

Castle Mountain Mine Geochemical Characterization Report

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Professional Certification

As a California Professional Geologist and California Certified Hydrogeologist, I have stamped this report regarding geochemical characterization of mined rock materials for the Equinox Gold Corporation, Castle Mountain Mine project. I certify that the findings and recommendations included in this report are valid in my professional judgment.

This report is based in part on previous materials characterization studies that were performed by other parties for Castle Mountain Mine. Our quality assurance review and analysis of the past studies and recent mined rock materials geochemical characterization test results were completed using recognized standards to support waste classification criteria in accordance with California Code of Regulations (CCR) Title 23 Chapter 15 Article 7.

This report was prepared in accordance with generally accepted professional hydrogeologic and engineering principles and practices. This report makes no other warranties, either expressed or implied as to the professional advice or data included in it. This report has not been prepared for use by parties or projects other than those named or described herein. It may not contain sufficient information for other parties or purposes.

We appreciate the opportunity to be of service to Equinox Gold Corporation on this project. If you have any questions concerning these reports or if we may be of further service, please contact the undersigned.

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Executive Summary

INTRODUCTION

This materials characterization report was prepared for Equinox Gold Corporation / Castle Mountain Ventures (Equinox) to support planned mine expansion at the Castle Mountain Mine (CMM) in San Bernardino County, California. The CMM project is an open-pit, heap-leach, precious metal mine, and processing facility that employs conventional heap leach mining methods to extract gold and silver from mined ore. This report summarizes the results of a mined rock materials characterization study in support of a proposed expansion of the CMM. This report also summarizes and compares the results of two previous mined rock materials characterization studies reported in Environment Impact Statements/Environmental Impact Reports (Castle Mountain Project EIS/EIR, Environmental Solutions, Inc., 1989 and 1990 [1990 EIS/EIR], and Castle Mountain Mine Expansion Project EIS/EIR, Lilburn Corporation, 1997a and 1997b [1997 EIS/EIR]).

SAMPLING AND METHODOLOGY

Fourteen composite samples were created from 36 discrete samples collected from 13 drill holes from the planned mine pit expansion areas (South Extension, Jumbo South-Leslie Ann, Oro Belle). The composite samples represented the lithologies expected to be mined and included overburden (i.e., waste rock) comprising six samples, ore rock comprising seven samples, and one leached and rinsed ore sample. The samples were sent to McClelland Laboratories, Inc. (MLI), of Sparks, Nevada for waste characterization testing for classification according to *The Designated Level Methodology for Waste Classification and Cleanup Level Determination* (DLM) (California Regional Water Quality Control Board – Central Valley Region, 1989). MLI prepared the samples for testing and performed the acid-base accounting (ABA) testing. MLI subcontracted Western Environmental Testing Laboratory (WETLAB) of Reno, Nevada, to perform the total metals digestion testing, and Weck Laboratories, Inc., (Weck) of City of Industry, California, to perform the California Waste Extraction Test (WET). All laboratories and subcontracted laboratories used for the project are certified in California for the testing and analyses performed.

The results of the above testing procedures are used here to determine what mine waste group each mined rock material is to be assigned (DLM). The ABA testing is done to determine if the mined rock materials are expected to be *potentially acid generating* (PAG), which, if PAG materials are not managed properly, can produce acid rock drainage (ARD) and impact the environment. Rock samples subjected to this manner of testing are either determined to be PAG

or not potentially acid generating (non-PAG). Samples are also analyzed for total metal concentrations and leachable metal concentrations. The totals metal digestion results are compared to the Total Threshold Limit Concentrations (TTLs) and the leachable metals extract results from the WET are compared to the Soluble Threshold Limit Concentrations (STLs). If the mined rock material is determined to be PAG, or if the total metals results exceed any TTL or the WET extract results exceed any STL, then that sample is determined to be hazardous (according to the DLM) and would require special handling to manage properly.

RESULTS FROM PREVIOUS STUDIES

Prior environmental analysis of the CMM project included ABA and leach testing for metals. Samples represented composites of overburden (waste rock), rock ore, and spent (leached) ore. Based on those results and evaluations in the 1990 and 1997 EIS/EIR analysis, the materials mined from the CMM were determined unlikely to generate acid and were not susceptible to metal leaching. Therefore, the BLM and San Bernardino County concluded that disposal of waste rock and spent (leached) ore at the project site would not produce significant environmental impacts.

These historical findings are consistent with the current project site surface and groundwater quality sampling results (see below).

RESULTS FROM CURRENT STUDY

The ABA results for the current mined rock materials characterization study indicated that all overburden, ore, and leached/rinsed ore samples were non-PAG based on Neutralization Potential Ratio (NPR) values greater than the 3.0 threshold.¹ ALL samples analyzed for total metal concentrations yielded results that met all standards (TTLs). All samples analyzed for the WET (extractable or leachable) metal concentrations yielded results that met all standards (STLs).

Based on these geochemistry testing results, the waste (overburden) and the rinsed and leached ore should be classified as a Group C mining waste pursuant to Title 23 CCR Chapter 15, Article 7. It is expected that the heap leach pad will continue to be classified as Group B mine waste until the heap leach pad has been rinsed to remove free cyanide, and confirmed by testing.

¹ The neutralization potential ratio (NPR) is the ratio of a material's acid neutralization potential (ANP) and its acid generating potential (AGP). An NPR of 3.0 indicates that the material's ANP is three times its AGP and therefore non-PAG.

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A.3	MATERIALS CHARACTERIZATION INFORMATION FROM: Lilburn Corporation, 1997. Castle Mountain Mine Expansion Project, San Bernardino County, California. Draft Environmental Impact Statement/Environmental Impact Report. March, 1997



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- A.4 MATERIALS CHARACTERIZATION INFORMATION FROM: Lilburn Corporation, 1997.
Castle Mountain Mine Expansion Project, San Bernardino County, California. Final
Environmental Impact Statement/Environmental Impact Report, Response to
Comments. October, 1997
- B Testing and Analytical Lab Reports



Acronyms

ABA	Acid-Base Accounting
AGP	Acid Generating Potential
AMSL	Above Mean Sea Level
ANP	Acid Neutralizing Potential
AP	Acid Potential
ARD	Acid Rock Drainage
CAM-17	California Administrative Manual metals
CCR	California Code of Regulations
CMM	Castle Mountain Mine
COC	Chain of Custody
DLM	Designated Level Methodology for Waste Classification and Cleanup Level Determination
EIR	Environmental Impact Report
EIS	Environmental Impact Statement
EP	Extraction Procedure
EPA	Environmental Protection Agency
ESI	Environmental Solutions, Inc.
GARD	Global Acid Rock Drainage
GLA	Geo-Logic Associates
HCT	Humidity Cell Test
INAP	International Network for Acid Prevention
JSLA	Jumbo South-Leslie Ann



K(AlSi) ₃ O ₃	Potassium feldspar
kT	Kilotons
MEND	Mine Environment Neutral Drainage
mg/kg	milligrams per kilogram
MLI	McClelland Laboratories, Inc.
mm	millimeter
NDEP BMRR	Nevada Division of Environmental Protection Bureau of Mining Regulation and Reclamation
NNP	Net Neutralizing Potential
NP	Neutralizing Potential
NPR	Neutralization Potential Ratio
PAG	Potentially Acid Generating
RCRA	Resource Conservation and Recovery Act
RWCQB	Regional Water Quality Control Board
SiO ₂	Quartz
SPLP	Synthetic Precipitation Leaching Procedure
STLC	Soluble Threshold Limit Concentration
T CaCO ₃	tons of calcium carbonate
TTLC	Total Threshold Limit Concentration
USDA	United States Department of Agriculture
WET	Waste Extraction Test
WETLAB	Western Environmental Testing Laboratory

1. Introduction

This materials characterization report was prepared on behalf of Equinox Gold Corporation / Castle Mountain Ventures (Equinox) to support planned mining activities at the Castle Mountain Mine (CMM) in San Bernardino County, California (**Figure 1**). Materials handled at the CMM and the focus of this report include ore, waste rock (overburden), and leach pad rinsed (spent) ore. The objectives of this report include:

- to summarize past geochemical investigations at the CMM,
- to describe additional investigations and testing results related to the proposed mine expansion project ("Project"), and
- based on current test work, recommend additional mitigation measures (if any).

Geo-Logic Associates (GLA) was retained by CMM to summarize past geochemical characterization studies and to evaluate test results from the current geochemical characterization study with respect to California regulations.

1.1 Project Information

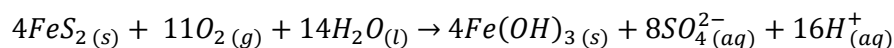
The CMM Project is an open-pit, heap-leach, gold metal mine and processing facility that employs conventional heap leach mining methods to extract gold (and silver) from mined ore. The project consists of mining within an approved project area of 3,910 acres (**Figure 2**) but proposes expanding approved mine pits past their current limits.

Mining at the CMM was originally approved in 1990, and mining commenced in 1991 following mine permitting that included a joint Environmental Impact Statement and Environmental Impact Report (Castle Mountain Project EIS/EIR, Environmental Solutions, Inc., 1989 and 1990) ("1990 EIS/EIR"). The mine project was expanded in 1998 after additional mine permitting and related environmental study (Castle Mountain Mine Expansion Project EIS/EIR, Lilburn Corporation, 1997a and 1997b) ("1997 EIS/EIR"). Geochemical material characterization was part of the historical environmental analysis that determined all overburden and leached/rinsed ore was non-potentially acid generating (non-PAG).

1.2 Purpose of the Current Work

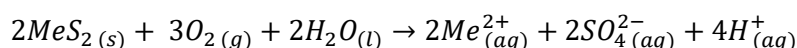
Mined rock materials characterization is a critical part of the mining process that is needed to protect the environment; most critically, California ground and surface water resources. Metallic mines, by definition, contain rock material enriched with metals of economic interest (ore). The ore often contains other elements that can be leached into these water resources if not disposed of properly.

It is important to understand the elemental and mineralogical makeup of mined rock materials. For example, mined rock materials may contain sulfides, which are metal-containing sulfur minerals in which the sulfur is in a reduced state. When sulfide minerals are exposed to air and water, the sulfur is oxidized, releasing sulfuric acid and metals. Pyrite, a common sulfide mineral containing iron, undergoes the following oxidation reaction:



In the above equation, the solid pyrite (FeS_2) reacts with oxygen (O_2) and water (H_2O) to produce an iron hydroxide mineral (ferrihydrite or $Fe(OH)_3$) while releasing sulfate anions (SO_4^{2-}) and acid (hydrogen ions or H^+) to the aqueous phase. In this equation, both iron and sulfur in pyrite are oxidized, and when iron is oxidized from Fe^{2+} to Fe^{3+} , the oxidized iron is insoluble except at low pH values, and hence, is precipitated as ferrihydrite.

Sulfide minerals can contain other various heavy metals; thus, a general oxidation reaction can be written:



In this case, the metal sulfide (MeS_2 , where Me can be such heavy metals as copper, Cu^{2+} or Pb^{2+} , etc.) releases metals into the aqueous phase in addition to acid and sulfate. Most of the heavy metals do not undergo oxidation during the reaction and are soluble in the aqueous phase over wider pH ranges than iron.

Metals and other salts can also be contained in other minerals that are leachable when contacted with water. The metals, salts, and acid released to the aqueous phase, if not properly controlled, can be transported away from the mine to potentially impact the environment downgradient. Therefore, it is important to characterize the makeup of the mined rock materials so a responsible materials management plan can be made and followed to protect the environment.

1.3 Testing Methodology Overview

The testing methodology selected for this project was designed to address the bulk geochemical characteristics of the three rock material types (ore, waste rock (overburden), and leached/rinsed ore) identified in section 1.4. Methods may include both static and kinetic type testing. The following is a brief overview of the methods employed. Detailed descriptions of the testing methods used are in Section 4.

Static testing refers to two types of testing:

- 1) **acid-base accounting** (ABA) for measuring a material's ability to both produce acid and neutralize acid; allowing the sample to be classified as PAG or non-PAG, and
- 2) **leach or extraction tests** for estimating the potential for the material to release metals and other constituents into the environment.

These are referred to as static tests because:

- tests either estimate the total acid that may be produced or neutralized, or the total amounts of metals that may leach from the materials to the environment, or
- tests are designed to simulate the short-term potential for the materials to produce acid or leach metals, generally to mimic the effects of the material coming into contact with rainfall.

The static tests do not provide rates of acid generation or of metals release.

Kinetic testing is generally conducted on material that has already been determined (through static testing) to be PAG or could leach metals in concentrations that would negatively impact the environment. Kinetic testing aims to roughly replicate environmental conditions on an accelerated basis to understand the rate of acid formation and metals leaching over periods of months to years. The reaction rates are used to estimate the effect on the environment over time. Humidity Cell Testing (HCT) is the most common type of kinetic testing.

The mined rock materials expected to be generated at CMM were sampled and tested by approved methods at California approved labs. Project work was completed in accordance with *The Designated Level Methodology for Waste Classification and Cleanup Level Determination (DLM)* (California Regional Water Quality Control Board – Central Valley Region, 1989) and best mining practices as detailed in the Global Acid Rock Drainage (GARD) Guide (International Network for Acid Prevention [INAP], 2014), and the Mine Environment Neutral Drainage (MEND)

Report (Price, 2009). The ABA testing performed was the approved methodology from the Nevada Division of Environmental Protection Bureau of Mining Regulation and Reclamation (NDEP BMRR, 2021). The NDEP BMRR works closely with the Nevada (U.S.) Bureau of Land Management (NV BLM); both agencies have substantial experience regarding waste rock geochemical characterization due to the number of precious metal mines operating in the Nevada.

1.4 Objectives

Project work was performed to characterize the three types of mined rock materials at the CMM and evaluate any risk their disposal may pose to degrade the quality of land or water of the state. These materials include:

- Ore
- Waste Rock (overburden)
- Leached and Rinsed (spent) Ore

California regulations require that groundwater resources be protected for future beneficial uses. This requires geochemical characterization of mining wastes to evaluate:

- The potential for ore and overburden to generate acidic runoff due to oxidation of sulfide minerals or dissolution of other acid-containing minerals; i.e., are the materials PAG.
- The concentrations of metals in ore and waste rock that could become available to leach into the environment, i.e., leachable metals.

The major objectives for the project are to:

- Verify and supplement previous waste rock and ore characterization results obtained for the CMM project.
- Document the acid-base properties of the mined rock materials at the site to determine if any of the rock types will be PAG and thus require special treatment or disposal practices.
- Estimate the likelihood of future environmental impacts from metals found among the CMM ore body and overburden by documenting:
 - the total concentrations of California Administrative Manual (CAM-17) metals in

the rocks to determine if any are at levels that may pose a threat to water quality, and

- the leachability of the rock materials to determine if CAM-17 metals are leached at levels that may pose a threat to the environment.

Sampling and analyses were directed to characterize the geochemical nature of anticipated mined rock materials within planned mining areas.

Ore and waste rock sample locations were identified to include a diverse sample set representative of the entire range of rock material mined, but also weighted based on each lithology's proportion of the total amount of mined material. Specific sample selection criteria included ensuring sampling from:

- Project expansion areas from each mine pit,
- Each major lithology (Section 3.2),
- Both ore and waste rock zones, and
- Pit-specific lithologies that intersect future pit wall/floor locations that could be subject to oxidation and weathering.

Finally, laboratory analytical results are to be used to classify potential waste materials in accordance with CCR Title 23, Chapter 15, Article 7 to determine their containment and disposal requirements.

2. Background Information

In the mid-1980s, Viceroy Gold Corporation (Viceroy) proposed development of the CMM and performed two materials characterization studies of anticipated waste rock, ore, and leached ore. The original study was incorporated with the 1990 EIS/EIR. The second study was for a mine expansion and part of the 1997 EIS/EIR. The waste characterization studies found that the waste rock contained very few occurrences of sulfide minerals, and thus was non-acid generating (non-PAG), and leached metals were identified at levels significantly below California's Soluble Threshold Limit Concentration (STLC) standards. Therefore, for California disposal purposes, the mined rock materials could be classified as Group C Mining Waste according to the DLM, i.e., an inert waste not likely to impact water resources. The permits granted based on the results of the studies are summarized below. The analytical results are detailed in Section 5.

- Based on the studies as reported in the 1990 EIS/EIR, the Colorado River Basin Regional Water Quality Control Board (RWQCB) issued a waste discharge requirement (WDR) and stated the following about the heap leach pad (RWQCB, 1991).

"Upon completion of the heap leach process, each pile or segment would be flushed with fresh water or otherwise rinse-treated after completion of leaching operations to reduce cyanide concentrations to an acceptable level which would result in a mining waste classification of Group C, under Article 7, Chapter 15, Title 23 of the California Code of Regulations."

The overburden was not assigned a mine waste Group classification in the 1991 WDR.

- Based on the ABA and leach testing² results performed for the 1997 EIS/EIR, the RWQCB issued an updated WDR for the operation of the heap leach pad (RWQCB, 1999).
- In 2005, after rinsing and characterizing the leached and rinsed ore, the RWQCB reclassified the heap leach pad from Group B to Group C mining wastes (RWQCB, 2005).
- In 2020, the RWQCB formally classified the overburden material as Group C mining waste (RWQCB, 2020).

Recognizing that planned mining may involve the excavation of materials not considered in the earlier studies, Equinox completed the additional characterization work presented herein. This study included evaluation of rocks that are expected to be mined in the South Extension, JSLA (Jumbo South-Lesley Ann), and Oro Belle pits.

3. Site Setting

3.1 Site Location

CMM is located at 115575 Hart Mine Road, San Bernardino County, California (**Figure 1**). The legal description for CMM is T14N, R17E, Sections 13, 14, 22, 23, 24, 25, 26, and 17 and T14N,

² The mine materials were subjected to either the Environmental Protection Agency's (EPA) Extraction Procedure (EP) Toxicity Test or EPA's Synthetic Precipitation Leaching Procedure as detailed in Section 4.1.2.2.

R18E, Sections 18, 19, and 30 San Bernardino Baseline and Meridian (SBB&M). The latitude and longitude of the site are 35°15'42" N by 115°06'44" W, respectively.

CMM is positioned near the northwest corner of Lanfair Valley, an intermountain valley bounded by the New York Mountains to the west, the Castle Mountains to the north, the Piute Range to the east, and the Hackberry Mountains and Vontrigger Hills to the south (**Figure 1**).

3.2 Site Geology³

CMM is located in the Hart Mining District, an area notable for its Miocene calc-alkaline rhyolite dome field that hosts major gold deposits. The Castle Mountains are mantled by Miocene-age, rhyolitic-ash-flow tuff, latitic to basaltic and andesitic flows, and associated volcanoclastic sedimentary rocks which, in turn, overlie a Miocene pre-volcanic sedimentary basal conglomerate and Proterozoic basement. Groundwater in this area typically occurs within fractured rock or in interbedded variably cemented alluvial and volcanoclastic rocks.

Bedrock materials that were encountered in monitoring well borings excavated at the site generally consist of Miocene basalts, variably welded and weathered ash-fall and pyroclastic tuffs, vitrophyres, cherts, and interbedded coarse-alluvial deposits consistent with the Castle Mountains Volcanic Sequence (Capps and Moore, 1991).

3.2.1 Mine Pits Geology

Prior referenced investigations at the project site have categorized the host rock and overburden stratigraphically into three lithologic zones that have been sampled and characterized for ABA and metals leachability in 1989 (ESI, 1989; Viceroy, 1990) and 1997 (Lilburn, 1997a and 1997b):

- **Unaltered Rhyolite Zone:** Rhyolite is an extrusive (fine-grained) granitic rock type consisting of quartz (SiO_2) and potassium feldspar [$\text{K(AlSi)}_3\text{O}_3$], sodium plagioclase, muscovite, biotite and hornblende. The unaltered rhyolite zones portray areas where silicification and alteration are infrequent. Iron and manganese oxides occur in fractures and fissures within the rhyolite and are formed as a result of weathering. Unaltered rhyolite represents the majority of the overburden that would be generated.
- **Altered Rhyolite Zone:** Silica occurs in fracture zones in the rhyolite gangue and is the primary mineral zone in which the ore occurs. Sulfide minerals in the quartz zones

³ Site geological information provided by Castle Mountain Mine.

include pyrite. The pyrite minerals are encapsulated in silica, rendering them less prone to oxidation and hence acid generation. This silicified zone primarily represents the ore body.

- **Lahar materials:** Lahar materials include cemented tertiary gravels which do not contain acid-generating materials. These materials, together with the rhyolite discussed above, represent the overburden. These materials were not included in the recent waste characterization study.

Subsequent to the previous characterization studies and mining, the underlying andesite has been determined to host precious metals and will be mined.

- **Unaltered Andesite:** The andesite unit at Castle Mountain is typically porphyritic with a purple, green, or grey groundmass hosting plagioclase and amphibole phenocrysts. Plagioclase is the dominant phenocryst mineral, accounting for up to 10% volume as 1 millimeter (mm) to 5 mm crystals. Phenocrysts of plagioclase are typically subhedral, but larger phenocrysts often form randomly oriented ovoid shapes. Hornblende accounts for <1% of volume as <1 mm crystals where present. It can appear as black crystals, but typically appear dark green from alteration to chlorite.
- **Altered Andesite:** When mineralized, the andesite is observed to host unaltered pyrite and in some instances pyrite crystals that have oxidized within the ground mass of the andesite rock and along fractures.

3.2.2 Pyrite Intensity

Pyrite can form as a primary hydrothermal mineral or as a secondary product of hydrothermal alteration. In the first case, it tends to form within quartz veins and can occur as very fine-grained disseminations that give the quartz a grey color, or as coarser crystals that may be mistaken for gold. Primary pyrite typically oxidizes to hematite from further hydrothermal or meteoric fluid exposure. In low-sulfidation epithermal deposits like Castle Mountain, pyrite as an alteration product tends to form in distal propylitic zones—especially within the andesite—as disseminated cubic crystals or fine-grained aggregates in and around fractures.

4. Materials Characterization Test Methods

This section details the test methods used for this study and previous studies to characterize the mined rock materials. Industry and California standard characterization methods and procedures

were followed to characterize the waste rock. The guidance documents include the DLM (RWQCB, 1989), the GARD Guide (INAP, 2014), and the MEND Report (Price, 2009). The ABA methodology for the current study was the NDEP BMRR modified Sobek method (NDEP BMRR, 2021). This section explains what information is gained from the test methods, and compares similar types of tests methods (e.g., different leaching methods in Section 4.1.2.2).

4.1 Static Testing Methods

The following static testing methods were used in the studies covered in this report.⁴

4.1.1 Acid Generating Potential

The following test methods were used to assess the potential for a mined rock material to generate acid.

Paste pH is a simple screening test for assessing the presence of stored acidity (soluble salts and reactive minerals, Lapakko, 2002) that is readily available in mine waste samples (Weber et al. 2006), and is a basic tool for assessing whether a material will be acid generating or not in the short term. Note that this test does not attempt to quantify the total amount of acid that could be produced or predict whether the material will be PAG in the long term.

Acid-base accounting is a set of static tests/analyses used to estimate the potential for a mined rock material to generate acid and to roughly quantify the total amount of acid that could be produced. ABA is generally measured by a modified Sobek procedure (Lawrence and Wang, 1997; NDEP BMRR, 2021). A mined rock material's potential to generate acid is comprised of two components, constituents in the material that will produce acid when exposed to the atmosphere and water, and constituents that can consume or neutralize acid.

- Acid generating potential (AGP or AP) – sulfide minerals are responsible for the majority of ARD (sulfides oxidize to acid and sulfate in the presence of oxygen and water). The Sobek (1978) method determined the percentages of sulfur forms in the mined rock material by combustion in LECO furnace (Total Sulfur, Sulfate-Sulfur, and Pyritic-Sulfur). The pyritic-sulfur percentage was then converted to AGP. Current industry standards are to measure sulfur forms (total, pyritic, water-soluble sulfate, non-water-soluble sulfate,

⁴ Not all the tests were used in all studies. Specific tests used for each study are discussed in the respective sections detailing the previous and current studies.

and non-extractable sulfur) and calculate AGP using the pyritic sulfur plus water-soluble sulfate (acid-forming sulfates) (e.g., NDEP BMRR, 2021).

- Acid neutralizing potential (ANP or NP) – NP is derived from minerals in the mined rock material that can neutralize acid. The most common and effective acid neutralizing minerals are carbonates such as calcium carbonate (e.g., limestone). Other minerals such as silicates can also neutralize acids, but generally react much more slowly and therefore are not as effective. The NP is determined by a titration by sodium hydroxide after all carbonates in a sample are consumed by using a known excess of added acid (Sobek, et al., 1978; NDEP BMRR, 2021).

ABA methods used for the previous and current studies include:

- AGP or AP – reported in tons of calcium carbonate per kilotons of rock (T CaCO₃/kT). Different sulfur forms were used for determining AGP for the different studies. This reduces the comparability of the results across studies; however, the accounting methods have been progressively more conservative with time:
 - 1990 EIS/EIR – the “Total Sulfur Estimation by Peroxide Oxidation” method was used (Section 3.2.11 in Sobek et al., 1978). This method directly estimates the sulfides in a sample by oxidizing them and measuring the acid produced. This method may result in a lower estimation of AGP (less conservative) than using the pyritic sulfur method more commonly used historically (Section 3.2.6 in Sobek et al., 1978).
 - 1997 EIS/EIR – calculated the AGP using the pyritic sulfur content (Section 3.2.6 in Sobek et al., 1978).
 - Current Study – calculated the AGP using pyritic sulfur plus water-soluble sulfate (more conservative) (NDEP BMRR, 2021).
- ANP or NP – modified Sobek method reported in T CaCO₃/kT.⁵

Taken together, these two parameters are used to classify a material as potentially acid generating (PAG) or not potentially acid generating (non-PAG). Two standard ways of using AGP

⁵ The method employed for neutralization potential was not stated in the 1989 Mine Plan and Reclamation Plan nor the 1989 Draft EIS/EIR. The assumption is that the method described in Sobek et al., (1978) was used.

and ANP to classify materials are to calculate the net neutralization potential and the neutralization potential ratio (current industry standard is the latter).

- Net neutralization potential (NNP) otherwise known as net acid base potential – the NNP is determined by subtracting the AGP from the ANP ($NNP = ANP - AGP$). This metric was used in the 1990 EIR/EIS. Materials are classified by their NNP as follows:
 - $NNP < -20 \text{ T CaCO}_3/\text{kT}$ – **PAG**.
 - $-20 < NNP < +20 \text{ T CaCO}_3/\text{kT}$ – uncertain (requires further testing and agency consultation).
 - $NNP > +20 \text{ T CaCO}_3/\text{kT}$ – **non-PAG**
- Neutralization Potential Ratio (NPR) – the NPR is determined by dividing the ANP by the AGP ($NPR = ANP/AGP$). Materials are classified by their NPR as follows:
 - $NPR < 1.0$ – **PAG**.
 - $1.0 < NPR < 3.0$ – uncertain (requires further testing and agency consultation).
 - $NPR > 3.0$ – **non-PAG**. In arid climates such as that at CMM, lower NPR values are often used to classify mined rock materials as non-PAG, e.g., the NDEP BMRR guidance uses a lower threshold of $NPR > 1.2$ for classifying materials as non-PAG (NDEP BMRR, 2021).

4.1.2 Toxicity Characterization Testing

The characteristics of toxicity are defined in Title 22 CCR § 66261.24. The testing procedures required by California to determine if a mined rock material is toxic are described in the following two sections. The toxicity tests leach or extract metals from the mined rock materials, and the leachates or extracts are compared to standards to determine if the materials are potentially harmful to the environment.

4.1.2.1 Total Metals/Total Threshold Limit Concentrations

Acid Digestion of Waste Rock (Total Metals) Understanding the total metals contained in a mined rock material is useful for determining if the material has the potential to release metals to water resources such that concentrations would pose harm to the environment and human health. This is accomplished by digesting the mined rock material in a strong acid, separating the digestate from the remaining solids and measuring the metals concentrations in the digestate. This provides a conservative estimate of the total amounts of available metals that may be leached from a mined rock material exposed to the environment.

California requires acid digestion by EPA Method 3050B⁶ with the results compared to the TTLC regulatory limits for the CAM-17 metals (Title 22 CCR Division 4.5 Chapter 11 Appendix II). If the concentration of any of the metals exceeds its respective TTLC, the waste is considered hazardous.

4.1.2.2 Extraction/Leaching Procedures / Soluble Threshold Limit Concentrations

The extraction (or leaching) procedures used to evaluate the short-term potential for a mined rock material to leach metals at toxic levels are generally designed to simulate the flushing that the mined rock material would experience from infiltration of rainfall and/or runoff. There are two types of environments the tests are trying to simulate: 1) leaching under acidic conditions that may be found in landfills⁷ or if the mined rock material is PAG; and 2) leaching under conditions of infiltration of natural rainfall where the mined rock material is non-PAG.

California regulations require that mined rock materials be leached using the Waste Extraction Test (WET) procedure (Title 22 CCR Division 4.5 Chapter 11 Appendix II) with the leachate compared to the STLCL regulatory limits for the CAM-17 metals. The WET uses a pH 5.0 citric acid buffered leach solution, which is used to approximate the leaching of PAG materials. The samples for the current study and the 1990 EIS/EIR Study were leached according to the WET procedures.

The 1997 EIS/EIR Study used either the EPA Method 1310 Extraction Procedure (EP) Toxicity Test or EPA Method 1312 Synthetic Precipitation Leaching Procedure (SPLP) method as described below.⁸

⁶ EPA Method 3050B (*Acid Digestion of Sediments, Sludges, and Soils*, Revision 2, December 1996) is designed to digest "almost all elements that could become environmentally available." Since 3050B is not a complete digestion, there may be CAM-17 metals contained in the undigested minerals (e.g., aluminosilicates, quartz, etc.) that are most likely not environmentally available.

⁷ Many of the leaching procedures were developed with different types of wastes in mind including sanitary landfills which tend to be acidic in nature and most likely contain organic acids.

⁸ The 1997 Draft EIS/EIR states the metals were analyzed using "EPA's Method 1312 EP Toxicity Test, 18-hour extraction" (Table 3.3-5, 1997 Draft EIS/EIR). However, EPA Method 1312 is the Synthetic Precipitation Leach Procedure (SPLP), whereas the EP Toxicity Test is EPA Method 1310. The SPLP uses synthetic precipitation (DI water adjusted to pH 5.0 with a sulfuric/nitric acid mixture) to leach metals over an 18-hour period. The EP Toxicity Test uses a pH 5.0 acetic acid solution over 24 hours, with the pH adjusted to 5.0 at regular intervals. In sum, the 1997 EIS/EIR references two separate test methods and it is unclear which of the two was actually conducted.

1997 EIS/EIR Waste Characterization Study samples were subjected to one of the two following leach tests as described below:

- The EP Toxicity Test (EPA 1310) is similar to the WET in that the extraction solution is made with an organic acid to simulate acidic conditions that might be expected if the mine material is PAG. The extraction fluid is 0.5 molar acetic acid adjusted to pH 5.0, and the solid-solution mixture is agitated for 24 hours.
- The SPLP (EPA 1312) is meant to simulate leaching of non-PAG materials by local rainfall. The extraction fluid is deionized (DI) water pH adjusted to 5.0 to mimic western rainfall pH and the solid-solution mixture is agitated for 18±2 hours.

In either case (EP Toxicity Test or SPLP), the supernatant (leachate) was filtered and analyzed for the CAM-17 metals and compared to the STLCs.

Since the WET, EP Toxicity Test, and SPLP are all different methods, the results from the 1997 EIS/EIR cannot be directly compared to the results of the 1990 EIS/EIR or the current study. These varying test methods notwithstanding, the mined rock materials in all three studies were found to not leach metals at levels that exceed the STLCs (Sections 5 and 6).

The NDEP BMRR and NV BLM require leaching by a different method, the Meteoric Water Mobility Procedure. The MWMP is meant to simulate an environmental condition similar to the DI-WET or SPLP, i.e., the leaching of metals and other constituents by the infiltration of rainwater using a pH-adjusted DI water, but uses a column method rather than agitation.

Acknowledging that differences exist between the described leaching methods, we nonetheless believe it is reasonable to assume the WET test (used in the current study) use of a pH 5.0 citric acid leach solution is generally a more aggressive method for determining the potential for metal leaching to the environment than using a synthetic rainwater (pH-adjusted DI water). Therefore, the WET results from the 1990 EIS/EIR and the current study are most likely more conservative than results that would be obtained using the MWMP proscribed by the NDEP BMRR and NV BLM.

