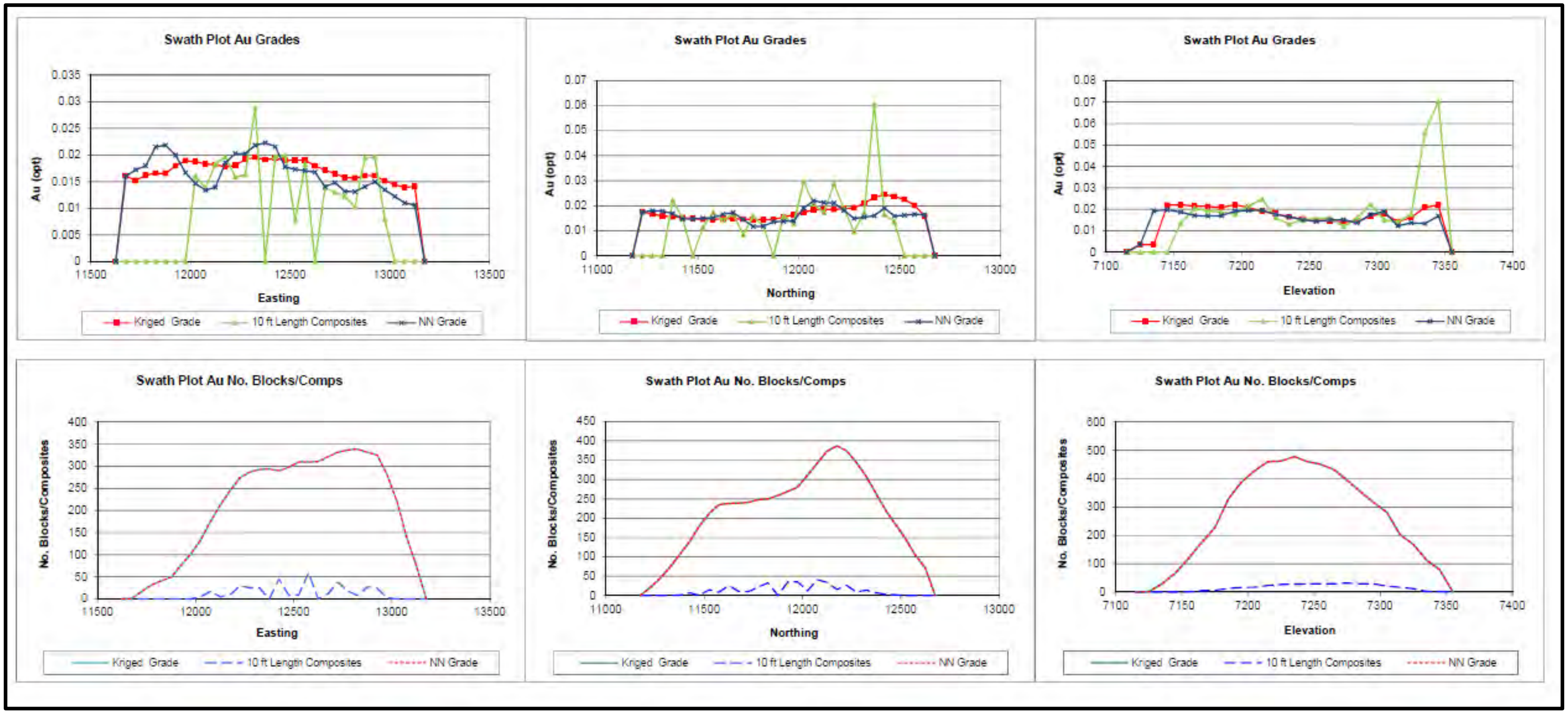
14.10.1.3 SWATH PLOTS

Swath plots comparing the OK grades to the grades of the 10 ft composites and the NN grades are provided in Figure 14.25 and Figure 14.26.

The model estimates extend further to the sides of the leach pad (within slope area) compared to the composite data. Extreme high values in composites are reduced in the model estimate. As expected, OK estimates are smoother compared to the NN and composite data.

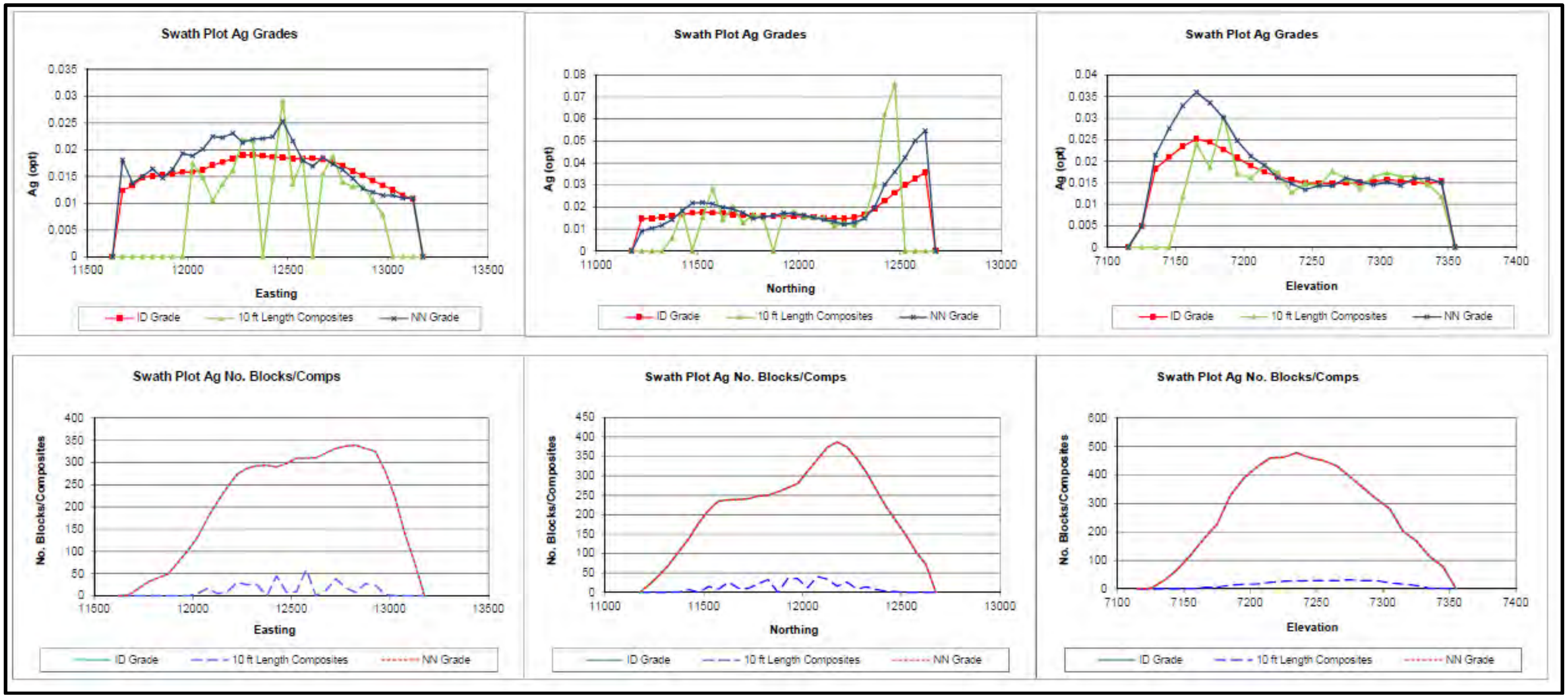
High-composite values in the northern area of the leach pad appear to influence both the ID and the NN model estimates. Similarly, grades are overall higher in the lower elevations.

Figure 14.25: Gold Swath Plot – Mineral Ridge Leach Pad



Note: Figure prepared by MTS, 2017.

Figure 14.26: Silver Swath Plot – Mineral Ridge Leach Pad



Note: Figure prepared by MTS, 2017.

14.10.2 REMNANT AREAS

14.10.2.1 COMPOSITE VERSUS MODEL STATISTICS

Comparisons of the 10 ft composite grades (length weighted) and the estimated grades for gold within the high-grade grade shells are shown in Table 14.9. Composite grades are displayed for both the uncapped and the capped (1.0 opt) gold values, while the block model statistics are based on values within the first and second kriging passes. Composite values are length weighted while block values are weighted by block proportion.

The Brodie model has the least global variance compared to the mean capped composite value at 2.2%, while the Custer and Drinkwater HW models have the greatest global variance of 6.6%. The global variance for the Bunkhouse, Mary LC, and Oromonte models average at 4.6%.

The influence of the capping is most apparent on the Oromonte composite values, where the mean grade of the composite grade is reduced by 25%. The capping reductions for the remaining model areas are between 0% and 3.4%.

There is good agreement between the OK model estimate and the ID^2 validation estimates, and to a lesser extent with the NN validation estimates (due to the more erratic nature of this estimate).

Table 14.9: Comparison of Composite Statistics versus Model Statistics

Model	Variable	No.	Minimum	Maximum	Mean	Standard Deviation	Variance
Brodie	Au(opt)	1,234	0.0001	1.6900	0.0559	0.0975	0.0095
	AuCap(1.0opt)	1,234	0.0001	1.0000	0.0552	0.0878	0.0077
	AuOK	42,712	0.0127	0.3721	0.0540	0.0281	0.0008
	AuNN	42,712	0.0001	1.0000	0.0547	0.0787	0.0062
	$AuID^2$	42,712	0.0011	0.6671	0.0548	0.0358	0.0013
Bunkhouse	Au(opt)	956	0.0010	2.8130	0.0737	0.1557	0.0242
	AuCap(1.0opt)	956	0.0010	1.0000	0.0712	0.1264	0.0160
	AuOK	53,297	0.0134	0.4169	0.0745	0.0480	0.0023
	AuNN	53,297	0.0010	1.0000	0.0701	0.1408	0.0198
	$AuID^2$	53,297	0.0042	0.7509	0.0753	0.0575	0.0033
Custer	Au(opt)	147	0.0002	0.7100	0.0759	0.1171	0.0137
	AuCap(1.0opt)	147	0.0002	0.7100	0.0759	0.1171	0.0137
	AuOK	11,398	0.0064	0.2702	0.0709	0.0318	0.0010
	AuNN	11,398	0.0002	0.7100	0.0652	0.1025	0.0105
	$AuID^2$	11,398	0.0011	0.5044	0.0657	0.0510	0.0026
Drinkwater HW	Au(opt)	329	0.0010	1.2750	0.0588	0.1241	0.0154
	AuCap(1.0opt)	329	0.0010	1.0000	0.0579	0.1166	0.0136
	AuOK	25,156	0.0071	0.3654	0.0541	0.0529	0.0028
	AuNN	25,156	0.0010	0.9080	0.0469	0.0833	0.0069
	$AuID^2$	25,156	0.0037	0.4319	0.0548	0.0553	0.0031
Mary LC	Au(opt)	956	0.0010	2.8130	0.0737	0.1557	0.0242
	AuCap(1.0opt)	956	0.0010	1.0000	0.0712	0.1264	0.0160
	AuOK	53,297	0.0134	0.4169	0.0745	0.0480	0.0023
	AuNN	53,297	0.0010	1.0000	0.0701	0.1408	0.0198
	$AuID^2$	53,297	0.0042	0.7509	0.0753	0.0575	0.0033
Oromonte	Au(opt)	274	0.0003	4.3500	0.1416	0.4312	0.1860
	AuCap(1.0opt)	274	0.0003	1.0000	0.1062	0.2021	0.0408
	AuOK	13,949	0.0191	0.6013	0.1110	0.0831	0.0069
	AuNN	13,949	0.0003	1.0000	0.0966	0.1938	0.0376
	$AuID^2$	13,949	0.0039	0.9047	0.1137	0.0986	0.0097

14.10.2.2 SECTION AND PLAN VIEW VALIDATIONS

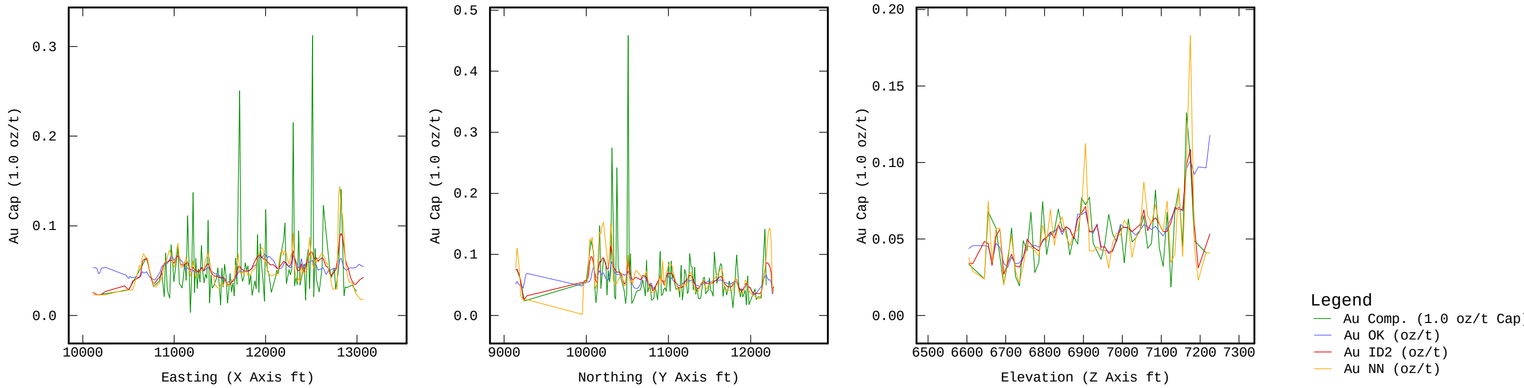
Sectional view validations were performed in 15 ft increments and plan view validations at 10 ft increments for the pit-shell area where resources were defined to verify that the block estimates and the composite values correlated and that there were no significant blowouts.

14.10.2.3 SWATH PLOTS

Swath plots comparing the OK grades to the grades of the 10 ft composites (capped at 1.0 opt) and both the ID^2 and NN model validation grades are provided in Figure 14.27 to Figure 14.32.

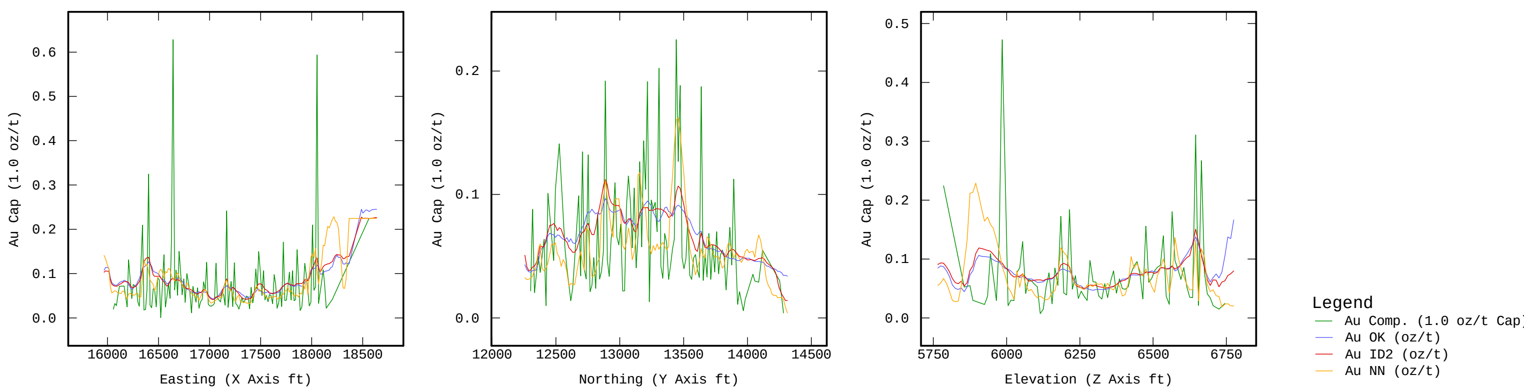
In all cases, the variability (variance) of the composites is clearly visible, and the NN model shows the greatest variability of the three model estimates. Model estimates track the composites reasonably well, with the exception at the edges of the model extents where there are fewer data available for the estimates.

Figure 14.27: Swath Plot – Brodie Composites versus Model Estimates



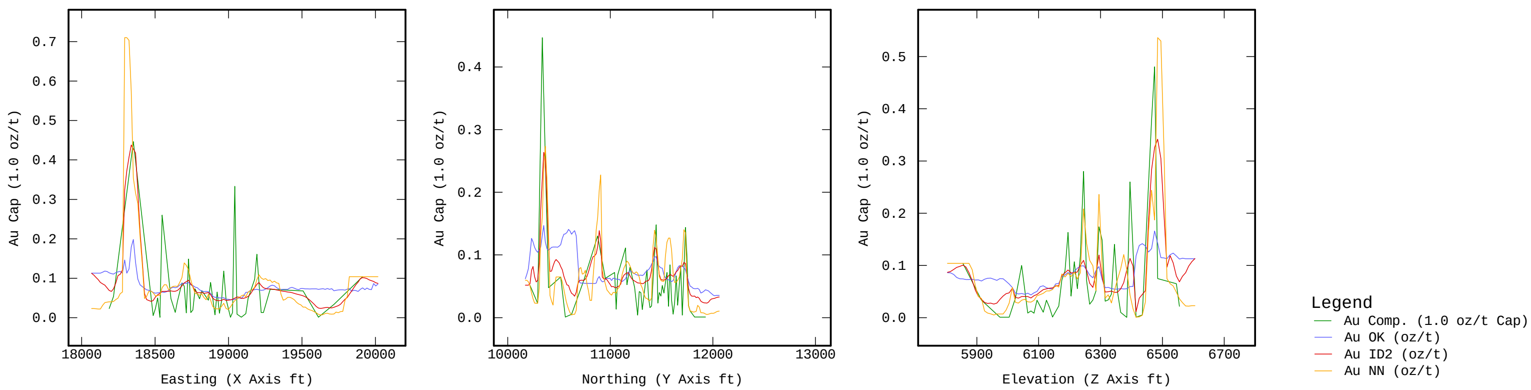
Note: Figure prepared by MTS.

Figure 14.28: Swath Plot – Bunkhouse Composites versus Model Estimates



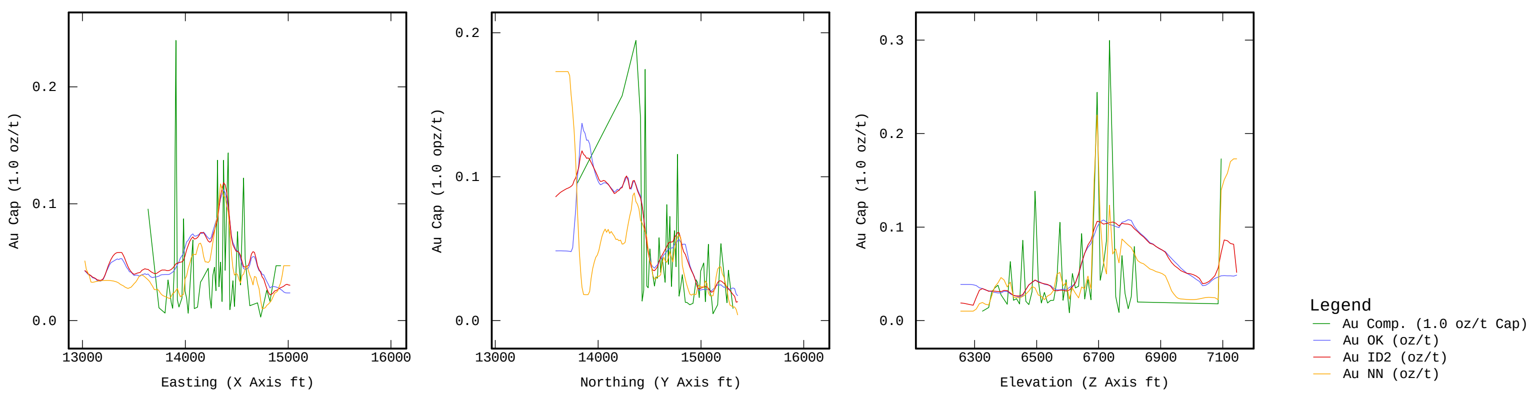
Note: Figure prepared by MTS.

Figure 14.29: Swath Plot – Custer Composites versus Model Estimates



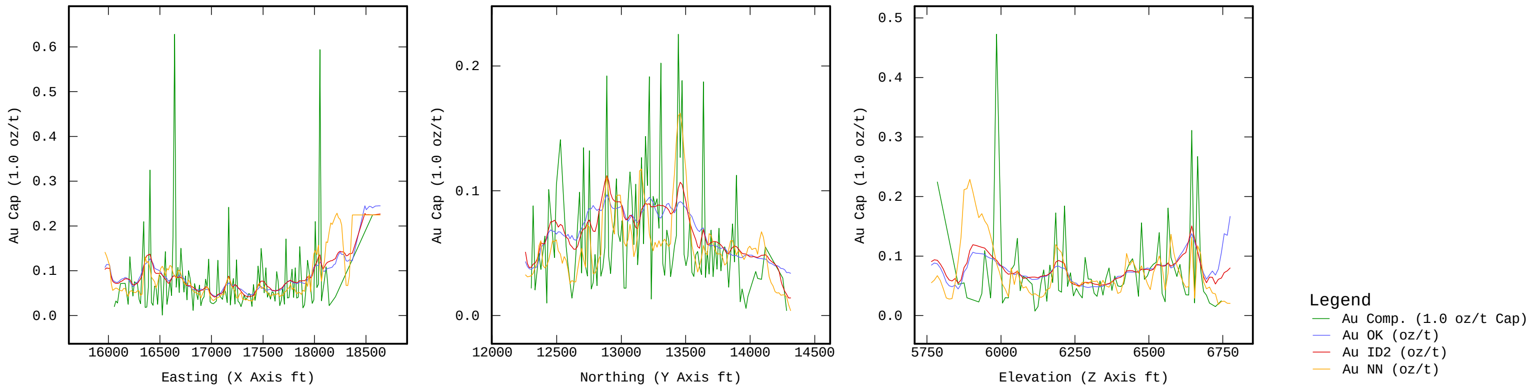
Note: Figure prepared by MTS.

Figure 14.30: Swath Plot – Drinkwater HW Composites versus Model Estimates



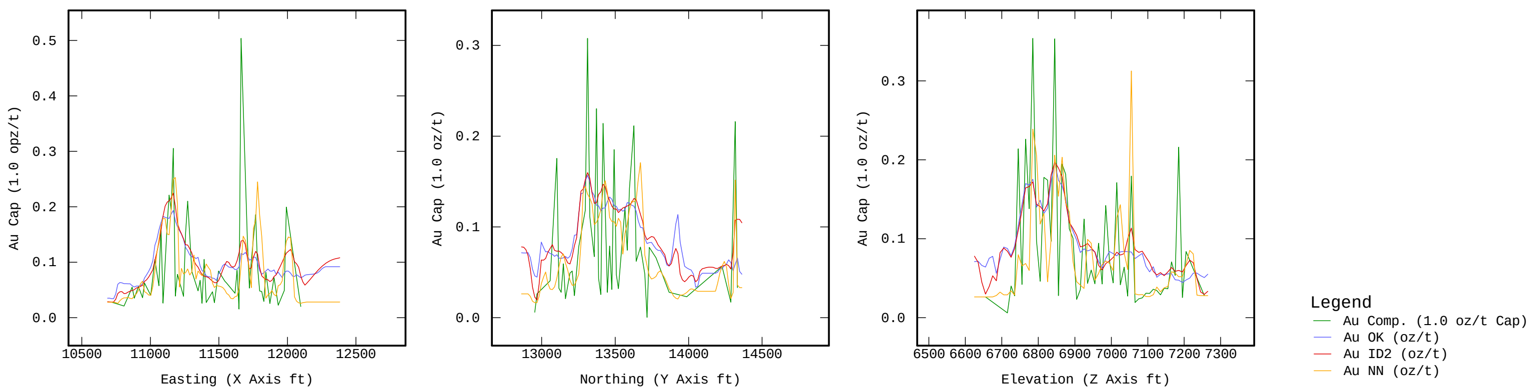
Note: Figure prepared by MTS.

Figure 14.31: Swath Plot – Mary LC Composites versus Model Estimates



Note: Figure prepared by MTS.

Figure 14.32: Swath Plot – Oromonte Composites versus Model Estimates



Note: Figure prepared by MTS.

14.11 CLASSIFICATION OF MINERAL RESOURCES

14.11.1 LEACH PAD

Mineral Resources were classified as Measured Mineral Resource where blocks were kriged in Pass 1. This equates to blocks estimated using a search neighborhood slightly larger than the maximum range of the variogram (150 ft) and covers the majority of blocks within the core of the leach pad.

An area of Indicated Mineral Resource bounds the Measured Mineral Resource and covers most of the area surrounding the sides of the leach pad, including the ramp and the side slopes less informed with drill data, and therefore where some extrapolation of grade estimates has occurred.

A final zone of Inferred Mineral Resource covers the areas effectively vertically above or below the unsampled areas, either due to drillholes having intentionally stopped short of the leach pad membrane, or unsampled areas where new material has been placed above the area covered by the 2017 sampling campaign (below the May 2017 topography). Since the grades are effectively extrapolated beyond the range of the influence of the variogram (specifically vertically), MTS assigned these areas a lower level of confidence.

In a practical sense, the Measured blocks correspond to the area covered by drilling that extends vertically downwards and where drilling is approximately 150 ft apart, and where there is a reasonable understanding of the leaching based on the grade data. The Indicated areas correspond to the ramp and the outer slope areas where there is less confidence in the data due to lesser sample coverage and a higher variability in data. The Inferred areas cover the extreme outer vertical layers of the pad where drilling data does not exist and where some uncertainty exists on the true expectation of the grades – it is unconfirmed if grades increase or decrease the closer we get to these vertical extents.

Measured blocks represent 40.3% of the total volume, Indicated blocks represent 58.7% of the total volume, and Inferred blocks represent 1.0% of the total volume.

14.11.2 REMNANT AREAS

Blocks were classified according to the estimation pass, with the first pass corresponding to Measured Mineral Resources, and the second and third passes corresponding to Indicated and Inferred Mineral Resource respectively.

Blocks within these categories were reasonably coherent and therefore did not require any further processing to smooth-out classification boundaries.

There are no blocks within the resource pit shell that were not estimated in one of the three kriging passes.

14.12 REASONABLE PROSPECTS FOR EVENTUAL ECONOMIC EXTRACTION

14.12.1 LEACH PAD

Blocks were considered to have reasonable prospects of economic extraction considering the gold grade only. A gold price of $1,216/oz was used, this represents the three-year trailing average price through June 2017. The process recovery of 95% for gold is that obtained by KCA testwork using reasonable mill-scenarios. The processing cost was provided by Scorpio Gold using actual Mineral Ridge Mine labor costs, and conceptual mill processing costs estimated by Novus for a 4,000 t/d mill operation.

14.12.2 REMNANT AREAS

The remnant areas are considered to be amenable to open-pit mining. Reasonable prospects for eventual economic extraction for these areas were derived from material within a conceptual Whittle pit shell based on the following parameter assumptions:

- Metal price $1,350/oz;
- Ore haulage cost $1.86/t;
- Processing costs $7.60/t;
- G&A $2.90/t;
- Metallurgical recoveries 95%;
- Refining and smelting costs $28.39/t;

The metal price assumption is based on a consensus of forecasts of the future long-term gold price. Metallurgical assumptions for gold recovery are based on preliminary interpretations completed by Scorpio Gold of results from metallurgical testwork completed in 2010.

Pit slope assumptions were based on the slope design assumptions used in the Mineral Reserve estimates and ranged from 38–42º.

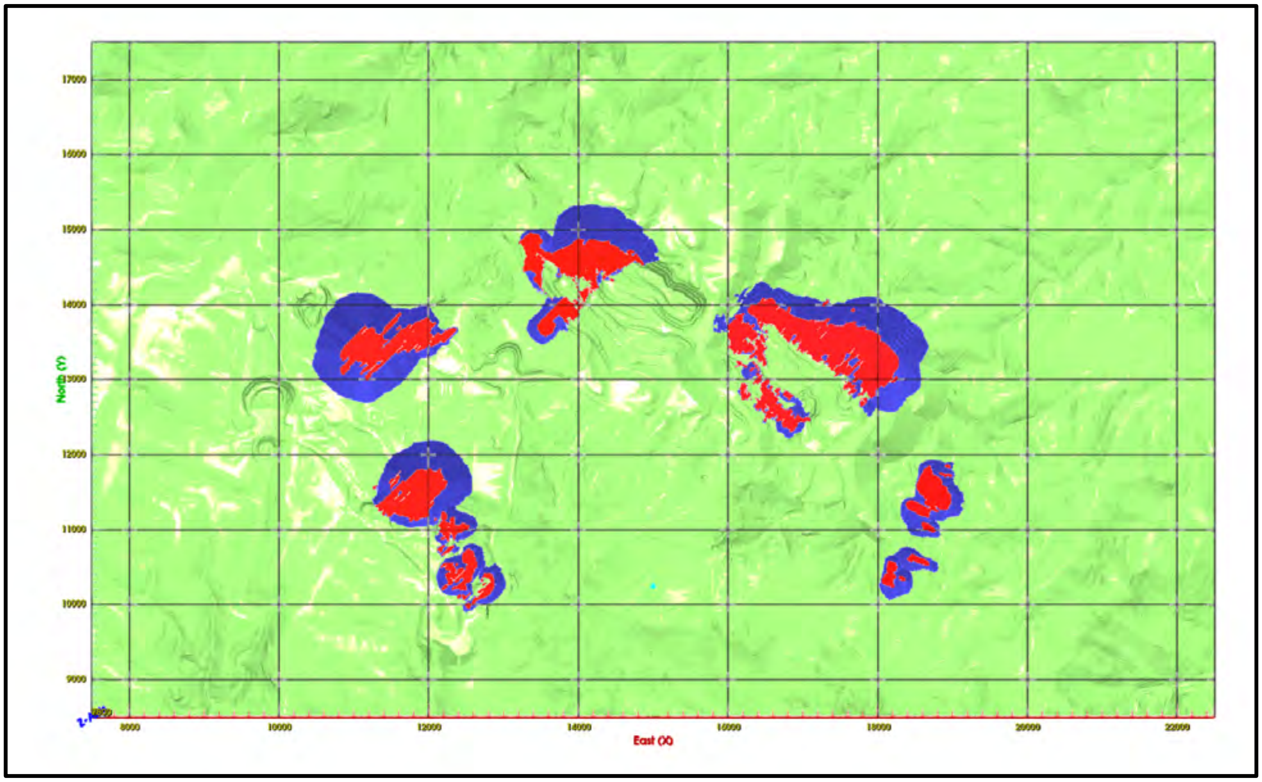
Based on the above criteria, a block-cut-off grade of 0.01 opt gold was used for blocks which would be considered Mineral Resource estimation purposes. No contribution from silver is used in the assessment of reasonable prospects for eventual economic extraction due to the limited number of silver assays available.

The pit shells were modified to remove small isolated areas that are not likely to be mined.

Final Mineral Resource tabulations were then derived for the blocks contained between the pit shell and the current topographic surface, for blocks that meet or exceed the economic cut-off grade based on the above parameters.

Figure 14.33 shows a plan view of the pit-shell outline (in blue) relative to the modelled Mineral Resource blocks within each pit shell (in red).

Figure 14.33: Plan View of the Resource Pit Shells and Resource Blocks



Note: Figure prepared by MTS, 2017. Blue = Whittle pit shell, red = resource blocks within pit shell

14.12.2.1 CUT-OFF CONSIDERATIONS

A sensitivity analysis was performed for various gold prices and cut-off grades. Metal price sensitivities were tested from $1,080–$1,690, which included the gold price assumption used in the leach pad considerations of reasonable prospects for eventual economic extraction. Cut-off grade sensitivities tested ranged from 0.008 opt to 0.012 opt gold.

As the resource estimate is already contained within a high-grade grade shell, these parameters had a very limited influence on the resulting Mineral Resources. Therefore, since the estimate is relatively insensitive to changes in gold price or gold grade, no sensitivity tables were considered necessary.

Mineral Resources are reported at an overall gold cut-off grade of 0.01 opt.

14.13 MINERAL RESOURCE STATEMENT

The Mineral Resource estimates were prepared with reference to the 2014 CIM Definition Standards and the 2003 CIM Best Practice Guidelines.

The Mineral Resource estimate for the material on the heap leach pad that is directly amenable to processing is provided in Table 14.10. No cut-off criteria have been applied since there will be no selectivity of areas to be processed and the leach pad will be processed in its entirety. The Mineral Resources are reported inclusive of Mineral Reserves and have an effective date of 29 June 2017. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability. The QP for the estimate is Mr. Ian Crundwell, P.Geo.

The Mineral Resource estimate for the remnant material is provided in Table 14.11 (Measured and Indicated) and Table 14.12 (Inferred). The Mineral Resources are reported inclusive of Mineral Reserves and have an effective date of November 30, 2017. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability. The QP for the estimate is Mr. Ian Crundwell, P.Geo.

Table 14.10: Mineral Resource Estimate for Mineralization Contained Within the Heap Leach Pad

Classification	Tons ('000)	Gold (opt)	Silver (opt)	Contained Gold ('000 oz)	Contained Silver ('000 oz)
Measured	2,895	0.017	0.016	48.5	46.4
Indicated	4,220	0.017	0.018	73.2	74.1
Measured & Indicated	***7,117***	***0.017***	***0.017***	***121.7***	***120.4***
Inferred	76	0.016	0.027	1.2	2.0

Notes: *The effective date of the Mineral Resource estimate is June 29, 2017. The QP for the estimate is Mr. Ian Crundwell, P.Geo.*
Mineral Resources are reported inclusive of Mineral Reserves. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
Mineral Resources are contained within the Mineral Ridge leach pad facility with the following assumptions: a long-term gold price of US$1,216/oz; assumed process costs of US$11/t; and metallurgical recovery for gold of 91%. Silver was not used in the consideration of reasonable prospects for eventual economic extraction. Silver recoveries from heap leach pad material are projected to be 24%.
Rounding may result in apparent differences between when summing tons, grade and contained metal content. Tonnage and grade measurements are in Imperial units. Grades are reported in ounces per ton.

Table 14.11: Measured and Indicated Mineral Resource Tabulation for Remnant Areas

Area	Classification	Tons ('000)	Gold Grade (opt)	Contained Gold ('000 oz)
Brodie	Measured	455.7	0.063	28.6
	Indicated	237.9	0.056	13.4
	Sub-total Measured and Indicated	693.6	0.060	41.9
Custer	Measured	147.8	0.083	12.3
	Indicated	75.4	0.088	6.6
	Sub-total Measured and Indicated	223.2	0.085	18.9
Drinkwater HW	Measured	527.3	0.046	24.3
	Indicated	209.2	0.049	10.3
	Sub-total Measured and Indicated	736.6	0.047	34.6
Mary LC & Bunkhouse	Measured	721.4	0.072	51.7
	Indicated	403.3	0.074	29.8
	Sub-total Measured and Indicated	1,124.7	0.072	81.5
Oromonte	Measured	235.8	0.162	38.3
	Indicated	169.0	0.074	12.6
	Sub-total Measured and Indicated	404.8	0.126	50.9
Combined	Measured	2,088.0	0.074	155.2
	Indicated	1,094.8	0.066	72.6
	Total Measured and Indicated	3,182.8	0.072	227.8

Notes: *The effective date of the Mineral Resource estimate is November 30, 2017. The QP for the estimate is Mr. Ian Crundwell, P.Geo.*

Mineral Resources are reported inclusive of Mineral Reserves at a gold cut-off grade of 0.01 opt.

Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.

Mineral Resources are constrained to the area within the grade-shell wireframes. The areas outside of these grade shells are assumed to be at zero grade.

These Mineral Resource are considered to be amenable to open-pit mining. Conceptual Whittle pit shells used the following assumptions: a long-term gold price of 1,350/oz; assumed combined operating costs of 12.36/t (mining, process, general and administrative); metallurgical recovery for gold of 95%, and variable pit slope angles that ranged from 38–42º.

Rounding may result in apparent differences between when summing tons, grade and contained metal content. Tonnage and grade measurements are in Imperial units. Grades are reported in ounces per ton.

Table 14.12: Inferred Mineral Resource Tabulation for Remnant Areas

Area	Classification	Tons ('000)	Gold Grade (opt)	Contained Gold ('000 oz)
Brodie	Inferred	2.4	0.034	0.08
Custer	Inferred	-		-
Drinkwater HW	Inferred	180.1	0.059	10.61
Mary LC & Bunkhouse	Inferred	0.1	0.061	0.01
Oromonte	Inferred	0.4	0.092	0.03
Combined	Total Inferred	182.9	0.059	10.73

Notes: The effective date of the Mineral Resource estimate is November 30, 2017. The QP for the estimate is Mr. Ian Crundwell, P.Geo.
Mineral Resources are reported inclusive of Mineral Reserves at a gold cut-off grade of 0.01 opt. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability.
Mineral Resources are constrained to the area within the grade-shell wireframes. The areas outside of these grade shells are assumed to be at zero grade.
These Mineral Resource are considered to be amenable to open-pit mining.
Conceptual Whittle pit shells used the following assumptions: a long-term gold price of US$1,350/oz; assumed combined operating costs of US$12.36/t (mining, process, general and administrative); metallurgical recovery for gold of 95%, and variable pit slope angles that ranged from 38–42º.
Rounding may result in apparent differences between when summing tons, grade and contained metal content. Tonnage and grade measurements are in Imperial units. Grades are reported in ounces per ton.

14.14 FACTORS THAT MAY AFFECT THE MINERAL RESOURCE ESTIMATES

14.14.1 LEACH PAD

Since the sonic drills were not permitted to penetrate the leach pad membrane, it was not possible to sample right up to the base of the leach pad. The majority of this material at the extreme edges of the resource model was classified as Inferred Mineral Resources. The true grade of the leached material at the extreme edges of the volume has some uncertainty.

Local estimates of the leach pad grade have some uncertainty due to the repeatability of certain samples, and therefore selective mining (processing) of the pad should not be attempted using the current grade block model.

14.14.2 REMNANT AREAS

Factors that could affect the resource estimate for the remnant areas include:

- Changes to geological or grade interpretations, including grade shell considerations;
- Changes to the modelling method or approach;

- Changes to the input parameters to the conceptual Whittle shells used to constrain the Mineral Resources;
- Changes to geotechnical assumptions, in particular, pit slope angles;
- Changes to metallurgical recovery assumptions;
- Changes to any of the social, political, economic, permitting, and environmental assumptions considered when evaluating reasonable prospects for eventual economic extraction.

14.15 COMMENTS ON MINERAL RESOURCE ESTIMATES

Based on mine production data provided by Scorpio Gold, a total of 115,000 t grading 0.045 opt was placed on the leach pad between July and November 2017. This material represents upside potential for the leach pad retreatment plan.

Only gold was considered when evaluating reasonable prospects for eventual economic extraction in the remnant areas, as there were insufficient silver assays to support estimation. Silver has historically been produced in doré from the Mineral Ridge deposits, and represents a minor upside for the Project.

The metallurgical recovery assumed for the remnant areas is an average recovery within the grade shell. Actual recoveries in the proposed plant may vary by lithology.

In future model updates for the remnant areas, Scorpio Gold could consider the use of implicit modeling of the mineralized grade shells to better differentiate between the high-grade and the low-grade zones.

15.0 MINERAL RESERVE ESTIMATES

Mineral Reserves have been estimated for material on a heap leach pad which is planned to be processed through a new milling facility. In addition to reprocessing the heap, remnant areas adjacent to mined-out open pits, comprising the Brodie, Custer, Drinkwater, Mary LC, Bunkhouse and Oromonte areas have Mineral Reserves estimated. These Mineral Reserves are also assumed to be processed through the new mill.

15.1 ESTIMATION PARAMETERS

15.1.1 HEAP LEACH PAD

Conversion from Mineral Resources to Mineral Reserves is relatively straightforward for the heap leach material. Given the nature of the reclaimed material on the heap leach pad and the method of mining, the assumption is that all material will be mined and processed, less any material left in place due to permit restrictions and facility location. Allowance has been made for facility location which excludes 260,000 t; this material must remain in-place, according to the heap material mining and tailings placement design (refer to Section 16.0).

