FINAL

RED DIRT PILE
2006 PRIORITY ACTION WORK PLAN
EMPIRE MINE STATE HISTORIC PARK

JULY 2006

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1.0 PURPOSE

The purpose of the Red Dirt Pile (RDP) 2006 Priority Action Work Plan is to implement priority action measures to limit potential human health exposures that could result from direct contact with, and the physical transport by wind and water of metal constituents contained in mine and mill related materials and/or stormwater runoff from the exposed surface of the RDP. The key component of this priority action will be the installation of a cover over the surface of the RDP. The cover will be constructed by placement of a vegetated soil cover (i.e., alluvium, topsoil), or alternatively a combination of an asphalt cover for use as a parking lot and a vegetated soil cover. The surface exposure pathways, and therefore potential human health exposures via these pathways, will be eliminated with the placement of either cover. This work plan has been prepared by MFG, Inc. (MFG) for Newmont Mining Corporation (Newmont) and the California Department of Parks and Recreation (CDPR).

2.0 SCOPE OF WORK PLAN

This work plan provides a description of the RDP, the potential surface exposure pathways, the cover design (the priority action measure), and details on implementation. The work plan also includes the Sampling and Analysis Plan to support the work plan.

The description of the RDP and the exposure pathways is presented in Section 3. Section 4 of the work plan describes the priority action measure that will be used to eliminate the potential surface exposure pathways. The Sampling and Analysis Plan (SAP) is included as an attachment to this work plan, with a summary discussion of the SAP in Section 5. Sections 6 and 7 address the implementation and the construction specifications for the cover and Section 8 describes the priority action completion report.

3.0 RDP DESCRIPTION AND EXPOSURE PATHWAYS

The RDP is located within the Empire Mine State Historic Park (SHP). Various historic gold mining related sites are located within the SHP. One of these is the RDP, which is a remnant sulfide material stockpile associated with historic milling activities, located adjacent to the ruins of the Empire Mine cyanide plant. Figure 1 shows the location of the RDP. The RDP is approximately 4 acres in size, with a relatively flat surface devoid of vegetation. The surface materials have a low pH (~2.75-3.0) and are acid generating.

In 1992, Harding Lawson and Associates completed a Preliminary Endangerment Assessment (PEA) of the SHP for the California Department of Parks and Recreation (CDPR) (HLA, 1992). The PEA identified elevated levels of arsenic, lead, mercury, and cadmium in the RDP surface materials, and determined that these constituents pose a potential risk to children from direct contact through inhalation and ingestion.

The Draft Industrial Stormwater Pollution and Prevention Plan for the Empire Mine State Historic Park (Considine and Dobrovolny, 2005) identifies additional potential contaminant concerns associated with the RDP as stormwater runoff containing sediment and unacceptable levels of soluble metals from the RDP surface.

Based on these two assessments, the exposure pathways of concern addressed by this work plan are:

1) Ingestion of surface material
2) Inhalation of surface material
3) Direct dermal contact
4) Stormwater runoff containing soluble metals in elevated concentrations

4.0 COVER DESCRIPTION

A vegetated imported soil cover or a combination of an asphalt and vegetated cover will be constructed to eliminate the surface exposure pathways. The cover type will be determined based on the desired future land use of the RDP. Waste rock from an adjacent construction project (The Adit Tunnel Waste Rock - AWR) will be incorporated into the surface of the RDP prior to cover construction. The vegetated cover design will consist of incorporating a neutralizing amendment into the upper 12 inches of the AWR/RDP material, placing 18 inches of imported soil cover, and establishing vegetation. This will entail locating soil from a local commercial borrow location for use to cover the RDP to a depth of approximately 18 inches. The selection of the imported soil cover will be consistent with the California Department of Toxic Substances Control (DTSC) Information Advisory For Clean Imported Fill Material (DTSC, 2001). Alternatively, an asphalt cover could be constructed over a portion of the RDP, suitable for use as a vehicle parking lot. The asphalt cover design will consist of placing a geosynthetic liner on the subgrade of the parking area, a compacted road base layer, and a asphalt surface on a portion of the RDP level surface area and a vegetated cover design on the remaining portion of the level surface area and along the out slope portions of the RDP. The thickness of the road base and asphalt layers will be designed to support anticipated vehicle loads.