4.2 Kinetic Testing Methods

Kinetic testing is done to evaluate the release of acidity and metals over time, usually weeks to months. These are performed so rate equations can be developed describing the rates of release. Two types of laboratory tests are usually performed: 1) humidity cell tests (HCTs); and 2) column tests. HCTs have weekly cycles of 3 days of dry air followed by three days of water-

saturated air passing through the mined rock materials, followed by a 1-day leach and drain cycle with a low-ionic strength solution. The wet-dry cycles of the HCT subjects the minerals in the mined rock materials to oxidation. Column tests can be performed with different degrees of saturation, including flooded and oxygen-deficient conditions.

HCTs are standardized and often are part of the state's mined rock materials characterization requirements (NDEP BMRR, 2022). As the overburden and spent ore will be located on surface facilities that will undergo wet and dry periods, HCTs would be the appropriate kinetic test to run on CMM mined rock materials, if required. Previous CMM Project studies did not include kinetic testing and none were required by the BLM nor California agencies because sample results were non-PAG and non-hazardous. The current study followed that same standard, and based on the results of current ABA and metals leach testing, no kinetic tests were performed.

5. Previous Characterization Studies

Two sets of characterization studies were completed historically for CMM: one for the 1990 EIS/EIR (ESI, 1989 and 1990) and the 1990 Mine Plan and Reclamation Plan (Viceroy, 1990), and one for the 1997 EIS/EIR (Lilburn, 1997a and 1997b). Relevant text, tables, and figures from those reports are included in Appendices A.1 through A.4.

5.1 1990 EIS/EIR Waste Characterization Study

5.1.1 Sampling and Analyses

As part of the permitting process related to the 1990 mine plan amendment (i.e., mine expansion), Viceroy completed the required geochemical characterization of mining wastes and pit rocks to evaluate their acid generating and neutralizing potentials as well as the concentrations of metals in these materials (Appendices A.1 and A.2). A total of seven (7) samples were submitted for waste characterization testing. The precise sample details are lacking; however, the following information was supplied in the Mine Plan and Reclamation Plan (Viceroy, 1990) regarding the samples tested:

- Two samples were composited from ore, protore, and overburden.
- Four overburden samples were collected.
- One spent ore sample was subjected to a column leach test (designed to measure heap leach success) prior to testing.



The samples were submitted for the following analyses:

- Acid-base accounting (ABA):⁹
 - Acid generating potential (AGP, or Potential Acidity in the report) – reported in T CaCO₃/kT.
 - Acid neutralizing potential (ANP, or Neutralization Potential in the report) – reported in T CaCO₃/kT.
 - Net Acid Base Potential (otherwise known as the NNP) – determined by subtracting the AGP from the ANP.
- Waste Extraction Test (WET) - metals leaching using a citric acid solution as documented in CCR Title 22. Results were reported in milligrams per liter (mg/L) and evaluated with respect to the STLCs. The overburden and spent ore extraction samples were analyzed for the CAM-17 metals, while the composite ore, protore, overburden samples were analyzed for the Resource Conservation and Recovery Act (RCRA) 8 metals.

5.1.2 Results – Acid Base Accounting

A summary of the results of the waste characterization testing for the 1990 mine permitting was reported in Table 2.9 of the 1990 Mine Plan and Reclamation Plan as reproduced in Appendix A.2. An abbreviated summary of the results was also presented in the draft EIS/EIR (ESI, 1989; see Table 5.3.1 in Appendix A.1).

The ABA results indicate that all samples had significant ANP, ranging from 2.9 T CaCO₃/kT to 105.7 T CaCO₃/kT. Only one sample had measurable AGP at 4.7 T CaCO₃/kT. The calculated NNP for each set of samples was positive.

Comparison of the historical ABA results to current guidance requires that the neutralization potential ratio (NPR) to be calculated and evaluated with respect to a threshold value of 3.0 (Section 4.1.1). Without the original full data set, the NPR cannot be calculated for each sample. However, on average, the ABA results for the composite, the overburden, and the spent ore

⁹ The methods employed for neutralization potential and potential acidity (acid generating potential) were not stated in the 1989 Mine Plan and Reclamation Plan nor the 1989 Draft EIS/EIR. The assumption is that the Sobek method was used.

samples indicate that the mined rock materials were all non-PAG as the average NPRs for each rock type were all greater than 3.0.

5.1.3 Results – Leaching Analyses

The extracts from the WET were compared to the STLC values¹⁰ to determine if they could be classified as Group C waste (i.e., non-hazardous and no special disposal requirements). The maximum extract concentrations for the overburden and spent ore samples were at least an order of magnitude lower than the STLCs. One of the two composite samples had an extract lead concentration slightly greater than the STLC (5.51 mg/L versus 5.0 mg/L, respectively), however, the average extract lead concentration was lower than the STLC. All other RCRA 8 metal extract concentrations were more than an order of magnitude lower than the respective STLCs.

Based on the ABA and WET results, the overburden was classified as Group C mining waste (RWQCB, 2020) and the ore to be placed on the heap leach pad was classified as Group B mining waste (RWQCB, 1991).

5.2 1997 EIS/EIR Waste Characterization Study

As part of the permitting process related to the 1998 mine plan amendment (i.e., mine expansion), Viceroy completed the required geochemical characterization of mining wastes and pit rocks to evaluate their acid-generating and neutralizing potentials as well as the concentrations of metals in these materials as summarized in the Draft EIS/EIR, (Lilburn, 1997a) with follow-up sampling details in the Final EIS/EIR, (Lilburn, 1997b) (Appendices A.3 and A.4, respectively).

5.2.1 Sampling

Geochemical testing was performed on three types of samples: 1) overburden, 2) raw ore, and 3) leached ore.

Overburden samples: Composite samples of overburden materials were developed from samples obtained at multiple depths from the Oro Bell (3 samples), Hart Tunnel (4 samples) and Jumbo pit (5 samples) areas (Table 7.5 from the Final EIR/EIS (Lilburn, 1997b); see Appendix A.4). Each sample represented multiple intervals from a single corehole that were then crushed and

¹⁰ The threshold limit concentrations for the RCRA 8 metals are the same as the STLC values.

composited.

Ore samples: Composite ore samples were developed for high- and low-grade rhyolitic and lithic tuff ores within the Oro Bell and Hart Tunnel areas. The Hart Tunnel ore material characterized was from 52 five-foot interval samples, from two coreholes. The Oro Belle ore material characterized was obtained from 88 five-foot interval samples from three coreholes (Table 7.4 from the Final EIR/EIS (Lilburn, 1997b); see Appendix A.4). The Jumbo ore material characterized was obtained from over 330 pounds of hand-sized samples collected from four ore faces from the 4,600- and 4,850-foot benches (see narrative on page 7-13, Final EIS/EIR, (Lilburn, 1997b); see Appendix A.4).

No information was given regarding how the materials were composited into the two raw ore samples or the two leached ore samples that were submitted for ABA. The Jumbo, Hart Tunnel, and Oro Belle ore samples were segregated into Mill and Leach grade for metals analyses. The leached ore sample submitted for metals analyses was a composite of crushed material from April to June 1996.

5.2.2 Laboratory Analyses

Sixteen samples were submitted to a laboratory for ABA analyses and nine samples were submitted for metals analyses:

- Acid-base accounting (ABA) by the Sobek Procedure including:
 - Acid generating potential (AGP or AP in the report) – the sulfide sulfur content was determined and converted to acidity (T CaCO₃/kT).
 - Acid neutralizing potential (ANP or NP in the report) – by the titration method described in Hutchinson and Ellison (1992).
 - Neutralization Potential Ratio (NPR = NP/AP) – guidance was that if the material had an NPR less than 3.0, the material should be classified as PAG., the material was classified as non-PAG if the NPR was 3.0 or greater (DLM, 1989).
- EPA Extraction Procedure Toxicity Test or EPA Synthetic Precipitation Leaching Procedure – samples were leached according to EP Toxicity Test or the SPLP and the leachate was compared to the STLC regulatory limits for the CAM-17 metals (Section 4.1.2.2).

5.2.3 Results – Acid-Base Accounting

The results of the ABA testing indicated that the overburden and the leached ore were non-PAG as no sulfide-sulfate was measured in the samples (Table 3.3-4 from the Draft EIS/EIR, 1997, see Appendix A.3). The two raw ore samples had an average AP of 1.9 T CaCO₃/kT and an average NP of 5.3 T CaCO₃/kT, resulting in an NPR of 2.7. The NPR of 2.7 is less than the conservative value of 3.0 used as the threshold above which a sample is classified as non-PAG (DLM, 1989). Viceroy stated in the Draft EIS/EIR (Lilburn, 1997a):

“Because of the low soluble metal concentrations and the high NP:AP ratio of ore and overburden that would remain in the mine pit walls, it is expected that the quality of any water that could collect in the mine pits would be good (comparable to natural surface runoff) and similar to that shown in Table 3.3-3. This water would be suitable for wildlife use.”

Under dry climatic conditions such as the CMM site, the use of a lower threshold may be warranted as is the case in Nevada where a threshold NPR value of 1.2 is used (NDEP BMRR, 2022).

5.2.4 Results – Leaching Analyses

The results of the extraction analyses from the leaching procedure (EP Toxicity Test or SPLP – see Section 4.1.2.2) are reproduced in Table 3.3-5 of the Draft 1997 EIS/EIR (Lilburn, 1997a) in Appendix A.3. for the overburden, ore and the spent ore, and were compared to the STLC criteria. Metals were non-detect in the extracts from the overburden and the leached ore samples. Most of the CAM-17 metals for the extracts from the ore samples were non-detect. When metals were detected, the results were always at least an order of magnitude lower than the STLCs.

Based on the ABA and EP Extraction Test or SPLP results, the overburden was classified as Group C mining waste (RWQCB, 2020) and the ore to be placed on the heap leach pad was classified as Group B mining waste (RWQCB, 1999).

6. Recent Materials Characterization

6.1 Sampling

Identifying and collecting characterization samples that are representative of the range of geochemical conditions in waste materials is the foundation for a reliable characterization testing program. The Castle Mountain Mine Drill Logging and Sampling Standard Operating Procedures are presented in Appendix B. Rock samples were obtained by CMM geologists using industry-standard practices that include:

- Drilling that is contracted through a licensed commercial drilling company.
- Continuous lithologic samples are retrieved from the drill cuttings of reverse circulation (RC) drilling or whole core samples from diamond core drilling.
- Samples are placed in wax-preserved cardboard core boxes and labeled to identify the drill hole ID and the sample depth interval.
- The recovered sample volume may be split, with half the sample prepared and shipped to a commercial assay laboratory for metal analysis.
- Boxed drill samples are then palletized and stored at the CMM project at the core storage facility.

CMM geologists selected core intervals that are representative of the majority rhyolite (and andesite) rock types described in Section 3.2.1 to assure that the rock types were represented of the mine area. All samples were collected from mine expansion areas. A total of 14 samples were submitted for waste characterization, consisting of six waste (overburden) samples, seven ore samples, and one leached and rinsed ore sample. The details of the samples are presented in **Table 1**.

Waste and ore samples were composited from several coreholes and multiple depths within each corehole. The samples came from all areas of the proposed mine expansion, including the South Expansion, JSLA, and Oro Belle pit areas. Locations of the coreholes are in **Figures 3 and 4**, with details for each area as follows:

- South Expansion Pit – Subsurface trajectories of the coreholes and intervals included in the composite samples are in **Figures 5 and 6**.
- JSLA Pit – Subsurface trajectories of the corehole and intervals included in the composite

samples are in **Figure 7**.

- Jumbo & Oro Belle Pit – Subsurface trajectories of the coreholes and intervals included in the composite samples are in **Figures 8 through 10**.

The leached and rinsed ore sample was composited of ore that was previously processed (crushed to minus 3/8", agglomerated with lime and cement) and then leached on the pad. Prior to closure of the old leach pad, the leached ore was rinsed, detoxified, and sampled by CMM to document there was no remaining cyanide in the leached/rinsed ore.

6.2 Laboratory Requirements

The 14 composite samples were shipped by CMM to McClelland Laboratories, Inc. (MLI) in Sparks Nevada.¹¹ Standard chain-of-custody (COC) procedures were used to track the shipment of the samples from the mine to the analytical laboratory.

All laboratories and subcontracted laboratories used for the project are certified in California for the testing and analyses performed.

- McClelland Laboratories, Inc. (MLI) in Sparks, Nevada – Sample preparation and ABA.
- Western Environmental Testing Laboratory (WETLAB), Sparks, Nevada – EPA 3050B acid digestion and digestate analyses.
- Weck Laboratories, Inc. (Weck) in City of Industry, CA – WET and extract analyses.

As required by California, the laboratory(s) have quality assurance/quality control (QA/QC) programs in place to assure that results are accurate and representative of the materials tested. The results of the QA/QC procedures are included in the laboratory reports and any deviations from the approved criteria are described therein. The laboratory reports are in Appendix B.

¹¹ Composite samples were processed at MLI (dried and sized according to each test procedure; see 4739 *Equinox Gold Report_2-18-22.pdf* in Appendix B for full sample preparation details). MLI sent approximately 100 grams of the minus 150 mesh samples to WETLAB in Sparks, Nevada, for total metals/TTLC testing. Subsequently, MLI sent approximately 250 grams of minus 3/8" samples to WETLAB for WET/STLC testing. WETLAB sent a portion of the minus 3/8" samples to Weck Laboratories, Inc., in City of Industry, California, for leachable metals (WET/STLC) testing.

6.3 Results

6.3.1 Acid-Base Accounting

The results of the ABA testing indicated that the waste rock, ore, and leached/rinsed ore samples were non-PAG (**Table 2**). The paste pH values were all alkaline, ranging from 7.78 to 9.43 standard units. Only three samples had potentially acid-generating sulfur, with two samples just above the detection limit of 0.30 T CaCO₃/kT. The composite ore sample from the Oro Belle pit (CMM Comp #11) had the highest AGP at 2.5 T CaCO₃/kT, but had an ANP of 20 T CaCO₃/kT. All samples had NPRs greater than the threshold value of 3.0, with the Oro Belle ore sample (CMM Comp #11) having the lowest NPR of 8.0. The paste pH and the ABA results indicate that the waste rock, ore, and leached and rinsed ore do not have the potential to generate acid and are classified as non-PAG (NPR > 3.0).

6.3.2 Total Metals & Leaching Analyses

The total metals analyses indicate that all the materials contain metals at levels significantly lower than the TTLCs (**Table 3**). Many of the metals results were non-detect and, in all cases but two, the detections of metals were at least an order of magnitude lower than the respective TTLCs.

All samples were submitted for the WET, with the extracts analyzed for CAM-17 metals that had been detected in the total metals analyses (**Table 4**). All extracted metals met the California standard for leached metals (STLCs), and all metals but mercury met all QA/QC criteria.¹² Most CAM-17 metals concentrations for the extracts were non-detect.

7. Conclusions

The results of the waste characterization testing described above were reviewed for quality assurance, tabulated, and evaluated with respect to California standards including mining best practices, including:

- Evaluation of the results of acid-base accounting (using the Nevada Modified Sobek

¹² The samples for mercury by the WET were leached 39 days after the samples were collected, which was after the 28-day hold-time for mercury. Since the mercury was nondetect in all samples, and since the STLC is 40 times higher than the detection limit, it is reasonable to assume that none of the samples would have exceeded the mercury STLC if leached within the 28-day hold time.

Procedure) with respect to DLM and GARD guidelines for determining whether or not the material is potentially acid generating.

- Evaluation of the results of the acid digestion/total metals with respect to total metals (TTLCs).
- Evaluation of the results of the WET extractions with respect to leachable metals (STLCs).

The results of the static testing, including paste pH, ABA, total metals, and WET are consistent with the findings of earlier geochemical testing at the CMM project. The NPRs calculated for the waste (overburden), ore, and leached and rinsed ore materials for the current study are all greater than the DLM threshold for non-PAG classification of 3.0. This is consistent with the low pyrite content observed in these and previous samples.

The WET results indicated that no metals leached from the mined rock materials at levels that exceeded California standards (STLCs). Furthermore, since the WET uses a more aggressive leaching solution than the MWMP procedure used in Nevada (by NDEP BMRR and NV BLM), it should produce leachable metal concentration results that are more conservative than the MWMP. Previous leaching test results also indicated that the overburden and spent ore samples did not and are not expected to leach metals in excess of STLCs.

Based on these geochemistry testing results, the waste (overburden) and the rinsed and leached ore should be classified as a Group C mining waste pursuant to Title 23 CCR Chapter 15, Article 7. It is expected that the heap leach pad will continue to be classified as Group B mining waste until the heap leach pad has been rinsed to remove free cyanide and confirmed by testing.

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TABLES

Table 1.
Sample Summary

Composite #	Core Sample ID	Drill Collar ID	Mine Pit	Ore/Waste	Lithology	Occurance of Pyrite	Core Intervals Composited (feet)	Sample Length (feet)
Overburden and Ore Samples								
CMM Composite #1	CMM-082C-W-1	CMM-082C	South Expansion	Waste	Rhyolite	No	164-169	5
	CMM-016C-W-1	CMM-016C	South Expansion	Waste	Rhyolite	No	439-443	4
	CMM-083C-W-1	CMM-083C	South Expansion	Waste	Rhyolite	No	290.5-294	4.5
	CMM-078C-W-2	CMM-078C	South Expansion	Waste	Rhyolite	No	787-792	5
	CMM-080C-W-1	CMM-080C	South Expansion	Waste	Rhyolite	No	25-30	5
CMM Composite #2	CMM-082C-W-2	CMM-082C	South Expansion	Waste	Rhyolite	No	174-179	5
	CMM-015C-W-2	CMM-015C	South Expansion	Waste	Rhyolite	No	175-180	5
	CMM-083C-W-2	CMM-083C	South Expansion	Waste	Rhyolite	No	147-152	5
	CMM-078C-W-1	CMM-078C	South Expansion	Waste	Rhyolite	No	335-340	5
	CMM-079C-W-1	CMM-079C	South Expansion	Waste	Rhyolite	No	427-430.5	3.5
CMM Composite #3	CMM-016C-O-1	CMM-016C	South Expansion	Ore	Altered Rhyolite	No	910-915	5
	CMM-079C-O-1	CMM-079C	South Expansion	Ore	Altered Rhyolite	No	554-561	7
CMM Composite #4	CMM-016C-O-2	CMM-016C	South Expansion	Ore	Altered Rhyolite	Oxidized pyrite	702-707	5
	CMM-083C-O-1	CMM-083C	South Expansion	Ore	Altered Rhyolite	No	250-255	5
	CMM-079C-O-2	CMM-079C	South Expansion	Ore	Altered Rhyolite	No	570.5-577	6.5
	CMM-080C-W-2	CMM-080C	South Expansion	Ore	Altered Rhyolite	No	518.5-523.5	5
CMM Composite #5	CMM-016C-O-3	CMM-016C	South Expansion	Ore	Altered Andesite	Oxidized pyrite	1119-1124	5
	CMM-015C-O-1	CMM-015C	South Expansion	Ore	Altered Andesite	No	694-699	5
	CMM-015C-O-2	CMM-015C	South Expansion	Ore	Altered Andesite	No	794-804	10
CMM Composite #6	CMM-098C-O-1	CMM-098C	JSLA	Ore	Altered Rhyolite	No	806-872.5	66.5
CMM Composite #7	CMM-018C-W-2	CMM-018C	JSLA	Waste	Rhyolite	No	178-183	5
	CMM-098C-W-1	CMM-098C	JSLA	Waste	Rhyolite	No	575-580	5
	CMM-096C-W-1	CMM-096CA	JSLA	Waste	Rhyolite	No	168-173	5
CMM Composite #8	CMM-018C-O-1	CMM-018C	JSLA	Ore	Altered Rhyolite	No	632-637	5
	CMM-095C-O-1	CMM-095C	JSLA	Ore	Altered Rhyolite	No	603-608	5
CMM Composite #9	CMM-095C-W-1	CMM-095C	JSLA	Waste	Rhyolite	No	377-382	5
CMM Composite #11	CMM-005C-W-1	CMM-005C	ORO BELLE	Waste	Rhyolite	No	215-220	5
	CMM-005C-W-2	CMM-005C	ORO BELLE	Waste	Rhyolite	No	291-296	5
	CMM-036C-W-1	CMM-036C	ORO BELLE	Waste	Rhyolite	No	90-95	5
CMM Composite #12	CMM-005C-O-1	CMM-005C	ORO BELLE	Ore	Altered Rhyolite	No	140-145	5
	CMM-036C-O-1	CMM-036C	ORO BELLE	Ore	Altered Rhyolite	No	129-134	5
	CMM-036C-O-2	CMM-036C	ORO BELLE	Ore	Altered Rhyolite	No	339-344	5
CMM Composite #13	CMM-027C-O-1	CMM-027C	ORO BELLE	Ore	Altered Rhyolite	No	164-169	5
	CMM-025C-O-1	CMM-025C	ORO BELLE	Ore	Altered Rhyolite	No	169-174	5
CMM Composite #14	CMM-027C-W-1	CMM-027C	ORO BELLE	Waste	Unaltered Andesite	No	254-259	5
	CMM-025C-W-1	CMM-025C	ORO BELLE	Waste	Unaltered Andesite	No	254-259	5
Leached and Rinsed Ore								
CMM Leache/Rinsed Ore	NA	NA	NA	NA	NA	NA	NA	NA

Notes: JSLA = Jumbo South-Leslie Ann; Sample details provided by Castle Mountain Mine.

Table 2.

Modified Acid/Base Accounting Static Acid Rock Drainage Potential Test Results

Sample I.D.	Mine Pit/ Location	Ore/Waste	Paste pH	Sulfur, weight percent (as S)									AGP ²	ANP ³	NNP	NPR
				Total	Hot Water Rinse Residue	HCl Rinse Residue	HNO ₃ Rinse Residue	H ₂ O- Soluble Sulfate	Non-H ₂ O Sulfate Sulfur	Pyritic Sulfur	Non- Extractable Sulfur	Potential Acid Generating Sulfur ¹				
				%	%	%	%	%	%	%	%	%	T CaCO ₃ /kT	T CaCO ₃ /kT	T CaCO ₃ /kT	
CMM Comp #1	South Expansion	Waste	9.43	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.30	6.1	5.9	40.4
CMM Comp #2	South Expansion	Waste	9.04	0.01	<0.01	0.01	0.01	0.01	<0.01	<0.01	0.01	0.01	0.31	21.4	21.1	68.4
CMM Comp #3	South Expansion	Ore	9.48	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.30	12.5	12.4	83.3
CMM Comp #4	South Expansion	Ore	9.31	0.02	0.02	0.02	0.01	<0.01	<0.01	0.01	0.01	0.01	0.31	4.9	4.6	15.6
CMM Comp #5	South Expansion	Ore	8.85	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.30	22.3	22.1	148
CMM Comp #6	JSLA	Ore	9.14	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.30	6.1	6.0	40.8
CMM Comp #7	JSLA	Waste	9.40	0.01	0.01	0.01	0.01	<0.01	<0.01	<0.01	0.01	<0.01	<0.30	5.5	5.4	36.7
CMM Comp #8	JSLA	Ore	9.05	0.01	<0.01	<0.01	0.01	0.01	<0.01	<0.01	0.01	<0.01	<0.30	4.9	4.7	32.5
CMM Comp #9	JSLA	Waste	7.78	0.06	0.06	0.06	0.06	<0.01	<0.01	<0.01	0.06	<0.01	<0.30	3.6	3.5	24.2
CMM Comp #11	Oro Belle	Waste	8.67	0.10	0.11	0.10	0.01	<0.01	0.01	0.09	0.01	0.08	2.50	20.0	17.5	8.0
CMM Comp #12	Oro Belle	Ore	8.95	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.30	6.1	6.0	40.8
CMM Comp #13	Oro Belle	Ore	8.99	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.30	6.1	6.0	40.8
CMM Comp #14	Oro Belle	Waste	8.65	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.30	16.1	16.0	108
CMM Leached/Rinsed Ore	Heap Leach Pad	Spent Ore	8.79	0.03	0.03	0.02	0.02	<0.01	0.01	<0.01	0.02	<0.01	<0.30	9.9	9.7	65.8

Notes

T CaCO₃/kT = tons as calcium carbonate ber kiloton

AGP = acid generating potential

ANP = acid neutralizing potential

NNP = net neutralizing potential

NPR = neutralization potential ratio

1) Potential Acid Generating Sulfur (PAG-S) is equal to the sum of the Pyritic Sulfur and the H₂O-Soluble Sulfate Sulfur per Nevada Modified Sobek ABA procedure with siderite correction (NDEP BMRR, 2021).

2) AGP based on Potential Acid Generating Sulfur (PAG-S) content (%S̄ x 31.25).

3) ANP determined by titration as per Nevada Modified Sobek ABA procedure with siderite correction (NDEP BMRR, 2021).

Table 3.
Acid Digestion Results - CAM 17 Metals and Managanese

Analysis, mg/kg	TTLC	Sample IDs													
		CMM Comp #1	CMM Comp #2	CMM Comp #3	CMM Comp #4	CMM Comp #5	CMM Comp #6	CMM Comp #7	CMM Comp #8	CMM Comp #9	CMM Comp #11	CMM Comp #12	CMM Comp #13	CMM Comp #14	CMM Leached/ Rinsed Ore
Mine Pit		South Expansion	South Expansion	South Expansion	South Expansion	South Expansion	JSLA	JSLA	JSLA	JSLA	Oro Belle	Oro Belle	Oro Belle	Oro Belle	NA
Waste/Ore		Waste	Waste	Ore	Ore	Ore	Ore	Waste	Ore	Waste	Waste	Ore	Ore	Waste	NA
Antimony (Sb)	500	7.0	<1.2	9.1	<1.2	2.2	<1.2	1.5	1.9	2.1	1.5	1.3	<1.1	<1.2	1.4
Arsenic (As)	500	12	10	26	15	35	28	11	71	36	19	11	19	7.7	28
Barium (Ba)	10,000	9.2	25	17	13	35	41	41	35	6.7	35	20	10	110	41
Beryllium (Be)	75	0.72	2.8	0.93	0.48	1.1	1.1	0.34	0.46	0.57	1.3	0.44	1.5	0.61	0.97
Cadium (Cd)	100	<0.096	<0.097	<0.096	<0.096	<0.094	<0.096	<0.10	<0.098	<0.097	<0.087	<0.098	<0.090	<0.099	<0.089
Chromium (Cr)	2,500	7.2	1.7	8.7	6.1	25	6.8	7.2	6.6	4.3	7.6	4.6	5.0	5.0	6.4
Cobalt (Co)	8,000	<0.72	<0.73	0.84	<0.72	8.0	<0.72	<0.75	<0.74	<0.73	3.9	<0.74	1.8	2.8	0.97
Copper (Cu)	2,500	<2.4	<2.4	5.9	<2.4	45	3.0	<2.5	<2.5	3.9	9.0	<2.5	3.8	<2.5	4.1
Lead (Pb)	1,000	8.9	10	13	8.4	11	11	5.7	7.2	2.7	13	6.5	14	3.9	10
Manganese (Mn)	---	35	200	160	37	420	68	75	27	21	370	36	190	390	190
Mercury (Hg)	20	0.24	0.61	0.57	2.9	0.61	0.38	0.99	1.4	0.21	0.62	0.33	0.29	0.16	0.25
Molybdenum (Mo)	3,500	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.5	<2.5	4.0	2.5	2.9	<2.3	<2.5	4.5
Nickel (Ni)	2,000	2.6	<2.4	4.6	<2.4	20	2.5	<2.5	<2.5	<2.4	11	<2.5	3.6	3.2	2.7
Selenium (Se)	100	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.5	<2.5	<2.4	<2.2	<2.5	<2.3	<2.5	<2.2
Silver (Ag)	500	<7.2	<7.3	<7.2	<7.2	<14	<7.2	<7.5	<7.4	<7.3	<6.6	<7.4	<6.8	<7.4	<6.7
Thallium (Tl)	700	<1.9	<1.9	<1.9	<1.9	2.4	<1.9	<2.0	<2.0	<1.9	<1.7	<2.0	<1.8	<2.0	<1.8
Vanadium (V)	2,400	7.2	12	6.7	5.8	40	8.1	6.7	8.1	5.2	9.7	2.3	5.7	14	7.6
Zinc (Zn)	5,000	9.9	15	23	9.5	55	19	7.9	11	7.8	28	10	28	25	19

Notes:
mg/kg = milligrams per kilogram
TTLC = Total Threshold Limit Concentrations
--- = no threshold value

Table 4.
Waste Extraction Test Results - CAM 17 Metals

Analysis, mg/L	STLC	Sample ID													
		CMM Comp #1	CMM Comp #2	CMM Comp #7	CMM Comp #9	CMM Comp #11	CMM Comp #14	CMM Comp #3	CMM Comp #4	CMM Comp #5	CMM Comp #6	CMM Comp #8	CMM Comp #12	CMM Comp #13	CMM Leached/ Rinsed Ore
Mine Pit		South Expansion	South Expansion	JSLA	JSLA	Oro Belle	Oro Belle	South Expansion	South Expansion	South Expansion	JSLA	JSLA	Oro Belle	Oro Belle	NA
Waste/Ore		Waste	Waste	Waste	Waste	Waste	Waste	Ore	Ore	Ore	Ore	Ore	Ore	Ore	NA
Antimony	15	<1	NM	<1	<1	<1	NM	<1	NM	<1	NM	<1	<1	NM	<1
Arsenic	5	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	0.37	<0.25	0.27	0.29
Barium	100	0.47	2.1	1.2	0.14	1.5	4.9	1.5	0.53	1.4	1	0.87	0.52	1.2	2.5
Beryllium	0.75	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Cadmium	1.0	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Chromium	5	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	<0.2	0.21	<0.2	<0.2	<0.2
Cobalt	80	NM	NM	NM	NM	0.12	<0.1	<0.1	NM	0.25	NM	NM	NM	0.37	<0.1
Copper	25	NM	NM	NM	<1	<1	NM	<1	NM	<1	<1	NM	NM	<1	<1
Lead	5.0	0.31	0.95	0.22	<0.1	0.40	0.54	0.64	0.53	0.35	0.95	<0.1	0.21	1.5	0.46
Mercury ¹	0.2	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Molybdenum	350	NM	NM	NM	<0.1	<0.1	NM	NM	NM	NM	NM	NM	<0.1	NM	<0.1
Nickel	20	0.49	NM	NM	NM	<0.2	<0.2	<0.2	NM	<0.2	<0.2	NM	NM	0.2	<0.2
Selenium	1.0	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Silver	5.0	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM	NM
Thallium	7.0	NM	NM	NM	NM	NM	NM	NM	NM	<0.5	NM	NM	NM	NM	<0.5
Vanadium	24	<0.1	0.35	0.16	<0.1	<0.1	<0.1	0.11	<0.1	0.20	0.21	0.26	<0.1	0.12	0.17
Zinc	250	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1	<1

Notes:

Nondetections are reported as less than the Reporting Limit

mg/L = milligrams per liter

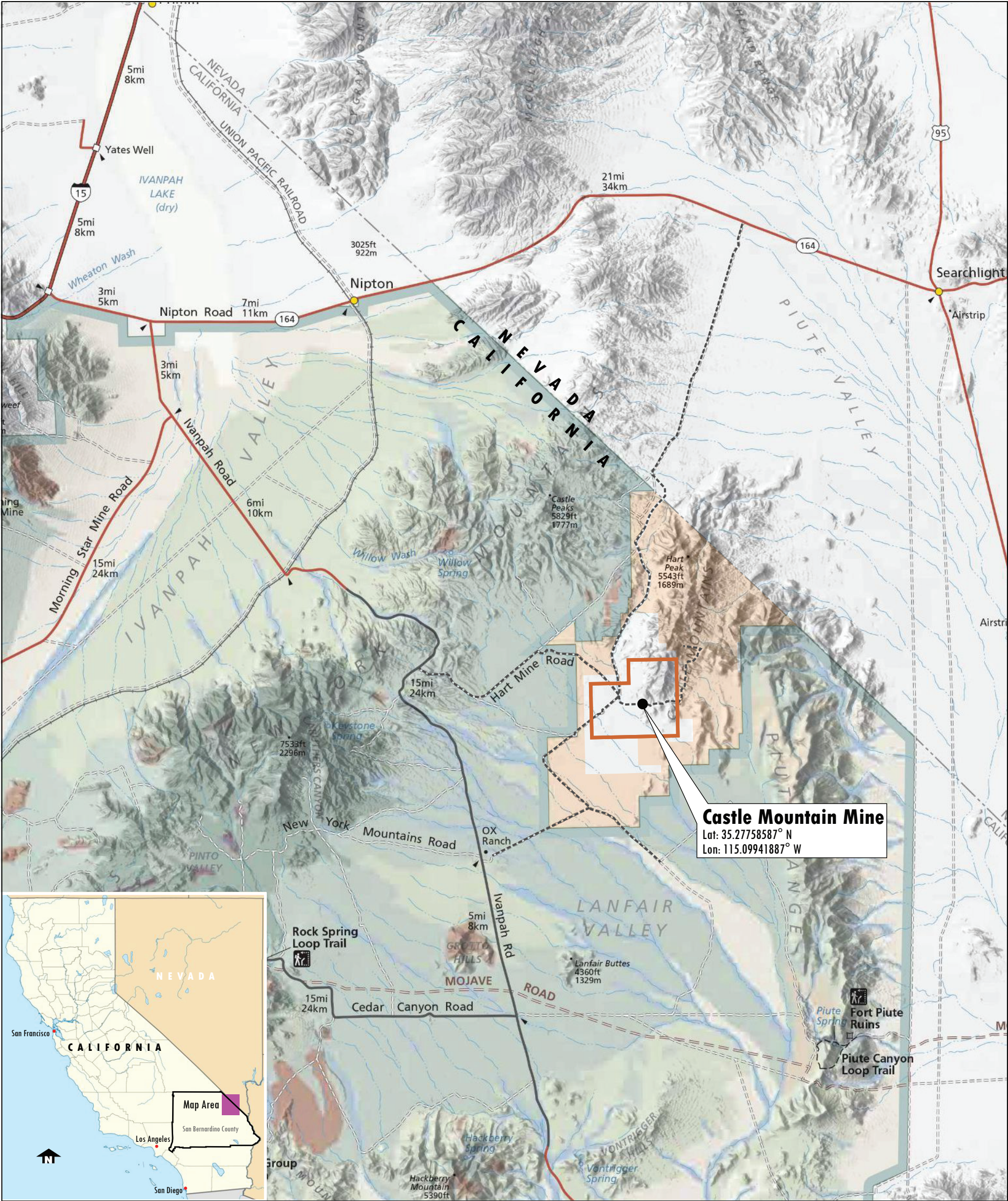
STLC = Soluble Threshold Limit Concentrations

NM = not measured. Metal was not analyzed for the sample as the result for the total metals/Total Threshold Limit Concentration test was non-detect.

