Dicaperl Minerals Corp
EL Grande Mine
Permit No. TA002RE
Permit Modification Application

Submitted to

New Mexico Mining Act Reclamation Program

Energy, Minerals, and Natural Resources Department

1220 South St. Francis Dive

Santa Fe, New Mexico 87505

Submitted by

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August 27, 2018

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Table of Contents

List of Figures

List of Tables

Appendices

Section 1
Introduction

Dicaperl Minerals Corporation (Dicaperl) herewith submits this Site Wide Closeout Plan Update Application (Application), Permit Modification 16-1, Permit No. TA002RE, El Grande Mine, August 13, 2018. The Application contains a revised closeout plans and associated cost estimate that are required to comply with 19.10.5 New Mexico Administrative Code (Existing Mine Operations) and 19.10.12 (Financial Assurance Requirements). This Application supplements previous permit-related submittals including Dicaperl 1994 Site Assessment (Jenkins, 1995) and Dicaperl 1998 Closeout Plan Revision, (Dicaperl, 1998).

This Application provides updates that:

1. recognize the receipt and placement of super sacks containing perlite waste resulting from processing of perlite that originates from the Dicaperl's Socorro Mine and El Grande Mine,

2. calculate the closeout costs for current and anticipated future conditions including the addition of the areas receiving waste identified above, and

3. reflect the current and anticipated future conditions for mining and reclamation (i.e. closeout) for the El Grande Mine operations.

Over the last several years, Dicaperl has submitted numerous documents to the State of New Mexico Energy, Mineral and Natural Resources Department, Mining and Mineral Division (MMD) in support of the Application. A compilation of these submittals in summarized in Table 1-1.

Table 1-1 Compilation of Dicaperl Application Submittals to MMD

Date	Submittal Purpose
December 23, 2014	Application to modify Permit No. TA002RE for the El Grande Mine. The modification addressed 1) receipt and placement of super sacks containing perlite waste resulting from processing of perlite that originates from the Dicaperl Socorro and El Grande operations, 2) updates the closeout costs for current and anticipated future conditions including the addition of the areas receiving waste identified above, and 3) current and anticipated future conditions for mining and reclamation
July 4, 2015	Response to MMD May 4, 2015 Request for Additional Information (RAI). The response addressed 1) anticipated future operations, 2) dump plans, 3) waste receiving plan, 4) vegetation and revegetation, 5) stability, 6) cover material, and 7) closure costs.
January 14, 2016	Stand-alone permit modification for disposal of super sacs containing inert waste material at the Dump 1Ea location.
February 5, 2016	Response to October 23, 2015 Request for Information (RAI). The response addressed 1) dump plan slope, 2) soil salvage, 3) vegetative support, 4) soil cover QA/QC plan, 5) sediment pond design, 6) seeding and reclamation, 7) demolition, and 8) closure costs.
July 21, 2016	Response to June 7, 2016 Request for Information (RAI). The response addressed 1) demolition plan and schedule, 2) vegetation success work plan, 3) cost estimating, 4) water usage for dust suppression, and 5) stormwater basins.
November 30, 2016	Response to October 26, 2016 e-mail. The response addressed 1) surface area updates for exploration trenches, 2) verified dozer push distances, 3) verified demolition costs, and 4) verified cost/acres for seed mix.

Date	Submittal Purpose
October 20, 2017	Response to May 10, 2017 comments. The responses addressed 1) building foundation area, 2) SRCE spreadsheet update, 3) exploration footprint acres, 4) diesel pricing, and 5) cost location factors.
February 26, 2018	Response to December 8, 2017 comments. The responses addressed 1) reclamation cost, 2) reclamation period, and 3) building demolition.

The documents listed in Table 1, along with MMD's corresponding comment documents, were reviewed in preparation of the Application. This Application provides a comprehensive compilation of the agreed upon provisions.

1.1 Background

The Dicaperl El Grande Mine is located in Taos County in northern New Mexico. The Mine is accessed from U.S. Route 285, approximately seven (7) miles north of Tres Piedras and about thirty-eight (38) miles northwest of Taos New Mexico. The Colorado border is approximately eighteen (18) miles north of the facility. Figure 1-1 illustrates the location of the Dicaperl El Grande mine site.

The El Grande Mine perlite ore was formed during the prevalent volcanic and tectonic activity that characterized the region during the Pliocene epoch approximately 3 to 6 million years ago and in conjunction with igneous processes where molten rock migrated into a "dome" formation.

Perlite, an amorphous volcanic glass having a relatively high-water content, typically is formed by the hydration of obsidian. The mineral occurs naturally and has the property of expanding when heated. Processed perlite is often used for insulation, textural coatings, filter aid, and soil amendment.

The Antonito Plant, located approximately 4.5 miles north of the Colorado/New Mexico border along U.S. Route 285, receives and processes perlite ore from both the Socorro and El Grande quarries, only. The El Grande site accepts waste from the Socorro and El Grande quarries. The only waste placed at the El Grande site originates from the Socorro Mine and El Grande Mine.

During the processing of perlite ore at the Socorro facility, cyclone overflow (fine material) is routed to the baghouse where it is collected in super sacs as waste. These ores are transported to the Antonito plant for processing. There is no blending of waste and no outside materials are added to the fines. Waste material from the Antonito plant consists of fine expanded perlite (which is not marketable) and unexpanded materials (which dropped from the furnace during the expansion process). These materials have the same chemical makeup as perlite, which is a silica based matrix. All the rock processed in Antonito facility is a form of Rhyolitic perlite, rhyolite, perlite, or obsidian. The rock is deemed an inert material and would not generate pollutants to groundwater.

Both the perlite waste material and the polypropylene sack material are relatively inert and pose little risk to workers or the environment. Appendix A contains the SDS's for both materials. As these documents indicate, these materials are non-toxic, require little in the way of special handling, and pose little to no risk of environmental contamination when properly managed.

1.1.1 Physical Location and Mailing Address

El Grande Mine Dicaperl Minerals Corp.
39088 U.S. Highway 285
Tres Piedras, NM 87577
Latitude: 36° 44’ 30.30” N
Longitude: 105° 58’ 9.09” W

1.1.2 Contact Information

Responsible Parties Facility Operator:

Allen Norris
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Socorro, NM 87801
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Designated Agent for this submittal on behalf of Dicaperl:

Jon Nickel, BCES, CHMM
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1.1.3 Environmental Permits

Close Out Plan	TA002RE
NMED Air Quality	NSR 1770-M2
Stormwater Pollution Prevention Plan	NMR05A5211

1.2 Previous Operations

The El Grande Mine has operated for over 60 years. The facility was originally permitted in 1997 as an existing mine. The permit (Closeout Plan) was amended in 1998. The permitted operation included a quarry (pit), processing mill, six waste ore dumps (1A, 1B, 1C, 1D, 1E, and 2A), and associated roads. Waste ore dump 2A will be developed after completion of ore dump IE. All active ore dumps, except 1E, have been closed, graded, and vegetated. The ore dump designated 1E is still being used. The ore Dump 2A site straddles an existing road. The reclamation plan for the closed dumps is provided in Section 3.

1.3 Current Operations

Currently, the El Grande Mine is conducting minimal mining, along with monitoring and maintenance activities. With respect to Dump 1E, there is still capacity for additional waste placement. A portion of Dump 1E is designated for current and future receipt of waste material from the Antonito processing plant.

1.4 Future Operations

Mined perlite is shipped from the El Grande and Socorro Mine to the Antonito processing plant. Waste from the processing of the perlite at the Antonito plant continues to be received by the El Grande operation and placed in the locations identified by this Application. At any time one or both of the operations may be fully operational. Regardless of the mine source, processing waste will continue to be received from the Antonito plant by the El Grande operation in the manner detailed in this Application.

Section 2
Hydrogeologic Characteristics

The El Grande Mine is located in an area characterized by a high semi-arid landscape established on a predominantly volcanically derived surface. The elevation at the mine is approximately 8,400 feet above mean sea level (amsl). The mine is located on the western flank of No Agua Peak, an erosional remnant of a rhyolite dome on the southwestern portion of the Taos Plateau. The following sections detail the site-specific attributes of the mine setting.

2.1 Geology

The Perlite deposit for the El Grande Mine was formed in high silica-rhyolite lava flows that were deposited during the Pliocene (Ennis, 2011). The No Agua Peak is surrounded by andesites and basalts, similarly of volcanic origin. Figure 2-1 illustrates the surface geology of the Taos Plateau and a geologic cross-section that includes No Agua Peak and the El Grande Mine (Johnson and Bauer, 2011).

2.2 Hydrology

The Taos Plateau is underlain by an unconfined regional aquifer within the Servilleta Basalt and upper Santa Fe Group. Groundwater flow is predominantly west to east from the Tusas Mountains toward the Rio Grande gorge. Depth to groundwater in the vicinity of the El Grande Mine is approximately 1,000 feet. Groundwater quality is characterized as warm, high total dissolved solids and elevated Ca, Mg, F, and Li (Johnson and Bauer, 2011).

The El Grande Mine is located within the surface drainage basin of the Arroyo Aguaje de la Petaca, which is an ephemeral arroyo directly to the west of the No Agua Peaks. The arroyo flows only in response to rainfall events. From the area of the El Grande Mine the arroyo courses for a distance of approximately 40 miles before it reaches the Rio Grande gorge.

2.3 Climate

The region is characterized as semi-arid, dry and sunny, with precipitation falling generally as summer thunderstorms. The area experiences a short growing season due to low nighttime temperatures and high altitude. Annual precipitation ranges from 10 to 14 inches with only about 13 to 18 percent as snowfall (Garrabrant, 1993).

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Section 3
Proposed Plan

Dicaperl intends to continue future mining and reclamation activities as economics dictate. For this reason, this Application is providing a mining plan for the quarry and for future overburden placement that will allow future mining to occur. It is also anticipated, as mentioned previously, that mining will continue at both the El Grande Mine and Socorro Mine and the waste from the processing of ore from both operations at the Antonito plant will continue to be received by the El Grande Mine.

The El Grande Mine is currently conducting minimal mining, as well as monitoring and maintenance activities with no milling. El Grande currently receives waste from the Antonito plant that is produced through the processing of ores from the Socorro Mine operation. Further detail regarding the planned activity for the receipt of the processed waste is provided below.

3.1 Mining Plan

Dicaperl has outlined a quarry which could reach 85 acres over the next 20 years. Sixty-five acres are already exposed and will not expand latterly but will expand in a vertical downward direction. Twenty acres may be developed to expose additional ore for mining. Figure 3-1 illustrates the limits of anticipated pit expansion.

3.2 Dump Plan

Figure 3-1 illustrates the locations of the EL Grande Mine features including Dumps 1A, 1B, 1C, 1D, 1E, 2A, South Dump, and overburden areas located around the periphery of the quarry. Dumps 1A, 1B, 1C, and 1D have all been graded to their final reclamation configuration. Dump 1E and Dump 2A have been identified for possible expansion during this closeout period.

Dump 1E is located directly northeast of the quarry. The Dump 1E footprint, measuring approximately 31 acres, has been regraded to final configuration as identified on Figure 3-1 in the area absent of color. Areas 1Ea, 1Eb, and 1Ec have been identified for further expansion in this Application.

Area 1Ea currently receives the waste perlite (derived from ore mined at the Dicaperl El Grande and Socorro Mines) from the Antonito processing plant. Area 1Eb is reserved for the future receipt of similar wastes to those deposited in 1Ea. Area 1Ec receives ore waste derived from the mining of ore from the quarry.

Dump 2A is located to the north of the area of 1E. Dump 2A, containing various sizes of perlite, expanded perlite waste and overburden, will become active upon the completion of Dump 1E. A minimum twenty (20) year life is anticipated for Dump 2A. The dump will be constructed in a manner to eliminate surface runoff and allow for reclamation as the dump is constructed.

It is also possible that in certain parts of the quarry perlite will be mined out. When adequate quarry space becomes available, all dumping will be back filled into the abandoned portions

of the quarry. This action will not increase the disturbed area since the quarry is already listed as disturbed. Dicaperl does not anticipate disposal of the super sacs in the quarry.

Figure 3-1 illustrates the locations and volumes of the existing Raton-rock outcrop-Orejas topsoil stockpiles. Each topsoil stockpile was given a unique identification number for clarity in stockpile location. Table 3-1 provides topsoil volumes, allocations, and the quantity of topsoil used (or available or reclaimed) at each reclamation area.

Table 3-1 Topsoil Source Locations, Unique Identification Numbers, and Volume

Topsoil Location	Topsoil Identification Number	Volume (Yards)
NE West Pit	1	7,164
South Side Main Pit	2	53,504
East Side South Pit	3	11,838
East End 1Eb	4	6,900
West Side South Pit	5	44,856
Dump 1D	6	3,888
Sides of Exploration 3A	7	21,889
South Side West Pit	8	10,935
	Total Topsoil	160,974

There is approximately volume of 161,000 cubic yards of Raton-rock outcrop-Orejas topsoil material available for reclamation on the El Grande site. The topsoil from future Dump 2A will be salvaged and stored at topsoil stockpile No. 7 located nearby Exploration area 3A. Approximately 10,224 cubic yards will be salvaged for storage and ultimate replacement on future Dump 2A. There is no vegetation to be grubbed from Future Dump 2A. After reclaiming Dumps 1Ea, 1Eb, 1Ec, 1E, future Dump 2A and exploration area 3A, the remaining topsoil available is 80,310 cubic yards of Raton-rock outcrop-Orejas. This volume will allow the Quarry to receive approximately 8 inches of cover over the existing ORP. The Quarry is comprised of ORP, for reclamation only topsoil (Raton-rock outcrop- Orejas) will be added as cover. The roads and the mill facility area will not have (Raton-rock outcrop- Orejas) topsoil added as cover, as those areas are observed to be constructed in Raton rock outcrop- Orejas material and no additional material will be added as cover.

Table 3-2 Topsoil Requirements

Areas to Be Reclaimed	Acres to Be Reclaimed	Required Volume (Yards)	Topsoil Depth (Inches)	Topsoil Stockpile Source Area	Total Volume Required for Reclamation (Yards)
Dump 1Ea	3	4,839	12	1	4,839
Dump 1Eb	4	2,325	6	1	6,453
		4,128	6	4	
Dump 1Ec	8	12,906	12	7	12,906
Dump 1E	16	2,772	6	4	25,813
		23,041	6	5	
Future Dump 2A	19	8.983	4	6	30,653
		10,935	4	8	

Areas to Be Reclaimed	Acres to Be Reclaimed	Required Volume (Yards)	Topsoil Depth (Inches)	Topsoil Stockpile Source Area	Total Volume Required for Reclamation (Yards)
		10,735	4	2	
Exploration 3A	5	8,389	12	2	8,389
Quarry	76.25	34,380	2	2	123,017
		11,838	2	3	
		21,815	2	5	
		3,888	2	6	
				Total Topsoil Placement	160,974

In addition, Dicaperl is proposing a test-plot study to identify alternative treatments regarding the cover on disturbed areas and the potential revegetation success of the various alternatives. The test plot will include an assessment of vegetation success using combinations of obsidian-rich perlite (ORP) with amendments (e.g. fertilizers based on results of soils sampling and testing), obsidian-rich perlite with six (6) inches of Raton-Rock outcrop-Orejas, obsidian-rich perlite with 6 inches of Raton-Rock outcrop-Orejas with soil amendments, and a mixture of topsoil and obsidian-rich material. The proposed approach for revegetation is presented in Section 4.

3.3 Waste Receiving Plan

The El Grande Mine receives approximately 2,000 tons of waste per year from the Antonito process facility in Colorado. The waste is shipped in polypropylene super sacks and is currently placed in the site identified as 1Ea. When the capacity in this area is reached, the material will be disposed in the area designated 1Eb. The active dump 1Ea has a minimum capacity of 9,840 tons allowing waste to be dumped here for approximately 5 years. Area 1Eb is reserved for the future receipt of similar wastes to those deposited in 1Ea and the minimum capacity of 43,732 tons will provide sufficient space for continued dumping. Dump 2A is the proposed future dump and has a minimum capacity of 600,000 tons providing sufficient additional storage. Table 3-3 illustrates the capacity of each dump.

Table 3-3 Dump Capacities

Location	Fill (Cubic yards)	Total Capacity (Cubic Yards)	Total Capacity (Tons)
Dump 1Ea	36,851	36,444	9,840
Dump 1Eb	162,185	161,971	43,732
Dump 1Ec	150,780	150,488	40,632
Dump 2A	226,775	222,222	600,000

Appendix B contains a Material Handling Plan that further describes methods, cover material, volumes, and reclamation stockpiles. Dicaprel will prepare a Quality Assurance/Quality Control (QA/QC) plan for submittal to MMD prior to commencing reclamation to assure a minimum of 24 inches of ORP mixed with Raton-rock outcrop-Orejas topsoil material is placed over dumps 1Ea containing Super Sacks. Dump 1Eb may be considered as a future location for super sack disposal if necessary. Dump areas 1E, 1Ec and future 2A will contain waste rock of varying sizes and a

minimum of 12 inches of Raton rock outcrop-Orejas topsoil will be added as cover. A mass balance for each area being reclaimed (Dumps 1E, 1Ea, 1Eb, 1Ec, 2A, 3A exploration, quarry, roads and Mill buildings) was conducted to determine the topsoil availability and best reclamation process for each area. The roads and mill facility area will not have topsoil (Raton-rock outcrop-Orejas) added as cover, as those areas are observed to be constructed in Raton rock outcrop-Orejas material and no additional material will be added as cover.

The technique implemented at El Grande of dumping and stacking is a unique process. Experience with past practices at the site suggest little concern with stability of the disposal area given the site orientation and buttressing from existing materials and natural ground. There are no known examples available to represent this type of super sack disposal.

Dumps 1Eb and 1Ec will be graded to the slope ratio of 3H:1V for the final configuration. The proposed future Dump 2A will follow the Dump Plan with the final slopes graded to 3H: 1V. The final elevation of Dump 1Eb and 1Ec will be a peak of 8485 ft above mean sea level (amsl) with the edges extending to 8475 ft amsl. Future Dump 2A will reach a final peak of 8500 ft amsl with the edges extending to 8475 ft amsl. Appendix C contains the reclamation design figures cross sections of Dumps 1E, 1Ea, 1Eb, 1Ec and future Dump 2A for final grading configuration.

Section 4
Environmental Impacts

This section describes the potential environmental impacts from mining operations. These impacts are discussed in accordance with the requirements of 19.10.5.508 NMAC.

4.1 Public Safety

Access to the El Grande Mine is from the nearby route US 285, which is located just to the west. Access by the public is controlled by a locked gate, which is locked any time that the site is unoccupied. Access for the remainder of the site is controlled through a combination of lack of access roads and fencing or is otherwise discouraged by very remote unimproved and unmaintained private jeep roads.

4.2 Wildlife and Vegetation

Potential species of concern at the El Grande Mine Site were identified based on knowledge of the plant associations and wildlife habitats at the site, using on-line environmental resources, and through use of the search function available through the Biota Information System of New Mexico (BISON-M 2014) and the Information, Planning, and Conservation System (IPaC) (USFWS 2014). On March 20, 2014, a site visit was conducted to observe and record the general plant communities and habitats within and near the El Grande site. On-line database resources for land cover, plant species, and habitat identification included the USGS National Gap Program (USGS GAP 2014), the New Mexico Rare Plants (NMRPTC 2014) website, the Southwest Regional Gap Analysis Project (SWReGAP 2014) and the Information, Planning, and Conservation System (IPaC) (USFWS 2014).

4.2.1 Wildlife

The BISON-M and IPaC search engines were specifically used to identify potential species of concern for the El Grande site. The BISON-M It was developed by the New Mexico Department of Game & Fish and The Fish & Wildlife Information Exchange (Conservation Management Institute, VA Tech, Blacksburg, VA). Other contributing agencies to the BISON-M system include Natural Heritage New Mexico (a division of UNM's Museum of Southwestern Biology), US Army Corps of Engineers, US Bureau of Land Management, US Bureau of Reclamation, US Fish and Wildlife Service, US Forest Service, and New Mexico State Land Office. The BISON-M database contains all vertebrate and many invertebrate species of wildlife occurring in New Mexico and includes all threatened, endangered and sensitive species.

The identification of potential species of special concern for the El Grande mine site included the following search criteria.

- County: Taos
- Taxonomy: fish, amphibians, reptiles, birds, mammals, mollusks, crustaceans, invertebrates

- Legal Status: federal threatened, endangered, and proposed, and state threatened and endangered
- Gap Analysis Habitat Associations: Pinyon/Juniper; and Woodland
- Eco Regions Habitat: Great Basin Sagebrush; and Colorado Plateau - Grama-Galleta Steppe/Juniper-Pinyon Woodland Mosaic

Based on these criteria, animal species of special concern were identified and are listed in Table 4-1. Upon closer examination of the habitat requirements of these species, specific knowledge of the site, and through discussion with the New Mexico Fish and Game, none of these species are likely to occur in the project area due to the lack of suitable foraging, nesting, or roosting habitat.

4.2.2 Vegetation

The search function within the New Mexico Rare Plants (NMRPTC 2014) website identifies 13 species for Taos County where the El Grande mine site is located. Table 4-2 provides a list of Species of Concern by both the USFWS and the state of New Mexico. It should be noted that none of these species are listed as threatened or endangered by a federal or state agency. The definitions of Species of Concern are as follows:

- Federal - A taxon for which further biological research and field study are needed to resolve their conservation status or are considered sensitive, rare, or declining on lists maintained by Natural Heritage Programs, State wildlife agencies, other Federal agencies, or professional/academic scientific societies. Source: Charlie McDonald, Regional Botanist, U.S. Forest Service, Southwestern Region
- State of New Mexico - A New Mexico plant species, which should be protected from land use impacts when possible because it is a unique and limited component of the regional flora. Sources: New Mexico Administrative Code, Title 19, Chapter 21 Part 2.8 (Criteria for inclusion of the endangered plant species list), and Robert Sivinski, State Botanist

Some of the thirteen (13) identified species have high state ranks, indicating that they may be Imperiled (S2) or even Critically Imperiled (S1). The species of greatest concern because of their high state rank are Delphinium robustum (Robust Larkspur) and Salix arizonica (Arizona willow), both of which are ranked S1. Based on a review of the habitat requirements of these species, it is unlikely that they are present within the El Grande project area due to the lack of alpine or forest habitat at high elevations in the case of Robust larkspur, and lack of sedge meadows and wet drainage ways in subalpine coniferous forest in the case of Arizona willow.

Table 4-1 Federal and State Threatened and Endangered Animal Species

Species	Status	Habitat Requirements	Likelihood of Occurrence
Birds			
Empidonax traillii extimus (Southwestern Willow flycatcher)	FE	For nesting, requires dense riparian habitats (cottonwood/willow and tamarisk vegetation). Saturated soils, standing water, or nearby streams, pools, or cienegas are a component of nesting habitat that also influences the microclimate and density vegetation component. Recurrent flooding and a natural hydrograph are important to withstand invading exotic species (tamarisk).	Unlikely to occur in the project area due to the lack of suitable habitat.
Coccyzus americanus (Yellow-Billed Cuckoo)	FT	Western yellow-billed cuckoos breed in dense willow and cottonwood stands in river floodplains.	Unlikely to occur in the project area due to the lack of suitable habitat.
Falco peregrinus anatum (Peregrine falcon)	ST	Breeding territories of peregrine falcons center on cliffs that are in wooded/forested habitats, with large "gulfs" of air nearby in which these predators can forage.	Unlikely to occur in the project area due to the lack of suitable habitat.
Strix occidentalis lucida (Mexican Spotted Owl)	FT	Primary habitat characteristics include high canopy closure, high stand density, a multi-layered canopy, uneven-aged stands, numerous snags, and downed woody matter. These are best expressed in old-growth mixed-conifer forests (usually more than 200 years old). This owl prefers virgin mixed-confer forests for roosting and that preference is key to its habitat requirements.	Unlikely to occur in the project area due to the lack of suitable roosting and foraging habitat.
Haliaeetus leucocephalus (Bald Eagle)	ST	The species is primarily water-oriented, and the majority of the populations occurring in New Mexico are found near streams and lakes. There are some "dry land" areas where these eagles occur; most notably in the region between the Pecos Valley and the Sandia, Manzano, Capitan, and Sacramento mountains, plus on the Mogollon Plateau.	Unlikely to occur in the project area due to the lack of suitable habitat.

Species	Status	Habitat Requirements	Likelihood of Occurrence
Falco peregrinus tundrius (Arctic Peregrine Falcon)	ST	A rare migrant, having been verified in the state only in the Roswell area. Key habitat areas are nest sites (eyries) and their vicinities, including both those that are currently occupied and historic ones that are still suitable for the species.	Unlikely to occur in the project area due to the lack of suitable habitat.
Mammals			
Mustela nigripes (Black-Footed ferret)	FE	The black-footed ferret depends exclusively on prairie dog burrows for shelter and is a highly specialized predator that depends upon prairie dogs for survival.	Unlikely to occur in the project area due to the lack of suitable habitat.
Lynx canadensis (Canada Lynx)	PT	Lynx habitat can generally be described as moist boreal forests that have cold, snowy winters and a high-density snowshoe hare prey base. The predominant vegetation of boreal forest is conifer trees, primarily species of spruce (Picea spp.) and fir (Abies spp.).	Unlikely to occur in the project area due to the lack of suitable habitat.

Species	Status	Habitat Requirements	Likelihood of Occurrence
Source: New Mexico Game and Fish, Biota Information System of New Mexico (BISON-M) and the USFWS Information, Planning, and Conservation System (IPaC) on-line database search engines.			
FT – Federal Threatened FE – Federal Endangered ST – State Threatened SE – State Endangered PT – Federal Proposed Threatened			
Other Federal Protections Considered			
National Migratory Bird Treaty Act (excludes House Sparrows, Rock Pigeons, European Starlings) Bald and Golden Eagle Protection Act			

Table 4-2 Federal and State Plant Species of Concern

Species	Habitat Requirements	Likelihood of Occurrence	USFWS	State of NM	USFS	BLM	Natural Heritage NM
Astragalus cyaneus (Cyanic milkvetch)	Dry hillsides and gullied banks, in sandy or gravelly soils, commonly in pinon-juniper woodland; 2,100-2,230 m (6,900-7,300 ft).This plant is relatively common within its limited range.	Given the soil, plant community, and elevation requirements, there is a reasonable potential for species to occur.	SoC	SoC	.	.	S4
Astragalus puniceus var. gertrudis (Taos milkvetch)	Dry banks and gravelly benches among pinon and junipers, 1,800-2,150 m (6,000-7,000 ft).	Although the El Grande site is higher than where this species has been found, its soil and plant community associations are similar to that of the El Grande site. Therefore, there is a reasonable potential for this species to occur on-site.	SoC	SoC	.	.	S3?
Astragalus ripleyi (Ripley's milkvetch)	Sagebrush, pinon-juniper woodland, and Gambel oak thickets in ponderosa pine forest; 2,120-2,500 m (7,000-8,250 ft).This is one of the few New Mexico milkvetches that is a desirable forage plant. It is relished by deer, elk, and all classes of livestock, without toxic effects.	Given the soil, plant community, and elevation requirements, there is a reasonable potential for species to occur.	SoC	SoC	Sen	Sen	S3?

Cymopterus spellenbergii (Taos springparsley)	This plant usually grows among basalt boulders that cover much of the Taos Plateau and form caprock along canyons rims. It occasionally grows in soils derived from metamorphic rock or in sandy draws. The plant community is open pinon-juniper woodland or Douglas fir-ponderosa pine forest at elevations of 1,890-2,680 m (6,200-8,800 ft).	This species may be present at the El Grande site based on the elevation range and plants communities that it has been found in. However, its soil requirements my preclude it being found at the site.	SoC	SoC	.	.	SNR
Delphinium alpestre (Alpine larkspur)	Alpine tundra and open meadows in subalpine coniferous forest; 3,500-3,950 m (11,500-13,000 ft).	Unlikely to occur in the project area due to the lack of alpine or forest habitat at high elevations.	SoC	SoC	Sen	.	S2?
Delphinium robustum (Robust larkspur)	Canyon bottoms and aspen groves in lower and upper montane coniferous forest; 2,200-3,400 m (7,200-11,200 ft).	Unlikely to occur in the project area due to the specific habitat requirement's, although species has been found within the elevation range	SoC	SoC	Sen	.	SNR
Draba smithii (Smith's whitlowgrass)	Montane and mountain shrub zones, mostly on rocky outcrops and talus slopes, rarely along streams; 2,365-4,000 m (7,760-13,125 ft).	Unlikely to occur in the project area due to the specific habitat requirement's, although species has been found within the elevation range of the El Grande site.	SOC	SOC	Sen	.	S1
Erigeron subglaber (Pecos fleabane)	Rocky, open meadows in subalpine coniferous forest; 3,050-3,500 m (10,000-11,500 ft).	Unlikely to occur in the project area due to the lack of rocky subalpine forest habitats.	SoC	SoC	Sen	.	S3

Eriogonum lachnogynum var. colobum (Clipped wild buckwheat)	Open sandy or gypseous limestone ridges and edges of mesas in pinon-juniper woodland; about 2,080-2,300 m (6,820- 7,540 ft). Presently known only from outcrops of Todilto limestone between Prewitt and Thoreau in McKinley County and limy gravelly soils on the rim of the Rio Grande Gorge in Taos County.	Unlikely to occur in the project area due to the specific habitat requirement's.	SoC	SoC	.	.	SNR
Hackelia hirsuta (New Mexico stickseed)	Dry sites of shaley or igneous soils in lower to upper montane coniferous forest, usually with Gambel oak; 2,350-3,100 m (7,700- 10,200 ft). The species often occupies roadcuts or excavations that expose mineral soils. It is not significantly threatened by common land uses within its habitats.	Given the soil and elevation requirements, there is a reasonable potential for the species to occur at the El Grande site.	SoC	SoC	.	.	SNR
Lorandersonia microcephala (Small-headed goldenweed)	Granitic rock crevices in open ponderosa pine forests; 2,440-2,600 m (8,000-8,500 ft). This species is locally abundant within its limited range between Tres Piedres and Petaca, New Mexico.	Given the soil and elevation requirements, there is a reasonable potential for the species to occur at the El Grande site.	SoC	SoC	Sen	.	S2
Phlox vermejoensis (Vermejo phlox)	North-facing, stable, vegetated, alpine scree slopes of granite or metamorphic rock at 3,720–3,840 m (12,200-12,600 ft).	Unlikely to occur in the project area due to the specific habitat requirements.	SoC	SoC	.	.	SNR
Salix arizonica (Arizona willow)	Sedge meadows and wet drainage ways in subalpine coniferous forest; 3,050-3,400 m (10,000-11,200 ft).	Unlikely to occur in the project area due to the specific habitat requirements.	SoC	SoC	Sen	.	S1

Also of concern are Cymopterus spellenbergii (Taos springparsley) and Lorandersonia microcephala (Small-headed goldenweed), which are ranked S2. Taos springparsley may be present at the El Grande site based on the elevation range and plant communities where it has historically been found. However, its soil requirements my preclude it being found at the site. For Small-headed goldenweed, there is a reasonable potential for the species to occur at the El Grande site given its soil and elevation requirements. Based on habitat requirements, other species of concern that have a reasonable chance of occurring at the El Grande site are Astragalus cyaneus (Cyanic milkvetch), Astragalus puniceus var. gertrudis (Taos milkvetch), Astragalus ripleyi (Ripley's milkvetch), and Hackelia hirsuta (New Mexico stickseed).

A vegetation survey was conducted on June 3, 2015 at the El Grande site to assess the current conditions of plant species and vegetation on site. The plant species listed as Imperiled (S2) and Critically Imperiled (S1) were identified on the New Mexico Rare Plants website and after the qualitative assessment was performed it was found none of the listed plant species of concern are present at the EL Grande site. Appendix D includes the vegetation survey and a full description of all the plant species that were encountered.

4.3 Cultural and Historic Resources

The El Grande Mine is an active perlite mining and milling operation located on the west peak and low hills on the west flank of the No Agua Peaks (Ennis 2011). The peaks were a cluster of four steep-sided lava domes near the center of the Taos Plateau Volcanic Field. Mining operations in the 20th and 21st century have reduced the peaks to where only part of the eastern dome remains (Shackley 2013:26).

The existing and proposed disturbance areas are within the previously approved permit area for the El Grande Mine site. Future planned disturbances as described earlier will occur either in or closely adjacent to previously disturbed areas, with the exception of Dump 2A. Dump 2A has experienced limited development to date (primarily road construction) but will be utilized as a future dump area for overburden when and if perlite mining activities at El Grande resume.

A review of the New Mexico Cultural Resources Information System revealed that there are no known archaeological sites or historic resources in the project area. There are two archaeological sites near the project area. One is a non-diagnostic prehistoric site and the other an early to late Archaic lithic scatter with a small late 19th to early 20th century component.

4.3.1 Prehistoric

The obsidian rock found at No Agua is a semi-local material that outcrops as small nodules. Despite its poor-quality, it has been utilized as a lithic resource for the manufacture of prehistoric tools (Michels 1985). Because it is of poor quality, however, it has not been found outside the immediate region (Shackley 2013:26).

Because the No Agua obsidian was a raw material, it may be possible that extraction, testing, and manufacturing related prehistoric archaeological sites may be present in or near the project area.

4.3.2 Historic Resources

The area of the No Agua Peaks has been mined for perlite for more than 50 years (Mickelsen 1971). A mill was erected as early as 1950 with other mining related features following shortly afterwards. Historic resources associated with this early mining activity may be present.

A narrow-gauge railroad, referred to as the "Chili Line" operated between 1880 and 1941. The railroad ran between Antonito, Colorado to Santa Fe, New Mexico. Sections of the rail bed can be found just east of existing US 285 (Lent 1991).

In May of 2013, President Barack Obama established a new National Monument designated the Rio Grande Del Norte National Monument located to the east of the El Grande Mine. The boundaries for the Monument "skirt" the No Aqua Peaks to the south and east. The Monument was established in recognition of the ecologic diversity as well as the rich cultural, prehistoric, and historic legacy of the area. There is little to no potential for operations at the Dicaperl El Grande Mine to impact the Monument given the nature of the operations and the location relative to the Monument boundaries. Appendix E contains a copy of President Obama's proclamation establishing the Monument.

4.4 Hydrologic Balance

The El Grande Mine is located on the upper side slopes of a lava knoll (No Agua Peak) and out of any macro drainage features. Given the location of the mine, there are not substantial upland areas that contribute run-on to the disturbed areas. In minor areas of significant run-on to the mine, run-on is diverted away from the disturbance and run off from disturbed areas is controlled by sediment ponds that are previously approved and sized for the appropriate storm event.

The site lies within the drainage of the Arroyo Aquaje de la Petaca, an ephemeral drainage that flows only in response to precipitation events. The mine is located within the Arroyo drainage basin at a point that is approximately 40 miles from the confluence with the Rio Grande Gorge. In the unlikely event that there is a discharge from the El Grande Mine, any effect on the Arroyo or the Rio Grande would be minimal to none.

Figure 3-1 illustrates the sediment ponds associated with Dump 1Eb and future Dump 2A. The sediment ponds located near Dump 1Eb and future Dump 2A are designed to collect the precipitation and the sediment runoff from the surrounding areas. National Conservation Resources Service (NCRS) methods and calculations were used to determine the runoff amount and the annual sediment loss from the contributing area. Appendix F contains the stormwater calculations. The sediment pond was designed to provide 3 years of sediment storage. The 10-year 24-hour storm event of 2.03 inches of precipitation was used for the runoff calculation. NCRS charts were used to estimate the annual sediment loading from areas.

Dump 1Eb and future Dump 2A. A curve number (CN) of 85 referenced from the NCRS TY-55 manual was used in the runoff calculation representing sagebrush with a grass understory condition found in semiarid regions of the country. A poor hydrologic soil condition was assumed.

From the calculations, the estimated amount of runoff from the area surrounding Dump 1Eb is 0.68 ac-ft. NCRS charts and tables are used to estimate an annual sediment load of 27 tons from

the contributing area. Sediment load resulting from 3 years of runoff from the area is approximately 0.04 ac-ft. The total pond size required to contain the precipitation runoff and the sediment load is approximately 1 ac-ft. This quantity includes a freeboard allowance of 0.28 ac-ft. Proposed Dump 1Eb is located in a natural channel with a large contributing area. A diversion channel will route upland runoff around the waste dump. For calculation purposes the diversion channel is immediately upgradient of the waste dump and flows toward the east. The runoff and sediment loading from the area upslope of the channel is included in this design.

The proposed sediment pond located near future Dump 2A was designed per the methodology as described above. Based on the above methods, the estimated amount of runoff from the area is 2.63 ac-ft. From the NCRS charts the estimated annual sediment load from the contributing area is 105 tons. The model projects a sediment yield of 105 tons yet empirical evidence indicates less sediment is typically present. A monitoring system will be implemented to clean-out the sediment based on specified levels present. The total storage required to contain 3 years of sediment runoff in the pond from the area is approximately 0.14 ac-ft. When both sediment and runoff are totaled together, the pond size is approximately 3 ac-ft. This amount does not include the one-foot of freeboard required. Appendix F contains the stormwater calculations and the rationale used to determine the precipitation and sediment runoff estimates from the areas surrounding Dump 1Eb and future Dump 2A.

Appendix C contains the plan views of Dump 1Eb and the future Dump 2A final configuration, including a detail on the perimeter channels. The sediment ponds will be constructed in perlite waste and lined with topsoil material. Dump 1Eb will discharge to the sediment pond located southwest of the dump. Future Dump 2A will flow in a perimeter channel to a sediment pond located west of the dump. The perimeter channels were designed 2 feet wide by 2 feet deep with a 1H:1V side slope, as illustrated on Figures A1, A3, and A7 of Appendix C. There are two separate discharge sediment ponds for Dump 1E and 1Ec. These ponds are connected by a culvert running under the road. Figure 3-1 and Appendix C illustrate these features.

4.5 Stream Diversions

The mine occupies an upland area that is characterized by small ephemeral channels and drainage features. There are no stream diversions associated with the mine.

4.6 Stability

As mentioned previously, the mine has been in operation for approximately 56 years. Many of the waste dumps have been completed, graded, and vegetated. There have been some minor issues with stability over the years, primarily erosional, particularly with over-steepened slopes in some areas. Regrading and implementation of controls such as ditches and contour furrows have been implemented to this end. Dicaperl continues to monitor these areas and improve their condition to create more stable configurations. Based on this experience and empirical observation, Dicaperl is able to effectively configure backfilled and reclaimed areas for long term stability. In the future, erosion controls will be addressed similarly. Appendix G contains the El Grande Storm Water Pollution Prevention Plan (SWPPP), which addresses the erosion controls for these areas.

The super sacs will be covered with 2 (two) feet of material. The cover material will be comprised of one (1) foot of obsidian-rich perlite and (1) foot of the Raton-Rock outcrop- Orejas creating little potential for buried waste to migrate through the cover. Over an extended period of time, there is some potential for the super sacs to degrade and waste materials to seep out but it will not become exposed to the surface. The waste as well as the polypropylene sack is found to be inert and pose little to no risk to the environment.

Section 3 provides information on material availability and locations of obsidian-rich perlite and topsoil Raton rock outcrop-Orejas. Obsidian-rich perlite was not used to stabilize active areas until 2009 when the current cover was placed. No significant erosion has occurred since the 2009 placement. The future plan is to minimize the size of the active dump area which will minimize the potential for any significant erosion. This method has been used at the Socorro site and has proven to be very successful.

In late 2016, soil samples were collected at the fifteen El Grande facility locations. The samples were analyses for seven physical parameters in addition to pH, potassium, phosphorous, and nitrates (as nitrogen). The analysis demonstrates that these results are consistent with the cover material used on Dump 1A. Appendix H contains the sample locations and analytical results.

4.7 Riparian/Wetland Areas

There are no intermittent or perennial waters identified in the area of the mine or within the permit boundary. There are no riparian or wetland areas with the potential for impact from existing or proposed operations at the El Grande Mine.

4.8 Roads

Roads constructed at the site are primarily access roads (i.e. the main access road to the property from US 285 and roads that provide connection to other parts of the mining operations), and operation/haulage roads for the transportation of equipment, overburden, and ore. In general, access roads tend to be “fixed” relative to location and operation/haulage roads may be moved within disturbed areas as features like the quarry and dumps undergo changes as operations proceed.

All roads are designed, constructed, and operated to be stable and to minimize erosion and/or disruption to existing drainage features. Examples of controls implemented include water bars, run-on diversions, and culverts at drainage crossings. There are no road crossings of intermittent or perennial streams within the permit area.

4.9 Explosives

Any blasting during operations shall be conducted to prevent injury to persons or damage to property not owned by the operator. Fly rock shall be confined to the permit area. Any blasting activity will conform with all applicable requirements (e.g. MSHA, ATF, etc.).

4.10 Erosion Control

Several sedimentation ponds have been established (and previously permitted) at down gradient locations of dumps where possible. This includes ponds established at the base of Dumps 1A, 1B, 1C, 1E, and South Dump. Figure 3-1 illustrates the locations of these sedimentation structures. Dicaperl will use check dams, water bars, contour terracing, armored channels, slope reduction and/or use of other erosion control practices where required for successful establishment of vegetation and erosion control. Dicaperl will also use erosion control devices that are designed, constructed, and maintained using professionally recognized standards (e.g., standards of the Natural Resource Conservation Service).

4.11 Revegetation

Dicaperl intends to revegetate reclaimed areas to achieve the post mining land use of rangeland. Dicaperl has developed, in conjunction with the previous Closeout Plan application, a revegetation plan that includes an appropriate seed mix and a procedure for assessing reclamation success. Table 4-3 illustrates the proposed seed mix, composition, and application rate.

Table 4-3 Reclamation Seed Mixture

Common Name	Latin Name	Composition (%)	Seeds/ft2*	lbs of PLS/A
Blue grama	Bouteloua gracilis	12	19	0.98
Sideoats grama	Bouteloua curtipendula	8	12	2.83
Western wheatgrass	Pascopyrum smithii	15	23	9.21
Sand dropseed	Sporobolus cryptandrus	8	12	0.10
Bottlebrush squirreltail	Elymus elymoides	10	16	3.52
Rocky mountain penstemon	Penstemon strictus	4	6	0.44
Purple prairie clover	Dalea purpurea purpurea	4	6	1.29
Western yarrow	Achillea millefolium var. occidentalis	5	8	0.12
Lewis flax	Linum lewisii	5	8	1.15
Mexican hat	Ratibida columnifera forma pulcherrima	5	8	0.46
Desert marigold	Baileya multiradiata	5	8	0.32
Munro globemallow	Sphaeralcea munroana	3	5	0.41
Fourwing saltbush	Atriplex canescens	3	5	3.90
Basin big sage	Artemisia tridentata tridentata	4	6	0.11
Fringed sagewort	Artemisia frigida	6	9	0.09
Cliffrose	Purshia mexicana	3	5	3.14
Totals		100	155	28.05
*The number of seeds/ft2 are derived based on the overall seeding rate (27.92 lbs of PLS/A), seeds/lb, and compostion.				