Because the pH of the existing surface material is too low to support plant growth, a neutralizing amendment (lime + limestone) will be incorporated into approximately the top 12 inches of the RDP surface material. The lime amendment will be added to neutralize the existing acidity within the material, and the limestone will control any long-term acid-generation potential. This will increase the pH and minimize the availability of metal constituents within the material in the event vegetative root penetration occurs through the soil cover or moisture wicking occurs into the soil cover. The lime amount will be calculated to prevent over-amending of the soil to an alkaline condition. The neutralizing amendment may be modified based on the results of material characterization described in Section 5.0, and in consultation with the DTSC and the California Central Valley Regional Water Quality Control Board (CVRWQCB). After the neutralizing amendment is incorporated, the soil cover or asphalt cover will be constructed on the RDP.

For the soil cover, a commercial inorganic amendment will be added with initial planting or seeding activities to promote plant emergence and establishment for the vegetated cover. This inorganic amendment composition will be determined by site specific soil sampling and analysis of the imported soil cover to determine any nutrient deficiency.

The vegetated cover design or the asphalt parking lot will isolate the RDP surface materials and stabilize the cover surface. Drainage at the RDP will be controlled to divert upgradient stormwater away from the RDP. All operations will be scheduled such that impacts to park visitors will be minimized.

5.0 SAMPLING AND ANALYSIS PLAN

To characterize the RDP material, the Adit Project waste rock (AWR) and determine the amount of neutralizing amendment required for the RDP/AWR mixed surface, prior to placement of borrow cover, the RDP and AWR will be sampled and analyzed for total metals, acid generation potential, the State of Nevada Meteoric Water Mobility Procedure (MWMP) analysis, and a Modified State of California Waste Extraction Test (WET). This section provides a summary of the Sampling and Analysis Plan (SAP) and Table 1 provides a summary of total number of samples and number submitted for each type of analysis. The complete SAP is located in Appendix A. Samples will be labeled and shipped to a designated California certified analytical laboratory, following chain-of-custody protocol discussed in the SAP. The following provides a summary of the sampling and analysis to be conducted on the different materials at the site.

Table 1 Summary of Number of Samples and Analyses

Sample Type	Individual Samples	ABA Analysis	Total Metals	Composite Samples	MWMP Analysis	WET Analyses
RDP Surface	20	20	10	10	10	4
RDP Subsurface	5	5	5	5	5	2
RDP Foundation Materials	5	5	5	0	5	0
AWR	5	5	5	0	5	2
RDP/AWR Amended[1]	5	5	0	5	5	2
TOTAL	**40**	**40**	**25**	**15**	**30**	**10**

[1]Blended composite RDP samples and AWR samples, amended with lime and limestone

5.1 RDP Surface Material Sampling and Analysis

Samples of the RDP material will be collected to evaluate chemical concentrations in near-surface material. The sampling will include five (5) samples per acre on the RDP, for a total of approximately 20 samples. Five of the surface samples will be co-located with the subsurface samples, described in section 5.2, the remaining 15 samples will be randomly located on the RDP, as described in the SAP. The samples will be collected to an approximate depth of 12 inches and then split into separate containers for the various sets of analyses.

The surface samples will be analyzed for the following, as described below: (1) Acid Base Accounting, (2) Total Metals, (3) MWMP, (4) Modified WET, (5) MWMP of amended material, and (6) modified WET of amended material.

5.1.1 Acid Base Accounting and Paste pH

The pH of all 20 samples will be determined, and the $CaCO_3$ equivalent amount required to raise the pH to approximately 6.5 will be calculated. This provides an approximation of the amount of short-term neutralizing amendment (lime) that is required to neutralize the current acidity present in the surface material.

The long-term acid generation potential will be evaluated with static acid base accounting (ABA) testing. Both the Acid Neutralization Potential (ANP) and Acid Generating Potential (AGP) of the samples will be determined. The ANP will be determined by EPA Method 600. The AGP will be evaluated by the LECO (modified Sobek) method, which provides the sulfur forms (non-extractable, pyritic, and sulfate sulfur) including total sulfide sulfur. The result of the two analyses gives the net neutralizing potential (NNP). This will be used to determine the limestone requirements for amending the material to a suitable pH over the long term. To ensure adequate limestone addition, limestone additions will be calculated at a 3:1 $CaCO_3$ equivalent neutralization potential to acid generation potential as recommended by U.S. Bureau of Land Management, U.S. Forest Service and multiple state mine regulatory agencies. This 3:1 ratio is used by these agencies in evaluating neutralization of long-term acid generation potential using LECO sulfide/sulfur analysis. The average amount of lime and limestone required will be calculated to determine the actual field applied amendment, as described in section 5.3.3.