15.1.2 REMNANT AREAS

Open pit mine designs have been completed on the Brodie, Custer, Drinkwater, Mary LC, Bunkhouse and Oromonte deposits. All Inferred material has been classified as waste and scheduled to the appropriate WRSF.

The Mineral Reserves are reported using a 0.010 opt gold cut-off inside designed pits. The pit design parameters are discussed in more detail in the following sub-sections.

15.1.2.1 PIT SLOPES

Pit slope stability evaluations have been completed by three different companies, Golder Associates (1999), GeoSolutions (2008), and AMEC (2011). Generally, the evaluations concur that bench face slope angles of 70–75º with 15 ft wide benches from 15 ft to 20 ft bench heights. East-facing pit slopes, where bedding generally dips away from the pit wall are recommended by AMEC to have a flatter configuration of a 70º inter-bench face slope and 15 ft wide benches every 15 ft in elevation.

The current Drinkwater pit has a high wall of an approximate 400 ft height which shows no significant signs of instability. The highwalls in the Drinkwater, Mary LC and Brodie pit have actual slope angles that range between 46–48º. Scorpio Gold uses a 48º inter ramp slope for internal designs. Based on the past studies and current highwall conditions the pit deigns for reporting the Mineral Reserves were completed at a 47º inter ramp slope, with 20 ft catch benches every 40 ft. This results in a bench face angle of 66.6º. The use of preshear drill holes along the highwall has been added to the mine plan so this will also help with preserving the highwall integrity.

15.1.2.2 ORE LOSS AND DILUTION

Dilution is calculated inside the block model by diluting the percent of each block that falls inside of the grade domains with the portion of the block that remains outside the domain. This is calculated on a weighted percent basis for each 15 ft x15 ft x10 ft block in the model. The portion of the block outside the domains is estimated with the low-grade samples outside of the domains in order to get the grades of the diluted material. If the diluted grade of the block is above cut-off then the full block is included in the mine plan; if the diluted grade is below cut-off then the full block is treated as waste material. Based on reconciliation reports provided by Scorpio Gold, no ore loss has been included in the Mineral Reserve estimate as the reports show a consistent result of the mine producing more gold ounces than is predicted by the resource models.

15.1.2.3 PIT OPTIMIZATION

The Mineral Resources for the remnant areas were evaluated using a Lerchs–Grossmann pit optimizer to generate optimized pit shells. Pit shells were generated based on varying metal prices with a base gold price of $1,300/oz. A total of 51 pit shells were generated to determine optimal break points in the pit phases and the final pit phase for each deposit.

Table 15.1 shows the cost and slope parameters used for each optimization. The operating costs were determined based on MTS's industry knowledge and prior experience and actual costs provided by Scorpio Gold. Metallurgical recoveries were estimated at 95% for the initial optimization runs, but were reduced to 93% for the final economics and Mineral Reserves reporting, based on recommendations from Novus. The 2% change is not anticipated to have a material impact on the optimization results.

Table 15.1: Mineral Reserve Optimization Parameters

	Units	Brodie	Oromonte	Drinkwater	Mary	Bunkhouse	Custer
Base Case Au Price	$/oz	1,300	1,300	1,300	1,300	1,300	1,300
Metallurgical Recoveries	%	95	95	95	95	95	95
Ore Loss	%	5	5	5	5	5	5
Stripping and Refining	$/oz	28.39	28.39	28.39	28.39	28.39	28.39
Ore Operating Costs							
Crushing	$/t of ore	1.81	1.81	1.81	1.81	1.81	1.81
Processing	$/t of ore	5.79	5.79	5.79	5.79	5.79	5.79
G&A, Taxes	$/t of ore	2.90	2.90	2.90	2.90	2.90	2.90
Ore Mining	$/t of ore	0.64	0.64	1.35	1.33	1.33	1.41
Total	**$/t of ore**	**11.14**	**11.14**	**11.85**	**11.83**	**11.83**	**11.91**
Mine Operating Costs							
Rock Mining Cost	$/t mined	1.71	1.71	1.71	1.57	1.57	1.58
Fill Mining Cost	$/t mined	0.96	0.96	0.96	0.96	0.96	0.96
Pit Slopes	degrees	42	42	38	38	38	42

Figure 15.1 to Figure 15.5 show the optimization results for the Brodie, Oromonte, Drinkwater, Mary/Bunkhouse and Custer respectively. Values in the figures are based on optimized pit shells before the design process and do not include the haulage ramps and catch benches.

The Brodie pit was limited to a $878/oz gold pit shell as the basis for the design as the pits beyond this price would be mining through the leach pad.

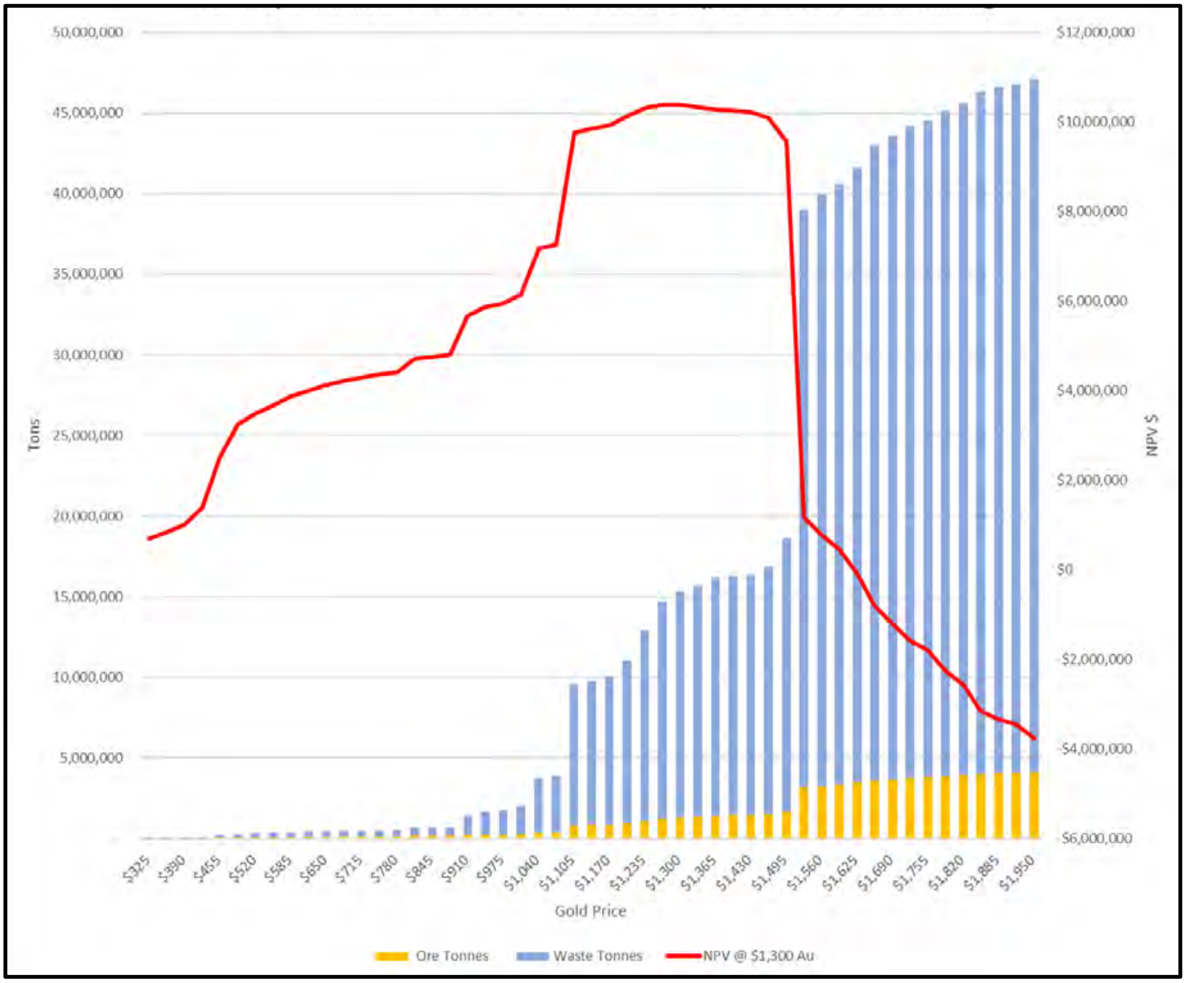
The Oromonte pit was designed in two phases, due to the large strip that would be required for this area. The first phase of the Oromonte pit was based on a $943/oz gold pit shell and the second phase was based on a $1,300/oz gold pit shell.

The Drinkwater pit was based on a $1,040/oz gold pit as the $1,300/oz gold pit only showed a minor value increase when mining an additional million tons of material; it was concluded that there was no support for mining the larger pit given the limited revenue gain.

The Mary LC and Bunkhouse pit areas were similar to Drinkwater in that a $1,170/oz gold pit was chosen for the design as although the $1,300/oz gold pit shows an increase in value, it would require mining an additional 17 Mt.

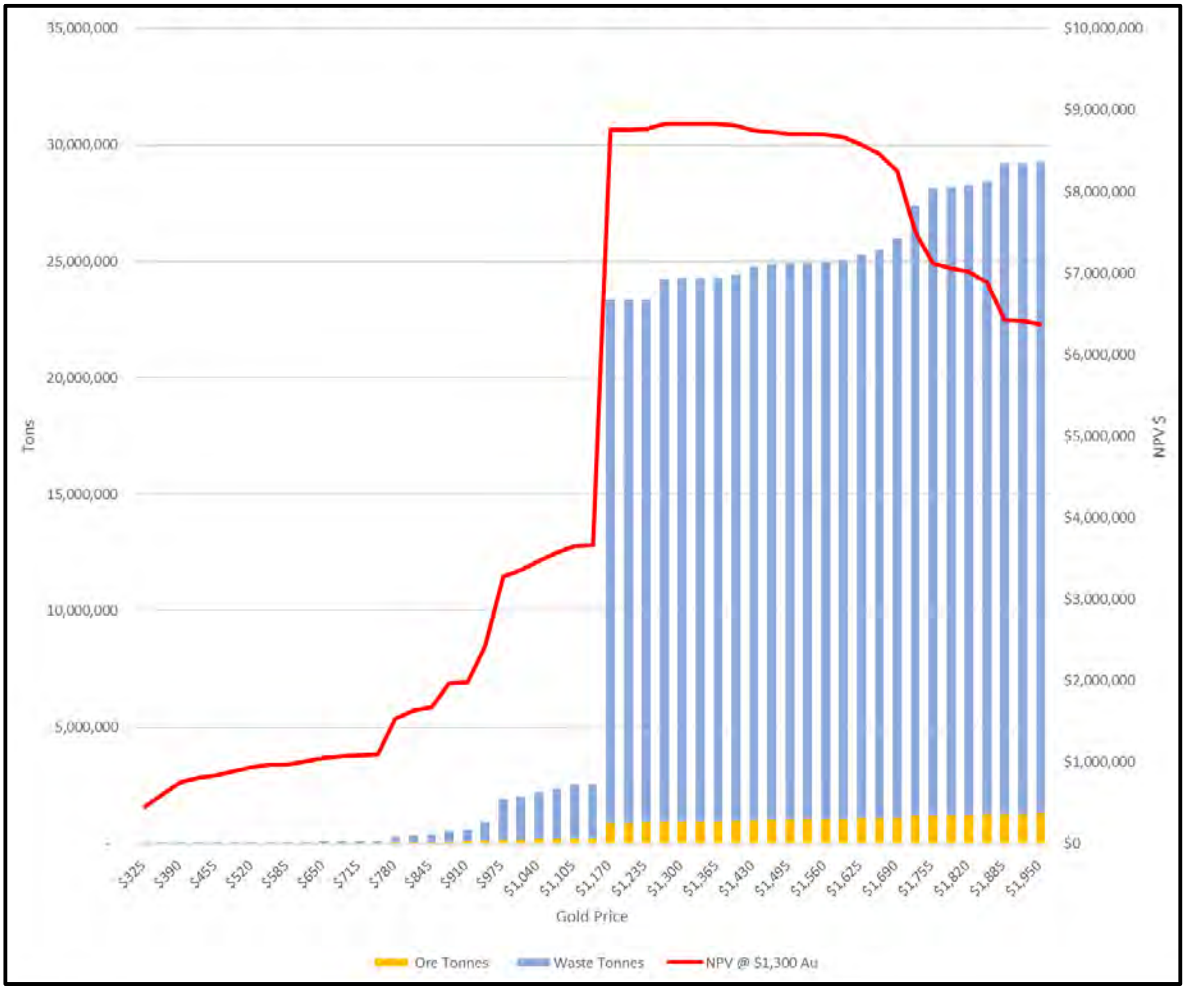
For the Custer pit the $1,008/oz gold pit was chosen as the basis for the design, for similar reasons of reduced value accruing from having to mine more tons in the $1,300/oz gold pit.

Figure 15.1: Brodie Optimization Results



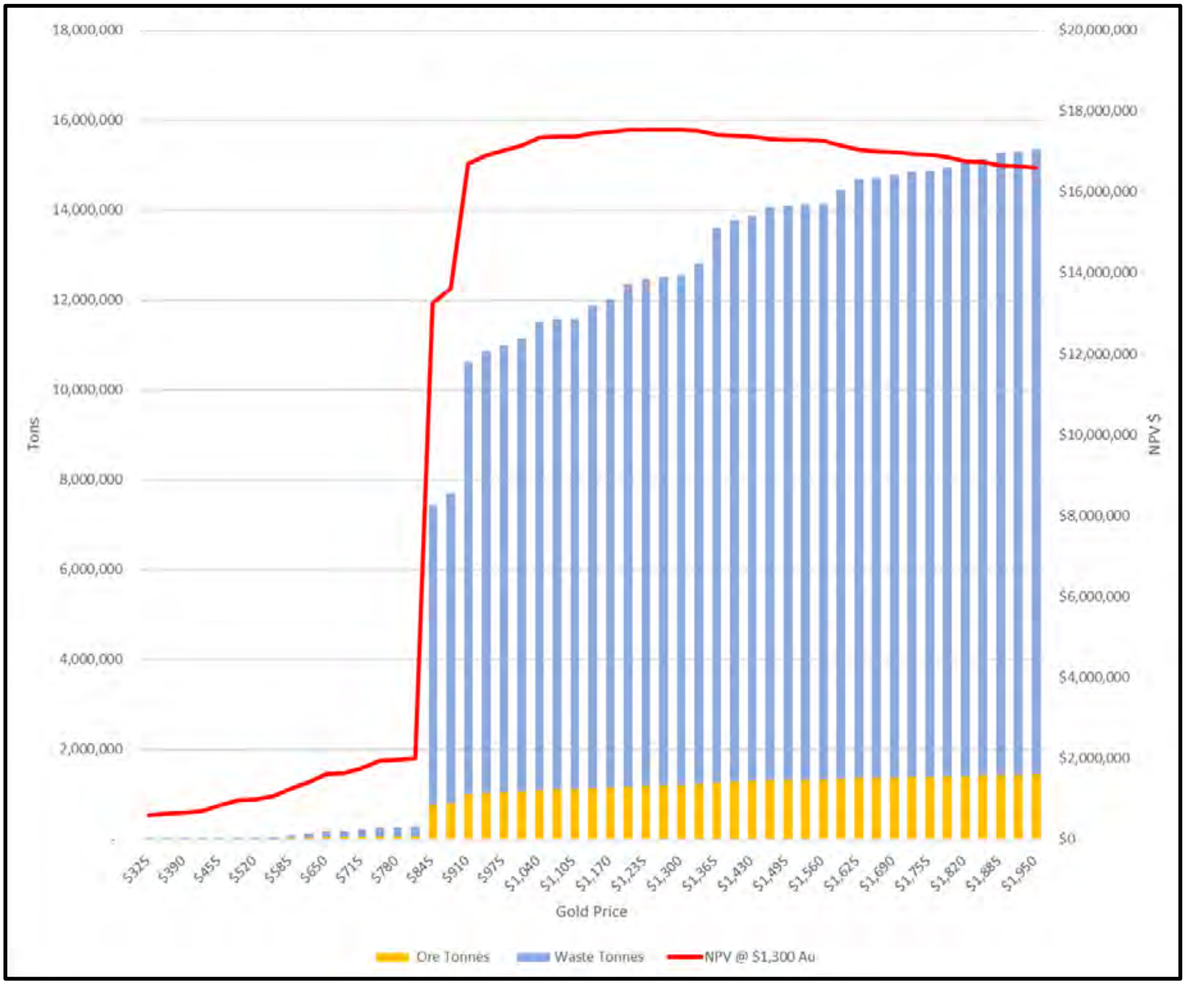
Note: Figure prepared by MTS, 2017.

Figure 15.2: Oromonte Optimization Results



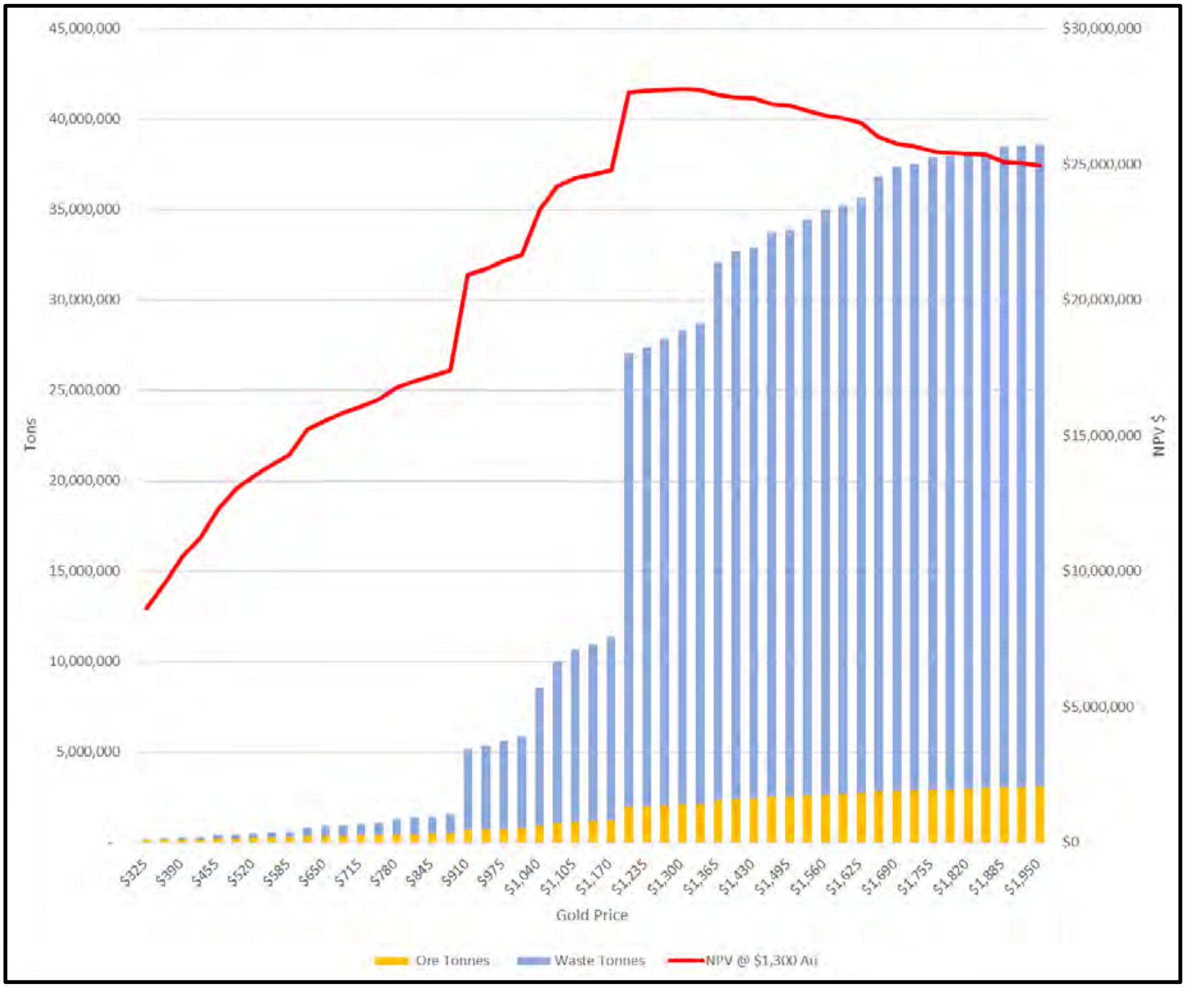
Note: Figure prepared by MTS, 2017.

Figure 15.3: Drinkwater Optimization Results



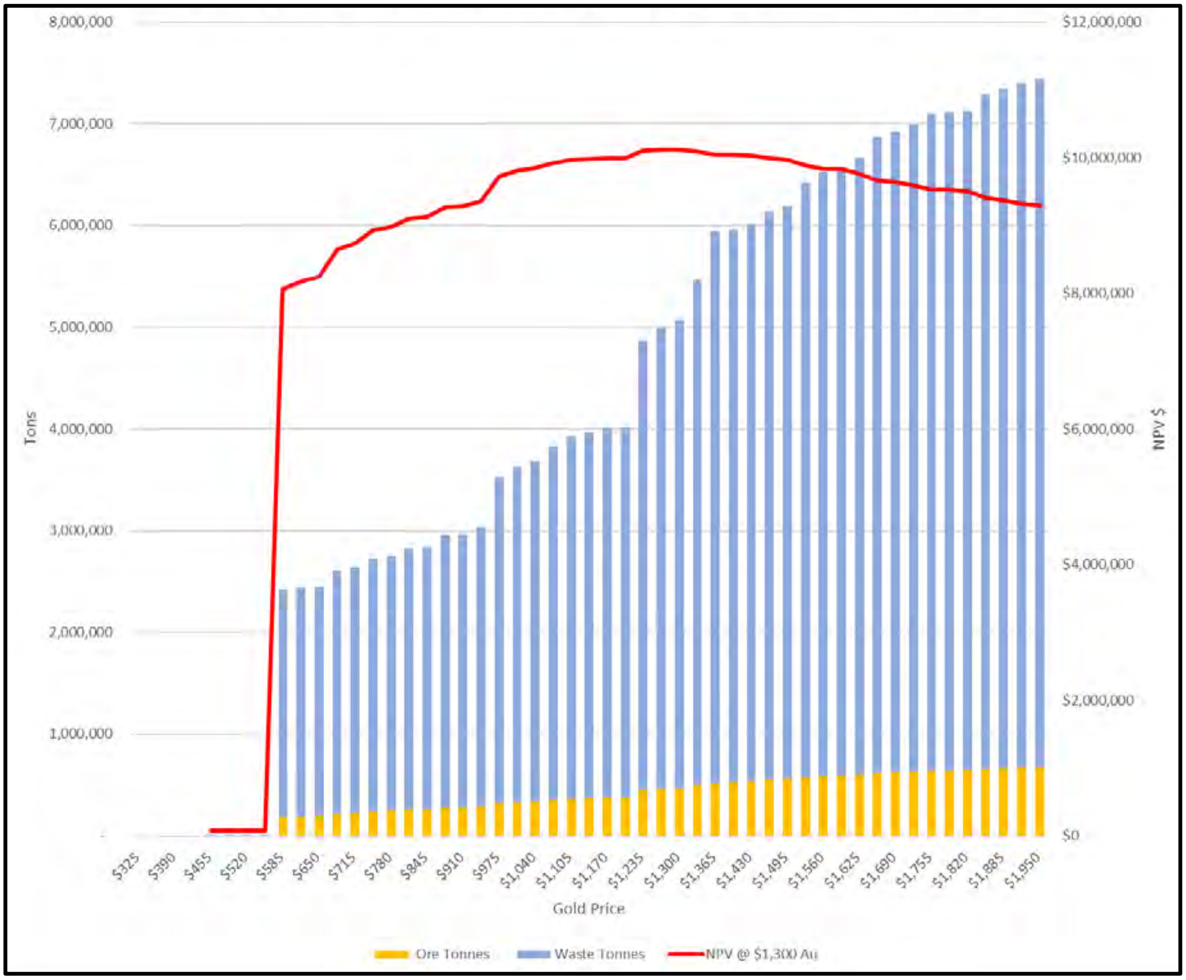
Note: Figure prepared by MTS, 2017.

Figure 15.4: Mary-LC and Bunkhouse Optimization Results



Note: Figure prepared by MTS, 2017.

Figure 15.5: Custer Optimization Results



Note: Figure prepared by MTS, 2017.

15.1.2.4 CUT-OFF GRADE

The Mineral Reserves are reported using a 0.010 opt gold cutoff inside the pit designs based on the operating costs and parameters presented in Table 15.2. The operating costs were determined based on MTC's industry knowledge and prior experience, processing cost estimates provided by Novus, and actual costs provided by Scorpio Gold. A $1,300/oz gold price was used for estimating the Mineral Reserves, and metallurgical recoveries were provided by Novus based on their review of past metallurgical testing.

Table 15.2: Cut-off Input Parameters

Parameter	Unit	Value
Cost Center		
Incremental Ore Mining	$/ore ton	0.75
Processing	$/ore ton	7.60
G&A	$/ore ton	4.05
Recoveries	%	93.0
Refining and smelting cost	per/oz	28.39
Total Cost	**$/ore ton**	**12.40**
Gold Selling Price	oz	1,300.00
Cut-off Grade	Au opt	0.010

15.2 MINERAL RESERVES STATEMENT

The Mineral Reserve estimates were prepared with reference to the 2014 CIM Definition Standards and the 2003 CIM Best Practice Guidelines. The QP for the estimate is Mr. Jeffery Choquette P.E.

15.2.1 HEAP LEACH MATERIAL

The Mineral Reserve estimate for the material on the heap leach pad is provided in Table 15.3. The estimate has an effective date of June 29, 2017.

Table 15.3: Mineral Reserve Estimate for the Heap Leach Pad

Mineral Reserve Classification	Tons ('000)	Gold (opt)	Silver (opt)	Contained Gold ('000 oz)	Contained Silver ('000 oz)
Proven	2,895	0.017	0.016	48.5	46.4
Probable	4,220	0.017	0.018	73.2	74.1
Less Material Remaining in Place due to Facility Designs	(260)	0.017	0.017	(4.5)	(4.6)
Total Proven and Probable	6,855	0.017	0.017	117.2	115.9

Notes: *The Mineral Reserves have an effective date of June 29, 2017. The Qualified Person for the estimate is Mr. Jeffery Choquette P.E.*
Mineral Reserves are contained within the Project leach pad facility with the following assumptions: long-term gold price of US$1,300/oz; assumed total ore process costs of US$10.59/t; metallurgical recovery for gold of 91%, refining and smelting cost of $28.39/oz of gold. Allowance has been made for the facility location which excludes 260,000 t; this material must remain in-place, based on the to the heap material mining and tailings placement design.
Rounding as required by reporting guidelines may result in summation differences.

15.2.2 REMNANT MATERIAL

Proven and Probable Mineral Reserves are reported within the final pit design used for the mine production schedule and are shown in Table 15.4. All inferred material was classified as waste and scheduled to the appropriate WRSF. The Mineral Reserves are reported using a 0.010 opt gold cut-off inside the pit design using the diluted grades. The estimate has an effective date of November 30, 2017.

Table 15.4: Mineral Reserve Estimate for the Remnant Areas

Pit Area	Mineral Reserve Classification	Tons ('000)	Gold (opt)	Contained Gold ('000 oz)
Brodie	Proven	51	0.042	2.1
	Probable	12	0.027	0.3
	Sub-total Proven and Probable	**63**	**0.039**	**2.5**
Custer	Proven	314	0.047	14.8
	Probable	144	0.032	4.6
	Sub-total Proven and Probable	**459**	**0.042**	**19.4**
Drinkwater	Proven	836	0.038	32.1
	Probable	352	0.033	11.7
	Sub-total Proven and Probable	**1,189**	**0.037**	**43.7**
Mary–LC	Proven	470	0.035	16.3
	Probable	276	0.035	9.7
	Sub-total Proven and Probable	**746**	**0.035**	**26.0**
Bunkhouse	Proven	239	0.047	11.1
	Probable	4	0.021	0.1
	Sub-total Proven and Probable	**243**	**0.046**	**11.2**
Oromonte	Proven	563	0.071	39.8
	Probable	449	0.030	13.7
	Sub-total Proven and Probable	**1,012**	**0.053**	**53.5**
Total Combined	**Proven**	**2,474**	**0.047**	**116.2**
	Probable	**1,239**	**0.032**	**40.1**
	Total Proven and Probable	**3,713**	**0.042**	**156.3**

Notes: *The Mineral Reserves have an effective date of November 30, 2017. The QP for the estimate is Mr. Jeffery Choquette P.E.*
Mineral Reserves are reported within the pit designs at a 0.01 opt Au cut-off grade. Pit designs incorporate the following considerations: base case gold price of US$1,300/oz; pit slope angles that range from 38–47º; average life-of-mine metallurgical recovery assumption of 93%; crushing costs of US$1.81/t, process cost of US$5.79/t, general and administrative and tax costs of US$2.90/t; and average mining costs of US$1.42/t mined.
Rounding as required by reporting guidelines may result in summation differences.

15.3 FACTORS THAT MAY AFFECT THE MINERAL RESERVES

Scorpio Gold has recently completed open pit mining operations, and the Mineral Ridge open pit mines have a relatively long history of production. The mine staff possess considerable experience and knowledge with regard to the nature of the deposits in and around the Project.

However, areas of uncertainty that may materially impact the Mineral Reserves include the following:

- Variations in the forecast commodity price
- Variations to the assumptions used in the constraining LG pit shells, including mining loss/dilution, metallurgical recoveries, geotechnical assumptions including pit slope angles, and operating costs
- Variations in assumptions as to permitting, environmental, and social licence to operate.

16.0 MINING METHODS

16.1 OVERVIEW

There are two elements to the proposed mining methods for this study. The first area involves the mining of the previously-processed heap leach material and processing it though a milling facility. The second item involves the mining of remnant areas adjacent to existing open pits on the property and sending this material to the new process facility. The milling facility will have a higher gold recovery than the heap leach process, so the remnant areas have become economic to mine.

Production of mineralized material from the heap and pit area is planned at a nominal rate of 4,000 t/d. Due to the timing of building a new pad storage area for the heap leach material, the heap leach material has to be processed before the mining of the pit areas to allow room for the additional material from the open pits. Mining and processing of the heap ore will take a little over five years and mining and processing of the open pit ores will take three years for a total projected mine life of 7.5 years.

16.2 LEACH PAD

Mill feed material is derived from moving the previously-processed heap leach material from the existing heap leach to a mill facility, to process and reclaim economic material from the leach material. Accordingly, mining activities for the heap leach pad portion of this Feasibility Study and Technical Report do not require traditional open-pit or underground mining methods.

No drilling or blasting is anticipated as the reclaim leach material is unconsolidated. All material movement will consist of transporting the reclaim leach material from the existing heap leach pad to the mill facility. A hopper and solution mixing system will be constructed on the leach pad in order to pump material directly from the leach pad to the mill. After materials are processed through the milling operation, the tailings leaving the mill will be placed back on the pad using conveyor stackers.

Given this method of mining, there will be no opportunity to selectively mine the reclaim material. Some of the tailings will be mined with the leached material, and about 260,000 t of reclaim material will remain on the pad because it is impractical to remove it. This material is situated in the bottom and center of the existing heap.

To convey the reclaim material from the pad to the mill, the material will be mixed into a slurry using a mixing system constructed on the pad. The mixing system will comprise a hopper, a mixing tank, pumps and piping. To remove ore from the pad, a 10 yd^3 front-end loader (CAT 988K or equivalent) will load reclaim leach material into the hopper. Reclaim material within close proximity to the hopper/conveyor system will be pushed with a dozer (CAT D8T or equivalent) such that the front-end loader can load the material. A 50 yd^3 scraper (CAT 637K or equivalent) will load and haul material that is located further away from the hopper and dump it near the hopper. Reclaim material will generally be removed from the top down, proceeding west to east and south to north.

16.3 REMNANT MATERIAL

The Mineral Ridge deposits contain mineralization at or near the bedrock surface that are ideal for open pit mining methods. The method of material transport at Scorpio Gold will be open pit mining using two to three 16-yd^3 front-end loaders as the main loading units; a 6.6-yd^3 excavator will be used for sorting out narrow ore zones. The open pit mineralized material will be loaded into 100-t haul trucks and transported to the crushing site next to the mill. Waste material will be transported to a designated WRSF for each pit. Open pit mining in the past has been conducted using contract mining; this study is based on Owner mining and assumes a new production fleet will be purchased for all future mining activity.

Mining is currently planned on 20 ft levels, but areas that contain ore zones are designed to be mined in approximately 10 ft levels. All blasting will be conducted per MSHA regulations on mines and mining plants. Blastholes 6.75 inches in diameter will be drilled on an approximate 13 ft x 14 ft staggered pattern for a 20 ft bench in the non-mineralized area. Blastholes 4.5 inches in diameter will be drilled in the mineralized zones on an approximate 10 ft x 11.5 ft staggered pattern on 10 ft. benches. All material will be blasted, generally using ANFO, with up to approximately 20% of the blasting requiring emulsion for better fragmentation and possible wet holes due to precipitation.

16.3.1 PIT DESIGN

Mineral Resources for the remnant areas were evaluated using a LG pit optimizer to generate optimized pit shells. Pit shells were generated based on varying metal prices with a base gold price of $1,300/oz. A total of 51 pit shells were generated to determine optimal break points in the pit phases and the final pit phase for each deposit. The Oromonte pit was designed in two phases, due to the large strip that would be required for this area. All other areas were designed in one pit phase, but the Custer, Mary LC and Drinkwater areas were designed with two different pits. The Custer pit has small satellite pit referred to as the South Custer pit, the Mary-LC pit has a small satellite pit referred to as the West Mary pit, and the Drinkwater pit has a small satellite pit referred to as the South Drinkwater pit. The pit designs for all areas are shown in Figure 16.1.

Haul roads are designed at a width of 80 ft, which provides a safe truck width (21 ft wide for 100-ton vehicles) to running surface width ratio of 1:3.5. Maximum grade of the haul roads is 10%, except for the lower benches where the grade is increased to 12%, and the ramp width is narrowed to 60 ft to minimize excessive waste stripping. The pit design criteria are presented in Table 16.1.

Figure 16.1: Pit Designs

Table 16.1: Pit Design Criteria

Category	Unit	Parameter
Ramp Widths	ft	80
Ramp Grade	%	10
Ramp Widths Pit Bottom	ft	60
Ramp Grade Pit Bottom	%	12
Minimum Turning Radius	ft	120
Ore Mining Levels	ft	10
Waste Mining Levels	ft	20

16.3.1.1 GEOTECHNICAL CONSIDERATIONS

As discussed in Section 15, pit slope stability evaluations have been completed by three different companies, Golder Associates (1999), GeoSolutions (2008), and AMEC (2011). Generally, the evaluations concur that bench face slope angles of 70–75º with 15 ft wide benches from 15 ft to 20 ft bench heights. East-facing pit slopes, where bedding generally dips away from the pit wall are recommended by AMEC to have a flatter configuration of a 70º inter-bench face slope and 15 ft wide benches every 15 ft in elevation.

The current Drinkwater pit has a high wall of an approximate 400 ft height which shows no significant signs of instability. The highwalls in the Drinkwater, Mary LC and Brodie pit have actual slope angles that range between 46–48º. Scorpio Gold uses a 48º inter ramp slope for internal designs. Based on the past studies and current highwall conditions the pit deigns for reporting the Mineral Reserves were completed at a 47º inter ramp slope, with 20 ft catch benches every 40 ft. This results in a bench face angle of 66.6º. The use of preshear drillholes along the highwall has been added to the mine plan so this will also help with preserving the highwall integrity. Table 16.2 show the parameters used for the pit designs.

Table 16.2: Pit Slope Angles

Design Sector	Safety Bench Spacing (ft)	Inter-ramp Pit Slope Angle (°)	Bench Width (ft)	Batter Angle (°)
All	40	47	20	66.6

16.3.1.2 HYDROGEOLOGICAL CONSIDERATIONS

The current open pits on site are all dry and do not require any dewatering of the working areas. The future pits also expected to be dry and not require any dewatering or pumping to outside areas. The site operations staff does implement storm water management controls on an as-needed basis, to assist in maintaining impacts of storm water flow on site operations.

16.3.1.3 DILUTION AND ORE LOSSES

Dilution is calculated inside the block model by diluting the percent of each block that falls inside of the grade domains with the portion of the block that remains outside the domain. This is calculated on a weighted percent basis for each 15 ft x 15 ft x 10 ft block in the model. The portion of the block outside the domains is estimated with the low-grade samples outside of the domains in order to get the grades of the diluted material. If the diluted grade of the block is above cut-off then the full block is included in the mine plan; if the diluted grade is below cut-off then the full block is treated as waste material. Based on reconciliation reports provided by Scorpio Gold, no ore loss has been included in the Mineral Reserve estimate as the reports show a consistent result of the mine producing more gold ounces than is predicted by the resource models.

The mining activities in all the pits will require constant attention to the separation of ore and waste to minimize dilution. The mineralization is generally limited to narrow structures dipping at approximately 20º, which requires proper identification of the ore and waste and efficient and effective loading. The majority of the ore control will rely entirely on the sampling and analysis of blasthole drill cuttings to confirm and define the zones of ore and low-grade mineralization from waste rock. Scorpio Gold ore control personnel will collect an approximately 10 lb sample from each blasthole and deliver it to the mine assay laboratory. Each sample will have a redundant sample ID applied to each sample bag. A tag with the sample ID will be stapled to each sample bag with an identical tag placed inside the bag. In addition, the sample ID will be written on the outside of each sample bag.

The inherent physical characteristics of the zones of mineralization are suited to using a hydraulic backhoe excavator (CAT 390) as the primary loading unit with front-end loaders (CAT 992) as the secondary and waste mining units. A 6.6 yd^3 capacity bucket was sized for the large excavator to separate and load ore and low-grade material. A 16 yd^3 capacity bucket was sized for the frontend loader to load waste. The front-end loader will only be used to load ore in areas where ore control has outlined a large enough zone to minimize dilution. Ore zones will also be blasted and mined on 10 ft levels to control dilution and waste zones will be blasted and mined on 20 ft levels.

16.3.1.4 MINING THROUGH UNDERGROUND WORKINGS

The open pit designs for the Mary, Bunkhouse, and Drinkwater pits are designed in areas that have historically been mined from underground. Scorpio Gold has been mining through these workings in prior operations, and have systems in place so that these areas can be mined in a safe and practical manner.

The historic underground mine stopes initially were open and could measure 150 ft x 70 ft with a vertical extent of 80 ft. Due to past open pit mining activity, the stopes near the current mining surface have been collapsed and filled with blasted material from the bench above. The smaller underground workings such as the ventilation and access infrastructure (drifts, raises and winzes) are not expected to impact open pit operations as the volume of material required to fill these structures is not significant. Scorpio Gold has sufficient knowledge of the location of these underground workings to minimize the potential for mine operational incidents.