All areas at the mine site requiring revegetation will have seed broadcast or placed with a range-drill with the proposed seed mixture in Table 4-3. The dumps and haul roads will be seeded but

the quarry will not have any revegetation during reclamation. This mixture is designed to be used both in upland and lowland, run-in areas. The roads will be ripped to loosen the materials prior to applying the seed mix.

Appendix I contains the baseline Reclamation Performance Standards at the No Aqua Peak Mine and Mill) prepared by GL Environmental Inc. outlines reference area approach for the El Grande Mine. Dicaperl supplements Appendix I with the following language:

> *Dicaperl recommends three (3) reference areas for reclamation assessment success. These areas are not intended to be fenced individually since access is otherwise controlled to the site and grazing is not allowed. Each of these areas will be at least one acre in size, consistent with MMD guidance, and will have corners that are georeferenced for easy and consistent location. These reference areas appear to be consistent with the associated dumps and exploration areas with respect to slope and aspect. The southwest area and northeast area will consist of open Ponderosa pine forest, while the northern area appears to be a natural savannah/meadow type community, with Ponderosa pine on the slopes above. A listing of the locations of the corners of the reference areas is provided below, and the locations are shown in Figure 4-1.*

Table 4-4 illustrates the proposed reference area corner mark coordinates.

Table 4-4 Proposed Reference Area Corner Mark Coordinates

Proposed Reference Area Corner Mark Coordinates (in degrees Datum WGS 84)						
	North Reference Area		Southwest Reference Area		Northeast Reference Area	
	Northwest Corner	Northeast Corner	Northwest Corner	Northeast Corner	Northwest Corner	Northeast Corner
Latitude	36.753870	36.753835	36.742122	36.742094	36-746083	36.745952
Longitude	-105.968808	-105.968084	-105.974014	-105.973318	-105.965781	-105.965170
	Southwest Corner	Southeast Corner	Southwest Corner	Southeast Corner	Southwest Corner	Southeast Corner
Latitude	36.753309	36.753260	36.741510	36.741503	36.741503	36.745297
Longitude	-105.968820	-105.968115	-105.973998	-105.973339	-105.965831	-105.965321

Dicaperl recognizes that MMD may inspect the reference areas prior to approve of this Amendment.

Reclamation will be considered successful when sampling of reclaimed areas indicates that 70% of reference area cover standard at a 90% confidence level for native, perennial species has been achieved. Success criteria will be demonstrated when a minimum of two (2) warm season grasses, two (2) cool season grasses, and two (2) forbs species are present in sufficient quantities to meet diversity objectives.

Dicaperl proposes the following tree and shrubs to be used as alternatives for selected plant species: Gambel Oak tree (Quercus gambelii), Wax Current shrub (Ribes cereum) and winterfat shrub (Ceratoides lanta). The following are suggested alternatives to the proposed seed mix: Spreading daisy (Erigeron divergens) and Fluffgrass (Erioneuron pulchellum).

In July 2016, Dicaperl prepared a reclamation test plot plan for exploration site 3A. The test plot plan included an assessment of vegetation success using approximately 3 combinations of obsidian-rich perlite with amendments (e.g. fertilizers based on results of soils sampling and testing). The following list represents the types of plots proposed:

- Obsidian-rich perlite (ORP) covered with 6 inches of Raton-Rock outcrop-Orejas
- Obsidian-rich perlite (ORP) covered with 6 inches of Raton-Rock outcrop-Orejas with soil amendments
- Mixture of topsoil and obsidian-rich material.

Dicaperl anticipates a one (1) foot of obsidian-rich perlite with Raton-Rock outcrop- Orejas cover (depth dependent on outcome of pilot studies) will be required for all perlite waste dump areas 1E, 1Ea, 1Eb, 1Ec and future 2A. The roads and mill facilities area will not have one foot of Ratonrock outcrop-Orejas added as these areas are comprised of the topsoil Raton-rock outcrop-Orejas. The quarry will receive approximately eight (8) inches of Raton rock outcrop-Orejas. There is little concern with impacts of the subsoils on acid weeping or plant growth potential. Minimization of the use of obsidian rich perlite from the quarry will also minimize the impact to the final graded topography of the quarry and enhance effective grading, stability, and erosion/runoff control. Appendix J contains the reclamation test plot plan.

Section 5
Close-Out Plan

In general, all disturbed areas of the El Grande Mine will be regraded, recontoured and reseeded at the end of their useful lives. Cover material will be placed on the regraded areas prior to seeding to the extent that it is available.

There is no top soil as such in the permit area. The cover material present is known as Raton-Rock outcrop-Orejas. This unit is used mainly for grazing, for which it has medium potential. This material supports a wide range of plant species as identified in the original permit application. Perlite itself also supports certain plant species. Perlite is an additive to commercial potting soils. When a dump area is reclaimed, it is covered with approximately one foot of soil material and experience has shown that this material will support plant species appropriate for the permit area.

5.1 Quarry

There is insufficient soil material available in the permit area to cover the quarry area. Therefore, Dicaperl is proposing to leave the quarry walls with slopes consistent with existing hill sides. The material will consist of fragmented perlite and any soil material available. These slopes will be seeded and vegetation should take hold on the slopes. Any surface runoff from quarry sides flows to the bottom of the quarry and collects there until it seeps into the ground.

The quarry slopes will be graded to a 2.5H to 1V slope and available soil material from stockpiles, the haul road and other places, if available, will be blended into the slopes along with ripping and whatever techniques are necessary to provide a medium for vegetation. All storm water will drain into the quarry where it will be collected and allowed to seep into the ground or evaporate. Adequate erosion control will be provided. This activity, once initiated, will take 6 months to 1 year to complete. Timing will be dependent of the best season for reclamation.

Table 3-1 and Table 3-2 illustrate topsoil volumes, allocations, and the quantity of topsoil used (or available or reclaimed) at each reclamation area. The topsoil volumes are sufficient to ensure adequate reclamation cover of the El Grande mine. Figure 3-1 illustrates the location and approximate volumes of all existing topsoil stockpiles. Topsoil quantities available on site at El Grande demonstrate sufficient volume of Raton-rock outcrop-Orejas to cover the disturbed areas with one foot of topsoil and one foot of ORP and the Quarry with eight (8) inches of topsoil over the existing ORP within the Quarry.

5.2 Designated Dump Areas

Section 3 discusses the eight dumps location at El Grande Mine. The dumps are identified as Dump 1A, 1B, 1C, 1D, 1E, South Dump, Quarry Dumps and 2A. These dumps are located around the periphery of the quarry. The close out plan for each of the dumps is discussed below.

Dump 1A has been regraded, recontoured for erosion control, and reseeded. Reclamation work was completed in calendar year 2007. The Dump 1A reclamation was the subject of an article in

the New Mexico Geological Society Guidebook (Ennis, 2011). Figure 5-1 illustrates an enlarged site plan of Dump 1A.

Dump 1B was regraded, recontoured and reseeded prior to 2006. The dump is demonstrating significant vegetal growth. Figure 5-2 illustrates an enlarged site plan of Dump 1B.

Dump 1C was regraded, recontoured and reseeded prior to 2006. The dump is demonstrating significant vegetal growth. Figure 5- 3 illustrates an enlarged site plan of Dump 1C.

Dump 1D was regraded, recontoured and reseeded in July of 2010. The dump is demonstrating significant vegetal growth. Figure 5-4 illustrates an enlarged site plan of Dump 1D.

Dump 1E consists of several sub-areas that are in various stages of development and reclamation. The entire area of Dump 1E (including Dump 1Ea, Dump 1Eb, Dump 1Ec, and sediment ponds) is approximately 33 acres. Approximately 16 acres of the Dump 1E has been reclaimed while the remaining acreage remains active. Dumps 1Ea, 1Eb, and 1Ec have been identified as areas available to receive the waste perlite from the Antonito Plant. When waste placement activities are complete in these areas, the appropriate amount of cover will be applied and the areas will be regraded, recontoured, and reseeded. Figure 5-5 illustrates an enlarges site plan of Dump 1E including Dump 1Ea, Dump 1Eb, and Dump 1Ec. The sediment pond is not shown in Figure 5-5.

South Dump is not a regulated dump and will be moved when the mining process moves through the area from west to east. The South Dump was regraded and seeded in calendar year 2010 to achieve stabilization. Figure 5-6 illustrates an enlarged site plan of the South Dump.

Quarry Dump are ridges located around the periphery of the Quarry. Figure 5-7 illustrates an enlarged site plan of the Quarry. The Quarry Dump receive overburden and cover material that will ultimately be used for dump area and Quarry cover.

Dump 2A, located north of Dump 1E, has experienced minimal activity. Dump 2A will be considered for future mining of perlite ore. When the development of the dump is complete, it will be graded, contoured, and seeded. Figure 5-8 illustrates an enlarged site plan of Dump 2A.

5.3 Exploration Areas

Six sites were cleared in the late 1980's in anticipation of modifying quarry locations. However, the plans were never realized and the modification did not take place. Five of these sites have been regraded and reseeded and are demonstrating good vegetation growth. One site, located directly north of the area 1Ec located in Dump 1E has not been reclaimed. If necessary, berms will be constructed and topsoil will be placed (as much as possible) to provide improved growth medium. Contour furrows beneficial for water catchment and erosion control will be applied. The area will be seeded using a broadcast technique.

5.4 Roads

The permit area contains eight (8) acres of roads. The roads will be reclaimed in a manner to prevent erosion and then seeded. Some roads may remain to accommodate post-mining land use activities. Roads in the permit area will be the last items to be reclaimed.

The roads will be ripped to two (2) feet and regraded prior to seeding to create a suitable seed bed. The proposed seed mix will be applied by broadcast seeding. There will not be a topsoil cover of Ratonrock outcrop-Orejas added to the roads. The roads and surrounding safety berms are constructed of Raton rock outcrop-Orejas material. (February 5, 2016, 15) It is estimated that road reclamation will be initiated once all other reclamation activities are complete.

5.5 Buildings and Facilities

Current structures at the El Grande operation include a mill and buildings attendant to the mill. All buildings and equipment will be razed and sold as scrap or used equipment. Concrete foundations will be broken up and buried. The building and facility sites will be graded and seeded. Once the decision has been made to close the mine and facilities, removal of facilities and reclamation will commence with an anticipated completion of six (6) to nine (9) months.

Appendix K describes Dicaperl's initial demolition plan for the El Grande facility. This initial plan sets forth a phased approach and timeline. To date, Dicaperl has dismantled the old mill structure. The tank farm and associated maintenance building will remain in place. A detailed demolition plan including the proposed burial location of any concrete or other scrap materials, physical and chemical characterization of the materials and an asbestos removal plan will be provided to MMD for approval prior to demolition of the Mill facilities.

Dicaperl anticipates using water for dust suppression during the reclamation. There are no records of a groundwater well nor any other well ever drilled at the El Grande Mine. Dust suppression water will originate from either the Antonito well or Village of Tres Piedras system. Water consumed at the El Grande mine was transported by haul truck from the Antonito Plant and stored in tanks. The quantity of dust suppression water will be established based upon necessity.

Upon final reclamation, the concrete foundations from the buildings will be buried in place at the toe of the hill to provide a stable landform. The concrete pads and associated facility sites will be demolished and then the disturbed areas will be ripped and regraded prior to seeding. Approximately two (2) feet of soil material will be placed on top of the buried concrete. Dicaperl will continue to identify potential hazardous materials on site prior to demolition and provide this data to MMD.

5.6 Reclamation Work Schedule

Dicaperl continues to actively reclaim the El Grande Mine through demolition and off-site removal of facility equipment. These voluntary activities reduce the long-term timeframe for overall facility reclamation. Based on similar demolition observation, familiarity of site conditions, and knowledge of remaining reclamation activities, Dicaperl remains confident that an outside contractor can complete the outstanding reclamation within six months, or sooner.

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Section 6

Close-Out Plan Costs

Closure costs for the activities described in this Application are discussed in this section. The costs were developed using a spreadsheet estimating procedure developed by the State of Nevada (Standard Reclamation Cost Estimator (SRCE), Version 1 4 1 017).

6.1 Closure Costs

Throughout the development of this Application, Dicaperl has provided MMD with several SCRE cost estimates. In correspondence dated April 24, 2018 and July 13, 2018, MMD expressed a willingness to accept Dicaperl's February 2018 cost estimate for financial assurance. This acceptance was based upon an increase to the construction management section. Specifically, MMD will accept the cost estimate if the number of supervisor hours was changed to 160 hours over six (6) month period. The attached August 2018 SRCE reflects this change and results in closure cost estimate of $753,712. Appendix L contains a hard copy and compact disc of Dicaperl's August 2018 SCRE spreadsheets that reflect this increase.

6.2 Financial Assurance

Dicaperl will provide financial assurance in the form of a surety bond.

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Section 7
References

BISON-M 2014. Biota Information System of New Mexico. Wildlife database resource maintained by the New Mexico Game and Fish and Natural Heritage New Mexico. http://www.bison-m.org/

Dicaperl Minerals Corp., 1994, *Dicaperl El Grande Mine Permit Application,* December 15th, 1994.

Dicaperl Minerals Corp., 1998, Closeout Plan Revision for No Agua Peak Mine and Mill Existing Mine Permit, Dicaperl Minerals Corporation Permit No. TA002RE, Third Revision, October 14th, 1998.

Ennis, D.J., 2011, *Perlite Mining and Reclamation in the No Aqua Peaks, Taos County, New Mexico*, in New Mexico Geological Society Guidebook, 62nd Field Conference, Geology of the Tusas Mountains - Ojo-Caliente, p. 409-418.

Lent, S.C., 1991, Survey, Test Excavation Results, and Data Recovery Plan for Cultural Resources near San Juan Pueblo, Rio Arriba County, New Mexico. Archaeology Notes 17. Office of Archaeological Studies, Museum of New Mexico, Santa Fe.

Garrabrant, L.A., 1993, *Water Resources of Taos County, New Mexico*, US Geological Survey, Water-Resources Investigation Report 93-4107.

Jenkins, D., 1994, El Grande Mine Dicaperl Corporation Site Assessment, June 1994.

Johnson, P.S., and Bauer, P.W., 2011, *Hydrogeology of the Northern Taos Plateau, Taos County, Northern New Mexico,* New Mexico Bureau of Geology and Mineral Resources.

Michels, J.W., 1985, Hydration Rate Constants for No Agua Mountain Obsidian, Rio Arriba County, New Mexico. Mohlab Technical Report No. 54. Mohlab State College.

Mickelsen, M.B., 1971*, History, Location and Development of the Johns-Manville Perlite Deposits, No Agua, New Mexico.* In Guidebook of the San Luis Basin, Colorado, edited by H. L. James, pp. 321.

NMRPTC 2014. New Mexico Rare Plants Technical Council. *New Mexico Rare Plants*. Albuquerque, NM: New Mexico Rare Plants Home Page. http://nmrareplants.unm.edu (Latest update: 16 January 2014

Shackley, M.S., 2013, The Geochemistry and Archaeological Petrology of Volcanic Raw Materials in Northern New Mexico: Obsidian and Dactite Sources in Upland and Lowland Contexts. In From Mountaintop to Valley Bottom: Understanding Past Land Use in the Northern Rio Grande Valley, New Mexico, edited by Bradley J. Vierra, pp. 17-32. The University of Utah Press, Salt Lake City.

SWReGAP 2014. SouthwestRegionalGapAnalysisProject.Multi-institutional cooperative effort to map and assess biodiversity for a five-state region (AZ, CO, NV, NM, UT). http://earth.gis.usu.edu/swgap/index.html

USFWS 2014. Information, Planning, and Conservation System (IPaC). http://ecos.fws.gov/ipac/wizard/chooseLocation!prepare.action;jsessionid=64651FBCA4A97AF57CF9BBDFC6F99BE8

USGS GAP 2014. National GAP Analysis Program. http://gis1.usgs.gov/csas/gap/viewer/land_cover/Map.aspx

Figures

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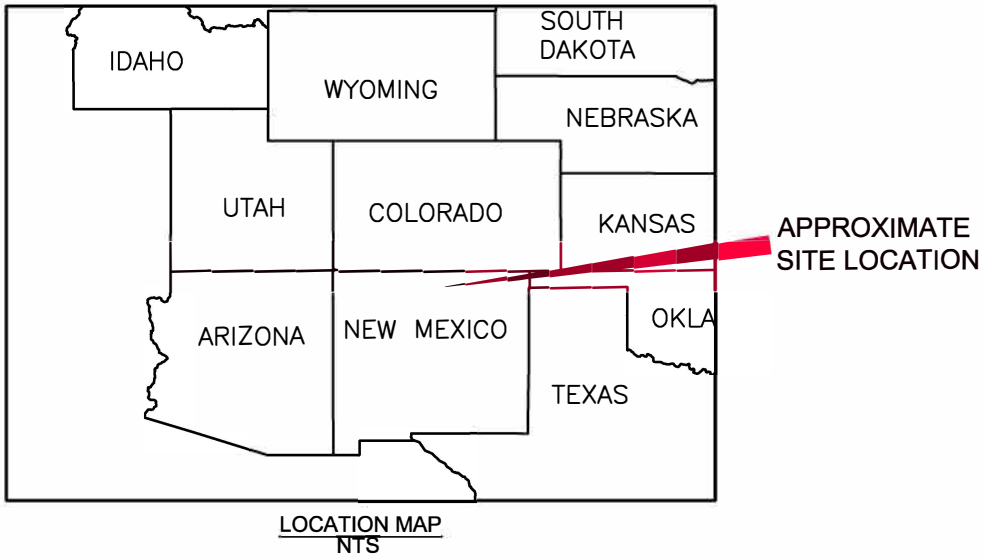

LOCATION MAP
NTS

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Figure No. 1-1
DICAPER MINERL CORP - EL GRANDE MINE LOCATION MAP
AUGUST 2018

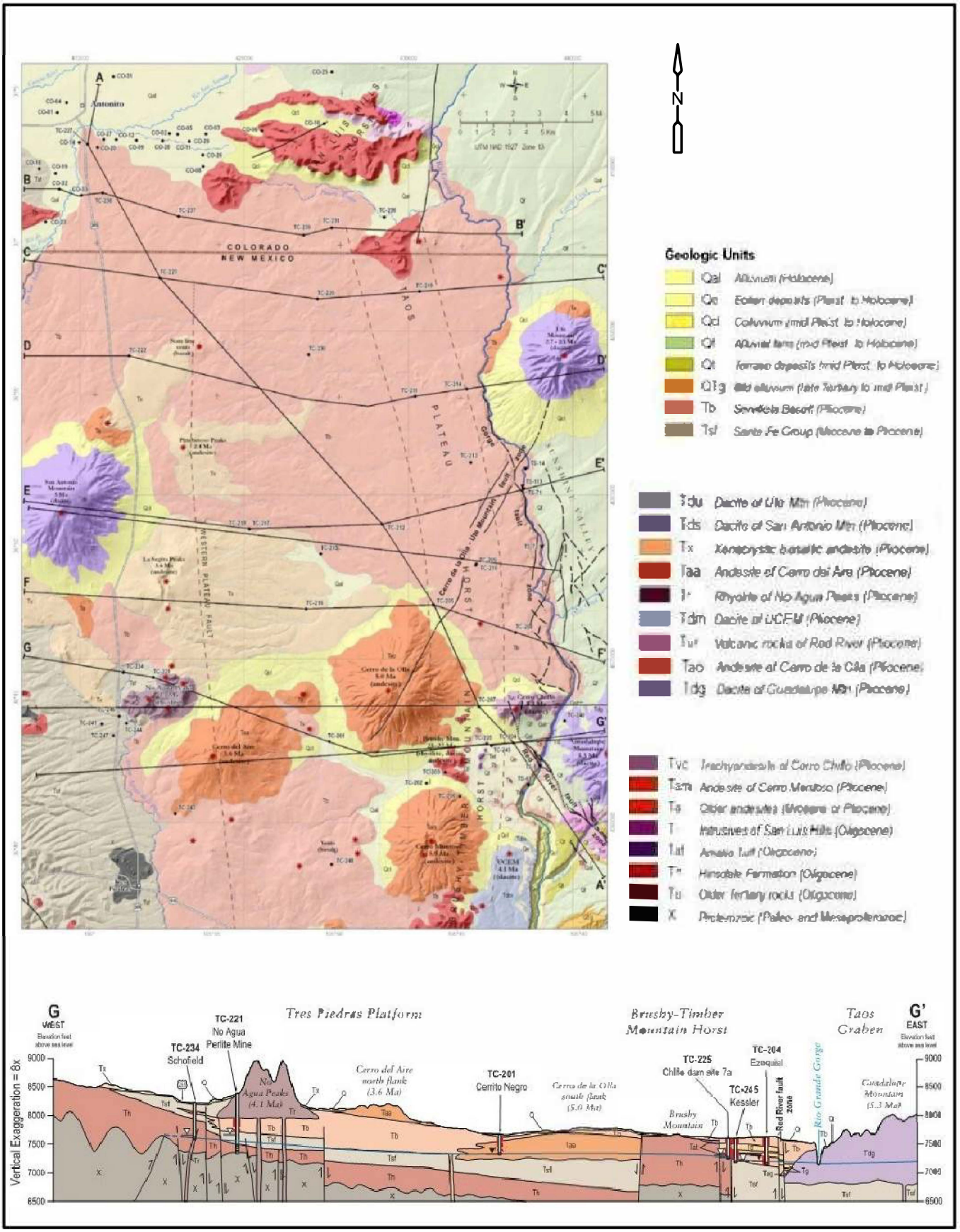

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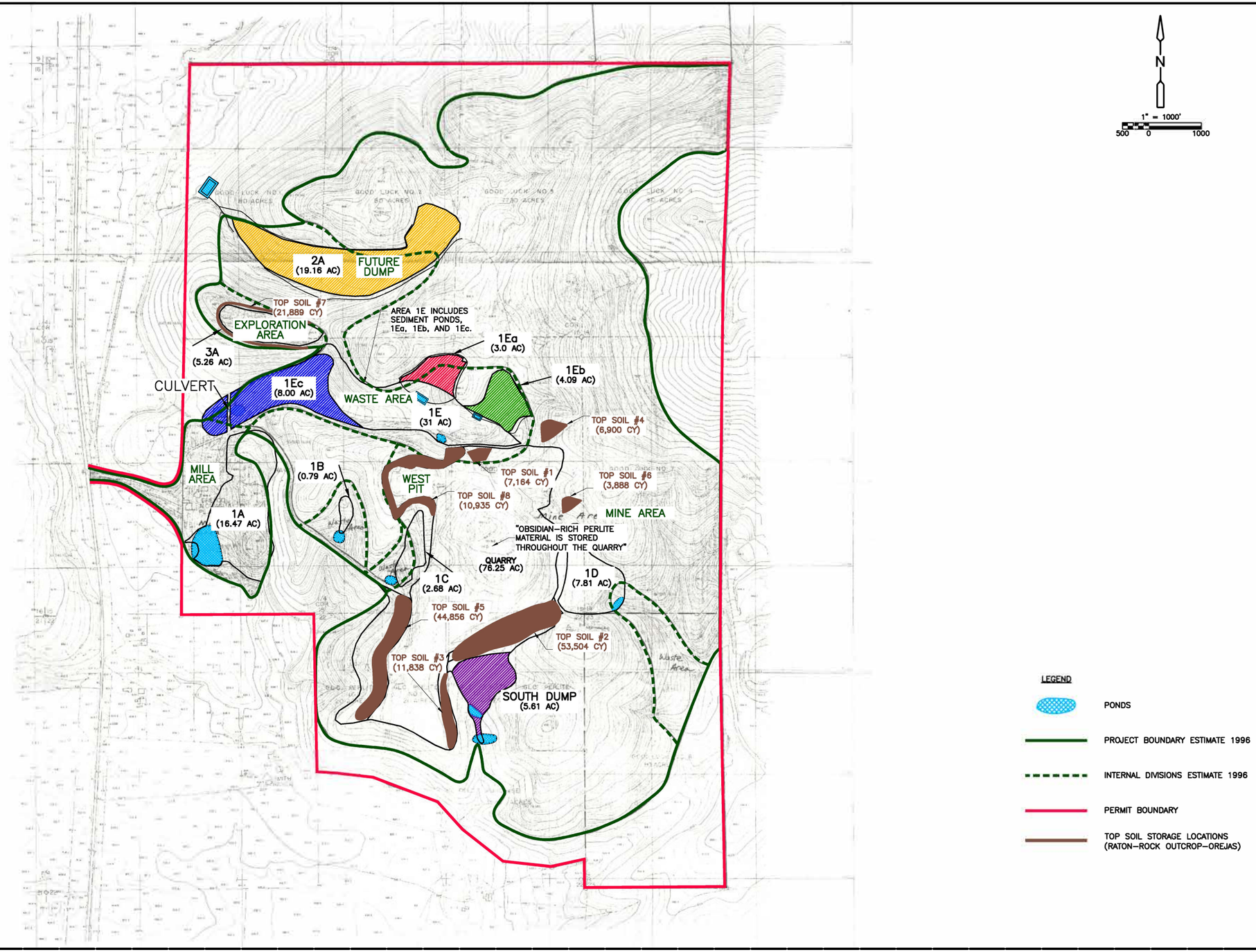
FIG 2-1
GEOLOGY OF THE NO AQUA PEAK AREA
FROM JOHNSON AND BAUER, 2011
AUGUST 2018



C:\cdmxm\huffsmithkm\d1895228\Dicoperl FIG 1-2A1.dwg

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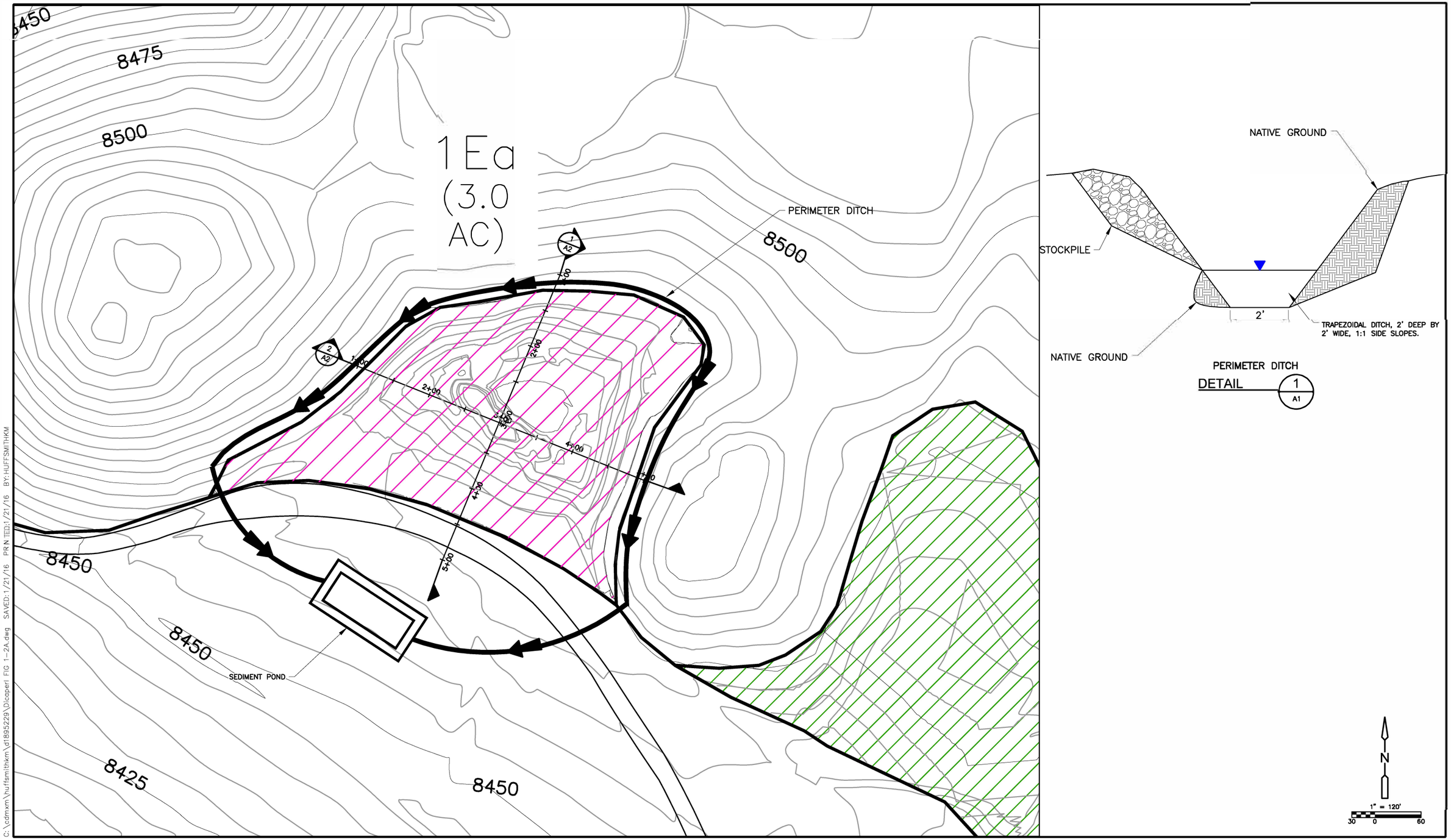
Figure 3-1
WORK AREA SITE PLAN
AUGUST 2018



C:\cdmxm\huffsmithkm\d1895229\Diaper1 FIG 1-2A.dwg SAVED:1/21/16 PRINTED:1/21/16 BY:HUFFSMITHKM

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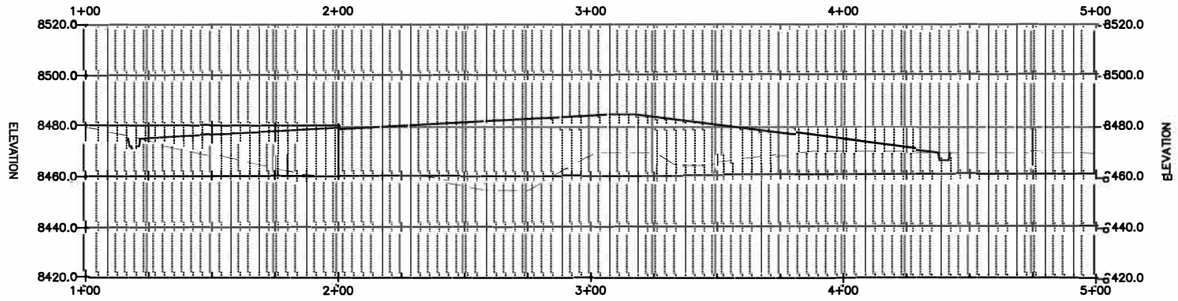
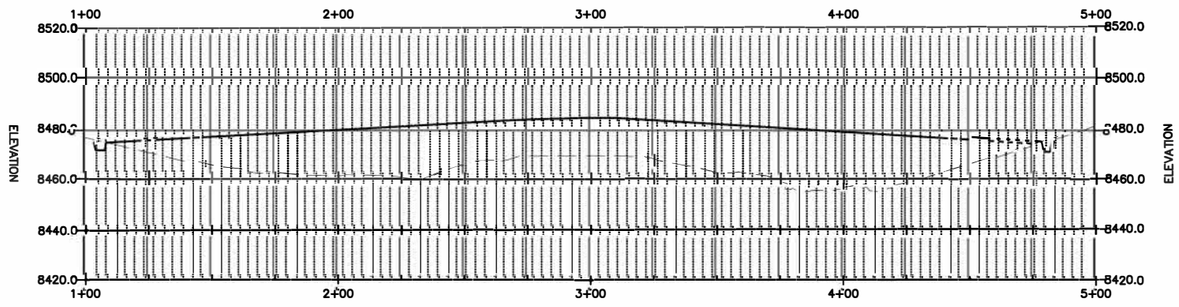
Figure A1
WORK AREA SITE PLAN - 1EA
AUGUST 2018



NORTH AND SOUTH SECTION 1Ea

SECTION 1 / A1

1" = 30'



EAST AND WEST SECTION 1Ea

SECTION 2 / A1

1" = 30'

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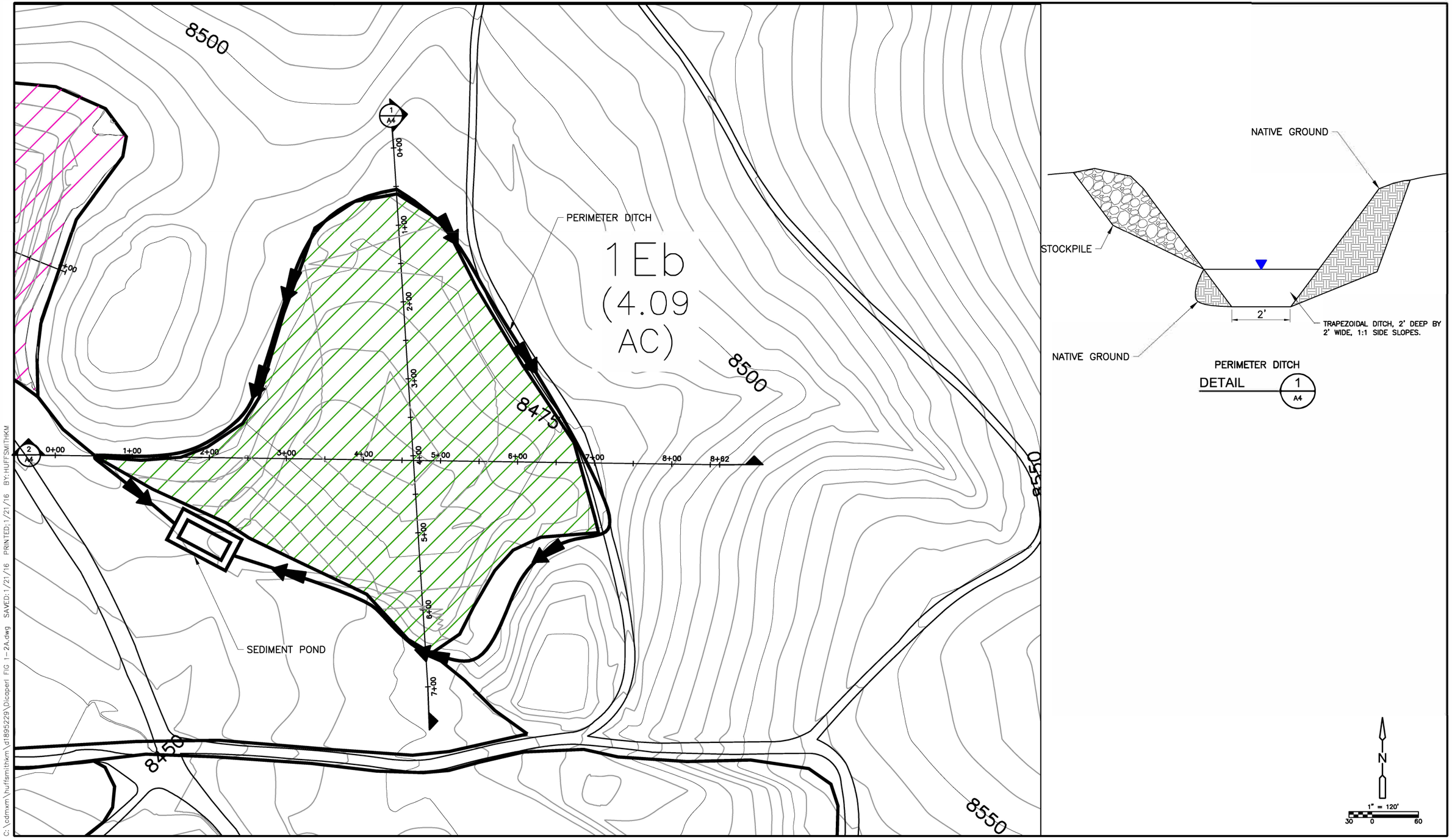
Figure A2
DUMP - 1Ea CROSS SECTIONS
AUGUST 2018



C:\cdmxm\huffsmithkm\d1895229\Dicaperl FIG 1-2A.dwg SAVED:1/21/16 PRINTED:1/21/16 BY:HUFFSMITHKM

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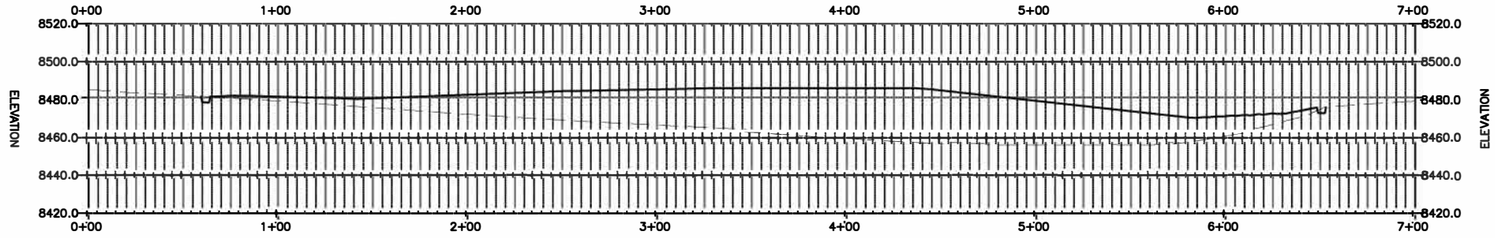
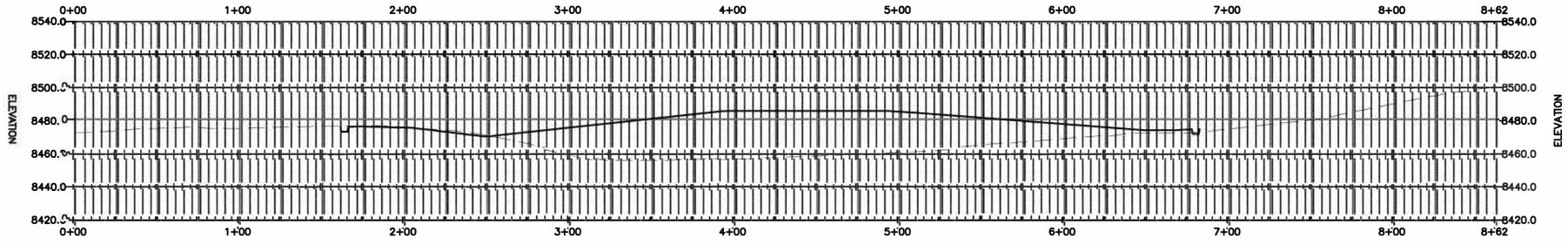
Figure A3
WORK AREA SITE PLAN - 1Eb
AUGUST 2018



NORTH AND SOUTH SECTION 1Eb

SECTION 1 / A3

1" = 40'



EAST AND WEST SECTION 1Eb

SECTION 2 / A3

1" = 40'

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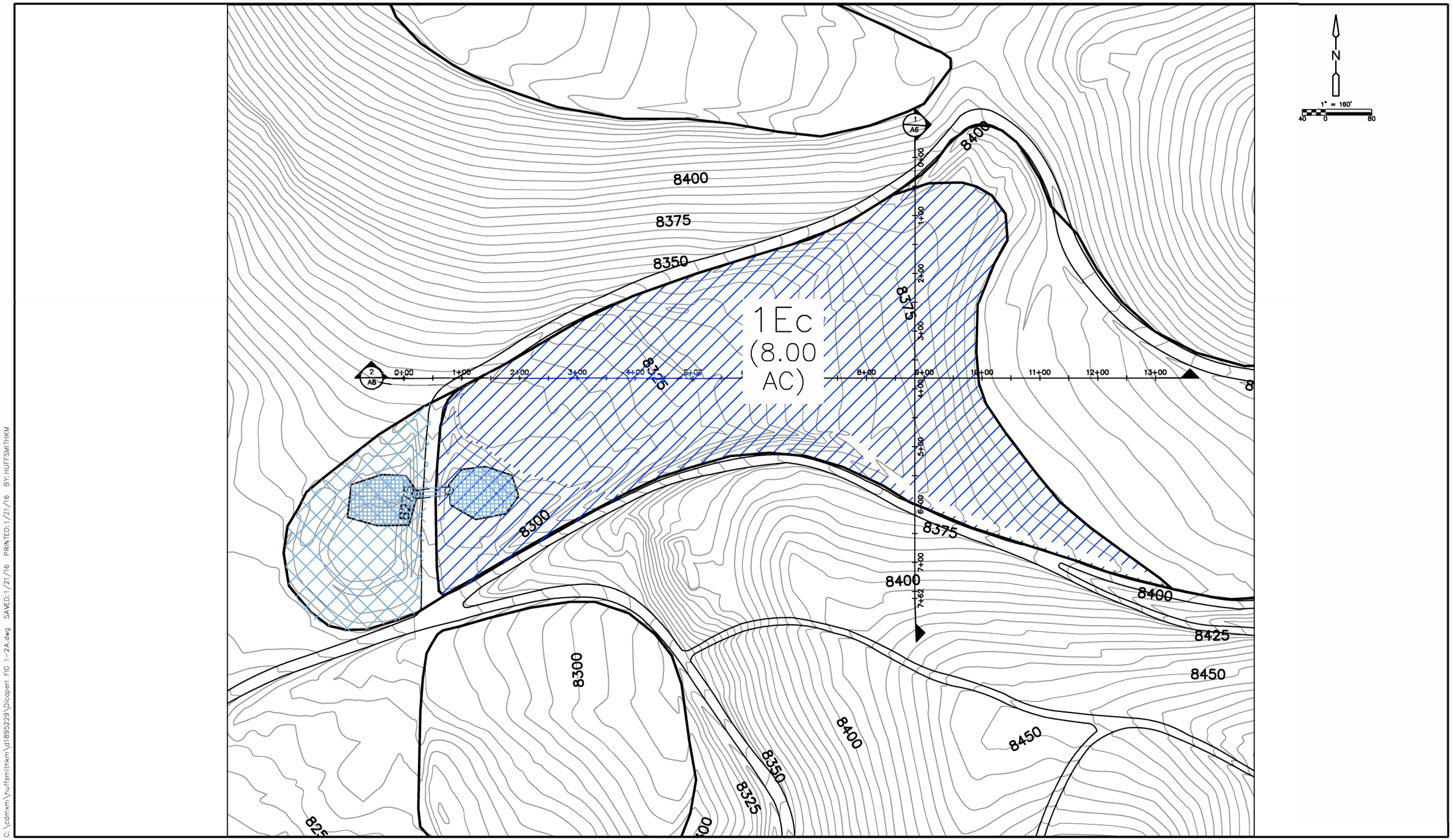
Figure A4
DUMP - 1Eb CROSS SECTIONS
AUGUST 2018



C:\cdmxm\huffsmithkm\d1895229\Dicaperl FIG 1-2A.dwg SAVED:1/21/16 PRINTED:1/21/16 BY:HUFFSMITHKM