5.1.2 Total Metals

Total metals analysis will be preformed on 10 of the 20 surface samples collected. The 10 samples selected for total metals analysis (for the CAM-17 metals) will be based on direct in-situ XRF screening of metal content of each sample so that the 10 selected represent the range of material conditions present on the surface. A portable field XRF instrument screening will be conducted at each surface sampling location. Field XRF analysis will conducted for all CAM-17 constituents which the XRF instrument has the ability to analyze. These constituents include As, Cr, Co, Pb, Hg, Mo, Ni, Se, and Zn. The standard operating procedures for the XRF are included in the Trails Work Plan SAP.

5.1.3 MWMP and Modified WET Analysis

The 20 original surface samples will be combined into 10 composite samples for MWMP analysis. The samples will be combined based upon the ABA results distribution such that similar samples will be grouped together, and the 10 will represent the full range of ABA results. Four of the 10 composite samples, selected to be representative of the range of ABA results, will also be analyzed for modified WET analysis. The WET test will be modified such that it uses DI water instead of citric acid.

5.2 RDP Subsurface Material Sampling

Five test pits will be located on the RDP: 3 on/near crest of slope on the Cyanide plant side of the pile, 1 on the opposite side of the pile, and 1 in the central area of the pile to characterize the volume of material present within the RDP. The pits will be excavated to the foundation material, or maximum of 15-20 feet, depending upon pit sidewall stability and excavation equipment capability, if foundation material is not encountered. One sample will be collected for each general material type encountered within each test pit, with a minimum of 1 sample per test pit. Variations in material type will be determined visually by noting any significant differences in grain size and material color. Foundation material will also be sampled where it is encountered.

5.2.1 Acid Base Accounting

The long-term acid generation potential will be evaluated with static acid base accounting (ABA) testing. Both the Acid Neutralization Potential (ANP) and Acid Generating Potential (AGP) of each subsurface sample will be determined. The ANP will be determined by EPA Method 600. The AGP will be evaluated by the LECO (modified Sobek) method, which provides the sulfur forms (non-extractable, pyritic, and sulfate sulfur) including total sulfide sulfur. The result of the two analyses gives the net neutralizing potential (NNP). The ratio of the NNP to the AGP is the Net Acid Generating Potential, which will be used to determine any sampling composites that may be generated, as described in Section 5.2.2.

5.2.2 Total Metals, MWMP and Modified WET Analysis

Five subsurface samples and 5 samples of the RDP foundation, if encountered, will be selected for total metals and MWMP (for the CAM-17 metals) analysis. If more than 1 mine waste material is encountered in the pits, the pit samples will be grouped for MWMP analysis based upon similar ABA results, and only the sample with the highest AGP per test pit will be analyzed for total metals. Foundation material will not be grouped, and no more than 2 mine waste samples will be combined into one sample unit for analysis. Two of the mine waste samples, and 2 of the foundation material samples, if available, will also be analyzed with the modified WET procedure for the CAM-17 metals. These 2 samples will be selected to be representative of the range of ABA results.

5.3 Adit Waste Rock Characterization

The Adit waste rock will be incorporated into the RDP surface, and amended with Lime and limestone prior to the installation of the borrow cover. The volume of the available Adit waste rock (AWR) will be determined from the estimated area, and estimated depth, and the AWR will also be sampled for

characterization and to determine the amount of neutralizing amendment that may be required. Five total samples will be randomly selected from the available AWR.

5.3.1 Acid Base Accounting

The long-term acid generation potential will be evaluated with static acid base accounting (ABA) testing. Both the Acid Neutralization Potential (ANP) and Acid Generating Potential (AGP) of each AWR sample will be determined. The ANP will be determined by EPA Method 600. The AGP will be evaluated by the LECO (modified Sobek) method, which provides the sulfur forms (non-extractable, pyritic, and sulfate sulfur) including total sulfide sulfur. The result of the two analyses gives the net neutralizing potential (NNP). This will be used to determine the limestone requirements for amending the material to a suitable pH over the long term. To ensure adequate limestone addition, limestone additions will be calculated at a 3:1 CaCO3 equivalent neutralization potential to acid generation potential as recommended by U.S. Bureau of Land Management, U.S. Forest Service and multiple state mine regulatory agencies. This 3:1 ratio is used by these agencies in evaluating neutralization of long-term acid generation potential using LECO (Modified Sobek) sulfide/sulfur analysis. The average amount of lime and limestone will be calculated to determine the actual field applied amendment, as described in section 5.3.3.