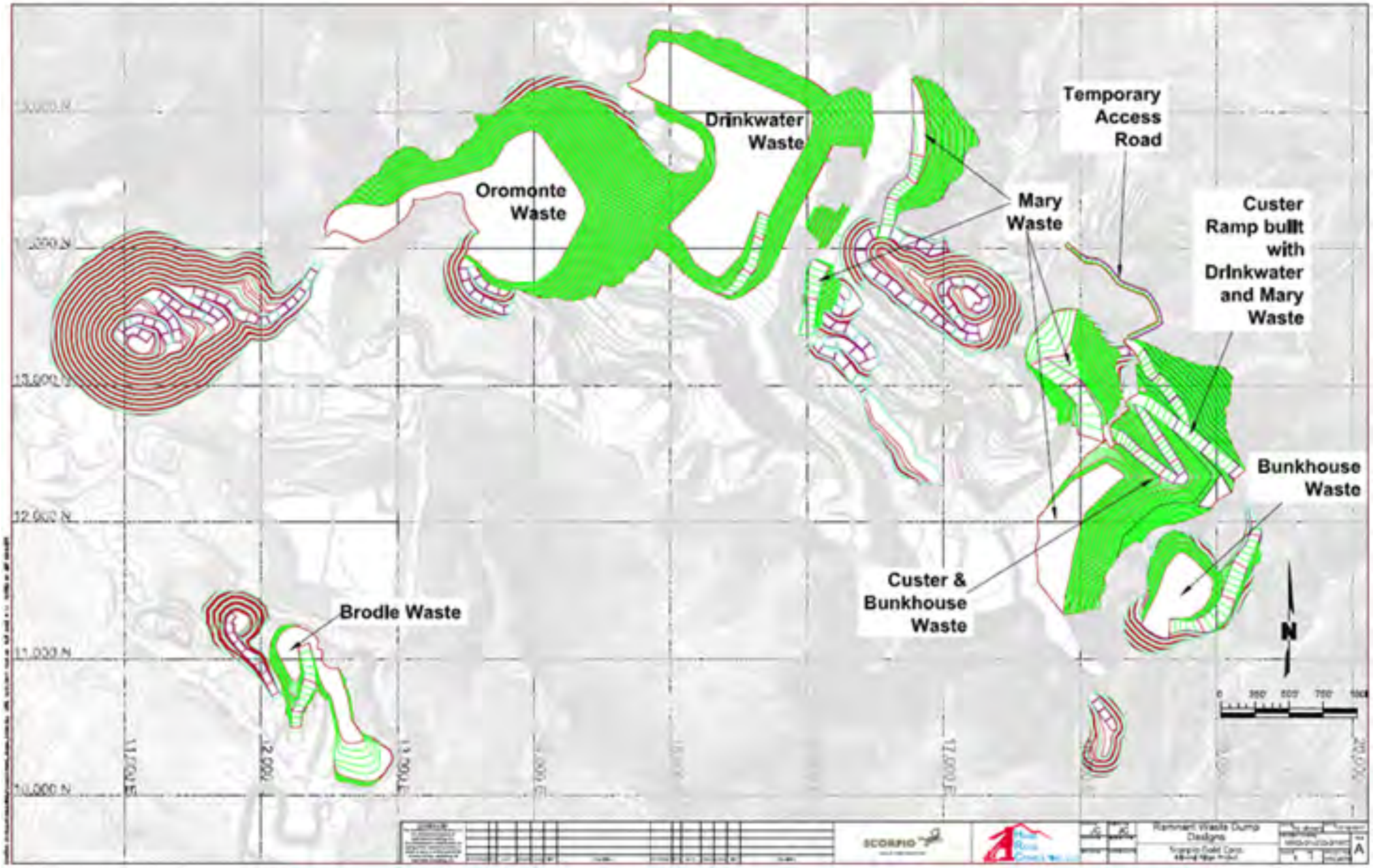
To minimize the impact of the historical underground stopes, blasthole drills will be used to drill a series of probe holes to a depth of 60 ft to confirm the dimensions and locations of the underground stopes. Each probe hole location will be repeatedly drilled by slightly offsetting the previously-drilled location every other bench. This will show how the rock conditions have changed due to mining and blasting activities, and whether the void has been filled or remains open at depth. The excavator will be located on top of the blasted muck providing a safe work area for loading material. If a void is encountered by the excavator while loading haul trucks, it will stop mining until a determination is made as to the size of the void. If warranted, the blasthole drill will drill more probe holes. Once a safe work plan has been established, the void will be backfilled with nearby material, or the area will be coned off while drilling and blasting takes place in the affected area in order to collapse and fill the void. Once the void has been filled, regular mining activities would resume. If blasting is required to fill the void, mining will be relocated to other areas in the pit. If the void is encountered in an ore area, the void will be backfilled with ore grade material. If the void is found in a waste area, it will be backfilled with waste. For safety, the loader will not be allowed to work in areas of known underground workings.

16.3.2 WASTE ROCK STORAGE FACILITY DESIGNS

The WRSFs were designed in order to minimize surface disturbance and backfill mined out pits where future mining is not anticipated. Figure 16.2 shows the final mine layout after all WRSFs have been constructed. The amount and placement of waste from each pit into each WRSF is as follows:

- Mary West Pit: 0.3 Myd^3 waste to Custer access ramp;
- Oromonte Phs1: 0.6 Myd^3 waste to Oromonte WRSF;
- Drinkwater: 0.5 Myd^3 to Custer access ramp and 5.9 Myd^3 to Drinkwater pit, and D1 and D2 WRSFs;
- Custer: 2.4 Myd^3 to D10 WRSF;
- Drinkwater South: 0.8 Myd^3 to Drinkwater pit, and D1 and D2 WRSFs;
- Brodie: 0.6 Myd^3 to Brodie pits;
- Bunkhouse: 1.5 Myd^3 to Custer pit and 1.1 Myd^3 to D10 WRSF;
- Custer South: 0.4 Myd^3 to D10 and D1 and D2 WRSFs;
- Mary–LC: 0.4 Myd^3 to WD6 WRSF, 0.1 Myd^3 to Mary West pit, 2.1 Myd^3 to Bunkhouse pit and 0.4 Myd^3 to WD10 WRSF;
- Oromonte Phase 2: 14.4 Myd^3 to Drinkwater pit.

Figure 16.2: Waste Rock Storage Facility Designs



16.4 PRE-PRODUCTION DEVELOPMENT

The pre-production requirements at the Project are minimal given the presence of mineable mineralization near the bedrock surface. The majority of the haul roads are in place from past mining operations, and only the Drinkwater, Custer and Oromonte Phase 2 pit will require construction of access roads to the top of each area to commence mining.

16.5 PRODUCTION SCHEDULE

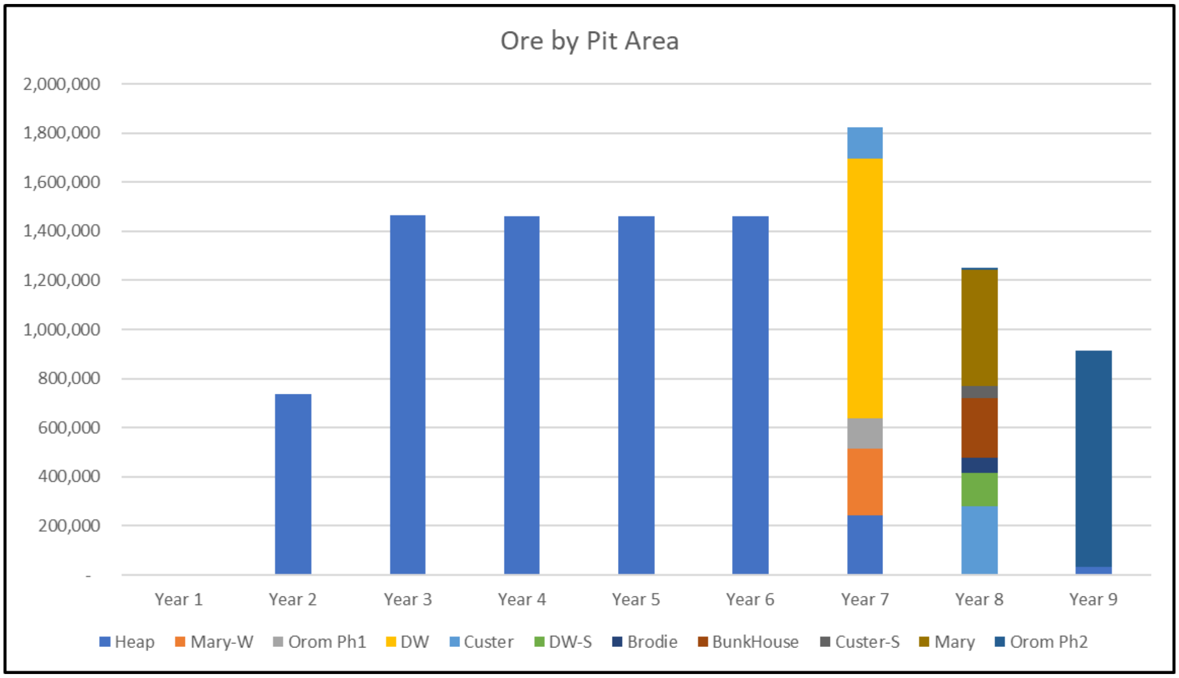
Production of mineralized material from both the heap and remnant pit areas has been evaluated at a nominal rate of 4,000 t/d, which results in a mine life of approximately eight years. Mining is planned on a seven day per week schedule, with two 12 hour shifts per day. During the mining of pit ore, the peak mineralized material and waste production is estimated at 79,000 t/d and an average production rate of 52,400 t/d. An ore stockpile that reaches a peak capacity of 450,000 tons is planned near the crusher and also on the past contractors lay down area. The stockpile is used to supplement mill feed during high stripping periods of the pit phases. The average life of mine stripping ratio is estimated to be 13.6:1 for the open pit remnant material, and 4.79:1 if the heap ore is included in the calculation.

The total tons of ore and waste that will be mined during the life of the project are summarized in Table 16.1. The production schedule by pit phase and year are shown in Figure 16.3 and Figure 16.4.

Table 16.3: Yearly Production Schedule

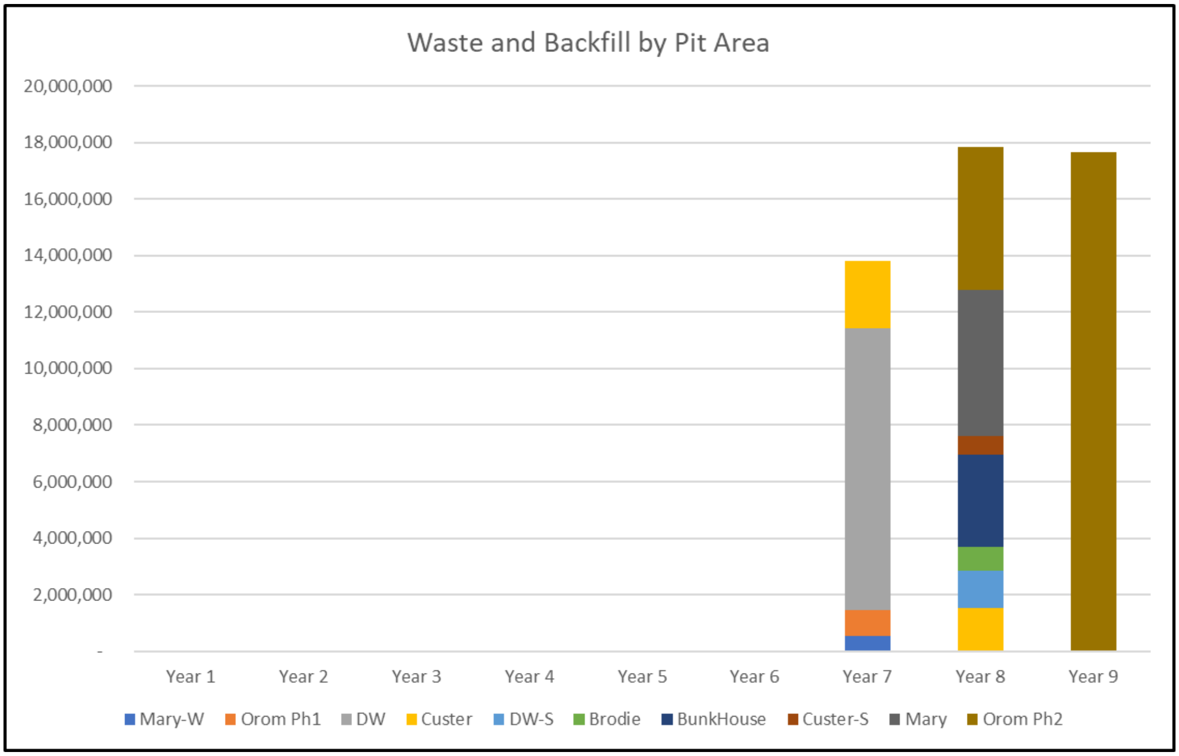
	Year 1 Total	Year 2 Total	Year 3 Total	Year 4 Total	Year 5 Total	Year 6 Total	Year 7 Total	Year 8 Total	Year 9 Total	LOM Year 1 to Year 9
Mine Production										
Pit Ore	0	0	0	0	0	0	1,582	1,249	881	3,712
Pit Grade: Au (opt)	--	--	--	--	--	-	0.037	0.039	0.056	0.042
Heap Ore	0	736	1,464	1,460	1,460	1,460	243	0	32	6,855
Heap Grade: Au (opt)		0.017	0.017	0.017	0.017	0.017	0.017	--	0.017	0.017
Pit Waste – Rock	0	0	0	0	0	0	13,824	17,832	17,659	49,315
Waste Backfill	0	0	0	0	0	0	327	927	0	1,254
Total Tons Mined	**0**	**736**	**1,464**	**1,460**	**1,460**	**1,460**	**15,974**	**20,009**	**18,572**	**61,135**
Other, Stemming, Rehandle etc.	0	0	0	0	0	0	236	646	389	1,271
Total Tons Moved	**0**	**736**	**1,464**	**1,460**	**1,460**	**1,460**	**16,210**	**20,655**	**18,962**	**62,407**
Strip Ratio	0.00	0.00	0.00	0.00	0.00	0.00	7.76	15.02	19.33	4.79
Tons Ore Mined per Day	0.0	0.0	0.0	0.0	0.0	0.0	4.3	3.4	2.4	--
Tons Heap Mined per Day	0.0	2.0	4.0	4.0	4.0	4.0	0.7	0.0	0.1	--
Total Tons Mined per Day	0.0	2.0	4.0	4.0	4.0	4.0	43.8	54.8	50.9	--
Tons to Mill										
Pit Tons	0	0	0	0	0	0	1,221	1,460	1,031	3,712
Pit Au opt	--	--	--	--	--	--	0.037	0.039	0.053	0.042
Heap Tons	0	736	1,464	1,460	1,460	1,460	243	0	32	6,855
Heap Au opt	--	0.017	0.017	0.017	0.017	0.017	0.017	--	0.017	0.017
Total Milled Tons	**0**	**736**	**1,464**	**1,460**	**1,460**	**1,460**	**1,464**	**1,460**	**1,063**	**10,567**
Average Milled Grade (Au, opt)	**--**	**0.017**	**0.017**	**0.017**	**0.017**	**0.017**	**0.034**	**0.039**	**0.052**	**0.026**

Figure 16.3: Yearly Ore Schedule



Note: Figure prepared by MTS, 2017.

Figure 16.4: Yearly Waste Schedule



Note: Figure prepared by MTS, 2017.

16.5.1 PRODUCTION SCHEDULE PARAMETERS

The mine production schedule is based on a seven day per week schedule, with two 12 hour shifts per day. There are four crews planned to cover the rotating schedule. Each 12-hour shift will contain a half hour down for blasting and miscellaneous delays, a half hour for shift start up and shutdown and an hour for lunch and breaks for a total of 10 effective working hours. Table 16.4 shows typical yearly schedule parameters and hours scheduled.

Table 16.4: Mine Schedule Parameters

Parameter	Unit	Value
Crews	--	4
Shifts/day	--	2
Hours/shift	h	12
Lunch, Breaks, etc.	h	1
Blasting, Misc.	h	0.5
Startup and Shutdown	h	0.5
Days/Year	d/a	365
Scheduled Hours/Year	**h/a**	**8,760**

The amount of equipment required to meet the scheduled tonnages is calculated based on the mine schedule, equipment availabilities, usages and haul and loading times for the equipment. Equipment mechanical physical availabilities start at 92% for the 777 trucks and 992 loaders and 915 for the 390 excavtor and production drills. For each 6,800 hours of operation, which is a typical year of production with four operating crews, the mechanical physical availabilities decrease by one percent. The use of availability for all of the equipment is calculated at 83% based on the breaks and down time in the schedule parameters. An additional 85% efficiency factor is applied to all of the equipment for calculating the total units of equipment required. Equipment availability parameters are presented in Table 16.5.

Table 16.5: Equipment Availabilities

	Hours	Physical Availability (%)	Use of Availability (%)	Efficiency (%)
777 Trucks and 992 Loaders	0	92	83	85
	6,800	91	83	85
	13,600	90	83	85
	20,400	89	83	85
	27,200	88	83	85
	34,000	87	83	85
	40,800	86	83	85
	47,600	85	83	85
	54,400	84	83	85
	61,200	83	83	85
	68,000	82	83	85
	74,800	81	83	85
	81,600	80	83	85
390 Excavator and Drills	0	91	83	85
	6,800	90	83	85
	13,600	89	83	85
	20,400	88	83	85
	27,200	87	83	85
	34,000	86	83	85
	40,800	85	83	85
	47,600	84	83	85
	54,400	83	83	85
	61,200	82	83	85
	68,000	81	83	85
	74,800	80	83	85
	81,600	79	83	85

16.5.2 DRILL AND BLAST PARAMETERS

The design parameters used to define drill and blast requirements are based on a 4.5 in blast holes on a 10 ft by 11.5 ft pattern in the mineralized zones and 6.75 in blast holes on a 13 ft by 14 ft pattern in the waste zones. Benches will be blasted and mined on 10 ft levels in the ore zones and 20 ft levels in the waste zones. The benches planned in the mineralized zones are shallower to help in controlling dilution of the ore. Buffer rows and pre-shear are planned to allow for controlled blasting and minimize damage to the highwalls. The number of blast holes and blast hole drills required each month or year is calculated based on the parameters presented in Table 16.6 and used in deriving the operating costs. Two rotary production drills are required for initial production with up to three drills being required as production increases. A smaller track mounted drill is planned for pre-shear drilling, bedrock pioneering and drilling void patterns to collapse the old workings.

Table 16.6: Drill and Blast Parameters

Production & Wall Control Blast Pattern Data		Production Pattern		Wall Control Pattern		
Drilling and Blasting Parameters	Units	Ore Rock	Waste Rock	Buffer	Buffer	Preshear
Tonnage Factor	t/ft^3	0.080	0.080	0.080	0.080	0.080
Blast Pattern Details						
Bench Height	ft	10.00	20.00	20.00	20.00	20.00
Sub Drill	ft	3.00	3.00	3.00	0.00	0.00
Diameter of Hole	in	4.50	6.75	6.75	6.75	4.50
Staggered Pattern Spacing	ft	10.00	13.00	12.00	10.00	6.00
Staggered Pattern burden	ft	11.50	14.00	14.00	12.00	6.00
Drill equivalent square pattern	ft	10.75	13.50	13.00	11.00	6.00
Hole depth	ft	13.00	23.00	23.00	20.00	20.00
Height of stemming or unloaded length	ft	4.50	12.00	15.00	15.00	--
Material Quantity						
Volume Blasted per Hole	ft^3	1,156	3,645	3,380	2,420	720
Tons Blasted per Hole	tons	92	292	270	194	58
Powder Factor						
Percent Emulsion	%	20	20	20	20	20
Percent ANFO	%	80	80	80	80	80
Density of Powder	lb/ft^3	57.43	57.43	57.43	57.43	--
Loading Density	lb/ft	6.34	14.27	14.27	14.27	5.00
Powder per Hole	lb/hole	53.92	157.00	114.18	71.36	5.18
Powder Factor	lb/t	0.583	0.538	0.422	0.369	0.090
Powder Factor	lb/ft^3	0.047	0.043	0.034	0.029	0.007
Drill Productivities						
Penetration Rate	ft/hr	165.00	165.00	165.00	165.00	120.00
Penetration Rate	ft/min	2.75	2.75	2.75	2.75	2.00
Cycle Time Estimate						
Drilling Rime	min	4.73	8.36	8.36	7.27	10.00
Steel Handling Time	min	0.00	0.00	0.00	0.00	0.50
Set-up Time	min	1.75	1.75	1.75	1.75	2.00
Add Steel	min	0.00	0.00	0.00	0.00	2.00
Pull Rods	min	0.50	0.50	0.50	0.50	2.00
Total	**min**	**6.98**	**10.61**	**10.61**	**9.52**	**16.50**
Drilling Factors for Wall Control						
Wall Control Drillholes Required	perimeter blast	--	--	--	--	--
Buffer Holes - 2 Rows	holes/ft	--	0.17	--	--	--
Material to Remove from Production Blast	tons/ft	--	48.00	--	--	--

16.5.3 LOAD AND HAUL PARAMETERS

The design parameters used to define the loading and hauling requirements are shown in Table 16.7. The method of material transport at Scorpio Gold will be open pit mining using two to three 16-yd^3 front-end loaders as the main loading units, and a 6.6-yd^3 excavator to be used for sorting out narrow ore zones. The open pit mineralized material will be loaded into 100-t haul trucks and transported to the crushing site next to the mill. Waste material will be transported to the designated WRSF for each pit. Haulage profiles were created for the mineralized material and waste material from each pit area and were used to generate the truck cycle times, which were then used in the equipment requirement and operating costs calculations.

Table 16.7: Load and Haul Parameters

Loading and Truck Match Calculation	Unit	992 Loader 777	390 Excavator 777
Bucket Capacity (Heaped)	yd^3	16.00	6.60
Bank Material Weight Dry	tons/bcy dry	2.08	2.08
Bank Material Weight Wet	tons/bcy wet	2.13	2.13
Bulk Factor (Swell Factor)	--	1.32	1.32
Loose Material Weight Dry	t/lcy dry	1.57	1.57
Moisture	%	2.5	2.5
Bucket Fill Factor	--	0.93	0.90
Effective Bucket Capacity	yd^3	14.80	5.94
Wet Material Weight (LCM)	wt/lcy	1.61	1.61
Dry Material Weight (LCM)	dt/lcy	1.57	1.57
Tons per Pass	wt	23.86	9.58
Truck Size Capacity (Volume)	yd^3 heaped	78.5	78.5
Truck Size Capacity (Tons)	wt	98.4	98.4
Theoretical Passes (Volume)	passes	5.30	13.22
Theoretical Passes (Tons)	passes	4.12	10.28
Actual Passes	passes	4.0	10.0
Truck Load - Volume (Volume)	yd^3	59.2	59.4
Truck Load - Volume (Tons)	wt	95.4	95.8
Truck Load for Productivity	dt	93.1	93.4
Truck Capacity Utilized (Tons)	% by weight	97.0	97.3
Truck Capacity Utilized (Volume)	% by volume	75.4	75.7
Average Cycle Time	s	50	40
Truck Spot Time	s	45	45
Load Time per Truck	s	245	445
Load time per Truck	min	4.08	7.42
Maximum Productivity	trucks/h	14.7	8.1
In situ Volume per Hour	bcy/h	659.0	364.0
Tons per Hour	dt/h	1,368.1	755.8

16.6 MINING EQUIPMENT

To mine the heap leach pad material, a mixing system is planned to be constructed on the pad. The mixing system will comprise a hopper, a mixing tank, pumps, and piping. To remove ore from the pad, a 10 yd^3 front-end loader will load reclaim leach material into the hopper. Reclaim material within close proximity of the hopper/conveyor system will be pushed with a D8 dozer such that the front-end loader can load the material. A 50 yd^3 scraper will load and haul material that is located further away from the hopper and dump it near the hopper. Table 16.8 lists the mine equipment that will be required for the heap leach mining.

Table 16.8: Heap Production Equipment

Description	Current Units	New Units	Total Units
988K Loader	0	1	1
Cat D8T Dozer	0	1	1
Cat 637K Scraper	0	1	1

For the planned open pit mining operation, the amount of equipment required to meet the scheduled tonnages is calculated based on the mine schedule, equipment availabilities, usages of availability, efficiency factors, and haul and loading times for the equipment.

The mine production equipment is expected to include two to three 16-yd^3 front-end loaders as the main loading units, and a 6.6-yd^3 excavator for sorting out narrow ore zones. In addition, eight to ten 100-t haul trucks will be required to meet the production schedule. Three production drills will also be required to meet the schedule. A pre-shear drill is planned for ore zone drilling, wall control purposes and backup drilling. Table16.9 lists the total mine production equipment requirements.

Table16.9: Pit Production Equipment

Description	Current Units	New Units	Total Units
390F Excavator	0	1	1
992K Loader	0	3	3
DM45 Production Drill	0	3	3
SmartROC T45 PreShear Drill	0	1	1
777G Haul Truck - 100t	0	10	10

Support equipment will consist of one CAT D8 dozer and one D9 dozer. A 14 ft road grader will service the haul roads along with a 9,000-gal water truck. Six mobile light plants will be required for lighting the working areas during night-time production. A maintenance service truck with a mobile crane will be needed for field maintenance and a self-contained fuel lube truck will be needed for infield fueling. The anticipated mine support equipment is listed in Table 16.10.

Table 16.10: Pit Support Equipment

Description	Current Units	New Units	Total Units
14 ft Grader	1	0	1
745C Art. Water Truck (9,000 gal)	0	1	1
D9T CAT Dozer	0	1	1
D8T CAT Dozer	0	1	1
Lube/Fuel Truck	0	1	1
Service Truck	0	1	1
SkidSteer	0	1	1
Pickups Mine G&A	2	2	4
Pickups Drilling	0	1	1
Pickups Blasting	0	1	1
Pickups Maintenance	2	1	3
Pickups Engineering	1	1	2
Pickups Geology	1	1	2
Light Plants	0	6	6
Pressure Washer	1	0	1
Genset	0	1	1
Compressor	0	1	1
Rock Breaker	1	0	1
Dump Truck	1	0	1
Backhoe	1	0	1
Forklift	1	0	1
Welders	3	0	3

16.7 MINE MANPOWER

For years one through six the mine manpower for the heap leach mining is estimated to be eight people, four crews of two people per crew.

The open pit manpower for Years 7 through 9 are shown in Table 16.11 and are estimated to range from 93 to 98 people.

Table 16.11: Open Pit Manpower

	Year 7	Year 8	Year 9
Mining G&A			
Mine Manager	1	1	1
Mine Foreman	4	4	4
Maintenance Superintendent	1	1	1
Total Mining G&A	**6**	**6**	**6**
Drilling and Blasting			
Driller	9	10	6
Blaster	2	2	2
Blaster Helper	1	1	1
Total Drilling and Blasting	**12**	**12**	**12**
Loading			
Excavator/Loader Operator	8	9	9
Total Loading	**8**	**9**	**9**
Hauling			
Truck Driver	33	39	31
Total Haulage	**33**	**39**	**31**
Roads and Dumps			
Dozer Operator	4	4	4
Grader Operator	4	4	4
Utility Operator	4	4	4
Total Roads and Dumps	**12**	**12**	**12**
Mine Maintenance			
Lead Mechanic	2	2	2
Heavy Equipment Mechanic	4	4	8
Mechanic	2	2	4
Welder/Mechanic	1	1	2
Apprentice/Fueler	4	4	4
Planner	1	1	1
Total Mine Maintenance	**14**	**14**	**21**
Total Mine Open Pit Operations	**85**	**92**	**90**
Engineering			
Senior Mining Engineer	1	1	1
Chief Surveyor	1	1	1
Surveyor	1	1	1
Total Engineering	**3**	**3**	**3**
Geology			
Senior Geologist	1	1	1
Ore Control Geologist	4	4	4
Total Geology	**5**	**5**	**5**
Total Mine Engineering and Geology	**8**	**8**	**8**
Total Mine Department	**93**	**100**	**98**

17.0 RECOVERY METHODS

17.1 INTRODUCTION

The proposed processing plant will be conventional and will re-process gold heap leach residues at a rate of 4,000 t/d with an equipment availability of 92% (365 d/a). The processing plant will produce gold-loaded activated carbon from a leaching circuit. Loaded carbon will be shipped off-site for further processing. The mill feed will be supplied from the residual heap material using reclaiming methods as described in the following sections. The tailings from the processing plant will be filtered and deposited back on the vacated area of the lined heap leach pad.

17.2 SUMMARY

The process flowsheet developed for the Mineral Ridge heap leach residues is a combination of conventional comminution using ball mills, and CIL cyanidation to recover gold and silver. The process plant will produce gold-loaded activated carbon from the CIL circuit. The estimated gold and silver recoveries in the CIL circuit are 91% and 24% respectively for the heap leach material, and 93% and 38% for the remnant open pit material (ROM), respectively. The loaded carbon will be shipped off-site to a refinery to recover the gold and silver. Refinery recovery is estimated in 99.4%. The process plant will consist of:

- modified (existing) crushing circuit (ROM only)
- reclaiming area including mixing and holding tanks (heap-leach material only)
- grinding circuit consisting of two parallel ball mills
- pre-leach thickener
- CIL cyanidation
- tailings thickening and filtration.

The overflow of the pre-leach thickener will be recycled as process make-up water. The overflow from the tailings thickener will be recycled as barren cyanide solution. The final tailings filtration cake will be transferred to the heap leach pad, which will be expanded to allow concurrent mining and tailings storage.

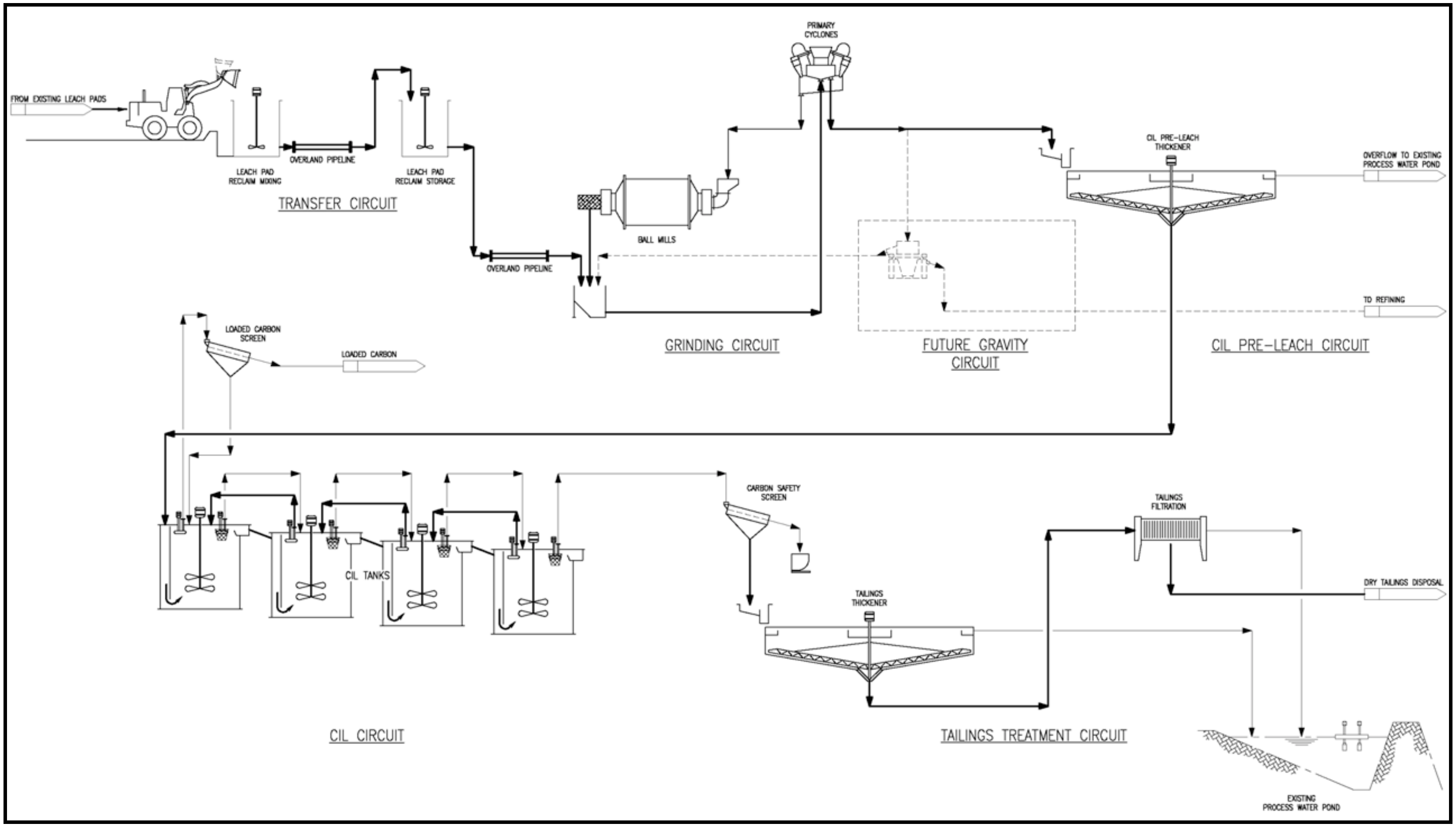
17.3 FLOWSHEET DEVELOPMENT

The process flowsheet was developed based on parameters established from test work conducted mainly from 2014 to 2017. Certain assumptions were made during the development of the process flowsheet which were based on engineering experience from other cyanidation projects with similar ore characteristics. The sizing of the grinding mills was based on the amenability of the reclaimed ore to grinding determined through test programs performed by laboratories. The CIL tank sizing was based on leaching times determined through test work and using scale-up factors.

Various test programs evaluated several options for treating the reclaimed ore of the Mineral Ridge heap leach. Samples showed regular to poor responses to conventional flotation. Although the mineralization responded reasonably well to a gravity concentration process followed by atmospheric leaching of gravity tailings in tanks, direct ore leaching was chosen as the best available alternative to re-process the heap leach residues. Future addition of gravity concentration has been considered in the design. As part of the study, several areas for optimization and simplification were identified in the process plant design, which allowed for the reduction of operational and capital expenditure estimates.

The simplified flowsheet for the proposed process is shown in Figure 17.1.

Figure 17.1: General Process Plant Flowsheet – Mineral Ridge Project



17.4 PLANT DESIGN

17.4.1 MAJOR DESIGN CRITERIA

The process plant is designed to process 4,000 t/d, equivalent to 1,460,000 t/a. The major criteria used in the design are outlined in Table 17.1.

Table 17.1: Major Process Design Criteria

Criteria	Unit	Heap Leach	ROM
Daily Processing Rate	t/d	4,000	
Operating Days per Year	d/a	365	
Operating Schedule	shifts/d	2	
	h/shift	12	
Mill Feed Grade – Average	opt	0.0171	0.04
Metal Recovery - CIL	% gold	91	93
Metal Recovery - CIL	% silver	24	38
Refining Recovery - Au & Ag	%	99.4	
Feed Particle Size, 80% Passing	in	0.14	0.39
Grinding/CIL Availability	%	92	
Milling and CIL Process Rate	t/h	181.2	
Ball Mill Grinding Particle Size, 80% Passing	mesh	200	
Ball Mill Circulating Load	%	300	
Bond Ball Mill Work Index	kWh/t	15.3	
CIL Slurry Feed Density	%	45	
CIL Residence Time	h	36	
Final Tailings Cake Moisture	%	15	

17.4.2 OPERATING SCHEDULE AND AVAILABILITY

The process plant is designed to operate on the basis of two 12-hour shifts per day, 365 d/a. The overall availability for the plant including heap reclaim, grinding, leaching and filtration will be of 92%. These availabilities will allow downtime for scheduled and unscheduled maintenance of the grinding and leaching areas, and potential weather interruptions.

17.5 PROCESS PLANT DESCRIPTION

17.5.1 RECLAIM AND GRINDING AREA

The grinding plant will receive residual material from the heap leaching operation. This material will be reclaimed with a front loader at a feed rate of approximately 181 t/h. The reclaimed material will be fed to a reclaim mixing tank trough a vibrating grizzly that will remove previous heap leach operation trash. The mixing tank will be agitated and process water will be added to form slurry with approximate 55% solids. The slurry will then be pumped to a holding tank (21 ft by 21 ft) with a retention capacity of 60 minutes, and then pumped to the ball mill pump box. This material will have a top size of approximately 0.25 in and a passing 80% under 0.14 in.

The slurry will feed the ball mills pump box at a controlled rate. The ball mill pump box will have approximately 90 seconds of storage capacity. The current design contemplates two ball mills (12.5 ft by 25.5 ft) with a motor of 2,400 hp each. Both mills operate in parallel with a shared pump box for both mills and in closed circuit with a cyclone pack for each mill that will control the grinding circuit product size. Pumps with variable frequency drivers will pump slurry in the pump box to the hydrocyclone packs. Each hydrocyclone pack will have nine cyclones of 10 in diameter with an arrangement of seven operating, and two in standby. The hydrocyclone overflow has a design 80% passing size (P_{80}) of 200 mesh and will be the final grinding circuit product that will be sent to the linear trash screen in the leaching area. The hydrocyclone underflow will feed the ball mills at a circulating load of 300% and a solids content of 77% w/w. The ball mill product will report by gravity to the pump box. The mills are designed to process 2,000 t/d each net, at 92% availability.

17.5.2 LEACHING AREA

From the grinding circuit, the hydrocyclone overflow material will flow by gravity to the trash linear screen, which will prevent any oversized trash from reporting to the CIL circuit and interfering with the interstage screens. The trash linear screen undersize will report by gravity to the pre-leach high-rate thickener (80 ft diameter). Flocculant will be added to aid the settling process. The underflow density of the thickener will be of approximately 60% solids. The thickener underflow will report to a pump box from which the slurry will then be pumped to the leaching circuit. The thickener overflow will be recycled to the process water pond for reuse.

There will be four leaching tanks (50 ft by 52 ft) operating in series with a total capacity of 353,160 ft^3 (10,000 m^3) that will provide a total leaching residence time of 36 hours. The leach feed density will be adjusted by recycling water from the water process pond to operate at 45% solids. Air will be injected into the tanks through spargers aiming to improve oxygen dissolution in slurry during the leaching of gold and silver. It is expected that the slurry will arrive at the CIL circuit at a pH of 10.5 and it will be adjusted as necessary to maintain high alkalinity. Sodium cyanide (NaCN) will be added to the first and third leaching tanks and its addition rate will be controlled based on cyanide analyses. Cyanide concentration in the slurry will be maintained at 0.03 to 0.06 lb/ft^3 (0.5 to 1.0 g/l) sodium cyanide. The slurry will flow by gravity between the tanks. Each tank is equipped with twin impeller agitators to maintain its slurry solids in suspension, one interstage screen to prevent activated carbon from flowing co-current with the slurry, and one carbon advance pump for carbon movement counter-current with respect to the slurry flow. Interconnecting tank launders will be arranged so that any tank in the circuit may be bypassed, while the circuit is continued to operate at a lower residence time and volume. Each CIL tank will contribute nine hours of residence time.

After the leaching process, barren slurry from the final leaching tank will flow to a carbon safety screen, which will prevent the loss of carbon in the instance that the final inter-stage screen has become deficient. The safety screen undersize slurry will report to the CIL tailings thickener feed tank. At the tailings thickener (80 ft diameter high rate thickener), the leaching barren solution will be thickened to produce an underflow product of 55 to 60% w/w solids, to aid with filtration. The thickener underflow will be pumped to plate-and-frame filters pump box. The tailings thickener overflow will be recycled to the process water pond and utilized in the CIL circuit, as required to adjust solids densities.

Fresh or reactivated carbon will be added to the final tank after rinsing with fresh water in the carbon sizing screen. The designed activated carbon concentration in the leaching tanks is 0.94 lb/ft^3 (15 g/l). The carbon will be moved counter–current to the slurry flow by recessed-impeller centrifugal carbon transfer pumps. Dissolved gold and silver in the slurry will be adsorbed onto activated carbon and finally removed from the circuit at the first tank. The removed carbon will feed a loaded carbon screen that will capture loaded carbon in the oversize. Loaded carbon will be bagged and transported to an external facility for final gold and silver recovery, and carbon regeneration and recycling. The loaded carbon screen undersize will be returned to the CIL circuit.

The current operation at MRG is a heap-leach operation, which uses reactivated carbon to adsorb gold from the pregnant leach solution. Most of the existing infrastructure for receiving new carbon, attritioning, sizing, sampling, and shipping the loaded carbon to the external facility will be reusable in the new process.

17.5.3 FILTRATION AREA

The tailings thickener underflow will be pumped to the tailings filter pump box. Slurry from the pump box will then be pumped to the two operating pressure filters with a filtration volume of 360 ft^3 each. Filtrate solution will report to the process water pond recovering. Tailings filter cake at designed 15% moisture will be transported by existing grasshopper stacking conveyors to the heap leach pad. Since the lined pad will be used for depositing the filtered tailings, it has been deemed not necessary to apply cyanide neutralization to the tailings prior to deposition.

17.5.4 FRESH AND PROCESS WATER SUPPLY

The process water balance represents an average operating hour of the process plant. Fresh makeup water will be sourced from an existing well. The reclaimed ore is expected to contain 10% moisture and the final filtered tailings are designed to hold 15% moisture.