1) The samples were leached for mercury 39 days after the samples were collected, 11 days later than the hold-time of 28 days. Since the mercury was nondetect in all samples, and since the STLC is 40 times higher than the detection limit, it is reasonable to assume that none of the samples would have exceeded the mercury STLC if leached within the 28-day hold time.



FIGURES



Castle Mountain Mine
Lat: 35.27758587° N
Lon: 115.09941887° W

LEGEND

- Mojave National Preserve (National Park Service)
- Approved Mine Boundary (1997 EIS/EIR)
- Designated Area Roads
- Castle Mountains National Monument (National Park Service)



DATE:

REVISION:



San Bernardino County
California

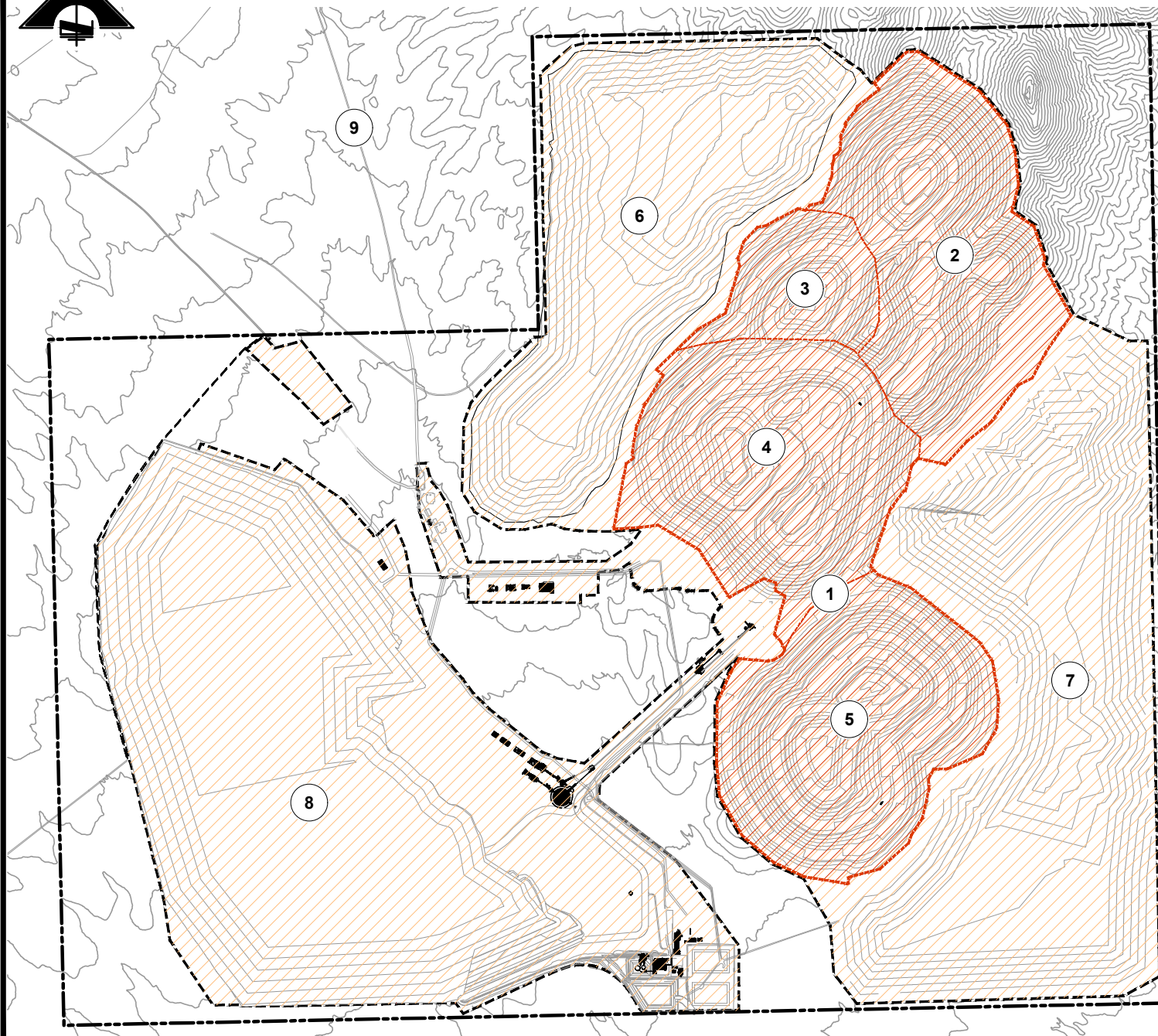
FIGURE 1 REGIONAL
LOCATION

Figure provided by Castle Mountain Mine

**CMM 2022 MINE & RECLAMATION PLAN OF OPERATION
APPENDIX H**

LEGEND:

-  BOUNDARY COMBINED
-  MINE PITS
-  ORO BELLE PIT
-  JUMBO PIT
-  JSLA PIT
-  SOUTH EXTENSION PIT
-  NORTH OVERBURDEN SITE
-  SOUTH OVERBURDEN SITE
-  HEAP LEACH PAD
-  CMM ACCESS ROAD