5.3.2 Total Metals, MWMP and Modified WET Analysis

Each of the 5 AWR samples will be analyzed for Total Metals and MWMP, and 2 will also be analyzed with the modified WET procedure, all for the CAM-17 metals. The 2 selected for the WET procedure will be representative of the range of ABA results of the samples.

5.3.3 Acid Base Accounting, MWMP and Modified WET Analysis of Amended/blended Materials

A total of 5 samples will be prepared for the amended MWMP and modified WET analysis. The 5 amended samples will also be analyzed for the complete Acid Base Accounting, to characterize the material, as amended. Five of the composite samples of RDP surface material, described in section 5.1.3, will be selected to represent the range of the ABA results. These 5 will be combined with the 5 AWR samples, in the proportions expected to represent the top 12 inches of the surface of the amended RDP prior to placement of borrow cover. The amount of lime and limestone that is required from the surface amendment neutralization characterization analysis described in section 5.1.1 for the surface materials, and 5.3.1 for the AWR will be determined based upon the average requirements for each material type, and the percent by volume of each material that is expected to occur in the top 12 inches of the constructed cover, before addition of borrow soils. The lime and limestone amount will be mixed

together with the combined RDP surface and AWR samples for further analysis. All 5 amended samples will be analyzed with the MWMP and the ABA, and 2 of those will also be analyzed with the modified WET test. The leachate from the both extractions will be analyzed for the CAM-17 metals. The MWMP and modified WET test will be used to determine the concentrations of metals and cations that potentially could be mobilized from the amended material.

6.0 FINAL COVER DESIGN

The cover design will incorporate the following components:

- Stormwater and dust control construction best management practices (BMPs) – temporary BMPs, such as silt fencing and fiber rolls, will be installed at appropriate locations along the RDP perimeter to control stormwater run-on and runoff, erosion, and sediment transport during construction activities. Procedures, such as water application or suspending actions during high wind conditions, will also be employed to minimize dust generation during grading and cover placement activities.
- RDP surface grading – The RDP will be regraded to produce stable slopes and grades for cover placement. The available waste rock from the Adit project will be incorporated into the surface of the RDP during regrading. RDP material existing along the margins of the pile will be excavated and consolidated onto the pile. The margins of the pile will be defined by visual observations, based on surface material color, composition, and presence of vegetation, and be no more than 30 feet from the approximate crest of the pile. Field reconnaissance of the margins will be preformed with representatives from DTSC and CVRWQCB. The side slopes of the RDP will be regraded to a slope no steeper than 3H:1V. The top surface of the RDP will be graded to a slope appropriate for the cover type (soil or asphalt). For the vegetated cover, the top surface will be graded to a slope that promotes positive, non-erosive stormwater runoff. For the asphalt cover, the top surface will be graded to provide positive drainage from the parking lot surface.
- Neutralizing amendment – The upper approximately 12 inches of the RDP beneath the area of the vegetated cover surface will be amended with a combination of lime and limestone to neutralize both the short-term and long-term acid generating potential of the RDP materials. The amount of lime and limestone will be based on the analytical results of the samples previously described and may be modified in consultation with the DTSC and CVRWQB. The neutralizing amendment will be incorporated by disking, where approximately one-half of the lime and limestone are incorporated with each disking operation. Following disking, field paste pH analysis will be conducted on samples collected on approximate 100 foot centers to ensure adequate lime amendment addition. Field paste pH values will not exceed a field paste pH of 8.
- Cover placement - After the neutralizing amendment is incorporated, a suitable soil cover media or an asphalt cover will be placed over the surface to cover the materials. For the soil cover, commercially available borrow sources will be identified and analyzed for texture, organic matter, and nutrients to determine effectiveness for revegetation and fertilizer needs. The borrow soil cover will be a thickness of approximately 18 inches. Vegetation will be established on the cover to provide surface stabilization. The cover and adjacent areas disturbed during construction will be seeded with a mixture of native and interim plant species (i.e., grasses, forbs, shrubs) that are appropriate for the area based upon the climate, native species in the area, and cover density requirements. Native shrub planting will be investigated to determine if such planting is necessary to establish interim vegetative stability. If the parking lot is selected, the asphalt cover will consist of a geosynthetic liner placed on the RDP beneath the parking area, an imported road base material layer, and the asphalt layer. The thickness of the road base and asphalt layers will be designed to support anticipated vehicle loads according to standard and accepted practices. The vegetated cover will placed on the remaining portion of the RDP outside of the parking lot.
- Stormwater management control – Stormwater management control measures will be incorporated in the design to divert surface water run-on and to convey surface water runoff from the covered RDP. It is anticipated that the control measures will consist of upstream diversion and downstream conveyance channels, lined with vegetation, rock, or concrete to reduce flow

velocities and prevent erosion. The stormwater management controls will be designed to convey the runoff resulting from a 100-year, 24-hour precipitation event.