A total process water flow rate of 1,774 gpm is estimated to feed the various process units inside the grinding and leaching areas. The process water tank will receive water recycled from process water pond. The process water pond will receive the overflow from the pre-leach thickener, tailings thickener and filtrate solution from tailings filtration. A portion of the water in the process water pond will be recycled as dilution water in the leaching circuit as required. The excess water in the process water pond will be pumped to the process water tank. Fresh make-up water flow rate is estimated at 47.3 gpm and will be distributed for reagents preparation, gland water, filtration units and process water make-up.

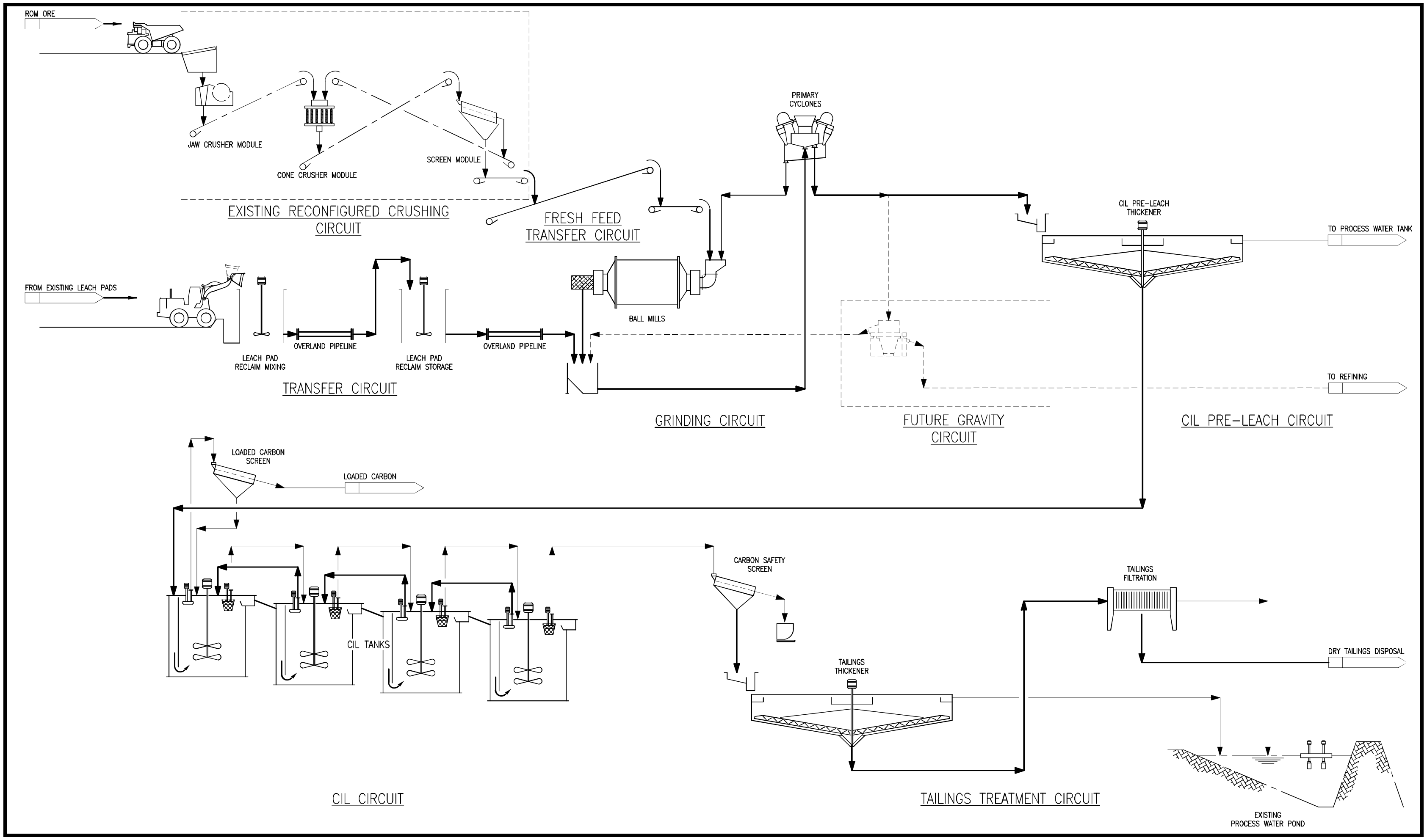
17.6 REMNANT OPEN PIT MATERIAL

The proposed process plant can be modified to treat ROM open pit material. The plant will treat ROM material up to a nominal rate of 4,000 t/d. A crushing facility already existing on the property will be modified to produce a final crushed transfer material to the grinding circuit of 0.39 in (10 mm) T_{80}. In addition, an extra total power of 540 hp (270 hp each ball mill) will be necessary in the grinding circuit to accommodate the increase in the feed size from 0.14 to 0.39 in. The crushing plant will supply crushed material at a rate of 168 tph during one 12-h shift, the heap leach material will be processed during the other shift.

The crushing circuit will consist of a 32 x 48 jaw crusher (existing) with a close side setting (CSS) of 4" that will be fed by a feeder with a maximum rock size of 24 in, which is controlled through the existing grizzly. The jaw crusher product will feed a 400 hp secondary cone crusher with a CSS of 5/8 in (16 mm). The cone crusher will work on a close loop with a double deck screen (7/8 in and 5/8 in apertures) to produce a final product P_{80} of 3/8 in (10 mm). Final crushed product will be transported to the ball mills by a single belt conveyor, and then split to feed the two ball mills equally.

Besides the increment in power to the ball mills, all other main process equipment in the comminution and leaching circuits (cyclones, CIL tanks, thickeners, filters) will remain unchanged. A simplified flowsheet of the modified process scenario to treat ROM ore together with residual heap leach material is presented in Figure 17.2.

Figure 17.2: Simplified Process Flowsheet - Mineral Ridge Project



17.7 COMMENTS ON SECTION 17.0

In the opinion of the QP, the following interpretation and conclusions are appropriate:

- The Project will use conventional mineral processing equipment to produce carbon loaded with gold and silver.
- The process flowsheet is standard, consisting of ore reclaim, grinding, cyanide leaching and recovery in a CIL circuit, and tailings filtration.
- The plant is designed to achieve 4,000 t/d for an annual throughput of 1.46 Mt/a and operate for 365 d/a.
- The main reagent to recover gold and silver will be cyanide in the leaching tanks. Other reagents such as hydrated lime may be used for pH adjustment in the leaching solution.
- The tailings will be filtered and deposited on the existing lined pad. Cyanide neutralization is not performed prior to depositing the tailings on the lined pad.

18.0 PROJECT INFRASTRUCTURE

18.1 INTRODUCTION

The existing infrastructure, constructed and placed in-use at MRG for the purposes of the current open-pit mining operation, will continue to be used for the proposed heap-leach reprocessing Project. The existing infrastructure is in good condition and can support the new process. The existing infrastructure includes a main substation and power distribution, fresh water supply and distribution, waste management, administration buildings, maintenance shop, warehousing, assay laboratory, and a crushing plant. The crushing plant is not required to process the heap-leach material as the material has already been crushed and will only require comminution through grinding. However, the crushing plant will be required to process the ROM material.

The following discusses the available infrastructure items that were reviewed and found suitable to support the operations envisioned in the Project.

18.2 MAIN SUBSTATION

The main substation is a 5-7.5 MVA stepdown transformer, which provides the main power for the operations at MRG. The incoming utility line transmits power at 69 kV, which the main substation steps down to 4,160 V for distribution on the site. The main substation is in good condition and is fit for use for the project.

18.3 POWER DISTRIBUTION

Existing power distribution infrastructure consists of switchgear and overhead transmission line, some of which will be used for the project. An additional overhead line will be installed to provide 4,160 V power to the mill building, where new medium-voltage switchgear will also be installed. The new ball mills will be powered at medium-voltage (4,160 V). Power will be stepped-down to 480 V for low-voltage distribution and use in the remainder of the process. The capital cost related to the new distribution and equipment is included in the CAPEX.

18.4 CRUSHING PLANT

The existing crushing plant utilizes four crushers to produce a product which is then agglomerated and placed on the heap leach pads with the use of grasshopper conveyors. The crushing plant will be modified such that only two of the four crushers are retained: the jaw crusher and the cone crusher. An existing screen will also be utilized to work in closed loop with the cone crusher, to produce the required feed size for the grinding circuit. Existing grasshopper conveyors will be used to transport the crusher material to the ball mills in the new Processing facility. An estimate of the CAPEX related to the modifications required to the crushing circuit and conveying has been included in Section 21.0.

18.5 MAINTENANCE FACILITIES

The existing maintenance workshop, which was constructed in 1996, is a 50 ft by 50 ft pre-engineered building, with bays for large mining equipment and light vehicles. Also, there is an existing 40 ft by 40 ft tire shop. There is an existing 65-t rough-terrain crane, which is in in good operating condition, and will be available for use during construction as well as new operations. The existing maintenance facilities are deemed suitable for use for the envisioned operations.

18.6 FUEL STORAGE

18.6.1 DIESEL

The fuel storage facility on site was built in 2010 and has the capacity to store 25,000 gal of dyed diesel fuel, and 3,000 gal of clear diesel fuel, with a concrete containment around the fuel storage tanks.

18.6.2 GASOLINE

The diesel fuel storage facility described in Section 18.6.1 has storage available for gasoline as well. The available capacity for unleaded gasoline is 7,000 gal.

18.6.3 PROPANE

Propane is stored in two tanks: one adjacent the existing absorption-desorption-recovery (ADR) building (18,250 gal capacity), and second near the maintenance shop (2,000 gal). Propane is used for heating in the winter. The Project adds no new demand for propane; therefore, the existing propane infrastructure is considered suitable as is. Heating in new mill building will be provided by electric heaters.

18.7 ROADS

As Mineral Ridge mine is currently operating, all existing roads are maintained are fit for use for the Project. The mine can be accessed from Nevada State Route NV-265 or via Coyote Rd from Silver Peak, Nevada.

The new mill building, CIL and other process facilities are all near existing roads.

18.8 WATER SUPPLY AND MANAGEMENT

Fresh water is available at a rate of 300-gpm from wells, which is more than what is required for the Project. Mineral Ridge has a 120,000 gal tank and a 1.3 Mgal lined pond for fresh water storage. There are two lined ponds on site which have been used as barren and pregnant solution ponds in the heap-leach process. The Project will continue to use the fresh water ponds, and the barren and pregnant solution ponds for process water storage. Any excess water can be evaporated with the use of existing evaporators.

Sewage from washrooms in the administration building and the maintenance shop is treated in separate septic fields. The Project will continue to use the existing sewage facilities.

18.9 ASSAY LAB

The existing laboratory is equipped for sample preparation and analytical analysis required for an operating gold mine. No additional instruments or analytical capability is required for the CIL process, as considered in the project. The assay lab building is approximately 32 ft by 76 ft, and is attached to the warehouse building.

18.10 WAREHOUSE

The existing warehouse building has sufficient storage space (approximately 32 ft by 40 ft) for operating spare-parts inventory. Larger equipment spares are stored outside or in Conex-containers.

18.11 OFFICES

The existing administration buildings (approximately 60 ft by 63 ft) are considered suitable for use for the project, as they have sufficient capacity and are in good repair.

18.12 CARBON HANDLING

18.12.1 NEW OR REACTIVATED CARBON

New or reactivated carbon is received in the existing ADR building, where it is washed, attritioned, and sized to remove fines. New carbon will be prepared for use in the existing ADR building and will then be transported in bags to the CIL circuit. The existing carbon handling facilities are deemed suitable for use for the project.

18.12.2 LOADED CARBON

The carbon product, which will have gold and silver adsorbed onto its surface, in the CIL process, will be washed and bagged for shipping off-site to Metals Research in Kimberley, Idaho for processing into doré. This is the current practice at the Mineral Ridge heap-leach operation. The loaded carbon is sampled and assayed prior to shipping in the on-site assay lab. Any new equipment required for handling the loaded carbon, such as, the loaded-carbon screen, the loaded carbon hopper, and bag handling and conveying equipment has been accounted for in the CAPEX.

18.13 IT & COMMUNICATIONS

The existing IT and communications infrastructure will not require any upgrades to support the expanded processing facility as envisioned in the process.

18.14 MINING

An ore storage stockpile that reaches a capacity of4 50,000 tons is planned on the open pit mining schedule. Approximately 150,000 tons of this material will be stored near the crusher and the remaining tons will be stored in the flat area previously used as a laydown by the mining contractor. This area is approximately 1,500 feet to the east of the crushing plant.

18.14.1 MINE ROADS

No new roads are envisioned to support the Project, except for a temporary access road that will be required during the mining of the Bunkhouse pit. The access road was shown on Figure 16-2.

18.14.2 WASTE STORAGE FACILITIES

The waste dumps are designed in order to minimize surface disturbance and backfill mined out pits where future mining is not anticipated. Figure 16-2 shows the final mine layout after all waste stockpile have been constructed. The placement of waste from each pit into each waste stockpile is outlined in Section 16.3.2.

18.14.3 EXPLOSIVES STORAGE MAGAZINES

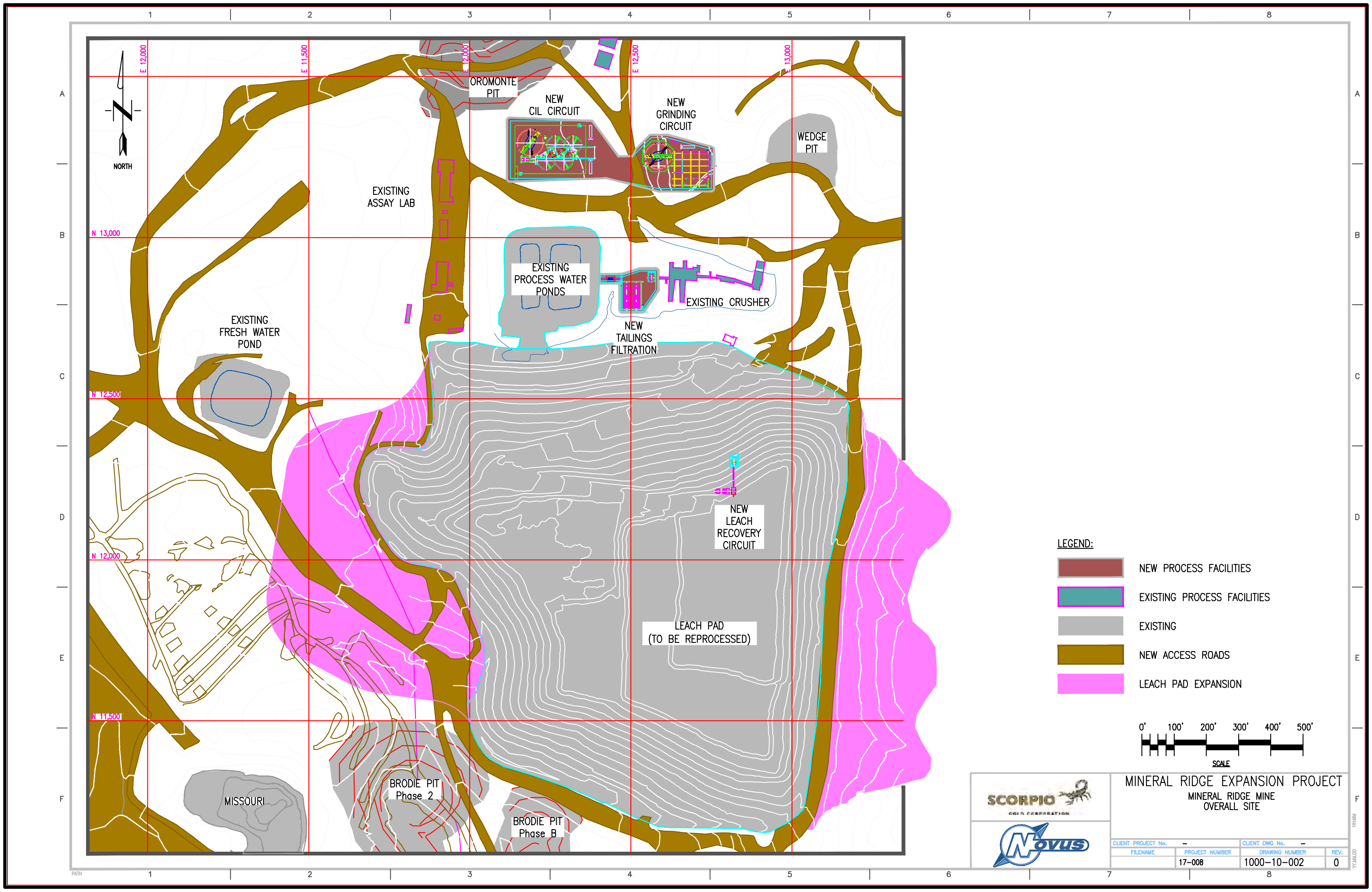
Explosive handling is subject to licensing by the US Bureau of Alcohol Tobacco and Firearms and Homeland Security. The explosives storage magazine currently on site will be used for the purposes of the remnant area open pit mining operation.

18.15 LEACH PAD LINER

The process tailings will be filtered and placed on the lined heap-leach pad, which will be expanded to allow for heap-leach material movement and tailings placement. Costs related to liner expansion have been estimated and included in the overall CAPEX for the Project. The estimated costs are based on using similar design and construction for the expansion areas as was used for the existing lined pad.

Figure 18.1 shows a general arrangement of the infrastructure of the Project area, including new and existing infrastructure items.

Figure 18.1: General Arrangement Drawing



19.0 MARKET STUDIES AND CONTRACTS

19.1 MARKET STUDIES

Gold and silver doré can be readily sold on numerous markets throughout the world and its market price can be ascertained on demand.

19.2 CONTRACTS

Until November 2017, Scorpio Gold produced gold- and silver-bearing carbon on-site at its Mineral Ridge mine, which was shipped to a carbon-stripping facility in Kimberly, Idaho, where doré was produced. The doré was transported to the Royal Canadian Mint's refining facility in Ottawa, Ontario, Canada where it was refined into saleable gold and silver bullion. Gold refining charges were estimated to be $0.78/oz of doré (LaCount, 2017).

Scorpio Gold entered into a LOM gold and silver supply agreement (the Supply Agreement) with Waterton in May 2011 to sell refined gold and silver. Under the terms of the Supply Agreement, Scorpio Gold committed to sell the gold and silver produced from the Mineral Ridge mine to Waterton at a price equal to 99.5% of the lesser of the 30-day trailing average price or the prior day settlement price, less $0.50/oz of gold and $0.01/oz of silver.

The Supply Agreement will apply to all gold produced from the retreatment of the heap leach pad and the remnant areas; however, the 0.50% discount expired May 2016. Scorpio Gold considers that the Supply Agreement is generally in line with industry norms.

While Waterton is required to purchase the doré, should it fail to, then Scorpio Gold could sell the Project production to gold bullion dealers or smelters on a competitive basis at spot prices. This approach is typical of, and consistent with, standard industry practices.

19.3 METAL PRICES

The gold price used in the financial model is based on consensus pricing of US$1250/oz, derived from a study performed in 2017 by MPA Morrison Park Advisors Inc. on behalf of Scorpio Gold.

The silver price is based on consensus pricing from a June 2017 CIBC market forecast study, as shown in Table 19.1. From 2021 onwards, the US$20/oz silver price is used for the remaining mine life.

Table 19.1: Silver Price Forecast in US$/oz

2018	2019	2020	2021
18.67	19.28	19.98	20.00

The QP has reviewed these studies and methodologies, and considers them to be reasonable based on his professional experience.

20.0 ENVIRONMENTAL STUDIES, PERMITTING AND SOCIAL OR COMMUNITY IMPACT

This section of the Feasibility Study and Technical Report discusses environmental and social issues, as they relate to the MRG mine. The MRG mine site has been mined intermittently since 1865, and modern mining has been ongoing since approximately 1981 (MRG 2016). More recent permitting history accompanying ongoing mining of the site commenced with authorization of a Plan of Operations under 43 CFR 3809 regulations and production of an Environmental Assessment (EA) (N65-96-001P) in 1996 at the Mineral Ridge Mine and acquisition of an Exploration Permit at the Mary Drinkwater Site in 1994. These two sites were combined and are referred to herein as the Mineral Ridge Mine. The history of the site, including more history of permitting actions to date, is included in Section 6.0 of this document.

Section 20.0 has been prepared with reliance on information, documents and data provided by MRG, as well project-related documents discovered by NewFields on MRG and regulatory agency websites. Project descriptions and permitting status descriptions were derived primarily from the Custer Plan of Operations Amendment (Rev. December 2017). Guidance for development of this format was provided by MRG.

20.1 ENVIRONMENTAL STUDIES AND ISSUES

In an effort to understand potential environmental issues associated with the Mineral Ridge Mine, a review of the most recent set of environmental studies completed at the Mineral Ridge Mine was undertaken. These studies were completed in support of a Plan of Operations amendment and an EA that was finalized in 2015 (BLM 2015). The EA was prepared to assess the potential impacts of a Proposed Action to mine the Mary LC and other satellite deposits located adjacent to the permitted footprint. The Proposed Action included 285 ac of new disturbance including 54 ac that would not receive growth media and seeding (open pit footprint). In the interest of brevity, selected environmental and social resources studies and impact analyses that were considered in the EA to be present at the mine site and potentially affected by the Proposed Action are discussed in this section.

20.1.1 AIR QUALITY

As part of the air quality study completed in 2015, an Air Quality Impact Assessment was performed that examined emissions from sources of dust and gaseous pollutants at the Mineral Ridge Mine including:

- open pits
- mobile equipment
- milling
- generators
- heap leach facilities
- waste rock disposal facilities
- backfill areas
- wind erosion
- roads.

The air dispersion model AERMOD-ISC 7.9 was used to model criteria pollutants. Results of the modelling indicated that concentrations of criteria pollutants emitted as part of the Proposed Action, when added to current background concentrations, were not expected to exceed National Ambient Air Quality Standards or Nevada State Ambient Air Quality Standards. The model also reviewed greenhouse gases (GHGs) and hazardous air pollutants (HAPs). Annual GHG emissions were calculated as 9.3 million (metric) tonnes per year. The most recent data analysis from the Nevada Division of Environmental Protection (NDEP)-Bureau of Air Pollution Control (BAPC) indicated that the statewide gross GHG emissions from 2010 totalled 45 million (metric) tonnes of carbon dioxide equivalent (CO_2e) and national totals were 6,822 million (metric) tonnes. The modelled emissions from the MRG mine were considered negligible. HAP emissions calculated are 0.927 t/a, well below the NDEP-BAPC thresholds for stationary sources, with mobile sources included (BLM 2015).

20.1.2 CULTURAL RESOURCES

Based on a total of 13 prior cultural resources investigations (ten Class III inventories, six treatment plans for eligible sites, and two eligible site mitigation reports), the entire Project area had been covered by Class III cultural resource surveys. Adverse effects to cultural resources from the proposed action could not be avoided and a treatment plan had to be developed and undertaken to mitigate adverse effects to cultural resources (BLM 2015).

The BLM (US Department of the Interior) Cultural Resource Specialist determined as of the time of the 2015 proposal that no impacts to Native American Cultural concerns had been identified at the Mineral Ridge site and that none were anticipated as part of this Proposed Action.

20.1.3 MIGRATORY BIRDS

The Proposed Action would disturb up to 285 ac of potential migratory bird habitat that would be removed or altered due to land clearing and facility developments; 54 ac of which would remain as an open pit. Impacts to migratory birds would also be extended for one additional year due to the Proposed Action. BLM took into consideration the size of the proposed disturbance, environmental protection measures proposed by MRG, existing disturbance, and the presence of undisturbed migratory bird habitat around the mine site and determined that potential impacts to migratory birds from the Proposed Action were negligible.

20.1.4 HAZARDOUS/SOLID WASTE

Hazardous materials managed at the MRG mine site would not change as a result of the Proposed Action. Adherence to the established Spill Contingency and Emergency Response Plan, and the lack of surface water and other sensitive receptors near the mine site are considered to be sufficient to mitigate potential impacts.

20.1.5 SURFACE AND GROUND WATER

As a result of the Proposed Action, no changes to the water consumption rates at the MRG mine are required. Groundwater in the mine area is at greater depth than the bottoms of the proposed pits; the pits will not encounter groundwater. Geochemical test work conducted on rock to be exposed by the Proposed Action concluded that the waste rock generated would have a net neutralizing effect and would present a low risk for acid generation; however other constituents likely to be mobilized under these conditions would be present in draindown solutions. Management of solution within containment as authorized would continue. Generally, based on the geochemical test results, impacts to surface or groundwater from stockpiled ore are unlikely to occur (BLM 2015).

An additional disturbance of up to 285 ac would result in increased potential for wind and water erosion however, potential impacts would affect ephemeral streams only and would be ultimately mitigated by reclamation. Water draining into the open pits would seasonally pond in the pit bottoms and evaporate (BLM 2015).

20.1.6 GRAZING MANAGEMENT

The Project area is located within the Silver Peak Grazing Allotment. Short term loss of vegetation due to disturbance resulting from mining activities at the MRG mine would result in a similar short-term reduction in forage for cattle. After reclamation has re-established vegetation, grazing levels would be reestablished. Potential impacts to grazing management as a result of the Proposed Action are considered to be negligible.

20.1.7 SOIL

An additional 285 ac of soil (growth media) would be impacted due to disturbance. Soil that can be salvaged will be stockpiled and spread as growth media at closure. Impacts to soil would be temporary and would include loss of soil structure, reduction in biological activity while placed in stockpiles, and exposure to wind and water erosion. The potential impacts to the disturbed areas and stockpiled soil would be reduced by the applicant committed environmental protection measures and Best Management Practices (BMPs). Based on the existing level of activity at the site and environmental protection measures proposed by MRG, impacts to soil is expected to be minimal (BLM 2015).

20.1.8 VISUAL RESOURCES

A visual resource inventory was conducted in 2011 as part of the BLM's Battle Mountain District revised Resource Management Plan. The visual resource inventory concluded some exploration activities included as part of the Proposed Action may be visible from the identified Key Observation Points (KOPs). Conclusions also included the following: mining activities and ancillary facilities would effect changes to the landscape resulting in long-term visual impacts lasting beyond the reclamation and revegetation phases; however, from the listed KOPs, the resulting changes are anticipated to be within the Visual Resource Management (VRM) Class III objective "to partially retain the existing character of the landscape. The level of change to the characteristic landscape should be moderate".

Since activities within the Project Area will be visible from selected KOPs, every attempt would be made to minimize the impact of the Proposed Action through careful location, minimal disturbance, and reclamation activities that provide for a natural, post-mining landscape. With successful reclamation and revegetation of the disturbance area, long-term visual impacts would be minimized and the VRM Class III objectives would be met (BLM 2015).

20.1.9 VEGETATION

An additional 285 ac of vegetation would be removed or altered under the Proposed Action. Impacts to vegetation would last until reclamation efforts are complete and vegetation is established. The proposed pit areas, covering approximately 54 ac, would not be revegetated.

The un-vegetated pit areas may support some sparse vegetation over time on benches. The post-mining condition of the pits would replicate existing barren desert cliff and canyon habitat types present within the proposed Project Area; however, considering the size of the proposed disturbance, the sparse vegetation types currently present, proposed reclamation, and the surrounding undisturbed areas, the loss and alteration of vegetation related to the Proposed Action is not anticipated to have significant effects (BLM 2015).

20.1.10 WILDLIFE

Information pertaining to the use of the Project area by wildlife has been collected from baseline biological reports referenced for previously approved EAs as well as more recent migratory bird surveys and biological surveys conducted during 2011, 2012, 2013, and 2014. These surveys together encompass the Project Area.

Direct impacts to wildlife from the Proposed Action could involve the taking of small mammals during land clearing activities. Wildlife protection measures including adherence to speed limits and construction of the power line and communication facilities according to Avian Power Line Interaction Committee standards would minimize impacts to wildlife including special status species.

Indirect impacts to wildlife would include removal or alteration of 285 ac of potential habitat. This impact would persist until reclamation activities are complete, and vegetation has been re-established. Approximately 54 ac would remain un-vegetated and would retain open pit features. The pit walls would constitute a long-term loss of habitat, although some species may eventually find the cliff-like pit walls suitable habitat. Impacts to wildlife related to habitat loss would be negligible given the small size of the disturbance area within undisturbed adjacent areas. Some wildlife species would benefit by the installation of the guzzlers and subsequent increased availability of water.

20.1.11 WILD HORSES AND BURROS

The Project Area is located within the Silver Peak Herd Management Area (HMA) which encompasses approximately 242,455 ac. The Appropriate Management Level is set at six burros and zero wild horses. With exception of the relatively flat eastern and southeastern flanks of Fish Lake Valley, the HMA provides poor habitat for wild horses and burros due to sharp changes in elevation and relative lack of palatable grasses and browse. Due in large part to the poor habitat, wild horse and burro populations that inhabit the HMA make little or no use of the Project Area. The nearest sighting of wild horses and burros to the Project Area during the last five years of population and monitoring flights was in excess of eight miles. Due to the lack of documented use of the Project area by wild horses and burros, impact to these species would be negligible.

20.1.12 ENVIRONMENTAL ISSUES

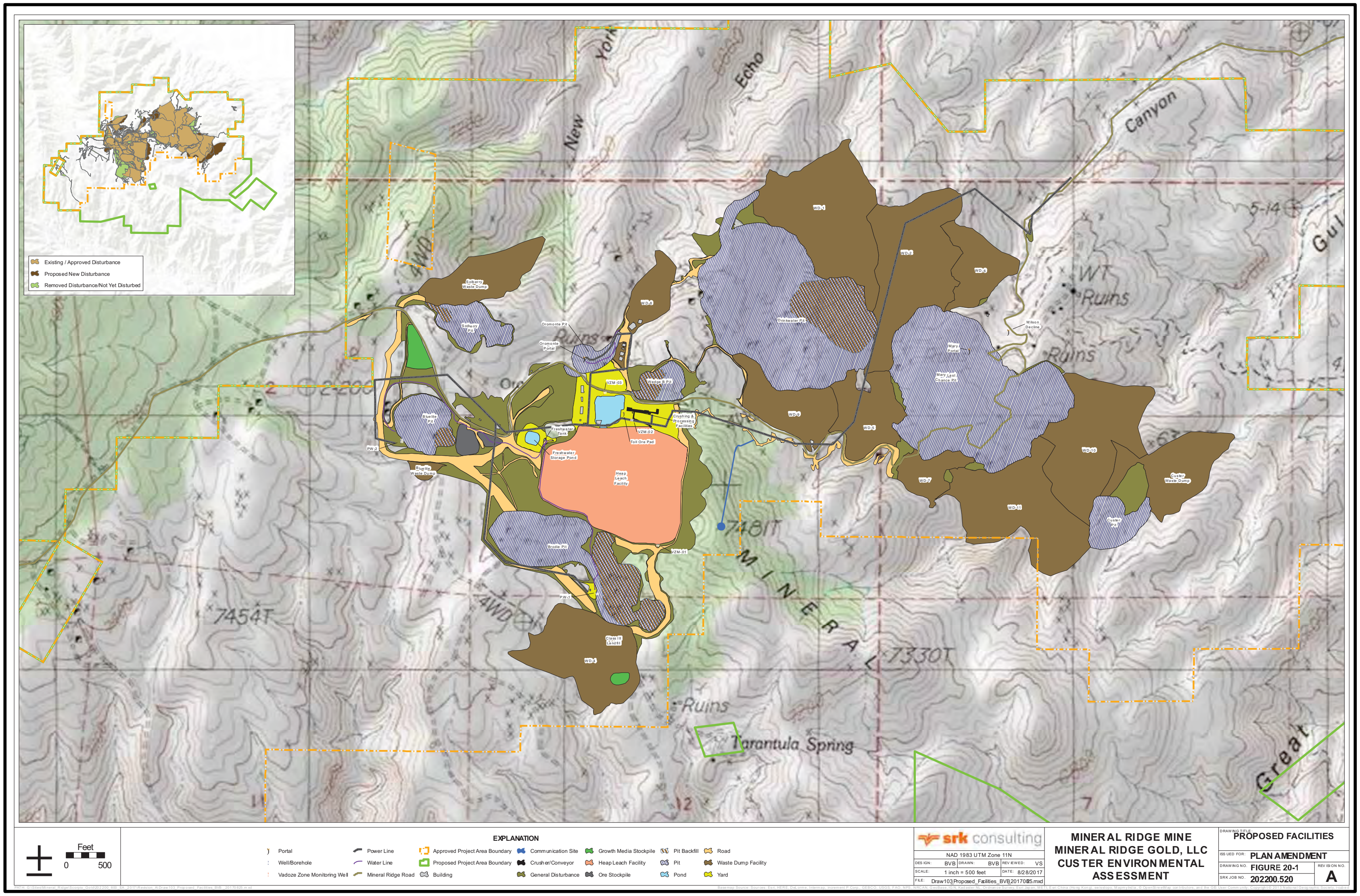
As noted in the introduction to this section, review of environmental baseline study documentations and affected environment sections of documents prepared for the MRG mine generally has not revealed any environmental or sociological issues that could, in and of themselves, create concerns that could result in materially affecting the proponents' ability to extract mineral reserves. Where there is potential concern, the resource has been amenable to reasonably easy-to-execute mitigations.

20.2 ENVIRONMENTAL MANAGEMENT PLANS

20.2.1 WASTE ROCK DISPOSAL/GEOCHEMICAL MONITORING

Waste rock produced by mining operations at the MRG mine is placed in waste rock disposal areas, used as backfill in the underground workings, and utilized for the construction of haul roads, parking areas, storage area pads, building foundations, and other structures requiring rock foundations. Authorized waste rock disposal areas are shown in Figure 20.1.

Figure 20.1: MRG Mine Proposed Facilities



Authorized tonnages and actual loading as of 2015 are summarized in Table 20.1. As of 2015, four waste rock disposal areas were in use at the MRG mine, WD-2, WD-6, WD-10, and WD-11. Waste rock disposal areas WD-1, WD-5, WD-7 and WD-8 have been loaded to the maximum capacity allowed by past agency authorizations. MRG prepared proposals to increase the capacity of WD-2, WD-4, WD-6, WD-9, WD-10, and WD-11. In addition, MRG has proposed to alter the footprints of WD-1, WD-5, and WD-7; and to add two new waste rock disposal areas, the Bluelite and the Solberry.

The Bluelite and WD-4 waste rock dumps are generally constructed in 40-ft lifts where practical. The remaining waste rock disposal facilities are constructed by end-dumping over the face with a maximum face height of approximately 390 ft.

Waste rock disposal areas are designed and constructed with maximum reclamation slopes of 2.5H:1.0V (WD-1, WD-2, WD-4, WD-5, WD-7, WD-8, WD-9, WD-10, WD-11, Bluelite and Solberry) (horizontal to vertical) with the exception of the upper portion of WD-5. The upper portion of WD-5, built by former operators, has an as-built slope of between 1.3H and 1.5H:1.0V. The natural slope the waste rock dump was built on has a slope of 2.0H:1.0V which makes it impracticable to reclaim this portion of the dump since the heavy equipment used for contouring has trouble operating on slopes greater than 2.0H:1.0V and the underlying natural slope is primarily solid rock. The lower portion of WD-5 will be reclaimed to a final slope of 2.5H:1.0V (MRG 2016).

Waste rock disposal areas are constructed using best practices for control of surface water run-on and runoff to manage flow, control erosion, and control sedimentation.

Table 20.1: Waste Rock Disposal Areas and Capacities

Waste Rock Disposal Area	Existing Tonnage[1] (t)	Authorized Tonnage (t)
WD-1	5,870,400	5,870,400
WD-2	9,907,000	9,951,000
WD-4[2]	2,080,000	3,810,400
WD-5	3,133,400	3,133,400
WD-6	1,540,000	2,900,000
WD-7	805,300	805,300
WD-8	286,600	286,600
WD-9	1,595,000	1,780,100
WD-10	7,116,000	12,400,000
WD-11	3,135,000	3,290,000
Bluelite Waste Dump	110,000	3,600,000
Solberry Waste Dump	775,000	1,310,000
Total[2]	**36,353,700**	**49,136,800**

Notes: [1]*Existing Tonnage as of the end of December 2015 (MRG 2016)*
[2]*In 2012 MRG hauled 69,100 t of run-of-mine material from leach pad to WD-4.*

A waste rock disposal area stability analysis has been updated by MRG with the following summarized results:

- 2.5H:1V Rock Disposal Area Slopes:
  - Static conditions, block failure factor of safety (FOS) = 2.05;
  - Seismic loading, block failure FOS = 1.48;
  - Static conditions, circular failure FOS = 1.90; and
  - Seismic loading, circular failure FOS = 1.36.
- 2.0H:1V Rock Disposal Area Slopes:
  - Static conditions, block failure FOS = 1.73;
  - Seismic loading, block failure FOS = 1.31;
  - Static conditions, circular failure FOS = 1.52; and
  - Seismic loading, circular failure FOS = 1.13.

Long-term stability of the waste rock disposal areas will be enhanced by planned reclamation of the sites. The crests of each lift and bench on the waste disposal piles will be dozed down to create a more rounded profile, thus reducing the potential for slope failure. A more detailed discussion of planned reclamation of the waste disposal areas is included in Section 20.5.

20.2.1.1 WASTE ROCK GEOCHEMISTRY

A 2013 waste rock and ore geochemical characterization program (SRK 2013) included samples from the Drinkwater, Mary, and Mary LC deposits that represent the four main geologic units located within the MRG mine including:

- Igneous Intrusive Complex – pegmatites, alaskite interbedded with quartz, granodiorite and undifferentiated mafic intrusives;
- Wyman Formation – interbedded units of metamorphosed sedimentary rocks including phyllites, schists and calc-silicates in addition to limestone. For the characterization program, individual lithologies identified for this main rock unit include limestone (undifferentiated), Mary limestone, metasediments and calc-silicates;
- Reed Dolomite – tan colored dolomite unit that occurs as an erosional remnant in the area. This lithologic type constitutes a minor portion of the waste rock that will be mined from the project; and
- Deep Springs Formation – grey micritic limestone commonly cross-cut by calcite veining. As with the Reed Dolomite, this unit only occurs as a remnant and will comprise a small percentage of the material that will be mined as part of the project.

Ongoing geochemical characterization of rock placed in unlined waste rock disposal areas is critical to responsible waste rock facility management. As part of the approved waste rock monitoring program, samples are collected monthly for the two main lithologies (Alaskite and

Wyman Formation). Samples are composited by material type and forwarded to a Nevada-certified laboratory for analysis according to the following methods:

- Acid Base Accounting (ABA) using the Nevada Modified Sobek method with sulfur speciation by hot water, hydrochloric acid, and nitric acid extraction; and
- Nevada ABA using the Nevada Modified Sobek method with sulfur speciation by hot water, hydrochloric acid, and nitric acid extraction; Meteoric Water Mobility Procedure ASTM E-2242-02) with laboratory analysis of the leachate for Nevada Profile I constituents.

As required by MRG's Water Pollution Control Permit (WPCP) (WPCP #NEV0096106), if static test results indicate potential for acid generation with neutralizing potential ratio values less than 1.2, NDEP will be notified in writing, and kinetic testing will be initiated within ten days. If required, kinetic testing will consist of the standard humidity cell test procedure designed to simulate water-rock interactions (ASTM D-5744-96). If kinetic testing results indicate acid generation conditions exist, then methods for managing the potentially acid generating (PAG) materials and the anticipated impact of acid generation on final stabilization of components affected will be submitted to NDEP within 30 days.

A geochemical characterization study was completed by SRK Consulting US, Inc. to assess waste rock anticipated to be generated from upcoming proposed expansions (SRK 2014a). In summary, rock units that will be encountered in the proposed Oromonte Pit, Oromonte Underground, Custer Pit, the Drinkwater Highwall Pushback, and Mary/LC pit expansion areas are geologically the same as the units in the authorized mine areas. Furthermore, multi-element data confirms rock units that will be encountered in the proposed expansion areas are also geochemically similar to waste rock in the dumps currently existing at the mine site, i.e. they are net neutralizing and present a low risk for acid rock drainage and metals leaching. Therefore, the existing geochemical dataset (SRK 2013c and 2014) is representative of future pit and underground expansions.