0' 1000' 2000'
SCALE IN FEET

DATE: 07 FEB 22

REVISION: P2

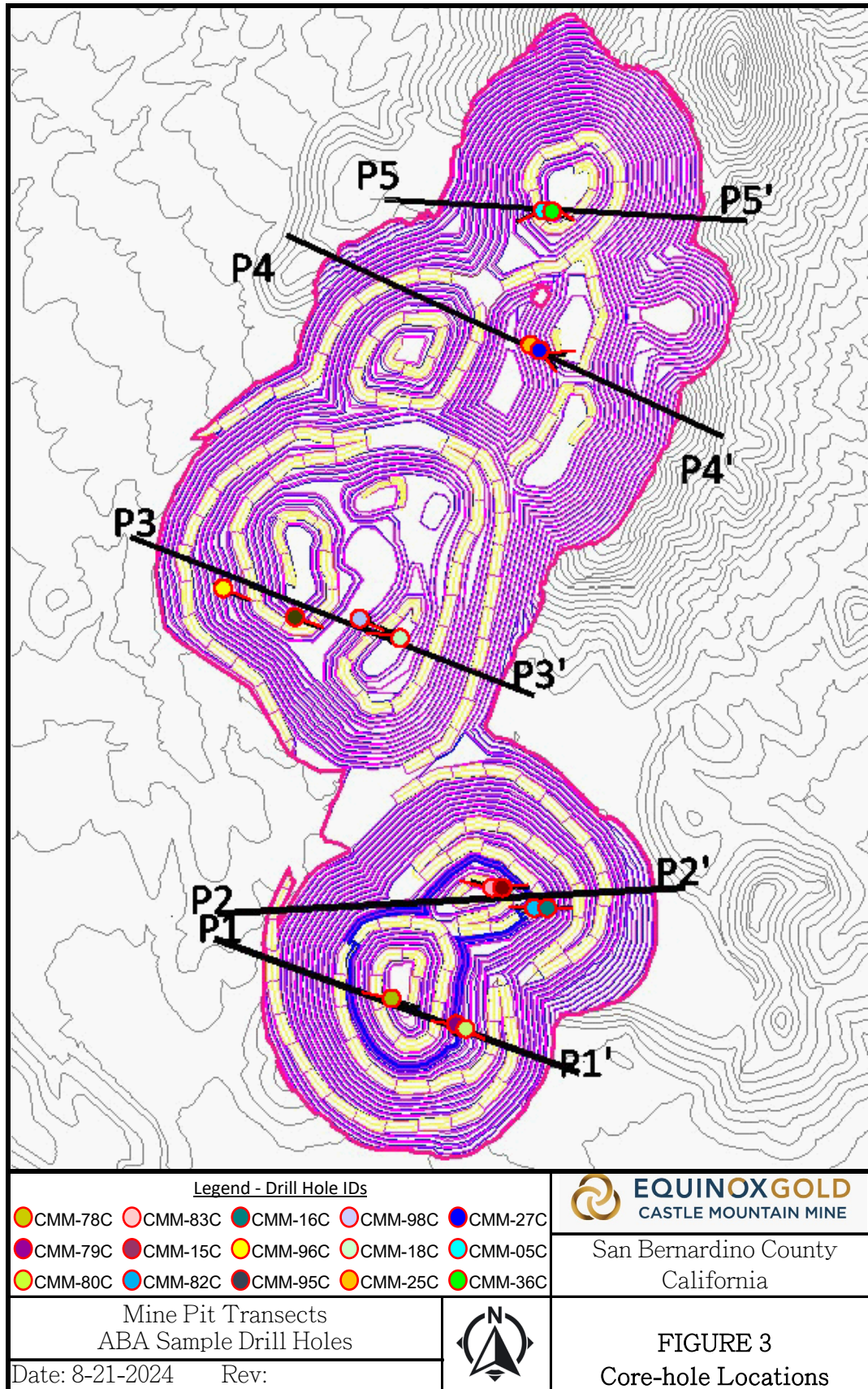


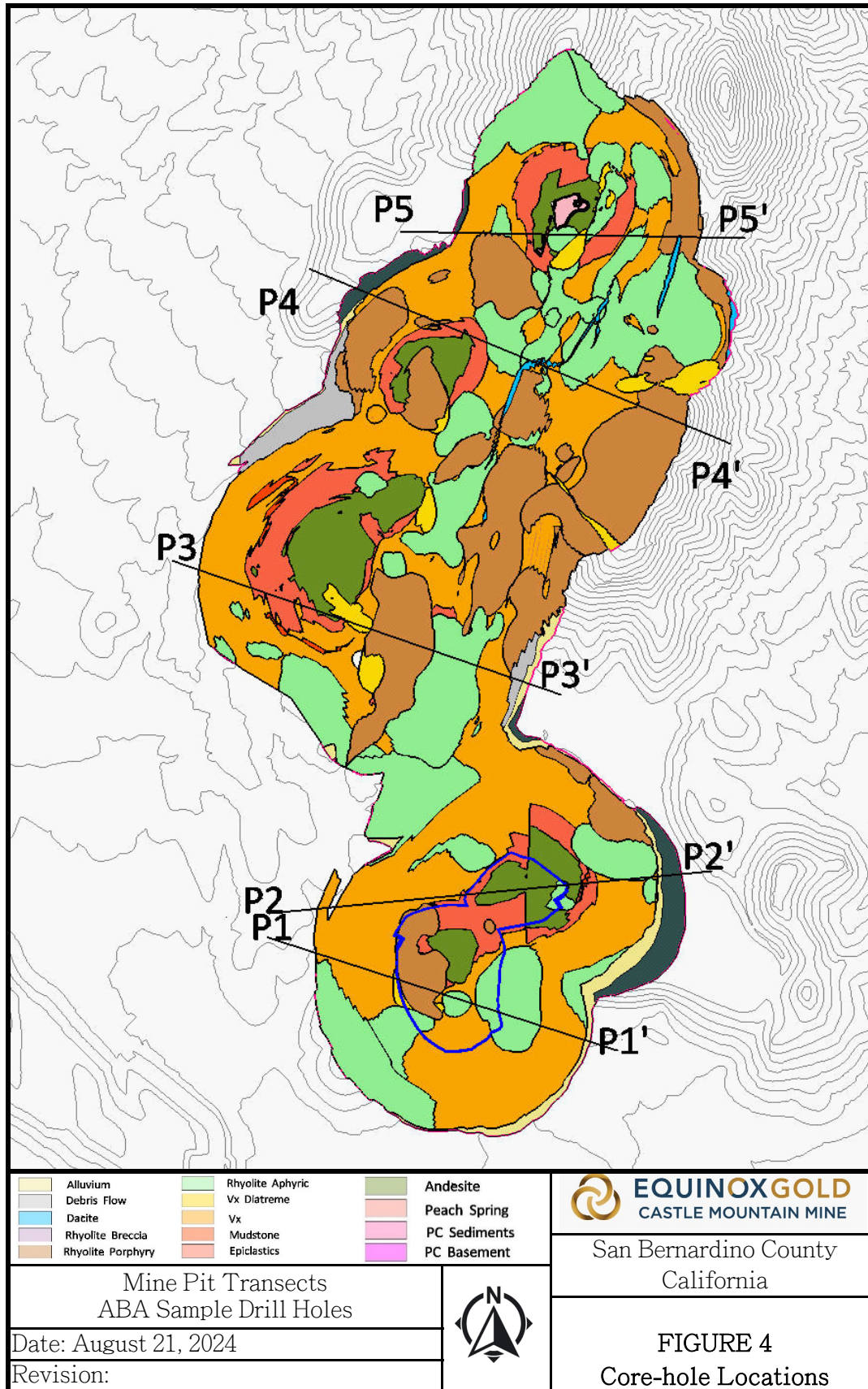
EQUINOXGOLD
CASTLE MOUNTAIN VENTURE

San Bernardino County
California

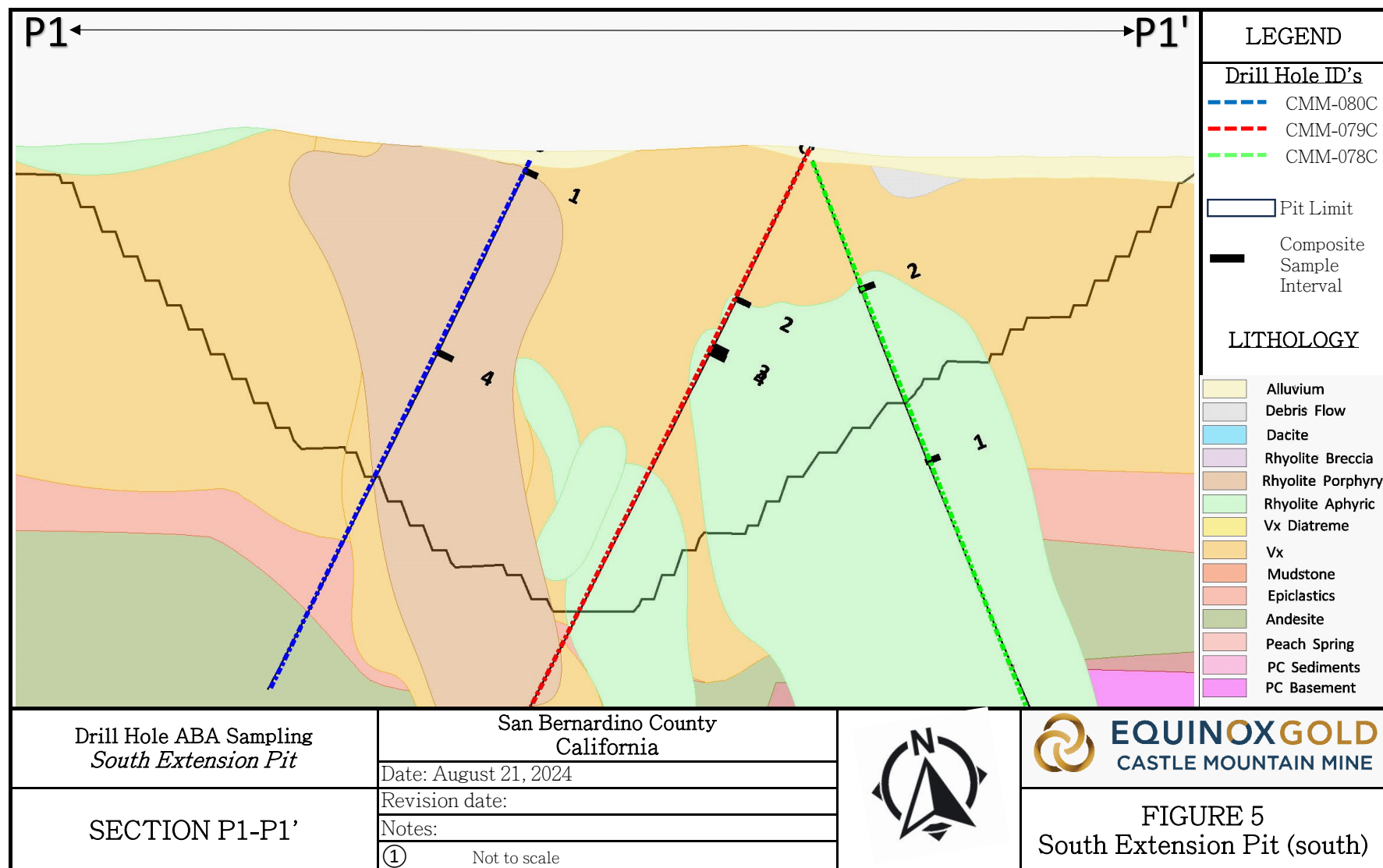
**FIGURE 2
PROPOSED FACILITIES**

Figure provided by Castle Mountain Mine

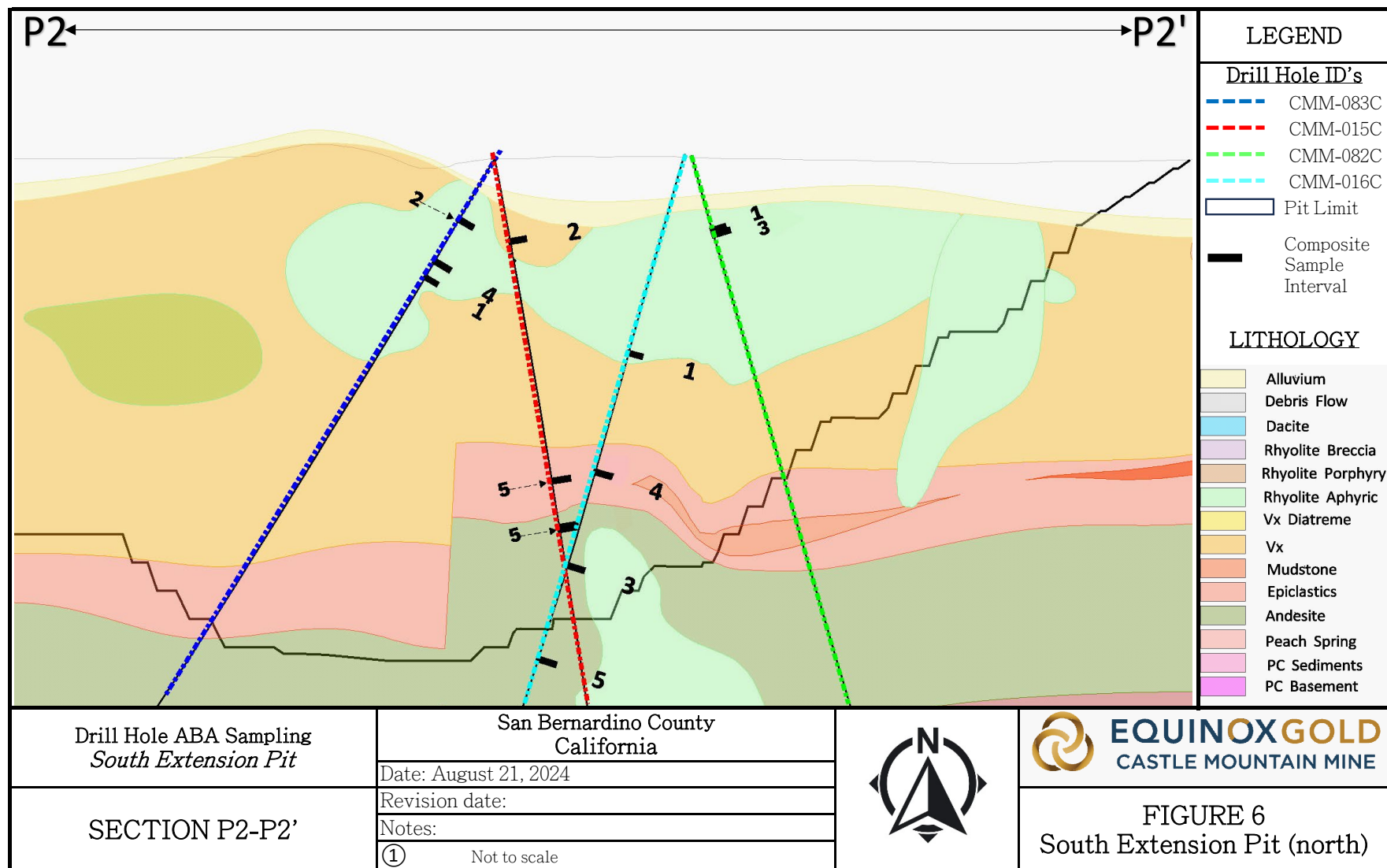




CMM 2022 MINE & RECLAMATION PLAN OF OPERATION
APPENDIX H



CMM 2022 MINE & RECLAMATION PLAN OF OPERATION
APPENDIX H



CMM 2022 MINE & RECLAMATION PLAN OF OPERATION
APPENDIX H

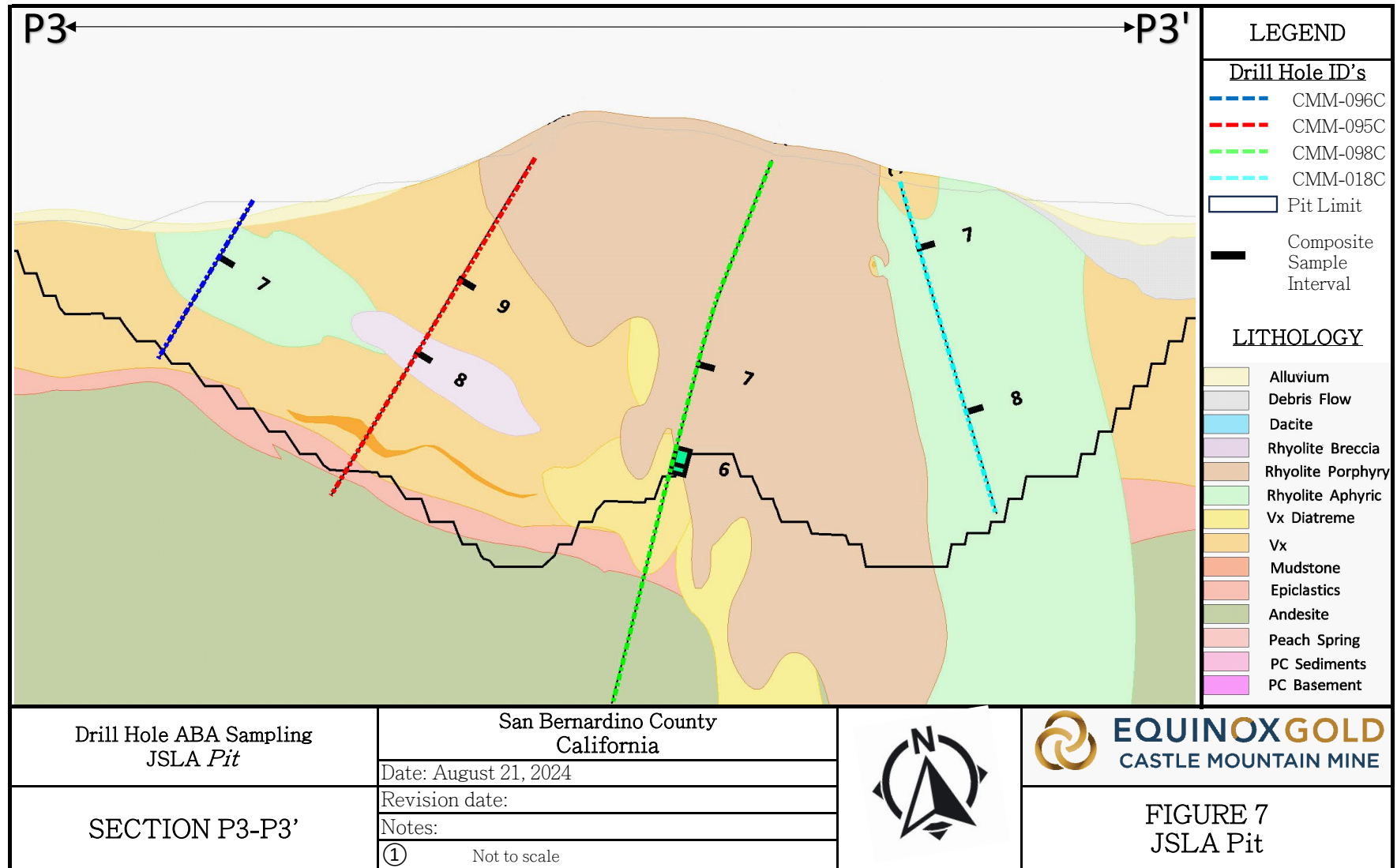


Figure provided by Castle Mountain Mine

CMM 2022 MINE & RECLAMATION PLAN OF OPERATION
APPENDIX H

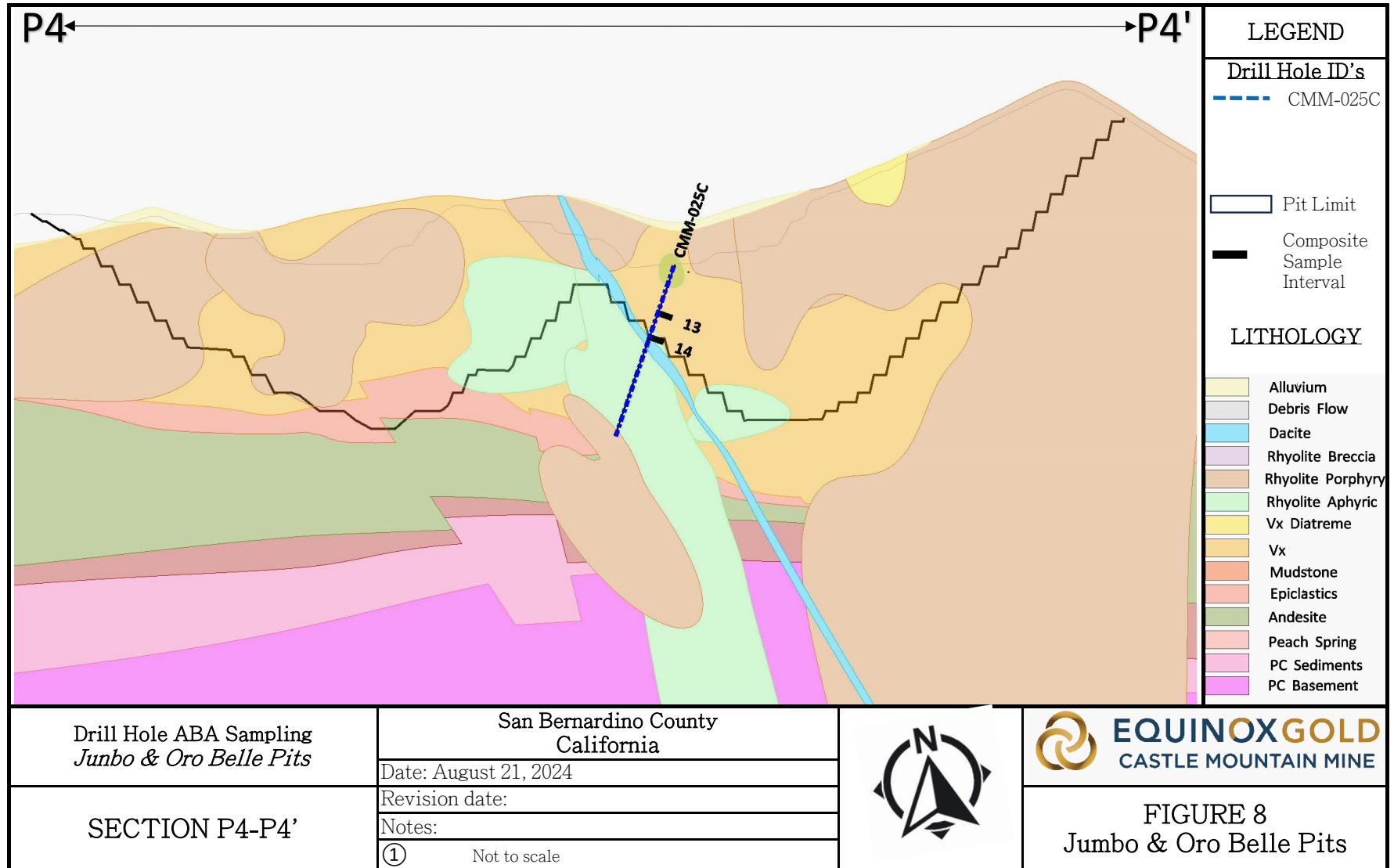


Figure provided by Castle Mountain Mine

CMM 2022 MINE & RECLAMATION PLAN OF OPERATION
APPENDIX H

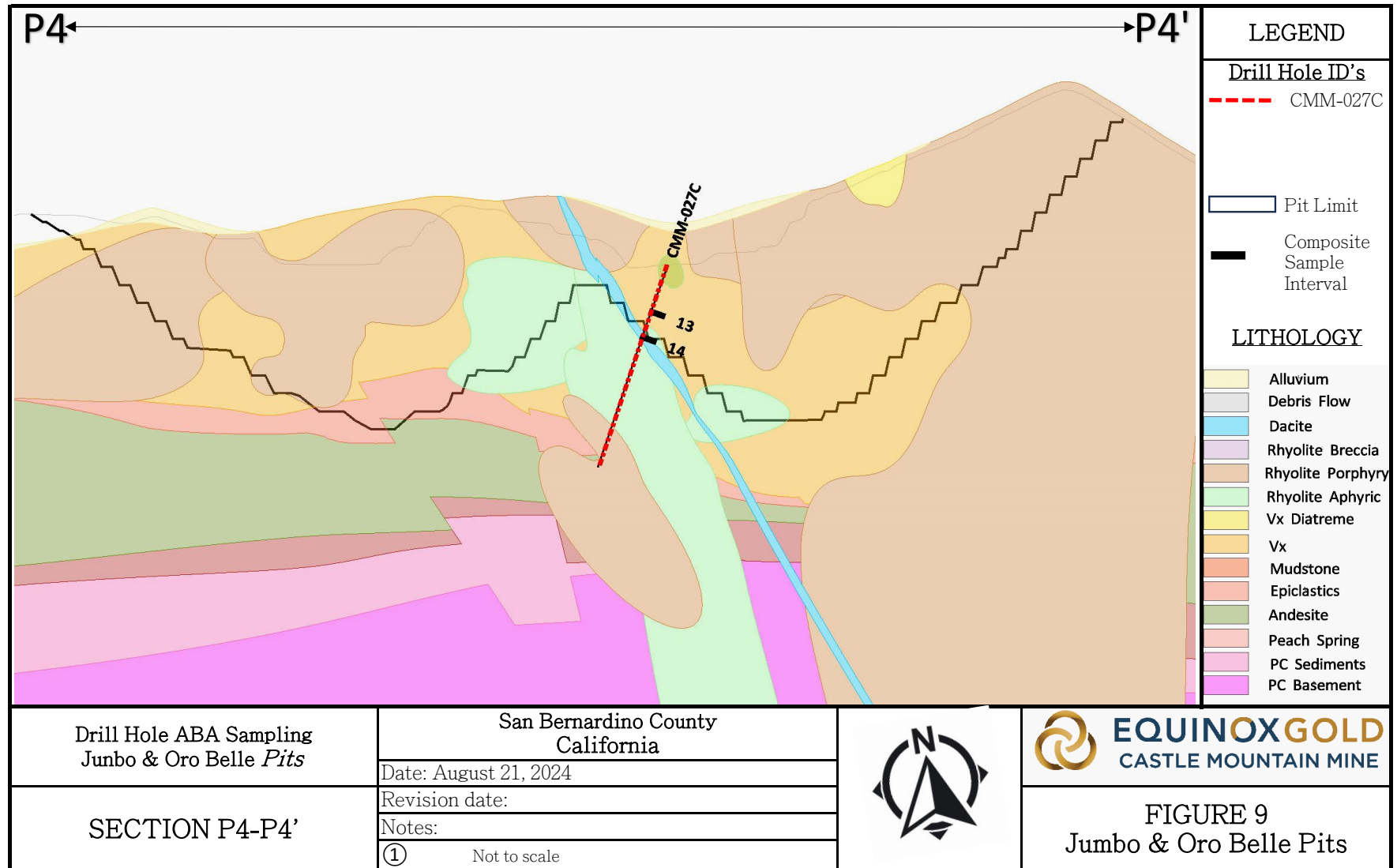


Figure provided by Castle Mountain Mine

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APPENDIX H

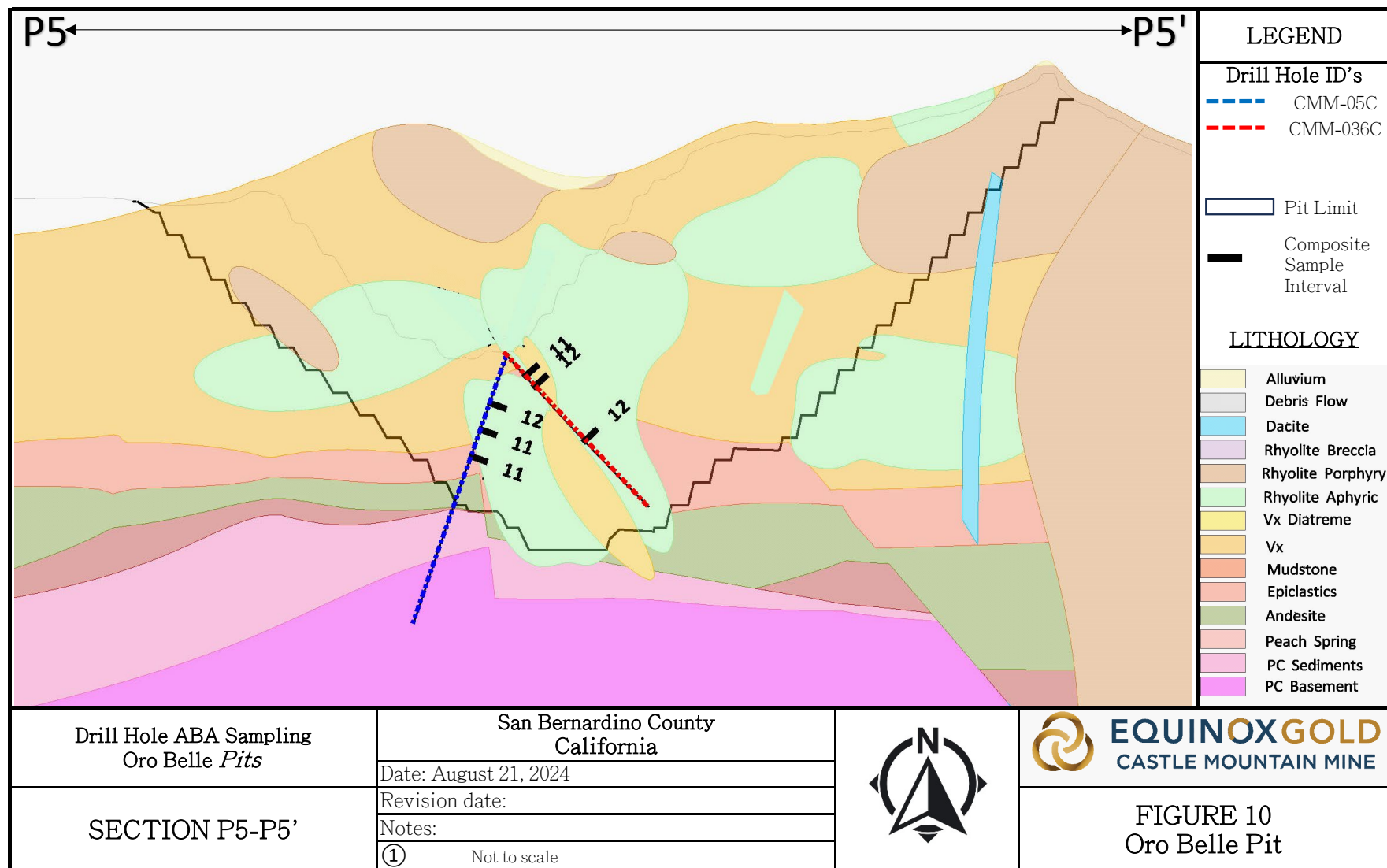


Figure provided by Castle Mountain Mine



APPENDIX A.1

MATERIALS CHARACTERIZATION INFORMATION FROM:

**Environmental Solutions, Inc. 1989. Castle Mountain
Project, San Bernardino County, California. Draft
Environmental Impact Statement/Environmental Impact
Report.
February, 1989**

5.3 WATER RESOURCES

5.3.1 PROPOSED ACTION

1. This section discusses impacts to water resources which could potentially result from the proposed Castle Mountain Project. The data is summarized from the detailed study by Environmental Solutions, Inc. (1988), titled Evaluation of Potential Effects on Lanfair Valley Aquifer and Piute Spring, which is incorporated by reference. The assessment of potential effects includes consideration of mitigation measures resulting from water pollution control and reclamation regulations, and modifications to the proposed project which have been made in response to public comments. A significant impact would be one which:
 - Degrades surface or ground water quality such that other uses would be significantly limited.
 - Substantially depletes ground water resources in Lanfair Valley.
 - Inhibits or reduces flow conditions at Piute Spring to the extent that the riparian habitat would be substantially affected or destroyed.

5.3.1.1 Surface Water

1. Effects of the proposed project on surface water quantity and quality elsewhere in Lanfair Valley would be minimal. There are no perennial waters at the site, and the facilities are arranged to minimize disruption to ephemeral surface water drainages. Process facilities using reagents (such as the solution ponds) during operation would be designed and constructed to contain large storm flows and avoid overflow discharges, using criteria approved by the Regional Water Quality Control Board (RWQCB), Colorado River Basin. During reclamation, flow from the process areas would be directed back into natural drainages, but only after the facilities undergoing reclamation had been neutralized in accordance with requirements of the RWQCB and/or BLM.
2. Based upon results of the exploratory drilling program, no significant quantity of water is expected to be encountered as the mine pits are excavated. Due to the limited rainfall and size of the completed mine pits, it is not expected that water would accumulate in the pits to the extent that surface discharges could occur.
3. Percolation through overburden materials would not be expected to significantly alter ground water or surface water quality. Samples of ore, protore and overburden have been subjected

5.3-2

to geochemical testing to determine the acid generation potential and extractable metals. Results are summarized in Table 5.3.1, Summary of Results, Analysis of Ore, Protore and Overburden. As indicated in the table, the material is slightly alkaline in nature and would not produce acidic leachate conditions. Also, the measured concentration of metals frequently associated with gold ore are relatively low in relation to concentrations considered to be of potential concern by the State. The metal concentrations shown in the table are based on a laboratory procedure which uses citric acid to intentionally leach metals out of the solid material. The amount of metals leached under non-acid conditions, such as those expected for the overburden pile, would be much lower.

4. Over time, inflow of water from precipitation to the mine pits could cause a buildup of dissolved solids. Since no ground water has been encountered in orebody definition drilling, the potential for dissolved solids from the pits to enter ground water is considered to be minor.

5.3.1.2 Ground Water

1. The evaluation of potential ground water impacts is based on the Applicant's estimated average consumption rate of about 450 gpm (725 acre-feet per year) for a period of about 10 years. Most of this water would be obtained from about 10 wells in the proposed West Well Field, located about two miles west of the proposed project. A small portion may also be obtained from several lower yielding wells in the project area. This use rate is less than earlier estimates of 1,650 and 1,140 acre-feet per year, reflecting reductions achieved as a result of processing modifications made to minimize water requirements.
2. Aquifer performance resulting from the proposed ground water withdrawal is discussed in the following sections and is based upon:
 - Evaluation of conditions in the West Well Field, as determined by the Mark Group (1988).
 - Evaluation of the potential for short- and long-term impacts at Piute Spring, as determined by Environmental Solutions, Inc. (1988).

TABLE 5.3.1
SUMMARY OF RESULTS
ANALYSIS OF ORE, PROTORE, AND OVERBURDEN

PARAMETER		RESULTS FOR TWO SEPARATE ANALYSES			STLC ⁽¹⁾
		MAXIMUM VALUE	MINIMUM VALUE	AVERAGE	
ACID POTENTIAL	Neutralization Potential (tons CaCO ₃ /1,000 tons of material)	105.7	2.9	54.3	--
	Potential Acidity (tons CaCO ₃ /1,000 tons of material)	4.7	<0.3	2.4	--
	Net Acid/Base Potential (± tons CaCO ₃ /1,000 tons of material)	101.0	2.9	51.9	--
METALS (Concentrations in mg/l)	Arsenic	0.24	0.08	0.16	5.0
	Barium	6.9	2.2	4.5	100.0
	Cadmium	0.01	<0.01	<0.01	1.0
	Chromium	0.14	0.11	0.125	5.0
	Lead	5.51	1.76	3.6	5.0
	Mercury	0.0005	<0.0003	0.0004	0.2
	Selenium	<0.10	<0.10	<0.10	1.0
	Silver	0.03	0.04	0.035	5.0

⁽¹⁾ Soluble Threshold Limit Concentration for Hazardous Waste, Code of Regulations Title 22.
Extract metals determined by CAL WET Test.

-- Not Applicable



APPENDIX A.2

MATERIALS CHARACTERIZATION INFORMATION FROM:

**Viceroy Gold Corporation, 1990. Castle Mountain Project,
San Bernardino County, California. Mine Plan and
Reclamation Plan.
August, 1990**

2. The overland conveyor will be realigned to a more westerly course from the Crushing Plant Area to supply ore to the second leach pad at the end of Stage 5. The conveyor will be contained within a road which is estimated to be about 35 feet wide.
3. Additional onsite roads built during Stages 5 through 7 will cross the plant communities shown in Table 2.8 (Onsite Road Lengths). This table itemizes the lengths of onsite roads both being developed and in use within these plant communities. The additional roads will be constructed in a manner similar to those described in Stage 1 and will be subject to BLM review and approval.

2.4.3.6 Stage 10

1. Stage 10 ends when reclamation activities have been completed as detailed in Sections 1.6 and 1.7. The resulting post-mining topography and hydrology are described in Sections 1.10 and 1.11, respectively.

2.4.4 MINE PRODUCT CHARACTERIZATION

1. Samples of ore, protore, and overburden have been subjected to geochemical testing to determine their acid generation potential and likelihood for solubilization of various metals. Results are summarized in Table 2.9 (Summary of Results: Analysis of Ore, Protore, and Overburden). The measured concentrations of metals commonly associated with gold ores are relatively low in relation to concentrations considered to be of potential concern by California regulatory agencies.
2. The metal concentrations shown in Table 2.9 are based on a laboratory procedure for evaluating materials to be placed in landfill sites. The procedure, required by State law, uses citric acid to intentionally leach metals from the material being evaluated, since citric acid can be generated by the decomposition of various fruit and vegetable wastes that are dumped at such sites. No such wastes will be placed in the heap leach or overburden piles at the Castle Mountain Project.



TABLE 2.9
SUMMARY OF RESULTS
ANALYSIS OF ORE, PROTORE, AND OVERBURDEN

PARAMETER	RESULTS FOR TWO SEPARATE ANALYSES ⁽¹⁾			RESULTS FROM OVERBURDEN SAMPLES ⁽²⁾ (4 SAMPLES)			RESULTS FROM SPENT ORE ⁽³⁾ (1 SAMPLE)	STLC ⁽⁴⁾
	MAXIMUM VALUE	MINIMUM VALUE	AVERAGE	MAXIMUM VALUE	MINIMUM VALUE	AVERAGE		
Neutralization Potential (tons CaCO ₃ /1,000 tons of material)	105.7	2.9	54.3	161.0	5.2	59.6	7.6	*
Potential Acidity (tons CaCO ₃ /1,000 tons of material)	4.7	<0.3	2.4	<0.10	<0.10	<0.10	<0.1	*
Net Acid Base Potential (±tons CaCO ₃ /1,000 tons of material)	101.0	2.9	5.19 Error - 51.9	161.0	5.2	59.6	7.6	*
METALS (Concentrations in mg/L)								
Antimony	-	-	-	<0.2	<0.2	<0.2	<0.1	15.0
Arsenic	0.24	0.08	0.16	0.38	0.08	0.18	0.26	5.0
Barium	6.9	2.2	4.5	3.18	1.02	1.74	1.80	100.0
Beryllium	-	-	-	0.032	<0.005	0.015	<0.005	0.75
Cadmium	0.01	<0.01	<0.01	0.012	<0.005	0.007	<0.005	1.0
Chromium	0.14	0.11	0.125	0.44	0.18	0.25	0.40	5.0
Cobalt	-	-	-	0.24	<0.03	0.14	0.10	80.0
Copper	-	-	-	1.08	0.44	0.62	0.48	25.0
Lead	5.51	1.76	3.6	0.46	0.07	0.27	0.36	5.0
Mercury	0.0005	<0.0003	0.0004	<0.0006	<0.0006	<0.0006	<0.0006	0.2
Molybdenum	-	-	-	0.14	0.05	0.07	0.10	350.0
Nickel	-	-	-	0.52	0.18	0.32	0.36	20.0
Selenium	<0.10	<0.10	<0.10	<0.2	<0.2	<0.2	<0.1	1.0
Silver	0.03	0.04	0.035	<0.01	<0.01	<0.01	<0.01	5.0
Thallium	-	-	-	0.2	<0.2	0.2	<0.1	7.0
Vanadium	-	-	-	0.16	0.06	0.10	0.14	24.0
Zinc	-	-	-	0.80	0.08	0.32	0.28	250.0

(1) Samples were composited from ore, protore, and overburden.

88-148B (7/23/90)

(2) Two samples were taken from unconsolidated overburden and two from consolidated overburden.

(3) Sample of ore was subjected to a column leach test, a test used to measure heap leach success, prior to being analyzed.

(4) Soluble Threshold Limit Concentration for Hazardous Waste, Code of Regulations Title 22. Extract metals determined by Waste Extraction Test (WET) as documented in Title 22.

- Not Analyzed
* Not Applicable



APPENDIX A.3

MATERIALS CHARACTERIZATION INFORMATION FROM:

**Lilburn Corporation, 1997. Castle Mountain Mine
Expansion Project, San Bernardino County, California.
Draft Environmental Impact Statement/Environmental
Impact Report.
March, 1997**

hydrogeologic modeling before BLM's decision respecting additional mitigation measures (if any) becomes final, the Operator shall reduce its groundwater pumping rates in accordance with the provisions of the groundwater monitoring plan.

This contingency measure has not been needed and, therefore, not implemented.

14. Groundwater extraction shall be recorded at each well with flow meters. [DEIS p. 6.3-2.]

Flow meters are in place.

15. If any existing wells in Lanfair Valley within 10 miles of the West Well Field go dry as a result of the Castle Mountain project operations, the Operator shall pay the costs to have these wells deepened, or shall provide replacement water to the owner of the affected wells. [DEIS p. 6.3-2.]

Groundwater drawdown has been limited to the immediate vicinity of the West Well Field.

Level of Significance After Mitigation: Less than significant.

NO ACTION ALTERNATIVE: *The No Action Alternative would result in no changes to water resources beyond the continued operation of the mine.*

The Castle Mountain Mine would continue to operate through the year 2000. Drawdown of the Lanfair Valley aquifer would be restricted to northern Lanfair Valley within predicted limits. Piute Spring would not be affected.

Mitigation Measures: No additional mitigation would be necessary.

Level of Significance After Mitigation: Less than significant.

SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE: *The impacts to surface and groundwater from this alternative would not differ substantially from those of the Proposed Action.*

The South Overburden Site Expansion Alternative would provide for continued operation of the Castle Mountain Mine for the same period as the Proposed Action. Anticipated water use would be similar to the Proposed Action, although longer haul roads would nominally increase the demand for dust control. As for the Proposed Action, drawdown of the Lanfair Valley Aquifer would be restricted to northern Lanfair Valley. Piute Spring would not be affected.

Mitigation Measures: As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.

Level of Significance After Mitigation: Less than significant.

Impact 3.3-2: Surface and Groundwater Quality

PROPOSED ACTION: *The Proposed Action would result in the generation of additional ore and overburden, which could affect surface or groundwater quality. Open mine pits may intercept groundwater.*

Mining wastes are regulated by Article 7 of CCR Title 23 Chapter 15, which requires that wastes be characterized with respect to their potential to degrade water of the state. Geochemical components of the characterization include evaluating:

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

- The potential for ore and overburden to generate acidic runoff due to the oxidation of sulfide minerals.
- The concentration of metals in ore and waste rock that could become available to the environment.

In addition to ore and overburden, rock in the pit walls must also be considered since the pit walls are also subject to oxidation and weathering processes similar to the overburden and heap leach piles. The rock that would remain in the Oro Belle-Hart Tunnel and Jumbo pit walls would essentially be the same material as the overburden that would be excavated. A small amount of ore-type rock would also remain exposed in the final mine pit walls.

Samples of the various types of materials that would be encountered during mining were analyzed for acid generating potential and acid neutralizing potential. A summary of acid generating potential results is provided in Table 3.3-4. Concentrations of metals were also analyzed; results for this analysis are summarized in Table 3.3-5.

Acid Generation Potential

Acid generating potential was evaluated utilizing generally accepted static testing procedures that estimate: (1) the amount of acid that could possibly be generated by weathering of sulfide minerals in the sample; and (2) the amount of acid that other minerals in the sample are capable of neutralizing (Hutchinson and Ellison, 1992). Results are expressed as a ratio of neutralization potential (NP) to acid generating potential (AP). A ratio greater than 1.0 indicates that, based solely on the quantity of minerals in the sample, there is a net potential to neutralize

acid, and therefore, acidic conditions would not be expected. An NP:AP ratio of approximately 3.0 is generally accepted as a conservative indication that acid generation cannot occur, even in a humid climate. In arid climates, lower values are often used (e.g., the State of Nevada Division of Environmental Protection uses 1.2 as a guideline for requiring further testing). Because the rate of possible acid production and acid neutralizing reactions is not considered in static testing, results are interpreted conservatively.

As shown in Table 3.3-4, the NP:AP ratio of all of the remaining material to be encountered is over 1.0, indicating little or no potential to generate acid. No sulfur acid generating potential is detected in overburden materials. The processed ore (with its ratio of 8.0) has an NP:AP ratio well above the conservative value of 3.0, and would not have potential to generate acidic water conditions. Raw ore, in isolation (with its NP:AP ratio of 2.7), is in the conservative 3.0 value range, and above the 1.0 value where acidic conditions would be expected. The degree to which the raw ore remaining in the pit walls could have the potential to reduce the pH of water is dependent upon the actual geologic characteristics that ultimately occur in the pit floor, the amount of ore, the net neutralization potential of surrounding overburden, and the availability of water. Existing data indicate little potential for acid producing conditions.

Groundwater encountered in the Lesley Ann Pit at elevation 3,920 is similarly exposed to raw ore and has not resulted in low pH values, as shown in Table 3.3-3. Expanded pits under the Proposed Action would intercept this depth at the Jumbo and Oro Belle deposits. Conditions similar to those shown in Table 3.3-3 are expected.

**TABLE 3.3-4
SUMMARY OF ACID-BASE ACCOUNTING**

Material Type	Numbers of Samples	Average Reported Results		
		Total Sulfur Acid ⁽¹⁾ Generating Potential (AP) (tons CaCO ₃ /kt)	Acid Neutralizing ⁽¹⁾ Potential (NP) (tons CaCO ₃ /kt)	NP:AP
Overburden				
	Oro Belle: (3)	ND ⁽²⁾	3.8	-
	Hart Tunnel: (4)	ND	4.1	-
	Jumbo: (5)	ND	3.2	-
Weighted Average	-	ND	3.6	-
Raw Ore⁽³⁾	(2)	1.9	5.3	2.7
Leached Ore	(2)	<0.3	2.4	8.0

NOTES: (1) EPA Method 600-12-78-054
(2) ND - Not detected
(3) Agglomerated at ratio of 9 tons of leach grade ore to 1 ton of mill grade

Metal Concentrations

Table 3.3-5 compares total and soluble metal concentrations from ore samples to the California Soluble Threshold Limit Concentration (STLC) for hazardous waste. Although overburden and leached ore residue are categorically exempt from regulation as a hazardous waste by state and federal laws, the STLC criteria provide a measure of significance for evaluation of metals analysis results.

The State of California has determined that waste material with metals contents exceeding these values pose a substantial threat to health and the environment and, therefore, unless exempted, must be disposed of in accordance with stringent hazardous waste regulations.

As shown in Table 3.3-5, soluble metals in the materials are non-detectable for most metals. None of the results exceed STLC limits.

Due to the low metal concentrations, the extremely dry site environment, and the net neutralizing potential of the ore and waste rock, the geochemistry of materials that would be mined under the Proposed Action would not pose a threat to surface or ground water quality. Based on these geochemistry testing results, it is anticipated that the overburden and the rinsed and abandoned leached ore residue would be classified as a Group C mining waste pursuant to Title 23 CCR Chapter 15, Section 2571.

Because of the low soluble metal concentrations and the high NP:AP ratio of ore and overburden that would remain in the mine pit walls, it is expected that the quality of any water that could collect in the mine pits would be good (comparable to natural surface runoff) and similar to that shown in Table 3.3-3. This water would be suitable for wildlife use.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

TABLE 3.3-5 SUMMARY OF METALS ANALYSES RESULTS AND COMPARISON TO REGULATORY THRESHOLDS										
Constituents	Ore (mg/liter)					Leached Ore	Overburden			Regulatory Criteria STLC
	Jumbo Mill Grade	Jumbo Leach Grade	Hart Tunnel Leach Grade	Oro Belle Mill Grade	Oro Belle Leach Grade		Jumbo	Oro Belle	Hart Tunnel	
Antimony	ND	ND	ND	ND	ND	<0.05	ND	ND	ND	15.
Arsenic	0.46	0.74	ND	ND	ND	<0.06	ND	ND	ND	5.0
Barium	ND	0.22	1.7	1.4	1.8	<0.20	ND	ND	ND	100.
Beryllium	ND	ND	ND	ND	ND	<0.05	ND	ND	ND	0.75
Cadmium	ND	ND	ND	ND	ND	<0.05	ND	ND	ND	1.0
Chromium	1.6	1.7	ND	ND	ND	<0.05	ND	ND	ND	560.
Cobalt	ND	ND	ND	ND	ND	<0.05	ND	ND	ND	80.
Copper	ND	ND	ND	ND	ND	<0.05	ND	ND	ND	25.
Lead	ND	ND	0.11	0.10	0.10	<0.05	ND	ND	ND	5.0
Mercury	ND	ND	ND	ND	ND	<0.0005	ND	ND	ND	0.2
Molybdenum	ND	ND	ND	ND	ND	<0.05	ND	ND	ND	350.
Nickel	1.2	0.93	ND	ND	ND	<0.06	ND	ND	ND	20.
Selenium	ND	ND	ND	ND	ND	<0.05	ND	ND	ND	1.0
Silver	ND	ND	ND	ND	ND	<0.05	ND	ND	ND	5.0
Thallium	ND	ND	ND	ND	ND	<0.05	ND	ND	ND	7.0
Vanadium	ND	0.18	ND	ND	ND	<0.05	ND	ND	ND	24.
Zinc	ND	ND	ND	ND	ND	<0.5	ND	ND	ND	250.

NOTES: All metals reported above are in mg/liter on a filtrate basis (STLC). Samples analyzed in accordance with EPA's Method 1312 EP Toxicity Test, 18-hour extraction.

Leached ore sample was a composite of crushed material from April-June 1996.

STLC: Soluble Threshold Limit Concentration

ND: None Detected

Mitigation Measures: Measures developed in the Previous EIS/EIR and subsequent approvals have been implemented at the Castle Mountain Mine as County Conditions of Approval and BLM Stipulations. These measures have been implemented as part of the ongoing mine operation. They are monitored regularly for both implementation and effectiveness.

Continued implementation of the following measures would adequately address potential water quality impacts for the Mine Plan Amendments.

COUNTY CONDITIONS OF APPROVAL

45. Reagents and fuels shall be stored in areas protected by dikes or curbs designed to contain the contents of containers to avoid the potential for an accidental spill. [DEIR p. 6.3-2; (See also Condition of Approval No. 30 above concerning capacity of containment area).]
46. The Applicant shall obtain a permit from and comply with the RWQCB requirements concerning using materials and implementing procedures to safely contain liquids, including:
 - a. Impermeable synthetic liners for process solution basins and heap leach pads.
 - b. Sealed drainage and collection facilities to transport or contain leaching solution.
 - c. Diked leach pads to confine and control drainage from the leach piles.
 - d. Storage basins with adequate freeboard to safely contain storm run-off from within the heap leach system and draindown of solution leach system to preclude entry of storm run-off into the system.
 - e. Drainage or diversion ditches outside the heap from the leach pads in the event pumps could not operate because of a power failure.

- f. A leakage detection monitoring system for the leach pads, emergency solution storage and stormwater storage basins.
- g. Regularly prepared monitoring reports on the current status of operations.
- h. Neutralization and final rinsing of the heap leach piles and decommissioning/removal of the solution storage facilities at the time of project completion. [DEIR 6.3-1.]

A permit from the RWQCB has been acquired (refer to Appendix G). This permit may need to be amended for approved/continued operations).

47. Reclamation activities shall include control of slopes on cuts and fills, plus revegetation, to control surface erosion. [DEIR 6.3-2.]

BLM STIPULATION

3. The Operator shall meet all of the requirements of the Regional Water Quality Control Board's ("RWQCB") Waste Discharge Order and make all monitoring data available to the BLM upon request.

Such requirements have been met, as reported in annual monitoring reports.

Additional Mitigation Measure 3.3-2a: Should groundwater discharge into the mine pits, creating a water body that would remain following mine closure, measures shall be taken to assure that there will be no degradation of such water that could adversely affect human health or terrestrial and avian life. Under such a circumstance, the following measures shall be implemented:

- a. Monthly monitoring shall be completed during reclamation and closure to confirm the concentrations of metals and other constituents.

3.0 AFFECTED ENVIRONMENT AND ENVIRONMENTAL CONSEQUENCES

- b. Should the monitoring results indicate that concentrations of constituents exceed, or could likely exceed in the future, a federal or State maximum contaminant level (MCL) that could cause an effect to human or animal health, backfilling of the mine pit floor shall be completed to an elevation above the high water level. Backfill rock shall have a high neutralization potential (NP:AP ratio greater than 5.0).

Level of Significance After Mitigation: Less than significant.

NO ACTION ALTERNATIVE: *The No Action Alternative would result in no additional potential for impacts to surface and groundwater quality beyond completion of the approved operation.*

As currently permitted, the Castle Mountain Mine would continue to operate through the year 2000. Ore and overburden previously analyzed in the Previous EIS/EIR showed high neutralization potential, and low metals concentrations. Data shown in this EIS/EIR (refer to Tables 3.3-3, 3.3-4, and 3.3-5) confirm these expectations. No significant adverse impacts would occur.

Mitigations Measures: No additional mitigation would be necessary.

Level of Significance After Mitigation: Less than significant.

SOUTH OVERBURDEN SITE EXPANSION ALTERNATIVE: *This alternative would not differ from the Proposed Action in its potential to impact surface and groundwater quality.*

Disposing of the overburden in an alternative onsite location as proposed under this alternative would not change the characteristics of the ore and overburden or the potential water quality impacts from those described and evaluated for the Proposed Action.

Mitigation Measures: As the environmental consequences associated with this alternative would be similar to the Proposed Action, the same mitigation measures would be applicable.

Level of Significance After Mitigation: Less than significant.

Impact 3.3-3: Surface Water Drainage and Diversions

PROPOSED ACTION: *Surface waters draining through the site could affect the expanded heap leach pad and stormwater solution storage basins.*

Existing facilities at the Castle Mountain Mine that could potentially be damaged by storm waters are located outside of defined flood plain areas. Primary facilities of concern include the heap leach pads, solution storage facilities, comminution circuit and gold processing plant, where chemicals are used.



APPENDIX A.4

MATERIALS CHARACTERIZATION INFORMATION FROM:

**Lilburn Corporation, 1997. Castle Mountain Mine
Expansion Project, San Bernardino County, California.
Final Environmental Impact Statement/Environmental
Impact Report, Response to Comments.
October, 1997**

7.2.2 Federal Agencies—Comments and Responses

slopes were increased to 54-degree inter-ramp slope angles (i.e., four successive 20-foot benches at a 71-degree slope angle followed by a 30-foot safety bench to achieve the 54-degree slope) for the majority of the pit. This slope angle was used around the entire perimeter of the pit with no short- or long-term slope stability problems. Reasons for the high reliability of the wall slopes include the uniform lithology of the rock types, dry climate, and favorable structural orientation. Structures were in general normal to the pit walls.

The Jumbo Pit is located immediately north of the Lesley Ann Pit and daylights with that pit at the 4,400 elevation. Surface mapping, reverse circulation, and diamond drilling indicated that the pit is located within a single rhyolite flow dome. As with the Lesley Ann Pit, moderate argillic alteration will be a common feature of the pit walls; however, rock quality is good due to the uniform lithology and favorable structure orientation. Mining is currently underway in the already permitted portion of the Jumbo Pit. Two hundred feet of highwall is exposed in the northeast portion of the pit, and no problems in short- or long-term slope stability have been experienced or are anticipated.

The Oro Belle-Hart Tunnel Pit is located northeast of the Lesley Ann and Jumbo pits. Mining is also underway in the currently permitted portion of the pit with standing pit highwalls above 300 feet, and no problems in short- or long-term slope stability have been experienced or are anticipated. Diamond drill holes were drilled to test the orientation and competency of contact zones projected in pit walls on the southeast portion of the pit expansion. Results showed rock competency similar to the Lesley Ann Pit, with foliation dipping away from the highwall.

The South Extension Pit will daylight into the south highwall of the Lesley Ann Pit. It will be comprised of the same rock types and structural features encountered in the Lesley Ann Pit. Current drill data and exposed highwalls indicate that long-term slope stability will be experienced.

Knowledge gained from the competent pit walls in the recently completed Lesley Ann Pit (1996) was utilized for pit designs in the expansion areas. Pits currently being mined and proposed for expansion were designed at a more conservative 52-degree inter-ramp slope angles (i.e., four successive 20-foot benches followed by a 34-foot safety bench).

There are no problems in short- or long-term stability anticipated for pit highwalls.