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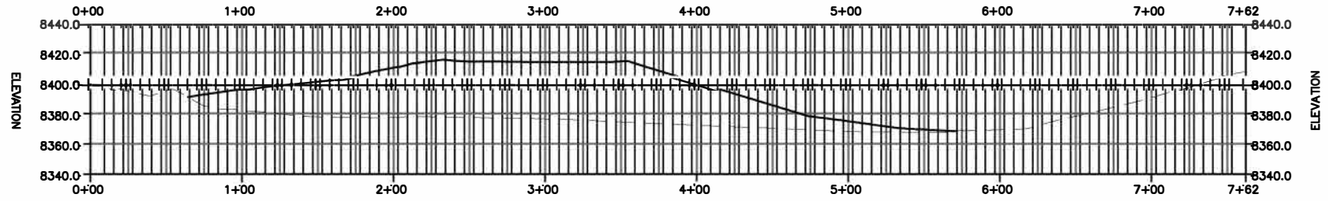
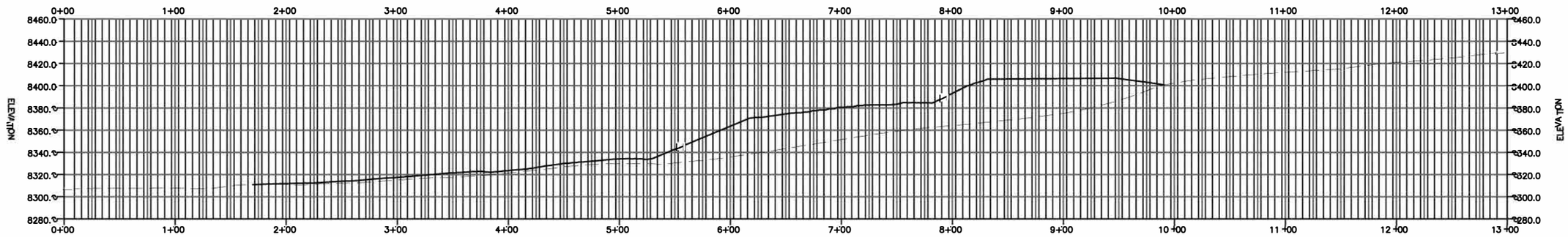
Figure A5
WORK AREA SITE PLAN - 1Ec
AUGUST 2018



NORTH AND SOUTH SECTION 1Ec

SECTION 1 / A5

1" = 50'



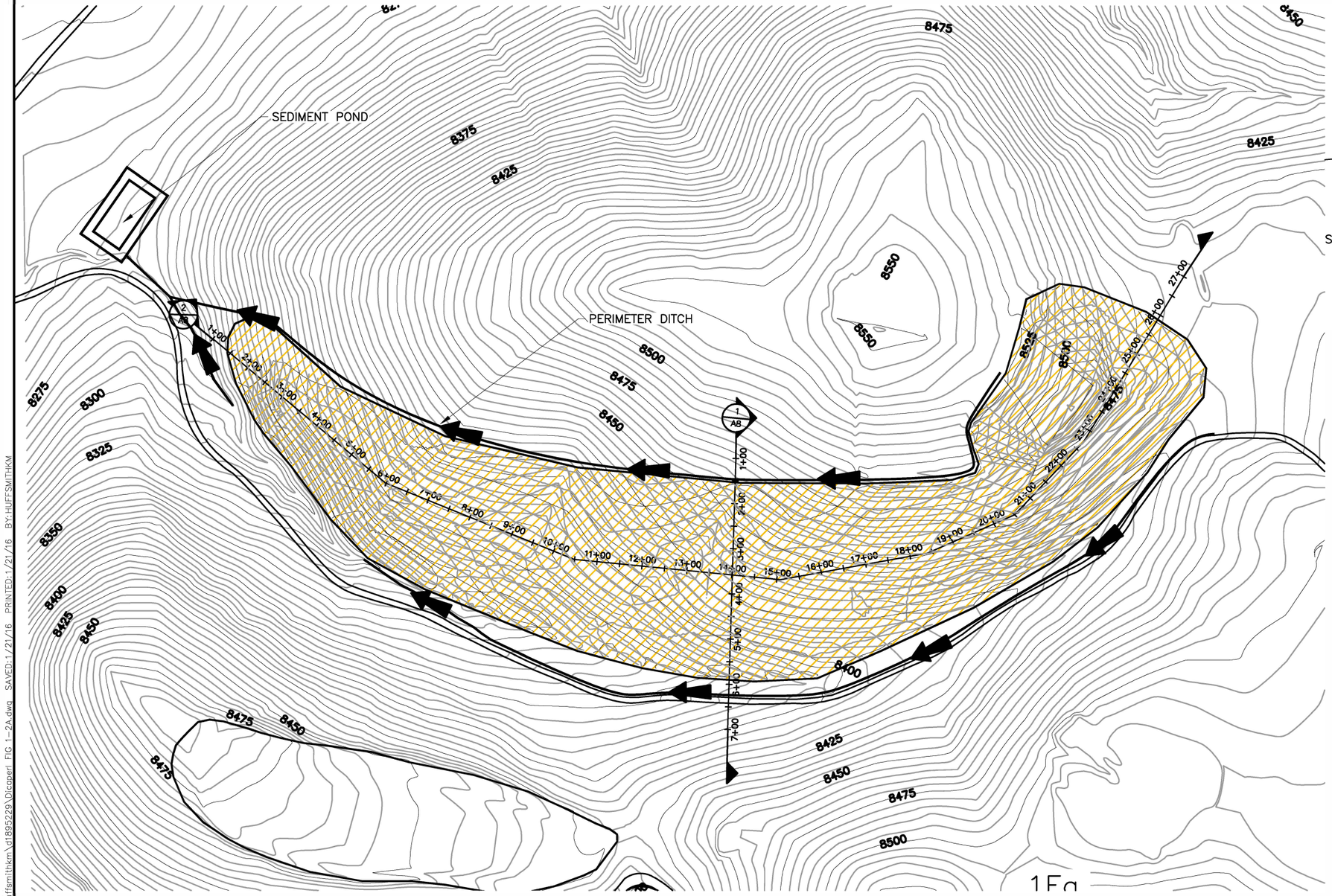
EAST AND WEST SECTION 1Ec

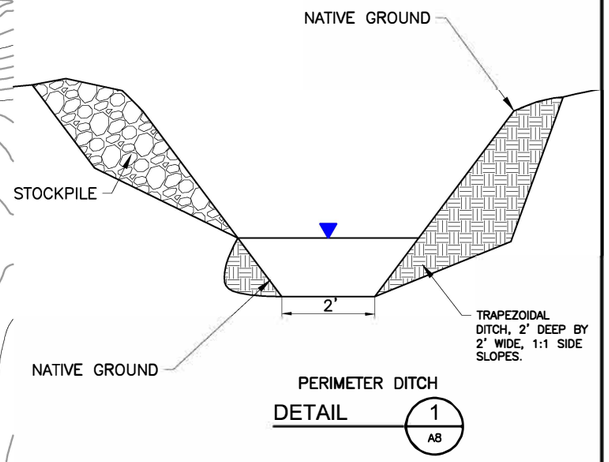
SECTION 2 / A5

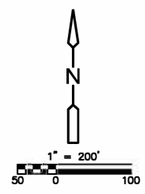
1" = 50'

CDM Smith

Figure A6
DUMP - 1Ec CROSS SECTIONS
AUGUST 2018







C:\cdmxm\\nuffsmithkm\cf1895229\Dicaper1 FIG 1--2A.dwg SAVED:1/21/16 PRINTED:1/21/16 BY:HUFFSMITHKM

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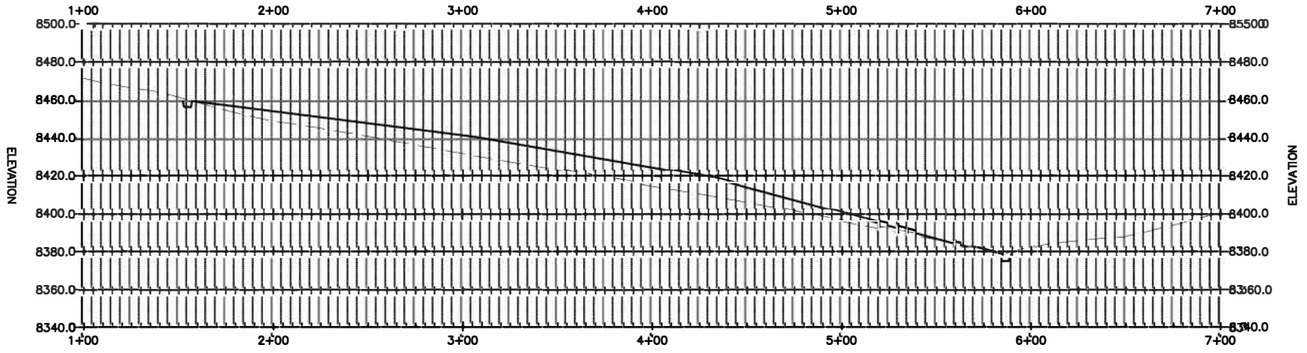
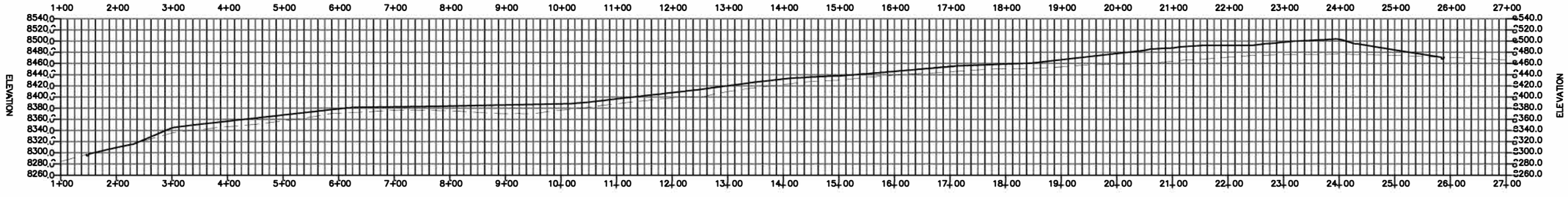
Figure A7
WORK AREA SITE PLAN - 2A
AUGUST 2018



NORTH AND SOUTH SECTION 2A

SECTION 1 / A7

1" = 40'



EAST AND WEST SECTION 2A

SECTION 2 / A7

1" = 100'

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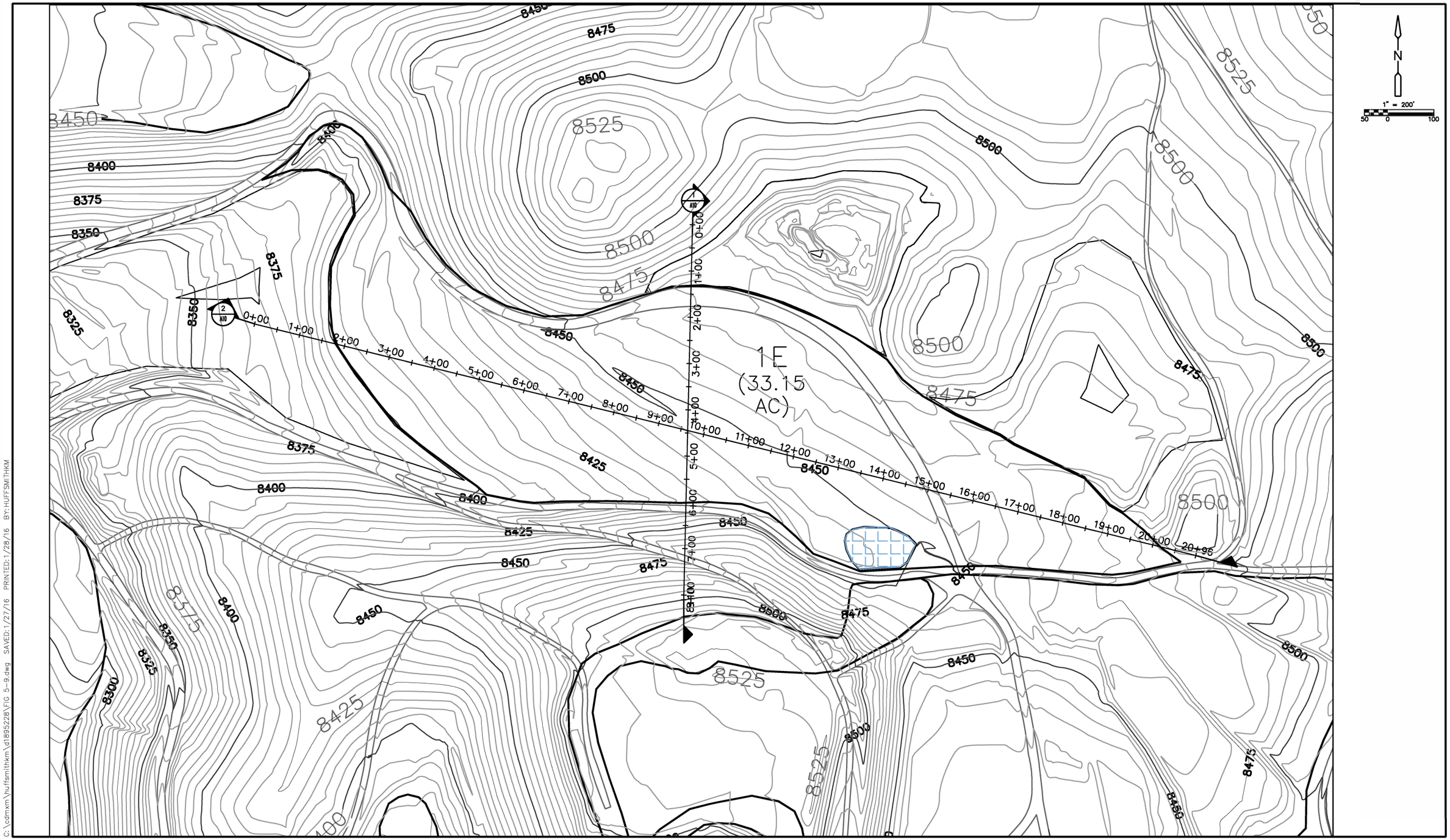
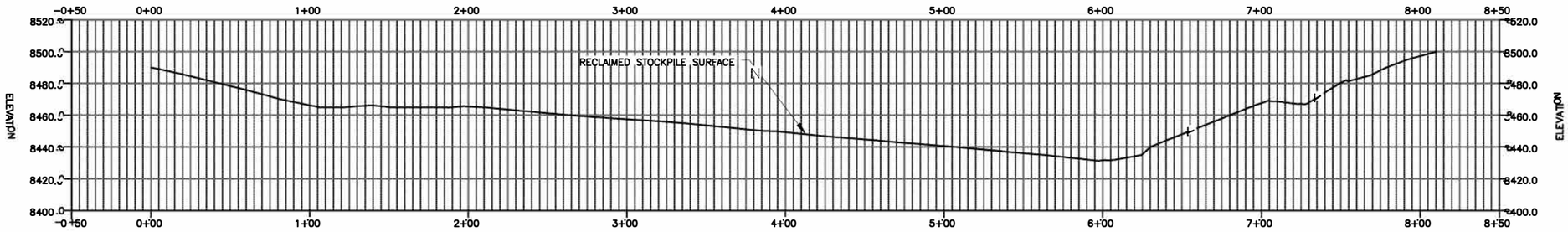
Figure A8
DUMP - 2A CROSS SECTIONS
AUGUST 2018



C:\cdmxm\hufsmithkm\d1895228\FIG 5--9.dwg SAVED:1/27/16 PRINTED:1/28/16 BY:HUFFSMITHKM

CDM Smith

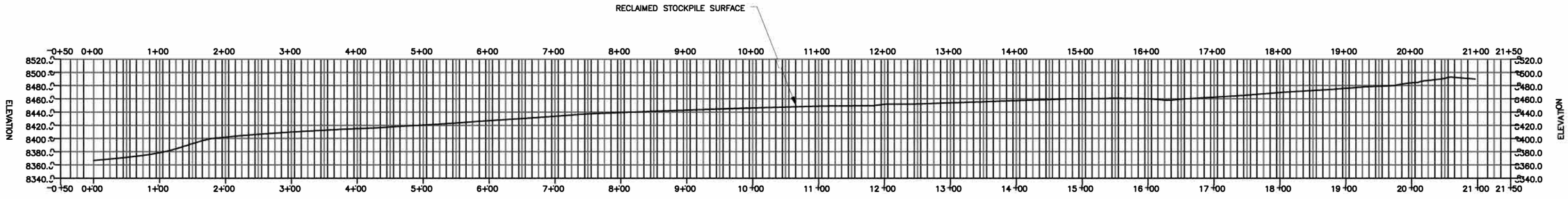
Figure A9
WORK AREA SITE PLAN - 1E
AUGUST 2018



NORTH AND SOUTH SECTION 1E

SECTION 1 / A9

1" = 40'



EAST AND WEST SECTION 1E

SECTION 2 / A9

1" = 80'

C:\cdmxm\huffsmithkm\d1852\28\FIG 5-9.dwg SAVED:1/2/16 PRINTED:1/28/16 BY:HUFFSMITHKM

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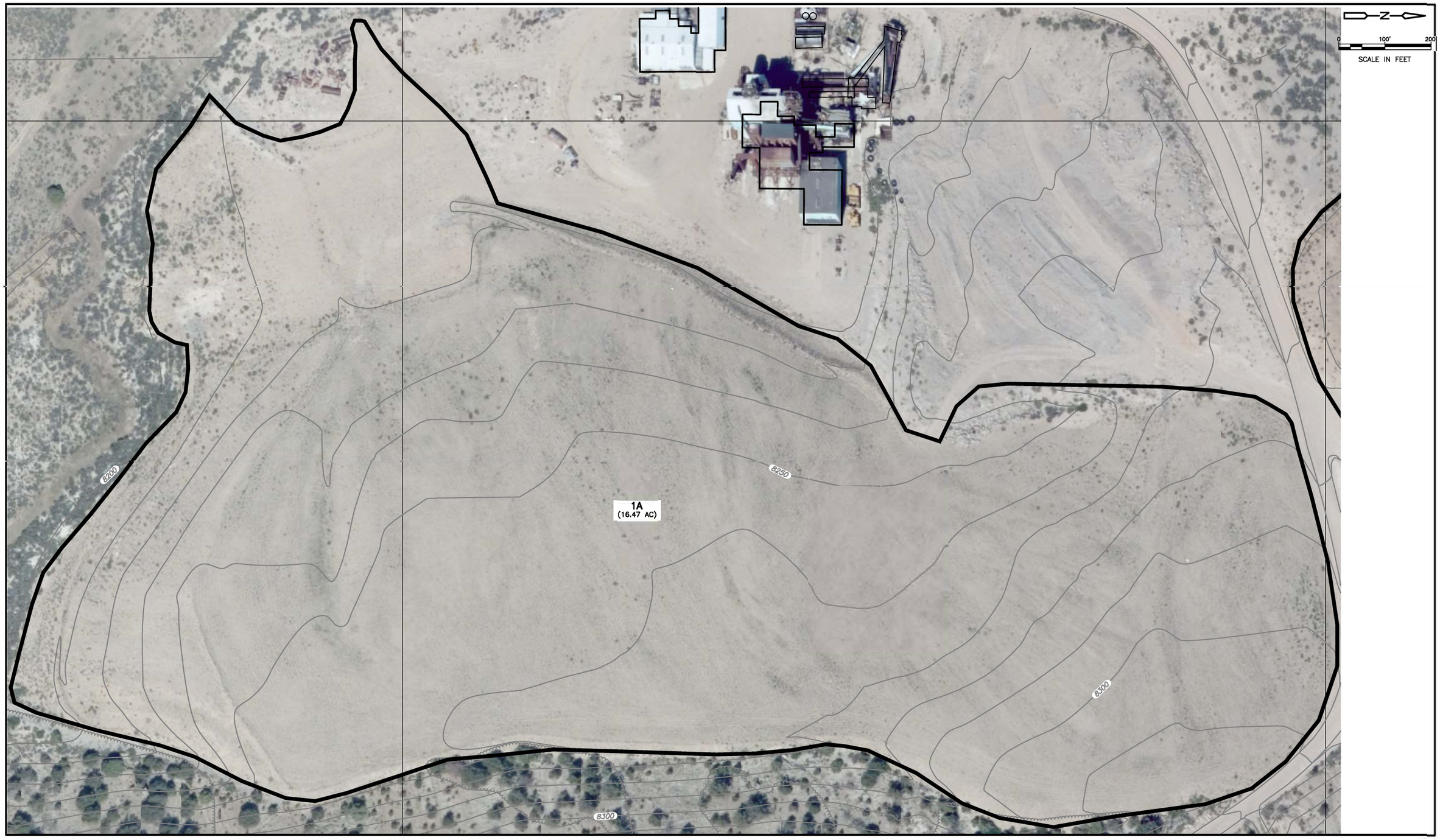
Figure A10

DUMP NO. 1E NORTH/SOUTH AND EAST/WEST CROSS SECTIONAL VIEWS

AUGUST 2018


El Grande Mine
Proposed Reference Areas
Legend
No Agua Peak West
North Reference Area
Dicaperl - El Grande
Southwest Reference Area
Southeast Reference Area
Google earth
© 2016 Google
N
2000 ft

Figure 4-1

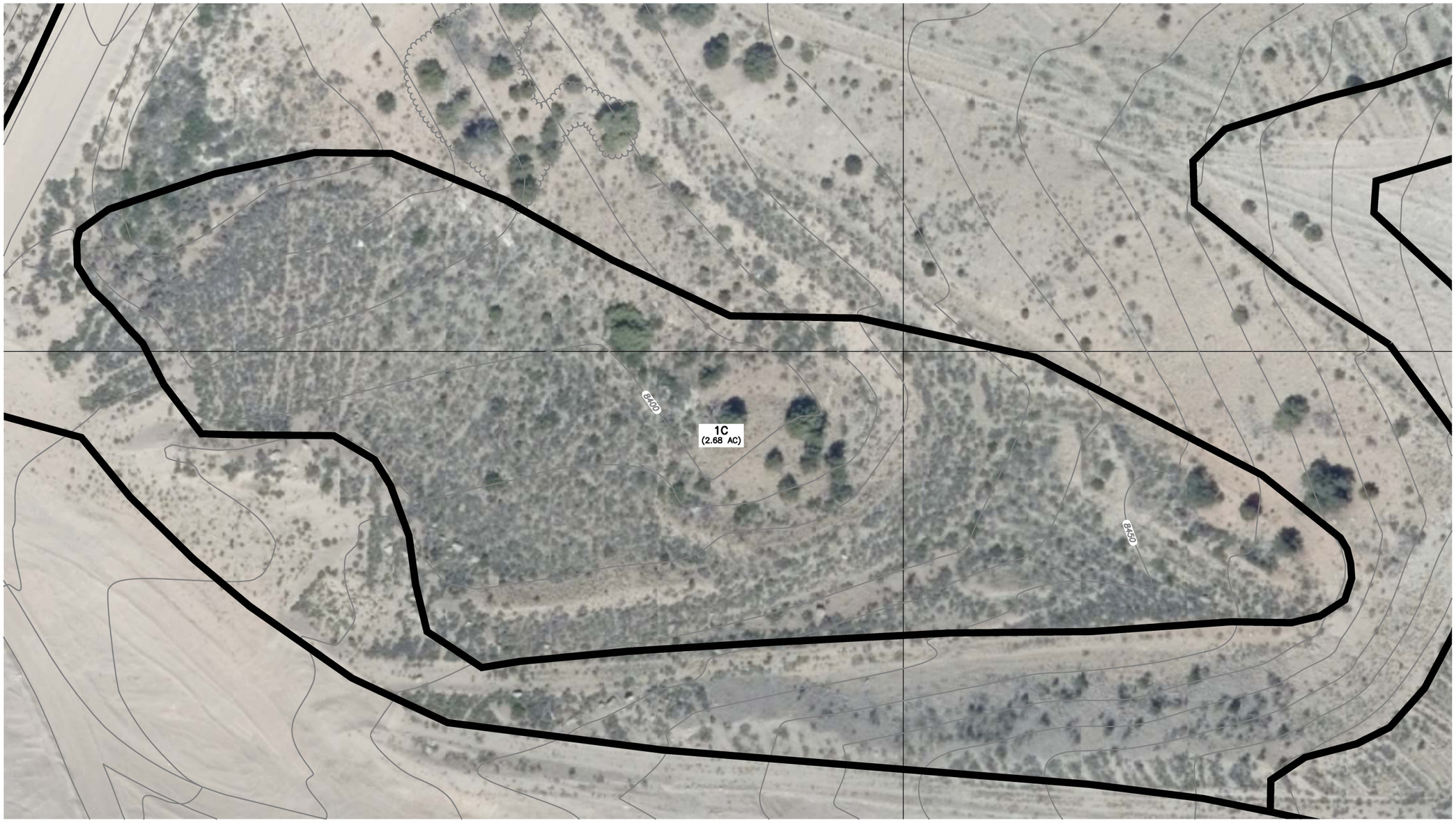


CDM Smith

Figure 5-1
AREA 1A ENLARGED SITE PLAN
August 2018

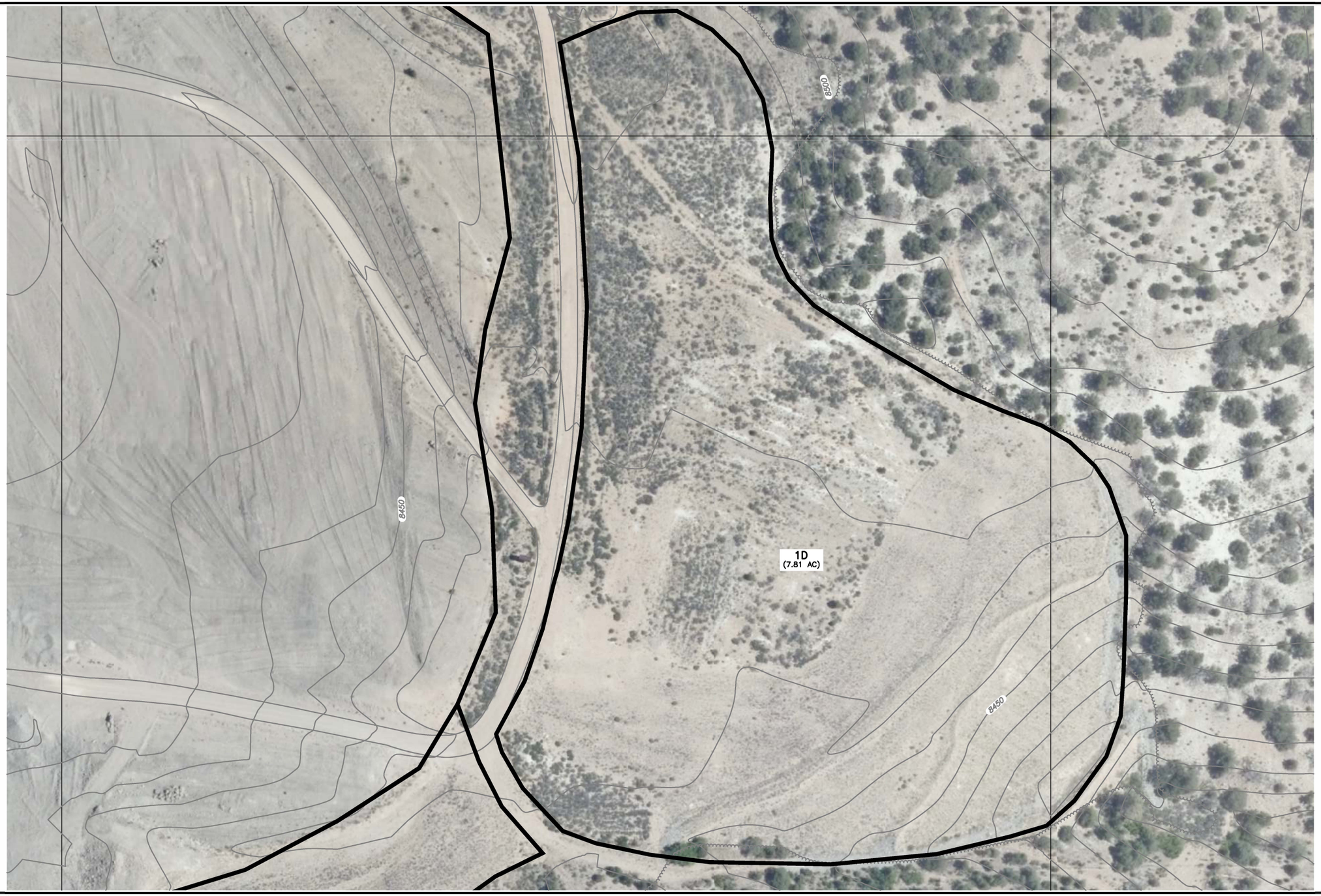
CDM Smith

Figure 5-2
AREA 1B ENLARGED SITE PLAN
August 2018



CDM Smith

Figure 5-3
AREA 1C ENLARGED SITE PLAN
August 2018



N

0 100' 200'

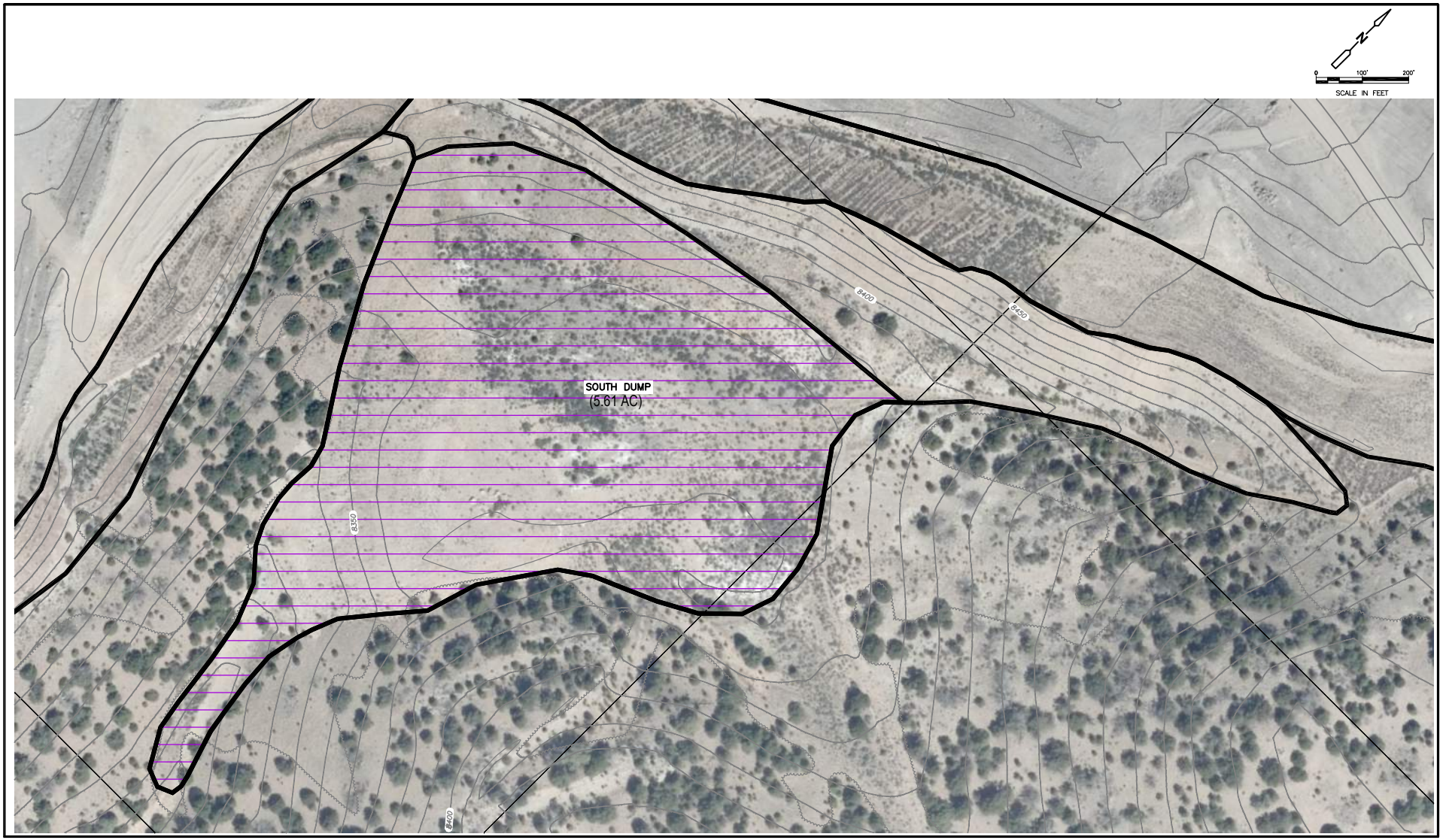
SCALE IN FEET

CDM Smith

Figure 5-4
AREA 1D ENLARGED SITE PLAN
August 2018

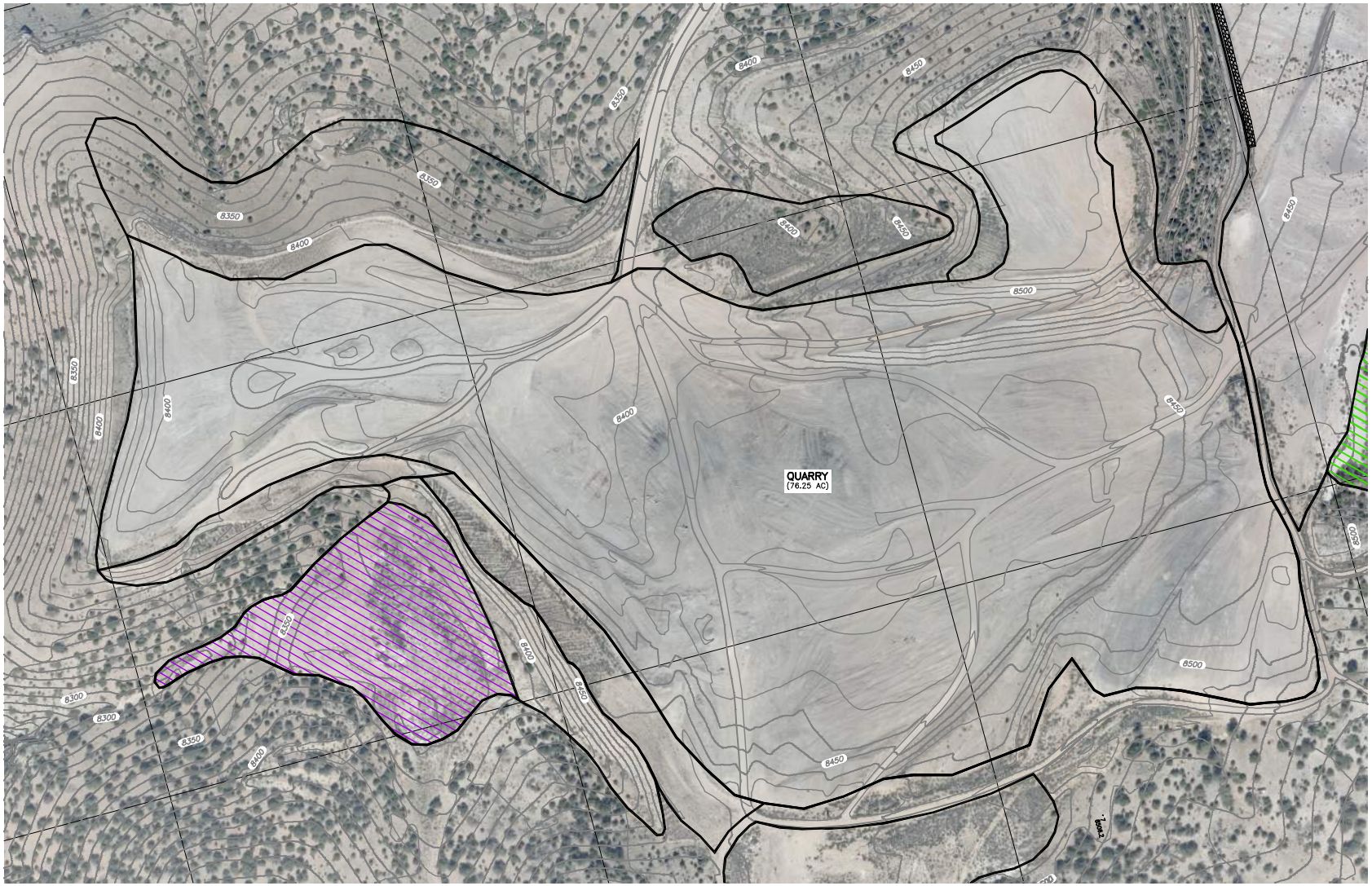
CDM Smith

Figure 5-5
AREA 1E ENLARGED SITE PLAN
August 2018



CDM Smith

Figure 5-6
SOUTH DUMP ENLARGED SITE PLAN
August 2018



CDM Smith

Figure 5-7
QUARRY ENLARGED SITE PLAN
August 2018

N

0 200' 400'

SCALE IN FEET

DUMP NO. 2
(19.16 AC)

8350
8400
8450
8500
8550

CDM Smith

Figure 5-8
DUMP NO. 2 ENLARGED SITE PLAN
August 2018

Appendix A

Safety Data Sheets

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POLYPROPYLENE Material Safety Data Sheet

I. General Information

Chemical Name & Synonyms Polypropylene	Trade Name & Synonyms Natural Homopolymer Polypropylene, O, P grade polypropylene.
Chemical Family Homopolymer Polypropylene	Formula [Ch (ch3) ch2-]
Proper DOT Shipping Name: N/A	DOT Hazard Classification: N/A

II. Ingredients

Principal Components	Percent	Threshold Limit Value (Units)
Polypropylene (9003-07-0)	>99%	10mg/m3 (total dust)

III. Physical Data

Boiling Point (Deg. F.) N/A	Specific Gravity (H20=1) .90-.91
Vapor Pressure (mm Hg) N/A	Percent Volatile By Volume (%)
Vapor Density (Air=1) N/A	Evaporation Rate (Air =1) N/A
Solubility in Water Negligible	pH N/A
Appearance & Odor Opaque, or white, solid, no odor	

IV. Fire & Explosion Hazard Data

Flash Point (Test Method) >500F (260C)	Auto Ignition Temperature 735F (388C)	
Flammable Limits N/A	LEL N/A	UEL N/A

Extinguishing Media
Water, Foam, Carbon Dioxide, Dry Chemical

Special Fire Fighting Procedures
Slow burning plastic that emits a dense black smoke. Firefighters should wear a self-contained breathing apparatus and protective clothing.

Unusual Fire & Explosion Hazards Dust is flammable when finely divided (less than 200 mesh) and suspended in air.
Combustion products may be hazardous.

V. Health Hazard Data

OSHA Permissible Exposure Limit	ACGIH Threshold Limit Value
15 mg/m3 total dust, 5 mg/m3 respirable dusts.	10 mg/m3 total dust
Carcinogen - NTP Program	**Carcinogen - IARC Program**
NO	NO

Symptoms of Exposure

Polypropylene heated to 700 deg. F can irritate the respiratory tract.

Medical Conditions Aggravated By Exposure

None known, however, seek medical attention if constant irritation occurs. If thermal decomposition occurs, upper respiratory, eye, nose, and throat irritation may result.

Primary Route(s) of Entry

Inhalation of particulates.

Emergency First Aid

Molten material. If molten material comes in contact with the skin, cool under running water. Do not attempt to remove the molten material from the skin. Get medical attention.

VI. Reactivity Data

STABILITY ____ Unstable	Conditions To Avoid
X Stable	None Known
INCOMPATABILITY	Materials To Avoid
Hazardous ___ May Occur	Strong oxidizing agents.
Polymerization X Will Not Occur	Conditions To Avoid
	None Known

Hazardous Decomposition Products: Carbon Monoxide, Carbon Dioxide, organic oxidation products, acrid smoke, and fumes.

VII. Environmental Protection Procedures

Spill Response...Sweep up for Disposal or reuse.

Waste Disposal Method...Incineration or landfill - dispose of in accordance with Federal, State and Local regulations.

VIII. Special Protection Information

Eye Protection	Skin Protection
Glasses with side shields.	Use insulated gloves when handling molten material.

Respiratory Protection (Specific Type) - NIOSH approved dust respirator recommended. If material is being burned wear an organic respirator.

Ventilation Recommended - Local ventilation in dusty conditions, or if thermal decomposition occurs.

Other Protection

Gloves and protective garments when handling molten material.

IX. Special Precautions

Hygienic Practices In Handling & Storage: Wash with soap and water.

Precautions For Repair & Maintenance Of Contaminated Equipment: Eliminate ignition sources.

Other Precautions

Avoid excess breathing of vapors, fumes, or smoke that may be released during thermal processing. Store in a sprinkler protected warehouse. Natural Homopolymer Polypropylene will burn if ignited.

NFPA Code: Fire 1, Health 0, Reactivity 0

HMIS Code: Fire 1, Health 0, Reactivity 0

X. Regulatory Information
OSHA Status: Polypropylene is not considered hazardous under OHSA.
TSCA Inventory Status: All ingredients are listed.
CERCLA Reportable Quantity (RQ): None
SARA Title III: Section 302/304.No extremely hazardous substances Section 311/312.No reporting requirements although it is suggested that storage of >10,000 lbs of polypropylene in one facility should be listed on a Tier II report. Section 313: No reporting requirements.

Hazard data contained herein was obtained from raw material suppliers. The information presented is believed to be factual, as it was derived from the works and opinions of persons believed to be qualified. However, no facts contained in the information are to be taken as a warranty, or representation, for which A&C Plastics Inc. bears legal responsibility. The user should review any recommendation in the specific context of the intended use to determine if they are appropriate.

N.A.= Not Applicable N.E.= Not Established

SAFETY DATA SHEET

Issuing Date 24-Mar-2014 **Revision Date** 24-Mar-2014 **Revision Number** 0

1. IDENTIFICATION OF THE SUBSTANCE/PREPARATION AND THE COMPANY/UNDERTAKING

GHS product identifier

Product Name **PERLITE ORE PROUCTS**

Other means of identification

Synonyms Dicaperl, Perlite Ore, from Socorro NM Deposit, Perlite Ore, Alumina Silicate
SOC 82,79,78,77,76,76S,75,72,71S,71,69,68,67,67G,66C,66,66A,60,54,53,52,51,000

Recommended use of the chemical and restrictions on use

Recommended Use Multi-Functional Industrial/Commercial Mineral Ore.