The 2016 characterization program indicated that Oromonte Underground waste rock has a slightly higher potential for acid generation due to higher overall total sulfur content; however, using total sulfur from multi-element analysis to calculate acid potential is a conservative approach, and the potential for waste rock from the Oromonte Underground to generate acid is still considered unlikely. Comparable multi-element data, coupled with the low reactivity of the waste rock associated with the MRG mine, indicates additional targeted geochemical testing of waste rock from expansion areas may not be necessary. The low potential for acid production issues with the Oromonte Underground waste rock and anticipated non-reactive nature of the remaining waste rock from the site will be confirmed by ongoing waste rock monitoring conducted on a quarterly basis pursuant to requirements in WPCP NEV0096106 (MRG 2016). Geochemical monitoring of the waste rock is also discussed in Section 20.2.2.2.

20.2.2 OTHER MANAGEMENT PLANS/MONITORING

MRG has committed to execution of a group of environmental management plans and associated protection measures as a means of avoiding or otherwise minimizing environmental impacts to a variety of resources in the Project area. These efforts are discussed in the following sections.

20.2.2.1 AIR QUALITY

The Class II Air Quality Operating Permit (Permit No. AP1041-2733) currently in effect at the MRG mine site was last revised in February of 2015. This permit applies primarily to fugitive dust and point sources at the site as well as a small number of stationary gaseous emissions sources. Dust emissions are controlled or minimized via implementation of BMPs at the site including gravel surfacing of roads, road watering, and enforcement of vehicle and equipment speed limits. Surface binders are also used on roads near sensitive receptors. Power plants and mobile equipment are maintained to ensure minimization of combustion byproduct emissions.

AIR QUALITY MONITORING

No currently-imposed ambient air monitoring requirements are currently ongoing at the MRG mine (MRG 2016).

20.2.2.2 WATER MANAGEMENT

Surface water quality management at the MRG site is generally a function of monitoring of springs and observance of BMPs as they relate to construction of infrastructure including roads, leach pads, waste rock dumps, and other components of the mine. Roads are constructed during dry periods and steep slopes are avoided to the extent possible. Roads are bermed for safety reasons as well as to manage runoff water. BMPs to control erosion and discharge of sediment from roads and other structures are utilized. Run-on water is diverted away from disturbed areas and returned to natural drainages. Diversion structures are used at the waste rock dumps and around the heap leach pad to control flow and manage erosion. Run-off from disturbance areas is collected using berms and directed to stormwater management ponds prior to discharge.

Spills of pollutants are managed per the *Spill Contingency and Emergency Response Plan* (Plan) (MRG Rev. 2015). This Plan has been revised to include requirements of Nevada Administrative Code (NAC) (NAC 445A.398 (4)) which requires that the Plan: 1. Identifies potential failures in the fluid management system that could result in releases of pollutants and describes actions required in case of such a failure and, 2. Is designed to minimize environmental impact resulting from releases of process fluids. The Plan discusses the following topics:

- Spill prevention;
- Emergency procedures and cleanup actions to be taken;
- Notification requirements;

- Releases of cyanide solution either due to spills or leaks;
- Releases of hydrocarbons or ethylene glycol;
- Injuries and correct response; and
- Fires and explosions.

WATER AND RELATED MONITORING

Water monitoring has been ongoing at the MRG site and will continue through operations and into closure. MRG prepared a Water Monitoring Plan in support of the WPCP NEV0096106 which was prepared to respond to requirements in NAC 445A.398 (3).

Six drainages within a one-mile radius of the MRG mine site provide intermittent surface water flow, consisting primarily of ephemeral stream flows from snowmelt and storm events. These drainages are Great Gulch, Custer Gulch, Echo Canyon, Eagle Canyon, Eagle Nest Canyon and New York Canyon. No jurisdictional waters of the U.S. as defined under Section 404 of the Clean Water Act are present within the area affected by the current plan amendment being considered by the BLM (MRG 2016). Two springs are located within the one-mile radius, Tarantula Springs and Borgo Springs (MRG 2013). These springs are monitored twice per month for flow and wildlife use; and are sampled annually.

Ongoing monitoring at the MRG mine site is conducted according to the commitments in the Table 20.2:

Table 20.2: Monitoring Locations, Parameters, and Frequency

Location	Parameter	Frequency
Water Supply (PW-1 and PW-2)	Profile I	Annually
Leach Pad Leak Detection Sumps (LD-1 though LD-7)	Average daily accumulation in gal/d	Weekly
Pregnant and Barren Pond Leak Detection Systems (PPLD and BPLD)	Average daily accumulation in gal/d	Weekly
Pregnant and Barren Leach Solutions (PLS and BLS)	Profile II	Semi-annually (1st and 3rd Quarter)
Vadose Zone Monitoring Wells (VZM-1, VZM-2, and VZM-3	Profile I and volume (gal)	Quarterly if solution is present
Waste Rock Generated During the Quarter	Meteoric Water Mobility Procedure, Profile I, and acid generating potential/ acid neutralizing potential	Quarterly

Samples collected as described in Table 20.1 are analyzed for Profile I and Profile II analytical parameters, per NDEP analyte lists included on forms 0090 and 0190, (2009). All analyses are conducted for dissolved fraction of each of the analytes.

PRODUCTION WELLS

MRG's production wells, PW-1 and PW-2 are sampled annually and analyzed for NDEP Profile I constituents.

LEACH PAD

Each of the seven cells within the leach pad has a dedicated leak detection system between the primary and secondary liners. MRG inspects leak detection systems daily and determines presence/absence of flow and volume. MRG's WPCP permit stipulates the leak detection flows cannot exceed 20 gal/d over the current quarter and 10 gal/d averaged over the year.

PROCESS SOLUTION

Pregnant and barren cyanide solution samples are collected semi-annually from the processing ponds and analyzed for NDEP Profile II parameters.

WASTE ROCK CHARACTERIZATION

WPCP NEV096106 stipulates that waste rock from the mining operation be monitored on a quarterly basis for acid generating potential, acid neutralizing potential and meteoric water mobility procedures (NDEP Profile II). This allows an ongoing examination of the waste rock for acid generation potential. If acid generation potential is noted, NDEP is notified and kinetic testing initiated. If kinetic testing indicates acid generation potential, a plan to contain the rock at issue and a review of final stabilization procedures will be performed.

VADOSE ZONE MONITORING

Vadose zone wells located downgradient from the leach pad are monitored quarterly for presence/absence of water. If water is detected in these normally dry wells, it will be tested for NDEP Profile I parameters.

STORMWATER MONITORING

MRG will continue to perform general visual inspections of structural stormwater controls after storm events. Inspections will include the fluid management system including conveyances, disturbed areas, condition of BMPs, and containment and storage areas.

INSPECTION/MAINTENANCE PROGRAMS

Elements of the fluid management system are inspected on a regular basis, including:

- Process pond and pad liners – daily;
- Process plant and ancillary facilities – daily;
- Secondary containment and sumps – regular basis; and
- Stormwater diversions and other elements of the stormwater system – monthly;

The inspection program includes a requirement to perform maintenance when damage is discovered. Inspections are documented and records maintained.

As required by the WPCP permit, results of the monitoring and analytical testing described above is reported to the NDEP on a quarterly and annual basis. Reports contain:

- Analytical results of water and solution testing;
- Analytical results of waste rock monitoring;
- Any non-compliance with facets of the WPCP; and
- Leak detection flows and analysis (if applicable) (MRG 2013).

20.2.2.3 CULTURAL RESOURCES

MRG adheres to a policy of avoidance for prevention of effects to historic properties or unevaluated cultural resources. If cultural artifacts or historic items are discovered during construction or operations, work is stopped and notifications made to the appropriate agencies. If avoidance is possible, a buffer area is defined and work is resumed. If the area cannot be avoided without adverse effects to the resource, MRG has put in place a Programmatic Agreement (PA) in effect between MRG, the BLM (Tonopah Field Office) and the Nevada State Historic Preservation Office. The PA defines stipulations for development of treatment plans, data recovery, documentation and report preparation. Depending on eligibility of the site for listing on the National Register of Historic Properties as determined by work completed under the PA, MRG may be required to mitigate the site prior to resumption of work (MRG 2016).

20.2.2.4 WILDLIFE AND VEGETATION

Minimization of impacts to wildlife and vegetation is accomplished at the MRG mine primarily by minimization of new surface disturbance to the extent possible. Based on results of baseline surveys completed at the site, MRG either avoids or implements measures to protect special status vegetation or wildlife species and critical habitat from impacts resulting from mine disturbances.

MRG is sensitive to the timing of surface disturbing activities and potential impacts to nesting birds during the spring and summer breeding and fledging season. If disturbance activities must be scheduled during this time, MRG carries out surveys for active nests in the proposed areas immediately prior to clearing activities in accordance with the Migratory Bird Treaty Act (MBTA).

MRG works in conjunction with the BLM and the Nevada Department of Wildlife (NDOW) to ensure mine construction and operations activities are in compliance with requirements under the Bald and Golden Eagle Protection Act (16 USC. 668-688d). This Act prohibits the take or disturbance of an eagle that may cause injury, decrease in its productivity or nest abandonment. MRG’s construction, operations, and reclamation planning includes measures to protect eagles and their nesting areas by means of avoidance. Avoidance is accomplished by establishment of buffer zones in conjunction with NDOW and the BLM (MRG 2016).

MRG has initiated cooperative efforts with BLM and NDOW to minimize direct impacts to bats in the project area by preventing access by bats into historic mine workings that would be disturbed by mining prior to the start of mining activities. Thirty-one sites have been excluded and permanently closed. Seven sites have been deferred for closure until reclamation is undertaken or until deemed necessary. To account for the direct loss of bat habitat as a result of mine expansion activities, suitable bat habitat outside of a one-half mile buffer around the planned disturbance area will be protected as potential mitigation sites (MRG 2016).

In March 2016, two bighorn sheep guzzlers were installed outside of the disturbance area as a mitigation measure agreed upon during a previous plan amendment. The guzzlers provide an alternative water source for bighorn sheep that were utilizing the truck shop filling station overflow as a water supply; and to aid in extending habitat availability (MRG 2016).

MRG's solution pond is fenced with an eight-foot high chain-link fence to limit access into the pond by terrestrial wildlife. The pond is also covered by bird-balls to minimize or preclude use by waterfowl. An eight-foot high chain-link fence has also been installed around the electrical sub-station. Other protections for wildlife (and livestock) include a project-related (on-site) speed limit of 25-miles per hour to protect wildlife.

WILDLIFE AND VEGETATION MONITORING

Daily inspections of facilities, including perimeter fences around ponds and other facilities, will include visual inspections for wildlife mortality.

Periodic monitoring for the presence of invasive and non-native vegetation species will be conducted for a period no shorter than the LOM reclamation or until bond release. If the presence of invasive noxious weeds is noted, appropriate weed control procedures will be developed in consultation with BLM personnel and will be performed in compliance with the appropriate BLM guidance and applicable laws and regulations (MRG 2016).

20.2.2.5 MATERIALS HANDLING AND WASTE MANAGEMENT

The MRG mine uses both hazardous and non-hazardous materials and reagents as part of operations at the site. The site Emergency Response Plan mandates that hazardous materials (including waste) are stored, handled, and disposed of in accordance with federal, state, and local regulations; and includes sections that deal with spill response. Non-fuel hazardous substances are used primarily at the process area and in the laboratory. Sodium cyanide, sodium hydroxide, nitric acid, and antiscalants are kept in storage locations with secondary containment adjacent to the processing plant. After these reagents are mixed to create process solution, this solution is fully contained within the fluid management system or is evaporated. Cyanide solution from the laboratory is hauled to the heap leach facility process pond for disposal, and laboratory acid solutions are neutralized prior to disposal (BLM 2015). FA procedures conducted at the laboratory require use of lead which is stored at the laboratory. Diesel, gasoline, and oil storage tanks are above ground with secondary containment to reduce the potential for releases into the environment.

Non-hazardous solid waste is disposed of in a Class III landfill located within WD-5 as shown on Figure 20.1. Petroleum-contaminated soil is shipped off site to a licensed disposal facility. Lead in laboratory wastes is shipped off site as a hazardous waste. Transportation of hazardous materials is conducted in accordance with US Department of Transportation and State of Nevada requirements (MRG 2016).

20.2.2.6 VISUALS

In an effort to minimize impacts to the visual landscape, MRG strives to reduce the affected footprint when planning and executing new developments at the MRG mine. Likewise, if a project can be sited in such a manner to reduce visual effects on potential receptors, this option will be taken under review.

To minimize effects from lighting necessary to maintaining a safe nighttime workplace, MRG will utilize hooded stationary lights and light plants to minimize impacts to the night sky. Lighting will be directed onto the working areas only and away from adjacent areas not in use, with safety and proper lighting of the active work areas being the primary goal. Lighting fixtures will be shielded as appropriate.

20.3 PERMITTING REQUIREMENTS/STATUS

20.3.1 PERMIT REQUIREMENTS

The MRG mine is located in part on public land administered by the BLM (Tonopah Field Office) and on private land controlled by MRG. BLM is the federal land management agency responsible for administration of surface mining regulations (43 CFR 3809) and determining compliance. BLM must ensure their decision regarding the project is in compliance with the NEPA. BLM works in conjunction with State of Nevada agencies including the NDEP- Bureau of Mining Regulation and Reclamation (BMRR), Nevada Division of Water Resources (NDWR), and the NDOW under a memorandum of understanding to assess and authorize proposed mining actions related to projects on both public and private lands. These State agencies issue substantive permits to the Mine under various state regulations. A list of permits and approvals required of mine operators in Nevada by both state and Federal agencies along with numbers/designations for permits held by MRG at the MRG mine, and a description of the current status of each is presented in Table 20.3.

Table 20.3: Required Permits to Operate a Mine in Nevada

Agency	Permit Name	Permit Number	Permit Status / Changes Needed
Nevada Division of Environmental Protection			
Bureau of Mining Regulation and Reclamation	Water Pollution Control Permit Reclamation Permit (Mining and Exploration) Reclamation Permit (Exploration)	NEV0096106 No. 0103 No. 0034	#0034 combined with permit #0103 on 1/11/12
Bureau of Air Pollution Control	Class II Air Quality Operating Permit	AP1041-2733	Permit revision approved 2/8/2015
	De Minimis Designation	FIN NO. A0398 –Tier 3 Permit	Updated 4/25/13 Valid until amended
Bureau of Waste Management	Solid Waste Permit	SW1770	Approved 4/24/2015 Expires 4/24/2020
	Hazardous Waste Permit	EPA LQG #NVR000079988	Does not expire
Bureau of Water Pollution Control	Onsite Sewage Disposal System General Permit	GNEVOSDS509L-0015	Approved 9/10/2020 valid for life of project
Bureau of Safe Drinking Water	Potable Water Permit	Application in Process	Application submitted as of PoO 2016
Department of Public Safety	Hazardous Materials Permit	55390	Expired 2/28/2017 Must be renewed annually
Nevada Division of Water Resources			
State Engineer	Permit to Appropriate Water	Nos. 60034,60036,82547	60034,60036; extensions filed by 5/10/16 82547; extensions filed by 5/29/16
Division of Dam Safety	Permit to Construct Dam	Notification only	Freshwater and Process Impoundments did not meet permitting criteria
Nevada Department of Wildlife			
	Industrial Artificial Pond Permit	S-32930	Renewal application filed 1/22/2016 Permit valid for 3 years
Federal Permits/Authorizations			
Bureau of Land Management – Tonopah Field Station	Plan of Operations 43 CFR 3809. NEPA - Decision Record/Finding of No Significant Impact	Case File NVN-73109	
Bureau of Alcohol, Tobacco, Firearms, and Explosives	Authorization to store and use explosives	Will be held by contractor	
Corps of Engineers	“Waters of the U.S.” Determination	SPK-2010-01189	Expired 1/10/2017 No waters of the U.S. exist in adjacent or project area
U.S. Environmental Protection Agency	Large Quantity Generator Permit	EPA LQG #NVR000079988	Transferred 4/26/2010 valid for life of project
	Toxic Release Inventory	NA	Due July 1 each year

The MRG mine has been under the ownership of several companies during its long mining history, with more recent permitting being undertaken by these operators since the late 1980s. As such, many of the permits have been either transferred to or acquired by each subsequent operator, most recently by MRG.

20.3.2 PERMIT STATUS

20.3.2.1 RECLAMATION PERMIT

The state of Nevada requires an operator to obtain a reclamation permit if proposed actions will disturb over 5 ac or remove more than 36,500 t of material within one year. This permit must be acquired before exploration, mining or, milling begins. In the past Mineral Ridge has held two reclamation permits. Reclamation Permit No. 0103 was transferred from the previous operator of the mine in 2010. This permit allows for mining on public and private land. Reclamation Permit No. 0034 allows for exploration, but not mining. MRG requested, in the current Plan of Operations, to combine the two permits allowing for both mining and exploration activities to fall under the same permit No. In November of 2011 this proposed action was allowed and permit No. 0034 was discarded. Both mining and exploration activities reside under permit No. 0103, this permit is valid for the LOM.

20.3.2.2 WATER POLLUTION CONTROL PERMIT

The Bureau of Water Pollution Control (BWPC) monitors all discharges to water of Nevada. This is done through issuing permits and regulating Nevada's water pollution control laws. Discharge permits protect water of the state which is defined by, "all water situated wholly or partly within or bordering upon this state". MRG acquired the WPCP after taking control of the project in March 2010. The permit (NEV0096106) was renewed in 2013. The WPCP permit includes requirements for regular and periodic testing of waste rock to determine potential for acid generation; provisions for waste rock management; and closure commitments for ongoing management of potential impacts to resources. A final approval of the WPCP permit was issued in January 2014. The current WPCP permit will expire on August 23, 2018 (MRG 2016).

20.3.2.3 CLASS II AIR QUALITY OPERATING PERMIT

MRG has obtained a Class II Air Quality Permit to Operate facilities that emit less than 100 t/y for any one regulated pollutant. The facility also meets hazardous air pollution system (HAPS) restrictions in that it emits less than 25 t/a HAPs, and less than 10 t/d of any one HAP. The BAPC issued Permit No. AP1041-2733 in December of 2010. This permit allowed temporary use of a portable crusher on the leach pad. In 2012, MRG was allowed to construct a permanent crushing facility to replace the crusher that was currently in use at the time. An amendment to the Class II permit was approved by the BAPC in July of 2012. Monitoring of the crusher occurs on a daily basis allowing the Production/Emissions Reporting Form to be submitted to the BAPC annually on March 1. In April 2011, MRG was notified of a De Minimis Designation for the mercury emissions from the laboratory thermal units. The MRG mine will remain a De Minimus operation as long as mercury emissions continue to satisfy the 5.0 lb/a criteria of a Tier-3 De Minimis unit (MRG 2016).

20.3.2.4 HAZARDOUS WASTE PERMIT

Hazardous materials must be transported, stored, and used in accordance with federal, state, and local regulations. To ensure that this requirement is met, employees are trained on proper storage of hazardous waste; and transport of and disposal of hazardous waste is contracted to licensed firms that specialize in these services. MRG has obtained a Hazardous Waste Permit, EPA LQG #NVR000079988. In conjunction with the permit, MRG was notified on 1/25/2015 that the project is a "Large Quantity Generator" (LQG) due to the quantities of lead waste being generated. LQGs are required to meet the regulations under 40 CFR §§260 and 262 for storage, container management, training and documentation. This waste may be disposed at the U.S. Ecology disposal site near Beatty Nevada.

20.3.2.5 SOLID WASTE PERMIT

MRG currently has a Class III waivered landfill permit, #F535, along with a new class III waivered landfill permit, #SW1770. #F535 was obtained 7/31/2012, while #SW1770 was obtained 4/24/2015. These will expire 7/31/2017 and 4/24/2020 respectively. These landfills must be managed in accordance with NAC Chapter 444 [Sanitation]. Two previous landfills, F360 and F515, were officially closed on 5/20/2015.

20.3.2.6 ONSITE SEWAGE DISPOSAL SYSTEM GENERAL PERMIT

Onsite Sewage Disposal Systems are defined in NAC 445A.9556 as "any existing or proposed on-site system for the treatment and disposal of domestic sewage, including, without limitation, a standard subsurface, alternative or experimental sewage disposal system that may include a treatment unit and effluent absorption system". Permit GNEVOSDS509L-0015, was given approval for construction on 9/10/2010. Construction was completed in November of 2010. The permit is valid for the life of the project.

20.3.2.7 POTABLE WATER PERMIT

The Bureau of Safe Drinking Water requires MRG to provide potable water due to there being more than 25 permanent employees on site. Bottled water is currently provided to employees and contractors, and a site-wide potable water system is planned for installation.

20.3.2.8 WATER RIGHTS

NDWR regulates the amount of water abstracted for use at the MRG mine. In the past, MRG has held three water permits, No. 60034, No. 60035, and No. 60036, all of which require annual applications for extensions. MRG obtained the three permits from the previous operator of the site. Transfer of ownership of the water rights was confirmed in January 2011. Volumes of water pumped under the three permits are reported to NDWR on a quarterly basis. In 2013 permit No. 60035 was replaced by permit No. 82547 due to change in point of diversion for a new water well (MRG 2013).

20.3.2.9 STORMWATER PERMIT

The U.S. Army Corps of Engineers (USACE) determined that drainages emanating from the mine site do not meet the requirements under Section 404 of the Clean Water Act as "waters of the U.S."; consequently, the drainages are not subject to regulation by the USACE. MRG requested a waiver from the Stormwater General Permit requirements under the Nevada Pollution Discharge Elimination System (NPDES), and in December 2012, the Bureau of Water Pollution Control approved a Notice of Termination for Coverage under the General NPDES Permit. A Stormwater Pollution Prevention Plan is no longer needed at the MRG mine, however MRG staff continues to implement stormwater management controls throughout the mine site (MRG 2016).

20.3.2.10 INDUSTRIAL ARTIFICIAL POND PERMIT

MRG acquired an Industrial Artificial Pond Permit, No. S-32930, in April 2013 from NDOW. This permit is valid for three years and must be renewed every three years. The MRG mine last filed for renewal in January 2016. Stipulations of the permit include secure fencing of ponds to preclude impacts to wildlife and a pond covering to prevent access by birds and bats. The permit requires quarterly reporting of any wildlife mortality on the site.

20.3.2.11 HAZARDOUS MATERIALS PERMIT

A Hazardous Materials Permit (HMP) must be renewed annually through the Department of Public Safety, State Fire Marshals Division. MRG acquired a HMP, No. 55390, in January of 2016. This permit expired in February of 2017 and must be renewed.

20.3.3 PERFORMANCE BOND REQUIREMENTS

With the most recent approval by NDEP-BMRR of the Reclamation Plan for the Mary pit expansion on November 14, 2013 and by BLM on February 4, 2014, the increased reclamation bond amount now posted by MRG for the MRG mine is approximately $10.2M (MRG 2014).

20.4 SOCIAL/COMMUNITY OUTREACH

Due to the type of permitting actions conducted to date by MRG, BLM, and the various state agencies, there have been limited requirements for social or community outreach by the company. MRG has conducted meetings with BLM and NDEP-BMRR and other Nevada regulatory agencies since acquiring the MRG mine, but none of these meetings have either been required to be open to the public or attended by members of the public.

MRG has attended meetings with the Esmeralda County Commissioners (Commissioners) to discuss planning, ongoing operations and other topics of interest to the Commissioners. These meetings were open to the public (Personal Communication, L. Gorell 8-31-2017).

20.5 MINE CLOSURE

MRG has committed to completing reclamation of disturbed areas resulting from mining activities at the Mineral Ridge site in accordance with BLM and NDEP (BMRR) regulations. BLM's reclamation requirements are outlined in 43 CFR 3809 and are generally summarized by stating that development of minerals on BLM-administered public land must be completed in a manner that prevents unnecessary or undue degradation of that land. BMRR's Reclamation Branch ensures that mining operations and exploration projects in the state of Nevada are reclaimed to prevent excess erosion and to ensure a productive post mining land uses (NRS and NAC 519A).

In addition to the plans as discussed below, MRG prepared plans for seasonal closure and temporary closure of the MRG mine. Since meteorological data collected at Silver Peak and adjusted for the mine site location indicate that diurnal conditions could result in 30+ consecutive days of temperatures below freezing, MRG prepared a seasonal closure plan that calls for continued irrigation of the leach pad until process solution has been converted to ice. Crushing may cease during severe weather and the processing plant may be shut down when pond volumes will not support ongoing activities. Ancillary facilities that may freeze will be drained and shut down. Normal operations will resume when weather permits.

Pursuant to NAC 445.445(1)(a), NDEP will be notified within 30 days of a temporary closure of the mineral processing circuit.

Temporary closure could occur as a result of mechanical or other technical difficulties, unfavorable economic conditions, litigation, or other unforeseen events. This notification will include a description of the procedures and controls initiated to maintain the process components during the temporary closure period. These processes and controls will include:

- A list of supervisory and support staff who will maintain the mine facility and ensure access to the site for appropriate regulatory personnel during during the temporary closure period; and
- A commitment under NAC 445.445 (1)(b)(1) that if the closure period exceeds 90 days, MRG will evaluate permanent closure of the site in conjunction with NDEP and BLM.

In the event of a temporary closure, MRG will take measures to ensure adequate freeboard in the processing ponds to contain a 25-year, 24-hour storm event. Hazardous and explosive materials will be controlled or isolated as appropriate. Inspection, monitoring and maintenance of infrastructure and equipment will continue, including power lines, access roads, equipment, berms and fences, stormwater BMPs and other erosional protections.

20.5.1 REQUIREMENTS AND PLANS

For Nevada operations, a Closure Plan must be completed and submitted to NDEP-BMRR as part of the WPC Permit application. BMRR's requirements for types of closure planning vary somewhat based on the mine life schedule and anticipated weather at the site. BMRR's closure requirements applicable to the MRG mine are listed below:

- Seasonal Closure Plan – NAC 445A.399 requires the mine operator to plan for a seasonal closure scenario driven by inclement weather. Specifically, *"if the facility is located in an area where the mean diurnal temperature does not exceed 0 degrees Centigrade for 30 days or more a plan for the seasonal closure of the process components must be prepared.";*
- Temporary Closure Plan - NAC 445A.398(5) requires production of a temporary closure plan for planned temporary closures of mining facilities resulting from seasonal closure due to normal weather cycles; interruption of the beneficiation process for planned shutdowns for operating reasons and other process related stoppages of work*;*
- Tentative Plan for Permanent Closure (TPPC) – A TPPC must be submitted at the time of application for a WPC Permit (NAC 445A.398). As outlined in BMRR guidance, closure and stabilization requirements in the TPCP pertain to process and non-process components such as heap leach pads, tailings impoundments, pits, waste rock dumps, ore stockpiles, and any other associated mine components that, if not properly managed during operation and closure, could potentially lead to the degradation of waters of the State. Goals and strategies for developing a Final Plan for Permanent Closure should be included in the TPPC;
- Final Plan for Permanent Closure (FPPC) – A FPPC must be submitted at least two years prior to the anticipated permanent closure of that process component (NAC 445A.447). A FPPC plan must provide closure goals and a detailed methodology of activities necessary to achieve a level of stabilization of all known and potential contaminants at the site as defined by NAC 445A.379.

20.5.1.1 SEASONAL CLOSURE

Weather at the MRG mine site meets BMRR criteria that require production of a Seasonal Closure Plan. Mining activities at the site are designed to operate under subfreezing conditions and MRG does not anticipate being affected by these conditions; however, during a seasonal closure, the crushing system may be temporarily shut down and makeup water addition to the leach circuit would be stopped. Solution would be added to the heap until icing conditions force a shutdown due to insufficient solution return to keep operating. All process piping and tanks not necessary for heap operations would be drained and shut down.

MRG would continue the seasonal closure until ice begins to melt on the heap and solution returns allowing circulation of process solution back onto the heap. At that point, the processing plant would be restarted and makeup water addition restarted as appropriate.

Current mine plans do not include provisions for closure during the winter months. If required, however, a seasonal closure is not anticipated to last more than two to three days (MRG 2013).

20.5.1.2 TEMPORARY CLOSURE

MRG has prepared a Temporary Closure Plan to deal with seasonal or interim closures that may occur due to mechanical or technical difficulties, unfavorable economic conditions, litigation or other unforeseen events. In that case the following steps would be taken:

- Pursuant to NAC 445.445(1)(a), MRG will notify NDEP within 30 days of a temporary closure of the processing plant including a description of procedures and controls initiated;
- MRG will provide NDEP a list of supervisory and staff personnel necessary to maintain the facility during the temporary closure and maintain access to the site for NDEP personnel; and
- If the temporary closure period exceeds 90 days, MRG will evaluate procedures necessary to effect permanent closure of the site. This action will be taken in coordination with BLM and NDEP.

MRG does not anticipate any required additional stabilization of workings during a temporary closure. Per NAC 445.422(1)(d), the process pond would be maintained at a level that would accommodate the volume of a 25-year, 24-hour storm event.

Explosives and hazardous materials will continue to be managed according to applicable regulations. No new reagents would be added to the process system during the temporary closure. Maintenance of equipment, ancillary equipment, power lines, berms, roads will continue as necessary; and idled equipment will be decommissioned and stored properly. Monitoring and maintenance of key areas of the site would continue throughout the temporary closure period including process ponds, erosion control BMPs, conveyances and ponds.

20.5.1.3 TENTATIVE PLAN FOR PERMANENT CLOSURE/FINAL PLAN FOR PERMANENT CLOSURE

The TPPC provides conceptual procedures for permanent closure of process facilities following cessation of mining and processing operations. It forms the technical basis of and develops goals and strategies for the FPPC; and it represents the best current estimate of closure methods and actions that will be utilized to meet BMRR’s requirements. The FPPC will be submitted at least two years before the anticipated permanent closure of the facility.

MILL FACILITY

The mill facility would be decommissioned at the end of processing by decontamination and dismantling of key processing components and shipping off site to other projects, storage facilities or to appropriate recycling facilities. Buildings associated with the mill facility and related ancillary installations would be removed off site to disposal facilities unless they can be recycled to other projects. Concrete foundations would be demolished and buried on site or removed off site to an approved disposal area. Conveyor belts, slurry pipelines, hoppers and water pipelines would be dismantled and either recycled to other projects, placed in storage or recycled. Power lines, transformers, and substations would be dismantled and removed off site unless post-mine uses could be identified. Process ponds associated with the mill would be reclaimed via the procedures identified in a subsequent sub-section of this report. After completion of the activities described above, the footprint impacted by these components would be covered with growth media where necessary and revegetated.

WASTE ROCK DISPOSAL FACILITIES

Current planning for waste rock disposal facility reclamation includes meeting general objectives related to minimization of slope erosion, mass and slope stability, revegetation, and rounding of landforms to increase stability. Slopes will be stabilized at 2.5H:1V with small benches to minimize erosion. Horizontal surfaces will be left rough or ripped to facilitate growth, after which revegetation with BLM-recommended seed mixes will be applied during optimal germination and growth periods. No growth media is envisioned for use on the waste rock disposal facilities.

CRUSHER AND AGGLOMERATION PLANT

The crusher and agglomeration plant will be dismantled. Equipment and materials will be salvaged or removed to the site landfill or other appropriate disposal site. Concrete foundations and slabs will be demolished and buried in place under approximately three feet of material. After demolition and salvage operations are complete, the disturbed areas will be covered with growth media if possible, and revegetated.

HEAP LEACH FACILITY

After operations cease, process solution disposal will be managed via an active and passive phase. During the active phase, solution will be recirculated and evaporated through a forced spray evaporation system located on the heap not closer than 500 feet from the edge. Process solution may also be re-applied to the heap using the existing drip and/or sprinkler system. The evaporation program will be continued until drain down from the heap leach has reached levels that can be handled through a passive management system. Evaporation on the heap surfaces may extend up to one year after closure starts.

The time required to reach a residual flow rate sufficiently low to be passively managed in the ponds is mainly a function of the final reclamation strategy rather than drain down rate, and depends largely upon the specific fluid management strategies used to reduce solution inventory. Management of drain down solution during the passive phase will include converting the process pond into an evapotranspiration cell (E-T cell). This will be created by partially backfilling the process pond and planting it with a seed mix designed to work under wetter conditions.

At the conclusion of active evaporation, the heap leach lift crests will be rounded to produce slope breaks and a slightly shallower overall final slope configuration, which will also serve to maintain or increase the designed slope stability. The top of the heap will be re-contoured to prevent ponding. The final surface of the reshaped heap will be compacted and ripped or scarified and covered with approximately 24 in of growth media prior to seeding with an approved seed mix. Liner and drain pipes will be retained under the stabilized heap.

Diversion ditches have been constructed around the perimeter of the heap leach facility to divert run-on. These ditches or berms have been designed to carry the 100-year 24-hour design storm event (Golder 1995). Perimeter berms and ditches and areas around the pad will be regraded to establish positive drainage.

PROCESS POND

Prior to conversion of the process pond to use as an E-T Cell during the passive phase of process solution disposal, representative samples of solids remaining in the process ponds will be obtained to determine the chemical characteristics of the pond solids. Depending on results of characterization testing, the solids will be removed and placed on the heap prior to regrading and cover, or removed and placed in an approved landfill.

At the conclusion of use of the process pond as an E-T Cell, pond liners would be folded over and buried in place.

Solution transfer channels between the heap leach and the pond will be reclaimed in the same manner as the process ponds, i.e. any solid residues will be tested and either removed to an appropriate disposal area or buried in the channels. The channel liners will be folded over, the channels will be backfilled, and revegetated with an approved seed mix.

OPEN PIT AND UNDERGROUND MINE

Various operators at the MRG mine have developed both surface and underground mines, all of which will be reclaimed at closure. Reclamation of open pits will include construction of a physical perimeter barricade to prevent vehicular access and deter livestock. Access to the open pits will be controlled by a four-foot-high rock safety berm and a catch bench. Selected pit access and haul roads will be bermed and left in place to allow for wildlife ingress and egress.

Final closure of underground mine openings may include a combination of backfilling, blasting, installation of bulkheads, or the use of other technologies as provided by the NDEP as part of the FPPC. During the interim, MRG has posted warning signs and installed fencing and/or bulkheads around many exposed underground openings on the site and will continue to manage mine openings that are not used as part of mining activities. Mine portals opened as a result of planned operations will be located within currently active mining areas and not accessible to the public. Portals used as part of the mining operations will be sealed at the end of mining operations by locking the bulkhead doors used during mining.

ANCILLARY FACILITIES AND ROADS

Surface facilities and other mining support facilities not associated with the processing areas will be reclaimed, demolished, or removed in accordance with the most current MRG mine plan of operations at the time of closure. Reagents and explosives will be removed for use at other mines or appropriately disposed of in a manner consistent with local, state, and federal regulations.

At the request of Esmeralda County, the main access roads and certain haul roads crossing the mine area will be retained to allow access through the area for post-reclamation monitoring and long-term use by Esmeralda County. Roads that will be reclaimed will be ripped, regraded to approximate pre-mining contours, and revegetated with an approved seed mix.

Drainage sites affected by road construction will be restored to a stable free-draining configuration to the extent possible. These sites will be stabilized to prevent erosion using techniques that include revegetation or the placement of riprap in erosion-prone areas of the drainages.

Drainages crossed by access and haul roads will remain open during regrading. The resulting channels will contain the same capacity as upstream and downstream reaches. Erosion will be controlled by using surface stabilization techniques and ultimately, revegetation. Best management practice sediment control measures will be followed during reclamation to minimize sedimentation from the disturbed areas (MRG 2013a).

DRILLHOLE PLUGGING AND ABANDONMENT

Mineral exploration and development drillholes subject to NDWR regulations will be abandoned in accordance with applicable rules and regulations (NAC 534.425 through 534.428). Boreholes will be sealed to prevent cross contamination between aquifers and the required shallow seal will be placed to prevent contamination by surface water.

Monitoring wells and production wells associated with processing facilities will be maintained until deemed no longer necessary by MRG and NDEP. These wells will then be plugged and abandoned according to requirements of the Nevada State Engineer.

WASTE MANAGEMENT

At closure, used oil and coolant will be either recycled or disposed of in accordance with state and federal regulations. Used containers will be disposed or recycled according to federal, state, and local regulations.

Industrial solid waste generated during operations and closure will be disposed in an onsite Class-III waivered landfill in accordance with NAC 444.731 through 444.737. Upon closure of the landfill, written notice will be sent to the Bureau of Waste Management. A layer of suitable cover material will be placed on the final grade of the landfill and graded to allow for proper drainage of surface runoff.

After conclusion of the aforementioned activities, a Final Closure Report will be prepared to summarize all completed closure-related activities (e.g., detoxification of the heap, monitoring, component characterization, leach field construction, and completed earthwork), provide closure related as-built engineers drawings, if required, and post-closure monitoring, as applicable. This document will contain all information necessary to demonstrate that the completed closure activities will ensure that water of the State will not be degraded. The Final Closure Report will also include a proposal for post-closure monitoring for an initial period of time not less than five years to provide additional supporting data that stabilization has been achieved. Upon approval of the FCR, the MRG mine site would be considered to be in the 'post-closure' period and a revised WPCP - Post Closure is issued.

Following completion of the post-closure monitoring period, a Request for Final Closure would be submitted. This request must demonstrate component stabilization has been achieved and solicits WPCP retirement. The request should contain all post-closure monitoring information and clearly demonstrate stabilization. Final closure is complete when the requirements contained in NAC 445A.429, 445A.430 and 445A.431 have been achieved.

20.6 FUTURE PERMITTING/IMPACT SYNOPSIS

MRG submitted to the BLM and the Nevada Division of Environmental Protection (NDEP) Bureau of Mining Regulation and Reclamation (BMRR) an Amended Plan of Operations and Nevada Reclamation Permit (Record Number NVN-73109/Reclamation Permit No. 0103) entitled the *Mineral Ridge Mine (NVN-73109/Reclamation Permit 0103) Custer Plan of Operations Amendment* (Plan Amendment). The proposed modifications include:

- Expansion of the approved Plan of Operations area (Plan area) by 1,396 acres;
- Inclusion of the patented Paris claim and incorporation of the Paris claim authorized exploration disturbance;
- Construction of an ore storage pad on existing disturbance;
- Changes to existing waste rock dumps;
- Modifications to pit backfill;
- Modifications to existing pits;
- Development of the Custer, Custer South, and Oromonte pits;
- Reconciliation of existing facility disturbance acreages to reflect modified sizes;
- Development of underground workings accessed through the Oromonte Pit with associated support facilities;
- Modifications to existing crushing facilities;
- Construction of a mill on patented land and on existing disturbance;
- Expansion of the existing leach pad and conversion to a filtered tailings storage facility;

- Raising the existing process pond height by eight vertical feet;
- Construction of a potable water treatment plant;
- Expansion of authorized exploration disturbance within the expanded Plan area; and
- Extensions to the mine life and employment.

The proposed changes would increase the disturbance area from approximately 906 acres to approximately 923 acres, an increase of approximately 17 acres or 2% of the authorized disturbance area. The proposed Plan area would be located on public land administered by the BLM and private land controlled by MRG. No U.S. Forest Service-administered land or state lands are located within the proposed Plan area.

Scorpio Gold has made the following commitments related to ongoing activities at the Mineral Ridge site:

- Air emissions, including point and fugitive sources, would continue to be controlled in accordance with the Class II Air Quality Operating Permit (Permit No. AP1041-2733) and the Fugitive Dust Control Plan;
- Pit backfilling would use the same dust suppression techniques as used for waste rock material placement. Pit slope stability factors such as rock strength and structural factors (Golder, 1995; AMEC, 2011) would be taken into consideration for the designation of safe backfill operations. Industry accepted drilling and blasting practices would also be followed during the mining of areas to be backfilled to minimize rock damage and destabilization from blasting;
- The current practice of avoidance for preventing effects to historic properties would continue. Development of a treatment plan, data recovery, archaeological documentation, and report preparation would be based on stipulations as advised by regulatory authorities;
- Public safety precautions would continue to be employed;
- Water quality control measures would continue;
- Existing access and exploration roads would be used to the maximum extent possible to avoid impacts on vegetation and wildlife;
- Measures to protect livestock would continue;
- Survey monuments, witness corners, or reference monuments would be protected to the extent economically and technically feasible;
- Solid waste management practices would continue;
- Disposal and management of hazardous waste would continue per current practices;
- Measures to prevent and suppress fires would continue;
- Growth media stockpiles would continue to be managed;
- Current priorities for weed management would continue;
- Current practices as to visual resources would continue;
- Current training as to environmental and cultural resources responsibilities would continue.