Comment 1-2

The geochemical test data available in the DEIS and the arid environment of the project area appear to suggest a low potential for acidification or contamination of meteoric waters as a consequence of the proposed project. However, we suggest that additional description of the deposit mineralogy and zonation be included in the FEIS. For example, the representativeness of the tested ore materials shown in Table 3.3-4 cannot be evaluated because their mineralogy is not described in the DEIS. This is an important consideration insofar as the moderately low neutralizing potential to acid generating potential (NP:AGP) ratios of the tested ore samples suggest the presence of sulfide minerals. Neither the DEIS or previous Castle Mountain Mine EIS/EIR clearly states the types and quantities of sulfide minerals present in the deposit that could oxidize to produce acid, with the exception of the general statement that the deposit "continue(s) to be very low in sulfides" (p. S-3 of DEIS).

7.0 RESPONSES TO COMMENTS

Moreover, neither document addresses the presence or absence of chemical or mineralogical zoning of the ore-bearing rock. As such, variations in the abundances of sulfide minerals throughout the deposit are not discussed. Two samples of ore have an average NP:AGP ratio of 2.7, which is below the 3:1 threshold, below which EPA recommends further testing (such as kinetic testing) to determine acid potential. In addition, protore samples were not tested. This material would be stockpiled for potential future processing. Consequently, the potential for acid generation from exposed pit walls or protore stockpiles is not definitively ruled out. The FEIS should provide additional info so that the representativeness of the samples and acid potential of protore & pit walls can be determined.

Furthermore, Method 1312 EP toxicity tests were conducted on 5 samples of mill and leach grade ore, 1 sample of leached ore, and 3 samples of overburden material. Metals were not detected in overburden samples and were below detection limits in the leached ore samples. Metals generally were not detected in ore samples with the exceptions of arsenic, chromium, and nickel which were present in 2 of the 5 ore samples; lead which was present in 3 samples; vanadium which was present in 1 sample; and barium which was present in 4 samples. In all cases, measured metals concentrations were significantly below the hazardous waste criteria established by the State of California.

The low content of soluble metals in most samples and the presumably low metal content of the deposit in general (the EIS/EIR states that base metals are “nonexistent” in the deposit) indicate that contamination of surface or ground waters by metals is not expected to occur. However, the representativeness of the

tested samples cannot be evaluated from the description of the deposit mineralogy, chemistry, and zonation provided in the DEIS. It should be noted that the sample of Lesley Ann pit sump water that was analyzed in June, 1996 contained arsenic at a concentration that was only slightly below the maximum contaminant level (MCL) established for drinking water by the State of California (0.045 mg/l sample vs. 0.05 mg/l MCL; Table 3.3-3). The FEIS should provide additional information so that the representativeness of the samples can be determined.

Response 1-2

Figures 2-11 and 2-12 provide additional detail on the mineral zonation and the locations of samples collected for acid-base accounting (ABA) and leachable metals testing EPA Method 1312. Stratigraphically, the host rock and overburden is divided into three lithologic zones that have been sampled and characterized for ABA:

- **Unaltered Rhyolite Zone:** Rhyolite is an extrusive (fine-grained) granitic rock type consisting of quartz (SiO_2) and potassium feldspar [$\text{K(AlSi}_3\text{O}_8\text{)}$], sodium plagioclase, muscovite, biotite and hornblende. The unaltered rhyolite zones indicated in the figures portray areas where silicification and alteration are infrequent. Iron and manganese oxides occur in fractures and fissures within the rhyolite and are formed as a result of weathering. Unaltered rhyolite represents the majority of the overburden that would be generated.
- **Altered Rhyolite Zone:** Silica occurs in fracture zones in the rhyolite gangue and is the primary mineral zone in which the ore occurs. Sulfide minerals in the quartz zones include pyrite. The pyrite minerals

7.2.2 Federal Agencies—Comments and Responses

are encapsulated in silica, rendering them less prone to oxidation and hence acid generation. This silicified zone primarily represents the ore body.

- **Lahar materials:** Lahar materials include cemented tertiary gravels which do not contain the acid-generating materials. These materials, together with the rhyolite discussed above, represent the overburden.

The samples used for the ABA were collected from the three pits. As there was no need to characterize the Lahar, the focus of the sampling and analysis was the unaltered and altered rhyolite zones. The analytical testing was done on crushed samples and is therefore representative of the ore, and likely overestimates the potential for acid generation of the overburden, which is not crushed. How these representative samples were collected is described below.

Ore

The Jumbo ore deposit has been characterized by hand-size samples selected off the 4,600- and 4,580-foot benches. The samples were collected along four ore faces and over 300 pounds of composite samples were collected for ABA and leachable metals analysis.

The diamond drill hole (DDH) used for overburden characterization was also used to sample the Oro Belle and Hart Tunnel deposits. The Hart Tunnel ore has been characterized by fifty-two 5-foot interval samples, from two DDH and composited for the test work. The Oro Belle deposit is represented by eighty-eight 5-foot interval samples from three DDHs. The mineralogy of these interval samples is described in Table 7-4.

Overburden

For the overburden testing, five DDHs were utilized to sample the Jumbo deposit. In each DDH, 1-foot interval samples were selected to represent the rock at the hole location. A total of sixteen 1-foot intervals were composited from the five DDHs for ABA testing and leachable metals analysis using EPA Method 1312. The original drill logs were reviewed and mineralogy of each interval described. The descriptions are provided in Table 7-5.

The Hart Tunnel overburden pile is sampled by four DDHs and twelve 1-foot interval samples composited for the ABA and leachable metals analyses. The Oro Belle overburden pile is represented by three DDHs and seven 1-foot interval samples that were composited. All of these DDH composite samples, selected to represent overburden, are within the planned pits. Mineralogy of these samples is listed in Table 7-5.

Conclusions

Since the Castle Mountain Mine is located in arid climate, there is very little runoff and no potential for rainfall infiltration causing leachate (Hutchison and Ellison, 1990). Therefore, acid generation is not expected to result in ground and surface water quality impacts. The only potential concern is the presence of acid-generating material at the surface of a pile that could interfere with establishment of reclamation vegetation. The closure operations at the mine would ensure that upon closure, any residual ore piles are tested. If these materials are found to be acid generating, they would be covered with several feet of non acid-generating overburden during reclamation.

7.0 RESPONSES TO COMMENTS

TABLE 7-4 DRILL HOLE INTERVALS NP/AP TEST WORK – ORE					
Area	DDH #	Interval	Lithology	Category	Occurrence of Pyrite
Oro Belle	50	10-35	Rhyolite	High Grade	None Observed
		35-60	Rhyolite Lithic Tuff	High Grade	None Observed
		60-75	Rhyolite	High Grade	None Observed
		75-90	Rhyolite Lithic Tuff	High Grade	None Observed
	51	90-95	Rhyolite	High Grade	None Observed
		95-110	Rhyolite Lithic Tuff	High Grade	None Observed
		235-260	Rhyolite	High Grade	None Observed
		265-270	Rhyolite	High Grade	None Observed
		295-315	Rhyolite	High Grade	None Observed
		315-325	Rhyolite Lithic Tuff	High Grade	None Observed
	50	225-245	Rhyolite	Low Grade	None Observed
		255-270	Rhyolite	Low Grade	None Observed
		310-315	Rhyolite	Low Grade	None Observed
		315-320	Rhyolite Lithic Tuff	Low Grade	None Observed
	51	65-80	Rhyolite Lithic Tuff	Low Grade	None Observed
		80-90	Rhyolite	Low Grade	None Observed
		110-120	Rhyolite Lithic Tuff	Low Grade	None Observed
		120-135	Rhyolite	Low Grade	None Observed
		150-170	Rhyolite	Low Grade	None Observed
		215-235	Rhyolite	Low Grade	None Observed
		355-360	Rhyolite Lithic Tuff	Low Grade	None Observed
		360-405	Rhyolite	Low Grade	None Observed
	52	85-170	Rhyolite	Low Grade	None Observed
Hart Tunnel	49	140-160	Rhyolite Lithic Tuff	Low Grade	None Observed
		215-230	Rhyolite Lithic Tuff	Low Grade	None Observed
		340-355	Rhyolite Lithic Tuff	Low Grade	None Observed
		440-450	Rhyolite	Low Grade	None Observed
		485-500	Rhyolite	Low Grade	None Observed
		525-540	Rhyolite	Low Grade	None Observed
		600-615	Rhyolite	Low Grade	None Observed
	54	90-125	Rhyolite	Low Grade	None Observed
		140-160	Rhyolite Lithic Tuff	Low Grade	None Observed
		175-190	Rhyolite Lithic Tuff	Low Grade	None Observed
		485-500	Rhyolite	Low Grade	None Observed
		630-665	Rhyolite	Low Grade	None Observed
		705-730	Rhyolite	Low Grade	None Observed
		775-783	Rhyolite	Low Grade	None Observed

NOTES:

1. The above represent the ore composites by pit area which were used for the Acid Base accounting work.
2. Occurrence of Pyrite was noted in the logging of drill holes if fresh pyrite was observed.
3. Grades are also shown which indicate the range of values which were included in the NP/AP test work.
4. High Grade refers to ore which is initially processed through the grinding circuit while low grade refers to material processed entirely on the heap leach pad.

CMM 2022 MINE & RECLAMATION PLAN OF OPERATION
APPENDIX H

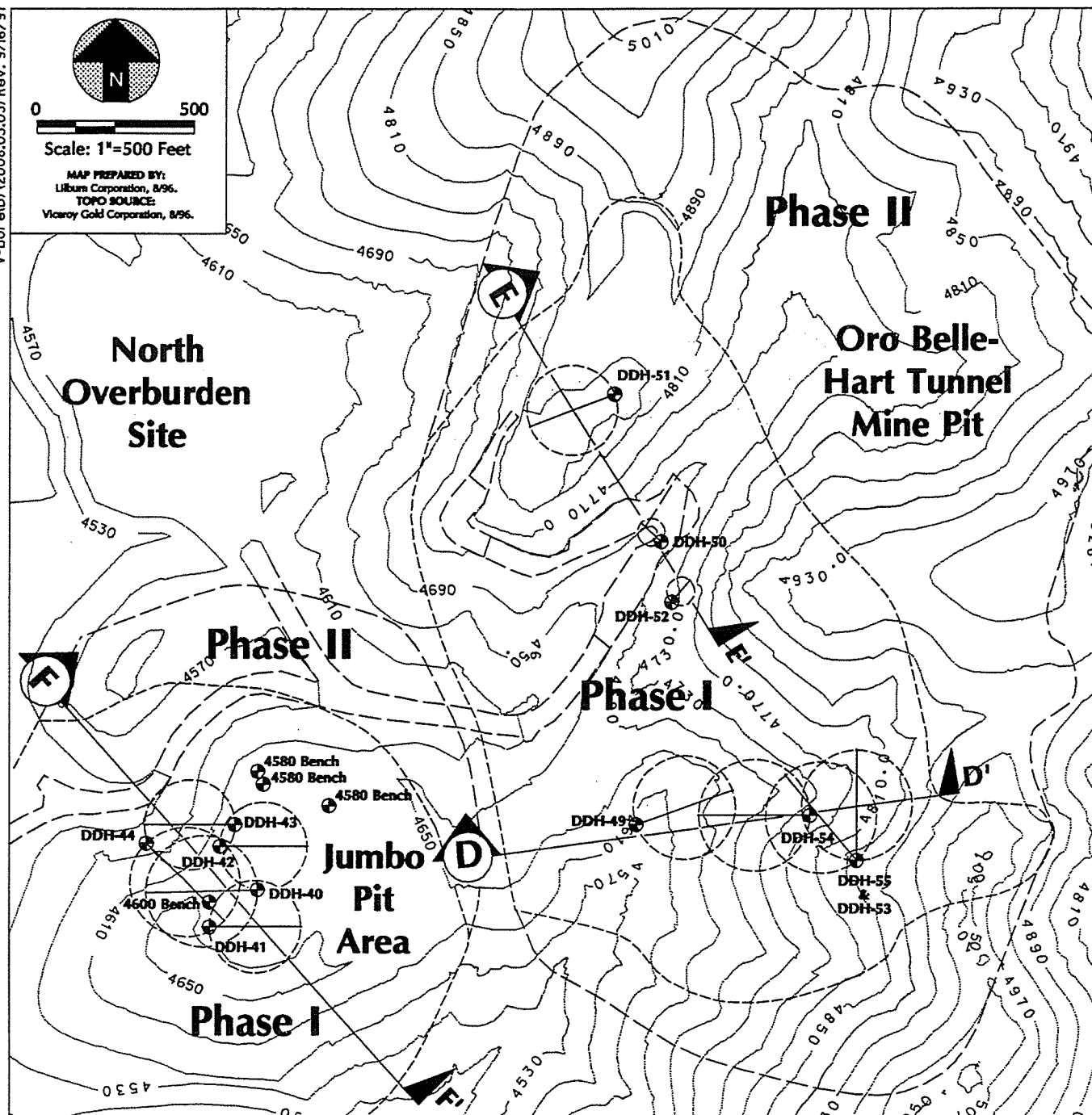
7.2.2 Federal Agencies—Comments and Responses

TABLE 7-5 DRILL HOLE INTERVALS NP/AP TEST WORK- OVERBURDEN					
Area	DDH #	Interval	Lithology	Category	Occurrence of Pyrite
Jumbo	40	49-50	Rhyolite	Overburden	None Observed
		199-200	Rhyolite	Overburden	None Observed
		400-401	Rhyolite	Overburden	None Observed
	41	80-81.5	Lahar	Overburden	None Observed
		290-291	Rhyolite	Overburden	None Observed
		380-381	Rhyolite	Overburden	None Observed
	42	56-57	Rhyolite Lithic Tuff	Overburden	None Observed
		192-193	Rhyolite Lithic Tuff	Overburden	None Observed
		391-392	Rhyolite	Overburden	None Observed
	43	50-51	Rhyolite Lithic Tuff	Overburden	None Observed
		344-345	Rhyolite	Overburden	None Observed
		550-551	Rhyolite	Overburden	None Observed
	44	38-39	Rhyolite	Overburden	None Observed
		300-301	Rhyolite	Overburden	None Observed
		570.5-571.5	Rhyolite	Overburden	Minor
Oro Belle	50	107-108	Rhyolite Lithic Tuff	Overburden	None Observed
		197-198	Rhyolite	Overburden	None Observed
		287-288	Rhyolite	Overburden	None Observed
	51	38-39	Rhyolite Lithic Tuff	Overburden	None Observed
		190-191	Rhyolite	Overburden	None Observed
		340-341	Rhyolite Lithic Tuff	Overburden	None Observed
	52	45-46	Rhyolite	Overburden	None Observed
Hart Tunnel	49	38-39	Rhyolite Lithic Tuff	Overburden	None Observed
		190-191	Rhyolite Lithic Tuff	Overburden	None Observed
		300-301	Rhyolite Lithic Tuff	Overburden	None Observed
		405-406	Rhyolite Lithic Tuff	Overburden	None Observed
	53	50-51	Rhyolite	Overburden	None Observed
		139-140	Rhyolite	Overburden	None Observed
	54	51-52	Rhyolite	Overburden	None Observed
		300-301	Rhyolite Lithic Tuff	Overburden	None Observed
		588-589	Rhyolite	Overburden	None Observed
	55	80-81	Rhyolite	Overburden	None Observed
		218-219	Rhyolite	Overburden	None Observed
		398-399	Rhyolite Lithic Tuff	Overburden	None Observed

NOTES:

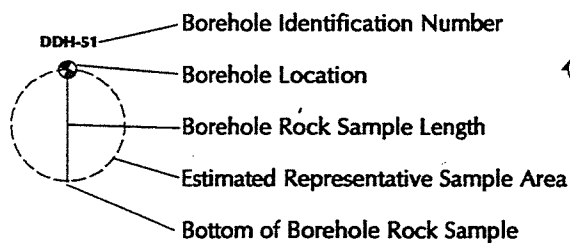
1. The above represent the overburden composites by pit area which were used for the Acid Base accounting work.
2. Occurrence of Pyrite was noted in the logging of drill holes if fresh pyrite was observed.
3. Grades are also shown. In certain cases the intervals were ore grade.

V-Borel(b) (2008.03.03) Rev. 9/16/97



Legend

- Existing Topography
- Roads
- Phase I Pit Areas
- Phase II Pit Areas

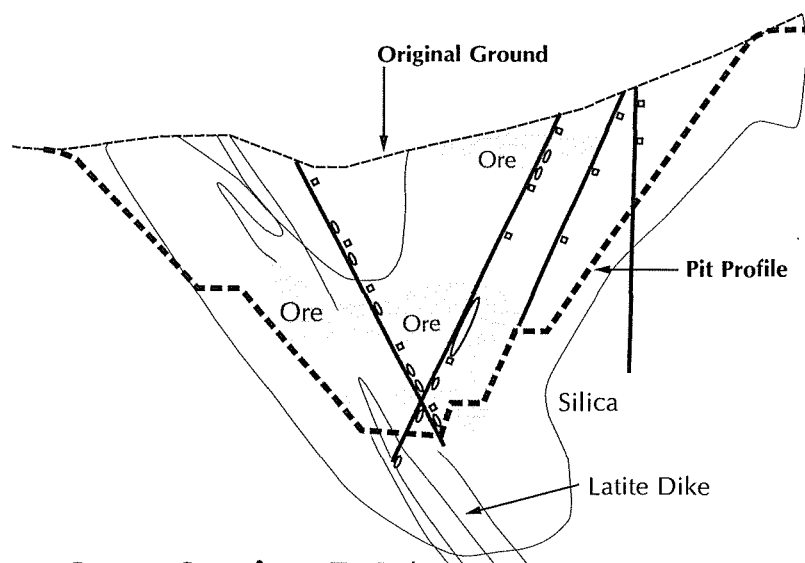


Cross Section Identification and Location
(see Figures 2-5 through 2-7 for Cross Sections)

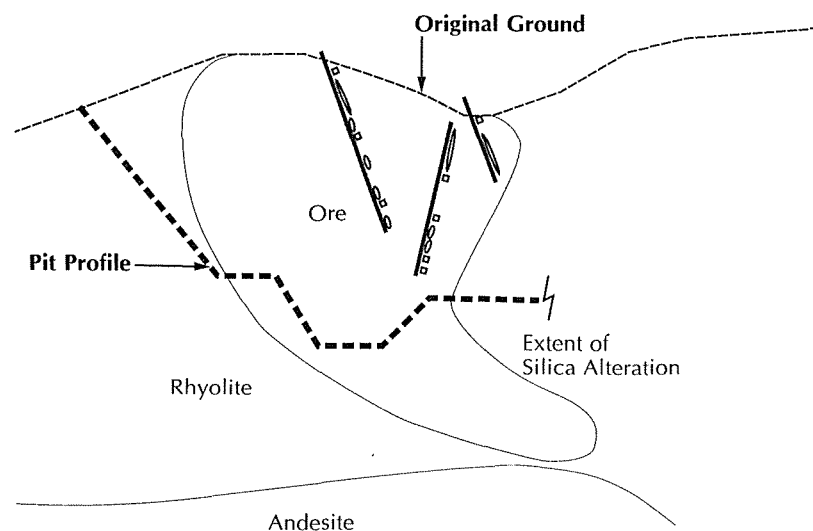
Acid-Base Accounting Sample Locations

CASTLE MOUNTAIN MINE
San Bernardino County, California

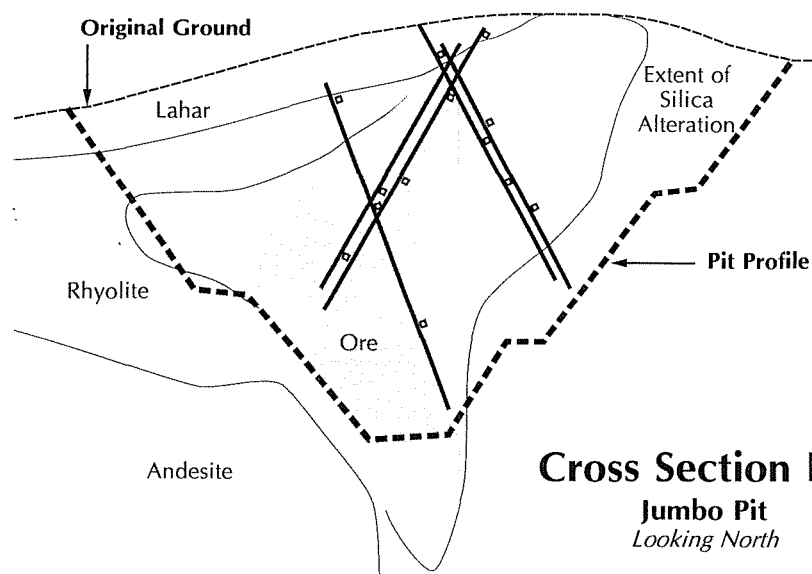
Figure 2-11



Cross Section D-D'
Oro Belle-Hart Tunnel (South)
Looking North



Cross Section E-E'
Oro Belle-Hart Tunnel (North)
Looking East



Cross Section F-F'
Jumbo Pit
Looking North

Legend

- Ore
- Overburden
- Borehole

Note: See Figure 2-9 for Cross Section Locations.

Acid-Base Accounting Cross Sections

CASTLE MOUNTAIN MINE
San Bernardino County, California



APPENDIX B

LABORATORY REPORTS



McClelland Laboratories, Inc.

1016 Greg Street, Sparks, Nevada 89431
(775) 356-1300 * FAX (775) 356-8917
E-Mail: MLI@METTEST.COM

February 23, 2022

Mr. Aren Hall
Equinox Gold Corp. - Castle Mountain Venture
980 American Pacific Dr. Suite 102
Henderson, NV 89014

Dear Aren:

Enclosed is the environmental report concerning the results obtained from the Modified Acid Base Accounting (Modified ABA) with paste pH, the California Administrative Manual (CAM)-17 Metals plus manganese, and Soluble Threshold Limit Concentration (STLC) analyses on fourteen samples.

We appreciate this opportunity to serve you on this project.

Sincerely,

Kirsten Cunningham
Environmental Project Manager

KVC:lj
Enclosure



McClelland Laboratories, Inc.

1016 Greg Street, Sparks, Nevada 89431
(775) 356-1300 * FAX (775) 356-8917
E-Mail: MLI@METTEST.COM

**Report
on
Waste Rock Characterization Testing
MLI Job No. 4739
February 23, 2022**

for

**Mr. Aren Hall
Environmental & Permitting Manager
Equinox Gold Corp – Castle Mountain Venture
980 American Pacific Drive, Suite 102
Henderson, NV 89014**

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McClelland Laboratories, Inc.

1016 Greg Street, Sparks, Nevada 89431
(775) 356-1300 * FAX (775) 356-8917
E-Mail: MLI@METTEST.COM

**Report
on
Waste Rock Characterization Testing
MLI Job No. 4739
February 23, 2022**

for

**Mr. Aren Hall
Environmental & Permitting Manager
Equinox Gold Corp – Castle Mountain Venture
980 American Pacific Drive, Suite 102
Henderson, NV 89014**

SUMMARY

A total of fourteen samples were received on October 26th, 2021, for waste rock characterization testing including Modified Acid Base Accounting (NV-Modified ABA) with paste pH, California Administrative Manual (CAM)-17 Metals plus manganese, and Soluble Threshold Limit Concentration (STLC) analysis. The fourteen samples were submitted to Western Environmental Testing Laboratory (WETLAB) for the CAM-17 Metals plus manganese, and STLC analysis. The samples were then subcontracted out by WETLAB to Weck Laboratories to complete the STLC analysis.

Sample Designations	
CMM Comp. #1	CMM Comp. #8
CMM Comp. #2	CMM Comp. #9
CMM Comp. #3	CMM Comp. #11
CMM Comp. #4	CMM Comp. #12
CMM Comp. #5	CMM Comp. #13
CMM Comp. #6	CMM Comp. #14
CMM Comp. #7	CMM Leached/Rinsed Ore

Mr. Aren Hall / **Equinox Gold Corp. - Castle Mountain Venture**
MLI Job No. 4739 – February 23, 2022

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SAMPLE PREPARATION

A total of thirteen out of the fourteen samples were received at a -2 1/2" feed size, with the remaining one sample, CMM Leached/Rinsed Ore, received at a -3/8" feed size. Once all samples were inventoried, each received sample was air dried. All samples were then stage crushed, as to minimize fines generation, to -2". Samples were then individually blended and split to obtain a 1/4 split for further crushing. These further crushing samples were stage crushed to -3/8". All samples were thoroughly blended and had a 0.30 kg split taken for further crushing. Each further crushing sample was then pulverized to 90%-150 mesh then thoroughly blended via roll cloth. Once each sample was blended, a 0.20 kg split was taken and submitted for NV-Modified ABA. The remaining approximately 0.1 kg split was then submitted to WETLAB for CAM-17 Metals plus manganese.

Once the results from WETLAB for the CAM-17 Metals plus manganese were reported, certain elements on each sample were selected for analysis. The sample splits for -3/8" were located. Each sample was thoroughly blended and then had a 0.25 kg split taken and submitted to WETLAB for STLC analysis.

WASTE ROCK ANALYSIS RESULTS

The NV-Modified ABA tests were conducted on each sample to assess the potential of the waste rocks to generate or neutralize acid in a natural weathering and oxidizing environment. Results show that the samples displayed a greater potential to neutralize rather than to generate acid. The results are summarized below:

- Paste pHs ranged from 7.78 to 9.48.
- Pyritic sulfide ranged from <0.01 to 0.09 wt. pct. This resulted in the AGP values ranging from <0.3 to 2.5 tons CaCO₃ equivalents per 1,000 tons of solid.
- ANP values ranged from 3.6 to 22.3 CaCO₃ per 1,000 tons.
- NNP values ranged from 3.5 to 22.1 CaCO₃ per 1,000 tons.
- Ratio of ANP/AGP ranged from 8.0 to 148.3.

Table 1 has a detailed summary of the results from the NV-Modified ABA analyses. Results from the CAM-17 Metals plus manganese analysis are provided in Table 2. Results from the STLC analysis are provided in Table 3. All final reports from MLI, WETLAB, and Weck, are in the Appendix.

Mr. Aren Hall / **Equinox Gold Corp. - Castle Mountain Venture**
 MLI Job No. 4739 – February 23, 2022

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Table 1. - Modified Acid/Base Accounting (Mod ABA) Static ARD Potential Test Results, Castle Mountain Venture

Sample I.D.	Total	Sulfur, weight percent (as S)							Potential Acid Generating Sulfur
		Hot Water Rinse Residue	HCl Rinse Residue	HNO ₃ Rinse Residue	H ₂ O-Soluble Sulfate	Non-H ₂ O Sulfate Sulfur	Pyritic Sulfur	Non-Extractable Sulfur	
CMM Comp. #1	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
CMM Comp. #2	0.01	<0.01	0.01	0.01	0.01	<0.01	<0.01	0.01	0.01
CMM Comp. #3	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
CMM Comp. #4	0.02	0.02	0.02	0.01	<0.01	<0.01	0.01	0.01	0.01
CMM Comp. #5	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
CMM Comp. #6	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
CMM Comp. #7	0.01	0.01	0.01	0.01	<0.01	<0.01	<0.01	0.01	<0.01
CMM Comp. #8	0.01	<0.01	<0.01	0.01	0.01	<0.01	<0.01	0.01	<0.01
CMM Comp. #9	0.06	0.06	0.06	0.06	<0.01	<0.01	<0.01	0.06	<0.01
CMM Comp. #11	0.10	0.11	0.10	0.01	<0.01	0.01	0.09	0.01	0.08
CMM Comp. #12	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
CMM Comp. #13	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
CMM Comp. #14	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
CMM Leached/Rinsed Ore	0.03	0.03	0.02	0.02	<0.01	0.01	<0.01	0.02	<0.01

MLI Report # B21-2368

Table 1, Cont'd. - Modified Acid/Base Accounting (Mod ABA) Static ARD Potential Test Results, Castle Mountain Venture

Sample I.D.	Paste pH	AGP ¹⁾	ANP ²⁾	NNP	Ratio
CMM Comp. #1	9.43	<0.3	6.1	5.9	40.4
CMM Comp. #2	9.04	0.3	21.4	21.1	68.4
CMM Comp. #3	9.48	<0.3	12.5	12.4	83.3
CMM Comp. #4	9.31	0.3	4.9	4.6	15.6
CMM Comp. #5	8.85	<0.3	22.3	22.1	148.3
CMM Comp. #6	9.14	<0.3	6.1	6.0	40.8
CMM Comp. #7	9.40	<0.3	5.5	5.4	36.7
CMM Comp. #8	9.05	<0.3	4.9	4.7	32.5
CMM Comp. #9	7.78	<0.3	3.6	3.5	24.2
CMM Comp. #11	8.67	2.5	20.0	17.5	8.0
CMM Comp. #12	8.95	<0.3	6.1	6.0	40.8
CMM Comp. #13	8.99	<0.3	6.1	6.0	40.8
CMM Comp. #14	8.65	<0.3	16.1	16.0	107.5
CMM Leached/Rinsed Ore	8.79	<0.3	9.9	9.7	65.8

1) AGP based on Potential Acid Generating Sulfur (PAG-S) content (%S⁺ x 31.25). AGP, ANP and NNP in units of tons CaCO₃ equivalents per 1000 tons of solids.

2) ANP determined by titration as per Nevada Modified Sobek ABA procedure with siderite correction. ANP reported in units of tons CaCO₃ equivalents per 1000 tons of solids.