7.0 CONSTRUCTION SPECIFICATIONS FOR IMPLEMENTATION

Written construction specifications will be developed for the final cover design. These will include a grading plan, drainage control, revegetation plan, inclusive of species selected, paving plan, if selected, and an implementation schedule. The project will include best management practices (BMPs) and standard methods and procedures (SMPs). In addition, an implementation plan will be developed for the specified control measure that includes schedule, contractor selection, and Health and Safety Plan (HASP).

8.0 COMPLETION REPORT

A completion report will be prepared to document the sampling and analysis results, cover design, and construction. A maintenance plan will be included in the completion report. The completion report will be submitted to the DTSC and the CVRWQCB within 90 days following completion of the work implementing this 2006 Priority Action Work Plan.

9.0 REFERENCES

California Department of Toxic Substances Control (DTSC), 2001. Information Advisory Clean Imported Fill Material. State of California, Environmental Protection Agency, Department of Toxic Substances Control. October.

Considine, K. and L. Dobrovolny, 2005. DRAFT Preliminary Industrial Stormwater Pollution Prevention Plan for Empire Mine State Historic Park. California Department of Parks and Recreation. Revision 7. November 28.

Harding Lawson and Associates (HLA), 1992. Preliminary Endangerment Assessment, Empire Mine State Historic Park, Grass Valley, California, prepared for the Department of Parks and Recreation, Gold Mine District, 10556 East Empire Street, Grass Valley, California 95945.