Supplier's details

Manufacturer Address
DICALITE MINERALS CORP
1 Bala Ave, Suite 310
Bala Cynwyd, PA 19004
TEL: (610)660-8840
(530)-335-5451

Emergency telephone number

Company Emergency Phone Number (610)660-8840, (530)-335-5451

2. HAZARDS IDENTIFICATION

Classification

This chemical is considered hazardous according to the OSHA Hazard Communication Standard 2012 (29 CFR 1910.1200)

Carcinogenicity	Category 1A
Specific Target Organ Toxicity (Repeated Exposure)	Category 2

GHS Label elements, including precautionary statements

Emergency Overview

Signal Word **Danger**

Hazard Statements

- May cause cancer with repeated or prolonged exposure if inhaled.
- Causes damage to lungs through prolonged or repeated exposure if inhaled

Appearance White to Grey **Physical State** Powder. **Odor** Odorless

Precautionary Statements

Prevention

- Obtain special instructions before use
- Do not handle until all safety precautions have been read and understood
- Use personal protective equipment as required
- Do not breathe dust/fume/gas/mist/vapors/spray.

General Advice

- If exposed or concerned: Get medical attention/advice

Storage

- Keep dry.

Disposal

- Dispose of contents/container in accordance wth local,state and federal laws.

Hazard Not Otherwise Classified (HNOC)

Not applicable

Other information

0% of the mixture consists of ingredient(s) of unknown toxicity.

3. COMPOSITION/INFORMATION ON INGREDIENTS

Synonyms Dicaperl, Perlite Ore, from Socorro NM Deposit, Perlite Ore, Alumina Silicate

Chemical Name	CAS-No	Weight %
Perlite Ore (alumina-silicate mineral)	130885-09-5	Up to 100%
Quartz	14808-60-7	<2%

4. FIRST AID MEASURES

Description of necessary first-aid measures

Eye Contact Rinse thoroughly with plenty of water, also under the eyelids. Do not rub affected area. If irritation persists, call a physician.

Skin Contact Use moisturizing lotions if dryness occurs.

Inhalation Move to fresh air. Drink water and blow nose to remove dust.

Ingestion Drink plenty of water.

Most important symptoms/effects, acute and delayed

Most Important Symptoms/Effects Difficulty in breathing.

Indication of immediate medical attention and special treatment needed, if necessary

Notes to Physician Treat symptomatically.

5. FIRE-FIGHTING MEASURES

Suitable Extinguishing Media
Use extinguishing measures that are appropriate to local circumstances and the surrounding environment.

Unsuitable Extinguishing Media None

Specific Hazards Arising from the Chemical
None known

Explosion Data
Sensitivity to Mechanical Impact None.
Sensitivity to Static Discharge None.

Protective Equipment and Precautions for Firefighters
As in any fire, wear self-contained breathing apparatus pressure-demand, MSHA/NIOSH (approved or equivalent) and full protective gear.

6. ACCIDENTAL RELEASE MEASURES

Personal precautions, protective equipment and emergency procedures

Personal Precautions Use personal protective equipment. Avoid dust formation. Avoid inhalation of dust. Avoid contact with the skin and the eyes.

Environmental Precautions

Environmental Precautions See Section 12 for additional Ecological Information

Methods and materials for containment and cleaning up

Methods for Containment Avoid creating dust.

Methods for Cleaning Up (Recommended) Clean up material with vacuum equipped with HEPA filter. Use water as dust suppressant if necessary. Avoid dust formation.

7. HANDLING AND STORAGE

Precautions for safe handling

Handling Use only in area provided with appropriate exhaust ventilation. Avoid breathing dust. Do not use compressed air for clean-up. Wear personal protective equipment. Avoid dust formation.

Conditions for safe storage, including any incompatibilities

Storage Keep dry

Incompatible Products Hydroflouric Acid

8. EXPOSURE CONTROLS / PERSONAL PROTECTION

Control parameters

Exposure Guidelines

Chemical Name	ACGIH TLV	OSHA PEL	NIOSH IDLH
Quartz 14808-60-7	TWA: 0.025 mg/m^3 respirable fraction	30/(%SiO2+2) mg/m^3 TWA, Total Dust;250/%SiO2+5) mppcf TWA, respirable fraction; 10/(%SiO2+2) mg/m^3 TWA, respirable TWA: 0.1 mg/m^3 (vacated)	IDLH: 50 mg/m^3 respirable dust TWA: 0.05 mg/m^3 respirable dust

ACGIH TLV: American Conference of Governmental Industrial Hygienists - Threshold Limit Value. OSHA PEL: Occupational Safety and Health Administration - Permissible Exposure Limits. NIOSH IDLH: Immediately Dangerous to Life or Health.

Other Exposure Guidelines Vacated limits revoked by the Court of Appeals decision in AFL-CIO v. OSHA, 965 F.2d 962 (11th Cir., 1992).

Appropriate engineering controls

Engineering Measures Showers
Eyewash stations
Ventilation systems

Individual protection measures, such as personal protective equipment

Eye/Face Protection Tightly fitting safety goggles.
Skin and Body Protection Protective gloves.
Respiratory Protection Use NIOSH approved respirators to protect against silicosis producing dusts. For dust concentrations:<10x PEL, use an N95 quarter or half mask respirator; <50X PEL, use a full face respirator equipped with N95 filters; <200X PEL, use a powered air purifying respirator (positive pressure) with N95 filters; for dust concentrations >200X the PEL use a type C, supplied air respirator (continuous flow, positive pressure), with a full facepiece.

Hygiene Measures Remove and wash contaminated clothing before re-use. Contaminated work clothing should not be allowed out of the workplace.

9. PHYSICAL AND CHEMICAL PROPERTIES

Information on basic physical and chemical properties

Physical State	Powder	**Appearance**	White to Grey
Odor	Odorless	**Odor Threshold**	No information available

Property	Values	Remarks/ - Method
pH	6-10	10% sol\ution
Melting Point/Range	>1037.7 °C / >1900 °F	ASTM or equivalent
Boiling Point/Boiling Range	Not applicable	Not applicable
Flash Point	Not applicable	Not applicable
Evaporation rate	Not applicable	Not applicable
Flammability (solid, gas)	Not applicable	Not applicable
Flammability Limits in Air		
upper flammability limit	Not applicable	N/A
lower flammability limit	Not applicable	N/A
Vapor Pressure	Not applicable	Not applicable
Vapor Density	Not applicable	Not applicable
Specific Gravity	Not applicalbe	Not applicable
Water Solubility	Negligible	Not applicable
Solubility in other solvents	No data available	Not applicable
Partition coefficient: n-octanol/water	No data available	Not applicable
Autoignition Temperature	No data available	Not applicable
Decomposition Temperature	No data available	Not applicable
Viscosity	No data available	Not applicable

Flammable Properties Not flammable

Explosive Properties Not explosive
Oxidizing Properties Not an oxidizer

Other information

VOC Content (%) No data available

10. STABILITY AND REACTIVITY

Reactivity

Not reactive except with Hydroflouric Acid.

Chemical stability

Stable under recommended storage conditions.

Possibility of hazardous reactions

None under normal processing.

Conditions to avoid

None known.

Incompatible materials

Hydroflouric Acid

Hazardous decomposition products

Silica oxides.

11. TOXICOLOGICAL INFORMATION

Information on likely routes of exposure

Product Information

Inhalation May cause irritation of respiratory tract. Inhalation overexposure to respirable crystalline silica may cause delayed lung injury including silicosis, a disabling and potentially fatal lung disease. Inhalation exposure to respirable levels of crystalline silica may cause respiratory impairment and lung damage.

Eye Contact Dust contact with the eyes can lead to mechanical irritation.

Skin Contact Prolonged or repeated contact may dry skin and cause irritation.

Ingestion May cause irritation

Component Information

Chemical Name	LD50 Oral	LD50 Dermal	LC50 Inhalation
Quartz	500 mg/kg (Rat)	-	-

Symptoms related to the physical, chemical and toxicological characteristics

Symptoms No information available.

Delayed and immediate effects and also chronic effects from short and long term exposure

Sensitization No information available.

Mutagenic Effects No information available.

Carcinogenicity The table below indicates whether each agency has listed any ingredient as a carcinogen.

Chemical Name	ACGIH	IARC	NTP	OSHA

Quartz	A2	Group 1	Known	X

ACGIH: (American Conference of Governmental Industrial Hygienists)
A2 - Suspected Human Carcinogen
IARC: (International Agency for Research on Cancer)
Group 1 - Carcinogenic to Humans
NTP: (National Toxicity Program)
Known - Known Carcinogen
OSHA: (Occupational Safety & Health Administration)
X - Present

Reproductive Toxicity No information available.
STOT - single exposure No information available.
STOT - repeated exposure Causes damage to lungs through prolonged or repeated exposure if inhaled
Chronic Toxicity Inhalation exposure to respirable levels of crystalline silica may cause respiratory impairment and lung damage.
Target Organ Effects Lungs.
Aspiration Hazard No information available.

Numerical measures of toxicity - Product
Acute Toxicity 0% of the mixture consists of ingredient(s) of unknown toxicity.
The following values are calculated based on chapter 3.1 of the GHS document:
LD50 Oral 10000 mg/kg; Acute toxicity estimate

12. ECOLOGICAL INFORMATION

Ecotoxicity
The material is generally considered non-hazardous to the environment as a naturally occurring mined and processed inorganic mineral.

Persistence and Degradability Product is not biodegradable.

Bioaccumulation Not likely to bioaccumulate.

Other Adverse Effects
None known

13. DISPOSAL CONSIDERATIONS

Waste Disposal Methods This material, as supplied, is not a hazardous waste according to Federal regulations (40 CFR 261). This material could become a hazardous waste if it is mixed with or otherwise comes in contact with a hazardous waste, if chemical additions are made to this material, or if the material is processed or otherwise altered. Consult 40 CFR 261 to determine whether the altered material is a hazardous waste. Consult the appropriate state, regional, or local regulations for additional requirements.

Contaminated Packaging Do not re-use empty containers. Empty containers should be taken to an approved waste handling site for recycling or disposal.

14. TRANSPORT INFORMATION

DOT Not regulated
DOT Shipping Name: Perlite, Crude, Class 55 No restrictions
TDG Not regulated
UN/NA Number: Not Applicable
MEX Not regulated

15. REGULATORY INFORMATION

International Inventories

TSCA	Complies
DSL	Complies

Legend

TSCA - United States Toxic Substances Control Act Section 8(b) Inventory
DSL/NDSL - Canadian Domestic Substances List/Non-Domestic Substances List

U.S. Federal Regulations

Section 313 of Title III of the Superfund Amendments and Reauthorization Act of 1986 (SARA). This product does not contain any chemicals which are subject to the reporting requirements of the Act and Title 40 of the Code of Federal Regulations, Part 372.

SARA 311/312 Hazard Categories

Acute Health Hazard	No
Chronic Health Hazard	Yes
Fire Hazard	No
Sudden Release of Pressure Hazard	No
Reactive Hazard	No

Clean Water Act

This product does not contain any substances regulated as pollutants pursuant to the Clean Water Act (40 CFR 122.21 and 40 CFR 122.42).

CERCLA

This material, as supplied, does not contain any substances regulated as hazardous substances under the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) (40 CFR 302) or the Superfund Amendments and Reauthorization Act (SARA) (40 CFR 355). There may be specific reporting requirements at the local, regional, or state level pertaining to releases of this material.

U.S. State Regulations

California Proposition 65

This product contains the following Proposition 65 chemicals:

Chemical Name	CAS-No	California Prop. 65
Quartz	14808-60-7	Carcinogen

U.S. State Right-to-Know Regulations

Chemical Name	New Jersey	Massachusetts	Pennsylvania	Illinois	Rhode Island
Quartz	X	X	X	-	X

U.S. EPA Label Information

EPA Pesticide Registration Number Not applicable

16. OTHER INFORMATION

NFPA	**Health Hazard**	1	**Flammability**	0	**Instability** 0	**Physical and Chemical Hazards** -
HMIS	**Health Hazard**	1*	**Flammability**	0	**Physical Hazard** 0	**Personal Protection** X

**Indicates a chronic health hazard.*

Prepared By	Product Stewardship 23 British American Blvd. Latham, NY 12110 1-800-572-6501
Issuing Date	24-Mar-2014
Revision Date	24-Mar-2014
Revision Note	Initial Release.

General Disclaimer

The information provided on this SDS is correct to the best of our knowledge, information and belief at the date of its publication. The information given is designed only as a guide for safe handling, use, processing, storage, transportation, disposal and release and is not to be considered as a warranty or quality specification. The information relates only to the specific material designated and may not be valid for such material used in combination with any other material or in any process, unless specified in the text.

End of Safety Data Sheet

MATERIAL SAFETY DATA SHEET - REPOL

POLYPROPYLENE

SECTION 1 - CHEMICAL PRODUCT AND COMPANY IDENTIFICATION

Chemical Name & Synonyms	:	Polypropylene Copolymer
Chemical Family	:	Polyolefin
Trade Name & Synonyms	:	Repol
C.A.S. No.	:	9010-79-1
Formula	:	–
Manufacturer's Name	:	Reliance Industries Ltd.
Address	:	Polymers Research & Technology Centre, Swastik Mill Compound, V. N. Purav Marg, Chembur, Mumbai-400 071, India
Telephone No.	:	+91-22-6767 7000

SECTION 2 - COMPOSITION / INFORMATION ON INGREDIENTS

Paints, Preservatives & Solvents	%	TLV (units)	Alloys & Metallic Coatings	%	TLV (units)
Pigments	NIL	NA	Base metal	NIL	NA
Catalyst	0.01	NA	Alloys	NIL	NA
Vehicle	NIL	NA	Metallic coatings	NIL	NA
Solvents	NIL	NA	Filler Metal plus coating or core flux	NIL	NA
Additives	<1	NA	Others	NIL	NA
Hazardous mixtures of other liquids, solids or gases				NIL	NA

Repol Polypropylene resins are not considered to be hazardous under normal processing conditions.

SECTION 3 - HAZARDS IDENTIFICATION

Potential Health Effects

Eye contact

The powder may cause eye irritation.

Skin contact

Negligible hazard at ambient temperatures (-18°C to + 50°C; 0°F to 100°F) but exposure to hot materials may cause thermal burns.

Inhalation

Negligible hazard at ambient temperatures (-18°C to +50°C; 0°F to 100°F) but vapours that are formed at elevated temperatures may be irritating to eyes and respiratory tract.

Ingestion

Not toxic.

SECTION 4 - FIRST AID MEASURES

Eye contact

This product is an inert solid, so flush eyes with water and do not rub.

Skin contact

Immediately wash affected area with large amounts of cold water to dissipate heat. Cover with clean cotton sheeting and get prompt medical attention. No attempt should be made to remove material from skin or to remove contaminated clothing, as the damaged flesh can be easily torn.

Inhalation

Immediately remove the affected victim from exposure. Administer artificial respiration, if breathing stops and call for prompt medical attention.

Ingestion

Get medical attention.

SECTION 5 - FIRE FIGHTING MEASURES

Flash Ignition Temperature - 345°C	LEL	NA
Auto Ignition Temperature - 360°C	UEL	NA
Flammable Limits: NA		
Extinguishing Media: Water, Dry Chemical, Co_2, Foam		
Special Fire Fighting Procedures: Repol resins are combustible materials – molten Polypropylene tends to flow or drip and will propagate fire. Respiratory and eye protection is required for fire fighting personnel.		
Unusual Fire and Explosion Hazards: Failure or malfunction of temperature control systems on processing equipment such as extruders may create explosion hazard		

SECTION 6 - ACCIDENTAL RELEASE MEASURES

Land Spill

Recover spilled material and place in suitable containers for recycling or disposal. Pellets released or spilled during shipping or storage may create a slipping hazard and should be removed from walkways. Consult an expert on disposal of recovered material and ensure conformity to local regulations.

SECTION 7 - STORAGE AND HANDLING

Storage Temperature, °C	:	Ambient
Loading / Un-Loading Temperature, °C	:	Ambient
Storage / Transport Pressure, mm Hg	:	Atmospheric
Loading / Un-Loading Viscosity, cSt	:	Solid

Storage and Handling: Store in a cool, well ventilated place away from incompatible materials. DO NOT handle or store near an open flame, heat or other sources of ignition. Protect material from direct sunlight. Material will accumulate static charges that may cause an electric spark (ignition source). Use proper grounding procedures.

SECTION 8 - EXPOSURE CONTROLS / PERSONAL PROTECTION

Respiratory Protection (Specify type): NONE				
Ventilation	Local Exhaust recommended for high temperature processing		Special	--
	Mechanical (General)	--	Other	--
Protective Gloves: Use gloves when handling hot melt				
Eye Protection: Use goggles when handling hot melt				
Other Protective Equipment: Long sleeve shirts & long cotton pants to protect skin contact with hot melt				

SECTION 9 - PHYSICAL AND CHEMICAL PROPERTIES

Boiling Point (°C)	NA	Specific Gravity ($H_2O=1$)	0.90
Vapour Pressure (mm Hg)	NA	Percent Volatile by volume (%)	<0.1
Vapour Density, at 1 atm (Air=1)	NA	Evaporation Rate	NA
Solubility in water	Insoluble		
Appearance and odour: White pellets, no specific odour			

SECTION 10 - STABILITY AND REACTIVITY

Stability	Unstable	-	Conditions to avoid
	Stable	3	Heating above 350°C, direct flame
Incompatibility (materials to avoid): Strong oxidants at high temperature			
Hazardous decomposition products:	CO, CO_2, Hydrocarbons, Smoke, Acrolein		
Hazardous Polymerisation	May occur	-	Conditions to avoid
	Will not occur	3	NA

*Decomposition of products may vary in nature depending upon actual conditions; e.g. availability of oxygen; temperature and presence of other materials.

SECTION 11 - TOXICOLOGICAL INFORMATION

Please refer Section 3 for available information on potential health effects.

SECTION 12 - ECOLOGICAL INFORMATION

No specific ecological data is available for this product. Please refer Section 6 for information regarding accidental releases and Section 15 for regulatory reporting information.

SECTION 13 - DISPOSAL CONSIDERATIONS

Waste disposal method: landfill or incineration. Please refer Sections 5, 6 and 15 for disposal and regulatory information.

SECTION 14 - TRANSPORT INFORMATION

Not applicable, this product is not transport regulated.

SECTION 15 - REGULATORY INFORMATION

Repol meets the requirements stipulated in IS 10910 on, 'Specification for Polypropylene and its copolymers for safe use in contact with foodstuff, pharmaceuticals and drinking water'.

Additives incorporated in this grade conform to the positive list of constituents as prescribed in IS 10909.

The product and the additives incorporated in it also comply with the FDA: CFR Title 21,177.1520 Olefin polymer.

SECTION 16 - OTHER INFORMATION

Ecotoxicity: Not toxic under normal conditions

Persistence: Non-biodegradable

Manufacturer's Data

Regd. Office
Maker IV,
Nariman Point
Mumbai-400 021
Tel.: 91-22-2278 5000
Fax: 91-22-2278 5399

Manufacturing Plants

Reliance Industries Ltd.,
Hazira Manufacturing Division,
Surat Hazira Road,
Village Mora, P.O. Batha,
Surat-394 510
Gujarat,
Tel.: 91-0261-2835 000
Fax: 91-0261-2835 444

Reliance Industries Ltd.,
Village Moti Khavdi,
Post Digvijaygram,
Dist: Jamnagar-361 140
Gujarat,
Tel.: 0288-3012 929

Reliance Industries Ltd.,
Baroda Complex,
P.O Petrochemicals,
Dist: Vadodara-391 346
Gujarat,
Tel.: 0265-6696 000
Fax: 0265-6693 834

Reliance Industries Ltd.,
Maharastra Gas
Cracker Complex,
Nagothane,
Dist: Raigad-402 125
Maharastra,
Tel.: 02194-666 000
Fax: 02194-668 961

Reliance Industries Limited, Product - Application & Technology Group, PRTC,
Swastik Mill Compound, V. N. Purav Marg, Chembur, Mumbai-400 071. Tel.: +91-22-6767 7000. E-mail: polymer_patsupport@ril.com Website: www.ril.com

Updated as of May, 2007

Polypropylene

An Environmentally Responsible Product.

Polypropylene is made up from **carbon** and **hydrogen**, and is manufactured without any dangerous emissions.

Polypropylene is ecologically sound.

Polypropylene is one of the easiest plastics to recycle: it can be re-used up to 50 times without appearing to lose strength. PP can be incinerated, or disposed of in landfill sites without any harm to the environment. When burnt or incinerated, polypropylene will only give off water vapour or carbon dioxide, which is converted by photosynthesis (chlorophyll). To incinerate some materials, extra fuel needs to be added - polypropylene, however, is destroyed simply by burning because its calorific capacity is similar to that of oil. Thus incinerators economize on fuel and operate more efficiently.

PP is up to 35% lighter than PVC or PET, meaning that one only needs 13 tons of PP for every 20 tons of PVC or PET for the same application.

Polypropylene uses relatively little energy in its production process, compared with other plastic materials. It has a relatively low melting point (roughly half that of PET), and it uses no water (except for a closed cooling system). There are no harmful emissions during the production process of polypropylene.

All production waste is recycled, and there are no dangerous emissions or by-products during the manufacturing process. Polypropylene does not contain any heavy metals or plasticizers, and is chemically stable (inert). Post consumer waste can be reclaimed without any difficulties.

Polypropylene is resistant to water and most oils, greases and chemical products. It is extremely hardwearing, and does not break or tear. When polypropylene is creased, a change in the molecular structure increases the material's resistance to mechanical stress. Polypropylene lasts much longer than similar materials (PVC/ acetate/cellulose) and withstands extreme temperatures and aging.

Polypropylene satisfies the four requirements of the EC "Environment Commission":

1. Minimum use of natural resources
2. Reduced emission of polluting substances
3. Long working life
4. Optimized re-use and recycling

Because it is a high performance plastic which respects the environment (air, water, earth) and has intrinsic conversion advantages (it can be stitched, cut, creased, welded, folded, litho printed, screen printed, foil blocked), polypropylene is the material of the future.

Appendix B

Material Handling Plan

This Material Handling Plan describes the waste placement method, cover material characteristics, cover material availability, cover material placement, and commitment to prepare a QA/QC plan.

Waste Placement Methods

The waste material is bagged into polyethene, super sacs at the Antonito processing plant before being transported to the El Grande site for disposal. The super sacs are placed with an end-dump trailer along the edge of the waste dump. The super sacs are lined up along the dump sidewalls creating a tight row, lock pattern with little to no room to expand or move prior to being pushed into the dump.

Cover Material Characteristics

The obsidian-rich perlite material is the product remaining after the saleable perlite is mined from the Quarry, Therefore, as long as perlite is being mined the obsidian-rich material will be in abundance. The final cover material will be composed of Raton-Rock outcrop-Orejas and obsidian-rich material. The Raton-Rock outcrop-Orejas will be blended with the obsidian-rich material creating a suitable and appropriate cover material. The final cover material is supplied by stockpiles around the mined areas delivered by haul truck. Both the obsidian-rich material and Raton-Rock outcrop Orejas contain perlite, which is an additive to commercial potting soil that supports a variety of plant species.

The cover material will be assessed for any outside debris before applying it for final cover. This type of cover is commonly utilized in grazing pastures and supports a wide range of vegetation. Vegetation has become well established as El Grande Mine has observed positive results by utilizing this blend for cover material over the past 12 years.

Cover Material Availability

Obsidian-rich perlite material provides cover over the polyethene super sacs. The obsidian rich material is located in the central part of the mined area approximately 1700 feet south of the current dump area (1Ea). An estimated 460,000 cubic yards of obsidian-rich material is available for cover. Although the exact volume has not been determined, the obsidian rich resides beneath the perlite ore continues to be available throughout the mine area. Visual observations are used to identity the cover material by comparing black obsidian against a dark grey matrix. The material chosen has only been mined and not processed deeming it appropriate for suitable cover.

Cover Material Placement

A twelve (12) inch layer of Obsidian Rich perlite rich plus a twelve (12) inch layer of Raton rock outcrop-Orejas material will be placed on top to the super sacs and waste dumps to stabilize the area. (July 4, 2015, 7 and June 21, 2016, 7) The loose obsidian-rich cover material will be placed on top of and used to fill the voids between the super sacs thereby creating a sturdier surface. Truckloads of the obsidian-rich material will be transported from the middle of the Quarry approximately every 15 days to provide enough volume to use the material for fill as well as cover.

Quality Assurance/Quality Control (QA/QC) Plan

Dicaperl will prepare a QA/QC plan prior to reclamation of the waste dumps. The plan will include depth of soil cover, chemical analysis, and textural analysis of the soil materials.

Appendix C

Reclamation Design

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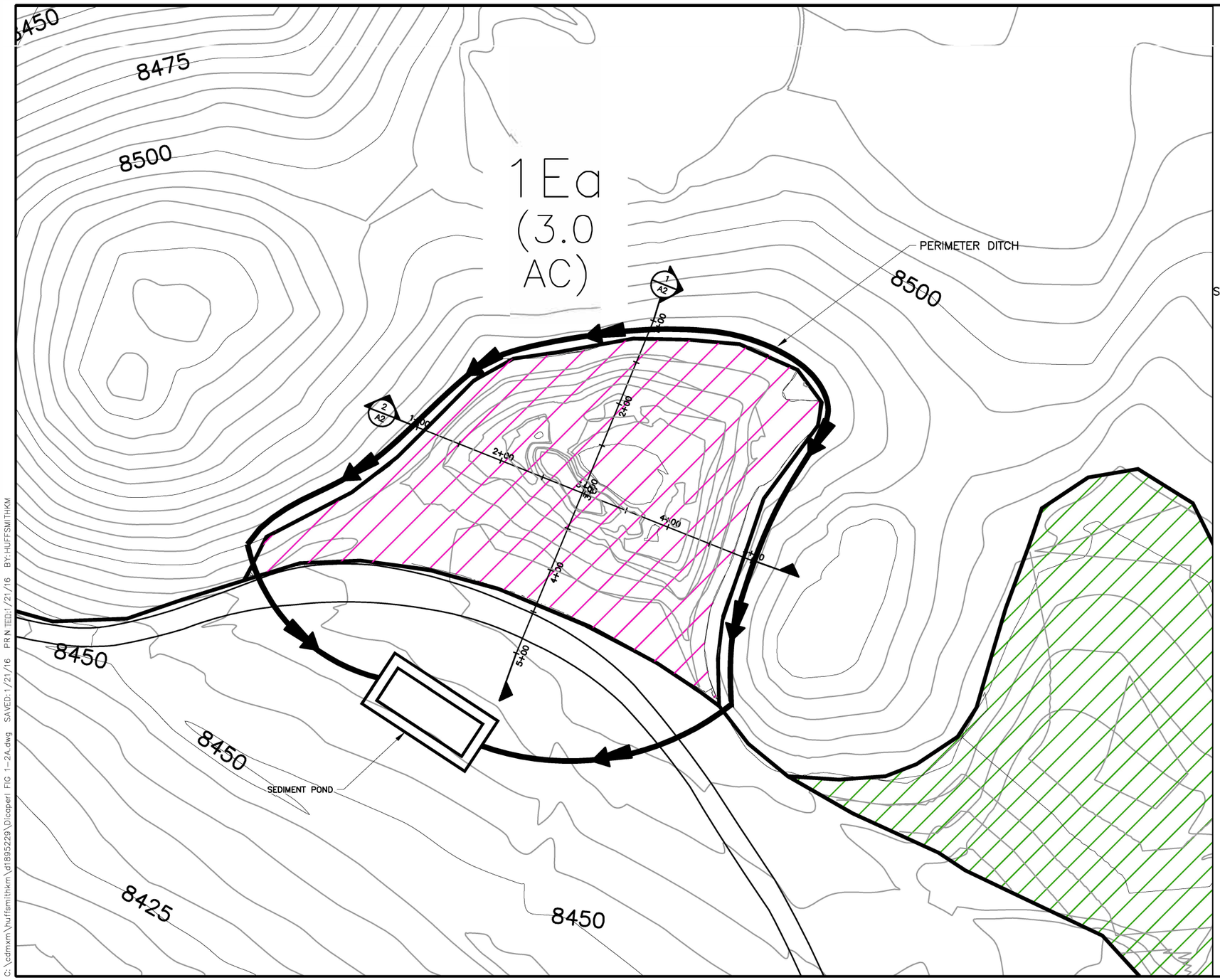
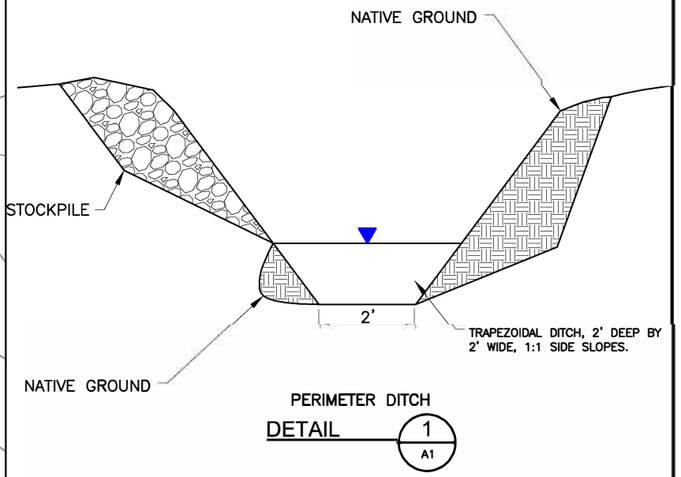
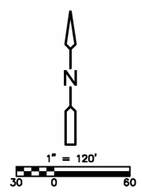
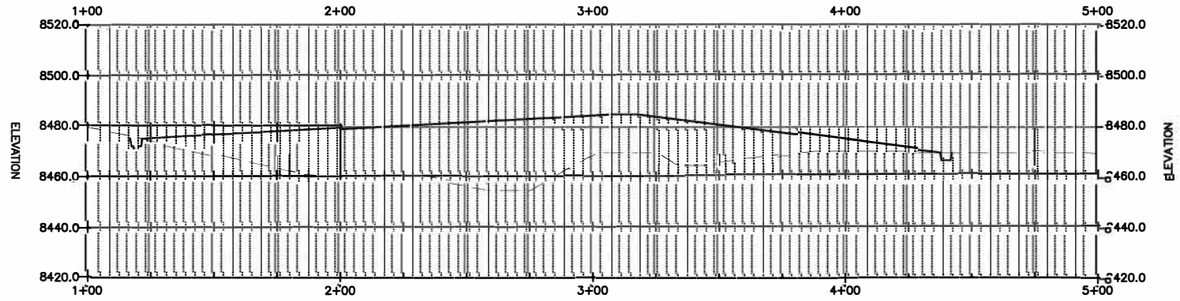






CDM Smith

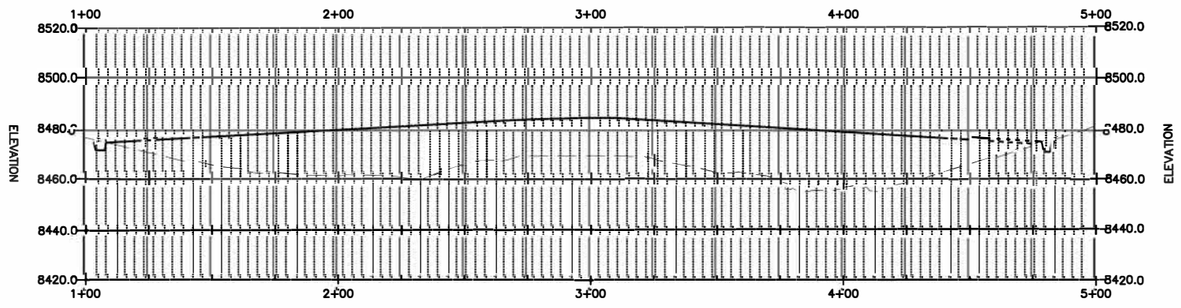
Figure No. A1
WORK AREA SITE PLAN - 1Ea
AUGUST 2018



NORTH AND SOUTH SECTION 1Ea

SECTION 1 / A1

1" = 30'



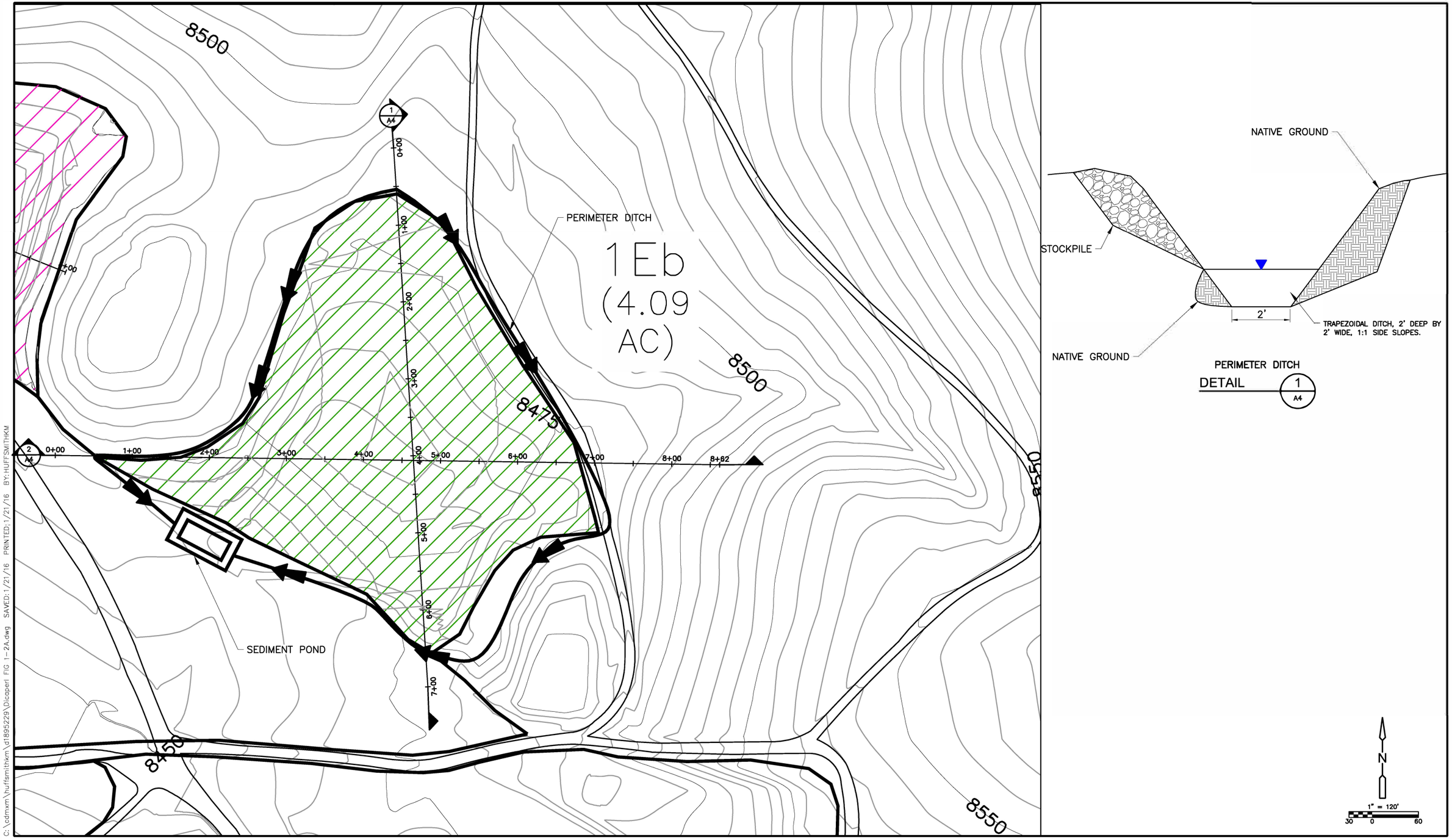
EAST AND WEST SECTION 1Ea

SECTION 2 / A1

1" = 30'

CDM Smith

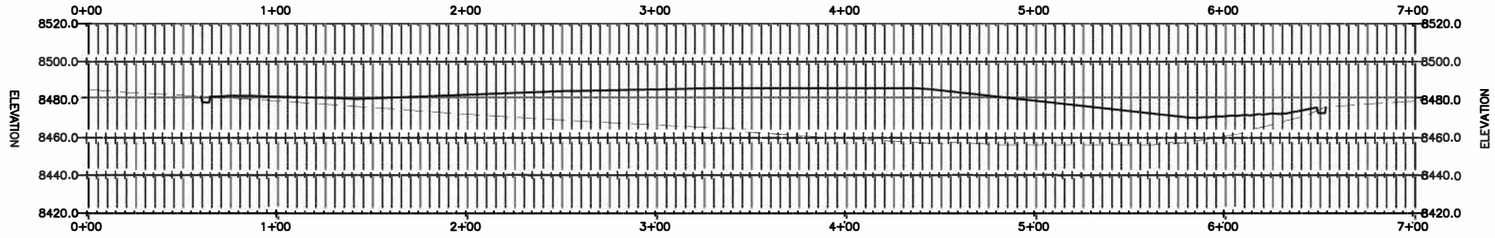
Figure No. A2
DUMP - 1Ea CROSS SECTIONS
AUGUST 2018



C:\cdmxm\huffsmithkm\d1895229\Dicoperl FIG 1-2A.dwg SAVED:1/21/16 PRINTED:1/21/16 BY:HUFFSMITHKM

CDM Smith

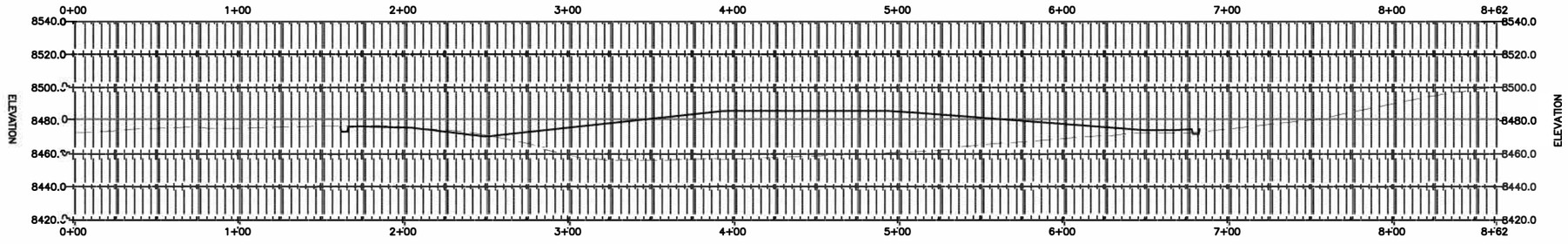
Figure No. A3
WORK AREA SITE PLAN - 1Eb
AUGUST 2018



NORTH AND SOUTH SECTION 1Eb

SECTION 1 (A3)

1" = 40'



EAST AND WEST SECTION 1Eb

SECTION 2 (A3)

1" = 40'

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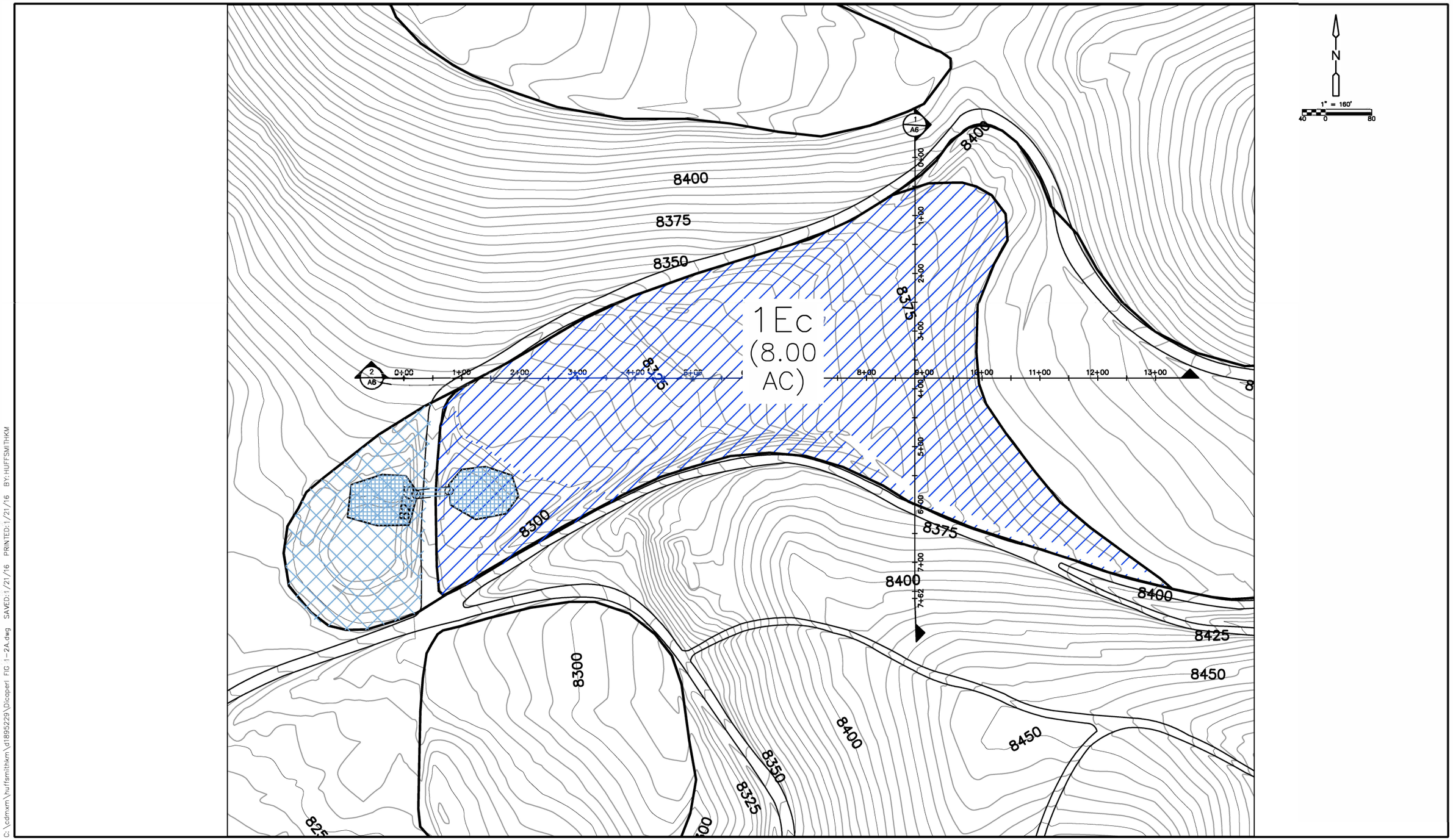
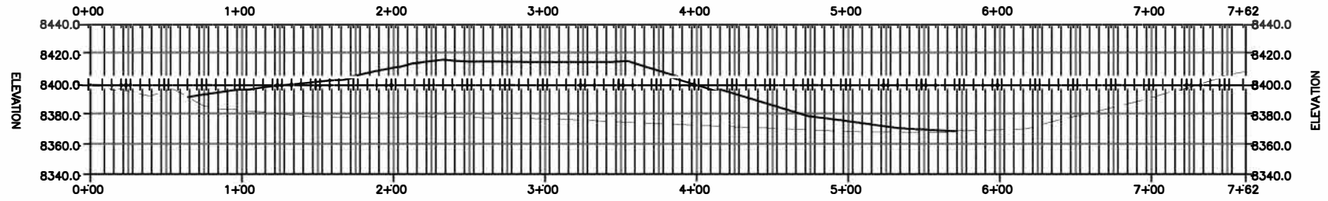
Figure No. A4
DUMP - 1Eb CROSS SECTIONS
AUGUST 2018