MLI Report # B21-2368

Mr. Aren Hall / **Equinox Gold Corp. - Castle Mountain Venture**
MLI Job No. 4739 – February 23, 2022

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Table 2. - CAM-17 + manganese Metals Analytical Results, Castle Mountain Venture

Analysis, mg/kg	Sample ID						
	CMM Comp. #1	CMM Comp. #2	CMM Comp. #3	CMM Comp. #4	CMM Comp. #5	CMM Comp. #6	CMM Comp. #7
Antimony (Sb)	7.0	<1.2	9.1	<1.2	2.2	<1.2	1.5
Arsenic (As)	12	10	26	15	35	28	11
Barium (Ba)	9.2	25	17	13	35	41	41
Beryllium (Be)	0.72	2.8	0.93	0.48	1.1	1.1	0.34
Cadmium (Cd)	<0.096	<0.097	<0.096	<0.096	<0.094	<0.096	<0.10
Chromium (Cr)	7.2	1.7	8.7	6.1	25	6.8	7.2
Cobalt (Co)	<0.72	<0.73	0.84	<0.72	8.0	<0.72	<0.75
Copper (Cu)	<2.4	<2.4	5.9	<2.4	45	3.0	<2.5
Lead (Pb)	8.9	10	13	8.4	11	11	5.7
Manganese (Mn)	35	200	160	37	420	68	75
Molybdenum (Mo)	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.5
Nickel (Ni)	2.6	<2.4	4.6	<2.4	20	2.5	<2.5
Selenium (Se)	<2.4	<2.4	<2.4	<2.4	<2.4	<2.4	<2.5
Silver (Ag)	<7.2	<7.3	<7.2	<7.2	<14	<7.2	<7.5
Thallium (Tl)	<1.9	<1.9	<1.9	<1.9	2.4	<1.9	<2.0
Vanadium (V)	7.2	12	6.7	5.8	40	8.1	6.7
Zinc (Zn)	9.9	15	23	9.5	55	19	7.9
Mercury (Hg)	0.24	0.61	0.57	2.9	0.61	0.38	0.99

WETLAB Report No. 21110443 & 21110444

Table 2, Cont'd. - CAM-17 + manganese Metals Analytical Results, Castle Mountain Venture

Analysis, mg/kg	Sample ID						
	CMM Comp. #8	CMM Comp. #9	CMM Comp. #11	CMM Comp. #12	CMM Comp. #13	CMM Comp. #14	CMM Leached/ Rinsed Ore
Antimony (Sb)	1.9	2.1	1.5	1.3	<1.1	<1.2	1.4
Arsenic (As)	71	36	19	11	19	7.7	28
Barium (Ba)	35	6.7	35	20	10	110	41
Beryllium (Be)	0.46	0.57	1.3	0.44	1.5	0.61	0.97
Cadmium (Cd)	<0.098	<0.097	<0.087	<0.098	<0.090	<0.099	<0.089
Chromium (Cr)	6.6	4.3	7.6	4.6	5.0	5.0	6.4
Cobalt (Co)	<0.74	<0.73	3.9	<0.74	1.8	2.8	0.97
Copper (Cu)	<2.5	3.9	9.0	<2.5	3.8	<2.5	4.1
Lead (Pb)	7.2	2.7	13	6.5	14	3.9	10
Manganese (Mn)	27	21	370	36	190	390	190
Molybdenum (Mo)	<2.5	4.0	2.5	2.9	<2.3	<2.5	4.5
Nickel (Ni)	<2.5	<2.4	11	<2.5	3.6	3.2	2.7
Selenium (Se)	<2.5	<2.4	<2.2	<2.5	<2.3	<2.5	<2.2
Silver (Ag)	<7.4	<7.3	<6.6	<7.4	<6.8	<7.4	<6.7
Thallium (Tl)	<2.0	<1.9	<1.7	<2.0	<1.8	<2.0	<1.8
Vanadium (V)	8.1	5.2	9.7	2.3	5.7	14	7.6
Zinc (Zn)	11	7.8	28	10	28	25	19
Mercury (Hg)	1.4	0.21	0.62	0.33	0.29	0.16	0.25

WETLAB Report No. 21110443 & 21110444

Mr. Aren Hall / **Equinox Gold Corp. - Castle Mountain Venture**
MLI Job No. 4739 – February 23, 2022

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Table 3. - STLC Analytical Results, Castle Mountain Venture

Analysis, mg/kg	Sample ID						
	CMM Comp. #1	CMM Comp. #2	CMM Comp. #3	CMM Comp. #4	CMM Comp. #5	CMM Comp. #6	CMM Comp. #7
Antimony (Sb)	<1.0	----	<1.0	----	<1.0	----	<1.0
Arsenic (As)	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25	<0.25
Barium (Ba)	0.47	2.1	1.5	0.53	1.4	1.0	1.2
Beryllium (Be)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium (Cr)	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Cobalt (Co)	----	----	<0.10	----	0.25	----	----
Copper (Cu)	----	----	<1.0	----	<1.0	<1.0	----
Lead (Pb)	0.31	0.95	0.64	0.53	0.35	0.95	0.22
Molybdenum (Mo)	----	----	----	----	----	----	----
Nickel (Ni)	0.49	----	<0.20	----	<0.20	<0.20	----
Thallium (Tl)	----	----	----	----	<0.50	----	----
Vanadium (V)	<0.10	0.35	0.11	<0.10	0.20	0.21	0.16
Zinc (Zn)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Mercury (Hg)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

WETLAB Report No. 21120502

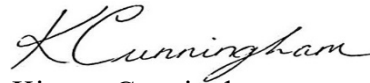
Table 3, Cont'd. - STLC Analytical Results, Castle Mountain Venture

Analysis, mg/kg	Sample ID						
	CMM Comp. #8	CMM Comp. #9	CMM Comp. #11	CMM Comp. #12	CMM Comp. #13	CMM Comp. #14	CMM Leached /Rinsed Ore
Antimony (Sb)	<1.0	<1.0	<1.0	<1.0	----	----	<1.0
Arsenic (As)	0.37	<0.25	<0.25	<0.25	<0.25	<0.25	0.29
Barium (Ba)	0.87	0.14	1.5	0.52	1.2	4.9	2.5
Beryllium (Be)	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Chromium (Cr)	0.21	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Cobalt (Co)	----	----	0.12	----	0.37	<0.10	<0.10
Copper (Cu)	----	<1.0	<1.0	----	<1.0	----	<1.0
Lead (Pb)	<0.10	<0.10	0.40	0.21	1.5	0.54	0.46
Molybdenum (Mo)	----	<0.10	<0.10	<0.10	----	<0.10	<0.10
Nickel (Ni)	----	----	<0.20	----	0.20	<0.20	<0.20
Thallium (Tl)	----	----	----	----	----	----	----
Vanadium (V)	0.26	<0.10	<0.10	<0.10	0.12	<0.10	0.17
Zinc (Zn)	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0	<1.0
Mercury (Hg)	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050

WETLAB Report No. 21120502

Mr. Aren Hall / **Equinox Gold Corp. - Castle Mountain Venture**
MLI Job No. 4739 – February 23, 2022

6


Kirsten Cunningham
Environmental Project Manager

KVC:lj

APPENDIX



WORK ORDER.: 21-1283

LAB ID: B21-2368

Date Received: November 10, 2021

Report Date: December 01, 2021

PROJECT: 4739

CLIENT MLI (MCCLELLAND LABS, INC.)

ATTN: Jr. PM Kirsten Cunningham

FROM: 4739 CMM Comp #1 ABA

TO: 4739 CMM Leached/Rinsed Ore ABA

CERTIFICATE OF ANALYSIS

Final Report

Analysis of 14 Analysis Split - Head Samples

The following analytical packages were requested.

Please see our current fee schedule for elements and detection limits

Sample Preparation:

STD-PREP Crush, split and pulverize

Analysis:

NV - Sobek Acid Base Accounting -
Modified Sobek

The results of these assays were based solely upon the content of the samples submitted. Any decision to invest should be made only after the potential investment value of the claim or deposit has been determined based on the results of assays of multiple samples of geologic materials collected by the prospective investor or by a qualified person selected by him/her and based on an evaluation of all engineering data which is available concerning any proposed project. This report may not be altered or reproduced without our consent. Our liability is limited solely to the analytical work performed on these samples

CERTIFIED BY : Kirsten Cunningham



Client: Client MLI (McClelland Labs, Inc.)
Project: 4739
Sample type(s): Analysis Split - Head
Submitted by: Jr. PM Kirsten Cunningham

ANALYSIS CERTIFICATE
B21-2368
01-Dec-21

RESULTS

Sample ID	Method Code	Scheme Code	S (T)	S (H2O)	S (HCl)	S (HNO3)	S-SO4 (H2O)	S-SO4 (HCl)	S-PYR	S-HNO3
		Unit Symbol	%	%	%	%	%	%	%	%
		Lower Limit	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01
			AGP-Sobek	AGP-Sobek	AGP-Sobek	AGP-Sobek	AGP-Sobek	AGP-Sobek	AGP-Sobek	AGP-Sobek
1	4739 CMM Comp #1 ABA		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
2	4739 CMM Comp #2 ABA		0.01	< 0.01	0.01	0.01	0.01	< 0.01	< 0.01	0.01
3	4739 CMM Comp #3 ABA		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
4	4739 CMM Comp #4 ABA		0.02	0.02	0.02	0.01	< 0.01	< 0.01	0.01	0.01
5	4739 CMM Comp #5 ABA		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
6	4739 CMM Comp #6 ABA		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
7	4739 CMM Comp #7 ABA		0.01	0.01	0.01	0.01	< 0.01	< 0.01	< 0.01	0.01
8	4739 CMM Comp #8 ABA		0.01	< 0.01	< 0.01	0.01	0.01	< 0.01	< 0.01	0.01
9	4739 CMM Comp #9 ABA		0.06	0.06	0.06	0.06	< 0.01	< 0.01	< 0.01	0.06
10	4739 CMM Comp #11 ABA		0.10	0.11	0.10	0.01	< 0.01	0.01	0.09	0.01
11	4739 CMM Comp #12 ABA		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
12	4739 CMM Comp #13 ABA		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
13	4739 CMM Comp #14 ABA		< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01	< 0.01
14	4739 CMM Leached/Rinsed Ore ABA		0.03	0.03	0.02	0.02	< 0.01	0.01	< 0.01	0.02



Client: Client MLI (McClelland Labs, Inc.)
 Project: 4739
 Sample type(s): Analysis Split - Head
 Submitted by: Jr. PM Kirsten Cunningham

ANALYSIS CERTIFICATE
B21-2368
 01-Dec-21

RESULTS

Sample ID	Scheme Code Unit Symbol Lower Limit Method Code	PAG (S)	AGP (T)	ANP-S	NNP-S	ANP/AGP	P-pH
		%	TCaCO ₃ /kT	TCaCO ₃ /kT	TCaCO ₃ /kT	---	su
		0.01	0.30	0.3			
		AGP-Sobek	AGP-Sobek	AGP-Sobek	AGP-Sobek	AGP-Sobek	AGP-Sobek
1	4739 CMM Comp #1 ABA	< 0.01	< 0.30	6.1	5.9	40.4	9.43
2	4739 CMM Comp #2 ABA	0.01	0.30	21.4	21.1	68.4	9.04
3	4739 CMM Comp #3 ABA	< 0.01	< 0.30	12.5	12.4	83.3	9.48
4	4739 CMM Comp #4 ABA	0.01	0.30	4.9	4.6	15.6	9.31
5	4739 CMM Comp #5 ABA	< 0.01	< 0.30	22.3	22.1	148.3	8.85
6	4739 CMM Comp #6 ABA	< 0.01	< 0.30	6.1	6.0	40.8	9.14
7	4739 CMM Comp #7 ABA	< 0.01	< 0.30	5.5	5.4	36.7	9.40
8	4739 CMM Comp #8 ABA	< 0.01	< 0.30	4.9	4.7	32.5	9.05
9	4739 CMM Comp #9 ABA	< 0.01	< 0.30	3.6	3.5	24.2	7.78
10	4739 CMM Comp #11 ABA	0.08	2.50	20.0	17.5	8.0	8.67
11	4739 CMM Comp #12 ABA	< 0.01	< 0.30	6.1	6.0	40.8	8.95
12	4739 CMM Comp #13 ABA	< 0.01	< 0.30	6.1	6.0	40.8	8.99
13	4739 CMM Comp #14 ABA	< 0.01	< 0.30	16.1	16.0	107.5	8.65
14	4739 CMM Leached/Rinsed Ore ABA	< 0.01	< 0.30	9.9	9.7	65.8	8.79

CMM 2022 MINE & RECLAMATION PLAN OF OPERATION
APPENDIX H

Client MLI (McClelland Labs, Inc.)

WORK ORDER:21-1283

LAB ID:B21-2368

Attn:Kirsten Cunningham

26-Nov-21

P.O. NUMBER:

PROJECT:4739

REPORT OF ANALYSIS
Analysis of 14 Analysis Split - Head Samples

ITEM	Package Code	AGP- Sobek	AGP- Sobek	AGP- Sobek	AGP- Sobek	AGP- Sobek
NO.	Scheme Name	Total Sulfur	Hot Water Rinse Residue	HCl Rinse Residue	HNO3 Rinse Residue	H2O- Soluble Sulfate S-SO4 (H2O)
	Scheme Code	S (T)	S (H2O)	S (HCl)	S (HNO3)	
	Unit Symbol	%	%	%	%	%
SAMPLE ID						
1	4739 CMM Comp #1 ABA	<0.01	<0.01	<0.01	<0.01	<0.01
2	4739 CMM Comp #2 ABA	0.01	<0.01	0.01	0.01	0.01
3	4739 CMM Comp #3 ABA	<0.01	<0.01	<0.01	<0.01	<0.01
4	4739 CMM Comp #4 ABA	0.02	0.02	0.02	0.01	<0.01
5	4739 CMM Comp #5 ABA	<0.01	<0.01	<0.01	<0.01	<0.01
6	4739 CMM Comp #6 ABA	<0.01	<0.01	<0.01	<0.01	<0.01
7	4739 CMM Comp #7 ABA	0.01	0.01	0.01	0.01	<0.01
8	4739 CMM Comp #8 ABA	0.01	<0.01	<0.01	0.01	0.01
9	4739 CMM Comp #9 ABA	0.06	0.06	0.06	0.06	<0.01
10	4739 CMM Comp #11 ABA	0.10	0.11	0.10	0.01	<0.01
11	4739 CMM Comp #12 ABA	<0.01	<0.01	<0.01	<0.01	<0.01
12	4739 CMM Comp #13 ABA	<0.01	<0.01	<0.01	<0.01	<0.01
13	4739 CMM Comp #14 ABA	<0.01	<0.01	<0.01	<0.01	<0.01
14	4739 CMM Leached/Rinsed Ore ABA	0.03	0.03	0.02	0.02	<0.01

CMM 2022 MINE & RECLAMATION PLAN OF OPERATION
APPENDIX H

Client MLI (McClelland Labs, Inc.)

Attn:Kirsten Cunningham

REPORT
Analysis of 14 Ar

ITEM	Package Code	AGP-Sobek	AGP-Sobek	AGP-Sobek	AGP-Sobek	AGP-Sobek
NO.	Scheme Name	Non-H2O Sulfate Sulfur	Pyritic Sulfur	Non-Extractable Sulfur	Potential Acid Generating Sulfur	Calculated AGP
	Scheme Code	S-SO4 (HCl)	S-PYR	S-HNO3	PAG (S)	AGP (T)
	Unit Symbol	%	%	%	%	TCaCO3/ kT
SAMPLE ID						
1	4739 CMM Comp #1 ABA	<0.01	<0.01	<0.01	<0.01	<0.3
2	4739 CMM Comp #2 ABA	<0.01	<0.01	0.01	0.01	0.3
3	4739 CMM Comp #3 ABA	<0.01	<0.01	<0.01	<0.01	<0.3
4	4739 CMM Comp #4 ABA	<0.01	0.01	0.01	0.01	0.3
5	4739 CMM Comp #5 ABA	<0.01	<0.01	<0.01	<0.01	<0.3
6	4739 CMM Comp #6 ABA	<0.01	<0.01	<0.01	<0.01	<0.3
7	4739 CMM Comp #7 ABA	<0.01	<0.01	0.01	<0.01	<0.3
8	4739 CMM Comp #8 ABA	<0.01	<0.01	0.01	<0.01	<0.3
9	4739 CMM Comp #9 ABA	<0.01	<0.01	0.06	<0.01	<0.3
10	4739 CMM Comp #11 ABA	0.01	0.09	0.01	0.08	2.5
11	4739 CMM Comp #12 ABA	<0.01	<0.01	<0.01	<0.01	<0.3
12	4739 CMM Comp #13 ABA	<0.01	<0.01	<0.01	<0.01	<0.3
13	4739 CMM Comp #14 ABA	<0.01	<0.01	<0.01	<0.01	<0.3
14	4739 CMM Leached/Rinsed Ore ABA	0.01	<0.01	0.02	<0.01	<0.3

CMM 2022 MINE & RECLAMATION PLAN OF OPERATION
APPENDIX H

Client MLI (McClelland Labs, Inc.)

Attn:Kirsten Cunningham

REPOR
Analysis of 14 Ar

ITEM	Package Code	AGP-Sobek	AGP-Sobek	AGP-Sobek	AGP-Sobek
NO.	Scheme Name	ANP	NNP	ANP/AGP	Paste pH
	Scheme Code				
	Unit Symbol	T/kT	T/kT		SU
	SAMPLE ID				
1	4739 CMM Comp #1 ABA	6.1	5.9	40.4	9.43
2	4739 CMM Comp #2 ABA	21.4	21.1	68.4	9.04
3	4739 CMM Comp #3 ABA	12.5	12.4	83.3	9.48
4	4739 CMM Comp #4 ABA	4.9	4.6	15.6	9.31
5	4739 CMM Comp #5 ABA	22.3	22.1	148.3	8.85
6	4739 CMM Comp #6 ABA	6.1	6.0	40.8	9.14
7	4739 CMM Comp #7 ABA	5.5	5.4	36.7	9.4
8	4739 CMM Comp #8 ABA	4.9	4.7	32.5	9.05
9	4739 CMM Comp #9 ABA	3.6	3.5	24.2	7.78
10	4739 CMM Comp #11 ABA	20.0	17.5	8.0	8.67
11	4739 CMM Comp #12 ABA	6.1	6.0	40.8	8.95
12	4739 CMM Comp #13 ABA	6.1	6.0	40.8	8.99
13	4739 CMM Comp #14 ABA	16.1	16.0	107.5	8.65
14	4739 CMM Leached/Rinsed Ore ABA	9.9	9.7	65.8	8.79



2/4/2022

McClelland Laboratory
1016 Greg Street
Sparks, NV 89431
Attn: Kirsten Cunningham

OrderID: 21120502
Amended

Dear: Kirsten Cunningham

This is to transmit the attached analytical report. The analytical data and information contained therein was generated using specified or selected methods contained in references, such as Standard Methods for the Examination of Water and Wastewater, online edition, Methods for Determination of Organic Compounds in Drinking Water, EPA-600/4-79-020, and Test Methods for Evaluation of Solid Waste, Physical/Chemical Methods (SW846) Third Edition.

The samples were received by WETLAB-Western Environmental Testing Laboratory in good condition on 12/15/2021. Additional comments are located on page 2 of this report.

This amended report has been generated to include additional analysis for STLC Metals. If you should have any questions or comments regarding this report, please do not hesitate to call.

Sincerely,

A handwritten signature in blue ink that reads 'Cory Baker'.

Cory Baker
QA Specialist

A handwritten signature in blue ink that reads 'McKenna Oh'.

McKenna Oh
Project Manager

McKennaO@wetlaboratory.com
(775) 200-9876

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EPA LAB ID: NV00932

Western Environmental Testing Laboratory Report Comments

McClelland Laboratory - 21120502 Amended

Specific Report Comments

Due to the sample matrix it was necessary to analyze the following at a dilution:

21120502-002, 005, 010, 013, 014 - ICP 6010 Trace Metals

The reporting limits have been adjusted accordingly.

Subcontracting Comments

The analysis for Various Metals (Subcontracted) was performed by Weck Laboratories, Inc. of City of Industry, CA. Their report is attached.

Report Legend

- | | |
|----|---|
| B | -- The analysis of the method blank revealed concentrations of the target analyte above the reporting limit. The client results were greater than ten times the blank amount or non-detect; therefore, the data was not impacted. |
| D | -- Due to the sample matrix dilution was required in order to properly detect and report the analyte. The reporting limit has been adjusted accordingly. |
| HT | -- Sample analyzed beyond the accepted holding time |
| J | -- The reported value is between the laboratory method detection limit and the laboratory practical quantitation limit. The reported result should be considered an estimate. |
| K | -- The TPH Diesel Concentration reported here likely includes some heavier TPH Oil hydrocarbons reported in the TPH Diesel range as per EPA 8015. |
| L | -- The TPH Oil Concentration reported here likely includes some lighter TPH Diesel hydrocarbons reported in the TPH Oil range as per EPA 8015. |
| M | -- The matrix spike/matrix spike duplicate (MS/MSD) values for the analysis of this parameter were outside acceptance criteria due to probable matrix interference. The reported result should be considered an estimate. |
| N | -- There was insufficient sample available to perform a spike and/or duplicate on this analytical batch. |
| NC | -- Not calculated due to matrix interference |
| QD | -- The sample duplicate or matrix spike duplicate analysis demonstrated sample imprecision. The reported result should be considered an estimate. |
| QL | -- The result for the laboratory control sample (LCS) was outside WETLAB acceptance criteria and reanalysis was not possible. The reported data should be considered an estimate. |
| S | -- Surrogate recovery was outside of laboratory acceptance limits due to matrix interference. The associated blank and LCS surrogate recovery was within acceptance limits |
| SC | -- Spike recovery not calculated. Sample concentration >4X the spike amount; therefore, the spike could not be adequately recovered |
| U | -- The analyte was analyzed for, but was not detected above the level of the reported sample reporting/quantitation limit. The reported result should be considered an estimate. |

General Lab Comments

Per method recommendation (section 4.4), Samples analyzed by methods EPA 300.0 and EPA 300.1 have been filtered prior to analysis.

The following is an interpretation of the results from EPA method 9223B:

A result of zero (0) indicates absence for both coliform and Escherichia coli meaning the water meets the microbiological requirements of the U.S. EPA Safe Drinking Water Act (SDWA). A result of one (1) for either test indicates presence and the water does not meet the SDWA requirements. Waters with positive tests should be disinfected by a certified water treatment operator and retested.

Per federal regulation the holding time for the following parameters in aqueous/water samples is 15 minutes: Residual Chlorine, pH, Dissolved Oxygen, Sulfite.

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EPA LAB ID: NV00932

Western Environmental Testing Laboratory

Analytical Report

McClelland Laboratory

1016 Greg Street

Sparks, NV 89431

Attn: Kirsten Cunningham

Phone: (775) 356-1300 Fax: (775) 356-8917

PO\Project: 4739

Date Printed: 2/4/2022

OrderID: 21120502

Amended

Customer Sample ID: CMM Comp #1

Collect Date/Time: 12/15/2021 09:00

WETLAB Sample ID: 21120502-001

Receive Date: 12/15/2021 14:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
<u>Trace Metals (Soil/Solids/Sediment) by ICP-OES</u>							
Antimony	SW846 6010B	7.9	M mg/kg	45.4	1.1	12/17/2021	NV00925
Arsenic	SW846 6010B	9.8	mg/kg	45.4	2.3	12/17/2021	NV00925
Barium	SW846 6010B	5.5	mg/kg	45.4	0.91	12/17/2021	NV00925
Beryllium	SW846 6010B	0.80	mg/kg	45.4	0.091	12/17/2021	NV00925
Chromium	SW846 6010B	6.4	mg/kg	45.4	0.23	12/17/2021	NV00925
Lead	SW846 6010B	8.4	mg/kg	45.4	0.91	12/17/2021	NV00925
Manganese	SW846 6010B	22	M mg/kg	45.4	0.91	12/17/2021	NV00925
Nickel	SW846 6010B	6.1	mg/kg	45.4	2.3	12/17/2021	NV00925
Vanadium	SW846 6010B	ND	mg/kg	45.4	0.45	12/17/2021	NV00925
Zinc	SW846 6010B	8.3	mg/kg	45.4	2.3	12/17/2021	NV00925
<u>Mercury (Soil) by CVAA</u>							
Mercury	SW846 7471B	0.09	mg/kg	1	0.03	12/21/2021	NV00925
<u>Sample Preparation</u>							
Trace Metals Digestion	EPA 3050B	S211217-1A		1		12/17/2021	NV00925
<u>Subcontracted Analyses</u>							
Various Metals (Subcontracted)	N/A	See Attached		1			

Customer Sample ID: CMM Comp #2

Collect Date/Time: 12/15/2021 09:00

WETLAB Sample ID: 21120502-002

Receive Date: 12/15/2021 14:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
<u>Trace Metals (Soil/Solids/Sediment) by ICP-OES</u>							
Arsenic	SW846 6010B	ND	D mg/kg	494.6	25	12/20/2021	NV00925
Barium	SW846 6010B	50	mg/kg	494.6	9.9	12/20/2021	NV00925
Beryllium	SW846 6010B	4.4	D mg/kg	494.6	0.99	12/20/2021	NV00925
Chromium	SW846 6010B	ND	D mg/kg	494.6	2.5	12/20/2021	NV00925
Lead	SW846 6010B	17	mg/kg	494.6	9.9	12/20/2021	NV00925
Manganese	SW846 6010B	290	mg/kg	494.6	9.9	12/20/2021	NV00925
Vanadium	SW846 6010B	14	mg/kg	494.6	4.9	12/20/2021	NV00925
Zinc	SW846 6010B	ND	D mg/kg	494.6	25	12/20/2021	NV00925
<u>Mercury (Soil) by CVAA</u>							
Mercury	SW846 7471B	0.14	mg/kg	1	0.03	12/21/2021	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Page 3 of 12

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 tel (702) 475-8899
 fax (702) 622-2868
 EPA LAB ID: NV00932

Customer Sample ID: CMM Comp #2

Collect Date/Time: 12/15/2021 09:00

WETLAB Sample ID: 21120502-002

Receive Date: 12/15/2021 14:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
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Sample Preparation

Trace Metals Digestion	EPA 3050B	S211217-1A		1		12/17/2021	NV00925
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Subcontracted Analyses

Various Metals (Subcontracted)	N/A	See Attached		1			
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Customer Sample ID: CMM Comp #3

Collect Date/Time: 12/15/2021 09:00

WETLAB Sample ID: 21120502-003

Receive Date: 12/15/2021 14:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
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Trace Metals (Soil/Solids/Sediment) by ICP-OES

Antimony	SW846 6010B	12	mg/kg	46.7	1.2	12/17/2021	NV00925
Arsenic	SW846 6010B	22	mg/kg	46.7	2.3	12/17/2021	NV00925
Barium	SW846 6010B	22	mg/kg	46.7	0.93	12/17/2021	NV00925
Beryllium	SW846 6010B	0.66	mg/kg	46.7	0.093	12/17/2021	NV00925
Chromium	SW846 6010B	5.2	mg/kg	46.7	0.23	12/17/2021	NV00925
Cobalt	SW846 6010B	0.91	mg/kg	46.7	0.70	12/17/2021	NV00925
Copper	SW846 6010B	5.9	mg/kg	46.7	2.3	12/17/2021	NV00925
Lead	SW846 6010B	14	mg/kg	46.7	0.93	12/17/2021	NV00925
Manganese	SW846 6010B	240	mg/kg	46.7	0.93	12/17/2021	NV00925
Nickel	SW846 6010B	4.3	mg/kg	46.7	2.3	12/17/2021	NV00925
Vanadium	SW846 6010B	ND	mg/kg	46.7	0.47	12/17/2021	NV00925
Zinc	SW846 6010B	18	mg/kg	46.7	2.3	12/17/2021	NV00925

Mercury (Soil) by CVAA

Mercury	SW846 7471B	0.06	mg/kg	1	0.03	12/21/2021	NV00925
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Sample Preparation

Trace Metals Digestion	EPA 3050B	S211217-1A		1		12/17/2021	NV00925
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Subcontracted Analyses

Various Metals (Subcontracted)	N/A	See Attached		1			
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Customer Sample ID: CMM Comp #4

Collect Date/Time: 12/15/2021 09:00

WETLAB Sample ID: 21120502-004

Receive Date: 12/15/2021 14:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
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Trace Metals (Soil/Solids/Sediment) by ICP-OES

Arsenic	SW846 6010B	18	mg/kg	48.6	2.4	12/17/2021	NV00925
Barium	SW846 6010B	3.7	mg/kg	48.6	0.97	12/17/2021	NV00925
Beryllium	SW846 6010B	0.36	mg/kg	48.6	0.097	12/17/2021	NV00925
Chromium	SW846 6010B	3.6	mg/kg	48.6	0.24	12/17/2021	NV00925
Lead	SW846 6010B	8.2	mg/kg	48.6	0.97	12/17/2021	NV00925
Manganese	SW846 6010B	30	mg/kg	48.6	0.97	12/17/2021	NV00925
Vanadium	SW846 6010B	ND	mg/kg	48.6	0.49	12/17/2021	NV00925
Zinc	SW846 6010B	8.0	mg/kg	48.6	2.4	12/17/2021	NV00925

Mercury (Soil) by CVAA

Mercury	SW846 7471B	0.36	mg/kg	1	0.030	12/21/2021	NV00925
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DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

Page 4 of 12

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fax (702) 622-2868
EPA LAB ID: NV00932

Customer Sample ID: CMM Comp #4

Collect Date/Time: 12/15/2021 09:00

WETLAB Sample ID: 21120502-004

Receive Date: 12/15/2021 14:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
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Sample Preparation

Trace Metals Digestion	EPA 3050B	S211217-1A		1		12/17/2021	NV00925
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Subcontracted Analyses

Various Metals (Subcontracted)	N/A	See Attached		1			
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Customer Sample ID: CMM Comp #5

Collect Date/Time: 12/15/2021 09:00

WETLAB Sample ID: 21120502-005

Receive Date: 12/15/2021 14:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
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Trace Metals (Soil/Solids/Sediment) by ICP-OES

Antimony	SW846 6010B	ND	D	mg/kg	494.2	12	12/20/2021	NV00925
Arsenic	SW846 6010B	42		mg/kg	494.2	25	12/20/2021	NV00925
Barium	SW846 6010B	36		mg/kg	494.2	9.9	12/20/2021	NV00925
Beryllium	SW846 6010B	1.3		mg/kg	494.2	0.99	12/20/2021	NV00925
Chromium	SW846 6010B	27		mg/kg	494.2	2.5	12/20/2021	NV00925
Cobalt	SW846 6010B	13		mg/kg	494.2	7.4	12/20/2021	NV00925
Copper	SW846 6010B	ND	D	mg/kg	494.2	25	12/20/2021	NV00925
Lead	SW846 6010B	22		mg/kg	494.2	9.9	12/20/2021	NV00925
Manganese	SW846 6010B	380		mg/kg	494.2	9.9	12/20/2021	NV00925
Nickel	SW846 6010B	27		mg/kg	494.2	25	12/20/2021	NV00925
Thallium	SW846 6010B	ND	D	mg/kg	494.2	20	12/20/2021	NV00925
Vanadium	SW846 6010B	45		mg/kg	494.2	4.9	12/20/2021	NV00925
Zinc	SW846 6010B	71		mg/kg	494.2	25	12/20/2021	NV00925

Mercury (Soil) by CVAA

Mercury	SW846 7471B	0.93		mg/kg	1	0.030	12/21/2021	NV00925
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Sample Preparation

Trace Metals Digestion	EPA 3050B	S211217-1A		1		12/17/2021	NV00925
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Subcontracted Analyses

Various Metals (Subcontracted)	N/A	See Attached		1			
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Customer Sample ID: CMM Comp #6

Collect Date/Time: 12/15/2021 09:00

WETLAB Sample ID: 21120502-006

Receive Date: 12/15/2021 14:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
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Trace Metals (Soil/Solids/Sediment) by ICP-OES

Arsenic	SW846 6010B	25		mg/kg	48	2.4	12/17/2021	NV00925
Barium	SW846 6010B	11		mg/kg	48	0.96	12/17/2021	NV00925
Beryllium	SW846 6010B	0.84		mg/kg	48	0.096	12/17/2021	NV00925
Chromium	SW846 6010B	3.2		mg/kg	48	0.24	12/17/2021	NV00925
Copper	SW846 6010B	5.4		mg/kg	48	2.4	12/17/2021	NV00925
Lead	SW846 6010B	10		mg/kg	48	0.96	12/17/2021	NV00925
Manganese	SW846 6010B	53		mg/kg	48	0.96	12/17/2021	NV00925
Nickel	SW846 6010B	2.9		mg/kg	48	2.4	12/17/2021	NV00925
Vanadium	SW846 6010B	ND		mg/kg	48	0.48	12/17/2021	NV00925
Zinc	SW846 6010B	19		mg/kg	48	2.4	12/17/2021	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

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Customer Sample ID: CMM Comp #6

Collect Date/Time: 12/15/2021 09:00

WETLAB Sample ID: 21120502-006

Receive Date: 12/15/2021 14:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
<u>Mercury (Soil) by CVAA</u>							
Mercury	SW846 7471B	0.08	mg/kg	1	0.03	12/21/2021	NV00925
<u>Sample Preparation</u>							
Trace Metals Digestion	EPA 3050B	S211217-1A		1		12/17/2021	NV00925
<u>Subcontracted Analyses</u>							
Various Metals (Subcontracted)	N/A	See Attached		1			

Customer Sample ID: CMM Comp #7

Collect Date/Time: 12/15/2021 09:00

WETLAB Sample ID: 21120502-007

Receive Date: 12/15/2021 14:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
<u>Trace Metals (Soil/Solids/Sediment) by ICP-OES</u>							
Antimony	SW846 6010B	1.8	mg/kg	44.2	1.1	12/17/2021	NV00925
Arsenic	SW846 6010B	11	mg/kg	44.2	2.2	12/17/2021	NV00925
Barium	SW846 6010B	9.5	mg/kg	44.2	0.88	12/17/2021	NV00925
Beryllium	SW846 6010B	0.23	mg/kg	44.2	0.088	12/17/2021	NV00925
Chromium	SW846 6010B	3.4	mg/kg	44.2	0.22	12/17/2021	NV00925
Lead	SW846 6010B	5.2	mg/kg	44.2	0.88	12/17/2021	NV00925
Manganese	SW846 6010B	56	mg/kg	44.2	0.88	12/17/2021	NV00925
Vanadium	SW846 6010B	ND	mg/kg	44.2	0.44	12/17/2021	NV00925
Zinc	SW846 6010B	8.7	mg/kg	44.2	2.2	12/17/2021	NV00925
<u>Mercury (Soil) by CVAA</u>							
Mercury	SW846 7471B	0.31	mg/kg	1	0.030	12/21/2021	NV00925
<u>Sample Preparation</u>							
Trace Metals Digestion	EPA 3050B	S211217-1A		1		12/17/2021	NV00925
<u>Subcontracted Analyses</u>							
Various Metals (Subcontracted)	N/A	See Attached		1			