Based on these commitments as well as their analysis of Impacts related to infrastructure development on non-patented, (BLM-administered) land, BLM reported the following potential impacts resulting from development of the proposed action as presented in Table 20.4.

Table 20.4: Results of Impacts Analyses as reported in the January, 2018 EA

Resource	Nature of Effects/Impacts	Duration of Effect	Extent of Effect	Discussion
Air Quality	No substantial adverse effects	Short-term	Localized	The Attainment Status of the Hydrographic basin would not be affected
Cultural Resources	11 archaeological sites, 5 architectural resources and one historic district.		Indirectly, adversely affected at the regional level	Source of regional effects is vibrations from the Proposed Action
Historic Properties	No adverse effects from atmospheric changes or noise			
Historic District	Adverse effects	Long-term	Regional level	Adverse effects resulting from changes to existing viewshed. Eligibility for NHRP not altered.
Noxious Weeds	Negligible effects	Long-term	Localized	
Native American Cultural Concerns	Negligible effects	Short-term	Localized	Engagement with Tribes is ongoing throughout operations.
Hazardous and Solid Waste	Minor impacts	Short-term	Localized	Lack of waterways in Project area would result in low intensity impacts.
Water, Surface and Ground	Minor impacts	Long-term	Localized	
Paleontological Resources	NA	NA	NA	No significant paleontological resources are known to exist on site.
Recreation	Negligible effects	Long-term	Localized	
Socioeconomic Values	Positive impacts	Long-term	Regional	Major impacts to Silver Peak and minor to moderate for other affected towns
Soil	Negligible impacts	Long-term	Localized	
Special Status Species - Bats	Adverse effects not likely	Long-term	Localized	
Other Special Status Species & Migratory Birds	Indirect impacts	Long-term	Localized	Due to removal of 17 acres of potential habitat
Special Status Plant Species	Impacts to potential habitat would be negligible	Habitat impacts would be long-term	Habitat impacts would be localized	Habitat is present for special status plant species but no SSS plants were observed during baseline surveys
Visual Resources	Minor impacts	Long-term	NA	
Wildlife	Negligible	Long-term	Localized	Indirect impacts to wildlife would include removal or alteration of 17 acres of habitat.

Scorpio Gold considers that all of the current permits in place for the open pit mining operations can be maintained as long as the required monitoring is conducted, and results of the monitoring are within permitted bounds, and regulatory payments are made in a timely manner. Scorpio Gold is of the opinion that when open pit operations recommence after the heap leach pad material is completed, these permits will remain current. It should be noted that some of these permits may require a review by Scorpio Gold in conjunction with the appropriate agencies as a result of changes to the operations as a result of the proposed changes in this Plan of Operations Amendment.

All facilities directly or indirectly associated with the proposed Scorpio Gold process and mine facilities, as described in the "Mineral Ridge Mine (NVNN-73109/Reclamation Permit 0103): Custer Plan Of Operations Amendment", will be addressed in the Major Modification of Water Pollution Control Permit #NEV0096106 which will be prepared for the Nevada Division of Environmental Protection as required under Chapter 445 of the Nevada Revised Statutes (email communication with L. Gorell, January 8, 2018). These facilities include the mill facility, WRSFs, leach pad (being converted to a tailings storage facility as part of the proposal), and any hydrology associated with the open pits (if applicable).

21.0 CAPITAL AND OPERATING COST ESTIMATES

21.1 INTRODUCTION

The previous Feasibility Study included processing the heap leach material in a new processing facility. This current study adds mining of Mineral Reserves from remnant areas by open-pit methods.

The CAPEX and the OPEX of the Project has been estimated based on the scope defined in previous sections of this report. The following parties have contributed to the preparation of the CAPEX in the specific areas:

- MTS:
  - mining
- Novus:
  - crushing plant modifications and conveying
  - heap material slurrying and transport
  - process plant
  - plant infrastructure and services, including additional power distribution and surface mobile equipment for construction
  - EPCM and indirect costs relating to the process plant, and on-site infrastructure
  - Owner's costs
  - contingency
- NewFields:
  - leach pad expansion to allow for heap material mining and filtered tailings placement.

21.2 MINE CAPITAL COSTS

21.2.1 HEAP LEACH PAD

It was assumed that the heap mining equipment would be leased rather than purchased. The mine equipment lease cost estimate, shown in Table 21.1, is based on new equipment with lease payment terms of 48 months. The lease is assumed to be an operating lease, so all of the costs are included in the mine operating costs. The mine lease costs are based on quotes from Caterpillar Financial Services Corporation from September 2017. A Nevada sales tax of 6.85% has been applied to the mine equipment lease cost estimate. The loader and dozer would be leased before operations begin. The scraper would not be required until the third year of production.

Table 21.1: Heap Mine Equipment Lease Costs

Equipment Item	Production Years 1–2 ($/mo)	Production Years 3–4 ($/mo)	Production Year 5 ($/mo)
Front-end Loader (CAT 9882K) – 10 yd^3	17,500	17,500	0
Dozer (CAT D8T) 13 ft SU-blade	18,400	18,400	0
Scraper (CAT 637K) – 50 yd^3	0	28,400	28,400
Subtotal	**35,900**	**64,300**	**28,400**
Sales Tax (6.85%)	2,460	4,400	1,945
Total Mine Lease Cost	**38,360**	**68,705**	**30,345**
Total Mine Lease Cost ($/t)	**0.32**	**0.5**	**0.25**

21.2.2 OPEN PIT

It also assumed that the open pit mining equipment would be leased rather than purchased. However, for the open pit mining equipment a capital lease and not an operating lease was assumed. The capital costs and lease payment terms were received from quotes from Caterpillar in December of 2017. The capital leases also assume a term of 48 months. Due to the open pit mine life only lasting three years, the principal remaining on the mining equipment at the end of the mine life is paid off and then the equipment is assumed to be sold at a 20% salvage value of the original purchase price. A Nevada sales tax of 6.85% has been applied to the mine equipment capital cost estimate. Only the major mine equipment that is listed as a capital lease in Table 21.2 is included in the lease assumptions and all other required equipment is assumed to be purchased.

Table 21.2: Open Pit Mine Equipment Capital Costs

Description	Units	Unit Cost ($)	Total Cost ($)	Lease/Purchase
390 Excavator	1	908,000	908,000	Capital Lease
992 Loader	3	2,351,000	7,052,000	Capital Lease
DM45 Production Drill	3	1,234,000	3,702,000	Capital Lease
SmartROC T45 Preshear Drill	1	759,000	759,000	Capital Lease
777G Haul Truck – 100 t	10	1,603,000	16,028,000	Capital Lease
745C Art. Water Truck (9,000 gal)	1	855,000	855,000	Capital Lease
D9T Cat Dozer	1	1,122,000	1,122,000	Capital Lease
D8T Cat Dozer	1	833,000	833,000	Capital Lease
Lube/Fuel Truck	1	187,000	187,000	Purchase
Service Truck	1	134,000	134,000	Purchase
SkidSteer	1	64,000	64,000	Purchase
Pickups Mine G&A	2	43,000	85,000	Purchase
Pickups drilling	1	37,000	37,000	Purchase
Pickups blasting	1	37,000	37,000	Purchase
Pickups maintenance	1	59,000	59,000	Purchase
Pickups engineering	1	37,000	37,000	Purchase
Pickups geology	1	37,000	37,000	Purchase
Light plants	6	16,000	96,000	Purchase
Genset	1	32,000	32,000	Purchase
Compressor	1	18,000	18,000	Purchase

21.3 MINE OPERATING COSTS

Mine operating costs are calculated in detail by equipment, consumables, supplies, services and manpower requirements based on the mine schedule. Equipment costs are calculated based on required hours of operation to meet the production schedule and hourly costs for equipment components, supplies, consumables and manpower. Mine maintenance costs are principally based on manufacturer's recommendations, and component replacement and cost. MTS also used data from operating mines of similar size in developing the operating costs for the major equipment.

21.3.1 HEAP LEACH PAD MINE OPERATING COSTS

The heap mine equipment lease cost estimate shown in Table 21.3 is based on new equipment leasing with payment terms of 48 months.

The mine lease costs are based on quotes from Caterpillar Financial Services Corporation from September 2017. A Nevada sales tax of 6.85% has been applied to the mine equipment lease cost estimate. The loader and dozer will be leased before operations begin. The scraper will not be required until the third year of production.

Table 21.3: Heap Mine Equipment Lease Costs

Equipment Item	Production Years 1 – 2 ($/mo)	Production Years 3 – 4 ($/mo)	Production Year 5 ($/mo)
Front-end Loader (CAT 9882K) - 10 yd^3	17,500	17,500	0
Dozer (CAT D8T) 13 ft SU-blade	18,400	18,400	0
Scraper (CAT 637K) - 50 yd^3	0	28,400	28,400
Subtotal	**35,900**	**64,300**	**28,400**
Sales Tax (6.85%)	2,460	4,400	1,945
Total Mine Lease Cost	**38,360**	**68,705**	**30,345**
Total Mine Lease Cost ($/t)	**0.32**	**0.56**	**0.25**

The mine equipment operating costs presented in Table 21.4 are based on the mine equipment listed in Table 21.1.

The mine equipment operating costs are based on the expectation that the front-end loader will work the full scheduled hours per day as discussed in Section 16.

While the dozer will be scheduled for the full hours during the first two years of production, the dozer and scraper will only be required about half the number of scheduled hours during production Years 3 through 5 for costing purposes. The mine equipment operating costs consist of fuel, lube, tires, wear parts, maintenance parts and labor with minor overhaul charges given the project's short life. A summary of the total heap mine operating cost is shown in Table 21.5.

Table 21.4: Heap Mine Equipment Operating Cost Estimate

Equipment Item	Operating Cost ($/h)	Production Years 1–2 ($/t)	Production Years 3–5 ($/t)
Front-end Loader (CAT 988K) – 10 yd^3	123.47	0.41	0.41
Dozer (CAT D8T) 13 ft SU-blade	57.78	0.19	0.10
Scraper (CAT 637K) – 50 yd^3	150.38	0.00	0.25
Total	--	**0.60**	**0.76**

Table 21.5: Heap Mine Operating Cost Estimate Summary

Cost Category	Production Years 1–2 ($/t)	Production Year 3 ($/t)	Production Year 4 ($/t)	Production Year 5 ($/t)
Mine Equipment Lease	0.32	0.56	0.56	0.25
Equipment Operating Cost	0.60	0.76	0.76	0.76
Equipment Overhaul Cost	0.00	0.21	0.36	0.20
Manpower Cost	0.28	0.28	0.28	0.28
Total	**1.20**	**1.81**	**1.96**	**1.49**

21.3.2 OPEN PIT MINE OPERATING COSTS

The operating costs for the open pit mine are estimated assuming an Owner mining scenario. The mine equipment is assumed to be purchases on a capital lease so only the interest portion of the lease is included in the operating costs. Mine operating costs and G&A costs are calculated in detail by equipment, consumables, supplies, services and manpower requirements. Equipment costs are calculated based on required hours of operation to meet the production schedule and hourly costs for equipment components, supplies, consumables and manpower. The operating costs are calculated on a monthly basis in the mine schedule throughout the mine life, so a detailed analysis of the equipment requirements can be calculated. The average yearly costs per tone mined, moved and per ton of ore are shown Table 21.6.

Table 21.6: Open Pit Mine Operating Cost Estimate Summary

	Year 7			Year 8			Year 9		
	$/t Mined	$/t Moved	$/t Ore	$/t Mined	$/t Moved	$/t Ore	$/t Mined	$/t Moved	$/t Ore
Lease Interest	0.11	0.11	1.10	0.07	0.06	1.07	0.05	0.05	1.04
Mine G&A	0.06	0.06	0.58	0.05	0.05	0.88	0.08	0.07	1.61
Drilling	0.11	0.11	1.11	0.10	0.10	1.68	0.11	0.11	2.26
Blasting	0.33	0.33	3.31	0.32	0.31	5.08	0.33	0.32	6.94
Loading	0.18	0.17	1.76	0.18	0.17	2.86	0.17	0.17	3.55
Haulage	0.38	0.38	3.80	0.43	0.42	6.87	0.37	0.36	7.72
Roads and WRSFs	0.12	0.12	1.18	0.11	0.10	1.72	0.12	0.11	2.44
Dewatering	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Mine Maintenance	0.07	0.07	0.71	0.06	0.06	1.04	0.10	0.09	2.04
Engineering	0.02	0.02	0.22	0.02	0.02	0.33	0.02	0.02	0.47
Geology	0.09	0.09	0.87	0.08	0.08	1.28	0.08	0.08	1.74
Total	**1.47**	**1.45**	**14.64**	**1.42**	**1.38**	**22.81**	**1.42**	**1.39**	**29.81**

21.4 PROCESSING CAPITAL COSTS

21.4.1 HEAP LEACH CAPEX SUMMARY

The CAPEX was prepared using a combination of first-principle estimates and in-house factors, and is based on Novus' project experience. The estimate is derived from engineers, contractors, and suppliers who have provided similar services to existing operations and have demonstrated success in executing the plans set forth in the study. To complete the CAPEX, Novus made assumptions where engineering information was unavailable; accordingly, the estimate and/or ultimate construction costs arising from the engineering work can only be estimated to a target accuracy of ±15%.

Costs are expressed in US dollars with no escalation, unless stated otherwise. Foreign exchange rate of CDN$1.00:US$0.82 were used where applicable.

Total LOM capital costs are estimated to be $34.9 million. Pre-production capital costs amount to $34.9 million. There are no sustaining capital costs associated to the Project during the production years, due to the short Project life. Contingency for the Project totals $4.3 million. The costs are summarized in Table 21.7.

Reclamation/closure costs will amount to $0.6 million and were assumed to occur in Years 6 and 7 immediately after plant closure and bond recovery.

Table 21.7: Capital Cost Summary

Description	Pre-production ($ million)	Total ($ million)
Mining	--	--
Site Development	--	--
Heap Recovery & Process Plant	20.6	20.6
On-site Infrastructure	2.9	2.9
TMF	1.7	1.7
Project Indirects	2.9	2.9
Engineering & EPCM	2.4	2.4
Owner's Costs	0.1	0.1
Subtotal	**30.6**	**30.6**
Contingency (14%)	4.3	4.3
Total CAPEX	**34.9**	**34.9**

Source: Novus et al. (2017)

21.4.2 BASIS OF ESTIMATE

All CAPEX costs have been expressed in Q3 2017 US dollars. There are no allowances for escalation included in the estimate. The estimated costs include heap material slurrying, process plant equipment and facilities, additional power distribution and surface mobile equipment for construction, and heap leach pad expansion. The estimate has been considered to have an overall accuracy of ±15%, and assumes the Project would be developed on an EPCM basis with heavy involvement by the Owner’s team.

The following parameters and qualifications should be considered when reviewing the Project CAPEX:

- No allowances have been made for exchange rate fluctuations over the life of the Project.
- Force majeure issues have not been considered.
- Future scope changes have not been considered.
- Project interest, insurances and financing costs have not been considered in the CAPEX.
- Land acquisition, compensation cost, and sunk costs have not been considered.
- Operational insurances such as business interruption insurance and machinery breakdown have not been included.

- The existing on-site substation and power distribution items require minor upgrades for the Project.
- The existing on-site maintenance facilities do not require expansion.
- The existing on-site fuel storage does not require expansion.
- The existing internal and access roads do not require expansion.
- The existing on-site water supply and management infrastructure does not require expansion.
- The existing on-site assay lab does not require expansion.
- The existing on-site offices and administration buildings do not require expansion.
- The existing on-site carbon-handling facility is suitable for use for the Project.

Data for the CAPEX has been obtained from numerous sources, including:

- feasibility-level engineering design
- budgetary quotations for equipment and infrastructure items
- QP experience and in-house database prices
- labor rates obtained from local contractors in Nevada
- data from recently completed projects of a similar size, method, and location.

The following assumptions were used in the CAPEX:

- The detail of the design is discussed in the relevant sections of this report.
- Heap leach pad expansion costs have been estimated by NewFields.
- Suitably qualified and experienced construction will be available at the time of execution of the Project.
- Qualified construction personnel will be available in the local community to assist with Project construction.
- There have been no geotechnical and drainage issues encountered during previous on-site work; therefore, no allowance has been included for special ground preparation.
- Borrow sources for construction are available from within the mine limits.
- No extremes in weather would be experienced during the construction phase; therefore, no allowances are included for construction-labor stand-down costs.

21.4.3 SITE DEVELOPMENT CAPEX

As MRG is an operating property, there are no site development costs (e.g., clearing and grubbing, bulk earthworks, site drainage, and internal roads) in the CAPEX. Any bulk earthworks limited to the new process facilities will be completed by the Owner’s site team, ahead of start of construction, with no incremental costs related to the Project.

21.4.4 PROCESSING CAPEX

The process plant will reprocess heap leach material at a rate of 4,000 t/d. The process plant will consist of a reclaim area with mixing and holding tanks, grinding circuit consisting of two parallel ball mills, pre-leach thickener, CIL cyanidation, tailings thickening, and tailings filtration. The filtered tailings cake will be transported by existing grasshopper conveyors to the tailings pad and placed on the heap leach pad.

The CAPEX has been prepared based on new budget quotes for mechanical equipment, mechanical platework, and mill buildings. Material take-offs (MTOs) for concrete, structural and internal steel, process piping and major water pipelines, and electrical cable were provided by the engineering team, and the related cost estimate developed from quotes and bench-marks.

Factors have been applied to cover in-plant piping and instrumentation, and minor mechanical equipment and platework. Estimates for reagent systems, utility supply (air/water), and fire protection have been based on database pricing.

The mineral processing plant CAPEX required to support plant operations is shown in Table 21.8.

Table 21.8: Mineral Processing Plant CAPEX

Description	Pre-Production ($ million)	Total ($ million)
Heap Recovery	0.7	0.7
Grinding	5.3	5.3
Leaching	5.7	5.7
Tailings Dewatering, Handling & Loadout	5.4	5.4
Tailings Filtration	4.3	4.3
Tailings Thickening	1.1	1.1
Reagents	0.3	0.3
Plant Building & Services	3.3	3.3
Plant Mill Building	2.3	2.3
Plant Water Systems	0.2	0.2
Plant & Instrument Air	0.7	0.7
Plant Control System	0.1	0.1
Total Mineral Processing Plant CAPEX	**20.6**	**20.6**

Source: Novus (2017)

21.4.4.1 EARTHWORKS & CIVIL WORKS

Excavation and backfill quantities for the leaching area have been calculated manually based on 2D AutoCAD layouts. Excavation and backfill quantities for the process plant are minimal as the process plant will sit on bedrock. Unit rates carried in the CAPEX were based on benchmarked data for similar projects in Nevada and confirmed by local contractors.

21.4.4.2 CONCRETE

Concrete MTOs were based on 2D AutoCAD layouts. Unit rates carried in the CAPEX were based on benchmarked data for similar projects in Nevada and confirmed by quotes from local contractors.

The unit rate includes the supply and installation of formwork, rebar, and concrete ready-mix, and also, concrete placing and finishing.

21.4.4.3 STRUCTURAL STEELWORK

Structural steelwork MTOs were based on 2D AutoCAD layouts. Unit rates carried in the CAPEX were based on benchmarked data for similar projects in Nevada and confirmed by local contractors.

The unit rate for the steelwork includes supply, shop detailing, fabrication, surface preparation and final painting in the shop, transportation to site, site erection and paint touch-up as required.

21.4.4.4 ARCHITECTURAL/BUILDINGS

Architectural building MTOs were based on 2D AutoCAD layouts. Building supply and install rates for the pre-engineered building were provided by suppliers.

Unit rates for heating, ventilation and air conditioning (HVAC), electrical, and plumbing rough-ins carried in the CAPEX were based on benchmarked data for similar projects.

21.4.4.5 MECHANICAL EQUIPMENT

The following major process equipment was sized based on the design criteria and budget quotes were obtained, as detailed below in Table 21.9.

Table 21.9: Summary of Quoted Equipment

Description	Package Number	Quote Vendor	Estimate ($ million)
Ball Mills	P16001	Outotec	3.9
Cyclones	P16002	FLS	0.1
Screens	P16004	Tenova / Sizetec	0.4
Pumps (feed, filter, thickener)	P16005	FLS	0.4
Thickeners	P16007	Tenova	1.0
Filter Presses	P16008	Tenova	2.1
Agitators	P16009	Mixpro	0.7
Tanks	P16010	Columbia Tec / CST	1.1
Receivers, Compressors, Dryer	P16012	AGL	1.0
Cranes	P16014	CRS Cranes	0.3
Inter-stage Screens	P16016	Kemix	0.2
Buildings	P11016	Seko	0.5
Total Quoted Equipment	--	--	**11.7**

Source: Novus 2017

The following equipment has been sized based on the process design criteria. Costs were determined based on database pricing.

- magnets
- belt scale
- metering and sump pumps
- fans
- hoist
- flocculant skid
- conveyors.

21.4.4.6 PLATEWORK

The following mechanical bulks have been sized based on the process design criteria:

- bins, chutes, hoppers, and pump boxes
- leach pad reclaim tanks
- CIL tanks
- receivers
- process water tank.

Unit rates carried in the CAPEX were based on benchmarked data for similar projects in Nevada.

The unit rate includes supply, shop detailing, fabrication, surface preparation and final painting in the shop, transport to site, site erection, and paint touch-up.

21.4.4.7 PIPING

Piping MTOs for the grinding and filtration areas were based on 2D AutoCAD layouts and sketches. Unit rates carried in the CAPEX were based on budgetary quotes and benchmarked data for similar projects.

The remaining process piping costs were factored from mechanical equipment for the plant areas based on historical factors for similar plants worldwide.

21.4.4.8 ELECTRICAL

Electrical MTOs were based on 2D AutoCAD layouts and site plans outlining the existing site distribution. Unit rates carried in the CAPEX were based on benchmarked data for similar projects and current prices for equipment and cables previously installed on site.

21.4.4.9 INSTRUMENTATION

The programmable logic controller system was based on the existing site requirements and instrumentation controls already installed at the site.

The remaining process instrumentation costs were factored from mechanical equipment for the plant areas based on historical factors for similar process plants.

21.4.4.10 INSTALLATION

A set of “all-In” labor rates has been developed for each commodity based on a specific crew mix and proposed work cycle, and applied against direct field man-hours to generate direct field labor costs. Rates are based on discussions with local contractors in Nevada.

The rates include the payroll portion which is made up of the base rate plus labor burdens and the contractor’s indirect costs. Base rates reflect working week hours and the resulting overtime payable. Labor burdens include vacation pay, health and welfare allowances, pension plans, industry funds or dues, and government assessments (e.g. Social Security, Unemployment Tax and Worker’s Compensation Insurance).

Contractor’s indirect costs are costs which are related to the direct construction costs, but which cannot easily be allocated to any particular part of the costs, or are not part of the permanent works. For the purposes of this CAPEX, the indirect costs include:

- small tools and consumables
- miscellaneous support services

- site office operations
- contractor's site supervision
- manual indirect labor
- safety equipment and personal protective equipment
- contractor's profit and home office overheads.

The following items have been excluded from the direct labor rate and included in the productivity factor:

- non-productive time
- safety orientations and coordination meetings
- scaffolding.

21.4.5 LEACH PAD EXPANSION CAPEX

The CAPEX associated with the expansion of the existing leach pad facility was based on historic costing information from the region. The cost estimate for the expansion of the leach pad required is based on a conceptual design that is similar to the design of the existing leach pad. The construction quantities involved with the required expansion were calculated using available site topography and estimated required earthworks grading. The expansion requires extending the lined base at both the east and west edges of the existing lined pad. To allow for the unloading of the heap material and placement of filtered tailings, both expansion areas will need to be constructed with the west expansion coming online first.

The CAPEX associated with the expansion of the lined pad is shown in Table 21.10.

Table 21.10: Lined Pad Expansion CAPEX

Description	Pre-Production ($ million)	Total ($ million)
Direct Costs	1.7	1.7
Indirect Costs	0.4	0.4
Contingency	0.4	0.4
Total Lined Pad Expansion Costs	2.5	2.5

Source: MTS (2017)

21.4.6 INFRASTRUCTURE CAPEX

The on-site Infrastructure required to support the plant operations is shown below in Table 21.11.

Table 21.11: On-site Infrastructure CAPEX

Description	Pre-production ($ million)	Total ($ million)
Plant Electrical/Site Power Distribution	2.4	2.4
Water Supply & Distribution	0.1	0.1
Waste Management	--	--
Ancillary Facilities	--	--
Surface Mobile Equipment	0.4	0.4
Bulk Fuel Storage & Distribution	--	--
IT & Communications	--	--
Total On-site Infrastructure Costs	**2.9**	**2.9**

Source: Novus (2017)

21.4.6.1 PLANT ELECTRICAL/SITE POWER

Substation and power distribution costs have been excluded from the CAPEX because they are already constructed and in-use for the current open-pit operations. Upgrades will be required for the Project to power the process plant by extending the existing overhead line by 175 m, installing an underground feeder cable of 120 m, and installing switchgear at the crusher and leach pad, four motor control centers, and six starters.

21.4.6.2 WATER SUPPLY & DISTRIBUTION

Water supply and distribution costs have been excluded from the CAPEX, with the exception of the two required pipelines noted below. Major water distribution networks, tanks and storage ponds are existing facilities on-site and will support Project construction and operations.

During construction the following pipelines will be installed:

- one, 8-in carbon steel pipeline, 539 ft in length
- one, 14-in carbon steel pipeline, 86 ft in length.

21.4.6.3 WASTE MANAGEMENT

Waste management costs have been excluded from the CAPEX, since the existing on-site facilities will support Project construction and operations.

21.4.6.4 ANCILLARY FACILITIES

Ancillary facility costs have been excluded from the CAPEX, since the existing on-site facilities will support Project construction and operations.

The following ancillary buildings are existing on site:

- maintenance facilities existing on site, no expansion required
- assay lab existing on site, no expansion required
- offices and administration buildings existing on site, no expansion required
- carbon handling facility existing on site, no expansion required.

21.4.6.5 BULK FUEL STORAGE AND DISTRIBUTION

Fuel storage and distribution costs have been excluded from the CAPEX. Fuel distribution networks, tanks and safety berms are existing and suitable for use for the Project.

21.4.6.6 SURFACE MOBILE EQUIPMENT

Surface mobile fleet required to support the plant operations is shown in Table 21.12. All values shown are for rental equipment; no capital purchases are required.

Table 21.12: Plant Surface Mobile Equipment CAPEX

Description	Equipment Count	Total Capital Costs ($ million)
IT28 Loader	1	0.03
Skidsteer	1	0.01
Articulated Truck – 735	1	0.04
Articulated Truck – 740	1	0.04
Excavator – 336	1	0.04
Dozer – D7	1	0.03
Flat Deck Truck – 5T	1	0.04
Highway Truck (existing on site)	--	--
Highway Trailer (existing on site)	--	--
Crane – 100 T (included in Indirect Costs)	--	--
RT Crane – 60 T	1	0.10
Manlifts – 80 ft	2	0.05
Pipe Fusing Machine (6 to 18 in)	1	0.01
Small Tools	1	0.03
Total Surface Mobile Equipment Rental Costs	**12**	**0.41**

Source: Novus (2017)

21.4.7 INDIRECT COSTS

21.4.7.1 SUMMARY

Indirect costs total an estimated $2.9 million, which equates to 11.6% of the total direct costs. The various cost centers that comprise the indirect costs are described in the following sections.

21.4.7.2 HEAVY CONSTRUCTION EQUIPMENT

Heavy construction equipment costs have been calculated to be $0.2 million, which allows for a 100-t mobile crane for three months on-site, to support construction activities.

21.4.7.3 FIELD INDIRECT COSTS

Field indirect costs have been calculated to be $0.4 million, which equates to 2.5% of the direct costs less mining equipment. The factor carried in the CAPEX is lower than that of typical projects; however, the project site has existing ancillary facilities and temporary structures. Costs are intended to cover the following:

- **Temporary Construction Facilities**: work areas and bays, roads, walks and parking areas, temporary buildings, temporary utilities for power and sewage, other minor temporary construction.
- **Construction Services**: general and final clean-up, material handling and warehousing, craft training and testing, onsite services (soils exploration and soil testing, all labor and material costs, concrete testing and security), operation and maintenance of temporary facilities, surveying, pre-operational testing and start-up.

21.4.7.4 FREIGHT AND LOGISTICS

Freight and logistics have been calculated to be $0.8 million, which equates to 5.0% of the equipment and material costs less mining equipment. Costs include ocean freight and inland freight; this figure is based on factored historical data for similar projects in Nevada.

21.4.7.5 VENDOR REPRESENTATIVES

Vendor representatives have been calculated to be $0.3 million, which equates to 2.0% of the equipment and material costs less mining equipment. This figure is based on factored historical data for similar projects.

21.4.7.6 START-UP AND COMMISSIONING/CAPITAL SPARES

Start-up and commissioning/capital spares have been calculated to be $0.8 million, which equates to a combined 6.5% of the equipment and material costs less mining equipment. This figure is based on factored historical data for similar projects.

21.4.7.7 FIRST FILLS

First fills have been calculated to be $0.3 million, which equates to a combined 2.0% of the equipment and material costs less mining equipment. This figure is based on factored historical data for similar projects.

21.4.8 EPCM

EPCM services have been calculated to be $2.4 million, or 9.5% of the direct and indirect costs, which includes detailed engineering, procurement, project management and home office services as well as construction management. EPCM has been calculated on the leach pad expansion, heap recovery, mineral processing plant, dry stack tailings, on-site infrastructure, indirects, and owner's costs.

21.4.9 OWNER'S COST ESTIMATE

For the purposes of this estimate, $0.1 million or 0.3% of the total direct, indirect, and EPCM costs were selected to cover on-site supervision on behalf of the Owner.

21.4.10 PROJECT BOND AND RECLAMATION COST ESTIMATE

The increased footprint for the new mill increases annual reclamation bonding expense by $28,000/a and requires $567,000 (50% of additional bonding) of reclamation collateral to be posted by the company prior to commencement of construction. This collateral is recognized in the cash flows as a first-year cash outflow.

Since salvage of the equipment is assumed for the purposes of this economic evaluation, the footprint disturbed will be assumed reclaimed at a cost equal to its full bond ($1,134,000), with the bond collateral recovered 60% in the year after reclamation and 40% in the second year following reclamation. Bond collateral, reclamation cost, bond collateral recovery and salvage value by year are noted in Table 21.13.

Table 21.13: Bond and Reclamation Cost Summary

Operating Period	Bonding Collateral ($ million)	Bond Collateral Recovery ($ million)	Reclamation Cost ($ million)
Year -1	0.5	--	--
Year 1	--	--	--
Year 2	--	--	--
Year 3	--	--	--
Year 4	--	--	--
Year 5	--	--	1.1
Year 6	--	0.3	--
Year 7	--	0.2	--
Total	**0.5**	**0.5**	**1.1**

Source: MTS 2017

21.4.11 CONTINGENCY

For the purposes of this Feasibility Study and Technical Report estimate, the contingency is estimated to be $4.3 million, or 14.0% of the total direct, indirect, EPCM, and Owner's costs. The contingency reflects the potential growth in CAPEX within the same scope of work. The contingency includes variations in quantities, differences between estimated and actual equipment and material prices, labor costs and site-specific conditions. It also accounts for variation resulting from uncertainties that are clarified during detail engineering, when designs and specifications of the basic engineering scope are finalized.

Contingency is an amount of money allowed in an estimate for cost which, based on past experience, are likely to be encountered, but are difficult or impossible to identify at the time the estimate is prepared. It is an amount expected to be expended during the course of the Project. Contingency does not include scope changes, force majeure, labor disruptions or lack of labor availability.

21.4.12 DUTIES AND TAXES

Local taxes on contractor-supplied materials and installation labor have not been included in the CAPEX.

21.4.13 ESCALATION

No escalation costs have been included in the Project. All costs and prices have been expressed in Q3 2017 US dollars.

21.4.14 PROCESS CAPEX OPEN PIT MATERIAL

As previously discussed, the existing crushing circuit will be modified to make it suitable for accepting ROM material. The CAPEX related to modifying the crushing circuit is estimated at $500,000.

21.5 PROCESSING OPERATING COSTS

21.5.1 PROCESS OPEX (HEAP LEACH MATERIAL)

The operating costs related to the processing plant include plant consumable and reagents, electrical power, maintenance supplies, and personnel, as summarized below in Table 21.14.

Table 21.14: Process Plant OPEX

Description	OPEX Year 1 ($/a)	Production Year 1 ($/t)	OPEX Year 2-5 ($/a)	Production Years 2-5 ($/t)
Plant Consumables and Reagents	2,675,085	1.83	2,675,085	1.83
Plant Electrical Power	1,616,296	1.11	1,616,296	1.11
Plant Maintenance	743,947	0.51	1,174,644	0.80
Plant Manpower	1,701,000	1.17	1,701,000	1.17
Total	**6,736,328**	**4.61**	**7,167,025**	**4.91**

The OPEX is lower in Year 1 because the cost related to the capital spares for the first year was included in the CAPEX for all major equipment. The capital spares were quoted by equipment vendors for all the major equipment. For the first year of operations, the maintenance cost was estimated to be $743,947 or $0.51/t, as compared to the remaining years at $1,174,644/a or $0.80/t.

21.5.1.1 PLANT CONSUMABLES AND REAGENTS

The plant consumables and reagents costs were obtained from estimates provided by vendors for similar operations, and also based on factors determined through laboratory testing. Items that were included in the plant consumables and reagents costs are shown in Table 21.15. The costs are presented in tons processed through the mill.

Table 21.15: Plant Consumables and Reagents OPEX

	OPEX ($/a)	Production ($/t)
Ball Mills Grinding Media	602,250	0.41
NaCN	1,778,280	1.22
Carbon	84,315	0.06
Flocculant (Polyclear 2501)	210,240	0.14
Total	**2,675,085**	**1.83**

21.5.1.2 PLANT ELECTRICAL POWER

An electrical load list was created from the major equipment list, which enabled the calculation of the electrical power consumption for the Project. The unit cost of $0.04/kWh for electrical power was provided by Scorpio Gold, based on the actual power consumption and rates from MRG from the past several years. Table 21.16 provides a summary of the estimated power usage by process area.

Table 21.16: Plant Electrical Power OPEX

Description	OPEX ($/a)	Production ($/t)
Heap Recovery	40,362	0.03
Grinding	1,146,556	0.79
Leaching	130,041	0.09
Tailings Dewatering and Transport	191,271	0.13
Reagents	3,476	--
Plant Building Services	98,016	0.07
Total	**1,616,296**	**1.11**

21.5.1.3 PLANT MAINTENANCE

The estimate for maintenance is based on quotes received from equipment vendors for spare parts usage for all of the major equipment in the processing plant. The estimated cost was verified against typical values from similar projects. Table 21.17 summarizes the cost per year and the cost per ton of material processed through the processing plant.

Table 21.17: Plant Maintenance OPEX

Description	OPEX ($/a)	Production ($/t)
Heap Recovery	47,009	0.03
Grinding	708,160	0.49
Leaching	213,600	0.15
Tailings Dewatering and Transport	141,382	0.10
Plant Building Services	38,985	0.03
Total	**1,174,644**	**0.80**

21.5.1.4 PLANT MANPOWER

The number of personnel required for the process plant was estimated based on existing man-power usage at MRG and experience from other similar projects. Table 21.18 summarizes the personnel required per area of the process plant, and costs per year and costs on per-ton basis.

Table 21.18: Plant Labor OPEX

Description	Number of Personnel	OPEX ($/a)	Production ($/t)
Supervisor	4	513,000	0.35
Control Room	4	297,000	0.20
Grinding Area	4	297,000	0.20
Reagents Area	2	148,500	0.10
Carbon Handling	2	148,500	0.10
CIL Area (including CN destruct)	2	148,500	0.10
Tailings Filtration	2	148,500	0.10
Total	**20**	**1,701,000**	**1.17**

21.5.2 PROCESSING OPEX OPEN PIT MATERIAL

The operating costs related to accepting the open pit material in the Processing Plant include plant consumable and reagents, electrical power, maintenance supplies, and personnel, as summarized below in Table 21.19.

Table 21.19: Crushing Plant OPEX

Description	OPEX ($/a)	Production ($/t)
Plant Consumables and Reagents	62,233	0.09
Plant Electrical Power	162,469	0.22
Plant Maintenance	800,320	1.10
Plant Manpower	297,000	0.41
Total	**1,322,021**	**1.81**

22.0 ECONOMIC ANALYSIS

22.1 CAUTIONARY STATEMENT

The results of the economic analyses discussed in this section represent forward-looking information as defined under Canadian securities law. The results depend on inputs that 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. Information that is forward-looking includes:

- Mineral Resource and Mineral Reserve estimates;
- Assumed commodity prices and exchange rates;
- Proposed mine production plan;
- Projected mining and process recovery rates;
- Assumptions as to mining dilution;
- Sustaining costs and proposed operating costs;
- Assumptions as to closure costs and closure requirements;
- Assumptions as to environmental, permitting and social risks.

Additional risks to the forward-looking information include:

- Changes to costs of production from what is assumed;
- Unrecognized environmental risks;
- Unanticipated reclamation expenses;
- Unexpected variations in quantity of mineralized material, grade or recovery rates;
- Geotechnical or hydrogeological considerations during mining being different from what was assumed;
- Failure of plant, equipment or processes to operate as anticipated;
- Changes to assumptions as to salvage values;
- Ability to maintain the social license to operate;
- Accidents, labor disputes and other risks of the mining industry;
- Changes to interest rates;
- Changes to tax rates, including federal, state and county income and property tax rates.

22.2 METHODOLOGY USED

The economic viability of the Project has been evaluated using a constant-dollar, after-tax DCF methodology. This valuation method requires projecting material balances estimated from operations and calculating resulting economics. Economic value is calculated from sales of metal plus net equipment salvage value and bond collateral, less cash outflows such as operating costs, equipment capital lease interest and principal payments, management fees, capital costs, working capital changes, any applicable taxes and reclamation costs. Resulting annual cash flows are used to calculate the NPV and IRR of the Project.

The economic evaluation is based on the estimated Mineral Reserves on the heap leach pad as of June 29, 2017, plus the Mineral Reserves estimated in remnant areas that can be mined using open-pit methods. Since the Project entails use of infrastructure active up to, and including, the time of capital investment, continuity of administrative and certain operational activities is expected, which allows general and administrative and site infrastructure-related costs to be based on actual cost history. Otherwise, operating and capital costs for proposed new activities have been derived by third-party engineers.

During the Project life (one year of initial capital investment and seven-and-one-half years of operation), the site will undergo further evaluation to extend its operating life, and as such, no end-of-project reclamation is included in this Project analysis.

Table 22.1 summarizes the Project's economic drivers, principal outputs and economic metrics. All dollar figures are expressed in US dollars unless otherwise noted.

Table 22.1: Economic Parameters

Area	Unit	Total/Average
Construction Period	years	1
Operating Period	years	7.5
Heap leach Pad Material Milled	kt	6,855
Average Leach Pad Gold Grade	opt	0.017
ROM Material Milled	kt	3,712
ROM Material Gold Grade	opt	0.042
Recovery After Process and Refining	%	91.6
Life of Project Gold Sold	oz ('000)	250.5
Average Annual Gold Sold	oz ('000)/a	33.4
Gold Price	$/oz	1,250
Realized Gold Price	$/oz	1,249.50
Average Silver Grade	opt	0.017
Average Annual Silver Sold	oz ('000)	3.7
Realized Silver Price (Average)	$/oz	19.81
Total Cash Cost	$/oz	805

table continues…

Area	Unit	Total/Average
Initial Capital Expenditures	$ million	34.9
Remnant Ore Capital Expenditures (Ops Year 6)	$ million	32.6
Total After-Tax Net Cash Flow	$ million	53.5
Net Salvage Value	$ million	13.1
NPV of Net Cash Flow Discounted at 5%	$ million	35.1
IRR	%	30.0
Payback from End of Construction	years	2.9

22.2.1 PRODUCTION

Mineral Reserves in the heap leach pad total 6.9 Mt. Mineral Reserves to be mined from the remnant areas total 3.7 Mt. Permitting, financing and construction timetables are such that first capital spending will start at the beginning of Q3 2018 for the milling facility, concluding by the end of Q2 2019, allowing production to start at the beginning of Q3 2019. The initial mill feed source is the heap leach pad, and starting Q1 2024, capital equipment will be purchased for mining and crushing and conveying equipment to allow remnant area ore to supplant the heap leach pad ore. The excavation and transport of heap leach pad material and remnant area ore to the mill is planned to occur at a rate that matches mill demand. Mill capacity is designed to be 4,348 t/d at 92% availability. Mill operations are scheduled 365 d/a, 24 h/d, resulting in mill throughput of 1.46 Mt/a (as outlined in the production schedule in Table 22.2). Life of these reserves and production duration is 7.5 years as no inventories are built or drawn down.