C:\cdmxm\huffsmithkm\d1895229\Dicaperl FIG 1-2A.dwg SAVED:1/21/16 PRINTED:1/21/16 BY:HUFFSMITHKM

CDM Smith

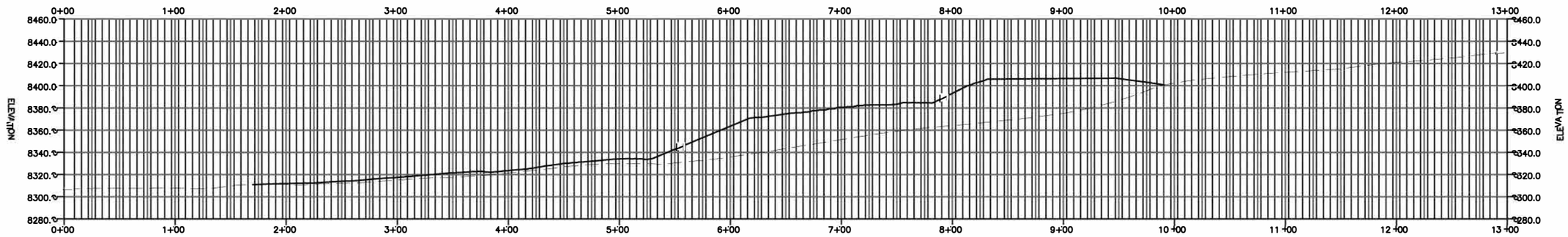
Figure No. A5
WORK AREA SITE PLAN - 1Ec
AUGUST 2018



NORTH AND SOUTH SECTION 1Ec

SECTION 1 / A5

1" = 50'



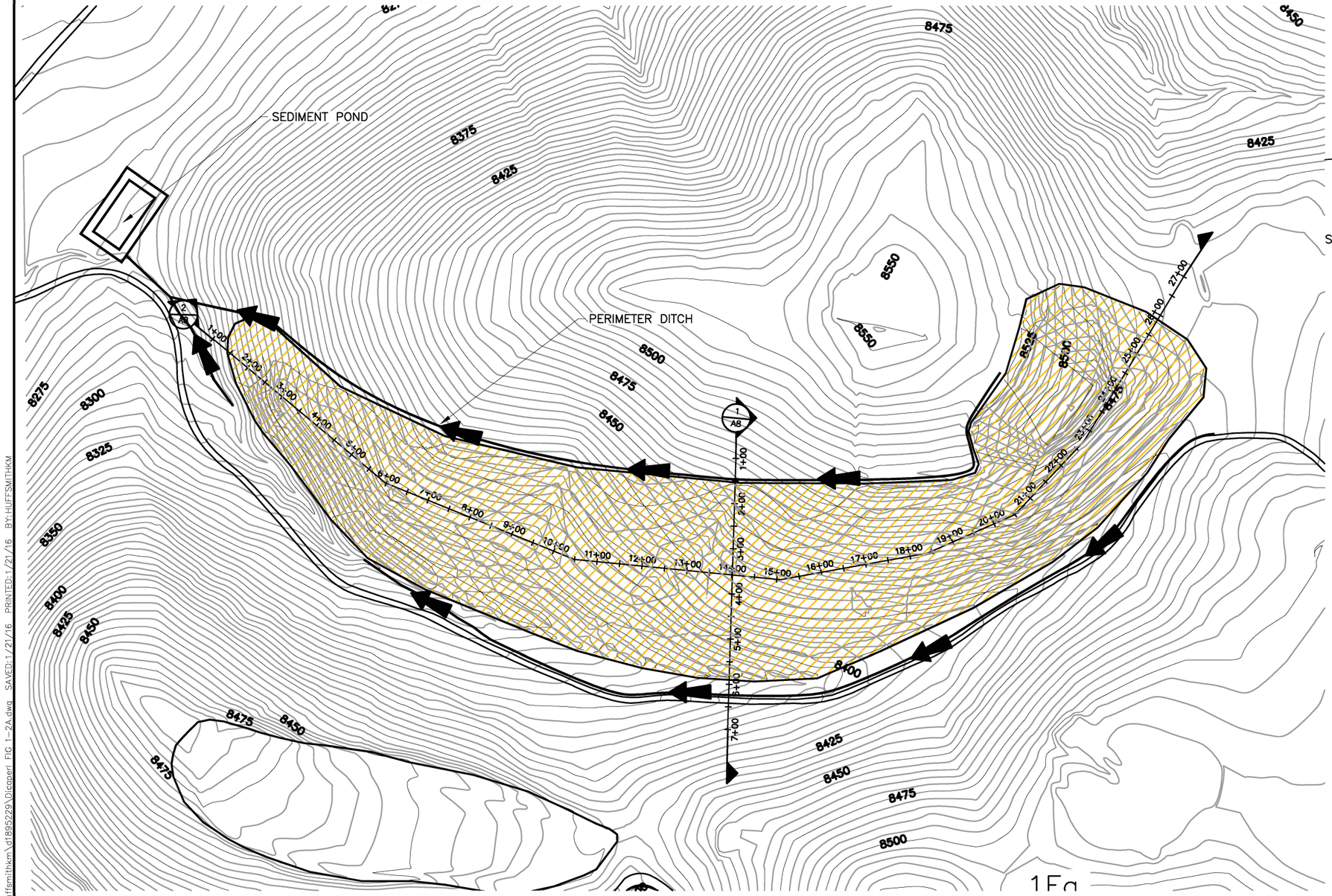
EAST AND WEST SECTION 1Ec

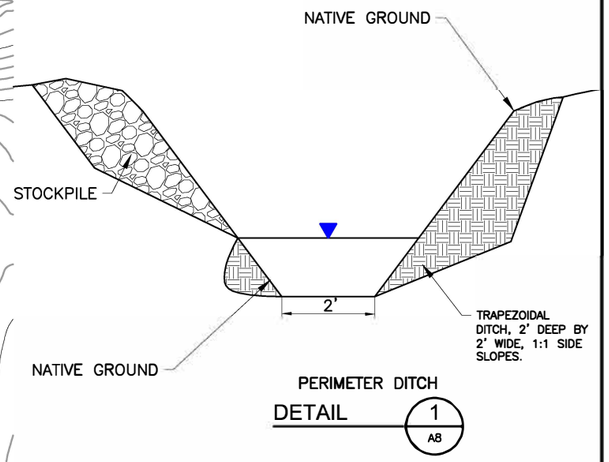
SECTION 2 / A5

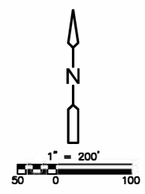
1" = 50'

CDM Smith

Figure No.A6
DUMP - 1Ec CROSS SECTIONS
AUGUST 2018



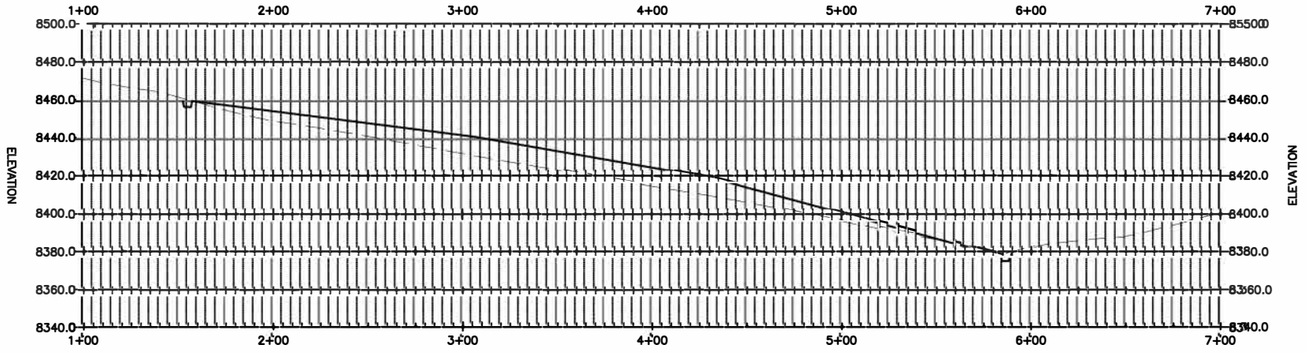




C:\cdmxm\\nufsmithkm\cf1895229\Dicaper1 FIG 1--2A.dwg SAVED:1/21/16 PRINTED:1/21/16 BY:HUFFSMITHKM

CDM Smith

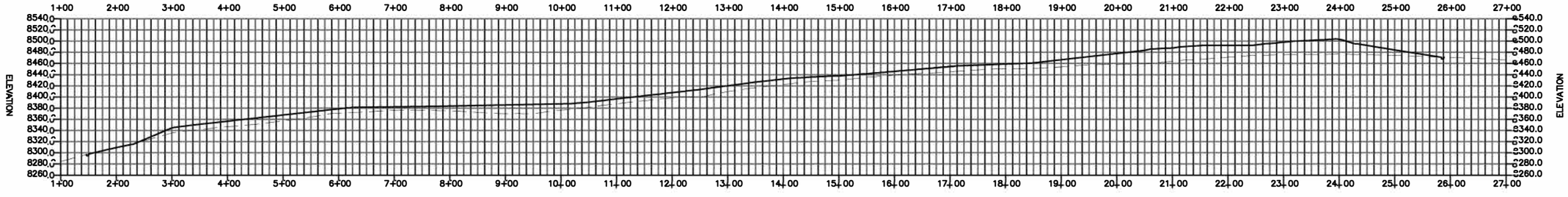
Figure No. A7
WORK AREA SITE PLAN - 2A
AUGUST 2018



NORTH AND SOUTH SECTION 2A

SECTION 1 / A7

1" = 40'



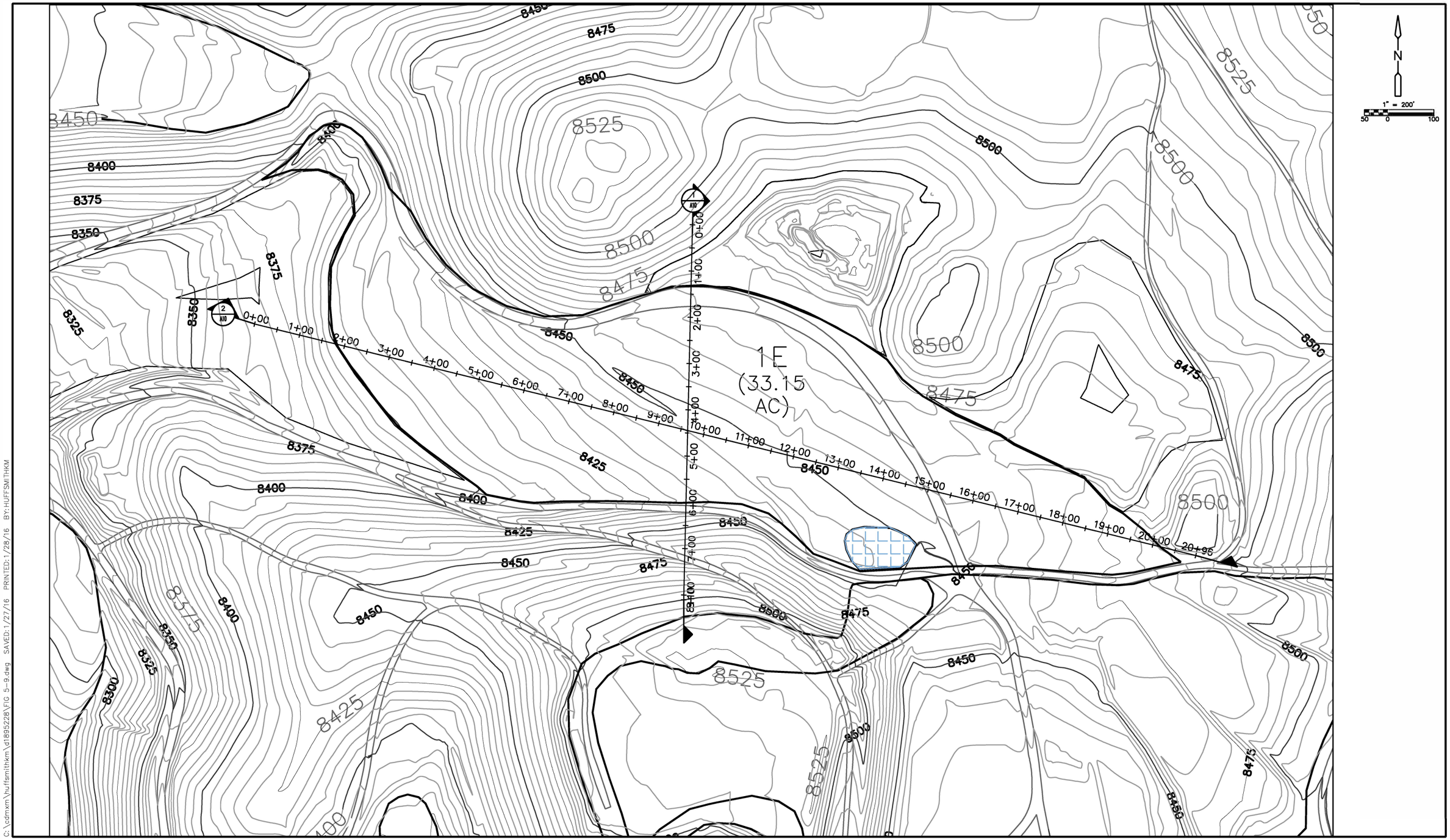
EAST AND WEST SECTION 2A

SECTION 2 / A7

1" = 100'

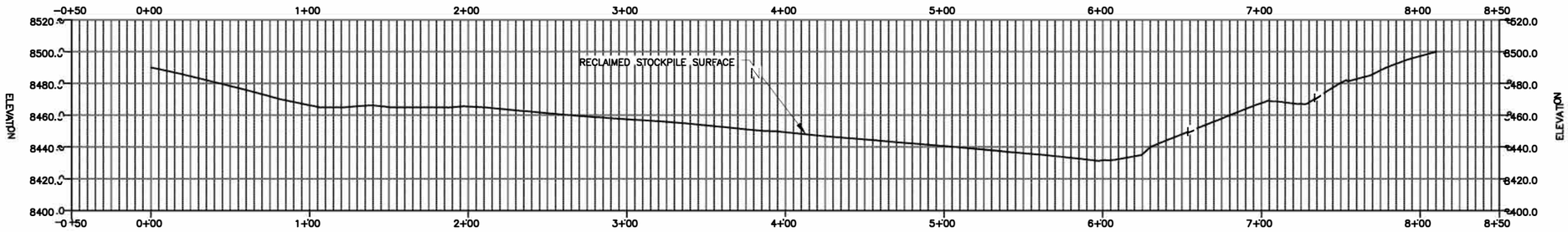
CDM Smith

Figure No. A8
DUMP - 2A CROSS SECTIONS
AUGUST 2018



CDM Smith

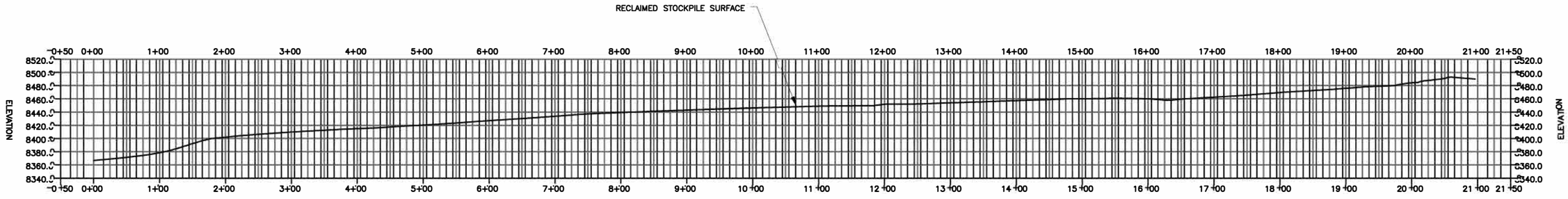
Figure No. A9
WORK AREA SITE PLAN - 1E
AUGUST 2018



NORTH AND SOUTH SECTION 1E

SECTION 1 / A9

1" = 40'



EAST AND WEST SECTION 1E

SECTION 2 / A9

1" = 80'

CDM Smith

Figure No. A10

DUMP NO. 1E NORTH/SOUTH AND EAST/WEST CROSS SECTIONAL VIEWS

AUGUST 2018

Appendix D

Vegetation Survey

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Memorandum

To: *Russel Hufford, Brian Munson, CDM Smith*

From: *Jennifer Jones, CDM Smith*

Date: *June 30, 2015*

Subject: *Qualitative Assessment of Vegetation at Reclaimed Areas of the Socorro and El Grande Mines, New Mexico*

Introduction

A CDM Smith biologist conducted vegetation surveys at the Socorro Mine on June 2, 2015 and the El Grande Mine on June 3, 2015. The surveys were conducted to assess the current condition of reclamation in support of closeout plans for the two mines.

Vegetation Survey Methods

During the vegetation surveys, the biologist performed an initial qualitative assessment of the vegetation community by walking the extent of each area, estimating overall plant cover (also known as absolute cover). Overall plant cover was recorded as the percentage of ground surface covered by vegetation. Plant composition was recorded as the percent of each vegetation type (grasses and forbs, shrubs, and trees) making up the overall cover. The biologist created a list of the plant species observed, identified to the species level where possible, and noted the presence of noxious weeds and other invasive plants. The biologist also assessed soil stability at each of the survey locations and noted any other factors that may have an effect on vegetation success. While the survey focused on reclaimed areas, previously established reference areas were also assessed.

Findings- Socorro Mine

The Socorro Mine is located near Socorro, New Mexico at an elevation of approximately 5,000 feet. The mine is situated at the northern extent of the Chihuahuan Desert, averaging nine inches of rain per year, most occurring during the summer monsoon season. While New Mexico has been experiencing a drought for the past few years, precipitation during the most recent few months of 2015 has been near to above normal.

Four areas of the Socorro Mine have been reclaimed, shown as Reclaimed Area B, C, D, and E in Figure 1. Two reference areas have been established: a Lowland and Upland Reference Area. The findings of the qualitative assessment at each of these areas is presented below, in the order they were conducted. Photos of each area are provided in Appendix A.

Reclaimed Area E

Reclaimed Area E is located on a slope in the southeast portion of the Socorro Mine site (Figure 1). Due to erosion occurring on the lower slope, the area was terraced in 2006, resulting in some disturbance of the vegetation. During the survey, rills were observed in the middle terrace, indicating that the slope is unstable during rain.

As shown in Table 1, the average overall plant cover in Area E is 25 percent, with grasses and forbs the dominant plant type. Scattered shrubs are also present, as well as a few trees. Plant species diversity is good, with 21 species observed (Table 2). Russian thistle and tamarisk, both of which are invasive, are present in low numbers.

The slope above Reclaimed Area E is undisturbed and dominated by large shrubs, including creosote, mesquite, and skunkbush sumac, and scattered one-seed juniper trees. Plants from this area may colonize Area E below over time.

Reclaimed Area D

Reclaimed Area D is situated in the lowland area adjacent to the developed part of the mine where the office, production buildings, storage, and parking areas are located (Figure 1). It is bound by the railroad to the south and the main road to the north. This area was reclaimed in 2001. Drainage channels have been created throughout Area D using boulders ("riprap") to guide surface runoff. Soil in Area D is stable.

As shown in Table 1, the average overall plant cover in Area D is 40 percent, dominated by shrubs. There is good cover of grasses and forbs and a few trees. Plant species diversity is fair, with 19 species observed (Table 2). Several tamarisk shrubs were observed, which should be removed to prevent spread.

Reclaimed Area C

Reclaimed Area C is located north of the developed part of the mine site. Area C is mainly located within the lowland area, but at a slightly higher elevation than the surrounding area to the north. There is a berm along the northern end and a drainage along the western perimeter that directs overland flow to sediment basins below. The soil in Area C is stable.

As shown in Table 1, the average overall plant cover in Area C is 50 percent, dominated by shrubs, which form dense thickets in some areas. There is good cover of grasses and forbs and a low number of trees. Plant species diversity is fair, with 17 species observed (Table 2). Several tamarisk shrubs were observed, which should be removed to prevent spread.

Reclaimed Area B

Reclaimed Area B is located directly west of the developed part of the site and east of the main quarry area (Figure 1). It is situated mid-slope: upland of the developed area below, but at a slightly lower elevation than the upland reference area. The soil is mostly stable; however, the slope leading down from the road is highly erosive. Patches of raw perlite are present at the surface.

As shown in Table 1, the average overall plant cover in Area B is 25 percent, dominated by shrubs, followed closely by grasses and forbs. Few trees are present. Plant species diversity is fair, with 16 species observed (Table 2). Tamarisk shrubs were observed in low numbers.

Lowland Reference Area

The Lowland Reference Area is located in the northeastern portion of the site, north of the main road and access road (Figure 1). It is situated at an elevation of around 4,930 feet and consists of Chihuahuan Desert vegetation. The soil is undisturbed and stable.

As shown in Table 1, the Lowland Reference Area has an average overall plant cover of 40 percent, dominated by shrubs. There is good cover of grasses and forbs and a low number of trees. Plant species diversity is good, with 22 species observed (Table 2). Russian thistle and tamarisk are present. The tamarisk shrubs should be removed to prevent spread.

Upland Reference Area

The Upland Reference Area is located in the southwestern portion of the site, south of the main quarry area (Figure 1). It is situated at an elevation of around 5,200 feet. The soil is undisturbed and stable. There was some evidence of cattle grazing.

As shown in Table 1, the Upland Reference Area has an average overall plant cover of 75 percent, with grasses and forbs making up most of the cover. Scattered trees and shrubs are also present. Plant species diversity is fair, with 17 species observed (Table 2). No invasive species were observed.

Findings- El Grande Mine

The El Grande Mine is located near Tres Piedras, New Mexico at an elevation of approximately 8,200 feet. Vegetation communities at the mine site include Southern Rocky Mountain pinyon-juniper woodland and savannah, Ponderosa Pine woodland, and foothill shrub and grassland. Average annual precipitation is 12 inches per year, most occurring during the summer and early fall.

Four areas of the El Grande Mine have been reclaimed, shown as Reclaimed Dump 1A, 1B, 1C, and 1D in Figure 2. No designated reference areas have been established; however, suitable potential reference areas were observed, as shown on Figure 2. The findings of the qualitative assessment at each of these areas is presented below, in the order they were conducted. Photos of each area are provided in Appendix B.

Dump 1A

Reclaimed Dump 1A is located directly east on a terrace slightly above the developed part of the mine site (Figure 2). It slopes up to the north and east and is completely fenced. Dump 1A was seeded in 2007, with trees planted in the spring of 2008, 2009, and 2010. The soil is stable. Elk and deer skat were observed.

As shown in Table 1, Dump 1A has an average overall plant cover of 50 percent, dominated by grasses and forbs. There is good cover of shrubs and scattered sapling trees. Plant species diversity is good, with 24 species observed (Table 2). No invasive species were observed.

Dump 1B

Reclaimed Dump 1B is located east of Dump 1A on a hillslope at an elevation of approximately 8,350 feet (Figure 2). This area was reclaimed by covering the raw perlite with rocky soil around 15 years ago, but it is not known if the area was seeded or planted. The soil is stable, but some raw perlite was exposed in patches on the surface. Elk and deer skat were observed.

As shown in Table 1, Dump 1B has an average overall plant cover of 50 percent, with both grasses and forbs and shrubs fairly equally distributed. A few trees are also present. Plant species diversity is fair, with 13 species observed (Table 2). No invasive species were observed.

Dump 1C

Reclaimed Dump 1C is located to the east and upslope from Dump 1B (Figure 2). There is a lower terrace located near the road, sloping up to an upper terrace at an elevation just over 8,400 feet. Like Dump 1B, this area was reclaimed by covering the raw perlite with rocky soil around 15 years ago, but it is not known if the area was seeded or planted. The soil is stable, but some raw perlite was exposed in places, including an animal burrow (likely badger). Elk and deer skat were observed.

As shown in Table 1, Dump 1C has an average overall plant cover of 60 percent, dominated by shrubs, with grasses and forbs present in good numbers. A few trees are also present. Plant species diversity is fair, with 10 species observed (Table 2). No invasive species were observed.

Dump 1D

Reclaimed Dump 1D is located east of the active quarry area on a terrace at an elevation of around 8,400 feet (Figure 2). There is a steep slope at the eastern edge of Dump 1D that slopes down to the adjacent Ponderosa pine woodland below. A portion of Dump 1D was re-graded, topsoil added, and planted and seeded in 2010 to address erosion concerns and reduce the slope. Elk and deer skat were observed, and elk were seen running away from the area during the survey.

As shown in Table 1, Dump 1D has an average overall plant cover of 40 percent, considering that the portion that was disturbed in 2010 has a lower overall plant cover compared to the area not disturbed in 2010. The plant cover is dominated by shrubs, with grasses and forbs present in good numbers. Scattered trees are also present. Plant species diversity is fair, with 18 species observed (Table 2). No invasive species were observed.

Exploration Area 3A

Exploration Area 3A is located north of the developed portion of the mine at an elevation of approximately 8,460 feet (Figure 2). This area was stripped during exploration in the late 1980s. No grading or topsoil was added, and the area was not seeded or planted. The surface is rocky and does not appear very conducive to plant growth. There are several areas of exposed ore and obsidian.

As shown in Table 1, Area 3A has an average overall plant cover of 15 percent, distributed fairly evenly between grasses and forbs and shrubs. Trees consisting of small willow saplings are also present. Plant species diversity is poor, with 8 species observed (Table 2). No invasive species were observed.

Upper Exploration Area

The Upper Exploration Area is located in the northern portion of the mine site at an elevation of approximately 8,500 feet (Figure 2). This is one of several exploration areas at the El Grande Mine. This area is adjacent to an undisturbed savannah. Following exploration in the late 1980s, the area was covered in gravelly topsoil but it is not known if seeding or planting was conducted.

As shown in Table 1, the Upper Exploration Area has an average overall plant cover of 50 percent, dominated by grasses and forbs. Trees consisting mostly of Pinyon pines and Ponderosa pines are present in good numbers, with few shrubs. Plant species diversity is poor, with 8 species observed (Table 2). No invasive species were observed.

Selection of Reference Areas for El Grande Mine

During the vegetation survey, undisturbed areas on the El Grande Mine property were observed for potential reference areas. Suitable reference areas would be selected for reclaimed areas having similar slope, elevation, aspect, and soil type, to the extent possible.

Potential reference areas for the lower reclaimed areas, including Dump 1A, 1B, and 1C, are shown in Figure 2. A potential reference area for Reclaimed Dump 1D was identified directly adjacent to the southeast. Reference areas generally consist of undisturbed Ponderosa pine forest.

Selection of potential reference areas for the upper exploration areas needs to consider the established plant community. For example, a savannah community is present adjacent to the Upper Exploration Area on one side, with Ponderosa pine forest also adjacent, but higher upslope.

Conclusions

Based on the vegetation surveys, the following conclusions are made:

Socorro Mine:

- Reclamation at four locations (Area B, C, D, and E) has generally been successful to provide vegetative cover and stabilize the soil. Vegetation is well-established and plant cover values are typical of what would be expected based on the time since reclamation activities were conducted. Uncontrollable factors such as precipitation and record low temperatures have affected plant growth in some areas.

- There is good vegetative cover of most reclaimed areas, with the exception of Area B and Area E, which are both situated on slopes. In addition, recent erosion control activities have disturbed the soil at Area E.

- Area E and Area B have the lowest overall plant cover (25 percent). Steeply sloped portions of Area E are experiencing erosion, evidenced by the presence of rills. Area B is also sloped, and patches of raw perlite were observed, indicating that the soil may not be ideal for plant growth.

- The Lowland Reference Area is suitable for comparison to Area C and D. It also appears suitable for comparison to Area B, which is located upslope but dominated by shrubs like the Lowland Reference Area.

- The Upland Reference Area appears to be suitable for comparison to Area E, which also has a northerly aspect and is dominated by grasses and forbs.

- The composition of the current seed mix and list of trees and shrubs for use in reclamation should be reviewed to ensure the appropriate species are included for the region.

- Tamarisk was observed in several locations and should be removed where possible to prevent spread.

El Grande Mine

- Reclamation at four locations (Dump 1A, 1B, 1C, and 1D) has generally been successful to provide vegetative cover and stabilize the soil. Vegetation is well-established and plant cover values are typical of what would be expected based on the time since reclamation activities were conducted. Recent re-grading and erosion control activities have disturbed a portion of Dump 1D, but subsequent revegetation activities have generally been successful.

- Exploration Area 3A would require replacement of topsoil and re-grading for revegetation to be successful.

- Both Exploration Area 3A and the Upper Exploration Area have poor species diversity.

- It is assumed that the Upper Exploration Area was not seeded or planted, but rather has been colonized naturally by Pinyon and Ponderosa pines. These trees are not present on the adjacent undisturbed savannah habitat, but pine woodlands do occur upslope from these areas. Comparison to reference locations should consider the potential for natural colonization of reclaimed areas that may result in a different vegetative community while still providing for good vegetative cover and soil stabilization.

- Potential reference areas are present adjacent to reclaimed areas as shown in Figure 2. Selection of suitable reference areas should consider slope, elevation, aspect, and soil type, as well as the potential for natural recolonization to affect the overall plant composition.

- The seed mix and plant material list should be reviewed to ensure the appropriate species are included for the region.

Figures

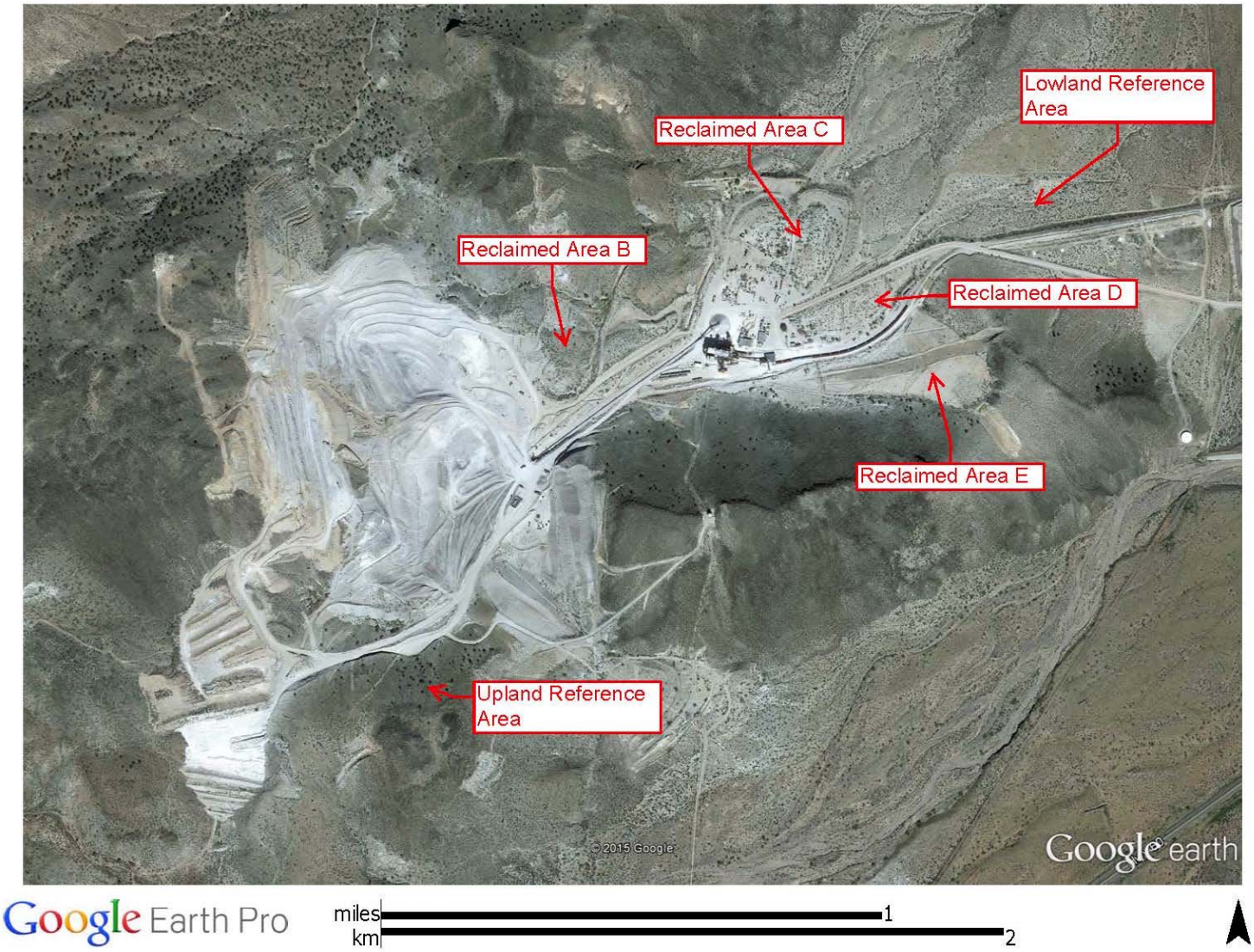


Figure 1. Vegetation Survey Locations at the Socorro Mine.

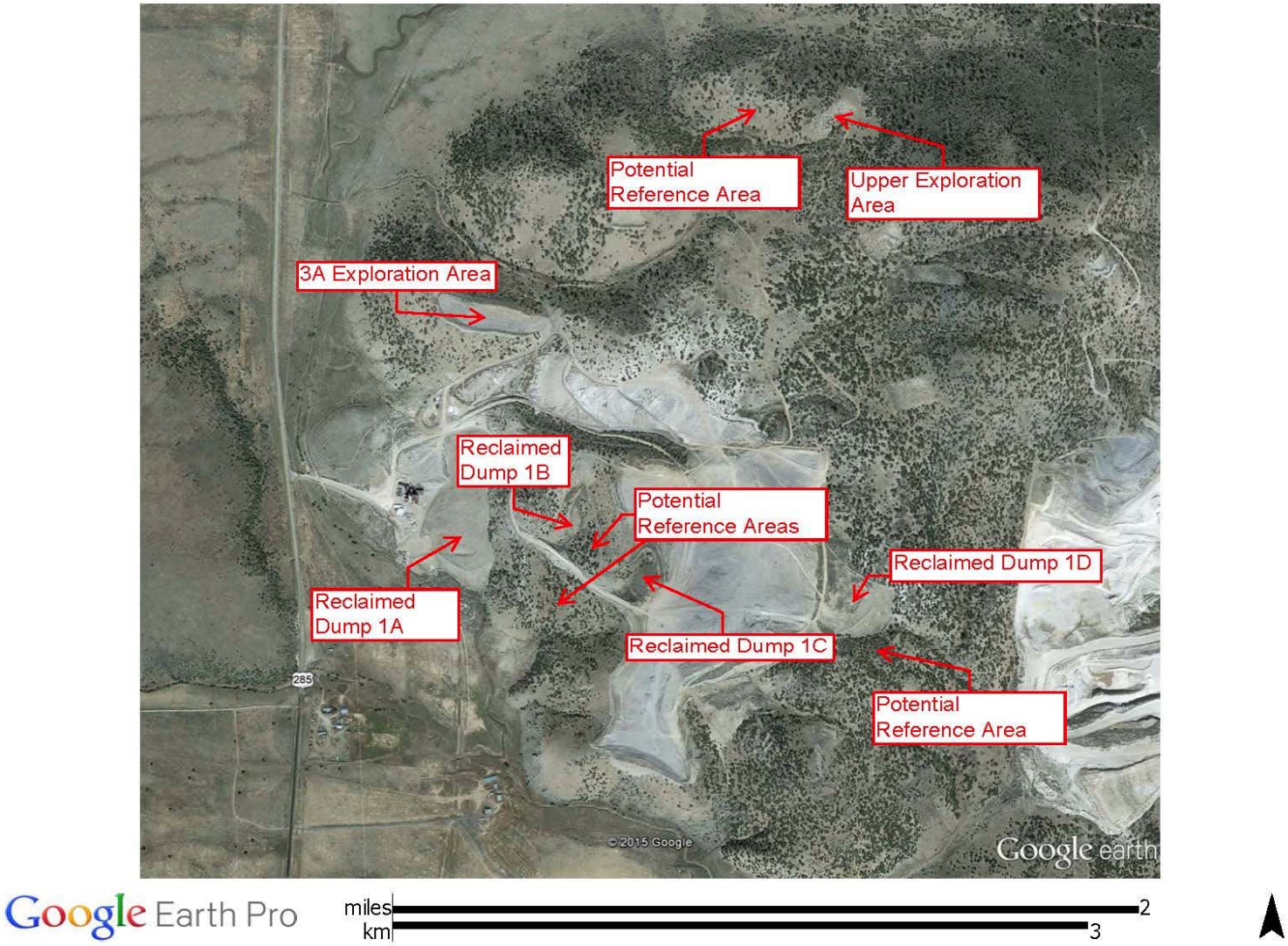


Figure 2. Vegetation Survey Locations at the El Grande Mine.

Tables

Table 1. Findings of the Qualitative Vegetation Survey of the Soccoro and El Grande Mine Sites.

Socorro Mine		Overall Plant Cover (%)	Plant Composition (%) by Type					
Area	Location Type		Grasses and Forbs	Shrubs	Trees	Dominant Plant Type	Species Diversity	Soil Stability
E	Upland hillslope	25	75	20	5	Grasses and forbs	Good (21 species observed)	Parts of slope are unstable; rills present
D	Lowland	40	35	50	15	Shrubs	Fair (19 species observed)	Stable, riprap channels
C	Lowland	50	30	65	5	Shrubs	Fair (17 species observed)	Stable, channel to sediment basin
B	Upland hillslope	25	40	55	5	Shrubs	Fair (16 species observed)	Mostly stable, erosion on slope up to road
Lowland Reference	Lowland	40	30	65	5	Shrubs	Good (22 species observed)	Stable
Upland Reference	Upland hillslope	75	75	10	15	Grasses and forbs	Fair (17 species observed)	Stable

Table 1, Continued.

El Grande Mine		Overall Plant Cover (%)	Plant Composition (%) by Type					
Area	**Location Type**		**Grasses and Forbs**	**Shrubs**	**Trees**	**Dominant Plant Type**	**Species Diversity**	**Soil Stability**
Dump 1A	Upland terrace	50	60	30	10	Grasses and forbs	Good (24 species observed)	Stable
Dump 1B	Upland hillslope	50	40	40	20	Shrubs	Fair (13 species observed)	Stable; some raw perlite patches
Dump 1C	Upland hillslope	60	35	55	10	Shrubs	Fair (18 species observed)	Stable; animal burrow in raw perlite
Dump 1D	Upland terrace	40	40	50	10	Shrubs	Fair (18 species observed)	Stable; a portion was restabilized in 2010
Exploration Area 3A	Upland hillslope	15	45	45	10	Grasses and forbs	Poor (8 species observed)	Ungraded; overburden not replaced after stripping; rocky surface appears stable
Upper Exploration Area	Upland terrace	50	65	5	30	Grasses and forbs	Poor (8 species observed)	Stable

Table 2. Plant Species Observed at the Socorro and El Grande Mine Sites during the Vegetation Survey.

		Location Observed	
Common Name	**Scientific Name**	**Socorro**	**El Grande**
Trees			
Mountain mahogany	*Cercocarpus montanus*		1A, UE
Desert willow	*Chilopsis linearis*		1A
New Mexico privet	*Forestiera neomexicana*	D	
One-seed juniper	*Juniperus monosperma*	Slope above E, D, B, UR	
Rocky mountain juniper	*Juniperus scopulorum*		1A, 1C, 1D
Pinyon pine	*Pinus edulis*		1B, 1C, 3A, UE
Ponderosa pine	*Pinus ponderosa*		1A, 1D, 3A, UE
Cottonwood	*Populus deltoides*	D	
Gambel oak	*Quercus gambelii*		3A, UE
Narrowleaf willow	*Salix exigua*		3A
Shrubs			
Biennial wormwood	*Artemisia biennis*		1A, 1B
Sagebrush	*Artemisia tridentata*		1A
Four-wing saltbush	*Atriplex canescens*	E, Slope above E, D, C, B	1A, 1B
Splitleaf brickellbush	Brickellia laciniata	B	
Feather dalea	*Dalea formosa or pulchra*	E, D, C, B, LR, UR	
Mormon tea	*Ephedra viridis*	E, C	
Rubber rabbitbrush	*Ericameria nauseosa*		1A, 1B, 1C, 3A
Apache plume	*Fallugia paradoxa*	E, D, C, B, LR, UR	1A
Broom snakeweed	*Gutierrezia sarothrae*	Slope above E, D, C, B, LR, UR	
Creosote	*Larrea tridentata*	E, Slope above E, C, B, LR	
Honey mesquite	*Prosopis glandulosa*	Slope above E, D, C, B, LR	
Wax currant	*Ribes cereum*	Slope above E, LR	1A, 1B, 1C, 1D
Littleleaf sumac	*Rhus microphylla*	LR	
Skunkbush sumac	*Rhus trilobata*	Slope above E, LR	
Grasses and Forbs			

Table 2. Plant Species Observed at the Socorro and El Grande Mine Sites during the Vegetation Survey.

		Location Observed	
Common Name	**Scientific Name**	**Socorro**	**El Grande**
Trailing windmills	*Allionia incarnata*	LR	
Purple three-awn grass	*Aristida purpurea*	E, Slope above E, D, C, B, LR, UR	
Fringed sagewort	*Artemisia frigida*		1A, 1B, 1C, 1D, 3A, UE
Yellow milk vetch	*Astragalus flavus*		1D
Purple locoweed	*Astragalus missouriensis*	UR	
Desert marigold	*Baileya multiradiata*	D, LR, UR	
Blue grama grass	*Bouteloua gracilis*	E, Slope above E, D, C, B, LR, UR	1A, 1B, 1C, 1D, 3A
Desert paintbrush	*Castilleja chromosa*		1D
Greenleaf five eyes	*Chamaesaracha coronopus*	B	
Wavyleaf thistle	*Cirsium undulatum*	D	
Golden Corydalis	*Corydalis aurea*		1A
Cryptantha sp.	*Cryptantha* sp.		1C
Spring parsley	*Cymopterus acaulis*	E, D	
Spectacle pod	*Dimorphocarpa wislizeni*	E, D, LR	
Bottlebrush squirreltail	*Elymus elymoides*		1A, 1B, 1D
Spreading daisy	*Erigeron divergens*		1A, 1B, 1C, 1D, 3A, UE
Roundleaf buckwheat	*Eriogonum rotundifolium*	E,	
Fluffgrass	*Erioneuron pulchellum*	E, D, C, B, LR, UR	1A, 1B, 1C, 1D, UE
Redstem filaree	*Erodium cicutarium*		1A
Western wallflower	*Erysimum capitatum*		1A, UE
Rattlesnake weed	*Euphorbia albomarginata*	LR	
Indian blanket	*Gaillardia pinnatifida*	Slope above E, B, LR, UR	
Prairie sunflower	*Helianthus petiolaris*	B	
Hairy false goldenaster	*Heterotheca villosa*	E	
Creeping rush-pea	*Hoffmanseggia repens*	Slope above E	
Collegeflower	*Hymenopappus flavescens*		1A, 1B
Hymenopappus	*Hymenopappus sp.*		1B

Table 2. Plant Species Observed at the Socorro and El Grande Mine Sites during the Vegetation Survey.