Customer Sample ID: CMM Comp #8

Collect Date/Time: 12/15/2021 09:00

WETLAB Sample ID: 21120502-008

Receive Date: 12/15/2021 14:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
<u>Trace Metals (Soil/Solids/Sediment) by ICP-OES</u>							
Antimony	SW846 6010B	4.8	mg/kg	47.6	1.2	12/17/2021	NV00925
Arsenic	SW846 6010B	69	mg/kg	47.6	2.4	12/17/2021	NV00925
Barium	SW846 6010B	8.8	mg/kg	47.6	0.95	12/17/2021	NV00925
Beryllium	SW846 6010B	1.1	mg/kg	47.6	0.095	12/17/2021	NV00925
Chromium	SW846 6010B	4.7	mg/kg	47.6	0.24	12/17/2021	NV00925
Lead	SW846 6010B	8.7	mg/kg	47.6	0.95	12/17/2021	NV00925
Manganese	SW846 6010B	10	mg/kg	47.6	0.95	12/17/2021	NV00925
Vanadium	SW846 6010B	ND	mg/kg	47.6	0.48	12/17/2021	NV00925
Zinc	SW846 6010B	13	mg/kg	47.6	2.4	12/17/2021	NV00925
<u>Mercury (Soil) by CVAA</u>							
Mercury	SW846 7471B	0.34	mg/kg	1	0.030	12/21/2021	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

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Customer Sample ID: CMM Comp #8

Collect Date/Time: 12/15/2021 09:00

WETLAB Sample ID: 21120502-008

Receive Date: 12/15/2021 14:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
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Sample Preparation

Trace Metals Digestion	EPA 3050B	S211217-1A		1		12/17/2021	NV00925
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Subcontracted Analyses

Various Metals (Subcontracted)	N/A	See Attached		1			
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Customer Sample ID: CMM Comp #9

Collect Date/Time: 12/15/2021 09:00

WETLAB Sample ID: 21120502-009

Receive Date: 12/15/2021 14:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
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Trace Metals (Soil/Solids/Sediment) by ICP-OES

Antimony	SW846 6010B	4.1	mg/kg	47.9	1.2	12/17/2021	NV00925
Arsenic	SW846 6010B	54	mg/kg	47.9	2.4	12/17/2021	NV00925
Barium	SW846 6010B	3.4	mg/kg	47.9	0.96	12/17/2021	NV00925
Beryllium	SW846 6010B	0.64	mg/kg	47.9	0.096	12/17/2021	NV00925
Chromium	SW846 6010B	1.8	mg/kg	47.9	0.24	12/17/2021	NV00925
Copper	SW846 6010B	7.1	mg/kg	47.9	2.4	12/17/2021	NV00925
Lead	SW846 6010B	3.4	mg/kg	47.9	0.96	12/17/2021	NV00925
Manganese	SW846 6010B	13	mg/kg	47.9	0.96	12/17/2021	NV00925
Molybdenum	SW846 6010B	5.3	mg/kg	47.9	2.4	12/17/2021	NV00925
Vanadium	SW846 6010B	ND	mg/kg	47.9	0.48	12/17/2021	NV00925
Zinc	SW846 6010B	8.4	mg/kg	47.9	2.4	12/17/2021	NV00925

Mercury (Soil) by CVAA

Mercury	SW846 7471B	0.22	mg/kg	1	0.030	12/21/2021	NV00925
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Sample Preparation

Trace Metals Digestion	EPA 3050B	S211217-1A		1		12/17/2021	NV00925
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Subcontracted Analyses

Various Metals (Subcontracted)	N/A	See Attached		1			
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Customer Sample ID: CMM Comp #11

Collect Date/Time: 12/15/2021 09:00

WETLAB Sample ID: 21120502-010

Receive Date: 12/15/2021 14:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
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Trace Metals (Soil/Solids/Sediment) by ICP-OES

Antimony	SW846 6010B	ND	D	mg/kg	206.3	5.2	12/20/2021	NV00925
Arsenic	SW846 6010B	21		mg/kg	206.3	10	12/20/2021	NV00925
Barium	SW846 6010B	12		mg/kg	206.3	4.1	12/20/2021	NV00925
Beryllium	SW846 6010B	1.3		mg/kg	206.3	0.41	12/20/2021	NV00925
Chromium	SW846 6010B	6.7		mg/kg	206.3	1.0	12/20/2021	NV00925
Cobalt	SW846 6010B	5.4		mg/kg	206.3	3.1	12/20/2021	NV00925
Copper	SW846 6010B	ND	D	mg/kg	206.3	10	12/20/2021	NV00925
Lead	SW846 6010B	17		mg/kg	206.3	4.1	12/20/2021	NV00925
Manganese	SW846 6010B	260		mg/kg	206.3	4.1	12/20/2021	NV00925
Molybdenum	SW846 6010B	ND	D	mg/kg	206.3	10	12/20/2021	NV00925
Nickel	SW846 6010B	14		mg/kg	206.3	10	12/20/2021	NV00925
Vanadium	SW846 6010B	7.8		mg/kg	206.3	2.1	12/20/2021	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

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Customer Sample ID: CMM Comp #11

Collect Date/Time: 12/15/2021 09:00

WETLAB Sample ID: 21120502-010

Receive Date: 12/15/2021 14:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
Zinc	SW846 6010B	27	mg/kg	206.3	10	12/20/2021	NV00925
<u>Mercury (Soil) by CVAA</u>							
Mercury	SW846 7471B	0.63	mg/kg	1	0.030	12/21/2021	NV00925
<u>Sample Preparation</u>							
Trace Metals Digestion	EPA 3050B	S211217-1A		1		12/17/2021	NV00925
<u>Subcontracted Analyses</u>							
Various Metals (Subcontracted)	N/A	See Attached		1			

Customer Sample ID: CMM Comp #12

Collect Date/Time: 12/15/2021 09:00

WETLAB Sample ID: 21120502-011

Receive Date: 12/15/2021 14:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
<u>Trace Metals (Soil/Solids/Sediment) by ICP-OES</u>							
Antimony	SW846 6010B	1.7	M mg/kg	47.7	1.2	12/17/2021	NV00925
Arsenic	SW846 6010B	9.9	mg/kg	47.7	2.4	12/17/2021	NV00925
Barium	SW846 6010B	4.3	mg/kg	47.7	0.95	12/17/2021	NV00925
Beryllium	SW846 6010B	0.38	mg/kg	47.7	0.095	12/17/2021	NV00925
Chromium	SW846 6010B	2.0	mg/kg	47.7	0.24	12/17/2021	NV00925
Lead	SW846 6010B	7.2	mg/kg	47.7	0.95	12/17/2021	NV00925
Magnesium	SW846 6010B	470	M mg/kg	47.7	72	12/17/2021	NV00925
Molybdenum	SW846 6010B	2.4	mg/kg	47.7	2.4	12/17/2021	NV00925
Vanadium	SW846 6010B	ND	mg/kg	47.7	0.48	12/17/2021	NV00925
Zinc	SW846 6010B	7.3	mg/kg	47.7	2.4	12/17/2021	NV00925
<u>Mercury (Soil) by CVAA</u>							
Mercury	SW846 7471B	0.12	mg/kg	1	0.03	12/21/2021	NV00925
<u>Sample Preparation</u>							
Trace Metals Digestion	EPA 3050B	S211217-1B		1		12/17/2021	NV00925
<u>Subcontracted Analyses</u>							
Various Metals (Subcontracted)	N/A	See Attached		1			

Customer Sample ID: CMM Comp #13

Collect Date/Time: 12/15/2021 09:00

WETLAB Sample ID: 21120502-012

Receive Date: 12/15/2021 14:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
<u>Trace Metals (Soil/Solids/Sediment) by ICP-OES</u>							
Arsenic	SW846 6010B	22	mg/kg	49.1	2.5	12/17/2021	NV00925
Barium	SW846 6010B	6.9	mg/kg	49.1	0.98	12/17/2021	NV00925
Beryllium	SW846 6010B	1.7	mg/kg	49.1	0.098	12/17/2021	NV00925
Chromium	SW846 6010B	3.7	mg/kg	49.1	0.25	12/17/2021	NV00925
Cobalt	SW846 6010B	2.3	mg/kg	49.1	0.74	12/17/2021	NV00925
Copper	SW846 6010B	6.1	mg/kg	49.1	2.5	12/17/2021	NV00925
Lead	SW846 6010B	21	mg/kg	49.1	0.98	12/17/2021	NV00925
Manganese	SW846 6010B	210	mg/kg	49.1	0.98	12/17/2021	NV00925
Nickel	SW846 6010B	4.5	mg/kg	49.1	2.5	12/17/2021	NV00925
Vanadium	SW846 6010B	ND	mg/kg	49.1	0.49	12/17/2021	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

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 EPA LAB ID: NV00932

Customer Sample ID: CMM Comp #13

Collect Date/Time: 12/15/2021 09:00

WETLAB Sample ID: 21120502-012

Receive Date: 12/15/2021 14:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
Zinc	SW846 6010B	27	mg/kg	49.1	2.5	12/17/2021	NV00925
<u>Mercury (Soil) by CVAA</u>							
Mercury	SW846 7471B	0.25	mg/kg	1	0.030	12/21/2021	NV00925
<u>Sample Preparation</u>							
Trace Metals Digestion	EPA 3050B	S211217-1B		1		12/17/2021	NV00925
<u>Subcontracted Analyses</u>							
Various Metals (Subcontracted)	N/A	See Attached		1			

Customer Sample ID: CMM Comp #14

Collect Date/Time: 12/15/2021 09:00

WETLAB Sample ID: 21120502-013

Receive Date: 12/15/2021 14:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
<u>Trace Metals (Soil/Solids/Sediment) by ICP-OES</u>							
Arsenic	SW846 6010B	ND	D mg/kg	241.5	12	12/20/2021	NV00925
Barium	SW846 6010B	110	mg/kg	241.5	4.8	12/20/2021	NV00925
Beryllium	SW846 6010B	1.0	mg/kg	241.5	0.48	12/20/2021	NV00925
Chromium	SW846 6010B	5.1	mg/kg	241.5	1.2	12/20/2021	NV00925
Cobalt	SW846 6010B	ND	D mg/kg	241.5	3.6	12/20/2021	NV00925
Lead	SW846 6010B	4.8	mg/kg	241.5	4.8	12/20/2021	NV00925
Manganese	SW846 6010B	310	mg/kg	241.5	4.8	12/20/2021	NV00925
Nickel	SW846 6010B	ND	D mg/kg	241.5	12	12/20/2021	NV00925
Vanadium	SW846 6010B	12	mg/kg	241.5	2.4	12/20/2021	NV00925
Zinc	SW846 6010B	22	mg/kg	241.5	12	12/20/2021	NV00925
<u>Mercury (Soil) by CVAA</u>							
Mercury	SW846 7471B	0.15	mg/kg	1	0.03	12/21/2021	NV00925
<u>Sample Preparation</u>							
Trace Metals Digestion	EPA 3050B	S211217-1B		1		12/17/2021	NV00925
<u>Subcontracted Analyses</u>							
Various Metals (Subcontracted)	N/A	See Attached		1			

Customer Sample ID: CMM Leached/Rinsed Ore

Collect Date/Time: 12/15/2021 09:00

WETLAB Sample ID: 21120502-014

Receive Date: 12/15/2021 14:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
<u>Trace Metals (Soil/Solids/Sediment) by ICP-OES</u>							
Antimony	SW846 6010B	ND	D mg/kg	245	6.1	12/20/2021	NV00925
Arsenic	SW846 6010B	36	mg/kg	245	12	12/20/2021	NV00925
Barium	SW846 6010B	46	mg/kg	245	4.9	12/20/2021	NV00925
Beryllium	SW846 6010B	1.2	mg/kg	245	0.49	12/20/2021	NV00925
Chromium	SW846 6010B	5.1	mg/kg	245	1.2	12/20/2021	NV00925
Cobalt	SW846 6010B	ND	D mg/kg	245	3.7	12/20/2021	NV00925
Copper	SW846 6010B	ND	D mg/kg	245	12	12/20/2021	NV00925
Lead	SW846 6010B	17	mg/kg	245	4.9	12/20/2021	NV00925
Manganese	SW846 6010B	300	mg/kg	245	4.9	12/20/2021	NV00925
Molybdenum	SW846 6010B	ND	D mg/kg	245	12	12/20/2021	NV00925

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

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Customer Sample ID: CMM Leached/Rinsed Ore

Collect Date/Time: 12/15/2021 09:00

WETLAB Sample ID: 21120502-014

Receive Date: 12/15/2021 14:30

Analyte	Method	Results	Units	DF	RL	Analyzed	LabID
Nickel	SW846 6010B	ND	D mg/kg	245	12	12/20/2021	NV00925
Vanadium	SW846 6010B	9.8	mg/kg	245	2.5	12/20/2021	NV00925
Zinc	SW846 6010B	27	mg/kg	245	12	12/20/2021	NV00925
<u>Mercury (Soil) by CVAA</u>							
Mercury	SW846 7471B	0.19	mg/kg	1	0.030	12/21/2021	NV00925
<u>Sample Preparation</u>							
Trace Metals Digestion	EPA 3050B	S211217-1B		1		12/17/2021	NV00925
<u>Subcontracted Analyses</u>							
Various Metals (Subcontracted)	N/A	See Attached		1			

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EPA LAB ID: NV00932

Western Environmental Testing Laboratory QC Report

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC21120792	Blank 1	Antimony	SW846 6010B	ND			mg/kg
		Arsenic	SW846 6010B	ND			mg/kg
		Barium	SW846 6010B	ND			mg/kg
		Beryllium	SW846 6010B	ND			mg/kg
		Chromium	SW846 6010B	ND			mg/kg
		Cobalt	SW846 6010B	ND			mg/kg
		Copper	SW846 6010B	ND			mg/kg
		Lead	SW846 6010B	ND			mg/kg
		Manganese	SW846 6010B	ND			mg/kg
		Molybdenum	SW846 6010B	ND			mg/kg
		Nickel	SW846 6010B	ND			mg/kg
		Thallium	SW846 6010B	ND			mg/kg
		Vanadium	SW846 6010B	ND			mg/kg
		Zinc	SW846 6010B	ND			mg/kg
QC21120793	Blank 1	Antimony	SW846 6010B	ND			mg/kg
		Arsenic	SW846 6010B	ND			mg/kg
		Barium	SW846 6010B	ND			mg/kg
		Beryllium	SW846 6010B	ND			mg/kg
		Chromium	SW846 6010B	ND			mg/kg
		Cobalt	SW846 6010B	ND			mg/kg
		Copper	SW846 6010B	ND			mg/kg
		Lead	SW846 6010B	ND			mg/kg
		Magnesium	SW846 6010B	ND			mg/kg
		Manganese	SW846 6010B	ND			mg/kg
		Molybdenum	SW846 6010B	ND			mg/kg
		Nickel	SW846 6010B	ND			mg/kg
		Vanadium	SW846 6010B	ND			mg/kg
		Zinc	SW846 6010B	ND			mg/kg
QC21120869	Blank 1	Mercury	SW846 7471B	ND			mg/kg
QC21120870	Blank 1	Mercury	SW846 7471B	ND			mg/kg

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
QC21120792	LCS 1	Antimony	SW846 6010B	49.3	50.0	99	mg/kg
		Arsenic	SW846 6010B	50.8	50.0	102	mg/kg
		Barium	SW846 6010B	51.5	50.0	103	mg/kg
		Beryllium	SW846 6010B	50.4	50.0	101	mg/kg
		Chromium	SW846 6010B	53.1	50.0	106	mg/kg
		Cobalt	SW846 6010B	51.4	50.0	103	mg/kg
		Copper	SW846 6010B	248	250	99	mg/kg
		Lead	SW846 6010B	50.9	50.0	102	mg/kg
		Manganese	SW846 6010B	51.1	50.0	102	mg/kg
		Molybdenum	SW846 6010B	49.1	50.0	98	mg/kg
		Nickel	SW846 6010B	258	250	103	mg/kg
		Thallium	SW846 6010B	52.0	50.0	104	mg/kg
		Vanadium	SW846 6010B	51.7	50.0	103	mg/kg
		Zinc	SW846 6010B	49.9	50.0	100	mg/kg
QC21120793	LCS 1	Antimony	SW846 6010B	49.3	50.0	99	mg/kg
		Arsenic	SW846 6010B	50.8	50.0	102	mg/kg

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

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SPARKS

475 E. Greg Street, Suite 119
Sparks, Nevada 89431
tel (775) 355-0202
fax (775) 355-0817
EPA LAB ID: NV00925 - ELAP No: 2523

ELKO

1084 Lamoille Hwy
Elko, Nevada 89801
tel (775) 777-9933
fax (775) 777-9933
EPA LAB ID: NV00926

LAS VEGAS

3230 Polaris Ave. Suite 4
Las Vegas, Nevada 89102
tel (702) 475-8899
fax (702) 622-2868
EPA LAB ID: NV00932

QCBatchID	QCType	Parameter	Method	Result	Actual	% Rec	Units
		Barium	SW846 6010B	51.5	50.0	103	mg/kg
		Beryllium	SW846 6010B	50.4	50.0	101	mg/kg
		Chromium	SW846 6010B	53.1	50.0	106	mg/kg
		Cobalt	SW846 6010B	51.4	50.0	103	mg/kg
		Copper	SW846 6010B	248	250	99	mg/kg
		Lead	SW846 6010B	50.9	50.0	102	mg/kg
		Magnesium	SW846 6010B	490	500	98	mg/kg
		Manganese	SW846 6010B	51.1	50.0	102	mg/kg
		Molybdenum	SW846 6010B	49.1	50.0	98	mg/kg
		Nickel	SW846 6010B	258	250	103	mg/kg
		Vanadium	SW846 6010B	51.7	50.0	103	mg/kg
		Zinc	SW846 6010B	49.9	50.0	100	mg/kg
QC21120869	LCS 1	Mercury	SW846 7471B	0.829	0.835	100	mg/kg
QC21120870	LCS 1	Mercury	SW846 7471B	0.829	0.835	100	mg/kg

QCBatchID	QCType	Parameter	Method	Spike Sample	Sample Result	MS Result	MSD Result	Spike Value	Units	MS %Rec	MSD %Rec	RPD %	
QC21120792 MS 1		Antimony	SW846 6010B	21120502-001	7.89	M 43.9	44.4	50	mg/kg	NC	NC	NC	
		Arsenic	SW846 6010B	21120502-001	9.84		48.2	50.8	50	mg/kg	77	82	5
		Barium	SW846 6010B	21120502-001	5.54		46.3	44.8	50	mg/kg	81	79	3
		Beryllium	SW846 6010B	21120502-001	0.798		44.7	44.3	50	mg/kg	88	87	<1
		Chromium	SW846 6010B	21120502-001	6.40		47.5	46.3	50	mg/kg	82	80	3
		Cobalt	SW846 6010B	21120502-001	ND		45.3	44.2	50	mg/kg	90	88	2
		Copper	SW846 6010B	21120502-001	3.11		220	215	250	mg/kg	87	85	2
		Lead	SW846 6010B	21120502-001	8.42		48.8	49.8	50	mg/kg	81	83	2
		Manganese	SW846 6010B	21120502-001	21.9	M 50.8	59.2	50	mg/kg	NC	NC	NC	
		Molybdenum	SW846 6010B	21120502-001	ND		43.7	42.8	50	mg/kg	86	84	2
		Nickel	SW846 6010B	21120502-001	6.12		228	221	250	mg/kg	89	86	3
		Thallium	SW846 6010B	21120502-001	ND	M 27.3	26.9	50	mg/kg	NC	NC	NC	
		Vanadium	SW846 6010B	21120502-001	ND		45.1	43.0	50	mg/kg	90	86	5
		Zinc	SW846 6010B	21120502-001	8.31		47.8	50.1	50	mg/kg	79	84	5
	QC21120793 MS 1		Antimony	SW846 6010B	21120502-011	1.67	M 38.0	38.5	50	mg/kg	NC	NC	NC
		Arsenic	SW846 6010B	21120502-011	9.88		49.7	47.6	50	mg/kg	80	75	4
		Barium	SW846 6010B	21120502-011	4.25		45.1	44.0	50	mg/kg	82	80	2
		Beryllium	SW846 6010B	21120502-011	0.379		43.2	42.2	50	mg/kg	86	84	2
		Chromium	SW846 6010B	21120502-011	1.98		46.3	46.6	50	mg/kg	89	89	<1
		Cobalt	SW846 6010B	21120502-011	ND		43.6	43.5	50	mg/kg	87	87	<1
		Copper	SW846 6010B	21120502-011	ND		215	212	250	mg/kg	85	84	1
		Lead	SW846 6010B	21120502-011	7.17		47.2	46.0	50	mg/kg	80	78	3
		Magnesium	SW846 6010B	21120502-011	469	M 841	835	500	mg/kg	NC	NC	NC	
		Manganese	SW846 6010B	21120502-011	30.6	M 52.5	52.2	50	mg/kg	NC	NC	NC	
		Molybdenum	SW846 6010B	21120502-011	2.42		43.5	43.2	50	mg/kg	82	82	<1
		Nickel	SW846 6010B	21120502-011	ND		218	218	250	mg/kg	87	86	<1
		Vanadium	SW846 6010B	21120502-011	ND		44.5	44.1	50	mg/kg	89	88	<1
		Zinc	SW846 6010B	21120502-011	7.32		49.0	48.3	50	mg/kg	83	82	1
QC21120869 MS 1		Mercury	SW846 7471B	21120502-001	0.091		0.883	1.00	0.825	mg/kg	96	111	12
QC21120870 MS 1	Mercury	SW846 7471B	21120502-011	0.120		0.919	0.927	0.785	mg/kg	102	98	<1	

DF=Dilution Factor, RL = Reporting Limit (minimum 3X the MDL), ND = Not Detected <RL or <MDL (if listed)

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SPARKS

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 fax (702) 622-2868
 EPA LAB ID: NV00932

CMM 2022 MINE & RECLAMATION PLAN OF OPERATION
APPENDIX H

STLC Analysis Submittal
Castle Mountain Venture

Analysis, mg/kg	Sample IDs													
	CMM Comp #1	CMM Comp #2	CMM Comp #3	CMM Comp #4	CMM Comp #5	CMM Comp #6	CMM Comp #7	CMM Comp #8	CMM Comp #9	CMM Comp #11	CMM Comp #12	CMM Comp #13	CMM Comp #14	CMM Leached/Rinsed Ore
Antimony (Sb)	x		x		x		x	x	x	x	x			x
Arsenic (As)	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Barium (Ba)	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Beryllium (Be)	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Cadium (Cd)														
Chromium (Cr)	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Cobalt (Co)			x		x					x		x	x	x
Copper (Cu)			x		x	x			x	x		x		x
Lead (Pb)	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Manganese (Mn)	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Molybdenum (Mo)									x	x	x			x
Nickel (Ni)	x		x		x	x				x		x	x	x
Selenium (Se)														
Silver (Ag)														
Thallium (Tl)					x									
Vanadium (V)	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Zinc (Zn)	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Mercury (Hg)	x	x	x	x	x	x	x	x	x	x	x	x	x	x

Submit each sample for all the elements marked in the corresponding column.

Work Orders: 2A13033

Project: 21120502S

Attn: Garry Gray

Client: Western Environmental Testing Laboratory
3230 Polaris Ave., Ste 4
Las Vegas, NV 89102

Report Date: 2/04/2022

Received Date: 1/13/2022

Turnaround Time: Normal

Phones: (775) 355-0202

Fax:

P.O. #:

Billing Code:

ELAP-CA #1132 • EPA-UCMR #CA00211 • Guam-EPA #17-008R • LACSD #10143 • NJ-DEP #CA015 • NV-DEP #NAC 445A •
SCAQMD #93LA1006

This is a complete final report. The information in this report applies to the samples analyzed in accordance with the chain-of-custody document. Weck Laboratories certifies that the test results meet all requirements of TNI unless noted by qualifiers or written in the Case Narrative. This analytical report must be reproduced in its entirety.

Dear Garry Gray,

Enclosed are the results of analyses for samples received 1/13/22 with the Chain-of-Custody document. The samples were received in good condition, at 2.6 °C and on ice. All analyses met the method criteria except as noted in the case narrative or in the report with data qualifiers.

Reviewed by:



Erika C. Alvarenga
PM Assistant





Certificate of Analysis

FINAL REPORT

Western Environmental Testing Laboratory
3230 Polaris Ave., Ste 4
Las Vegas, NV 89102

Project Number: 21120502S

Project Manager: Garry Gray

Reported:
02/04/2022 14:12

Sample Summary

Sample Name	Sampled By	Lab ID	Matrix	Sampled	Qualifiers
21120502-001	KC	2A13033-01	STLC	12/15/21 09:00	
21120502-002	KC	2A13033-02	STLC	12/15/21 09:00	
21120502-003	KC	2A13033-03	STLC	12/15/21 09:00	
21120502-004	KC	2A13033-04	STLC	12/15/21 09:00	
21120502-005	KC	2A13033-05	STLC	12/15/21 09:00	
21120502-006	KC	2A13033-06	STLC	12/15/21 09:00	
21120502-007	KC	2A13033-07	STLC	12/15/21 09:00	
21120502-008	KC	2A13033-08	STLC	12/15/21 09:00	
21120502-009	KC	2A13033-09	STLC	12/15/21 09:00	
21120502-010	KC	2A13033-10	STLC	12/15/21 09:00	
21120502-011	KC	2A13033-11	STLC	12/15/21 09:00	
21120502-012	KC	2A13033-12	STLC	12/15/21 09:00	
21120502-013	KC	2A13033-13	STLC	12/15/21 09:00	
21120502-014	KC	2A13033-14	STLC	12/15/21 09:00	



Certificate of Analysis

FINAL REPORT

Western Environmental Testing Laboratory
3230 Polaris Ave., Ste 4
Las Vegas, NV 89102

Project Number: 21120502S

Project Manager: Garry Gray

Reported:
02/04/2022 14:12

Sample Results

Sample: 21120502-001
2A13033-01 (STLC)

Sampled: 12/15/21 9:00 by KC

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
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Metals - Soluble on STLC by EPA 6000/7000 Methods

Method: EPA 6010B

Instr: ICP03

Batch ID: W2A1730

Preparation: EPA 3010A

Prepared: 01/26/22 10:25

Analyst: kvm

Antimony, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	
Arsenic, Soluble on WET Extract	ND	0.25	mg/l	1	02/03/22	
Barium, Soluble on WET Extract	0.47	0.10	mg/l	1	02/03/22	
Beryllium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Cadmium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Chromium, Soluble on WET Extract	ND	0.20	mg/l	1	02/03/22	
Cobalt, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Copper, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	
Lead, Soluble on WET Extract	0.31	0.10	mg/l	1	02/03/22	
Molybdenum, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Nickel, Soluble on WET Extract	0.49	0.20	mg/l	1	02/03/22	
Selenium, Soluble on WET Extract	ND	0.50	mg/l	1	02/03/22	
Silver, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Thallium, Soluble on WET Extract	ND	0.50	mg/l	1	02/03/22	
Vanadium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Zinc, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	

Method: EPA 7470A

Instr: HG03

Batch ID: W2A1482

Preparation: EPA 7470A

Prepared: 01/23/22 09:25

Analyst: KVM

Mercury, Soluble on WET Extract	ND	5.0	ug/l	1	01/26/22	O-09
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Certificate of Analysis

FINAL REPORT

Western Environmental Testing Laboratory
3230 Polaris Ave., Ste 4
Las Vegas, NV 89102

Project Number: 21120502S

Project Manager: Garry Gray

Reported:
02/04/2022 14:12

Sample Results

(Continued)

Sample: 21120502-002
2A13033-02 (STLC) Sampled: 12/15/21 9:00 by KC

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
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Metals - Soluble on STLC by EPA 6000/7000 Methods

Method: EPA 6010B

Instr: ICP03

Batch ID: W2A1730

Preparation: EPA 3010A

Prepared: 01/26/22 10:25

Analyst: kvm

Antimony, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	
Arsenic, Soluble on WET Extract	ND	0.25	mg/l	1	02/03/22	
Barium, Soluble on WET Extract	2.1	0.10	mg/l	1	02/03/22	
Beryllium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Cadmium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Chromium, Soluble on WET Extract	ND	0.20	mg/l	1	02/03/22	
Cobalt, Soluble on WET Extract	0.14	0.10	mg/l	1	02/03/22	
Copper, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	
Lead, Soluble on WET Extract	0.95	0.10	mg/l	1	02/03/22	
Molybdenum, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Nickel, Soluble on WET Extract	ND	0.20	mg/l	1	02/03/22	
Selenium, Soluble on WET Extract	ND	0.50	mg/l	1	02/03/22	
Silver, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Thallium, Soluble on WET Extract	ND	0.50	mg/l	1	02/03/22	
Vanadium, Soluble on WET Extract	0.35	0.10	mg/l	1	02/03/22	
Zinc, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	

Method: EPA 7470A

Instr: HG03

Batch ID: W2A1482

Preparation: EPA 7470A

Prepared: 01/23/22 09:25

Analyst: KVM

Mercury, Soluble on WET Extract	ND	5.0	ug/l	1	01/26/22	O-09
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Certificate of Analysis

FINAL REPORT

Western Environmental Testing Laboratory
3230 Polaris Ave., Ste 4
Las Vegas, NV 89102

Project Number: 21120502S

Project Manager: Garry Gray

Reported:
02/04/2022 14:12

Sample Results

(Continued)

Sample: 21120502-003
2A13033-03 (STLC) Sampled: 12/15/21 9:00 by KC

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
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Metals - Soluble on STLC by EPA 6000/7000 Methods

Method: EPA 6010B

Instr: ICP03

Batch ID: W2A1730

Preparation: EPA 3010A

Prepared: 01/26/22 10:25

Analyst: kvm

Antimony, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	
Arsenic, Soluble on WET Extract	ND	0.25	mg/l	1	02/03/22	
Barium, Soluble on WET Extract	1.5	0.10	mg/l	1	02/03/22	
Beryllium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Cadmium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Chromium, Soluble on WET Extract	ND	0.20	mg/l	1	02/03/22	
Cobalt, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Copper, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	
Lead, Soluble on WET Extract	0.64	0.10	mg/l	1	02/03/22	
Molybdenum, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Nickel, Soluble on WET Extract	ND	0.20	mg/l	1	02/03/22	
Selenium, Soluble on WET Extract	ND	0.50	mg/l	1	02/03/22	
Silver, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Thallium, Soluble on WET Extract	ND	0.50	mg/l	1	02/03/22	
Vanadium, Soluble on WET Extract	0.11	0.10	mg/l	1	02/03/22	
Zinc, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	

Method: EPA 7470A

Instr: HG03

Batch ID: W2A1482

Preparation: EPA 7470A

Prepared: 01/23/22 09:25

Analyst: KVM

Mercury, Soluble on WET Extract	ND	5.0	ug/l	1	01/26/22	O-09
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Certificate of Analysis

FINAL REPORT

Western Environmental Testing Laboratory
3230 Polaris Ave., Ste 4
Las Vegas, NV 89102

Project Number: 21120502S

Project Manager: Garry Gray

Reported:
02/04/2022 14:12

Sample Results

(Continued)

Sample: 21120502-004
2A13033-04 (STLC) Sampled: 12/15/21 9:00 by KC

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
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Metals - Soluble on STLC by EPA 6000/7000 Methods

Method: EPA 6010B

Instr: ICP03

Batch ID: W2A1730

Preparation: EPA 3010A

Prepared: 01/26/22 10:25

Analyst: kvm

Antimony, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	
Arsenic, Soluble on WET Extract	ND	0.25	mg/l	1	02/03/22	
Barium, Soluble on WET Extract	0.53	0.10	mg/l	1	02/03/22	
Beryllium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Cadmium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Chromium, Soluble on WET Extract	ND	0.20	mg/l	1	02/03/22	
Cobalt, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Copper, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	
Lead, Soluble on WET Extract	0.53	0.10	mg/l	1	02/03/22	
Molybdenum, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Nickel, Soluble on WET Extract	0.28	0.20	mg/l	1	02/03/22	
Selenium, Soluble on WET Extract	ND	0.50	mg/l	1	02/03/22	
Silver, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Thallium, Soluble on WET Extract	ND	0.50	mg/l	1	02/03/22	
Vanadium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Zinc, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	

Method: EPA 7470A

Instr: HG03

Batch ID: W2A1482

Preparation: EPA 7470A

Prepared: 01/23/22 09:25

Analyst: KVM

Mercury, Soluble on WET Extract	ND	5.0	ug/l	1	01/26/22	O-09
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Certificate of Analysis

FINAL REPORT

Western Environmental Testing Laboratory
3230 Polaris Ave., Ste 4
Las Vegas, NV 89102

Project Number: 21120502S

Project Manager: Garry Gray

Reported:
02/04/2022 14:12



Sample Results

(Continued)

Sample: 21120502-005
2A13033-05 (STLC) Sampled: 12/15/21 9:00 by KC

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
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Metals - Soluble on STLC by EPA 6000/7000 Methods