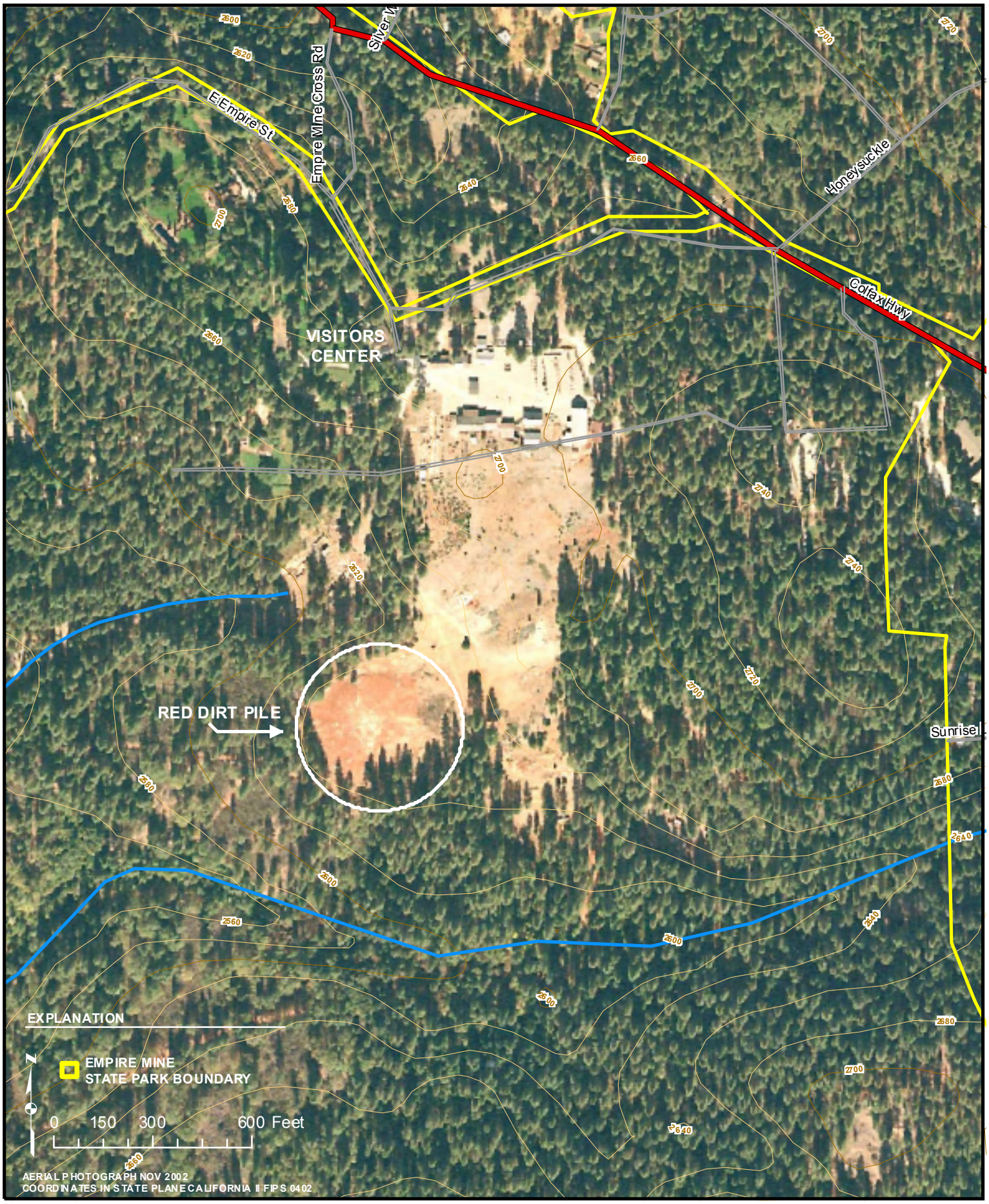

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FIGURE 1
RED DIRT PILE
EMPIRE MINE STATE HISTORIC PARK

Date:	JUNE 2006
Project:	010156
File:	RDP.mxd

APPENDIX A
SAMPLING AND ANALYSIS PLAN

SAMPLING AND ANALYSIS PLAN
EMPIRE MINE STATE HISTORIC PARK
RED DIRT PILE

JULY 2006

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TABLE

1.0 INTRODUCTION

The purpose of this Sampling and Analysis Plan (SAP) is to support the Red Dirt Pile (RDP) 2006 priority removal action. Sampling activities will consist of the collection of RDP and Adit project Waste Rock (AWR) material samples at the Empire Mine State Historic Park (SHP). These samples will be analyzed and the results will provide a characterization of the materials and the basis for the determination of the amount of neutralizing amendment that will be needed to be incorporated in the cover design.

This Sampling and Analysis Plan (SAP) addresses the following issues:

- The environmental media to be sampled
- Specific sampling locations for those media
- Data collection methods
- Chemicals of interest to be monitored
- Chemical analytical methods and associated detection limits

2.0 FIELD ACTIVITIES AND METHODS

This Sampling and Analysis Plan contains information necessary to understand what, where, and how data will be collected for the RDP. The field activities are scheduled to occur in 2006.

Samples will be collected at the RDP and AWR to characterize the material and evaluate net neutralization potential (NNP) and metal mobility of soil/surface material. An excavator or backhoe will be used for sampling. Samples will be collected, by shovel, from each backhoe/excavator bucket full and placed on a plastic sheet for mixing, as necessary. All sampling equipment (bowls, trowels, augers, etc.) will be stainless steel, and will be decontaminated before sampling. Equipment decontamination will use one or more of the following: a tap water rinse, a soap and tap water wash, a dilute HNO3 rinse (10 parts de-ionized [DI] water to 1 part concentrated HNO3) and a DI water rinse followed by air drying. Equipment will be decontaminated between samples by visually inspecting sampling equipment for adhered soil and using a disposable paper towel or stiff brush will be used to remove any visible material.

Five locations on the RDP will be sampled for surface and subsurface materials. Fifteen additional surface sampling sites will be randomly located at the RDP. A metals screening analysis of the RDP surface materials using a portable field XRF instrument will be conducted at each surface sampling location. Field XRF analysis will conducted for all CAM-17 constituents which the XRF instrument has the ability to analyze. These constituents include As, Cr, Co, Pb, Hg, Mo, Ni, Se, and Zn. Surface samples will be collected to a depth of approximately 12 inches. Subsurface samples will be collected from each material type encountered in the test pit, to a maximum depth of 15-20 feet, dependant upon stability of pit and depth of materials. If Foundation materials are encountered before the 15-20 foot depth, excavation will cease. One sample of each material type in the test pit, inclusive of foundation materials, will be taken.

Additionally, 5 samples will be randomly selected and collected from the AWR. RDP samples will be mixed and split into 2 containers: 1-5 gallon bucket, and 1-1 gallon heavy duty plastic storage bag. AWR samples will be mixed and split into 3 containers: 1 – 5 gallon bucket, ½ of 1 – 5 gallon bucket, and 1 – 1 gallon heavy duty plastic storage bag. Samples will be labeled and shipped to the designated laboratory according to Sections 4 and 5.2, following chain-of-custody protocol discussed in Section 5.2. The samples will be submitted for chemical analysis for the parameters listed in Tables 1 and 2.