Metallurgical testing of leach pad material indicates an expected recovery rate of 91% for gold and 24% for silver. Metallurgical testing of the remnant area ore indicates an expected average gold recovery rate of 93% for that material; no silver has been estimated for the Mineral Reserves for the remnant area. Average overall recovery is calculated to be 91.5% for the LOM. Refining recoveries have historically averaged 99.4% and, given the form of the doré, similar recoveries for the Project’s production are expected. Projected metal sales over the life of the Project total 250,000 oz of gold and 28,000 oz of silver.

22.2.2 ROYALTIES

Royalties are payable based on royalty agreement terms and the laws of Nevada (see also discussion in Section 4.6 and Section 24.2.4). Scorpio Gold maintains a record of claims for the Project, with associated royalties and the respective ounces of gold by claim that reside in the heap leach pad, a summary of which is provided in Table 22.3. The Mineral Reserve in the heap leach pad has been estimated to contain 4,400 oz of gold, and at the expected mill recovery rate of 91%, 4,000 oz will be recovered. These ounces are allocated proportionally to heap leach pad material volume moved.

Gold recovered from the remnant areas to be mined by open pit methods is also subject to royalty. The ounces sourced each year from the remnant areas are added to the allocation of heap leach ounces subject to royalty and multiplied by the result of the expected gold price, less the per-ounce costs of stripping, refining, and the Nevada Net Proceeds of Mining Tax, all multiplied by the NSR of 3%. This calculation is shown in Table 22.4.

Table 22.2: Forecast Production Schedule, Heap Leach Pad

	Units	Total	2018	2019	2020	2021	2022	2023	2024	2025	2026
Ore from Heap Leach Pad	kt	6,855	--	736	1,464	1,460	1,460	1,460	243	0	32
Ore from Remnant Areas	kt	3,712	--	--	--	--	--	--	1,221	1,460	1,031
Average Gold Grade	opt	--	--	0.017	0.017	0.017	0.017	0.017	0.034	0.039	0.052
Contained Gold	oz ('000)	273	--	13	25	25	25	25	49	56	55
Average Silver Grade	opt	--	0	0.017	0.017	0.017	0.017	0.017	0.017	n/a	0.017
Contained Silver	oz ('000)	116	--	12	25	25	25	25	4	0	1
Mill Recovery	%	--	0.0	91.0	91.0	91.0	91.0	91.0	92.9	92.9	92.6
Refining Recovery	%	--	0.0	99.4	99.4	99.4	99.4	99.4	99.4	99.4	99.4
Gold Returned for Sale	oz ('000)	250	--	11	23	23	23	23	49	52	26
Silver Returned for Sale	oz ('000)	28	--	3	6	6	6	6	1	0	0

Note: Totals may not sum due to rounding

Table 22.3: Royalty Claim Records (Heap Leach Pad)

	Ore Tons Mined & Placed (t)	Contained Ounces Mined & Placed (oz)	Leach Recovery Rate[1] (%)	Recoverable Ounces by Leaching[2] (oz)	Ounces Remaining After Leaching (oz)	Mill Recovery Rate[3] (%)	Additional Recoverable Ounces Subject to 3% NSR
Soda Claims (Dudley)	34,393	1,436	58	833	603	91	549
Peorto Claims (Dudley)	10,343	459	66	303	156	91	142
Solberry-Gillespy Claims (Dudley & Stewart)	179,682	7,279	66	4,804	2,475	91	2,252
Missouri Claims (Hanchett, Butler)	84,514	3,487	66	2,301	1,186	91	1,079
Totals	**308,932**	**12,661**	--	**8,241**	**4,419**	--	**4,022**

Notes: NSR is 3%. Analysis is based on material placed on the leach pad through July 2017, subject to royalties; per 'Scorpio Internal Memorandum: Royalties analysis for mill feasibility study.xls'
[1]indicates ounces on which royalties have already been paid
[2]indicates the estimated contained ounces remaining after leaching
[3]indicates the additional estimated recoverable ounces subject to royalty, based on a mill recovery rate
Totals may not sum due to rounding

Table 22.4: Forecast Royalty Payments

	Units	Total	2018	2019	2020	2021	2022	2023	2024	2025	2026
Realized Gold Price (includes the $0.50/oz Refining Deduct)	$/oz	--	--	1,249.50	1,249.50	1,249.50	1,249.50	1,249.50	1,249.50	1,249.50	1,249.50
Less: Net Proceeds Tax	$/oz	--	--	-4	-21	-18	-18	-8	-18	-34	--
Less: Stripping and Refining	$/oz	--	--	-28	-28	-28	-28	-28	-14	-13	-13
Net Price Against which Ounces and NSR Applied	$/oz	--	--	1,221	1,217	1,200	1,203	1,204	1,226	1,225	1,221
Gold Subject to Royalty	oz ('000)	44	--	0	1	1	1	1	0	0	40
NSR Rate	%	3	3	3	3	3	3	3	3	3	3
Royalty Paid	$'000	1,599	--	16	31	31	31	31	5	4	1,450

Note: Royalty paid is calculated by multiplying gold ounces by the net price by the NSR.
Totals may not sum due to rounding.

22.2.3 PRICES AND REVENUE

As discussed in Section 19.0, gold prices for all Project years are constant at $1,250/oz less $0.50/oz of gold such that realized gold price for the Project evaluation is $1,249.50/oz. Silver prices are based on a June 30, 2017 CIBC Global Mining Group, Analyst Consensus Commodity Price Forecasts study, less $0.01/oz of silver per contract with buyer, with the average over the life of the Project assumed to be $19.76/oz.

Table 22.5 shows forecast ounces of metal for sale, prices and resulting revenues. Given the terms of the selling agreement (payment five days following placement for sale) and production inventory time due to shipping from the mill to the stripper and then to the refinery (stripping time is 16 days and refining seven days, inclusive of transport time), receipt of payment for revenues is delayed. Changes to balance sheet working capital account for these timing factors. The cash impact of these timing differences is noted in the last two lines of Table 22.5 and is used in the cash flow calculation under the line item “working capital”.

Table 22.5: Forecast Saleable Ounces, Price and Revenue, and Working Capital Changes

	Units	Total	2018	2019	2020	2021	2022	2023	2024	2025	2026
Gold Returned for Sale	oz	250	--	11	23	23	23	23	46	52	51
Realized Gold Price (includes the $0.50/oz refining deduct)	$/oz	--	--	1,249.50	1,249.50	1,249.50	1,249.50	1,249.50	1,249.50	1,249.50	1,249.50
Silver Returned for Sale	oz	28	--	3	6	6	6	6	1	0	0
Silver Price (includes the $0.01/oz refining deduct)	$/oz	--	--	19	20	20	20	20	20	20	20
Gross Revenue	$'000	313,513	--	14,282	28,412	28,334	28,334	28,334	56,899	65,202	63,717
Royalty Paid	$'000	1,599	--	16	31	31	31	31	5	4	1,450
Net Revenue	$'000	311,914	--	14,266	28,381	28,303	28,303	28,303	56,894	65,179	62,267
Accounts Receivable (Increase)/Decrease	$'000	--	--	(391)	--	1	--	--	(392)	--	781
Strip/Refine Cash (Delay)/Recovery After End of Production	$'000	--	--	(1,798)	--	5	--	--	(1,802)	--	3,595

Note: Totals may not sum due to rounding

22.2.4 OPERATING COSTS

Activities related to production of metal include movement of heap pad material and ore from the remnant area open pits to the processing plant (refer to Section 16.0 with operating costs discussed in detail in Section 21.0), milling and processing (refer to Section 17.0 with processing costs discussed in detail in Section 21.0), stripping and refining, maintenance, purchasing, payroll, safety and management and general and administrative costs. Table 22.6 summarizes operating costs for the mining and processing disciplines.

Heap leach pad material mining costs as described in Section 21.0 include lease costs (48-month term), equipment operator labor (costs increase as the scraper is brought on line in the third year of production to move distal material to the dozer and loader), and fuel and maintenance. Operating lease costs for mining equipment will end after 48 months; equipment rebuild costs as scheduled as cumulative operating hours dictate in production years three, four and five included in the lease cost expense item.

Remnant area ore mining costs, as described in Section 21.0 include only drill/blast wear parts, operating labor and fuel and maintenance for all mining equipment. Only one rebuild is included, given the short duration of the drill/blast activities. Interest costs for mining equipment capital lease financing is included as an operating cost. Principal for the mining equipment capital lease is accounted for under cash flow.

Stripping and refining costs are based on the assumption that each shipment will include 14 days of gold production, and each shipment will contain 72% gold and, proportionally to grade and recovery, silver (only during its recovery from heap leach pad material milled). These factors, combined with expected transportation and contract stripping and refining rates determine shipping and refining costs.

G&A cost forecasts are provided in Table 22.7. G&A costs for the Mineral Ridge operations include purchasing staff, safety staff, accounting/bookkeeping staff, maintenance of fleet vehicles, Nevada property taxes, maintenance of all permits, licenses and claims, Scorpio Gold's management fee (calculated as 3% of capital plus operating costs, less royalties), and, under the "All other G&A" line in Table 22.7, costs of insurance, legal, bonding, postage, audit, utilities, communications and software, consulting, travel/per diem and other going-concern operating expenses. These costs were determined on a full-year basis; however, in years where production occurs for only a portion of the year (such as 2019), these costs were scaled proportionally to production.

Property taxes in Nevada are levied at the county level. In Esmeralda County, asset-based property taxes are calculated based on the cost basis of the asset multiplied by the level of assessment (35%) and then multiplied by the Esmeralda county mill levy set by county commissioners. The cost basis declines by approximately 12% each year.

The increased footprint for the new mill increases annual reclamation bonding expense by $28,000 per year and requires $567,000 (50% of additional bonding) of reclamation collateral to be posted by Scorpio Gold prior to commencement of construction. This collateral is recognized in the cash flows as a first-year cash outflow. The annual bonding expense is included as a component of “All other G&A” in Table 22.7.

Since salvage of the equipment is assumed for the purposes of this economic evaluation, the footprint disturbed will be assumed reclaimed at a cost equal to its full bond ($1,134,000), with the bond collateral assumed to be recovered as to 60% in the year after reclamation and 40% in the second year following reclamation. (Bond collateral, reclamation cost, bond collateral recovery and salvage value by year are noted in Table 22.12, and are captured in the economic evaluation as non-taxable cash flow items).

Additional state-level taxes are collected through the Net Proceeds of Mining Tax, which is calculated based on net proceeds of activity whose value is the basis for a tax computed by a specific rate in a published table. The formula for determining the amount of tax due is: calculate gross proceeds (net revenues less all operating costs) and subtract from that depreciation (as calculated based on specific rates for defined classes of assets). For the Project, the average depreciation rate is 5.78% of book value per year. In determining the net proceeds, county property tax, charitable contributions, liability insurance and lobbying expenses are excluded. As such, per the schedule in Table 22.8, these elements of operating costs are added back. In determining which rate from the published table to use: first, if the gross proceeds exceed $4.0 million, then the rate of five is multiplied by the net proceeds. If the net proceeds are negative, no tax is due. If the gross proceeds are less than $4.0 million, then a declining percentage rate from the published table is selected and used to determine the tax due. The Project will not trigger this declining scale because its gross proceeds will always exceed $4.0 million. Tax is payable in the year following its calculation.

Table 22.9 summarizes all operating costs and their associated unit costs.

Table 22.6: Mining and Process Operating Cost Estimate Forecast

	Units	2018	2019	2020	2021	2022	2023	2024	2025	2026
Heap Leach Mining										
Front-end Loader	$/t	--	0.46	0.46	0.46	0.46	0.46	0.46	--	0.46
Dozer	$/t	--	0.18	0.18	0.18	0.18	0.18	0.18	--	0.18
Scraper (CAT 627H)	$/t	--	--	--	0.29	0.29	0.29	0.05	--	0.01
Labor	$/t	--	0.24	0.24	0.27	0.31	0.31	0.31	--	0.31
Lease Cost	$/t	--	0.31	0.31	0.44	0.56	0.63	0.25	--	0.25
Total Heap Leach Mining	**$/t**	**--**	**1.20**	**1.20**	**1.65**	**1.81**	**1.87**	**1.25**	**--**	**1.20**
Remnant Area Mining	**$/t**	**--**	**--**	**--**	**--**	**--**	**--**	**1.34**	**1.31**	**1.34**
Crushing	**$/t**	**--**	**--**	**--**	**--**	**--**	**--**	**1.81**	**1.81**	**1.81**
Processing Costs										
Plant Consumables and Reagents	$/t	--	1.83	1.83	1.83	1.83	1.83	1.83	1.83	1.83
Plant Electrical Power	$/t	--	1.11	1.11	1.11	1.11	1.11	1.11	1.11	1.11
Plant Maintenance Supplies	$/t	--	0.51	0.66	0.80	0.80	0.80	0.80	0.80	0.80
Plant Labor	$/t	--	1.17	1.17	1.17	1.17	1.17	1.17	1.17	1.17
Other Operations Costs	$/t	--	0.88	0.88	0.88	0.88	0.88	0.88	0.88	0.88
Total Processing	**$/t**	**--**	**5.50**	**5.65**	**5.79**	**5.79**	**5.79**	**5.79**	**5.79**	**5.79**
Stripping and Refining	**$/oz**	**--**	**28.17**	**28.31**	**28.39**	**28.39**	**28.39**	**14.63**	**12.90**	**13.18**

Note: Totals may not sum due to rounding

Table 22.7: General and Administrative Cost Estimate Forecast

	Units	Total	2018	2019	2020	2021	2022	2023	2024	2025	2026
Personnel	$'000	11,802	--	908	1,816	1,816	1,816	1,816	1,816	1,816	1,816
General Operating	$'000	787	--	61	121	121	121	121	121	121	121
Fuel, Oil & Lubricants	$'000	524	--	40	81	81	81	81	81	81	81
Parts & Supplies	$'000	234	--	18	36	36	36	36	36	36	36
NV County Property Taxes	$'000	2,895	--	257	454	393	346	302	609	535	467
Permits and Licensing	$'000	1,997	--	154	307	307	307	307	307	307	307
Scorpio US Management Fee	$'000	6,499	--	974	451	487	490	491	2,221	1,385	1,181
Claim Maintenance	$'000	684	--	53	105	105	105	105	105	105	105
All Other G&A	$'000	6,092	--	469	937	937	937	937	937	937	937
Total G&A	**$'000**	**31,513**	**--**	**2,932**	**4,308**	**4,283**	**4,240**	**4,196**	**6,232**	**5,323**	**5,051**
G&A per Processed Ton	**$/t**	**--**	**--**	**3.98**	**2.94**	**2.93**	**2.90**	**2.87**	**4.26**	**3.65**	**155.94**

Note: Totals may not sum due to rounding

Table 22.8: Nevada Net Proceeds of Mining Tax Forecasts

	Units	Total	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Gross Proceeds	$'000	311,914	--	14,266	28,381	28,303	28,303	28,303	56,894	65,197	62,267	--
Operating Costs	$'000	(201,042)	(327)	(8,181)	(15,064)	(16,256)	(16,376)	(16,413)	(41,439)	(46,173)	(40,813)	(486)
Depreciation for Nevada Proceeds Tax	$'000	(40,075)	(4,463)	(4,463)	(4,463)	(4,463)	(4,463)	(4,463)	(4,431)	(4,431)	(4,431)	--
County Property Tax	$'000	3,361	--	257	454	393	346	302	609	535	467	--
Charitable Contributions	$'000	8	--	1	1	1	1	1	1	1	1	--
Liability Insurance	$'000	850	--	57	113	113	113	113	113	113	113	--
Net Proceeds from Mining	$'000	**57,413**	**(4,791)**	**1,936**	**9,422**	**8,090**	**7,924**	**7,843**	**11,747**	**15,242**	**17,603**	**(486)**
Tax Rate	%	--	--	5	5	5	5	5	5	5	5	--
Estimated Tax Due (payments delayed by one year)	$'000	**2,348**	**--**	**--**	**97**	**471**	**405**	**396**	**392**	**587**	**762**	**880**

Note: Depreciation allowance is calculated per state of Nevada regulations at specific rates for asset classes. Totals may not sum due to rounding

Table 22.9: Operating Costs by Category

	Units	Total	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Remnant Area Mining	$'000	78,390	--	--	--	--	--	--	23,158	28,493	26,268	472
Heap Mining		10,740	--	880	1,752	2,407	2,636	2,725	302	--	39	--
Crushing		6,719	--	--	--	--	--	--	2,211	2,643	1,865	--
Process		60,767	--	4,049	8,266	8,455	8,455	8,455	8,478	8,455	6,156	--
Stripping and Refining		4,896	--	321	641	641	641	641	666	673	672	--
G&A		36,906	327	2,932	4,308	4,283	4,240	4,196	6,232	5,323	5,051	15
Net Proceeds of Minerals Tax		3,110	--	--	97	471	405	396	392	587	762	--
Total Operating Costs		**201,528**	**327**	**8,181**	**15,064**	**16,256**	**16,376**	**16,413**	**41,439**	**46,173**	**40,813**	**486**
Remnant Area Mining	$/oz	313	--	--	--	--	--	--	509	546	515	--
Heap Leach Pad Mining		43	--	77	77	107	117	121	7	--	1	--
Crushing		27	--	--	--	--	--	--	49	51	37	--
Process		243	--	356	365	374	374	374	186	162	121	--
Stripping and Refining		20	--	28	28	28	28	28	15	13	13	--
G&A		147	--	258	190	190	188	186	137	102	99	--
Net Proceeds of Minerals Tax		12	--	--	4	21	18	18	9	11	15	--
Total Cash Cost		**805**	**--**	**719**	**665**	**720**	**725**	**727**	**910**	**885**	**800**	**--**

Note: Totals may not sum due to rounding

22.2.5 FEDERAL TAXES

Scorpio Gold, which owns 70% of MRG, is the taxable entity for the company. As of the end of 2016, Scorpio Gold has accumulated a net operating loss of approximately $33 million. This initial net operating loss (NOL) balance is intended to be used to offset Scorpio Gold's 70% share of income before tax generated by the Project. As such, the Project owners will be able to apply this NOL to taxable income through 2024 and for a portion of 2025. Any taxable income is taxed at a nominal 20%. Table 22.10 provides this schedule.

22.2.6 TAX DEPRECIATION

Capital expenditures for the Project, less adjustment in the final Project year for expected salvage, are recovered over the life of the Project using Modified Accelerated Cost Recovery System rates for Mining Asset class 10.0 over seven years, with any undepreciated basis written off in the final year of the analysis (Table 22.11). Depreciation is used in the economic analysis only as it relates to the federal tax schedules estimated in Section 22.2.5.

22.2.7 WORKING CAPITAL

Cash received for sale of gold is delayed by shipping and refining schedules (16 and seven days, respectively) and by payment terms (five days). These two elements delay cash receipts compared to production, and upon termination of production, the amount delayed is recovered by Scorpio Gold.

The Scorpio Gold standard terms with vendors are 30 days, and as such, accounts payable change allows cash to be held by the company for this period, delaying payment to vendors. These differences drive necessary working capital requirements, which are shown in Table 22.12.

Table 22.10: Federal Tax and Use of Net Operating Loss Forecasts

	Units	Total	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027
Net Revenue	$'000	311,914	--	14,266	28,381	28,303	28,303	28,303	56,894	65,197	62,267	--
Operating Costs	$'000	(201,528)	(327)	(8,181)	(15,064)	(16,256)	(16,376)	(16,413)	(41,439)	(46,173)	(40,813)	(486)
Operating Profit	$'000	**110,385**	**(327)**	**6,085**	**13,318**	**12,047**	**11,927**	**11,890**	**15,455**	**19,024**	**21,454**	**(486)**
Tax Depreciation	$'000	(54,400)	(1,513)	(6,064)	(7,798)	(5,569)	(3,978)	(3,113)	(7,771)	(8,451)	(10,143)	--
Income Attributable to MRG LLC	**$'000**	**55,986**	**(1,840)**	**21**	**5,519**	**6,477**	**7,949**	**8,778**	**7,684**	**10,574**	**11,310**	**(486)**
Scorpio Gold Share of Income	%	--	70	70	70	70	70	70	70	70	70	70
Income Before Tax	**$'000**	**39,190**	**(1,288)**	**15**	**3,863**	**4,534**	**5,564**	**6,144**	**5,379**	**7,402**	**7,917**	**(340)**
Use of NOL Against Positive Income before Tax	$'000	--	--	(15)	(3,863)	(4,534)	(5,564)	(6,144)	(5,379)	(7,402)	(1,131)	--
Taxable Income	**$'000**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**--**	**6,786**	**--**
Scorpio Gold - NOL Account (estimated)												
Opening Balance	$'000	--	32,744	34,032	34,017	30,154	25,620	20,056	13,911	8,532	1,131	--
Additions to NOL	$'000	--	1,288	--	--	--	--	--	--	--	--	340
NOL Used	$'000	--	--	(15)	(3,863)	(4,534)	(5,564)	(6,144)	(5,379)	(7,402)	(1,131)	--
Closing Balance	**$'000**	**--**	**34,032**	**34,017**	**30,154**	**25,620**	**20,056**	**13,911**	**8,532**	**1,131**	**--**	**340**

Note: This tax analysis has not been reviewed by tax experts, nor has Scorpio Gold opined on it other than providing the opening NOL balance (as of the end of 2016). Actual tax effects of this Project on Scorpio may be influenced by factors beyond the scope of this Report. Totals may not sum due to rounding

Table 22.11: Depreciation Forecast

		Units	Total	2018	2019	2020	2021	2022	2023	2024	2025	2026
MACRS 7 Year Rates per IRS Pub 946	2018	%	--	14.30	24.49	17.49	12.49	8.93	8.92	8.93	4.46	--
	2019	%	--	--	14.30	24.49	17.49	12.49	8.93	8.92	8.93	4.46
	2024	%	--	--	--	--	--	--	--	14.30	24.49	17.49
Depreciation for First Year's Capital	--	$'000	10,579	1,513	2,591	1,850	1,321	945	944	945	471	--
Depreciation for Second Year's Capital	--	$'000	11,237	--	3,473	5,948	4,248	3,034	2,169	2,166	--	-9,801
Depreciation for Remnant Area Mine Equipment	--	$'000	32,584	--	--	--	--	--	--	4,660	7,980	19,945
Exclusion of Salvage Value	--	$'000	(13,051)	--	--	--	--	--	--	--	--	(13,051)
Total Tax Depreciation	**--**	**$'000**	**41,349**	**1,513**	**6,064**	**7,798**	**5,569**	**3,978**	**3,113**	**7,771**	**8,451**	**(2,907)**

Note: Totals may not sum due to rounding

Table 22.12: Working Capital Forecast

	Units	2018	2019	2020	2021	2022	2023	2024	2025	2026
Accounts Receivable Change	$'000	--	(391)	--	1	0	0	(392)	--	781
Strip/Refine Cash (Delay)/Recovery After End of Production	$'000	--	(1,798)	--	5	0	0	(1,802)	--	3,595
Accounts Payable Change	$'000	--	1,345	(107)	98	10	3	2,057	389	(3,795)
Working Capital Change	**$'000**	**--**	**(844)**	**(107)**	**104**	**10**	**3**	**(136)**	**389**	**581**

Note: Totals may not sum due to rounding

22.2.8 CAPITAL COSTS

Direct initial capital costs for heap leach pad material movement equipment and the construction of mineral processing systems and on-site infrastructure, are estimated to total $25.2 million. Twenty-five percent of the processing portion of these capital costs are scheduled during the first six months of the construction period, with the remainder in the final six months. Initial mining capital expenditure is for pad expansion and will be incurred in 2018. Subsequent mining capital expenditure of $32.6 million in 2024 is for remnant area open pit mining and crushing and conveying equipment.

Project indirect costs are estimated based on comparable projects in Nevada and are expected to be 12% of the subtotal of initial direct mining, mineral processing and on-site infrastructure capital costs. Engineering and project management costs are expected to comprise 9% of initial direct capital costs.

Owner's costs are expected to comprise 0.3% of initial direct capital costs. Contingency on all initial capital costs is estimated to be 14% based on the design stage of this study.

No contingency is included in the mine equipment capital estimate (year 2024). There is no sustaining capital on initial capital items due to the brevity of the Project.

Table 22.13 summarizes the Project's capital expenditures.

Salvage value of $13.1 million has been estimated under market conditions known in October 2017 for processing equipment and heap leach pad mobile equipment and as of December 2017 for mine equipment. Ram Opportunities LLC (of Arizona) and Nelson Machinery & Equipment Ltd (of British Columbia), both of whom are used mining and mineral processing equipment dealers, provided quotes for the purchase of the disassembled processing plant at the end of year five on which salvage values were based. With the Project concluding four years after this estimate's timing, 50% has been used for mill equipment salvage.

Cashman Equipment Co., a Nevada CAT dealer for the mobile equipment, provided estimated values for the sale of the mobile equipment at the end of the leach pad material recovery. All values assume the equipment will have been well-maintained.

Salvage of mining equipment is 20% of major equipment cost (refer to discussion in Section 21.0). Net salvage value, assumed recovered in the final Project year, is 23% of initial direct capital costs.

Table 22.13: Capital Expenditure Forecast

	Item	Units	Total	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Mining Equipment & Pad Expansion	--	$'000	33,762	1,678	--	--	--	--	--	32,084	--	--	--	--
Mineral Processing	--	$'000	21,118	5,154	15,463	--	--	--	--	500	--	--	--	--
On-site infrastructure	--	$'000	2,910	728	2,183	--	--	--	--	--	--	--	--	--
Subtotal Direct Costs	**--**	**$'000**	**57,790**	**7,560**	**17,646**	**--**	**--**	**--**	**--**	**32,584**	**--**	**--**	**--**	**--**
Project Indirect Costs	5.1%	$'000	2,931	859	2,072	--	--	--	--	--	--	--	--	--
Engineering & Project Management	4.1%	$'000	2,387	*760*	1,627	--	--	--	--	--	--	--	--	--
Owner's Costs	0.1%	$'000	71	18	53	--	--	--	--	--	--	--	--	--
Subtotal Initial Capital Cost	**--**	**$'000**	**63,179**	**9,197**	**21,399**	**--**	**--**	**--**	**--**	**32,584**	**--**	**--**	**--**	**--**
Contingency	6.8%	$'000	4,271	1,382	2,889	--	--	--	--	--	--	--	--	--
Total Capital Costs	**--**	**$'000**	**67,451**	**10,579**	**24,288**	**--**	**--**	**--**	**--**	**32,584**	**--**	**--**	**--**	**--**
(Bonding & Reclamation)/Bond Recovery	--	$'000	(1,134)	(567)	--	--	--	--	--	--	--	--	**340**	**227**
Salvage Value	22.6%	$'000	13,051	--	--	--	--	--	--	--	--	13,051	**13,051**	**--**

Note: Totals may not sum due to rounding

22.2.9 CASHFLOW

The remnant area open pit mining equipment is assumed to be leased rather than purchased. The type of lease is assumed to be a capital equipment lease. The term the lease is modeled at is four years at 6% interest. Interest payments are reported as cash operating costs and principal payments reduce cash as a financing activity reported on the cash flow statement. This financing mechanism adds 1.5% to the Project IRR.

The Project returns a NPV 5% of $35.1 million and an IRR of 30.0%, supporting the Mineral Reserves estimate. The projected payback period is 2.9 years from commencement of operations. The cash flows that generate these economic metrics presented in the expected periods are presented in Table 22.14 and displayed graphically in Figure 22.1.

22.2.10 SENSITIVITY ANALYSIS

Project sensitivity to variations to operating costs, capital costs, gold grade and metals price were evaluated. The NPV 5% of the Project changes rapidly with changes in metals price (Figure 22.2). For example, at a gold price of $1,100/oz, a 12% decrease, the NPV 5% decreases to $10 million and the IRR declines to 13%. A gold price over the Project period that averaged $1,045/oz would cause the NPV 5% to decline to zero.

Project sensitivity to variations to operating costs, capital costs, grade and metals price were evaluated with respect to the IRR (Figure 22.3). The IRR of the project changes rapidly with changes in grade and metals price, and less rapidly with changes in capital and operating costs.

22.2.11 COMMENT ON SECTION 22.0

Scorpio Gold plans to investigate as to whether there is any capital plant or equipment available in the southwestern United States that could be acquired and refurbished for use at Mineral Ridge. If such are available, there may be some potential to reduce capital plant and equipment costs from those used in the financial analysis in this Technical Report. This Technical Report has assumed that new equipment will be acquired.

Table 22.14: Cash Flow Summary

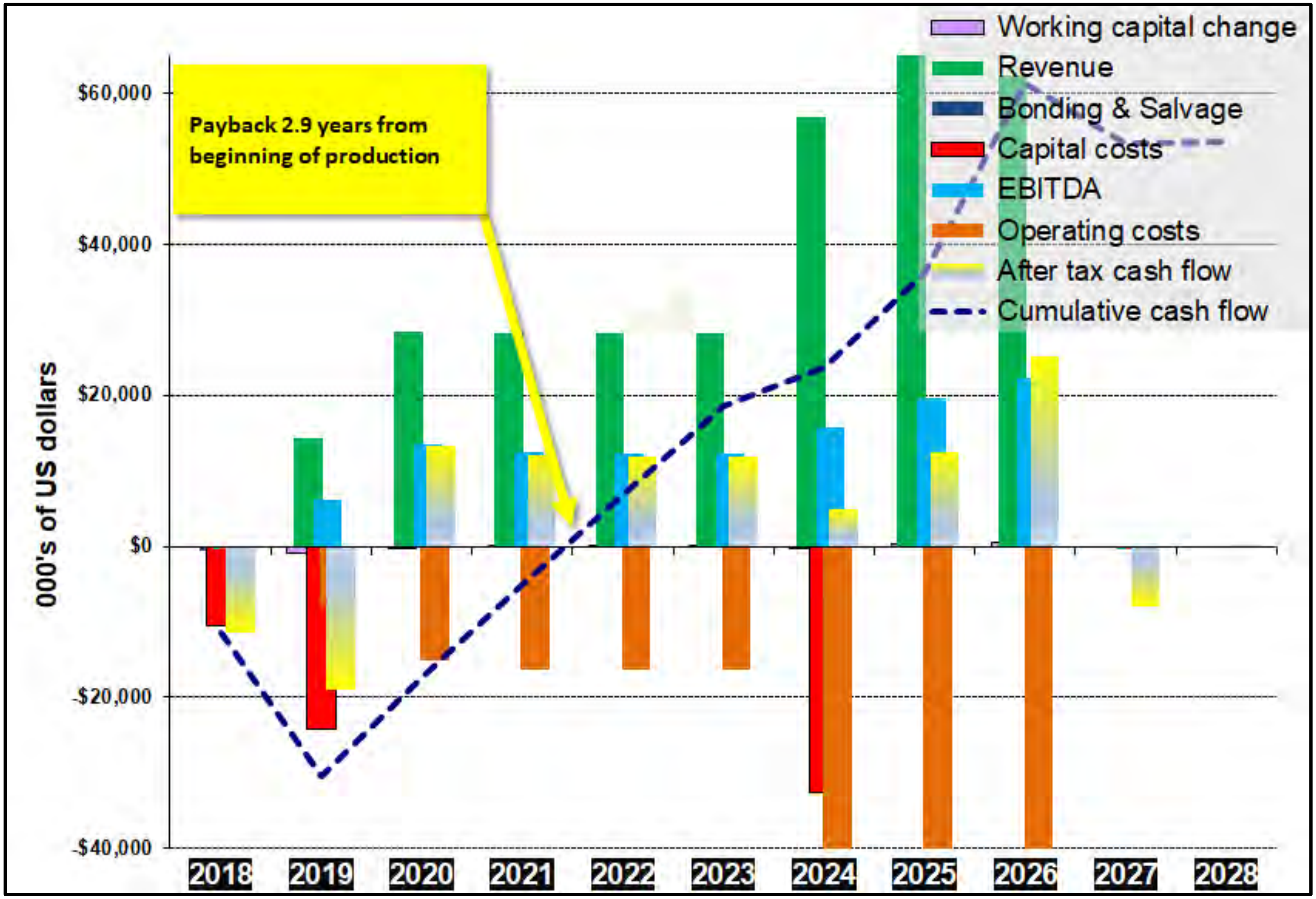
	Units	Total	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Production and Revenue													
Heap Leach Pad Material	kt	6,855	--	736	1,464	1,460	1,460	1,460	243	--	32	--	--
Average Heap Gold Grade	opt	0.017	--	0.017	0.017	0.017	0.017	0.017	0.017	--	0.017	--	--
Waste Moved	kt	51,840	--	--	--	--	--	--	14,386	19,406	18,048	--	--
Remnant Ore	kt	3,712	--	--	--	--	--	--	1,221	1,460	1,031	--	--
Average ROM Gold Grade	opt	0.042	--	--	--	--	--	--	0.037	0.039	0.053	--	--
Average Recovery, after Processing, Strip & Refine	%	92	--	90	90	90	90	90	92	92	92	--	--
Net Gold Ounces Sold	**koz**	**250**	**--**	**11**	**23**	**23**	**23**	**23**	**46**	**52**	**51**	**0**	**0**
Gold Price	$/oz	1,250	--	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250	1,250
Gold Revenue	**$'000**	**312,968**	--	**14,225**	**28,294**	**28,217**	**28,217**	**28,217**	**56,880**	**65,202**	**63,717**	--	--
Silver Revenue	$'000	545	**--**	57	118	117	117	117	19	--	--	--	--
Royalties	$'000	(1,599)	--	(16)	(31)	(31)	(31)	(31)	(5)	(4)	(1,450)	--	--
Net Revenue	**$'000**	**311,914**	**--**	**14,266**	**28,381**	**28,303**	**28,303**	**28,303**	**56,894**	**65,197**	**62,267**	--	--
Operating Costs													
Remnant Area Mining	$'000	78,390	--	--	--	--	--	--	23,158	28,493	26,268	472	--
Heap Mining	$'000	10,740	--	880	1,752	2,407	2,636	2,725	302	--	39	--	--
Crushing	$'000	6,719	--	--	--	--	--	--	2,211	2,643	1,865	--	--
Process	$'000	60,767	--	4,049	8,266	8,455	8,455	8,455	8,478	8,455	6,156	--	--
Stripping and Refining	$'000	4,896	--	321	641	641	641	641	666	673	672	--	--
G&A	$'000	36,906	--	2,932	4,308	4,283	4,240	4,196	6,232	5,323	5,051	15	--
Net Proceeds of Minerals Tax	$'000	3,110	--	—	97	471	405	396	392	587	762	--	--
Total Operating Costs	**$'000**	**201,528**	--	**8,181**	**15,064**	**16,256**	**16,376**	**16,413**	**41,439**	**46,173**	**40,813**	**486**	--
Operating Income	$'000	110,385	--	6,085	13,318	12,047	11,927	11,890	15,455	19,024	21,454	(486)	--
Income Taxes	$'000	(1,357)	--	--	--	--	--	--	--	--	(1,357)	--	--
(Bonding & Reclamation)/Bond Recovery	--	(1,134)	(567)	--	--	--	--	--	--	--	(1,134)	340	227
Net Salvage	$'000	13,051	—	--	--	--	--	--	--	--	13,051	--	--
Capital Lease Loan	--	--	--	--	--	--	--	--	28,876	--	--	--	--
Capital Lease Principal Payments	--	--	--	--	--	--	--	--	(6,601)	(6,997)	(7,417)	(7,862)	--

table continues…

	Units	Total	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028
Working Capital Change	$'000	0	--	(844)	(107)	104	10	3	(136)	389	581	--	--
Capital Costs	$'000	(67,451)	(10,579)	(24,288)	--	--	--	--	(32,584)	--	--	--	--
Net Cash Flow	**$'000**	**53,494**	**(11,473)**	**(19,047)**	**13,211**	**12,151**	**11,937**	**11,893**	**5,010**	**12,416**	**25,177**	**(8,008)**	**227**
Cumulative Net Cash Flow	$'000	--	(11,473)	(30,520)	(17,309)	(5,159)	6,778	18,671	23,681	36,098	61,275	53,267	53,494
Memo: EBITDA and NPMT	**$'000**	**113,496**	--	**6,085**	**13,414**	**12,518**	**12,331**	**12,286**	**15,847**	**19,612**	**22,216**	**(486)**	--

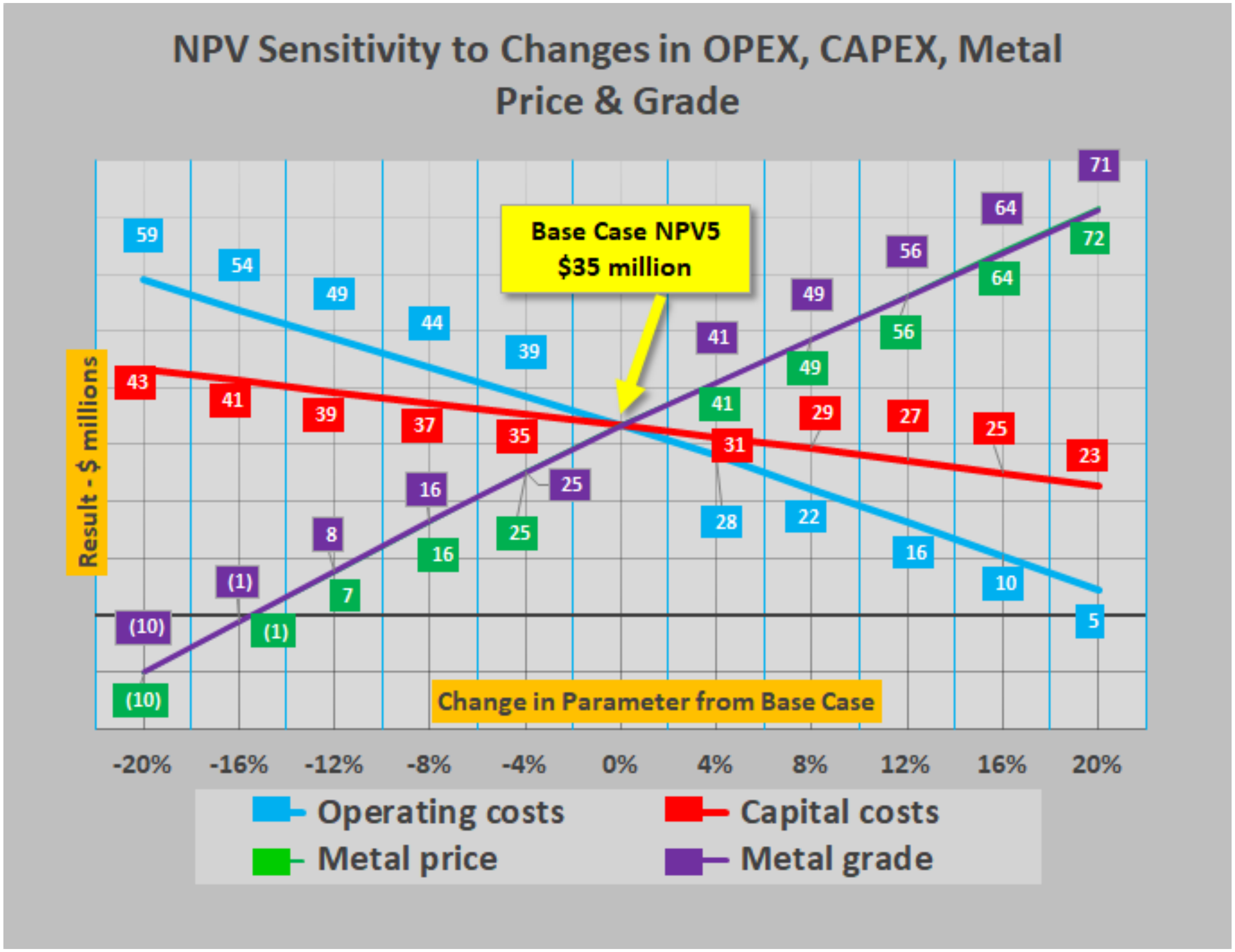
Note: EBITDA is defined by Scorpio Gold as earnings before interest, taxes, depreciation, amortization, and net proceeds of mining tax.
NPMT = Nevada Proceeds Mining Tax.
Totals may not sum due to rounding.