Method: EPA 6010B

Instr: ICP03

Batch ID: W2A1730

Preparation: EPA 3010A

Prepared: 01/26/22 10:25

Analyst: kvm

Antimony, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	
Arsenic, Soluble on WET Extract	ND	0.25	mg/l	1	02/03/22	
Barium, Soluble on WET Extract	1.4	0.10	mg/l	1	02/03/22	
Beryllium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Cadmium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Chromium, Soluble on WET Extract	ND	0.20	mg/l	1	02/03/22	
Cobalt, Soluble on WET Extract	0.25	0.10	mg/l	1	02/03/22	
Copper, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	
Lead, Soluble on WET Extract	0.35	0.10	mg/l	1	02/03/22	
Molybdenum, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Nickel, Soluble on WET Extract	ND	0.20	mg/l	1	02/03/22	
Selenium, Soluble on WET Extract	ND	0.50	mg/l	1	02/03/22	
Silver, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Thallium, Soluble on WET Extract	ND	0.50	mg/l	1	02/03/22	
Vanadium, Soluble on WET Extract	0.20	0.10	mg/l	1	02/03/22	
Zinc, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	

Method: EPA 7470A

Instr: HG03

Batch ID: W2A1482

Preparation: EPA 7470A

Prepared: 01/23/22 09:25

Analyst: KVM

Mercury, Soluble on WET Extract	ND	5.0	ug/l	1	01/26/22	O-09
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Certificate of Analysis

FINAL REPORT

Western Environmental Testing Laboratory
3230 Polaris Ave., Ste 4
Las Vegas, NV 89102

Project Number: 21120502S

Project Manager: Garry Gray

Reported:
02/04/2022 14:12

Sample Results

(Continued)

Sample: 21120502-006
2A13033-06 (STLC) Sampled: 12/15/21 9:00 by KC

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
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Metals - Soluble on STLC by EPA 6000/7000 Methods

Method: EPA 6010B

Instr: ICP03

Batch ID: W2A1730

Preparation: EPA 3010A

Prepared: 01/26/22 10:25

Analyst: kvm

Antimony, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	
Arsenic, Soluble on WET Extract	ND	0.25	mg/l	1	02/03/22	
Barium, Soluble on WET Extract	1.0	0.10	mg/l	1	02/03/22	
Beryllium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Cadmium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Chromium, Soluble on WET Extract	ND	0.20	mg/l	1	02/03/22	
Cobalt, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Copper, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	
Lead, Soluble on WET Extract	0.95	0.10	mg/l	1	02/03/22	
Molybdenum, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Nickel, Soluble on WET Extract	ND	0.20	mg/l	1	02/03/22	
Selenium, Soluble on WET Extract	ND	0.50	mg/l	1	02/03/22	
Silver, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Thallium, Soluble on WET Extract	ND	0.50	mg/l	1	02/03/22	
Vanadium, Soluble on WET Extract	0.21	0.10	mg/l	1	02/03/22	
Zinc, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	

Method: EPA 7470A

Instr: HG03

Batch ID: W2A1482

Preparation: EPA 7470A

Prepared: 01/23/22 09:25

Analyst: KVM

Mercury, Soluble on WET Extract	ND	5.0	ug/l	1	01/26/22	O-09
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Certificate of Analysis

FINAL REPORT

Western Environmental Testing Laboratory
3230 Polaris Ave., Ste 4
Las Vegas, NV 89102

Project Number: 21120502S

Project Manager: Garry Gray

Reported:
02/04/2022 14:12

Sample Results

(Continued)

Sample: 21120502-007
2A13033-07 (STLC) Sampled: 12/15/21 9:00 by KC

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
Metals - Soluble on STLC by EPA 6000/7000 Methods						
Method: EPA 6010B		Instr: ICP03				
Batch ID: W2A1730	Preparation: EPA 3010A	Prepared: 01/26/22 10:25			Analyst: kvm	
Antimony, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	
Arsenic, Soluble on WET Extract	ND	0.25	mg/l	1	02/03/22	
Barium, Soluble on WET Extract	1.2	0.10	mg/l	1	02/03/22	
Beryllium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Cadmium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Chromium, Soluble on WET Extract	ND	0.20	mg/l	1	02/03/22	
Cobalt, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Copper, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	
Lead, Soluble on WET Extract	0.22	0.10	mg/l	1	02/03/22	
Molybdenum, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Nickel, Soluble on WET Extract	0.27	0.20	mg/l	1	02/03/22	
Selenium, Soluble on WET Extract	ND	0.50	mg/l	1	02/03/22	
Silver, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Thallium, Soluble on WET Extract	ND	0.50	mg/l	1	02/03/22	
Vanadium, Soluble on WET Extract	0.16	0.10	mg/l	1	02/03/22	
Zinc, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	
Method: EPA 7470A		Instr: HG03				
Batch ID: W2A1482	Preparation: EPA 7470A	Prepared: 01/23/22 09:25			Analyst: KVM	
Mercury, Soluble on WET Extract	ND	5.0	ug/l	1	01/26/22	O-09



Certificate of Analysis

FINAL REPORT

Western Environmental Testing Laboratory
3230 Polaris Ave., Ste 4
Las Vegas, NV 89102

Project Number: 21120502S

Project Manager: Garry Gray

Reported:
02/04/2022 14:12

Sample Results

(Continued)

Sample: 21120502-008
2A13033-08 (STLC) Sampled: 12/15/21 9:00 by KC

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
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Metals - Soluble on STLC by EPA 6000/7000 Methods

Method: EPA 6010B

Instr: ICP03

Batch ID: W2A1730

Preparation: EPA 3010A

Prepared: 01/26/22 10:25

Analyst: kvm

Antimony, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	
Arsenic, Soluble on WET Extract	0.37	0.25	mg/l	1	02/03/22	
Barium, Soluble on WET Extract	0.87	0.10	mg/l	1	02/03/22	
Beryllium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Cadmium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Chromium, Soluble on WET Extract	0.21	0.20	mg/l	1	02/03/22	
Cobalt, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Copper, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	
Lead, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Molybdenum, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Nickel, Soluble on WET Extract	0.41	0.20	mg/l	1	02/03/22	
Selenium, Soluble on WET Extract	ND	0.50	mg/l	1	02/03/22	
Silver, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Thallium, Soluble on WET Extract	ND	0.50	mg/l	1	02/03/22	
Vanadium, Soluble on WET Extract	0.26	0.10	mg/l	1	02/03/22	
Zinc, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	

Method: EPA 7470A

Instr: HG03

Batch ID: W2A1482

Preparation: EPA 7470A

Prepared: 01/23/22 09:25

Analyst: KVM

Mercury, Soluble on WET Extract	ND	5.0	ug/l	1	01/26/22	O-09
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Certificate of Analysis

FINAL REPORT

Western Environmental Testing Laboratory
3230 Polaris Ave., Ste 4
Las Vegas, NV 89102

Project Number: 21120502S

Project Manager: Garry Gray

Reported:
02/04/2022 14:12

Sample Results

(Continued)

Sample: 21120502-009
2A13033-09 (STLC) Sampled: 12/15/21 9:00 by KC

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
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Metals - Soluble on STLC by EPA 6000/7000 Methods

Method: EPA 6010B

Instr: ICP03

Batch ID: W2A1730

Preparation: EPA 3010A

Prepared: 01/26/22 10:25

Analyst: kvm

Antimony, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	
Arsenic, Soluble on WET Extract	ND	0.25	mg/l	1	02/03/22	
Barium, Soluble on WET Extract	0.14	0.10	mg/l	1	02/03/22	
Beryllium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Cadmium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Chromium, Soluble on WET Extract	ND	0.20	mg/l	1	02/03/22	
Cobalt, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Copper, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	
Lead, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Molybdenum, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Nickel, Soluble on WET Extract	ND	0.20	mg/l	1	02/03/22	
Selenium, Soluble on WET Extract	ND	0.50	mg/l	1	02/03/22	
Silver, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Thallium, Soluble on WET Extract	ND	0.50	mg/l	1	02/03/22	
Vanadium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Zinc, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	

Method: EPA 7470A

Instr: HG03

Batch ID: W2A1482

Preparation: EPA 7470A

Prepared: 01/23/22 09:25

Analyst: KVM

Mercury, Soluble on WET Extract	ND	5.0	ug/l	1	01/26/22	O-09
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FINAL REPORT

Western Environmental Testing Laboratory
3230 Polaris Ave., Ste 4
Las Vegas, NV 89102

Project Number: 21120502S

Project Manager: Garry Gray

Reported:
02/04/2022 14:12

Sample Results

(Continued)

Sample: 21120502-010
2A13033-10 (STLC)

Sampled: 12/15/21 9:00 by KC

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
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Metals - Soluble on STLC by EPA 6000/7000 Methods

Method: EPA 6010B

Instr: ICP03

Batch ID: W2A1730

Preparation: EPA 3010A

Prepared: 01/26/22 10:25

Analyst: kvm

Antimony, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	
Arsenic, Soluble on WET Extract	ND	0.25	mg/l	1	02/03/22	
Barium, Soluble on WET Extract	1.5	0.10	mg/l	1	02/03/22	
Beryllium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Cadmium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Chromium, Soluble on WET Extract	ND	0.20	mg/l	1	02/03/22	
Cobalt, Soluble on WET Extract	0.12	0.10	mg/l	1	02/03/22	
Copper, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	
Lead, Soluble on WET Extract	0.40	0.10	mg/l	1	02/03/22	
Molybdenum, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Nickel, Soluble on WET Extract	ND	0.20	mg/l	1	02/03/22	
Selenium, Soluble on WET Extract	ND	0.50	mg/l	1	02/03/22	
Silver, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Thallium, Soluble on WET Extract	ND	0.50	mg/l	1	02/03/22	
Vanadium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Zinc, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	

Method: EPA 7470A

Instr: HG03

Batch ID: W2A1482

Preparation: EPA 7470A

Prepared: 01/23/22 09:25

Analyst: KVM

Mercury, Soluble on WET Extract	ND	5.0	ug/l	1	01/26/22	O-09
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Certificate of Analysis

FINAL REPORT

Western Environmental Testing Laboratory
3230 Polaris Ave., Ste 4
Las Vegas, NV 89102

Project Number: 21120502S

Project Manager: Garry Gray

Reported:
02/04/2022 14:12

Sample Results

(Continued)

Sample: 21120502-011
2A13033-11 (STLC) Sampled: 12/15/21 9:00 by KC

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
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Metals - Soluble on STLC by EPA 6000/7000 Methods

Method: EPA 6010B

Instr: ICP03

Batch ID: W2A1730

Preparation: EPA 3010A

Prepared: 01/26/22 10:25

Analyst: kvm

Antimony, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	
Arsenic, Soluble on WET Extract	ND	0.25	mg/l	1	02/03/22	
Barium, Soluble on WET Extract	0.52	0.10	mg/l	1	02/03/22	
Beryllium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Cadmium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Chromium, Soluble on WET Extract	ND	0.20	mg/l	1	02/03/22	
Cobalt, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Copper, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	
Lead, Soluble on WET Extract	0.21	0.10	mg/l	1	02/03/22	
Molybdenum, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Nickel, Soluble on WET Extract	ND	0.20	mg/l	1	02/03/22	
Selenium, Soluble on WET Extract	ND	0.50	mg/l	1	02/03/22	
Silver, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Thallium, Soluble on WET Extract	ND	0.50	mg/l	1	02/03/22	
Vanadium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Zinc, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	

Method: EPA 7470A

Instr: HG03

Batch ID: W2A1482

Preparation: EPA 7470A

Prepared: 01/23/22 09:25

Analyst: KVM

Mercury, Soluble on WET Extract	ND	5.0	ug/l	1	01/26/22	O-09
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Certificate of Analysis

FINAL REPORT

Western Environmental Testing Laboratory
3230 Polaris Ave., Ste 4
Las Vegas, NV 89102

Project Number: 21120502S

Project Manager: Garry Gray

Reported:
02/04/2022 14:12

Sample Results

(Continued)

Sample: 21120502-012
2A13033-12 (STLC)

Sampled: 12/15/21 9:00 by KC

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
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Metals - Soluble on STLC by EPA 6000/7000 Methods

Method: EPA 6010B

Instr: ICP03

Batch ID: W2A1730

Preparation: EPA 3010A

Prepared: 01/26/22 10:25

Analyst: kvm

Antimony, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	
Arsenic, Soluble on WET Extract	0.27	0.25	mg/l	1	02/03/22	
Barium, Soluble on WET Extract	1.2	0.10	mg/l	1	02/03/22	
Beryllium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Cadmium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Chromium, Soluble on WET Extract	ND	0.20	mg/l	1	02/03/22	
Cobalt, Soluble on WET Extract	0.37	0.10	mg/l	1	02/03/22	
Copper, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	
Lead, Soluble on WET Extract	1.5	0.10	mg/l	1	02/03/22	
Molybdenum, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Nickel, Soluble on WET Extract	0.20	0.20	mg/l	1	02/03/22	
Selenium, Soluble on WET Extract	ND	0.50	mg/l	1	02/03/22	
Silver, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Thallium, Soluble on WET Extract	ND	0.50	mg/l	1	02/03/22	
Vanadium, Soluble on WET Extract	0.12	0.10	mg/l	1	02/03/22	
Zinc, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	

Method: EPA 7470A

Instr: HG03

Batch ID: W2A1482

Preparation: EPA 7470A

Prepared: 01/23/22 09:25

Analyst: KVM

Mercury, Soluble on WET Extract	ND	5.0	ug/l	1	01/26/22	O-09
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Certificate of Analysis

FINAL REPORT

Western Environmental Testing Laboratory
3230 Polaris Ave., Ste 4
Las Vegas, NV 89102

Project Number: 21120502S

Project Manager: Garry Gray

Reported:
02/04/2022 14:12

Sample Results

(Continued)

Sample: 21120502-013
2A13033-13 (STLC) Sampled: 12/15/21 9:00 by KC

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
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Metals - Soluble on STLC by EPA 6000/7000 Methods

Method: EPA 6010B

Instr: ICP03

Batch ID: W2A1730

Preparation: EPA 3010A

Prepared: 01/26/22 10:25

Analyst: kvm

Antimony, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	
Arsenic, Soluble on WET Extract	ND	0.25	mg/l	1	02/03/22	
Barium, Soluble on WET Extract	4.9	0.10	mg/l	1	02/03/22	
Beryllium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Cadmium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Chromium, Soluble on WET Extract	ND	0.20	mg/l	1	02/03/22	
Cobalt, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Copper, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	
Lead, Soluble on WET Extract	0.54	0.10	mg/l	1	02/03/22	
Molybdenum, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Nickel, Soluble on WET Extract	ND	0.20	mg/l	1	02/03/22	
Selenium, Soluble on WET Extract	ND	0.50	mg/l	1	02/03/22	
Silver, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Thallium, Soluble on WET Extract	ND	0.50	mg/l	1	02/03/22	
Vanadium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Zinc, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	

Method: EPA 7470A

Instr: HG03

Batch ID: W2A1482

Preparation: EPA 7470A

Prepared: 01/23/22 09:25

Analyst: KVM

Mercury, Soluble on WET Extract	ND	5.0	ug/l	1	01/26/22	O-09
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Certificate of Analysis

FINAL REPORT

Western Environmental Testing Laboratory
3230 Polaris Ave., Ste 4
Las Vegas, NV 89102

Project Number: 21120502S

Project Manager: Garry Gray

Reported:
02/04/2022 14:12

Sample Results

(Continued)

Sample: 21120502-014
2A13033-14 (STLC) Sampled: 12/15/21 9:00 by KC

Analyte	Result	MRL	Units	Dil	Analyzed	Qualifier
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Metals - Soluble on STLC by EPA 6000/7000 Methods

Method: EPA 6010B

Instr: ICP03

Batch ID: W2A1730

Preparation: EPA 3010A

Prepared: 01/26/22 10:25

Analyst: kvm

Antimony, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	
Arsenic, Soluble on WET Extract	0.29	0.25	mg/l	1	02/03/22	
Barium, Soluble on WET Extract	2.5	0.10	mg/l	1	02/03/22	
Beryllium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Cadmium, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Chromium, Soluble on WET Extract	ND	0.20	mg/l	1	02/03/22	
Cobalt, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Copper, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	
Lead, Soluble on WET Extract	0.46	0.10	mg/l	1	02/03/22	
Molybdenum, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Nickel, Soluble on WET Extract	ND	0.20	mg/l	1	02/03/22	
Selenium, Soluble on WET Extract	ND	0.50	mg/l	1	02/03/22	
Silver, Soluble on WET Extract	ND	0.10	mg/l	1	02/03/22	
Thallium, Soluble on WET Extract	ND	0.50	mg/l	1	02/03/22	
Vanadium, Soluble on WET Extract	0.17	0.10	mg/l	1	02/03/22	
Zinc, Soluble on WET Extract	ND	1.0	mg/l	1	02/03/22	

Method: EPA 7470A

Instr: HG03

Batch ID: W2A1482

Preparation: EPA 7470A

Prepared: 01/23/22 09:25

Analyst: KVM

Mercury, Soluble on WET Extract	ND	5.0	ug/l	1	01/26/22	O-09
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Certificate of Analysis

FINAL REPORT

Western Environmental Testing Laboratory
3230 Polaris Ave., Ste 4
Las Vegas, NV 89102

Project Number: 21120502S

Project Manager: Garry Gray

Reported:

02/04/2022 14:12

Quality Control Results

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W2A1482 - EPA 7470A										
Blank (W2A1482-BLK1)				Prepared: 01/23/22 Analyzed: 01/26/22						
Mercury, Soluble on WET Extract	ND	5.0	ug/l							
LCS (W2A1482-BS1)				Prepared: 01/23/22 Analyzed: 01/26/22						
Mercury, Soluble on WET Extract	21.6	5.0	ug/l	25.0		87	80-120			
Matrix Spike (W2A1482-MS1)				Source: 1L20008-02 Prepared: 01/23/22 Analyzed: 01/26/22						
Mercury, Soluble on WET Extract	25.7	5.0	ug/l	25.0	ND	103	70-127			
Matrix Spike Dup (W2A1482-MSD1)				Source: 1L20008-02 Prepared: 01/23/22 Analyzed: 01/26/22						
Mercury, Soluble on WET Extract	26.2	5.0	ug/l	25.0	ND	105	70-127	2	20	
Batch: W2A1730 - EPA 6010B										
Blank (W2A1730-BLK1)				Prepared: 01/26/22 Analyzed: 02/03/22						
Antimony, Soluble on WET Extract	ND	1.0	mg/l							
Arsenic, Soluble on WET Extract	ND	0.25	mg/l							
Barium, Soluble on WET Extract	ND	0.10	mg/l							
Beryllium, Soluble on WET Extract	ND	0.10	mg/l							
Cadmium, Soluble on WET Extract	ND	0.10	mg/l							
Chromium, Soluble on WET Extract	ND	0.20	mg/l							
Cobalt, Soluble on WET Extract	ND	0.10	mg/l							
Copper, Soluble on WET Extract	ND	1.0	mg/l							
Lead, Soluble on WET Extract	ND	0.10	mg/l							
Molybdenum, Soluble on WET Extract	ND	0.10	mg/l							
Nickel, Soluble on WET Extract	ND	0.20	mg/l							
Selenium, Soluble on WET Extract	ND	0.50	mg/l							
Silver, Soluble on WET Extract	ND	0.10	mg/l							
Thallium, Soluble on WET Extract	ND	0.50	mg/l							
Vanadium, Soluble on WET Extract	ND	0.10	mg/l							
Zinc, Soluble on WET Extract	ND	1.0	mg/l							
LCS (W2A1730-BS1)				Prepared: 01/26/22 Analyzed: 02/03/22						
Antimony, Soluble on WET Extract	10.6	1.0	mg/l	10.0		106	80-120			
Arsenic, Soluble on WET Extract	10.1	0.25	mg/l	10.0		101	80-120			
Barium, Soluble on WET Extract	9.87	0.10	mg/l	10.0		99	80-120			
Beryllium, Soluble on WET Extract	9.63	0.10	mg/l	10.0		96	80-120			
Cadmium, Soluble on WET Extract	9.60	0.10	mg/l	10.0		96	80-120			
Chromium, Soluble on WET Extract	9.57	0.20	mg/l	10.0		96	80-120			
Cobalt, Soluble on WET Extract	9.38	0.10	mg/l	10.0		94	80-120			
Copper, Soluble on WET Extract	10.6	1.0	mg/l	10.0		106	80-120			
Lead, Soluble on WET Extract	9.52	0.10	mg/l	10.0		95	80-120			
Molybdenum, Soluble on WET Extract	9.65	0.10	mg/l	10.0		97	80-120			
Nickel, Soluble on WET Extract	9.94	0.20	mg/l	10.0		99	80-120			
Selenium, Soluble on WET Extract	9.26	0.50	mg/l	10.0		93	80-120			



Certificate of Analysis

FINAL REPORT

Western Environmental Testing Laboratory
3230 Polaris Ave., Ste 4
Las Vegas, NV 89102

Project Number: 21120502S

Project Manager: Garry Gray

Reported:
02/04/2022 14:12

Quality Control Results

(Continued)

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	Limits	RPD	Limit	Qualifier
Batch: W2A1730 - EPA 6010B (Continued)										
LCS (W2A1730-BS1)				Prepared: 01/26/22 Analyzed: 02/03/22						
Silver, Soluble on WET Extract	10.0	0.10	mg/l	10.0		100	80-120			
Thallium, Soluble on WET Extract	10.1	0.50	mg/l	10.0		101	80-120			
Vanadium, Soluble on WET Extract	9.94	0.10	mg/l	10.0		99	80-120			
Zinc, Soluble on WET Extract	9.92	1.0	mg/l	10.0		99	80-120			
Matrix Spike (W2A1730-MS1)				Source: 2A13033-03 Prepared: 01/26/22 Analyzed: 02/03/22						
Antimony, Soluble on WET Extract	10.6	1.0	mg/l	10.0	ND	106	75-125			
Arsenic, Soluble on WET Extract	10.4	0.25	mg/l	10.0	0.159	102	75-125			
Barium, Soluble on WET Extract	11.4	0.10	mg/l	10.0	1.52	99	75-125			
Beryllium, Soluble on WET Extract	9.85	0.10	mg/l	10.0	0.0151	98	75-125			
Cadmium, Soluble on WET Extract	9.77	0.10	mg/l	10.0	ND	98	75-125			
Chromium, Soluble on WET Extract	9.90	0.20	mg/l	10.0	0.131	98	75-125			
Cobalt, Soluble on WET Extract	9.50	0.10	mg/l	10.0	ND	95	75-125			
Copper, Soluble on WET Extract	11.1	1.0	mg/l	10.0	0.318	108	75-125			
Lead, Soluble on WET Extract	10.4	0.10	mg/l	10.0	0.645	97	75-125			
Molybdenum, Soluble on WET Extract	9.87	0.10	mg/l	10.0	0.0295	98	75-125			
Nickel, Soluble on WET Extract	10.1	0.20	mg/l	10.0	0.109	100	75-125			
Selenium, Soluble on WET Extract	9.74	0.50	mg/l	10.0	ND	97	75-125			
Silver, Soluble on WET Extract	10.2	0.10	mg/l	10.0	ND	102	75-125			
Thallium, Soluble on WET Extract	10.2	0.50	mg/l	10.0	ND	102	75-125			
Vanadium, Soluble on WET Extract	10.3	0.10	mg/l	10.0	0.106	102	75-125			
Zinc, Soluble on WET Extract	10.3	1.0	mg/l	10.0	ND	103	75-125			
Matrix Spike Dup (W2A1730-MSD1)				Source: 2A13033-03 Prepared: 01/26/22 Analyzed: 02/03/22						
Antimony, Soluble on WET Extract	10.5	1.0	mg/l	10.0	ND	105	75-125	1	20	
Arsenic, Soluble on WET Extract	10.3	0.25	mg/l	10.0	0.159	101	75-125	1	20	
Barium, Soluble on WET Extract	11.3	0.10	mg/l	10.0	1.52	98	75-125	0.7	20	
Beryllium, Soluble on WET Extract	9.81	0.10	mg/l	10.0	0.0151	98	75-125	0.5	20	
Cadmium, Soluble on WET Extract	9.67	0.10	mg/l	10.0	ND	97	75-125	1	20	
Chromium, Soluble on WET Extract	9.82	0.20	mg/l	10.0	0.131	97	75-125	0.8	20	
Cobalt, Soluble on WET Extract	9.44	0.10	mg/l	10.0	ND	94	75-125	0.6	20	
Copper, Soluble on WET Extract	11.1	1.0	mg/l	10.0	0.318	107	75-125	0.6	20	
Lead, Soluble on WET Extract	10.3	0.10	mg/l	10.0	0.645	97	75-125	0.2	20	
Molybdenum, Soluble on WET Extract	9.82	0.10	mg/l	10.0	0.0295	98	75-125	0.5	20	
Nickel, Soluble on WET Extract	10.0	0.20	mg/l	10.0	0.109	99	75-125	1	20	
Selenium, Soluble on WET Extract	9.77	0.50	mg/l	10.0	ND	98	75-125	0.3	20	
Silver, Soluble on WET Extract	10.2	0.10	mg/l	10.0	ND	102	75-125	0.4	20	
Thallium, Soluble on WET Extract	10.2	0.50	mg/l	10.0	ND	102	75-125	0.06	20	
Vanadium, Soluble on WET Extract	10.2	0.10	mg/l	10.0	0.106	101	75-125	0.6	20	
Zinc, Soluble on WET Extract	10.2	1.0	mg/l	10.0	ND	102	75-125	1	20	



Certificate of Analysis

FINAL REPORT

Western Environmental Testing Laboratory
3230 Polaris Ave., Ste 4
Las Vegas, NV 89102

Project Number: 21120502S

Project Manager: Garry Gray

Reported:
02/04/2022 14:12

Notes and Definitions

Item	Definition
O-09	This sample was received with the EPA recommended holding time expired.
%REC	Percent Recovery
Dil	Dilution
MRL	The minimum levels, concentrations, or quantities of a target variable (e.g., target analyte) that can be reported with a specified degree of confidence. The MRL is also known as Limit of Quantitation (LOQ)
ND	NOT DETECTED at or above the Method Reporting Limit (MRL). If Method Detection Limit (MDL) is reported, then ND means not detected at or above the MDL.
RPD	Relative Percent Difference
Source	Sample that was matrix spiked or duplicated.

Any remaining sample(s) will be disposed of one month from the final report date unless other arrangements are made in advance.

All results are expressed on wet weight basis unless otherwise specified.

All samples collected by Weck Laboratories have been sampled in accordance to laboratory SOP Number MIS002.



WETLAB
WESTERN ENVIRONMENTAL
TESTING LABORATORY

CMM 2022 MINE & RECLAMATION PLAN OF OPERATION
Subcontracting Chain of Custody
APPENDIX H

Analysis to be subcontracted to:

Neck

Report Due Date:

12/22/2021

Page 1 of 2

CLIENT REQUIREMENTS

Client: Western Environmental Testing Laboratory				Turnaround Time Requirements		Reporting Results Via	
Address: 475 E. Greg St. Suite #117				Standard		Fax	
City, State Zip: Sparks, NV 89431				5 Day*		PDF X	
Contact: McKenna Oh				3 Day*		EDD X	
Phone: (775) 355-0202		Collector's Name: KC		48 Hour*		Mail Only	
PWS/Site:				24 Hour*		Other:	
WETLab Job ID: 21120502S		WETLab Client Code: MCCL		Compliance Monitoring		Samples Collected From Which State?	
Email: Reporting@wetlaboratory.com				Yes ☒		NV CA ☒	
Billing Address (if different than Client Address)				No		Other:	
Client: Western Environmental Testing Laboratory				ANALYSES REQUESTED			
Address: 475 E. Greg St. Suite #117				SAMPLE TYPE (Key found below) NO. OF CONTAINERS Various Metals (Subcontracted) STLC Metals			
City, State Zip: Sparks, NV 89431							
Contact: Accounts Payable							
Phone: (775) 355-0202 Fax: (775) 355-0817							
Email: Reporting@wetlaboratory.com							
SAMPLE ID/LOCATION	WETLAB SampleID	Date	Time				
CMM Comp #1	21120502-001	12/15/2021	9:00:00 AM	SO	1	✓	
CMM Comp #2	21120502-002	12/15/2021	9:00:00 AM	SO	1	✓	
CMM Comp #3	21120502-003	12/15/2021	9:00:00 AM	SO	1	✓	
CMM Comp #4	21120502-004	12/15/2021	9:00:00 AM	SO	1	✓	
CMM Comp #5	21120502-005	12/15/2021	9:00:00 AM	SO	1	✓	
CMM Comp #6	21120502-006	12/15/2021	9:00:00 AM	SO	1	✓	
CMM Comp #7	21120502-007	12/15/2021	9:00:00 AM	SO	1	✓	
CMM Comp #8	21120502-008	12/15/2021	9:00:00 AM	SO	1	✓	
CMM Comp #9	21120502-009	12/15/2021	9:00:00 AM	SO	1	✓	
CMM Comp #11	21120502-010	12/15/2021	9:00:00 AM	SO	1	✓	
CMM Comp #12	21120502-011	12/15/2021	9:00:00 AM	SO	1	✓	
CMM Comp #13	21120502-012	12/15/2021	9:00:00 AM	SO	1	✓	
CMM Comp #14	21120502-013	12/15/2021	9:00:00 AM	SO	1	✓	
CMM Leached/Rinsed Ore	21120502-014	12/15/2021	9:00:00 AM	SO	1	✓	

Please see attach for needed metals parameters via STLC for each sample. Thank you!



WETLAB
WESTERN ENVIRONMENTAL
TESTING LABORATORY

CMM 2022 MINE & RECLAMATION PLAN OF OPERATION
APPENDIX H

Subcontracting Chain of Custody

Analysis to be subcontracted to:

Report Due Date: 12/22/2021

Page 2 of 2

CLIENT REQUIREMENTS

Instructions/Comments/Special Requirements: Please send Sample Receipts, Reports and Invoices to Reporting@wetlaboratory.com

Sample Matrix/Type Key**

DW=Drinking water WW=Waste Water SW=Surfacewater MW=Monitoring Well SD=Solid/Sludge
SO=Soil HW=Hazardous Waste OT=Other

SAMPLE RECEIPT CONDITIONS	DATE	TIME	SAMPLES RELINQUISHED BY	SAMPLES RECEIVED BY
Temperature _____ °C	1/10/22	1600	<i>[Signature]</i>	<i>Fed Ex</i>
Custody Seals Intact? Y N None				
Number of Containers _____				

WETLAB'S Standard Terms and Conditions apply unless written agreements specify otherwise. Payment terms are Net 30 for established customers. Pre-payment is required for clients without an account.

Client/Collector attests to the validity and authenticity of this (these) sample(s) and, is (are) aware that tampering with or intentionally mislabeling the sample(s) location or date/time of collection will be considered fraud and may be subject to legal action (NAC445.0636)

Samples are discarded 90 days after receipt unless other arrangements have been made with the laboratory.

To the maximum extent permitted by law, the Client agrees to limit the liability of WETLAB for the Client's damages to the total compensation received, unless other arrangements are made in writing.

This limitation shall apply regardless of the cause of action or legal theory pled or asserted.

CMM 2022 MINE & RECLAMATION PLAN OF OPERATION
APPENDIX H

STLC Analysis Submittal
Castle Mountain Venture

Analysis, analyte	Sample IDs													
	CMM Comp #1	CMM Comp #2	CMM Comp #3	CMM Comp #4	CMM Comp #5	CMM Comp #6	CMM Comp #7	CMM Comp #8	CMM Comp #9	CMM Comp #10	CMM Comp #11	CMM Comp #12	CMM Comp #13	CMM Comp #14
Antimony (Sb)	x		x		x		x	x	x	x	x			x
Arsenic (As)	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Barium (Ba)	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Beryllium (Be)	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Cadmium (Cd)														
Chromium (Cr)	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Cobalt (Co)			x		x					x		x	x	x
Copper (Cu)			x		x	x			x	x	x	x		x
Lead (Pb)	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Manganese (Mn)	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Molybdenum (Mo)									x	x	x			x
Nickel (Ni)	x		x		x	x				x		x	x	x
Selenium (Se)														
Silver (Ag)														
Thallium (Tl)					x									
Vanadium (V)	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Zinc (Zn)	x	x	x	x	x	x	x	x	x	x	x	x	x	x
Mercury (Hg)	x	x	x	x	x	x	x	x	x	x	x	x	x	x

Submit each sample for all the elements marked in the corresponding column.