Paste pH measurements of the RDP surface will be conducted in the field following incorporation of the neutralizing amendment to ensure adequate lime amendment addition. Samples will be collected to a

depth of 12 inches on approximate 100 foot centers. The field paste pH measurements will be performed according to USDA No. 60 (21a) method.

3.0 SAMPLE LOCATIONS, FREQUENCY, AND QUALITY CONTROL SAMPLES

3.1 Sample Locations and Frequency

The RDP is approximately 4 acres in size (see Figure 1 of the Red Dirt Pile 2006 Priority Action Work Plan). Fifteen of the RDP surface sample locations will be randomly selected. The approximate center of the RDP will be located, and used as the origin point. The RDP will be split into 4 quadrants, and random directions and distance (less than the distance to the margin of the RDP) will be selected from a random number generator for each point and flagged. The flagged spots will be the sample locations and each sample location will be field surveyed using hand-held GPS instrumentation.

Five test pits will be located on the RDP for surface and subsurface sampling: 3 on/near crest of slope on the Cyanide plant side of the pile, 1 on the opposite side of the pile, and 1 in the central area of the pile to characterize the volume of material present within the RDP.

Five AWR sample locations will be randomly selected. The approximate center of the AWR dump will be located and random directions (0-365) and distance (less than the distance to the edge of the dump) will be selected from a random number generator for each point and flagged. The flagged spots will be the sample locations and each sample location will be field surveyed using hand-held GPS instrumentation.

3.2 Quality Control Samples

Duplicate samples will be collected and submitted to the laboratory to evaluate the precision and reproducibility of sampling and analysis procedures. Duplicate soil samples will be submitted for laboratory analysis at a minimum of one duplicate sample for every 20 soil samples and will .represent a split of the soil sample collected in the field. The duplicate soil samples will be preserved, packaged, and handled in the same manner as the soil samples. No equipment blanks or field blanks will be collected.

4.0 SAMPLE IDENTIFICATION AND LABELING

4.1 Sample Identification

Samples collected at the Site will be designated using the nomenclature system described in this section. Information provided in the sample ID will include Sample location and sample type. The sample identifications will be in the form of:

WWW/XX/##

Where WWW is sample location (RDP or AWR), XX is the sample ID, ## is sample type (01=primary, 02=duplicate).

4.2 Sample Labeling

Each sample that is collected in the field will be labeled for future identification. Sample labels will be filled out as completely as possible by a member of the sampling team prior to the start of the day's field sampling activities. The date, time, sampler's signature, and the last field of the sample identification number should not be completed until the sample is actually collected. All sample labels will be filled out using waterproof ink. At a minimum, each label will contain the following information:

- Sampler's initials
- Sampler's company affiliation
- Site location
- Sample identification number
- Date and time of sample collection
- Analyses required
- Sample type
- Sampler's signature

Sample designation, sampling time and date, sampling personnel, and analyses will also be recorded on the field records, sample labels, and chain-of-custodies.

5.0 SAMPLE HANDLING AND CUSTODY

5.1 Sample Handling

After collection, samples will be labeled as described in the previous discussion, and preserved according to Table 1. Samples will be placed on ice in an insulated cooler for delivery to the laboratory. The ice in the cooler will be double-bagged. The coolers will include the chain-of-custody form, taped shut and chain-of-custody seals will be attached to the outside of the cooler to ensure that the cooler cannot be opened without breaking the seal.

All samples will be shipped for laboratory receipt and analysis within the holding times specified in Table 1. Prompt shipping and analysis should be done to minimize the possibility of exceeding holding times.

5.2 Sample Custody

After samples have been collected, they will be maintained under strict chain-of-custody protocols, as described in the Project QAPP.

6.0 SAMPLE ANALYSES

The parameter list and associated analytical methods for analysis of the RDP material samples are listed in Tables 1 and 2. Targeted reporting limits, sample preservation and holding time requirements are also listed. Samples will be sent to a California certified laboratory. Laboratory reporting, quality control and assurance procedures and data validation protocol are presented in the project Quality Assurance Project Plan (QAPP). Samples will be analyzed by acid base accounting (ABA), total metals, the State of Nevada Meteoric Water Mobility Procedure (MWMP), and the State of California Waste Extraction Test procedure (WET - modified) for the CAM-17 metals.