		Location Observed	
Common Name	**Scientific Name**	**Socorro**	**El Grande**
Flaxflowered Ipomopsis	*Ipomopsis longiflora*	C	
Green sprangletop	*Lepochloa dubia*	D	
Blue flax	*Linum perenne*		1A, 1D
Tansyaster	*Machaeranthera tanacetifolia*	E, D, C, LR	
Desert dandelion	*Malacothrix sonchoides*		1A
Blackfoot daisy	*Melampodium leucanthum*	Slope above E, D, C, UR	
Sweet clover	*Melilotus officinalis*		1A, 1B, 1D
Desert primrose	*Oenothera deltoides*	C, B	
Indian ricegrass	*Oryzopsis hymenoides*	E	
Western wheatgrass	*Pascopyrum smithii*	LR, UR	1D
Arizona scorpion weed	*Phacelia arizonica*		1A
Gypsum phacelia	*Phacelia integrifolia*	C	
Woolly plantain	*Plantago patagonica*	UR	
Mexican hat	*Ratibida columnifera*		1D
Plains bristlegrass	*Setaria vulpiseta*		1D
Desert globemallow	*Sphaeralcea ambigua*	C, UR	
Juniper globemallow	*Sphaeralcea digitata* var. *tenuipes*	UR	
Prairie spiderwort	*Tradescantia scopulorum*	UR	
Common mullein	*Verbascum thapsus*		1A, 1C, 1D
Cactus and Succulents			
Hedgehog cactus	*Echinocereus* sp.		1D
Prickly pear	*Opuntia* spp.	LR, UR	
Yucca	*Yucca spp.*	LR	1B
Invasive Plants			
Russian thistle	*Salsola tragus*	E, LR	1D
Tamarisk	*Tamarisk* sp.	E, D, C, B, LR	

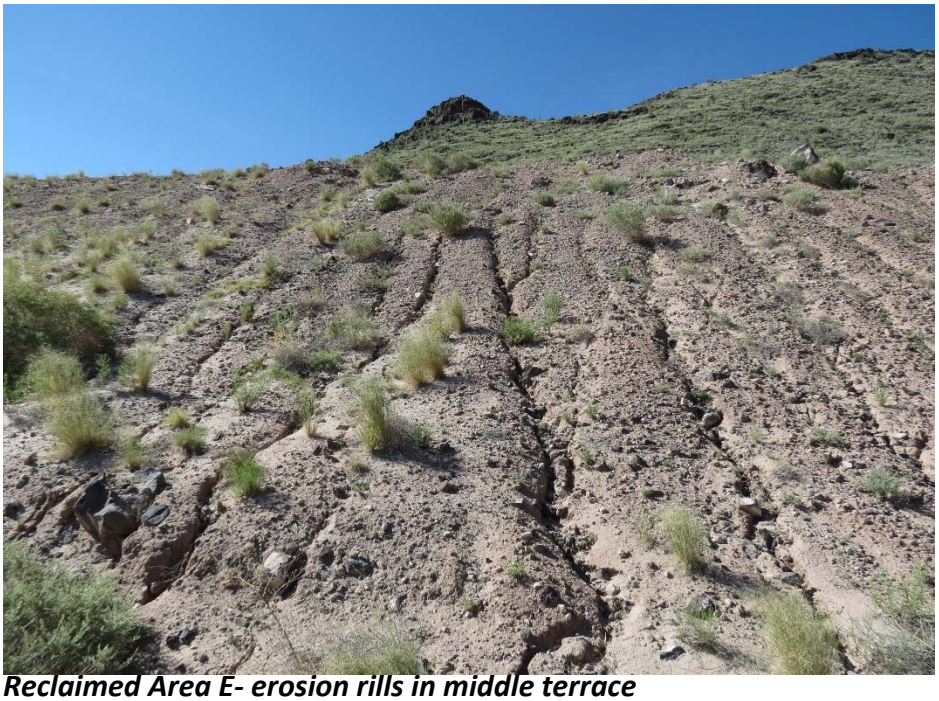
Table 2. Plant Species Observed at the Socorro and El Grande Mine Sites during the Vegetation Survey.

		Location Observed	
Common Name	**Scientific Name**	**Socorro**	**El Grande**

Key-
LR - Lowland Reference Area (Socorro)
sp. – species unidentified
spp. – more than one species observed
UE - Upper Exploration Area (El Grande)
UR - Upland Reference Area (Socorro)

Appendix A- Socorro Mine Photos

Reclaimed Area E- lower and middle terraced areas



Reclaimed Area E- erosion rills in middle terrace

Reclaimed Area E- upper terrace

Undisturbed Slope above Reclaimed Area E

Reclaimed Area D

Reclaimed Area D showing riprap drainage channels

Reclaimed Area C

Reclaimed Area C showing perimeter berm (lower left) and drainage to sediment basin (lower right and center)

Reclaimed Area B

Lowland Reference Area

Upland Reference Area

Appendix B- El Grande Mine Photos

Reclaimed Dump 1A

Reclaimed Dump 1A showing scattered Ponderosa Pine and Mountain Mahogany

Reclaimed Dump 1B

Reclaimed Dump 1C- lower terrace area

Reclaimed Dump 1C- upper terrace area

Reclaimed Dump 1D- re-graded area

Reclaimed Dump 1D- area not disturbed by re-grading

3A Exploration Area

Upper Exploration Area showing undisturbed savannah (right) and partially reclaimed area with Pinyon Pines (left)

Upper Exploration Area – partially reclaimed

Appendix E

Obama Proclamation

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THE WHITE HOUSE

Office of the Press Secretary

For Immediate Release March 25, 2013

ESTABLISHMENT OF THE RÍO GRANDE DEL NORTE NATIONAL MONUMENT

- - - - - - -

BY THE PRESIDENT OF THE UNITED STATES OF AMERICA

A PROCLAMATION

In far northern New Mexico, the Río Grande Wild and Scenic River flows through a deep gorge at the edge of the stark and sweeping expanse of the Taos Plateau. Volcanic cones, including the Cerro de la Olla, Cerro San Antonio, and Cerro del Yuta, jut up from this surrounding plateau. Canyons, volcanic cones, wild rivers, and native grasslands harbor vital wildlife habitat, unique geologic resources, and imprints of human passage through the landscape over the past 10,000 years. This extraordinary landscape of extreme beauty and daunting harshness is known as the Río Grande del Norte, and its extraordinary array of scientific and historic resources offer opportunities to develop our understanding of the forces that shaped northern New Mexico, including the diverse ecological systems and human cultures that remain present today.

For millennia, humans have seasonally passed through the Río Grande del Norte, gathering resources and finding spiritual meaning in its dramatic geologic features. Although few have attempted to live year-round in this harsh landscape, the images carved into the gorge's dark basalt cliffs and the artifacts scattered across the forested slopes of the volcanic cones bear ample testimony to the human use of the area.

The Río Grande gorge lies within the traditional area of the nearby Taos and Picuris Pueblos, as well as the Jicarilla Apache and Ute Tribes, and hosts a dazzling array of rock art. Carved into the boulders and cliffs are hundreds of images ranging from seemingly abstract swirls and dots to clear depictions of human and animal figures. Dense collections of petroglyphs are found near the hot springs that bubble up in the deep heart of the gorge, with some dating back to the Archaic Period (ca. 7,500 B.C. - 500 A.D.). In addition to petroglyphs, these lands harbor small hunting blinds, pit houses, chipping stations, potsherds, tools and projectile points, as well as large ceramic vessels. The area is home to a rich array of archaeological resources that represent diverse cultural

Separated from the Río Grande Wild and Scenic River by a broad swath of sagebrush and grassland, the Río San Antonio gorge is another area of concentrated artifact and petroglyph sites. People were drawn to this area by the flowing water, hunting opportunities, and nearby San Antonio Mountain, which is thought to have been a major regional source for the dacite used by nomadic peoples to create stone tools thousands of years ago. This corner of the Río Grande del Norte landscape was traversed by traders and other travelers during the 18th and 19th centuries, who traded furs and other goods and later brought woolen articles from New Mexico's sheep grazing communities to markets throughout the Southwest.

Between the Río Grande gorge and the Río San Antonio gorge stretches a sweeping and austere expanse of the Taos Plateau. The Río Grande del Norte landscape is a testament to the geologic past of New Mexico and the 70 million year tectonic history of the Río Grande Rift, one of the world's major rift systems. Composed of Servilleta lava basalts and rhyolites, the Taos Plateau has long been a center of research in geology and volcanology. Rising in stark contrast from the plateau's broad expanse, Cerro de la Olla, Cerro San Antonio, and other volcanic cones provide visible reminders of the area's volatile past. Cerro del Yuta, or Ute Mountain, the tallest of these extinct volcanoes, rises above the plateau to an elevation topping 10,000 feet. Springs within the Río Grande gorge have been measured emitting 6,000 gallons of water per minute into the river bed and are thought to be part of a flooded lava tube system.

This northern New Mexico landscape also exhibits significant ecological diversity in these different geologic areas. From the cottonwood and willows along the Río Grande corridor, to the expansive sagebrush plains above the gorge on the Taos Plateau, the piñons at the base of Ute Mountain, and the spruce, aspen, and Douglas fir covering the mountain's northern slopes, the diversity of both ecosystems and species allows for, and has been the subject of, substantial scientific research.

The Río Grande gorge connects the northern reaches of the river's watershed with its middle and lower stretches. Deep within the gorge, beneath soaring cliffs that rise hundreds of feet above the river, stands of willow and cottonwood thrive in riparian and canyon ecosystems that have been present since the river first appeared in the Río Grande Rift Valley. The river provides habitat for fish such as the Río Grande cutthroat trout as well as the recently reintroduced North American river otter. The Río Grande del Norte is part of the Central Migratory Flyway, a vital migration corridor for birds such as Canada geese, herons, sandhill cranes, hummingbirds, and American avocets. Several species of bats make their home in the gorge,

the plateau to the small mammals on which they prey. Many other bird species, including Merriam's turkey, scaled quail, mourning dove, mountain plover, and loggerhead shrike, can be seen or heard on the plateau. Large mammals, including the Rocky Mountain elk, mule deer, pronghorn, and Rocky Mountain bighorn sheep, find their winter homes on the plateau alongside a population of rare Gunnison's prairie dogs. The Río Grande del Norte also provides habitat for many species of predators, including the ringtail, black bear, coyote, red fox, cougar, and bobcat.

While diverse peoples have used this area intermittently for thousands of years, its challenging conditions make it inhospitable for permanent settlement. In an area near the forested slopes of Cerro Montoso, however, a group of eastern homesteaders attempted to make a living in the years immediately following World War I. The nearly forgotten story of this fleeting community, recently revealed through detailed historical research, is written on the landscape by the remnants of homes, root cellars, cistern-style water catchments, and cast metal toys. At one site, researchers have found several World War I brass uniform buttons, evidence of the veterans who once made their homes on this rugged land.

The protection of the Río Grande del Norte will preserve its cultural, prehistoric, and historic legacy and maintain its diverse array of natural and scientific resources, ensuring that the historic and scientific values of this area remain for the benefit of all Americans.

WHEREAS section 2 of the Act of June 8, 1906 (34 Stat. 225, 16 U.S.C. 431) (the "Antiquities Act"), authorizes the President, in his discretion, to declare by public proclamation historic landmarks, historic and prehistoric structures, and other objects of historic or scientific interest that are situated upon the lands owned or controlled by the Government of the United States to be national monuments, and to reserve as a part thereof parcels of land, the limits of which in all cases shall be confined to the smallest area compatible with the proper care and management of the objects to be protected;

WHEREAS it is in the public interest to preserve the objects of scientific and historic interest on the Río Grande del Norte lands;

NOW, THEREFORE, I, BARACK OBAMA, President of the United States of America, by the authority vested in me by section 2 of the Antiquities Act, hereby proclaim, set apart, and reserve as the Río Grande del Norte National Monument (monument), the objects identified above and all lands and interest in lands owned or controlled by the Government of the United States within the boundaries described on the

leasing, or other disposition under the public land laws, including withdrawal from location, entry, and patent under the mining laws, and from disposition under all laws relating to mineral and geothermal leasing, other than by exchange that furthers the protective purposes of this proclamation.

The establishment of this monument is subject to valid existing rights. Lands and interests in lands within the monument's boundaries not owned or controlled by the United States shall be reserved as part of the monument upon acquisition of ownership or control by the United States.

The Secretary of the Interior (Secretary) shall manage the monument through the Bureau of Land Management (BLM) as a unit of the National Landscape Conservation System, pursuant to applicable legal authorities, including the Wild and Scenic Rivers Act (82 Stat. 906, 16 U.S.C. 1271 *et seq.*), to implement the purposes of this proclamation.

For purposes of protecting and restoring the objects identified above, the Secretary, through the BLM, shall prepare and maintain a management plan for the monument and shall provide for maximum public involvement in the development of that plan including, but not limited to, consultation with tribal, State, and local governments as well as community land grant and acequia associations.

Except for emergency or authorized administrative purposes, motorized vehicle use in the monument shall be permitted only on designated roads and non-motorized mechanized vehicle use shall be permitted only on designated roads and trails.

Nothing in this proclamation shall be construed to preclude the Secretary from renewing or authorizing the upgrading of existing utility line rights-of-way within the physical scope of each such right-of-way that exists on the date of this proclamation. Additional utility line rights-of-way or upgrades outside the existing utility line rights-of-way may only be authorized if consistent with the care and management of the objects identified above.

Nothing in this proclamation shall be deemed to enlarge or diminish the rights of any Indian tribe or pueblo. The Secretary shall, in consultation with Indian tribes, ensure the protection of religious and cultural sites in the monument and provide access to the sites by members of Indian tribes for traditional cultural and customary uses, consistent with the American Indian Religious Freedom Act (92 Stat. 469, 42 U.S.C. 1996) and Executive Order 13007 of May 24, 1996 (Indian Sacred Sites).

Laws, regulations, and policies followed by the BLM in

Nothing in this proclamation shall be deemed to enlarge or diminish the jurisdiction of the State of New Mexico with respect to fish and wildlife management.

Nothing in this proclamation shall be construed to preclude the traditional collection of firewood and piñon nuts in the monument for personal non-commercial use consistent with the purposes of this proclamation.

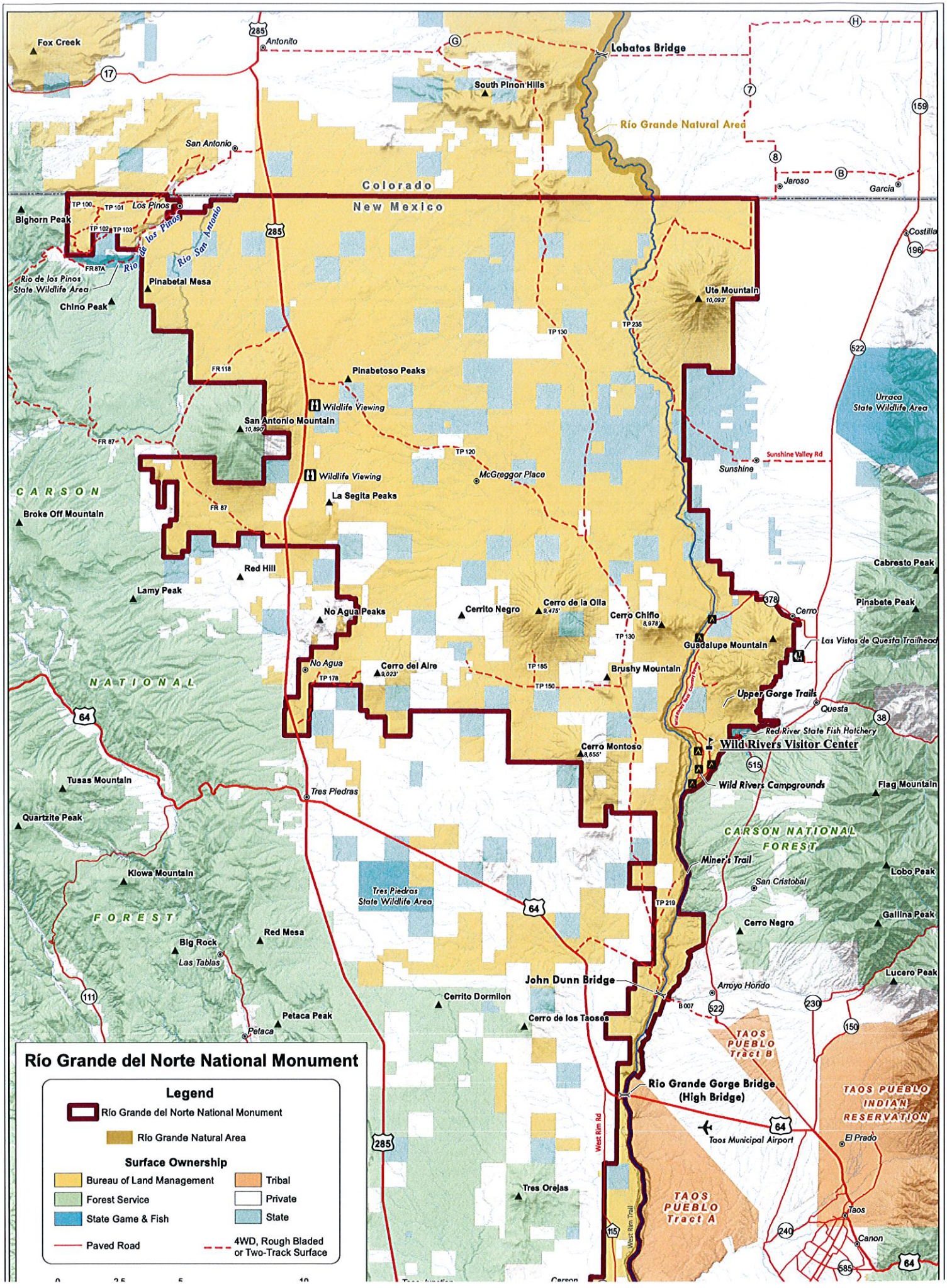
Nothing in this proclamation shall be deemed to revoke any existing withdrawal, reservation, or appropriation; however, the monument shall be the dominant reservation.

Warning is hereby given to all unauthorized persons not to appropriate, injure, destroy, or remove any feature of the monument and not to locate or settle upon any of the lands thereof.

IN WITNESS WHEREOF, I have hereunto set my hand this twenty-fifth day of March, in the year of our Lord two thousand thirteen, and of the Independence of the United States of America the two hundred and thirty-seventh.

BARACK OBAMA

# # #


Río Grande del Norte National Monument
Legend
Río Grande del Norte National Monument
Río Grande Natural Area
Surface Ownership
Bureau of Land Management
Forest Service
State Game & Fish
Tribal
Private
State
Paved Road
4WD, Rough Bladed or Two-Track Surface
Colorado
New Mexico
Río Grande Natural Area
Río de los Pinos State Wildlife Area
Tres Piedras State Wildlife Area
Wild Rivers Visitor Center
Wild Rivers Campgrounds
Red River State Fish Hatchery
Las Vistas de Questa Trailhead
Upper Gorge Trails
Rio Grande Gorge Bridge (High Bridge)
John Dunn Bridge
Lobatos Bridge
Taos Municipal Airport
Sunshine Valley Rd
Wildlife Viewing
Wildlife Viewing
CARSON NATIONAL FOREST
TAOS PUEBLO Tract A
TAOS PUEBLO Tract B
TAOS PUEBLO INDIAN RESERVATION
Fox Creek
Antonito
South Pinon Hills
San Antonio
Los Pinos
Bighorn Peak
Río de los Pinos
Río San Antonio
Pinabetal Mesa
Chino Peak
Ute Mountain 10,093'
Pinabetoso Peaks
San Antonio Mountain 10,890'
McGreggor Place
La Segita Peaks
Broke Off Mountain
Red Hill
Lamy Peak
No Agua Peaks
Cerrito Negro
Cerro de la Olla 9,475'
Cerro Chifio 8,978'
Guadalupe Mountain
Brushy Mountain
No Agua
Cerro del Aire 9,023'
Cerro Montoso 8,655'
Tusas Mountain
Quartzite Peak
Tres Piedras
Klowa Mountain
Big Rock
Las Tablas
Red Mesa
Petaca
Petaca Peak
Cerrito Dormilon
Cerro de los Taoses
Tres Orejas
Urraca State Wildlife Area
Cabresto Peak
Pinabete Peak
Cerro
Questa
Flag Mountain
Miner's Trail
San Cristobal
Lobo Peak
Gallina Peak
Cerro Negro
Lucero Peak
Arroyo Hondo
El Prado
Taos
Canon
Costilla
Jaroso
Garcia
Sunshine
West Rim Rd
West Rim Trail
Carson
FR 87A
FR 118
FR 87
TP 100
TP 101
TP 102
TP 103
TP 120
TP 130
TP 178
TP 185
TP 150
TP 219
TP 235
B 007

Appendix F

Stormwater Runoff Calculations

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Sediment Pond 1 Ea

Estimate runoff and sediment from area

Determine the volume of runoff and sediment flowing to a proposed sediment pond near waste pile 1 Ea

From acad (see attached dainage area map)

The area is :	436650	sf
	10.02	acres

Determine the curve number of the contributing area.
From NRCS TR-55 Table 2-2d (see attached)
CN= 85
assuming sagebrush with grass understory
poor hydrologic condition

Calculate the maximum possible retention (in)

S = (1000/CN)-10
S= 1.76

Calculate the total rainfall depth (P_e) in storm (in)

P_e= (P-0.2xS)^2 /(P + 0.8S)

Where P is the design storm (in)
The design storm is the 10-yr 24-hr storm event
To determine P the NOAA website is used
To use this site the latitude and longitude of th site is inptted

Lat =	36.7475	degrees
Long =	-105.971	degrees

P = 2.03 in

P_e= (P-0.2xS)^2 /(P + 0.8S)

P_e= 0.82 in

Calculate the total runoff from the area

V_r = Pe / 12 x Area

V_r = 0.68 ac-ft
This quantity represents the water storage in the pond

Calculate the sediment load from the area

From the NCRS report "Sediment loss from Soil Erosion"
for D hydologic soil group the yearly average is
2.7 tons per acre per year (see attached chart)

total sediment load = 2.7 * area

total sediment load : 27 tons
54130 lbs
Assume the sediment weighs 100 lb/cf

the volume of sediment = 541 cf
20 cy
the pond will hold 3 years of sediment

the total volume of sediment = 1624 cf
0.04 ac-ft

The total volume of the pond is the water storage plus sediment

total pond volume 0.72 ac-ft

add volume for freeboard

total pond size approximately 1 ac-ft

Sediment Pond 1 Eb

Estimate runoff and sediment from area

Note: A diversion is needed upslope from this waste pile to divert runoff from the upslope mountain contributing area.
This waste pile is located in a "natural drainage way".
For design purposes this diversion is located to the north of this waste pile and is south of contour elevation 8500 ft.

Determine the volume of runoff and sediment flowing to a proposed sediment pond near waste pile 1Eb

From acad (see attached dainage area map)

The area is :	437584	sf
	10.05	acres

Determine the curve number of the contributing area.
From NRCS TR-55 Table 2-2d (see attached)
CN= 85
assuming sagebrush with grass understory
poor hydrologic condition

Calculate the maximum possible retention (in)

S = (1000/CN)-10
S= 1.76

Calculate the total rainfall depth (P_e) in storm (in)

P_e= (P-0.2xS)^2 /(P + 0.8S)

Where P is the design storm (in)
The design storm is the 10-yr 24-hr storm event
To determine P the NOAA website is used
To use this site the latitude and longitude of th site is inptted

Lat =	36.7475	degrees
Long =	-105.971	degrees

P = 2.03 in

P_e= (P-0.2xS)^2 /(P + 0.8S)

P_e= 0.82 in

Calculate the total runoff from the area

V_r = Pe / 12 x Area

V_r = 0.68 ac-ft
This quantity represents the water storage in the pond

Calculate the sediment load from the area

From the NCRS report "Sediment loss from Soil Erosion"
for D hydologic soil group the yearly average is
2.7 tons per acre per year (see attached chart)

total sediment load = 2.7 * area

total sediment load = 27 tons
54246 lbs
Assume the sediment weighs 100 lb/cf

the volume of sediment = 542 cf
20 cy
the pond will hold 3 years of sediment

the total volume of sediment = 1627 cf
0.04 ac-ft

The total volume of the pond is the water storage plus sediment

total pond volume 0.72 ac-ft

add volume for freeboard

total pond size approximately 1 ac-ft

Sediment Pond 2A

Estimate runoff and sediment from area

Determine the volume of runoff and sediment flowing to a proposed sediment pond near waste pile 2A

From acad (see attached dainage area map)

The area is :	1680028	sf
	38.57	acres

Determine the curve number of the contributing area.
From NRCS TR-55 Table 2-2d (see attached)
CN= 85
assuming sagebrush with grass understory
poor hydrologic condition

Calculate the maximum possible retention (in)

S = (1000/CN)-10
S= 1.76

Calculate the total rainfall depth (P_e) in storm (in)

P_e= (P-0.2xS)^2 /(P + 0.8S)

Where P is the design storm (in)
The design storm is the 10-yr 24-hr storm event
To determine P the NOAA website is used
To use this site the latitude and longitude of th site is inptted

Lat =	36.7475	degrees
Long =	-105.971	degrees

P = 2.03 in

P_e= (P-0.2)^2 /(P + 0.8S)

P_e= 0.82 in

Calculate the total runoff from the area

V_r = Pe / 12 x Area

V_r = 2.63 ac-ft

This quantity represents the water storage in the pond

Calculate the sediment load from the area

From the NCRS report "Sediment loss from Soil Erosion"
for D hydologic soil group the yearly average is
2.7 tons per acre per year (see attached chart)

total sediment load = 2.7 * area

total sediment load =	104	tons
	208268	lbs

Assume the sediment weighs 100 lb/cf

the volume of sediment =	2083	cf
	77	cy

the pond will hold 3 years of sediment

the total volume of sediment =	6248	cf
	0.14	ac-ft

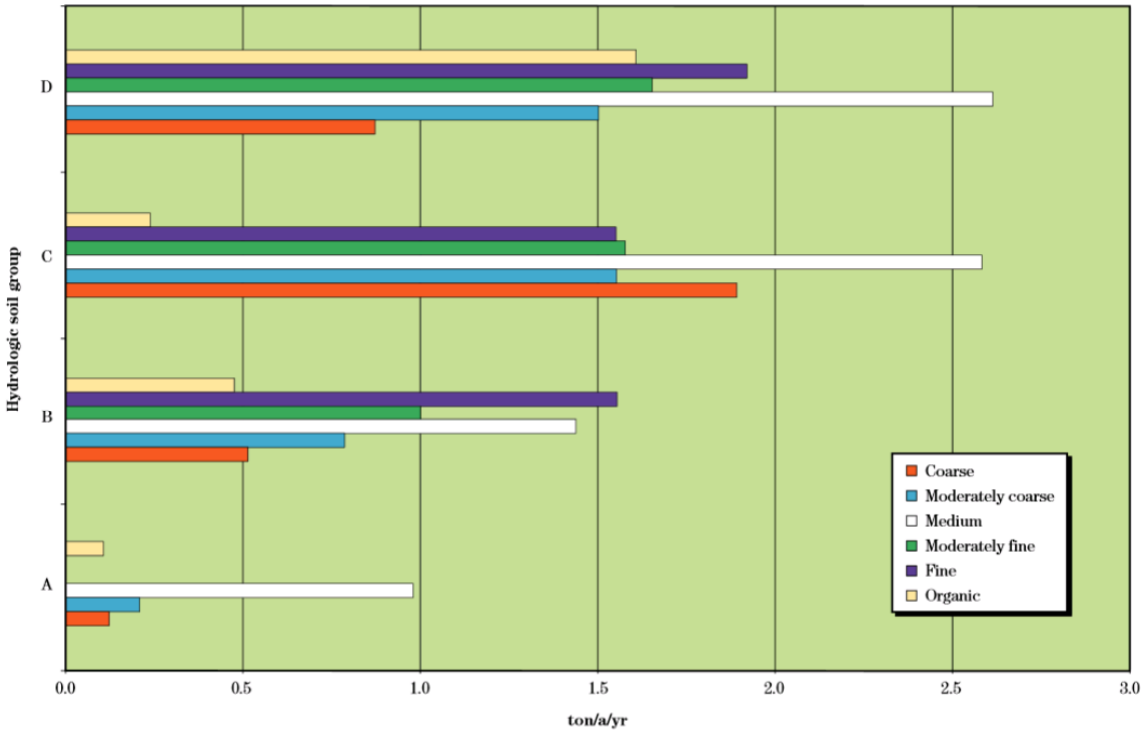
The total volume of the pond is the water storage plus sediment

total pond volume	2.77	ac-ft

add volume for freeboard

total pond size approximately	3	ac-ft

Figure 10 Average per-acre sediment loss estimates (MUSLE)–by hydrologic soil group and soil texture group



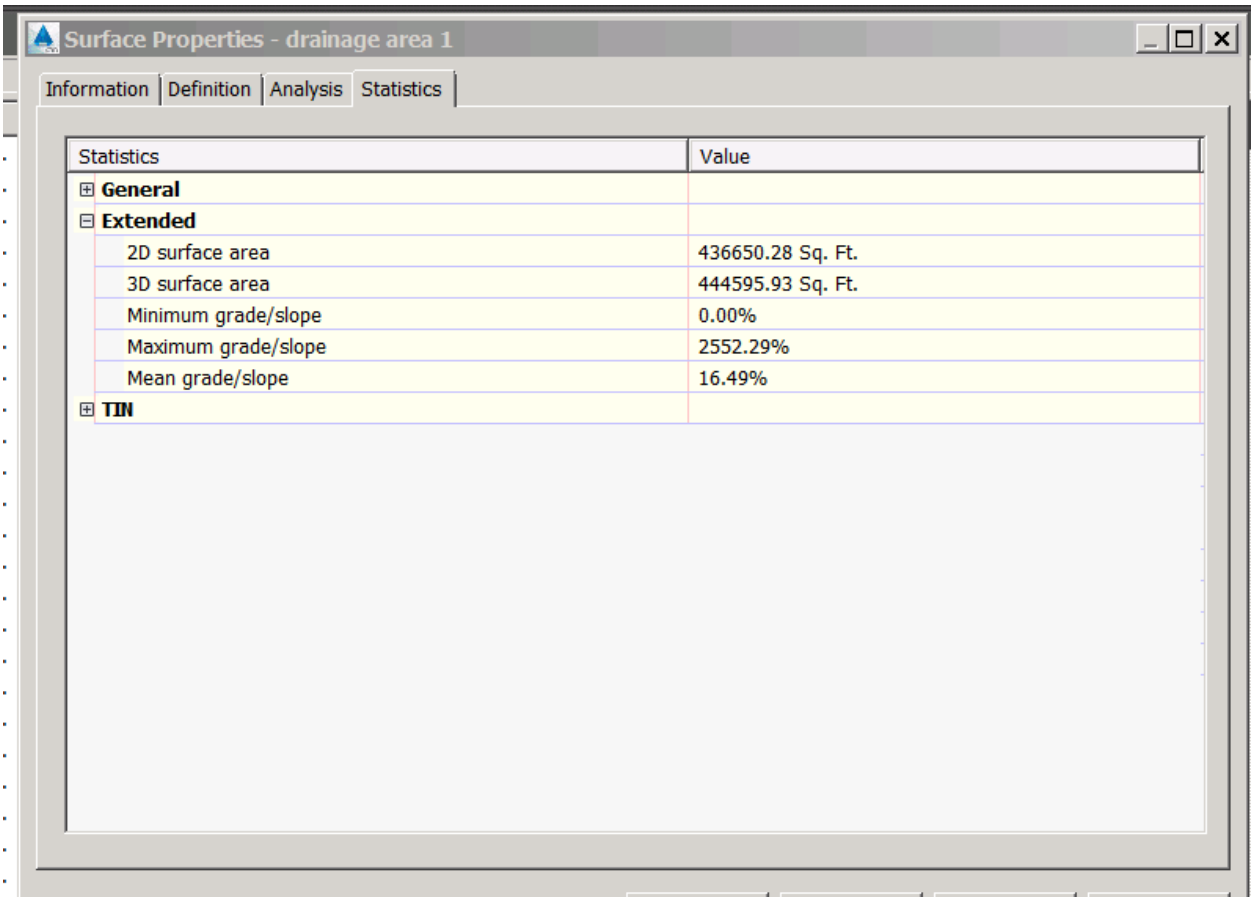

Surface Properties - drainage area 1
Information
Definition
Analysis
Statistics
Statistics
Value
General
Extended
2D surface area
436650.28 Sq. Ft.
3D surface area
444595.93 Sq. Ft.
Minimum grade/slope
0.00%
Maximum grade/slope
2552.29%
Mean grade/slope
16.49%
TIN

Table 2-2d Runoff curve numbers for arid and semiarid rangelands [1/]

Cover description		Curve numbers for hydrologic soil group			
Cover type	Hydrologic condition [2/]	A [3/]	B	C	D
Herbaceous—mixture of grass, weeds, and low-growing brush, with brush the minor element.	Poor		80	87	93
	Fair		71	81	89
	Good		62	74	85
Oak-aspen—mountain brush mixture of oak brush, aspen, mountain mahogany, bitter brush, maple, and other brush.	Poor		66	74	79
	Fair		48	57	63
	Good		30	41	48
Pinyon-juniper—pinyon, juniper, or both; grass understory.	Poor		75	85	89
	Fair		58	73	80
	Good		41	61	71
Sagebrush with grass understory.	Poor		67	80	85
	Fair		51	63	70
	Good		35	47	55
Desert shrub—major plants include saltbush, greasewood, creosotebush, blackbrush, bursage, palo verde, mesquite, and cactus.	Poor	63	77	85	88
	Fair	55	72	81	86
	Good	49	68	79	84

1 Average runoff condition, and I_a = 0.2S. For range in humid regions, use table 2-2c.
2 Poor: <30% ground cover (litter, grass, and brush overstory).
Fair: 30 to 70% ground cover.
Good: > 70% ground cover.
3 Curve numbers for group A have been developed only for desert shrub.

Appendix G

SWWP

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El Grande Mine

Dicaperl Minerals Corp.

39088 U.S. Highway 285

Tres Piedras, NM 87577

Stormwater Pollution Prevention Plan (SWPPP)

Date of Original Preparation: May 11, 2015

Table of Contents

Tables

Appendices

1.0 Facility Description and Contact Information

1.1 Facility Information/Introduction

This document constitutes the Stormwater Pollution Prevention Plan (SWPPP) for Dicaperl Minerals Corp. (Dicaperl) at the EL Grande mine site. This SWPPP is required by the United States Environmental Protection Agency (EPA) National Pollutant Discharge Elimination System (NPDES) Multi-Sector General Permit for Stormwater Discharges Associated with Industrial Activity – Mineral Industry – to Waters of the United States.

The site is eligible for coverage under the Multi-Sector General Permit (MSGP) as a mineral mining and processing facility that falls under primary subsector J2 SIC Code 1499; miscellaneous nonmetallic minerals, except fuels and subsector E3, SIC Code 3295; minerals and earths, ground or otherwise treated. Historically, the El Grande site mines and produces crushed, dried and screened perlite minerals.

The nature of the site activities requires that stormwater discharging from the site be managed as "stormwater discharge associated with industrial activities." Activities at the site involve ripping the rock and stripping of overburden to expose the ore for mining. This SWPPP describes the practices that both minimize the impacts of stormwater discharges to surface water and reduce the contact of "significant materials" associated with the site mining related activities. A location map for the Project is presented in Appendix A.

The EL Grande site is located in Taos County, 75 miles north of Santa Fe, New Mexico and 50 miles southwest of Alamosa, Colorado, with disturbances in section 11 of Township 29 North, Range 09 East. The El Grande facility is not located in Indian Country nor is it considered a Federal Facility. The estimated area of industrial activity exposed to stormwater is 100 acres. The total area held by Dicaperl for the mine property amounts to approximately 787 acres. This facility does not discharge into a Municipal Separate Storm Sewer System (MS4).

The main receiving water from this facility is the Rio Grande, which is located approximately 15 miles due east from the site or approximately 40 river miles via the Arroyo Aguaje de la Petaca. There are no segments of impaired water that are potentially impacted by the facility. Stormwater discharges from this facility are not subject to effluent guidelines.

The location of the mine was determined using a global positioning system (GPS) is:

Latitude: 36° 44' 30.30" N

Longitude: 105° 58' 9.09" W

1.2 Contact Information/Responsible Parties

Facility Operator:

Name: Allen Norris

Address: 39088 U.S. Highway 285

Tres Piedras, NM 87577

Telephone Number: 575-835-2892

Email Address: anorris@dicaperl.com

Facility Owner:

Name: Dicaperl Minerals Corp.

Address: P. O. Box 1436

Socorro, NM 87801

Telephone Number: 575-838-4436

Fax Number: 575-835-2894

SWPPP Contact:

Name: CDM Smith

Telephone Number: 602-281-7900

Email Address: munsonbe@cdmsmith.com

1.3 Stormwater Pollution Prevention Team

Every employee at this facility is responsible for the prevention of pollution from stormwater discharges during the conduct of their regular work activities. A specific Stormwater Pollution Prevention Team has been formed to implement the provisions of this SWPPP. The following Table 1 represents the persons who hold the positions.

Table 1. Stormwater Pollution Prevention Team

Title	Responsibility
Plant Manager	Provide resources and oversight to develop and implement pollution prevention practices.
Production/Maintenance Coordinator	Provide interpretation of regulatory requirements of the Stormwater program. Responsible for training the team on Stormwater sampling. Provide overall development and implementation of Stormwater management plan. Conduct or coordinate inspections, and maintain records.
Production/Maintenance Lead-Man Coordinator	Provide assistance with quarterly and visual stormwater assessments. Conduct inspections and maintain records to report back to Plant Manager.
Technical Manager	Reviews the stormwater samples in the Classifer lab after an inspection or storm event.

1.4 Site Location and Activities at the Facility

The site is located approximately 75 miles north of Santa Fe, New Mexico. A Location map is presented in Appendix A. To get to the site from Santa Fe, one must take US Highway 285 N/US Highway 84 W for approx. 33 miles; turn right onto US 285 for 54 miles; arrive at the mine road on the right off of US 285.

The major activities taking place on site include mining and waste storage of perlite. Ore is loosened by ripping the rock with a dozer then the minerals are hauled to the feed stockpile inside the mining area. The product is shipped off site for final processing. The primary shipping method is via railroad with the remainder being shipped by truck.

Waste ore dumps are located throughout the site along with one topsoil dump located along the west end of the quarry. All waste dumps except Dump 1E have been reclaimed, Dump 1E remains active and there is a future Dump 2A. There are sediment basins on site to contain and treat runoff and thereby protect the drainages on and off site.

There is one main drainage that would receive runoff from the site named the Arroyo Aguaje de la Petaca. The Arroyo is located northwest of the Quarry and flows from the northwest to the southwest. The Arroyo eventually drains into the Rio Grande River.

The General Location Map, also in Appendix A is a topographic map of the site showing the primary attributes of the operation. The direction of stormwater flow was identified by site inspection and confirmed using topographic maps.

See Figure 2 for a layout of material storage, loading/unloading areas, and oil storage areas for substances in bulk.

2.0 Potential Pollutant Sources

2.1 Industrial Activity and Associated Pollutants

The main activities which present the potential for pollutants are the mining and storage of waste perlite ore. The ore is mined out of the quarry and stored in a stockpile until it is shipped offsite for further processing.

There is one fueling area that contains fuel tanks, fresh oil barrels and recycled fuel oil. There is also one waste oil storage area, and an equipment parking area located on the site. The fueling site contains a 1,000 gallon gasoline tank, two 4,000 gallon dyed diesel tanks, one undyed diesel tank, two recycled fuel tanks with a 9,000 gallon and a 21,000 gallon capacity, and fresh oil in 55 gallon barrels. The fuel area is located inside a concrete containment that is approximately 47’ x 34’ x 3’. The waste oil area is located east of the fueling area and contains a 300 gallon tank. The waste oil is then transferred to the fuel oil tanks all located within the concrete containment.

All equipment maintenance is conducted inside a building east of the plant so there is no potential for drainage.

The following represents the potential pollutant sources at the site:

Table 2. Industrial Activity and Associated Pollutants

Industrial Activity	Associated Pollutant
Mining minerals	Perlite
Equipment/Vehicle Fueling	Diesel fuel, unleaded gasoline, engine oil
Equipment/Vehicle Maintenance	Grease, antifreeze, waste oil
Equipment/Vehicle Cleaner	Solvents

Potential pollutants carried by stormwater runoff may include naturally occurring metals that are mixed with sediments.

2.2 Spills and Leaks

If a spill occurred from the primary diesel tank or the bulk oil tanks in the concrete containment area the spilled material would remain within the secondary containment area with an extremely low potential for any material to be transported to an outfall area.

Potential spills occurring around the maintenance shop, in equipment service areas and in the equipment parking area would drain to sediment basins. The potential for any significant spills or leaks is extremely low due to most of the equipment and vehicle maintenance is preformed indoors.

There have been no known spills or contamination on site resulting in a discharge at the outfalls in the past three (3) years.

2.3 Non-Stormwater Discharges

There are two primary uses for water on the site, 1) dust control around the mill and on roads and 2) facility bathrooms which drain to an on-site septic system. Neither of these two primary uses place enough water in any one area to cause a discharge from the site. The source for these waters comes from an off-site location. The water tank on site is filled and then the water is conveyed to the plant in underground pipes. The underground pipelines are the most likely source of a non-stormwater discharge which would be possible if an underground line broke. Areas south of the plant are the most likely to have this happen but drainage in the disturbed areas where a leak is likely is toward low areas where there is little chance of this water reaching an outflow area.

2.4 Sampling Data Summary

The site has not had sufficient rainfall to cause discharges in the past three (3) years. In the past 7 years there has been one 100-year/24-hour rainfall event and no flows were observed at the outfalls past the sediment basins.

3.0 Stormwater Control Measures

3.1 Minimize Exposure

The main control measures used for stormwater are sediment basins located in low areas with low potential to drain to outfall areas. Also, as mentioned earlier, there is secondary containment for bulk oil tanks, secondary diesel and gasoline fuel tanks which also help to minimize exposure.