Figure 22.1: Graphical Display of Summary Cash Flow Forecast



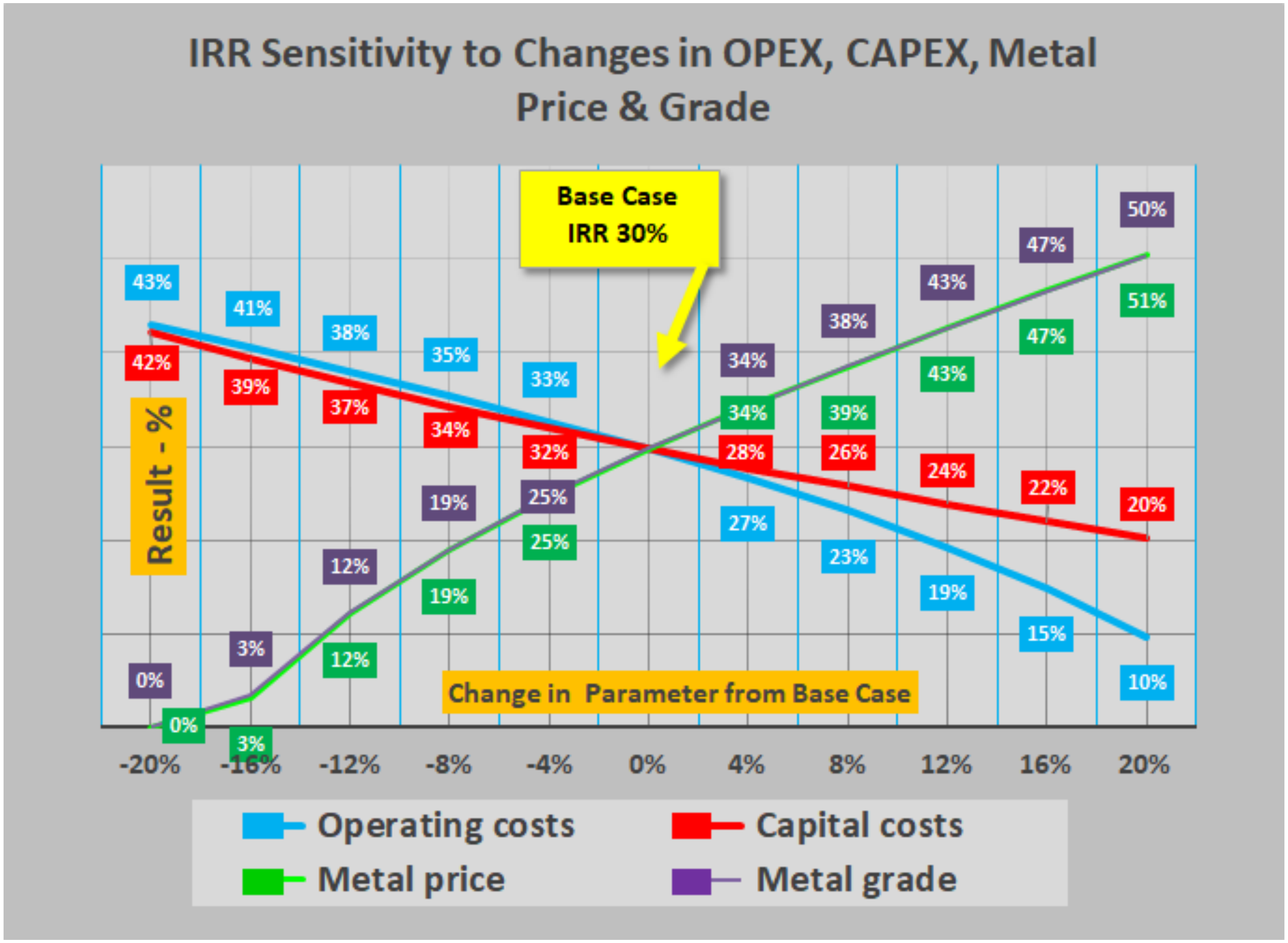
Note: Figure prepared by MTS, 2017

Figure 22.2: NPV Sensitivity



Note: Figure prepared by MTS, 2017

Figure 22.3: IRR Sensitivity



Note: Figure prepared by MTS, 2017

23.0 ADJACENT PROPERTIES

This section is not relevant to this Report.

24.0 OTHER RELEVANT DATA AND INFORMATION

24.1 PROJECT EXECUTION

The MRG site is accessible from urban centers via well-maintained roads; thus, delivery of equipment and materials will be possible by standard road transport, and availability of skilled construction personnel will not be a concern. The completion of project construction is driven primarily by permitting, and secondarily, by equipment delivery. The permitting timing is an external risk factor, and is not in Scorpio Gold's control. In order to mitigate schedule risk associated with equipment delivery, the next phase of engineering should begin immediately.

24.1.1 PROJECT SCHEDULE

Key milestone dates as they pertain to the completion of the construction and commissioning of the Project are shown below in Table 24.1.

Table 24.1: Project Schedule with Key Milestone Dates

Description	Milestone Date
Kick-off & Initiate Detailed Engineering	08-Jan-18
Procure Major Long-lead Equipment	30-Jan-18
Detailed Engineering Completion	18-May-18
Permitting	15-May-18
Site Early Works Completion	20-Jun-18
Civil & Concrete Completion	27-Aug-18
Field Tank Erection Completion	1-Oct-18
Piping Completion	21-Oct-18
Architectural and Structural Steel Completion	16-Feb-19
Mechanical Completion	11-Feb-19
Electrical & Instrumentation Completion	18-Mar-19
Ramp-up Completion	28-Apr-19

24.1.2 DETAILED ENGINEERING

The engineering consultant will begin engineering by reviewing the existing project information. Attention to long-lead items will be required and engineering effort focused to facilitate securing delivery of such equipment. The key equipment packages identified to affect project schedule are ball mills, thickeners, and tailings filters. The engineering phase of the project is expected to take approximately six months, and will facilitate the procurement of equipment and materials.

A key factor in the design of the Project will be safety of personnel and equipment during construction and operations. Efficiency will also be focused on during the design to optimize the use of power and consumables during operations.

The main engineering deliverables will include process flowsheets, piping and instrumentation diagrams, general arrangement layouts, structural concrete and steel drawings, electrical equipment layouts and distribution drawings, piping layouts, MTOs, and equipment procurement package support, including technical specifications, datasheets, and scopes of work documents. Engineering will also prepare technical bid evaluations to assist with the selection of successful bidders.

24.1.3 PROCUREMENT

The procurement team will engage well reputed suppliers and contractors to respond to requests for quotations for equipment, materials, and construction contracts. Engineering will assist with the selection of the successful vendor through technical bid evaluations. Procurement will ensure that commercial terms are negotiated and best pricing is secured for the required equipment and materials, while ensuring the equipment and materials arrive on site when required for construction. There are no special logistical challenges expected for equipment delivery to MRG.

24.1.4 CONSTRUCTION MANAGEMENT

Safety of personnel during construction will be the main focus of the construction management team. Ensuring personnel are trained to perform the tasks assigned, and informed or the work occurring on site any given day will ensure worker safety. Personal protective equipment and other safety gear are last lines of defence; safety must be implemented through a culture of being safety aware at all times. Safety meetings will be mandatory and require input from all workers to ensure full engagement. Leading by example is an effective safety management strategy.

Additionally, the construction management team will provide project controls by monitor the project schedule and budget, and providing timely reporting to Scorpio Gold management of the construction progress. Field engineers will provide quality assurance by ensuring that construction activities meet the required engineering specifications. Field engineers will also be available to answer any technical questions arising during construction.

Ensuring the equipment and materials are available when required, will ensure construction crews are utilized and will avoid stand-by time by construction crews and construction equipment. Working closely with construction supervision to level manpower during construction to ensure effective use of labor and equipment will help optimize the construction costs.

24.1.5 OWNER'S TEAM

The Owner's team will ensure permitting requirements are met before, during and after the construction. The Owner's team will also interface with the Project Controls group of the Construction Management team to ensure payments are made on time to ensure the project schedule is not affected.

The Owner's team will be responsible for providing operators during the commissioning and ramp-up phases, as this will ensure the operators are trained and ready to start working. Maintenance personnel will also benefit form being involved during the commissioning and ramp-up phases.

25.0 INTERPRETATIONS AND CONCLUSIONS

25.1 INTRODUCTION

This Feasibility Study and Technical Report indicates that the Project is economically viable for Scorpio Gold and its shareholders. The processes identified in the feasibility study to mine and process the heap leach material and the additional open pit reserves are standard within the industry, and have been proven at many operations worldwide. The level of accuracy for the CAPEX of ±15% and the allowed contingency are within industry standards for a Feasibility Study.

The QPs note the following interpretations and conclusions in their respective areas of expertise, based on the review of data available for this report.

25.2 MINERAL TENURE

MTS was provided with expert opinion that supported that Scorpio Gold through its subsidiary MRG, has valid Project ownership.

A PoO is currently in place. An amendment request to the PoO has been filed.

25.3 GEOLOGY AND MINERALIZATION

A structurally-controlled orogenic model may be the most applicable to the Mineral Ridge deposits.

The geological setting, mineralization style, and structural and stratigraphic controls are sufficiently well understood to provide useful guides to exploration, Mineral Resource estimation, and mine planning.

25.4 DATA COLLECTION IN SUPPORT OF MINERAL RESOURCE ESTIMATION

Exploration completed to date has resulted in delineation of a number of mineral deposits and exploration targets.

Drilling equipment and procedures are consistent with industry standards and are adequate to support Mineral Resource estimation and mine planning.

The quantity and quality of the lithological, recovery, collar and downhole survey data collected are consistent with industry standards and are adequate to support Mineral Resource estimation and mine planning.

Sample preparation procedures are consistent with typical industry practices and are adequate to support Mineral Resource estimation. Analytical procedures are adequate to support Mineral Resource estimation and mine planning. MTS considers the QA/QC data to be adequately accurate and precise to support Mineral Resource estimation and mine planning.

The density data determination methods employed at the Project are widely used in the mineral industry, and the procedures are adequate to support Mineral Resource estimation and mine planning.

Sample security procedures met industry standards at the time the samples were collected. Current sample storage procedures and storage areas are consistent with industry standards.

Data collected were subject to validation prior to Mineral Resource estimation. Verification is performed on all digitally collected data uploaded to the database, and includes checks on surveys, collar coordinates, lithology data, and assay data. The checks are appropriate, and consistent with industry standards.

Independent third-parties have completed data reviews either as part of audits of major mining studies, or during preparation of technical reports. No material issues were noted with the data evaluated.

As part of site visits conducted in 2017 site visit, the QPs performed high-level reviews of the database and procedures. These included reviews of sampling procedures, geological logging procedures, sonic and core drilling and sample handling procedures, and QA/QC procedures.

MTS has reviewed the appropriate data and reports and is of the opinion that the data verification programs undertaken on the data collected in previous campaigns adequately support the geological interpretations, and the analytical and database quality. The QPs consider the analytical data to be sufficiently accurate and precise to support Mineral Resource estimation and mine planning and the project database to be sufficiently error-free to support Mineral Resource estimation and mine planning.

25.5 MINERAL RESOURCE ESTIMATES

Mineral Resource estimation was performed for gold and silver for mineralization within the heap leach pad. Gold was the only element estimated for the remnant areas as silver assays were not routinely performed during the drilling campaigns.

Mineral Resources estimated for the leach pad have an effective date of 28 June, 2017 and are stated inclusive of Mineral Reserves on an in-situ basis. Mineral Resources for the remnant areas considered amenable to open pit mining are also stated inclusive of Mineral Reserves, and have an effective date of November 30, 2017. Mineral Resources have had reasonable prospects of eventual economic extraction considerations applied.

Factors that may affect the Mineral Resources estimated for the leach pad include the following:

- Since the sonic drills were not permitted to penetrate the leach pad membrane, it was not possible to sample right up to the base of the leach pad. The majority of this material at the extreme edges of the resource model was classified as Inferred Mineral Resources. The true grade of the leached material at the extreme edges of the volume has some uncertainty.
- Local estimates of the leach pad grade have some uncertainty due to the repeatability of certain samples, and therefore selective mining (processing) of the pad should not be attempted using the current grade block model.

Factors that may affect the Mineral Resources estimated for the remnant areas include: changes to geological or grade interpretations, including grade shell considerations; changes to the modelling method or approach; changes to the input parameters to the conceptual Whittle shells used to constrain the Mineral Resources; changes to geotechnical assumptions, in particular, pit slope angles; changes to metallurgical recovery assumptions; and changes to any of the social, political, economic, permitting, and environmental assumptions considered when evaluating reasonable prospects for eventual economic extraction.

Based on mine production data provided by Scorpio Gold, a total of 115,000 t grading 0.045 opt gold was placed on the leach pad between July and November 2017. This material represents upside potential for the leach pad retreatment plan. Only gold was considered when evaluating reasonable prospects for eventual economic extraction in the remnant areas, as there were insufficient silver assays to support estimation. Silver has historically been produced in doré from the Mineral Ridge deposits, and represents a minor upside for the Project.

25.6 MINERAL RESERVE ESTIMATES

The mine plan is based on Measured and Indicated Mineral Resources. Mineral Reserves have been estimated using standard practices for the industry, and conform to the 2014 CIM Definition Standards.

Scorpio Gold has recently completed open pit mining operations, and the Mineral Ridge open pit mines have a relatively long history of production. The mine staff possess considerable experience and knowledge with regard to the nature of the deposits in and around the Project.

However, areas of uncertainty that may materially impact the Mineral Reserves include the following:

- Variations in the forecast commodity price;

- Variations to the assumptions used in the constraining LG pit shells, including mining loss/dilution, metallurgical recoveries, geotechnical assumptions including pit slope angles, and operating costs;
- Variations in assumptions as to permitting, environmental, and social licence to operate.

25.7 MINE PLAN

The heap leach pad will be mined using a hopper and solution mixing system to pump material directly from the leach pad to the mill. After materials are processed through the milling operation, the tailings leaving the mill will be placed back on the pad using conveyor stackers.

Open pit mining will use conventional truck-and-shovel techniques. The mobile equipment fleet is acceptable for the mine plan proposed.

The general assumption is the mine will operate at an average of 4,000 t/d. Manpower considerations are considered appropriate to the type of mining contemplated and the mining rate.

No new roads are envisioned to support the Project, except for a temporary access road that will be required during the mining of the Bunkhouse pit.

An ore storage stockpile that reaches a capacity of 450,000 t is planned on the open pit mining schedule.

Waste will be stored in existing WRSFs or will backfill existing pits.

25.8 MINERAL PROCESSING AND METALLURGICAL TESTING

The Project will use conventional mineral processing equipment to produce carbon loaded with gold and silver. The process flowsheet is standard, consisting of ore reclaim, grinding, cyanide leaching and recovery in a CIL circuit, and tailings filtration.

The plant is designed to achieve 4000 t/d for an annual throughput of 1.46 Mt/a and operate for 365 d/a. The main reagent to recover gold and silver will be cyanide in the leaching tanks. Other reagents such as hydrated lime may be used for pH adjustment in the leaching solution. The filtered tailings will be deposited on the existing lined pad.

Metallurgical test work and analytical procedures were performed by recognized testing facilities, and the tests performed were appropriate for the type of mineralization.

Samples selected for testing were prepared as described in the previous chapter and are relied on as being representative. Samples for variability testing were not provided.

Inconsistencies are noted in the calculated head assays for a number of tests. The sample size was probably too small to be representative. Further tests should use larger samples.

Optimization of reagents and leaching conditions has not been performed. Recovery and operating costs could be improved through optimization. It is recommended that further testing be performed for detailed plant design.

25.9 INFRASTRUCTURE

There is a substantial amount of existing infrastructure on the Property, which includes the main substation and power distribution, fresh water supply and distribution, waste management, administration buildings, maintenance shop, warehousing, assay laboratory, and crushing plant.

The new processing facilities in the Project will be powered via an expansion of the existing power distribution system.

25.10 MARKETS AND CONTRACTS

Gold and silver doré can be readily sold on numerous markets throughout the world and its market price can be ascertained on demand.

While Waterton is required to purchase the Project doré, should it fail to, Scorpio Gold could sell the Project production to gold bullion dealers or smelters on a competitive basis at spot prices. This approach is typical of, and consistent with, standard industry practices.

The gold price used in the financial model is based on consensus pricing of US$1250/oz, derived from a study performed in 2017 by MPA Morrison Park Advisors Inc on behalf of Scorpio Gold. The silver price is based on consensus pricing from a June 2017 CIBC market forecast study, and uses a reverting price curve. The QP has reviewed these studies and methodologies, and considers them to be reasonable based on his professional experience.

25.11 ECONOMIC ANALYSIS

Under the assumptions in this Report, the proposed Mineral Ridge mining plan shows positive Project economics over the life-of-mine and support Mineral Reserves. The mine plan is achievable under the set of assumptions and parameters presented.

The NPV 5% of the Project changes rapidly with changes in metals price. The IRR of the project changes rapidly with changes in grade and gold price, and less rapidly with changes in capital and operating costs.

25.12 RISKS AND OPPORTUNITIES

Two risks, in addition to the financial risks identified in the sensitivity analysis of the Economic Analysis section of the report, were identified that could adversely impact the economic outcome of the Project: these are the availability of financing, and timing for the permitting.

Some opportunities to improve the project economics are also discussed below.

25.12.1 FINANCING

The economic analysis shows that the Project will initially require approximately $35 million in financing to construct. Whether the Project will be financed with reasonable terms and interest rates, will be based on the prevailing market conditions and sentiments of financing firms to invest in mining projects.

25.12.2 PERMITTING

The Project schedule as presented in the study depends on the completion of permitting by end of May, 2018. Although this is a reasonable amount of time for permits to be granted, this activity is out of Scorpio Gold's control and could be delayed.

However, if permitting is received earlier, there will be an opportunity to shorten the construction schedule and achieve production and cash flow sooner.

25.12.3 USED PROCESS EQUIPMENT

While not considered in the CAPEX, purchasing some used equipment for the Project could provide an opportunity to lower the CAPEX, which in turn might improve the Project economics. Used equipment can be considered for the Project, as the Project life is short.

Risk can be introduced with the introduction of used equipment of premature equipment failure, lower than expected performance, or incompleteness or unavailability altogether of technical information. This risk can be mitigated through inspections and conducting due-diligence before the purchase of such equipment.

Another benefit of purchasing used equipment to the Project can be shortening of the construction schedule. As discussed in Section 24.0, in addition to the permitting, certain purchased long-lead equipment determines the finish-date of the project, and hence, the start of production.

26.0 RECOMMENDATIONS

26.1 INTRODUCTION

This Feasibility Study and Technical Report indicates that processing the Mineral Ridge heap leach material and the additional Mineral Reserves in the remnant areas will provide a strong economic return for shareholders and minimal risk for potential investors. It is recommended that the Project be constructed as defined in this Feasibility Study and Technical Report.

To maintain the proposed project schedule, it is recommended that engineering work begin as soon as possible, to improve the accuracy of the CAPEX estimate and secure long-lead equipment. Suitable used equipment should be located, inspected and assessed to determine whether it can be used in place of new equipment to lower cost and lead-time.

26.2 DRILLING

An RC drilling program is recommended to further investigate selected exploration targets in the Chieftain, Oromonte, Custer, and Brodie areas. The program assumes that 45 holes would be drilled at Chieftain, 30 holes at Oromonte, 50 holes at Custer, and 70 holes at Brodie. Holes are assumed to have an average depth of 450 ft. The program assumes an all-in drilling cost of $30.11/ft, which includes provisions for regulatory clearance surveys, construction of road accesses, drilling and pad set-up, surveying, sampling and assaying, and labour. The program also includes a minor contingency allocation of 2,250 ft in the drilled footage assumption. The overall program estimate assumes 90,000 ft of drilling, at $30.11/ft, for an estimated program cost of $2.7 million.

26.3 MINERAL PROCESSING AND METALLURGY

Although the testwork indicated good metallurgical response of the Mineral Ridge leach pad mineralization to direct leaching with cyanide, an unexpected correlation between the grind size and total gold recovery has been observed. In addition, settling and filtration testwork was based on fresh ore samples, instead of the heap leach material.

The test work related to the open pit resource was completed on similar material in the past. It is also recommended to confirm the metallurgical response of the new open pit resource through further testing.

Therefore, it is recommended that further metallurgical test work be completed to confirm the relationship of grind size to gold (and silver) recovery and confirm the metallurgical response of the samples to the established process flowsheet. Testing could include direct leaching of the material at various grind sizes, and sedimentation and filtration testing of CIL final tailings. Reagent optimization tests should be performed to lower the OPEX. Larger sample sizes should be used to remove variability in head assays.

This testwork is often conducted during the basic engineering stage to improve confidence in the process design and equipment sizing for critical unit operations in the process plant.

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SECTION 20

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SUPPORTING DOCUMENTS

The supporting documents listed here can be obtained by request from:

Scorpio Gold Corporation
206-595 Howe St.
Vancouver, British Columbia
Canada, V6C 2T5
Tel: (604) 678-9639
Fax: (604) 558-1136
Email: scorpio@scorpiogold.com

Document Number	Description
A010 B	Mineral Ridge Overview
A050 B	Mineral Ridge HLP Overview
A100 B	Ore Removal and Filtered Tailings Stacking Progression Layouts (1 of 4)
A105 B	Ore Removal and Filtered Tailings Stacking Progression Layouts (2 of 4)
A110 B	Ore Removal and Filtered Tailings Stacking Progression Layouts (3 of 4)
A115 B	Ore Removal and Filtered Tailings Stacking Progression Layouts (4 of 4)
A200 B	Typical Ore Removal and Filtered Tailings Section
1000-13-001	Civil Earthworks - Rough Grading Arrangement & Details
3000-19-001	Electrical General Arrangement Site Plan
1000-10-001	General Arrangement Site Plan
3000-10-001	General Arrangement Plan @ 0'-0"
3000-10-002	General Arrangement Plan @ 12'-0"
3000-10-003	General Arrangement Plan @ 24'-0"
3000-10-004	General Arrangement Elevation
3000-10-005	General Arrangement Section
3100-10-001	General Arrangement Plan & Elevation
3100-10-002	General Arrangement Plan, Elevation & Side View
3400-10-001	General Arrangement Plan
3400-10-002	General Arrangement Section
3400-10-003	General Arrangement Plan
3400-10-004	General Arrangement Elevation
1000-10-SK01	Fresh Feed Alternative General Arrangement
1000-10-SK02	Fresh feed Alternative Elevation
3000-09-001	Simplified Overall Flow Diagram
3000-09-002	Grinding & Gravity Circuits
3000-09-003	Leach Circuit
3000-09-004	Cyanide Destruction
3000-09-005	Site Water Balance
17-008-02-EST-002	Capital Estimate Summary
17-008-SCH-001	Construction Schedule - CM
17-008-SCH-001	Construction Schedule - EP
17-008-SCH-002	Manpower Loading
CAPEX-0034-MRe	CAPEX for Leach Pad Expansion (East)
CAPEX-0034-MRw	CAPEX for Leach Pad Expansion (West)

CERTIFICATE OF QUALIFIED PERSON

I, Amritpal Singh Gosal, P.Eng., of Vancouver, British Columbia, do hereby certify:

- I am a Project Manager with Novus Engineering Inc. located at #1110-1111 West Georgia Street, Vancouver, BC, V6E 4M3, Canada.
- This certificate applies to the technical report entitled "Updated Feasibility Study and National Instrument 43-101 Technical Report: Mineral Ridge Project" dated January 2, 2018 (the "Technical Report").
- I am a graduate of University of British Columbia, Bachelor of Applied Science, Mining Engineering (2001); University of British Columbia, Master of Applied Science, Mechanical Engineering (2004); Wilfred Laurier University, Master of Business Administration, Finance (2011). I am registered as Professional Engineer with Engineers & Geoscientists, British Columbia, License No. 43966. My relevant experience includes 16 years of working on equipment design, and contributing to studies and EPCM projects related to processing plants and infrastructure. I am a "Qualified Person" for the purposes of National Instrument 43-101 (the "Instrument").
- My most recent personal inspection of the Property was on August 30, 2017.
- I am responsible for Section 1.1, 1.13.2, 1.16.2, 2.1, 2.2, 2.3, 2.4, 18.1, 18.2, 18.3, 18.4, 18.5, 18.6 18.7, 18.8, 18.9, 18.10, 18.11, 18.12, 18.13, 24.0, 25.1, 25.9, 25.12, 26.1 of the Technical Report.
- I am independent of Scorpio Gold Corporation as defined by Section 1.5 of the Instrument.
- I have previously co-authored a technical report on the Mineral Ridge Project:

  Cooper, G.J., Crundwell, I., Gosal, A.S., Kaplan, P., Tschabrun, D., and Wakefield, T., 2017: Feasibility Study and National Instrument 43-101 Technical Report on the Mineral Ridge Gold Heap Leach Recovery Project: report prepared by Novus Engineering Inc. for Scorpio Gold, effective date October 10, 2017.
- My prior involvement with the Property also includes leading the completion of a Scoping Study in 2015, while with a different employer.
- I have read the Instrument and the sections of the Technical Report that I am responsible for have been prepared in compliance with the Instrument.
- As of the date of this certificate, to the best of my knowledge, information and belief, the sections of the Technical Report that I am responsible for contain all of the scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated: January 9, 2018 at Vancouver, British Columbia.

signed and sealed

Amritpal Singh Gosal, P.Eng.
Project Manager
Novus Engineering Inc.

CERTIFICATE OF QUALIFIED PERSON

I, Gordon Cooper, P.Eng., of Grand Forks, BC, do hereby certify:

- I am a metallurgist with Novus Engineering located at #1110 - 1111 West Georgia St., Vancouver, BC, V6E 4M3, Canada.
- This certificate applies to the technical report entitled "Updated Feasibility Study and National Instrument 43-101 Technical Report: Mineral Ridge Project" dated January 2, 2017 (the "Technical Report").
- I am a graduate of The University of Waterloo with a B A Sc in Chemical Engineering (1981) with a major in extractive metallurgy. I am a member of Engineers and Geoscientists BC License number 40444. I have worked in the metallurgy field since 1981. My relevant experience includes 15 years in plant operations in metallurgist and project management roles; and 19 years in the design, construction and commissioning of metallurgical plants. The most recent 8 years have been in the mineral processing field.. I am a "Qualified Person" for the purposes of National Instrument 43-101 (the "Instrument").
- My most recent personal inspection of the Property was August 30, 2017.
- I am responsible for Sections 1.11, 13.0, 17.0, 25.8, 26.3, and 27.0 (for Section 13) of the Technical Report.
- I am independent of Scorpio Gold Corporation as defined by Section 1.5 of the Instrument.
- I have previously co-authored a technical report on the Mineral Ridge Project:

  Cooper, G.J., Crundwell, I., Gosal, A.S., Kaplan, P., Tschabrun, D., and Wakefield, T., 2017: Feasibility Study and National Instrument 43-101 Technical Report on the Mineral Ridge Gold Heap Leach Recovery Project: report prepared by Novus Engineering Inc. for Scorpio Gold, effective date October 10, 2017.
- I have read the Instrument and the sections of the Technical Report that I am responsible for have been prepared in compliance with the Instrument.
- As of the date of this certificate, to the best of my knowledge, information and belief, the sections of the Technical Report that I am responsible for contain all of the scientific and technical information that is required to be disclosed to make the Technical Report not misleading.

Dated: January 9, 2018 at Grand Forks, BC.

signed and sealed

Gordon Cooper, P.Eng.
Metallurgist
Novus Engineering

CERTIFICATE OF QUALIFIED PERSON

I, Paul Kaplan, P.E., do hereby certify that:

- I am a Principal with NewFields Mining Design & Technical Services located at 1301 N. McCarran Boulevard, Suite 101, Sparks, Nevada, 89431.
- This certificate applies to the technical report entitled "Updated Feasibility Study and National Instrument 43-101 Technical Report: Mineral Ridge Project" dated January 2, 2017 (the "Technical Report").
- I am a graduate of Arizona State University with an MS (1983) and BS (1980) in Civil Engineering. I am a member of the following professional organizations: American Society of Civil Engineers (ASCE), Society for Mining, Metallurgy & Exploration (SME), American Exploration & Mining Association (AEMA), and a Professional Civil Engineer in Nevada, California, Utah, Washington & Montana. My relevant experience includes 34 years of civil engineering with a focus on mining, including heap leach pads, tailings storage and mine waste facilities.
- As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43–101 Standards of Disclosure for Mineral Projects (NI 43–101).
- I have visited the Mineral Ridge Project.
- I am responsible for Sections 1.13.3, 18.15, 20.0, and 27.0 (for Section 20) of the Technical Report.
- I am independent of Scorpio Gold Corporation as independence is described by Section 1.5 of NI 43–101.
- I have previously co-authored a technical report on the Mineral Ridge Project:

  Cooper, G.J., Crundwell, I., Gosal, A.S., Kaplan, P., Tschabrun, D., and Wakefield, T., 2017: Feasibility Study and National Instrument 43-101 Technical Report on the Mineral Ridge Gold Heap Leach Recovery Project: report prepared by Novus Engineering Inc. for Scorpio Gold, effective date October 10, 2017.

- I have read NI 43-101 and the sections of the Technical Report for which I am responsible have been prepared in compliance with that Instrument.
- As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make those sections of the Technical Report not misleading.

Dated: 9 January 2018.

"signed and sealed"

Paul Kaplan, P.E.

CERTIFICATE OF QUALIFIED PERSON

I, Ian Crundwell, P.Geo, am employed as an independent consultant with Mine Technical Services Ltd.

This certificate applies to the technical report titled "Updated Feasibility Study and National Instrument 43-101 Technical Report: Mineral Ridge Project" with an effective date of January 2, 2018 (the "Technical Report").

I am registered as a Professional Geologist (P.Geo.) with the Association of Professional Geoscientists of Ontario (APGO) (#1501) and a Pr.Sci.Nat of the South African Council for Natural Scientific Professions (#400004/05).

I graduated from the University of Witwatersrand, South Africa, with a B.Sc.Eng., degree in1989, and obtained a Diploma in Applied Geostatistics, from the École Nationale Supérieure des Mines de Paris, France, in 1995.

I have practiced my profession for 28 years since graduation. I have been directly involved in geostatistical studies and mineral resource estimation.

As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101).

I visited the Mineral Ridge property between October 30 and November 2, 2017.

I am responsible for Section 1.9; Section 3.2; Section 9.6; Section 14; Section 25.5; and Section 27 of the Technical Report.

I am independent of Scorpio Gold Corporation as independence is described in Section 1.5 of NI 43-101.

I have previously co-authored a technical report on the Mineral Ridge Project:

- *Cooper, G.J., Crundwell, I., Gosal, A.S., Kaplan, P., Tschabrun, D., and Wakefield, T., 2017: Feasibility Study and National Instrument 43-101 Technical Report on the Mineral Ridge Gold Heap Leach Recovery Project: report prepared by Novus Engineering Inc. for Scorpio Gold, effective date October 10, 2017.*

I have read NI 43-101 and the sections of the Technical Report for which I am responsible have been prepared in compliance with that Instrument.

As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make those sections of the Technical Report not misleading.

Dated: 9 January 2018

“signed and sealed”

Ian Crundwell, P.Geo.

CERTIFICATE OF QUALIFIED PERSON

I, Todd Wakefield, RM SME, am employed as a Principal Geologist with Mine Technical Services Ltd. in Reno, Nevada.

This certificate applies to the technical report titled "Updated Feasibility Study and National Instrument 43-101 Technical Report: Mineral Ridge Project" with an effective date of January 2, 2018 (the "Technical Report").

I am a Registered Member of the Society for Mining, Metallurgy, and Exploration (SME), membership number 4028798.

I graduated from the University of Redlands with a Bachelor of Science degree in Geology in 1986, and the Colorado School of Mines with a Master of Science degree in Geology in 1989.

I have practiced my profession continuously since 1987. I have been directly involved in gold exploration and mining projects in the United States, and I have been involved in evaluating geology, drilling, assaying, and data quality for scoping, pre-feasibility, and feasibility level studies for properties in the United States.

As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101).

I visited the Mineral Ridge Project on February 21, 2017 and April 5, 2017.

I am responsible for Section 3.2; Sections 11.1.4, 11.4.3, 11.5.3, 11.9; Sections 12.3.1, 12.4; Section 25.4; and Section 27 of the Technical Report.

I am independent of Scorpio Gold Corporation as independence is described in Section 1.5 of NI 43-101.

I have previously co-authored the following technical reports on the Mineral Ridge Project.

- *Cooper, G.J., Crundwell, I., Gosal, A.S., Kaplan, P., Tschabrun, D., and Wakefield, T., 2017: Feasibility Study and National Instrument 43-101 Technical Report on the Mineral Ridge Gold Heap Leach Recovery Project: report prepared by Novus Engineering Inc. for Scorpio Gold, effective date October 10, 2017*

- *Drozd, M., Munroe, M., Tschabrun, D., and Wakefield, T., 2012: Scorpio Gold Corporation Mineral Ridge Project, Esmeralda County, Nevada USA, NI 43-101 Technical Report on*

Life on Mine Plan: technical report prepared by AMEC E&C Services Inc for Scorpio Gold, effective date July 15, 2012.

I have read NI 43-101 and the sections of the Technical Report for which I am responsible have been prepared in compliance with that Instrument.

As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make those sections of the Technical Report not misleading.

Dated: 9 January, 2018

“signed and stamped”

Todd Wakefield, RM SME

CERTIFICATE OF QUALIFIED PERSON

I, Bruce Genereaux, RM SME, am employed as an independent consultant with Mine Technical Services Ltd. in Reno, Nevada.

This certificate applies to the technical report titled "Updated Feasibility Study and National Instrument 43-101 Technical Report: Mineral Ridge Project" with an effective date of January 2, 2018 (the "Technical Report").

I am a Registered Member of the Society for Mining, Metallurgy, and Exploration (#4067729).

I graduated from the Middlebury College, Vermont, in 1986 with a Bachelor of Arts degree *cum laude* in geology, and from the Colorado School of Mines with a Master of Science degree in Mineral Economics in 1989.

I have practiced my profession continuously since 1990. I have been directly involved in financial and economic modelling for mineral projects, including gold, silver, lead, zinc, iron ore, specialty metals and coal deposits. I also have experience in long–range planning and mining operations, valuation substantiation, acquisition and due diligence reviews, and market analysis. I have worked on metal project assessments in the United States, West Africa, Chile, Peru, and Liberia.

As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101).

I have not visited the Mineral Ridge Project.

I am responsible for Sections 1.14, 1.15, Sections 3.2, 3.3, 3.4, Section 19, Section 22, Sections 25.10, 25.11, and Section 27 of the Technical Report.

I am independent of Scorpio Gold Corporation as independence is described by Section 1.5 of NI 43–101.

I have previously been involved with the Mineral Ridge Project in 2017, during which I participated in the preparation of the economic analysis.

I have read NI 43-101 and the sections of the Technical Report for which I am responsible have been prepared in compliance with that Instrument.

As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make those sections of the Technical Report not misleading.

Dated: 9 January 2018

“signed”

Bruce Genereaux, RM SME

CERTIFICATE OF QUALIFIED PERSON

I, Jeffery Choquette, P.E., am employed as a Director of Mining with Hard Rock Consulting, LLC in Lakewood, Colorado, and am contracted as an independent consulting engineer with Mine Technical Services Ltd. in Reno, Nevada.

This certificate applies to the technical report titled "Updated Feasibility Study and National Instrument 43-101 Technical Report: Mineral Ridge Project" with an effective date of January 2, 2018 (the "Technical Report").

I am a registered as a Professional Engineer in Montana, registration number 12265.

I graduated from Montana College of Mineral Science and Technology and received a Bachelor of Science degree in Mining Engineering in 1995.

I have practiced my profession continuously since graduation. I have experience in project development, resource and reserve modeling, mine operations, mine engineering, project evaluation, and financial analysis. I have worked for mining and exploration companies for 15 years and as a consulting engineer for seven years. I have been involved in industrial minerals, base metals and precious metal mining projects in the United States, Canada, Mexico, Asia and South America.

As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101).

I visited the Mineral Ridge Project from October 30 to November 2, 2017.

I am responsible for Sections 1.10, 1.12; Section 1.13.1; Sections 3.2, 3.3, 3.4; Section 15; Section 16; Sections 21.2, 21.3; Sections 25.6, 25.7 and Section 27 of the Technical Report.

I am independent of Scorpio Gold Corporation as independence is described by Section 1.5 of NI 43–101.

I have no prior involvement with the Mineral Ridge Project.

I have read NI 43-101 and the sections of the Technical Report for which I am responsible have been prepared in compliance with that Instrument.

As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make those sections of the Technical Report not misleading.

Dated: 9 January 2018

“signed and sealed”

Jeffery Choquette, P.E.

CERTIFICATE OF QUALIFIED PERSON

I, Stella Searston, RM SME, am employed as a consulting geologist with Mine Technical Services Ltd. in Reno, Nevada.

This certificate applies to the technical report titled "Updated Feasibility Study and National Instrument 43-101 Technical Report: Mineral Ridge Project" with an effective date of January 2, 2018 (the "Technical Report").

I am a Fellow of the Australasian Institute of Mining and Metallurgy (FAusIMM #111778), a Member of the Australian Institute of Geoscientists (MAIG #2406) and a Registered Member of the Society for Mining, Metallurgy and Exploration (#4168111).

I graduated from James Cook University in Australia in 1987 with a Bachelor of Science degree in geology, and from the University of Tasmania in 1999 with a Master of Economic Geology degree.

I have continuously practiced professionally since graduation in 1987. In that time I have been directly involved in generation of, and review of, mineral tenure, surface and other property rights, geological, mineralization, exploration and drilling data, geological models, sampling, sample preparation, assaying and other resource-estimation related analyses, quality assurance-quality control, databases, resource estimates, risk analyses, preliminary economic assessment, pre-feasibility, and feasibility studies, and due diligence studies in Australia, Southern Africa, the Pacific and North and South America. I have experience in exploration for structurally-controlled orogenic and intrusion-related gold deposits in Australia, Southern Africa, and the Pacific.

As a result of my experience and qualifications, I am a Qualified Person as defined in National Instrument 43-101 Standards of Disclosure for Mineral Projects (NI 43-101).

I visited the Mineral Ridge Project on from October 30 to November 2, 2017.

I am responsible for Sections 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.16.1; Section 2.5; Sections 3.1, 3.2; Section 4; Section 5; Section 6; Section 7; Section 8; Section 9; Section 10; Sections 11.1.1, 11.1.2, 11.1.3, 11.2, 11.3, 11.4.1, 11.4.2, 11.5.1, 11.5.2, 11.6, 11.6, 11.8, 11.9; Sections 12.1, 12.1, 12.3.2, 12.4; Section 23; Sections 25.2, 25.3, 25.4; Section 26.1.1; Section 26.2; and Section 27 of the Technical Report.

I am independent of Scorpio Gold Corporation as independence is described by Section 1.5 of NI 43–101.

I have no prior involvement with the Mineral Ridge Project.

I have read NI 43-101 and the sections of the Technical Report for which I am responsible have been prepared in compliance with that Instrument.

As of the effective date of the Technical Report, to the best of my knowledge, information and belief, the sections of the Technical Report for which I am responsible contain all scientific and technical information that is required to be disclosed to make those sections of the Technical Report not misleading.

Dated: 9 January 2018

"signed and stamped"

Stella Searston, RM SME