Net Neutralization Potential Characterization

The potential for acid generation of the RDP, AWR, and amended composite RDP/AWR material will be evaluated with static ABA testing. In the ABA testing, both the Acid Neutralization Potential (ANP) and Acid Generating Potential (AGP) of the samples will be determined. The ANP will be determined by EPA Method 600. The AGP will be determined by the LECO method, which provides the sulfur forms (non-extractable, pyritic, and sulfate sulfur) including total sulfide sulfur. The difference between the AGP and ANP represents the net neutralizing potential (NNP).

Total Metals

The RDP and AWR samples will be characterized for total metals, using EPA 3050B/6020 for the CAM-17 metals.

Meteoric Water Mobility Procedure (MWMP) and modified Waste Extraction Test (WET)

The MWMP and modified WET will be used to determine the concentrations of metals and cations that potentially could be mobilized from the RDP, AWR, and the amended RDP/AWR blended material. The MWMP and modified WET extract of the samples will be analyzed for the CAM-17 metals listed in Table 2.

Table 1 Analysis Parameters and Methods for Acid Base Accounting

Analysis	Analytical Method	Minimum Sample Volume (g)	Preservation
pH (paste)	USDA No. 60 (21a)	225	Soil: Cool at 4° C for transport, no preservation needed.
Acid Neutralization Potential (ANP)	EPA 600 ($CaCO_3$ Equiv. / Titration)		
Acid Generation Potential	LECO Combustion IR[1]		
Non-extractable Sulfur, S	LECO Combustion IR[1]		
Pyritic Sulfur, S	LECO Combustion IR[1]		
Sulfate Sulfur, S (HCL Extractable)	LECO Combustion IR[1]		
Total Sulfur, S	LECO Combustion IR[1]		

[1] Modified Sobek method

Table 2 Analysis Parameters (CAM-17 Metals), Methods, Method Detection Limits, Holding Times, Sample Volumes and Preservation for Soil Samples

Analyte	Analytical Method	Target Method Detection Limit (mg/kg)[2]	Target Method Detection Limit (mg/l)[3]	Holding Time (days)	Minimum Sample Volume	Preservation
Antimony	MWMP-WET[1]/EPA 6020-EPA3050b/EPA 6010	2	0.0002	180	A) 12 kg (one 5 gallon bucket full per MWMP) B) 225 g for each WET and EPA3050b	Small samples: Cool at 4° C for transport (Large samples for MWMP do not need to be chilled), no preservation needed.
Arsenic	MWMP-WET[1]/EPA 6020-EPA3050b/EPA 6010	4	0.0005	180		
Barium	MWMP-WET[1]/EPA 6020-EPA3050b/EPA 6010	0.3	0.0001	180		
Beryllium	MWMP-WET[1]/EPA 6020-EPA3050b/EPA 6010	0.2	0.0001	180		
Cadmium	MWMP-WET[1]/EPA 6020-EPA3050b/EPA 6010	0.3	0.0001	180		
Chromium	MWMP-WET[1]/EPA 6020-EPA3050b/EPA 6010	1	0.00005	180		
Cobalt	MWMP-WET[1]/EPA 6020-EPA3050b/EPA 6010	1	0.00005	180		
Copper	MWMP-WET[1]/EPA 6020-EPA3050b/EPA 6010	1	0.0005	180		
Lead	MWMP-WET[1]/EPA 6020-EPA3050b/EPA 6010	4	0.0001	180		
Mercury	MWMP-WET[1]-EPA3050b/EPA 7470	0.02	0.0002	28		
Molybdenum	MWMP-WET[1]/EPA 6020-EPA3050b/EPA 6010	1	0.0001	180		
Nickel	MWMP-WET[1]/EPA 6020-EPA3050b/EPA 6010	1	0.0002	180		
Selenium	MWMP-WET[1]/EPA 6020-EPA3050b/EPA 6010	4	0.0015	180		
Silver	MWMP-WET[1]/EPA 6020-EPA3050b/EPA 6010	0.5	0.00005	180		
Thallium	MWMP-WET[1]/EPA 6020-EPA3050b/EPA 6010	20	0.00005	180		
Vanadium	MWMP-WET[1]/EPA 6020-EPA3050b/EPA 6010	0.5	0.00005	180		
Zinc	MWMP-WET[1]/EPA 6020-EPA3050b/EPA 6010	1	0.002	180		

[1] WET test modified to use DI water instead of citric acid
[2] Target Method Detection Limits (mg/kg) for Total Metals (EPA 3050b/6010)
[3] Target Method Detection Limits (mg/l) for MWMP and WET leachate analysis (EPA 6020)