3.2 Good Housekeeping

Good housekeeping is practiced at this facility. Unnecessary disturbances of waste materials or soil that may lead to increased erosion or release of pollutants are avoided to the extent practicable. Any materials transported or stored on site are isolated from receiving waters by proper controls.

When the site is active Housekeeping inspections are completed each shift throughout the site to ensure a clean and healthy work environment. These inspections are completed by the personal assigned to the work area and checked by the Coordinator responsible for the area.

3.3 Maintenance

Sediment basins and culverts are in place and maintained at the property to prevent stormwater from leaving the site. Maintenance of the control measures is to be scheduled upon report there is a problem in a specific area.

Stormwater controls are implemented and structures are installed as necessary. Such controls and structures are inspected at least every 30 calendar days and within 24 hours of the end of each measureable storm event. Any noted problems will be remedied as soon as practicable. No treatment of stormwater other than drainage and sediment control is necessary.

3.4 Spill Prevention and Response

Should it be observed that there is a spill in one of the control areas or secondary containment or should one of the sediment basins be close to capacity or need attention, the observation will be reported and repairs will be completed as soon as they can be completed safely. There are no significant possibilities for a large spill to occur. During mining activities appropriate spill prevention and response plans will be implemented in accordance with Dicaperl policy.

3.5 Erosion and Sediment Controls

Sediment basins and culverts have been put in place at El Grande to prevent sediment and stormwater from leaving the site. Berms are used where sediment basins are ineffective. The Site Map in Appendix B shows the locations of the sediment basins. The erosion controls will be addressed the same as in the past.

3.6 Management of Runoff

El Grande uses sediment basins and berms at the site to prevent stormwater runoff. The annual inspections referenced along with changes in activities on site will determine whether or not there is a need for additional stormwater management controls. Measures that Dicaperl determines to be reasonable and appropriate will be implemented and maintained as described.

3.7 Employee Training

Dicaperl will train all employees who are responsible for meeting the conditions of the Multi-Sector General Permit (MSGP) for this site (inspectors, maintenance personnel, engineers, etc.) including members of the Stormwater Pollution Prevention Team (Table 1). Training will cover specific control measures used to achieve compliance and monitoring, inspection, planning, reporting, and documentation requirements of the Multi-Sector General Permit (MSGP). The training will be conducted annually.

3.8 Waste, Garbage and Floatable Debris

Dicaperl will ensure that litter, garbage, and floatable debris are not discharged to surface waters by keeping exposed areas free of such materials and waste.

3.9 Non-Stormwater Discharges

See section 2.3 Non-Stormwater Discharges for a description of non-stormwater discharges on site.

3.10 Dust Generation and Vehicle Tracking of Industrial Materials

The following describes the dust control measures per New Mexico air quality permit requirements. Main areas of dust control are around the mill and on roads. Water trucks maintain dust control on site and on haul roads. Water is also sprayed over rock channels and sediment basins when needed.

4.0 Schedules and Procedures for Monitoring

4.1 Control Measures

Annual site inspections will be conducted by the Dicaperl Stormwater Pollution Prevention Team, or their designated representative, to evaluate the effectiveness of stormwater controls currently being implemented and to evaluate the need for additional storm water controls. Current control measures are in place and are inspected to maintain effectiveness.

EPA requires monitoring and inspection of facilities covered under the Multi-Sector General Permit (MSGP). Below is a description of the monitoring and inspection that Dicaperl will conduct as required by EPA.

4.1.1 Benchmark Monitoring

The MSGP requires a water sample be collected at each outfall quarterly for the first four (4) full quarters of permit coverage to establish a baseline for total suspended solids (TSS). However, due to the erratic nature of rainfall at the El Grande site each rainfall event which causes measurable flows from the outfalls should have samples collected. No more than one sample will need to be collected per quarter even if more than one storm event occurs during that quarter. . If no storm event results in a discharge from the facility during a wet season (hence no sample is collected), it must be documented in the monitoring records and retained with the SWPPP. Each outfall where flow is observed should be sampled with a grab sample collected in a glass or plastic 500mL or1L container. If the average of the first four samples are below benchmark limits then no further sampling needs be completed and monitoring requirements will be fulfilled. However, if the average is above the benchmark limit then control measures must be evaluated and modified until four (4) additional quarters of monitoring for which the average does not exceed the benchmark must be completed.

The sampling results from the benchmark tests must be submitted to EPA no later than 30 days after receiving laboratory results for each quarter a sample was collected.

The following represents the quarterly monitoring intervals:

- January 1 – March 31
- April 1 – June 30
- July 1 – September 30
- October 1 – December 31

4.1.2 Effluent Limitations

Sampling is for Total Suspended Solids (TSS) with a benchmark limit of 100 mg/L making allowances for natural background pollutant levels. There are two potential flow areas for sampling.

Sample Locations:

- Outfall #1 – Sample area is southeast of the South Dump and should be sampled at the property boundary. This is the most likely outfall to have measurable flows.
- Outfall #2 – Sample area is southeast of the quarry.

Sampling Procedure – Using a clean 500mL or 1L sample jar; dip sample jar into the flow without disturbing the streambed or sides eliminating any additional sediment; place lid on tightly. If the sample will not be run immediately refrigerate sample. Document date, time and conditions of sample on bottle and chain of custody (COC).

Measurement Method – The sample should be measured using standard method 2540 D for Total Suspended Solids (TSS).

Sampling Frequency – Due to the infrequent nature of rainfall at the El Grande site the samples will need to be collected during the first four rain events which cause measurable flows in an outfall.

Procedures – Samples are to be collected anytime there is sufficient rainfall to cause runoff from the outfall areas. The person responsible for ensuring that a sample is taken will be the highest ranking of the following who is present at the time: Plant manager, Production Coordinator, Maintenance Coordinator, Production Lead-man and Maintenance Lead-man. The clean sample containers are to be kept in the main office. The samples are to be presented to the Technical Manager after collection or stored in the refrigerator if he/she is not on the site. If the samples are stored then a note should be written on the Mill Shift Report documenting the collection and storage of the sample. The production coordinator is responsible for training these people on the process and procedure for sample collection.

5.0 Inspections

5.1 Inspection Procedures

Members of the Stormwater Pollution Prevention Team or other qualified personnel will conduct the Routine Facility Inspections, Quarterly Visual Assessment and Annual Comprehensive Site Inspection in accordance with the MSGP. The purpose of the evaluation will be to examine: (1) whether the controls are

adequately and properly implemented; (2) whether additional control measures are needed; (3) whether existing measures are operating correctly; and (4) the condition of equipment used.

During the required inspections, the adequacy of the control measures (berms, sediment basins and culverts) may be re-assessed. Discharge locations must be inspected to verify erosion control measures are effective in preventing significant impacts to waters of the United States, where accessible. Where discharge locations are inaccessible, nearby downstream locations must be inspected to the extent that such inspections are practicable. Locations where vehicles enter or exit the site must be inspected for evidence of significant off-site sediment tracking.

5.1.1 Routine Inspections

Inspections are required to be completed at least once each quarter. These inspections are to be documented on the Routine Inspection Form with all items completed. If any additional information is required it is to be documented on the back of the form and the form is to be turned in to the Plant Manager. These inspections are to be completed by one of the following people: Plant Manager, Production Coordinator, and Maintenance Coordinator or by a competent person designated by one of the above individuals.

5.1.2 Quarterly Visual Assessment

Due to the erratic nature of rainfall at the El Grande site the first four rainfall events which create measurable flows each year should have samples collected from the discharges and the samples observed as directed in the Quarterly Visual Assessment Form. If no storm event results in a discharge from the facility during a wet season, Dicaperl is excused from visual assessment for the facility for that season provided it is documented in the monitoring records and retained with the SWPPP why a sample could not be collected. The person responsible for ensuring that a sample is taken will be the highest ranking of the following people: Plant Manager, Production Coordinator, Maintenance Coordinator, Production Lead-Man and Maintenance Lead-man. The visual assessment shall be made:

- Summer wet season: June 1 – October 31
- Winter wet season: November 1 – May 31

Dicaperl shall visually inspect the sample for the following water quality characteristics:

- Color
- Odor
- Clarity
- Floating solids
- Settled solids
- Suspended solids
- Foam
- Oil sheen
- Other obvious indicators of stormwater pollution

5.1.3 Annual Comprehensive Site Inspections

The annual inspection is to include all active and disturbed areas of the site and is to cover all items listed on the Annual Comprehensive Site Inspection (CSI) Form. This inspection can also be used to fulfill the requirements on one Routine Inspection as required above. These inspections are to be completed by one of the following people: Plant Manager, Production Coordinator, and Maintenance Coordinator or by a competent person designated by one of the above individuals.

Any deficiencies in the implementation of this SWPPP will be corrected as soon as practicable, but no later than 14 calendar days after the date of the discovery, or before the next measurable storm event, whichever is sooner.

If control measures are modified or replaced, the changes will be documented in an updated version of this SWPPP.

5.2 Inspection of Site Following Severe Weather or Other Events

Dicaperl will inspect the site within 24 hours of the end of each measureable storm event. Dicaperl will also inspect the site during any other events that may have damaged control measures or increased discharges. Inspections will include all areas of the site disturbed and areas used for storage of materials that are exposed to precipitation. If there is no measurable storm event during a calendar year, Dicaperl shall document the inability to perform an inspection during a measurable storm event. In any case, Dicaperl must still complete routine quarterly inspections.

5.3 Inspection Documentation

For each inspection required Dicaperl shall document the findings of the inspections in accordance with the MSGP. Dicaperl will use three (3) different inspection forms depending on what inspection is being conducted 1) Routine Inspection Form 2) Quarterly Visual Assessment Form and 3) Annual Comprehensive Site Inspection Form. Examples of the inspection form are attached in Appendix C.

6.0 SWPPP Modifications

6.1 Maintaining an Updated SWPPP

This SWPPP will be amended if there is a change at the site which has a significant effect on the discharge or potential for discharge of pollutants from the site, or if it is determined during inspections, monitoring, or investigations that the SWPPP is not achieving the general objectives of controlling pollutants in discharges, or changes in the SWPPP are necessary to remain in compliance with State and local regulations.

6.2 Records Retention

A copy of this SWPPP (including any modifications made during the term of the permit) and additional documentation requirements shall be kept for a period of at least three (3) years from the date that the facility's coverage under the MSGP expires or is terminated.

6.3 Reporting Requirements for Noncompliance

Dicaperl Minerals Corp will report to New Mexico Environment Department (NMED) and the Environmental Protection Agency (EPA) any noncompliance with the MSGP which may endanger human health or the environment. Dicaperl will orally notify NMED within 24 hours by contacting:

NMED – Surface Water Quality Bureau

1190 South St. Francis Drive

Santa Fe, NM 87505

Office: 505-824-0187; Fax: 505-827-0160

U.S. Environmental Protection Agency

Office of Water, Water Permits Division

Mail Code 4203M

Atten: MSGP Reports

1200 Pennsylvania Avenue, NW

Washington, D.C. 20460

A written submission will also be provided within five (5) days of the time Dicaperl becomes aware of the circumstances. The written submission will contain a description of the noncompliance and its cause; the period of noncompliance, including exact dates and times, and if the noncompliance has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent recurrence of the noncompliance.

7.0 SWPPP Certifications

7.1 Certification and Signature

SWPPP

Certification and Signature

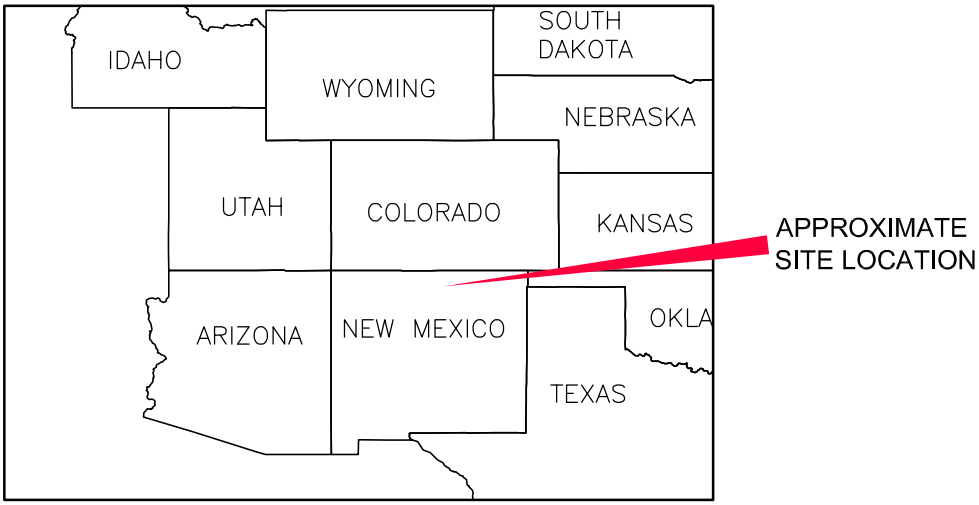
I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Name: _____ Title: _____

Authorized Signature: _____ Date: _____

Appendix A

General Location Map



LOCATION MAP
NTS

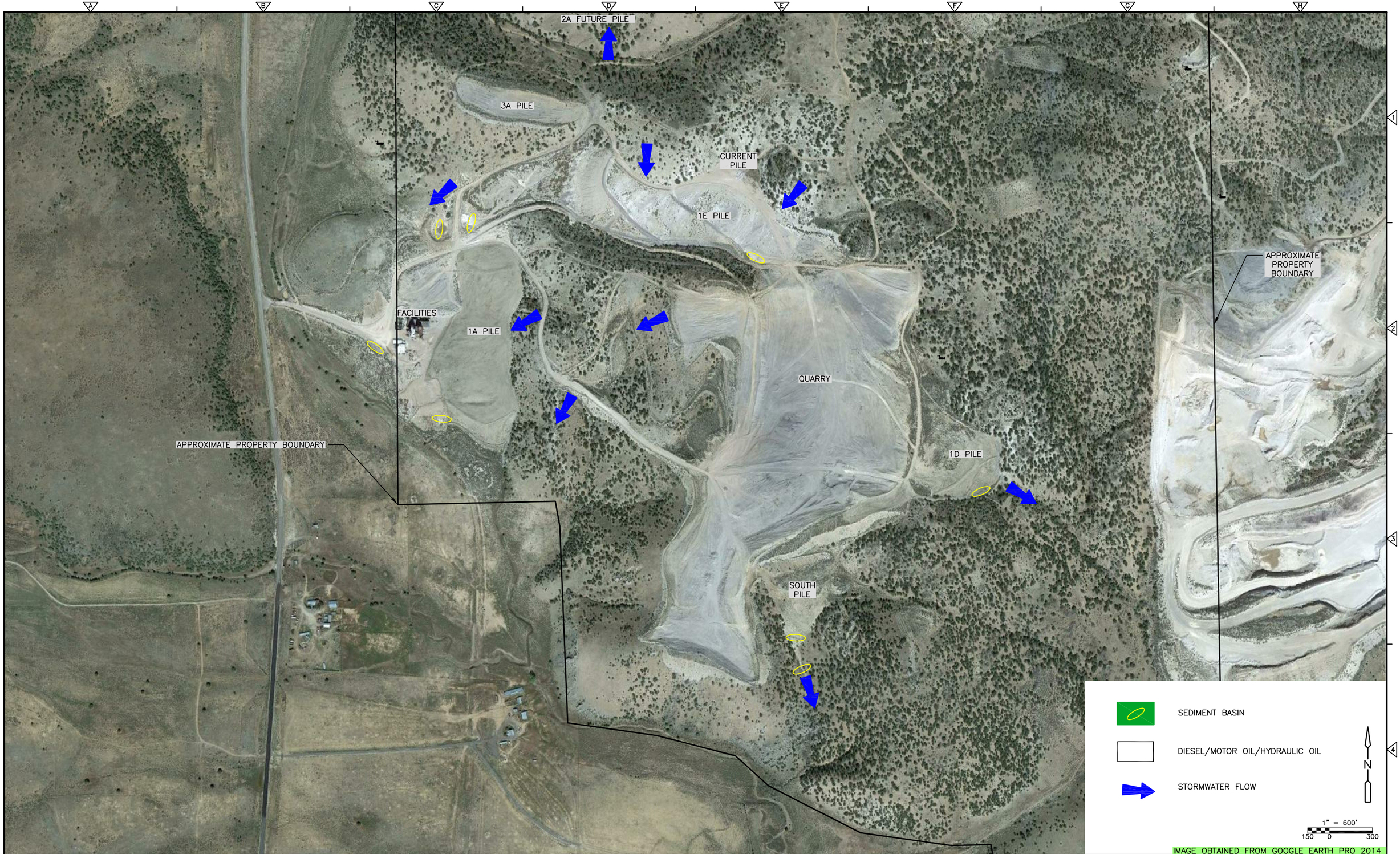
C:\Users\brennanhp\Desktop\Dicaperl Project\SWPPP\El Grande Location Map.dwg SAVED:3/31/15 PRINTED:3/31/15 BY:FALGIANOHP

CDM Smith

Figure No. 1
DICAPERL MINERAL CORP - EL GRANDE MINE
LOCATION MAP
MAR 2015

Appendix B

Site Map



REV. NO.	DATE	DRWN	CHKD	REMARKS

DESIGNED BY: H. FALGIANO
DRAWN BY: K. HUFFSMITH
SHEET CHK'D BY: B. MUNSON
CROSS CHK'D BY:
APPROVED BY:
DATE: MAY 2015

CDM Smith
4835 EAST CACTUS ROAD, SUITE 360
PHOENIX AZ 85254
Tel: (412) 201-5500

EL GRANDE SITE
DICAPERL
NEW MEXICO

EL GRANDE SITE MAP

PROJECT NO. 106779
FILE NAME: CSP001.DWG

FIGURE 2

K:\TEMP\HILLARY\DICAPERL\CSTPL001ELGRANDE.dwg SAVED:5/13/15 BY:HUFFSMITHKM

Appendix C
Inspection Forms

Storm Water Pollution Prevention Plan
Routine Inspection Form

Date Of Inspection_____ Start time_____ Completion Time_____

Inspector(s) _____

Weather Conditions_____

Were any discharges observed during the inspection? ____ If yes provide location_____
Were there any previously unidentified discharges of pollutants?_____

List condition of each of the control measures in each outfall and note if there were any failures or if repairs are needed. Also please note condition of outfall area and if cleanup is needed.
Outfall #1 _____
_____
#2 _____
_____
#3 _____
_____
#4 _____
_____
#5 _____
_____
#6 _____
_____

Is there any evidence of noncompliance observed?_____

Is there a need for additional control measures in any outfall area? If so list below.
_____
_____
_____
_____

Signature(s) of Inspector(s)_____

StormWater Pollution Prevention Plan
Quarterly Visual Assesment Form

The sample for this assessment is to be collected in a clean, clear container and should be examined in a well lit area. The sample is to be collected within 30 minutes of the beginning of a discharge flow or the reason for the delay is to be recorded below.

Date Of Sample_____ Location of Sample _____
Collection time_____
Person Collecting Sample_____
Condition of Sampled Outfall area and cause of Outfall Flow ie. Rain, Snowmelt
_____
_____
If sample was not collected within the first 30 minutes of flow please document cause of delay.
_____
_____
_____
If signs of pollution in the discharge are obvious please document probable source(s).
_____
_____

Signature of Collector _____

Date of Evaluation _____ Time of Evaluation _____
Evaluator if different from Collector _____

The sample is to be observed for the following:

Color_____
Odor _____
Clarity _____
Floating Solids _____
Settled Solids _____
Suspended Solids _____
Foam _____
Oil Sheen _____
Other indications of stormwater pollution _____
_____

Signature of Evaluator _____

StormWater Pollution Prevention Plan
Annual Comprehensive Site Inspection Form

Date Of Inspection_____ Start time_____ Completion Time_____

Inspector(s) _____

Weather Conditions_____

Were any discharges observed during the inspection? ____ If yes provide location_____
Were there any previously unidentified discharges of pollutants?_____

List condition of each of the control measures in each outfall and site area listed below and note if there were any failures or if repairs are needed. Also please note condition of area and if cleanup is needed.

Outfall #1 _____
_____
#2 _____
_____
#3 _____
_____
#4 _____
_____
#5 _____
_____
#6 _____
_____
Plant Site _____
_____
Quarry _____
_____
Active Dump _____
_____

Is there any evidence of noncompliance observed?_____

Is there a need for additional control measures in any area? If so list below.

_____
_____
_____
_____

Signature(s) of Inspector(s)_____

StormWater Pollution Prevention Plan
Annual Comprehensive Site Inspection Form

Date Of Inspection_____ Start time_____ Completion Time_____

Inspector(s) _____
Note: Review annual report form prior to inspection to ensure proper information collection.

Weather Conditions_____

Were any discharges observed during the inspection? ____ If yes provide location_____
Were there any previously unidentified discharges of pollutants?_____

List condition of each of the control measures in each outfall and site area listed below and note if there were any failures or if repairs are needed. Also please note condition of area and if cleanup is needed.

Outfall #1 _____
_____
#2 _____
_____
#3 _____
_____
#4 _____
_____
#5 _____
_____
#6 _____
_____
Plant Site _____
_____
Quarry _____
_____
Active Dump _____
_____

Is there any evidence of noncompliance observed?_____

Is there a need for additional control measures in any area? If so list below.

_____
_____
_____
_____

Signature(s) of Inspector(s)_____

NPDES Permit Tracking No.:

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY
WASHINGTON, DC 20460

Annual Reporting Form

A. GENERAL INFORMATION

1. Facility Name:

2. NPDES Permit Tracking No.:

3. Facility Physical Address:

a. Street:

b. City: c. State: d. Zip Code: -

4. Lead Inspectors Name: Title:

Additional Inspectors Name(s):

5. Contact Person: Title:

Phone: - - Ext. E-mail:

6. Inspection Date: / /

B. GENERAL INSPECTION FINDINGS

1. As part of this comprehensive site inspection, did you inspect all potential pollutant sources, including areas where industrial activity may be exposed to stormwater?
☐ YES ☐ NO

If NO, describe why not:

NOTE: *Complete Section C of this form for each industrial activity area inspected and included in your SWPPP or as newly identified in B.2 or B.3 below where pollutants may be exposed to stormwater.*

2. Did this inspection identify any stormwater or non-stormwater outfalls not previously identified in your SWPPP? ☐ YES ☐ NO

If YES, for each location, describe the sources of those stormwater and non-stormwater discharges and any associated control measures in place:

NPDES Permit Tracking No.:

3. Did this inspection identify any sources of stormwater or non-stormwater discharges not previously identified in your SWPPP? ☐ YES ☐ NO

If YES, describe these sources of stormwater or non-stormwater pollutants expected to be present in these discharges, and any control measures in place:

4. Did you review stormwater monitoring data as part of this inspection to identify potential pollutant hot spots? ☐ YES ☐ NO ☐ NA, no monitoring performed

If YES, summarize the findings of that review and describe any additional inspection activities resulting from this review:

5. Describe any evidence of pollutants entering the drainage system or discharging to surface waters, and the condition of and around outfalls, including flow dissipation measures to prevent scouring:

6. Have you taken or do you plan to take any corrective actions, as specified in Part 3 of the permit, since your last annual report submission (or since you received authorization to discharge under this permit if this is your first annual report), including any corrective actions identified as a result of this annual comprehensive site inspection?

☐ YES ☐ NO

If YES, how many conditions requiring review for correction action as specified in Parts 3.1 and 3.2 were addressed by these corrective actions? ☐☐

NOTE: *Complete the attached Corrective Action Form (Section D) for each condition identified, including any conditions identified as a result of this comprehensive stormwater inspection.*

NPDES Permit Tracking No.:

C. INDUSTRIAL ACTIVITY AREA SPECIFIC FINDINGS

Complete one block for each industrial activity area where pollutants may be exposed to stormwater. Copy this page for additional industrial activity areas.

In reviewing each area, you should consider:

- Industrial materials, residue, or trash that may have or could come into contact with stormwater;
- Leaks or spills from industrial equipment, drums, tanks, and other containers;
- Offsite tracking of industrial or waste materials from areas of no exposure to exposed areas; and
- Tracking or blowing of raw, final, or waste materials from areas of no exposure to exposed areas.

INDUSTRIAL ACTIVITY AREA _____:

1. Brief Description:

2. Are any control measures in need of maintenance or repair? ☐ YES ☐ NO

3. Have any control measures failed and require replacement? ☐ YES ☐ NO

4. Are any additional/revised control measures necessary in this area? ☐ YES ☐ NO

If YES to any of these three questions, provide a description of the problem: (Any necessary corrective actions should be described on the attached Corrective Action Form)

INDUSTRIAL ACTIVITY AREA _____:

1. Brief Description:

2. Are any control measures in need of maintenance or repair? ☐ YES ☐ NO

3. Have any control measures failed and require replacement? ☐ YES ☐ NO

4. Are any additional/revised c necessary in this area? ☐ YES ☐ NO

If YES to any of these three questions, provide a description of the problem: (Any necessary corrective actions should be described on the attached Corrective Action Form)

INDUSTRIAL ACTIVITY AREA _____:

Brief Description:

2. Are any control measures in need of maintenance or repair? ☐ YES ☐ NO

3. Have any control measures failed and require replacement? ☐ YES ☐ NO

4. Are any additional/revised BMPs necessary in this area? ☐ YES ☐ NO

If YES to any of these three questions, provide a description of the problem: (Any necessary corrective actions should be described on the attached Corrective Action Form)

Appendix D

NPDES General Permit for Stormwater Discharges Associated with Industrial Activity- Mining Industry (MSGP)

Appendix H

Soil Sample Analysis

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Inter-Mountain Labs
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Your Environmental Monitoring Partner

Date: 1/12/2017

CLIENT: Dicaperl Minerals Corp.
Project: Reclamation
Lab Order: S1612107

CASE NARRATIVE

Report ID: S1612107001

Samples 1, 10, 11, 12, 13, 14, 15, 2, 3, 4, 5, 6, 7, 8, and 9 were received on December 8, 2016.

Samples were analyzed using the methods outlined in the following references:

U.S.E.P.A. 600/2-78-054 "Field and Laboratory Methods Applicable to Overburden and Mining Soils", 1978
American Society of Agronomy, Number 9, Part 2, 1982
USDA Handbook 60 "Diagnosis and Improvement of Saline and Alkali Soils", 1969
Wyoming Department of Environmental Quality, Land Quality Division, Guideline No. 1, 1984
New Mexico Overburden and Soils Inventory and Handling Guideline, March 1987
State of Utah, Division of Oil, Gas, and Mining: Guidelines for Management of Topsoil and Overburden for Underground and Surface Coal Mining, April 1988
Montana Department of State Lands, Reclamation Division: Soil, Overburden, and Regraded Spoil Guidelines, December 1994
State of Nevada Modified Sobek Procedure
Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, SW846, 3rd Edition

All Quality Control parameters met the acceptance criteria defined by EPA and Inter-Mountain Laboratories except as indicated in this case narrative.

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

Inter-Mountain Labs
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Your Environmental Monitoring Partner

Soil Analysis Report

Dicaperl Minerals Corp.
P.O. Box 1436
Socorro, NM 87801

Report ID: S1612107001

Project: Reclamation
Date Received: 12/8/2016

Date Reported: 1/12/2017
Work Order: S1612107

Lab ID	Sample ID	pH	Saturation	Electrical Conductivity	Sand	Silt	Clay	Texture	Coarse Fragment	Potassium	Phosphorus
		s.u.	%	dS/m	%	%	%		%	ppm	ppm
S1612107-001	1	7.1	54.9	0.41	53.0	26.0	21.0	Sandy Clay Loam	40.2	643	11
S1612107-002	2	7.4	31.4	0.25	69.0	20.0	11.0	Sandy Loam	38.6	245	6
S1612107-003	3	7.7	47.3	0.47	63.0	23.0	14.0	Sandy Loam	55.6	459	9
S1612107-004	4	7.8	39.9	0.36	76.0	17.0	7.0	Sandy Loam	50.4	393	5
S1612107-005	5	7.2	41.9	0.26	72.0	18.0	10.0	Sandy Loam	23.8	307	5
S1612107-006	6	7.8	35.5	0.58	68.0	22.0	10.0	Sandy Loam	48.4	582	16
S1612107-007	7	6.3	41.5	0.26	68.0	21.0	11.0	Sandy Loam	59.1	472	17
S1612107-008	8	7.9	38.6	0.48	70.0	21.0	9.0	Sandy Loam	60.8	464	9
S1612107-009	9	7.0	33.3	0.18	84.0	15.0	1.0	Loamy Sand	33.4	30	4
S1612107-010	10	7.5	42.2	0.79	72.0	19.0	9.0	Sandy Loam	61.4	528	14
S1612107-011	11	6.9	33.8	0.24	78.0	17.0	5.0	Loamy Sand	36.8	125	4
S1612107-012	12	7.4	39.6	0.51	68.0	21.0	11.0	Sandy Loam	34.4	250	19
S1612107-013	13	7.3	43.3	0.48	70.0	18.0	12.0	Sandy Loam	52.9	460	13
S1612107-014	14	7.3	40.0	0.15	90.0	5.0	5.0	Sand	15.4	104	5
S1612107-015	15	7.4	37.2	0.22	66.0	19.0	15.0	Sandy Loam	22.4	245	5

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

Inter-Mountain Labs
1673 Terra Avenue, Sheridan, Wyoming 82801 ph: (307) 672-8945

Your Environmental Monitoring Partner

Soil Analysis Report

Dicaperl Minerals Corp.
P.O. Box 1436
Socorro, NM 87801

Report ID: S1612107001

Project: Reclamation
Date Received: 12/8/2016

Date Reported: 1/12/2017
Work Order: S1612107

Lab ID	Sample ID	Nitrate(as N) ppm
S1612107-001	1	3.6
S1612107-002	2	2.0
S1612107-003	3	2.2
S1612107-004	4	1.7
S1612107-005	5	1.0
S1612107-006	6	2.0
S1612107-007	7	5.2
S1612107-008	8	5.3
S1612107-009	9	2.1
S1612107-010	10	7.7
S1612107-011	11	1.8
S1612107-012	12	5.0
S1612107-013	13	2.5
S1612107-014	14	1.1
S1612107-015	15	0.5

These results apply only to the samples tested.

Abbreviations for extractants: PE= Saturated Paste Extract, H20Sol= water soluble,AB-DTPA= Ammonium Bicarbonate-DTPA, AAO= Acid Ammonium Oxalate
Abbreviations used in acid base accounting: T.S.= Total Sulfur, AB= Acid Base, ABP= Acid Base Potential, PyrS= Pyritic Sulfur, Pyr+Org= Pyritic Sulfur + Organic Sulfur, Neutral. Pot.= Neutralization Potential
Miscellaneous Abbreviations: SAR= Sodium Adsorption Ratio, CEC= Cation Exchange Capacity, ESP= Exchangeable Sodium Percentage

Reviewed by: Karen A Secor
Karen Secor, Soil Lab Supervisor

Appendix I

Reclamation Performance Standard at the No Aqua Peak Mine and Mill

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RECLAMATION PERFORMANCE STANDARDS
AT THE NO AGUA PEAK MINE AND MILL
PERMIT NO. TA002RE
TAOS COUNTY, NEW MEXICO

PREPARED FOR
DICAPERL MINERALS CORPORATION
SOCORRO, NEW MEXICO

PREPARED BY

GLENRIO ENVIRONMENTAL, INC.
RIO RANCHO, NEW MEXICO

SEPTEMBER 1998

TABLE OF CONTENTS

INTRODUCTION

This document was prepared by GL Environmental on behalf of DICAPERL Minerals Corporation and will serve as an attachment to the closeout plan for the No Agua Peak Mine and Mill located near Tres Piedras, New Mexico. The following document specifies all methods and criteria that will be utilized in evaluating the success of reclamation at the site.

POST MINING LAND USE

The post mining land use (PMLU), as specified in the close out plan, is range management. This PMLU is defined as a vegetation system established to provide food or browse for domestic livestock and/or indigenous wildlife without the need for constant maintenance. The selected PMLU will be compatible with the surrounding rangeland and will allow for a predominantly grass/shrub habitat following reclamation.

REFERENCE AREA APPROACH

The reference area approach will be utilized to evaluate the success of reclamation on the site. The reference area will be established on-site in two locations within habitat that is similar to the desired post mining habitat. This area will be sampled in conjunction with reclamation areas, utilizing the methodology presented in this document, to determine the success of reclamation. The reference areas will be at least 5 acre's in size and will be marked in the field with signs. These areas will be protected from disturbance, except for normal grazing pressure from livestock and indigenous wildlife.

SAMPLING METHODOLOGY

Cover

The line intercept method will be utilized for sampling cover. This method comprises three basic considerations:

1) The sampling unit is a line transect which is visualized as having length and vertical dimension only; lateral dimension, or width, is not considered.
2) There is a direct measurement of the intercept of the plants through which a vertical plane must pass.
3) The random basis of the estimate is obtained through randomization in the location of the sampling units.

The setup and data collection involve the following:

Transect locations are determined randomly from a grid system overlay placed over the most current map showing areas to be sampled. Transect direction will be determined randomly in the field. A 100-foot tape, subdivided into 1.0-foot intervals, is then stretched between two points at the position found on the map. The sampler moves along the line, and for each interval, records the plant species found and the distance it covers along that portion of the line intercept. Measurements of individual plants are read to the nearest 0.1-inch. The sampler considers only those plants or seedlings touched by the line or lying under or over it. For floral canopies below eye level, the distance each species covers along the line at ground level will be measured. For canopies above eye level, the distance covered by the downward projection of the foliage will be measured. Multiple vegetation levels are included for cover measurements. Measurements will be summarized based on herbaceous

cover [grass, forb, and immature shrub (less than 1 foot)] and mature shrub (over 1 foot tall).

The advantages of this method are that it is objective and relatively accurate (Canfield 1941)[1]. Bias is reduced since it is based on actual measurements of the plants growing in randomly located and clearly defined sampling units. It is accurate in mixed plant communities and suited for measuring low vegetation. By direct measurement of small samples, it will obtain estimates of known reliability concerning the vegetation, its composition and ecological structure.

The measurements which are calculated from the line intercept transect are:

$$\text{cover} = \frac{\text{total intercept length, species A}}{\text{total transect length}} \times 100$$

$$\text{relative cover} = \frac{\text{total intercept length, species A}}{\text{total intercept length, all species}} \times 100$$

$$\text{frequency} = \frac{\text{intervals in which species occur}}{\text{total number of transect intervals}} \times 100$$

$$\text{relative frequency} = \frac{\text{frequency value, species A}}{\text{total frequency value, all species}} \times 100$$

An "importance value" (I.V.) for each species in each sampled area will be determined to describe its contribution to the community. The value will be based on the summative totals of the relative cover plus the relative frequency values of each species, and is presented below:

Importance Value (I.V.) = relative cover + relative frequency

The value of this calculation is:

---

1 Canfield, R.H. 1941. Application of the Line Intercept Method in Sampling Range Vegetation. Journal of Forestry. 39:388-394.

It is based on "relative" rather than "absolute" values and is less effected by estimator bias. The relative position of a plant in the community is relatively undisturbed by year to year differences in precipitation, as density and frequency in poor years tend to compensate for fluctuations in production. The I.V. is an unbiased estimator of changes in the plant community or "range condition".

Production

Measurements of productivity will be made using a double sampling technique. This method is used and accepted by the United States Department of Agriculture and the Department of Interior. This technique involves both random ocular estimates of plant biomass and fewer numbers of random clipped observations taken from the ocularly estimated points. Yields are corrected to oven-dried weights before reporting so all figures are reported in pounds of dry matter per acre.

Measurements of production for the sampled plant community are predicted from the regression of estimated and clipped plots of the corrected yields by the following equation:

$y = a + b(x)$ (Cook and Bonham 1977)[2]

Where:

y = adjusted yield of all plots with x values

a = slope-intercept

b = regression coefficient

x = average of ocular estimated weight in regression samples

[2] Cook, Wayne C. and Charels D. Bonham. 1977. Techniques for Measurement and Analysis for a Pre- and Post-Mining Inventory. Colorado State University. Dept. of Range Sc. Range Science Series No. 28

Where:

$$b = \frac{\sum(yx)}{\sum x^2} \qquad a = \bar{y} - b\bar{x}$$

Where:

$$\sum x^2 = \sum x^2 - \frac{(\sum x)^2}{n}$$

$$\sum(yx) = \sum(yx) - (\sum y)\frac{(\sum x)^2}{n}$$

n = number of observations

A coefficient of determination (r^2) will also be identified for estimated versus clipped weights. Values greater than 80% will indicate that no adjustment of estimated weights is necessary.

$$r^2 = \frac{\sum xy}{\sqrt{(\sum x^2)(\sum y^2)}}$$

The setup and data collection involve the following:

Transect locations are determined randomly from a grid system overlay placed over the most current map showing areas to be sampled. A 100-foot tape, subdivided into 1.0-foot intervals, is then stretched between two points at the position found on the map. Production quadrat size is a 0.1 meter square (20 X 50 cm). Ten random points are located along the tape and then random paces taken away from the tape for quadrat placement. Weights in grams per 0.1 meter square are estimated ocularly by species. Clipped plots are estimated ocularly, then clipped and weighed by species.

A ratio of two (2) clipped plot to ten (10) ocular plots will be used at each sampling site to generate all productivity data. Productivity values will be obtained by lifeform for forbs, grass/grasslike, and shrub (less than 1 foot tall).

Sample Adequacy

Preliminary measurements will be sampled and used as the means and variances representative of each plant community. The cover and productivity estimates of all herbaceous, shrub and tree species are then incorporated into the following formula for the determination of an adequate sample size:

$$m = \frac{t^2 * s^2}{(x * d)^2}$$

where:

m = the minimum number of observations needed

t = a table value for a given level of confidence (80%)

s^2 = the variance estimates from preliminary vegetation sampling

$$s^2 = \frac{\sum x^2 - \frac{(\sum x)^2}{n}}{n-1}$$

d = the level of accuracy desired for the estimate of the mean (± 10%)

x_I = individual observation

$$mean = x = \frac{x_1 + x_2 + \ldots + x_n}{n}$$

A minimum of 15 and a ceiling of 40 sampling transects and/or productivity clippings will be set as the minimum and maximum required for representation of each plant community. In the event the required observations exceed the ceiling limit, the information collected from the 40 samplings of the required task (i.e.,

cover transect or productivity clipping) will be used as the estimated parameters of that community for that sampling period.

SUCCESS CRITERIA

Cover and Productivity

Reclamation success will be determined through comparisons with the reference area. Both areas will be sampled by the same method within the same year to be compared. Revegetation will be considered successful for vegetative cover and herbaceous productivity if the reclaimed area (cover and productivity) are not significantly different from 90% of the reference area (cover and productivity) at a 90% level of statistical confidence.

Species Diversity

Species diversity on the reclaimed area will be evaluated based on the vegetative cover data. The diversity calculations will be based on species classified as "perennial palatable" only. This will exclude all annual weedy type species from consideration and will allow for consideration of naturally invading desirable species. Diversity will be considered adequate if it meets the following criteria:

Perennial palatable grass: There will be at least three (3) perennial palatable species established that occupy more than 5% and less than 75% of the relative herbaceous cover.

Perennial palatable forb: There will be at least two (2) perennial palatable species established that occupy more than 2% and less than 75% of the relative herbaceous cover.

Shrubs: There will be at least two (2) species established that occupy more than 5% and less than 75% of the relative mature shrub cover.

MONITORING SCHEDULE

Reclamation areas will be monitored annually to assess general success or failure of the vegetation. Monitoring will focus on germination, growth, establishment, and species composition. In later years, a visual evaluation of cover, production and diversity will be included. This will be done visually and qualitatively until the final two years prior to bond release. During the final two years, vegetative success will be determined utilizing the above described methods and criteria.

BOND RELEASE

Sampling of revegetated areas will be conducted in the final two years of the responsibility period for bond release purposes. A formal application requesting bond release and a report describing the revegetation will be submitted to the director of MMD for approval. The release application will be submitted no sooner than the end of the twelfth (12^{th}) growing season.

The report will include data tabulated to demonstrate the revegetation success criteria have been met on the reclaimed area. The tabulated data will include a comprehensive species list and all of the sampled information described in this document. A map showing the post-mining vegetation will also be included. This map will depict location, size, shape, and proportion of cover and forage areas.

Appendix J

Reclamation Test Plot Plan

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Dicaperl Minerals Coperation

El Grande Mine

Reclamation Test plot plan

Date:7/26/2016

In pursuant to Permit number TA002RE section 5.3 on page 24 additional testing will be conducted on exploration site 3A to demonstrate quality of growth for the seed mix in various depths of soil. For the test 3 different methods of seed disbursement will be along with 3 varying depths of soil and monitored over a period of 7 years to see which method yields the best results.

Grading

The perimeter of dump 3A contains the Raton-rock Outcrop-Orejas material herein referred to as top soil. Preparation of the site will include the ripping to a minimum of 2' depth and smoothing of the site. Once smooth the 9 areas will be laid out and staked to achieve the desired soil depth. The center section will be left uncovered while the soil plots will be a 50' wide area on each side of the disturbed area. The test area varies from 150 to 180ft wide, and is roughly 950ft long containing approximately 3 acres. The test will demonstrate seed growth on obsidian-rich perlite substrate with 6 inches of soil in some areas 12" of soil in others and no top soil areas.

Reclamation and Vegetation

The area of reclamation has been previously been discussed in the permit. Due to the temporary nature of the site only the approved seed mix will be used on the site as the site already has trees growing on it. Currently there are willow, ponderosa and pinion trees growing on the site. In 6 years we are hoping to see significant growth from the test plot experiment.

The seed mix that Dicaperl has proposed and used for the site includes:

Dicaperl intends to revegetate reclaimed areas to achieve the post mining land use of rangeland. In doing so Dicaperl has developed, in conjunction with the previous Closeout Plan amendment, a revegetation plan that includes an appropriate seed mix and a procedure for assessing reclamation success. The seed mix that Dicaperl has proposed and used for the site includes:

Blue Grama	Sideoats Grama
Western Wheatgrass	Sand Dropseed
Bottlebrush Squirreltail	Rocky Mountain Penstemon
Purple Prairie Clover	Western Yarrow

Lewis Flax	Mexican Hat
Desert Marigold	Munro Globemallow
Fourwing Saltbush	Basin Big Sage
Fringed Sagewort	Cliffrose

Test parameters

The test area for each row as described will have stakes placed to ensure the proper depth of soil is placed in the test plots. The first stake will be placed 20ft from the edge and then another stake another 15 ft away from the first one in a north-south orientation. There will be 3 east to west rows of the 2 stake north-south rows. The east-west rows will be placed 100 ft apart.

As mentioned above after the ground is bulldozed and flattened the see will be planted in 3 different ways.

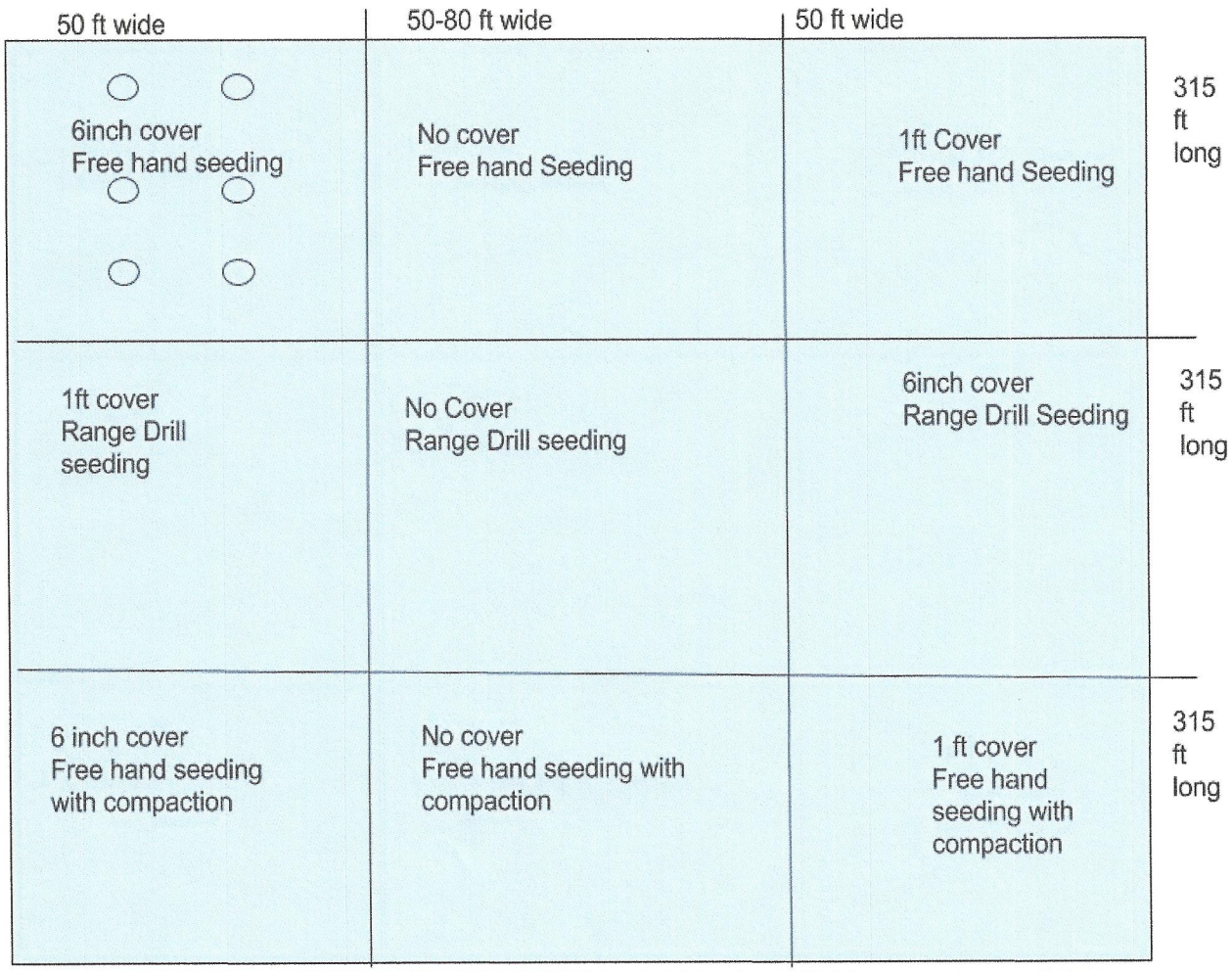
1. The first is to actually plant the seed into the ground using a machine called the Range Drill which places the seed on top of the soil and then compacts to a previously selected depth.
2. The second method is to spread the seed over the ground by hand and the drag a series of tires across the ground for compaction.
3. The third and final method is to just implement the by-hand method for the seed and to see how it does naturally without compaction.

Top soil will be layed down in three different increments. 6 inches of topsoil, no additional top soil and 12 inches of topsoil will be the measurement used. The plot below (figure 1a) shows the pattern in which everything will be distributed.

Test Results and Monitoring

An evaluation of the plot will be done every 6 months to determine the growth of the vegetation and the health of the exploration. Checking for good growth means seeing the height of the plant versus the full growth capable of the species. Within the 6 years 75% to 100 % growth is the optimal results for all vegetation present.

Figure 1a


50 ft wide
50-80 ft wide
50 ft wide
6inch cover
Free hand seeding
No cover
Free hand Seeding
1ft Cover
Free hand Seeding
315 ft long
1ft cover
Range Drill
seeding
No Cover
Range Drill seeding
6inch cover
Range Drill Seeding
315 ft long
6 inch cover
Free hand seeding
with compaction
No cover
Free hand seeding with
compaction
1 ft cover
Free hand
seeding with
compaction
315 ft long

50 ft wide	50-80 ft wide	50 ft wide	
6inch cover Free hand seeding	No cover Free hand Seeding	1ft Cover Free hand Seeding	315 ft long
1ft cover Range Drill seeding	No Cover Range Drill seeding	6inch cover Range Drill Seeding	315 ft long
6 inch cover Free hand seeding with compaction	No cover Free hand seeding with compaction	1 ft cover Free hand seeding with compaction	315 ft long

Appendix K

Demolition Plan

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El Grande Mill – Demolition Plan

As background, Dicaperl's prepared a now outdated demolition plan of the El Grande facility. The plan has been laid out in four phases. The demolition activity was expected to take ten to twelve weeks to bring down the structure to the top of the silos. The details of the plan include:

- Remove all usable equipment from the structure. 4th Floor has 4 elevators and 2 belt conveyors with salvageable motor and gearboxes and floor grating that is in very good condition. 3rd Floor has 6 Tyler Screens in fair condition but the motors are expected to be good with two motors per screen, Mogensen screen motors are salvageable but the screen is worn out, Baghouse controls should still be usable and the Raymond mill baghouse is in fair condition if needed somewhere. Most flooring is expanded metal and not worth salvaging. 2nd Floor has a 20 Hp motor on the air separator, 6 more Tyler screens and motors. Flooring is mostly expanded metal but some grating although not worth salvaging 1st Floor has a roll of conveyor belting that is good and 7 screw conveyors with usable motors and gearboxes. Flooring is to be left for safety on top of the silos. Bag house deck has 4 screw conveyors with gearboxes and motors, two 75 Hp 1800 rpm motors, two 60 Hp 1800 rpm motors and a 250 Hp 1200 rpm motor. There is another 250 Hp 1200 rpm motor on ground level.
- Remove wiring, piping and associated equipment saving the electrical boxes for reuse.
- Remove roofing and siding from the structure.
- Remove structures down to the top of the silos or ground level based on the location and structure type.

Over the last several years, Dicaperl has been actively removing equipment from the El Grande facility. As of February 2018 (or later), select foundations and buildings that have not been demolished include the office, lunch and changeroom; maintenance shop; equipment shop; drier and control room area; jaw crusher structure; tank farm; and mill buildings. The mill structure above the silos has been razed with only a few structures remaining. Dicaperl intends to continue demolishing the remaining buildings, including recycling scrap metal and other valued commodities. A comprehensive list of all equipment removed (or scheduled for removal) from the building or stockpiled in the outside storage area was provided to MMD. Dicaperl continues to actively reclaim the El Grande Mine through demolition and off-site removal of facility equipment. These voluntary activities reduce the long-term timeframe for overall facility reclamation. Demolition crews continue to complete demolition as time allows with resumption of these actively schedule shortly.

Appendix L

SRCE

Enter Data Below in Green and Blue Spaces

STANDARDIZED RECLAMATION COST ESTIMATOR

Version 1.4.1
Build 017b (revised to work with Excel 2016 - 24 Oct 2016)

Approved for use in Nevada, August 1, 2012

COST DATA FILE INFORMATION

File Name:	SRCE_Version_1_4_1_017_(August 2018) Final.xlsm
Cost Data File:	Alamosa Baseline SRCE Cost Data USR 1-2018 El Grande Reclamation Costs (1-15).xlsm
Cost Data Date:	October 13, 2017
Cost Data Basis:	User Data — Data Cost Units: Imperial
Author/Source:	CDM Smith

PROJECT INFORMATION

Property/Mine Name:	El Grande — Property Code:
Project Name:	Dicaperl El Grande Closeout Plan - Reclamation Plan
Date of Submittal:	January 15, 2018 — Average Altitude: 0 ft.
Select One:	○ Notice or Sm Exploration Plan ○ Lg Exploration Plan ◉ Mine Operation
Select One:	○ Private Land ◉ Public or Public/Private
Cost Estimate Type:	Surety
Cost Basis Category:	Alamosa, Colorado
	Southern Colorado
Cost Basis Description:	

ıe: Dicaperl El Grande Closeout Plan - Reclamation Plan

Project Date: January 15, 2018

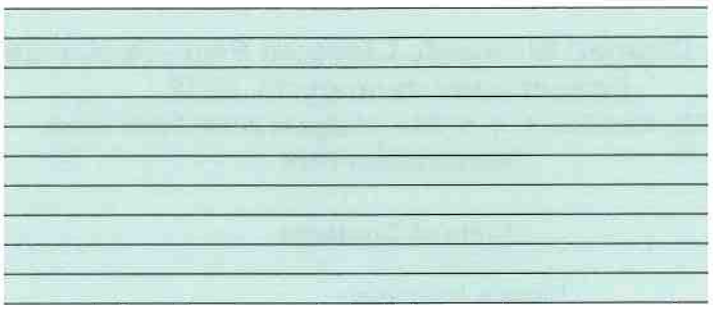
ŚRCE_Version_1_4_1_017_(August 2018) Final.xlsm

Reclamation Plan

Table of Contents

Description

Closure Cost Estimate
Table of Contents



Closure Cost Estimate
Cost Summary

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan
Project Date: January 15, 2018
Model Version: Version 1.4.1
File Name: SRCE_Version_1_4_1_017_(August 2018) Final.xlsm

A. Earthwork/Recontouring	Labor [1]	Equipment [2]	Materials	Total
Exploration	$2,173	$9,473	$0	$11,646
Exploration Roads & Drill Pads	$0	$0	$0	$0
Roads	$323	$2,099	$0	$2,422
Well Abandonment	$0	$0	$0	$0
Pits	$0	$0	N/A	$0
Quarries & Borrow Areas	$10,543	$70,638	$0	$81,181
Underground Openings	$0	$0	$0	$0
Process Ponds	$0	$0	$0	$0
Heaps	$0	$0	$0	$0
Waste Rock Dumps	$18,738	$125,187	$0	$143,925
Landfills	$0	$0	$0	$0
Tailings	$0	$0	$0	$0
Foundation & Buildings Areas	$203	$1,414	$0	$1,617
Yards, Etc.	$0	$0	$0	$0
Drainage & Sediment Control	$0	$0	$0	$0
Generic Material Hauling	$0	$0	$0	$0
Other User Costs (from Other User sheet)	$0	$0	$0	$0
Other**				$0
Subtotal	$31,980	$208,811	$0	$240,791
Mob/Demob if included in Other User sheet	$0	$0	$0	$0
Mob/Demob		$19,979		$19,979
Subtotal "A"	**$31,980**	**$228,790**	**$0**	**$260,770**

B. Revegetation/Stabilization	Labor [1]	Equipment [2]	Materials	Total
Exploration	$3,555	$6,393	$2,842	$12,790
Exploration Roads & Drill Pads	$0	$0	$0	$0
Roads	$1,395	$2,507	$1,115	$5,017
Well Abandonment				N/A
Pits	$0	$0	$0	$0
Quarries & Borrow Areas	$13,160	$23,661	$10,519	$47,340
Underground Openings				N/A
Process Ponds	$0	$0	$0	$0
Heaps	$0	$0	$0	$0
Waste Rock Dumps	$12,798	$23,013	$10,231	$46,042
Landfills	$0	$0	$0	$0
Tailings	$0	$0	$0	$0
Foundation & Buildings Areas	$1,211	$2,170	$966	$4,347
Yards, Etc.	$0	$0	$0	$0
Drainage & Sediment Control	$0	$0	$0	$0
Generic Material Hauling	$0	$0	$0	$0
Other User Costs (from Other User sheet)	$0	$0	$0	$0
Other**				$0
Subtotal "B"	**$32,119**	**$57,744**	**$25,673**	**$115,536**

C. Detoxification/Water Treatment/Disposal of Wastes**	Labor [1]	Equipment [2]	Materials	Total
Process Ponds/Sludge				$0
Heaps				$0
Dumps (Waste & Landfill)				$0
Tailings				$0
Surplus Water Disposal				$0
Monitoring				$0
Miscellaneous				$0
Solid Waste - On Site	$0	$0	N/A	$0
Solid Waste - Off Site				$0
Hazardous Materials				$0
Hydrocarbon Contaminated Soils	$0	$0	$0	$0
Other User Costs (from Other User sheet)	$0	$0	$0	$0
Other**				$0
Subtotal "C"	**$0**	**$0**	**$0**	**$0**

D. Structure, Equipment and Facility Removal, and Misc.	Labor [1]	Equipment [2]	Materials	Total
Foundation & Buildings Areas	$33,683	$11,982	$0	$45,665
Other Demolition	$0	$0	$0	$0
Equipment Removal	$4,936	$6,841	$12,764	$24,541
Fence Removal	$0	$0		$0
Fence Installation	$0	$0	$0	$0
Culvert Removal	$0	$0	N/A	$0
Pipe Removal	$0	$0	N/A	$0
Powerline Removal	$0			$0
Transformer Removal	$0			$0
Rip-rap, rock lining, gabions	$0	$0	$0	$0
Other Misc. Costs	$0	$0	$0	$0
Other User Costs (from Other User sheet)	$0	$0	$0	$0
Other**				$0
Subtotal "D"	**$38,619**	**$18,823**	**$12,764**	**$70,206**

E. Monitoring	Labor [1]	Equipment [2]	Materials	Total
Reclamation Monitoring and Maintenance	$8,746	$2,887	$1,284	$12,917
Ground and Surface Water Monitoring	$0	$0	$0	$0
Other User Costs (from Other User sheet)	$0	$0	$0	$0
Subtotal "E"	**$8,746**	**$2,887**	**$1,284**	**$12,917**

F. Construction Management & Support	Labor	Equipment [2]	Materials	Total
Construction Management	$82,416	$5,827	N/A	$88,243
Construction Support	$0	$360	$0	$360
Road Maintenance	$0	$0	$0	$0

Closure Cost Estimate
Cost Summary

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan
Project Date: January 15, 2018
Model Version: Version 1.4.1
File Name: SRCE_Version_1_4_1_017_(August 2018) Final.xlsm

Other User Costs (from Other User sheet)	$0	$0	$0	$0
Other**				$0
Subtotal "F"	**$82,416**	**$6,187**	**$0**	**$88,603**
Subtotal Operational & Maintenance Costs	**Labor [1]**	**Equipment [2]**	**Materials [3]**	**Total**
Subtotal A through F	**$193,880**	**$314,431**	**$39,721**	**$548,032**

** Other Operator supplied costs - additional documentation required.

Closure Cost Estimate
Cost Summary

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan
Project Date: January 15, 2018
Model Version: Version 1.4.1
File Name: SRCE_Version_1_4_1_017_(August 2018) Final.xlsm

Indirect Costs			Include?	Total
1. Engineering, Design and Construction (ED&C) Plan (7)				$32,882
2. Contingency (8)				$43,843
3. Insurance (9)	$2,908			$2,908
4. Performance Bond (10)				$16,441
5. Contractor Profit (11)				$54,803
6. Contract Administration (12)				$54,803
7. Government Indirect Cost (13)				$0
Subtotal Add-On Costs				**$205,680**
Total Indirect Costs as % of Direct Cost				38%
GRAND TOTAL				**$753,712**

Administrative Cost Rates (%)

	Cost Ranges for Indirect Cost Percentages				
	<=	<=	<=	>	
1. Engineering, Design and Construction (ED&C) Plan (7)	$500,000	$2,500,000	$25,000,000	$25,000,000	Small Plan
Variable Rate	8%	6%		4%	0%
	<=	<=	<=	>	
2. Contingency (8)	$500,000	$5,000,000	$50,000,000	$50,000,000	Small Plan
Variable Rate	10%	8%	6%	4%	0%
3. Insurance (9)	1.5%	of labor costs			
4. Bond (10)	3.0%	of the O&M costs if O&M costs are >$100,000			
5. Contractor Profit (11)	10%	of the O&M costs			
	<=	<=	<=	>	
6. Contract Administration (12)	$1,000,000	$15,000,000	$25,000,000	$25,000,000	
Variable Rate	10%	8%		6%	
0	0%	$0			

RECLAMATION COST ESTIMATION SUMMARY SHEET FOOTNOTES
NOTE :

Closure Cost Estimate
Other User

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan - Reclamation Plan
Date of Submittal: January 15, 2018
File Name: SRCE_Version_1_4_1_017_(August 2018) Final.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: Alamosa Baseline SRCE Cost Data USR 1-2018 El Grande Reclamation Costs (1-15).xlsm
Cost Estimate Type: Surety Cost Basis: Alamosa, Colorado

Other Cost Items Calculated Elsewhere

	Description (required)	ID Code	Facility Type	Quantity	Units	Total Capital Cost $	Material Unit Cost $	Labor Unit Cost $	Equipment/ Operating Unit Cost $	Cost Type (select)	Total Cost $	Comments
						$0	$0	$0	$0		$0	

Notes: Capital cost is lump sum (i.e. not multiplied by the quantity).
Material, Labor and Equipment/Operating costs are unit costs (i.e. multiplied by the quantity).

Closure Cost Estimate
Reclamation Quantities

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan - Reclamation Plan
Date of Submittal: January 15, 2018
File Name: SRCE_Version_1_4_1_017_(August 2018) Final.xlsm
Model Version: Version 1.4.1
Data Cost File: Alamosa Baseline SRCE Cost Data USR 1-2018 El Grande Reclamation Costs (1-15).xlsm
Cost Data: User Data
Cost Data File: Alamosa Baseline SRCE Cost Data USR 1-2018 El Grande Reclamation Costs (1-15).xlsm
Cost Estimate Type: Surety Cost Basis: Alamosa, Colorado

Reclamation Quantity Summary

	Description	Total Regrade or Haul Volume cy	Total Regrade or Haul Cost $	Total Cover Volume cy	Cover Placement Cost $	Total Growth Media Volume cy	Growth Media Placement Cost $	Total Surface Area acres	Total Scarify Cost $	Total Revetation Cost $	TOTALS $	Unit Costs: Regrade Unit Cost $/CY	Material Haul or Backfill Unit Cost $/CY	Cover Unit Cost $/CY	Growth Media Unit Cost $/CY	Scarify Unit Cost $/CY	Area Unit Cost $/acre
1	Waste Rock Dumps	28,244	$ 4,629	165,077	$ 130,730		$ -	74.16	$ 8,566	$ 46,042	$ 189,967	$0.16	N/A	$0.79		$115.51	$2,561.58
2	Tailings Impoundments		$ -		$ -		$ -		$ -	$ -	$ -		N/A				
3	Heap Leach Pads		$ -		$ -		$ -		$ -	$ -	$ -		N/A				
5	Open Pits		$ -							$ -	$ -		N/A				
4	Quarries & Borrow Pits	95	$ 231	92,262	$ 68,447		$ -	76.2492562	$ 12,503	$ 47,340	$ 128,521	$2.43	N/A	$0.74		$163.98	$1,685.54
6	Roads	978	$ 801				$ -	8.08	$ 1,621	$ 5,017	$ 7,439	$0.82	N/A			$200.62	$920.67
7	Landfills		$ -		$ -		$ -		$ -	$ -	$ -		N/A				
8	Buildings				$ -		$ -	7	$ 1,617	$ 4,347	$ 5,964		N/A			$231.00	$852.00
9	Yards		$ -		$ -		$ -		$ -	$ -	$ -		N/A				
10	Ponds		$ -				$ -			$ -	$ -	N/A					
11	Exploration Roads		$ -				$ -		$ -	$ -	$ -		N/A				
12	Exploration Trenches	7,933	$ 11,646					20.6		$ 12,790	$ 24,436	$1.47	N/A				$1,186.21
13	Diversion Ditches		$ -							$ -	$ -		N/A				
14	Sediment Ponds		$ -				$ -		$ -	$ -	$ -						
15	Generic Haulage/Backfill		$ -		$ -		$ -		$ -	$ -	$ -	N/A					
16	Adit/Decline Backfilling1		$ -								$ -	N/A					
17	Shaft Backfilling		$ -								$ -	N/A					
	TOTALS	37,250	$ 17,307	257,339	$ 199,177	-	$ -	186.09	$ 24,307	$ 115,536	$ 356,327						
	Average Costs	per CY	$0.46	per CY	$0.77	per CY		per acre	$130.62	$4.75	$1,915	per acre					

Closure Cost Estimate
Exploration

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Cost Estimate Type: Surety Cost Basis: Alamosa, Colorado

Exploration - Cost Summary

	Labor	Equipment	Materials	Totals
Hole Abandonment Costs	$0	$0	$0	$0
Trench Backfilling Costs	$2,173	$9,473		$11,646
Subtotal Earthworks	**$2,173**	**$9,473**	**$0**	**$11,646**
Trench Revegetation Costs	$3,555	$6,393	$2,842	$12,790
TOTALS	**$5,728**	**$15,866**	**$2,842**	**$24,436**

Exploration Drillhole Abandonment - User Input

Facility Description			Hole Plugging							
	Description (required)	ID Code	Hole Type (select)	Diameter in	Total Number of Holes	Max Holes Open at One Time	Casing to Remove ft	Average Depth of Hole[1] ft bgs	Depth to Water ft bgs	Hole Plug Method (select)

Notes:
1. If core holes are pre-drilled, use length of hole below pre-drilled length
2. If Top Plug is selected, assumes maximum 1/2hr laborer time to place plug and backfill with cuttings/soil (including move-to/set up time).

Closure Cost Estimate
Exploration

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Exploration Trenches - User Input

	Facility Description		Trench Parameters					Backfill			Revegetation		
	Description (required)	ID Code	Trench Length ft	Trench Depth ft	Trench Bottom Width ft	Trench Sideslope Angle degrees	Additional Hrs for Walk-in [1] hr	Backfill Material (select)	Cut Material Type (select)	Backfilling Fleet (select)	Seed Mix (select)	Mulch (select)	Fertilizer (select)
1	3A		973	0.8	225.0	45.0		1.2	Alluvium	Medium Dozer	User Mix 5 (from Seed Mix sheet)		
2	3B		500	0.0	340.0	45.0		1.2	Alluvium	Medium Dozer	User Mix 5 (from Seed Mix sheet)		
3	3C		375	0.0	280.0	45.0		1.2	Alluvium	Medium Dozer	User Mix 5 (from Seed Mix sheet)		
4	3D		475	0.0	265.0	45.0		1.2	Alluvium	Medium Dozer	User Mix 5 (from Seed Mix sheet)		
5	3E		350	0.0	280.0	45.0		1.2	Alluvium	Medium Dozer	User Mix 5 (from Seed Mix sheet)		
6	3F		425	0.0	350.0	45.0		1.2	Alluvium	Medium Dozer	User Mix 5 (from Seed Mix sheet)		

Notes:
1. Include one-way hours necessary to walk equipment in from drop-off point to work area
2. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table

In order for the SRCE model to correctly calculate the cost for the 3A exploration trench backfill, the trench depth must be adjusted from their existing depth to 9 inches (0.75 feet), which is the acceptable cover thickness for the El Grande Quarry. See the Quarries and Borrow Pits tab. The model rounds the depth to 0.80 feet.
Exploration trenches 3B through 3F have been backfilled and vegetated, with no further reclamation required. Seed mix costs have been included to support potential re-vegetation.

Closure Cost Estimate
Exploration

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TOTALS	**$5,728**	**$15,866**	**$2,842**	**$24,436**

Exploration Drillhole Abandonment

Description (required)	Vol/foot of depth ft3	Hole Plugging Material (1)	Total Grout Volume (2) cy	Total Cuttings Volume cy	Total Top Seal Volume (3,4) cy	Total Drillhole Abandon. Hours (6,7) hrs	Casing Removal Labor Cost (5) $	Casing Removal Equipment Cost $	Plugging Labor Cost $	Plugging Equipment Cost $	Plugging Material Cost $	Top Seal Material Cost (2,3) $	Total Cost (6,7) $
							$0	$0	$0	$0	$0	$0	$0

Notes:

1. Assumes grout backfill from bottom of hole to 50' (15.24m) above static water level, up to 10' (3m) from top of hole
2. Assumes 25% loss to formation for grout backfill
3. If "Top Plug" hole plug method is used, assumes physical plug installed without backfill, grout or cement. Not available option for Nevada projects
4. Assumes top 20' (6 m) of hole is plugged with cement if "Grout Only", "Backfill + Grout", or "Cement Plug" hole plug method are chosen.
5. Assumes that a) casing is not cemented entire length, b) does not include temporary surface casing
6. Assumes minimum 1 hr per hole for abandonment (excluding move-to and casing removal)
7. Assumes fixed hours per hole for setup & tear-down and moving between holes (see Productivty Sheet) per drill hole (includes rig time if grouting required, labor crew only if cuttings backfill only)

Closure Cost Estimate
Exploration

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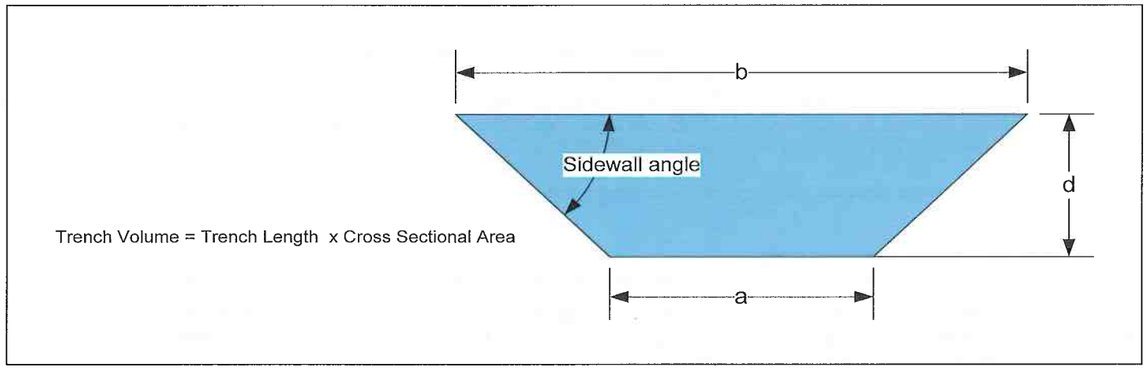
TOTALS	**$5,728**	**$15,866**	**$2,842**	**$24,436**

Exploration Trenches - Calculations

Exploration Trench Volume Calculation



Dozing & Ripping/Scarifying Calculations

Dozing: Dozing distance = 1/2 trench length or 400 ft (max push) whichever is less
Assumes flat push (grade correction factor = 1)

Revegetation: 10 ft added to trench width to account for revegetation under spoil pile

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Exploration - Cost Summary

	Labor	Equipment	Materials	Totals
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TOTALS	**$5,728**	**$15,866**	**$2,842**	**$24,436**

Exploration Trenches - Backfill/Regrading Costs

Productivity = Dozer Productivity x Grade Correction x Density Correction x Operator (0.75) x Material x Visibility x Job Efficiency (0.83)

	Description (required)	Trench Backfill Volume LCY (BCY+30%)	Dozer Push Distance ft	Equipment Productivity yd3/hr	Dozing Material	Density Correction	Backfilling Fleet	Corrected Hourly Productivity yd3/hr	Total Dozer Hours hr	Trench Backfill Labor Cost $	Trench Backfill Equipment Cost $	Total Trench Backfill Cost $
1	**3A**	7,933	487	182	1.20	0.79	D7R	107	74	$2,173	$9,473	$11,646
2	**3B**		250	307	1.20	0.79	D7R	0		$0	$0	$0
3	**3C**		188	383	1.20	0.79	D7R	0		$0	$0	$0
4	**3D**		238	319	1.20	0.79	D7R	0		$0	$0	$0
5	**3E**		175	405	1.20	0.79	D7R	0		$0	$0	$0
6	**3F**		213	348	1.20	0.79	D7R	0		$0	$0	$0
		7,933							74	**$2,173**	**$9,473**	**$11,646**

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Exploration - Cost Summary

	Labor	Equipment	Materials	Totals
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Subtotal Earthworks	**$2,173**	**$9,473**	**$0**	**$11,646**
Trench Revegetation Costs	$3,555	$6,393	$2,842	$12,790
TOTALS	**$5,728**	**$15,866**	**$2,842**	**$24,436**

Exploration Trenches - Revegetation Costs

	Description (required)	Surface Area acres	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revgetation Material Cost $	Total Revegetation Cost $
1	**3A**	5.30	$915	$1,645	$731	$3,291
2	**3B**	4.00	$690	$1,241	$552	$2,483
3	**3C**	2.50	$431	$776	$345	$1,552
4	**3D**	3.00	$518	$931	$414	$1,863
5	**3E**	2.30	$397	$714	$317	$1,428
6	**3F**	3.50	$604	$1,086	$483	$2,173
		20.60	**$3,555**	**$6,393**	**$2,842**	**$12,790**

Closure Cost Estimate
Waste Rock Dumps

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Cost Estimate Type: Surety Cost Basis: Alamosa, Colorado

Waste Rock Dumps - Cost Summary

	Labor	Equipment	Materials	Totals
Grading Costs	$587	$4,042	N/A	$4,629
Cover Placement Cost	$17,064	$113,666	N/A	$130,730
Topsoil Placement Cost	$0	$0	N/A	$0
Ripping/Scarifying Cost	$1,087	$7,479	N/A	$8,566
Subtotal Earthworks	**$18,738**	**$125,187**	**$0**	**$143,925**
Revegetation Cost	$12,798	$23,013	$10,231	$46,042
TOTALS	**$31,536**	**$148,200**	**$10,231**	**$189,967**

Waste Rock Dumps - User Input

You must fill in ALL green cells in this section for each dump, lift or dump category

	Facility Description			Physical - MANDATORY									Cover				Growth Media			
	Description (required)	ID Code	Type	Underlying Ground Slope % Grade	Ungraded Slope _H:1V	Final Slope _H:1V	Final Top Slope % Grade	Lift (dump) Height ft	Mid-Bench Length ft	Average Flat Area Long Dimension (ripping distance) ft	Final (Regraded) Dump Footprint acres	Regrade Volume (1) (if calculated elsewhere) cy	Cover Thickness Slopes in	Cover Thickness Flat Areas in	Distance from Cover Borrow ft	Slope from Dump to Cover Borrow % grade	Slope Growth Media Thickness in	Flat Area Growth Media Thickness in	Distance from Growth Media Stockpile ft	Slope from Dump to Stockpile % grade
1	Dump 1E		Waste Rock Dump	1.1	1.1	3.0	0.0	15	1,753	2,013	16.00		24.0	24.0	2,242	1.0				
2	Dump 1Ea		Waste Rock Dump	1.1	1.1	3.0	0.0	15	375	500	3.00		24.0	24.0	1,800	1.0				
3	Dump 1Eb		Waste Rock Dump	1.1	1.1	3.0	0.0	15	425	640	4.00		24.0	24.0	623	1.0				
4	Dump 1Ec		Waste Rock Dump	1.1	1.1	3.0	0.0	15	680	1,003	8.00		24.0	24.0	688	1.0				
5	Dump 2A		Waste Rock Dump	1.1	1.1	3.0	0.0	50	980	2,355	19.00		24.0	24.0	215	1.0				
6	Dump 1A		Waste Rock Dump	1.1	1.1	3.0	0.0	15			4.50									
7	Dump 1B		Waste Rock Dump	1.1	1.1	3.0	0.0	15			3.00									
8	Dump 1C		Waste Rock Dump	1.1	1.1	3.0	0.0	15			2.00									
9	Dump 1D		Waste Rock Dump	1.1	1.1	3.0	0.0	15			13.00									

Notes:
1. All Physical parameters must be input even if manual overrides for volume or area are used.
2. If Slope from facility to borrow source is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivty Sheet)

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Waste Rock Dumps - User Input (cont.)

You must fill in ALL green cells and relevant blue cells in this section for each dump, lift or dump category

		Grading				Cover		Growth Media		Revegetation								
	Description (required)	Regrading Material Condition (select)	Regrading Material Type (select)	Regrading Equipment Fleet (select)	Slot/Side-by-Side (select)	Cover Material Type (select)	Cover Placement Equipment Fleet (select)	Growth Media Material Type (select)	Growth Media Equipment Fleet (select)	Seed Mix Slopes (select)	Seed Mix Flat Areas (select)	Mulch Slopes (select)	Mulch Flat Areas (select)	Fertilizer Slopes (select)	Fertilizer Flat Areas (select)	Slope Scarify/ Rip? (select)	Flat Area Scarify/ Rip? (select)	Scarify/ Ripping Fleet (select)
1	Dump 1E	1.2	Alluvium	Med	No	Alluvium	Scraper Dozer			User Mix 5 (fr	User Mix 5 (from Seed Mix sheet)					Yes	Yes	Med Dozer
2	Dump 1Ea	1.2	Alluvium	Med	No	Alluvium	Scraper Dozer			User Mix 5 (fr	User Mix 5 (from Seed Mix sheet)					Yes	Yes	Med Dozer
3	Dump 1Eb	1.2	Alluvium	Med	No	Alluvium	Scraper Dozer			User Mix 5 (fr	User Mix 5 (from Seed Mix sheet)					Yes	Yes	Med Dozer
4	Dump 1Ec	1.2	Alluvium	Med	No	Alluvium	Scraper Dozer			User Mix 5 (fr	User Mix 5 (from Seed Mix sheet)					Yes	Yes	Med Dozer
5	Dump 2A	1.2	Alluvium	Med	No	Alluvium	Scraper Dozer			User Mix 5 (fr	User Mix 5 (from Seed Mix sheet)					Yes	Yes	Med Dozer
6	Dump 1A									User Mix 5 (fr	User Mix 5 (from Seed Mix sheet)							
7	Dump 1B									User Mix 5 (fr	User Mix 5 (from Seed Mix sheet)							
8	Dump 1C									User Mix 5 (fr	User Mix 5 (from Seed Mix sheet)							
9	Dump 1D									User Mix 5 (fr	User Mix 5 (from Seed Mix sheet)							

Notes:
1. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table

Closure Cost Estimate
Waste Rock Dumps

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Waste Rock Dumps - Calculations

Regrading Volume Calculation

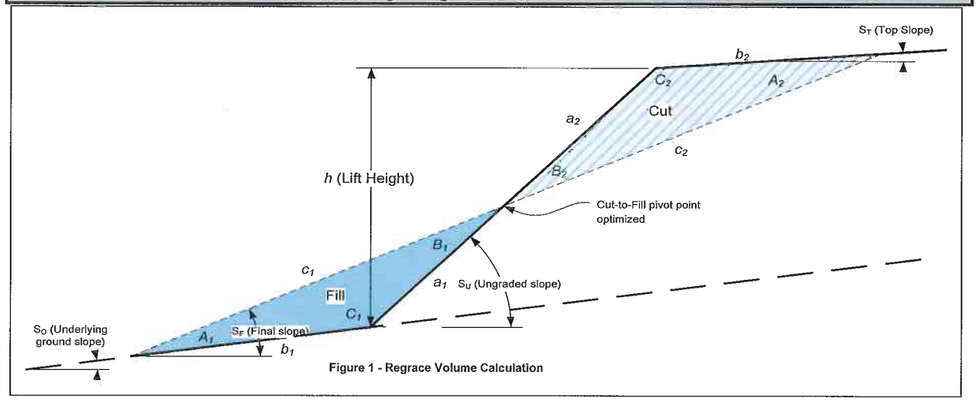

Figure 1 - Regrace Volume Calculation

Regrading Push Distance Calculation

dozing distance: based on 2/3 final cut slope + 2/3 final fill slope (minimum = 50 ft)

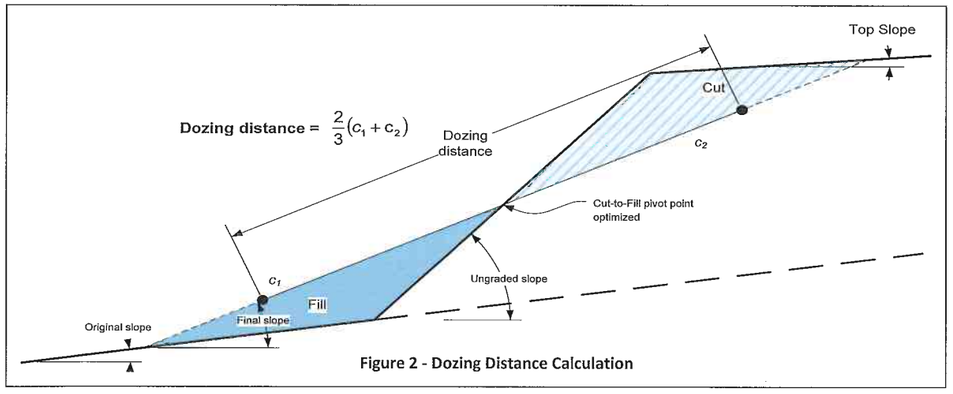

Figure 2 - Dozing Distance Calculation

Final Slope Area and Footprint Area Calculations

Final slope length = $c_1 + c_2$
Final slope area = Final slope length *x* Mid-bench Length
Final lift height (h_{final}) = $(c_1 + c_2)$ *x* sin(Final slope)
Final slope width (d) = $(c_1 + c_2)$ *x* cos(Final slope)
Final slope footprint = Final slope width *x* Mid-bench Length
Final flat area = Final footprint – Final slope footprint

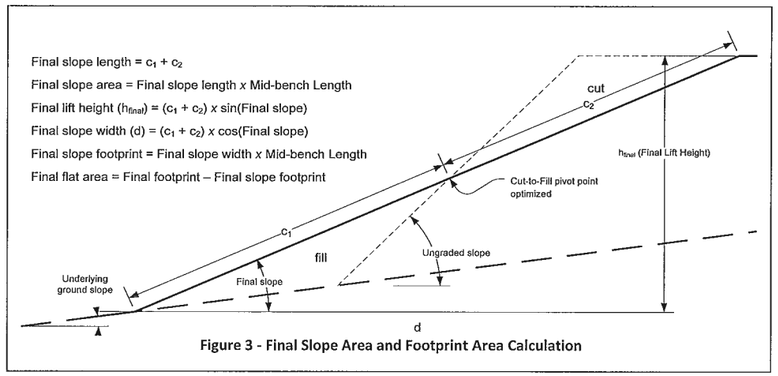

Figure 3 - Final Slope Area and Footprint Area Calculation

Ripping/Scarifying Calculations

Minimum 1 hr ripping/scarifying time per dump

Slopes:
Number of passes = Final slope length ÷ Grader width
Travel distance = Number of passes x Mid-bench length
Total hours = (Travel distance ÷ Grader productivity) + (Number of passes x Grader maneuver time)
Minimum 1 hr

Flat Areas:
Flat area width = Final flat area ÷ Average long dimensions
Number of passes = Flat area width ÷ Grader width
Travel distance = Number of passes x Average long dimensions
Total hours = (Travel distance ÷ Grader productivity) + (Number of passes x Grader maneuver time)

Revegetation: Minimum 1 acre revegetation crew time per area

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TOTALS	**$31,536**	**$148,200**	**$10,231**	**$189,967**

Waste Rock Dumps - Regrading Costs

Productivity = Dozer Productivity x Grade Correction x Density Correction x Operator (0.75) x Material x Visibility x Job Efficiency (0.83) x (Slot/Side-by-Side) x (Altitude Deration)

	Description (required)	Regrading Volume cy	Dozing Distance (see above) ft	Regrading Fleet	Uncorrected Dozer Productivity cy/hr	Grade Correction	Dozing Material	Density Correction	Side-by-Side or Slot Dozing	Total Hourly Productivity cy/hr	Total Dozer Hours hr	Total Labor Cost $	Total Equipment Cost $	Total Regrading Cost $
1	Dump 1E	3,506	50	D9R	2,251	1.6	1.2	0.79	1.0	2,125	2	$59	$404	$463
2	Dump 1Ea	750	50	D9R	2,251	1.6	1.2	0.79	1.0	2,125	1	$29	$202	$231
3	Dump 1Eb	850	50	D9R	2,251	1.6	1.2	0.79	1.0	2,125	1	$29	$202	$231
4	Dump 1Ec	1,360	50	D9R	2,251	1.6	1.2	0.79	1.0	2,125	1	$29	$202	$231
5	Dump 2A	21,778	77	D9R	1,499	1.6	1.2	0.79	1.0	1,415	15	$441	$3,032	$3,473
6	Dump 1A	0		Select Fleet								$0	$0	$0
7	Dump 1B	0		Select Fleet								$0	$0	$0
8	Dump 1C	0		Select Fleet								$0	$0	$0
9	Dump 1D	0		Select Fleet								$0	$0	$0
		28,244									20	**$587**	**$4,042**	**$4,629**

Closure Cost Estimate
Waste Rock Dumps

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan - Reclamation Plan
Date of Submittal: January 15, 2018
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Cost Data File: Alamosa Baseline SRCE Cost Data USR 1-2018 El Grande Reclamation Costs (1-15).xlsm
Cost Estimate Type: Surety Cost Basis: Alamosa, Colorado

Waste Rock Dumps - Cost Summary

	Labor	Equipment	Materials	Totals
Grading Costs	$587	$4,042	N/A	$4,629
Cover Placement Cost	$17,064	$113,666	N/A	$130,730
Topsoil Placement Cost	$0	$0	N/A	$0
Ripping/Scarifying Cost	$1,087	$7,479	N/A	$8,566
Subtotal Earthworks	**$18,738**	**$125,187**	**$0**	**$143,925**
Revegetation Cost	$12,798	$23,013	$10,231	$46,042
TOTALS	**$31,536**	**$148,200**	**$10,231**	**$189,967**

Waste Rock Dumps - Cover and Growth Media Costs

		Cover (lower layer)								Growth Media Placement							
	Description (required)	Cover Volume cy	Cover Replacement Fleet	Fleet Productivity LCY/hr	Number of Trucks/ Scrapers	Total Fleet Hours	Cover Labor Cost $	Cover Equipment Cost $	Total Cover Cost $	Growth Media Volume cy	Growth Media Replacement Fleet	Fleet Productivity BCY/hr	Number of Trucks/ Scrapers	Total Fleet Hours	Total Labor Cost $	Total Equipment Cost $	Total Growth Media Cost $
1	Dump 1E	51,400	631G/D10R/D7R	979	2	52	$6,109	$40,724	$46,833						$0	$0	$0
2	Dump 1Ea	11,003	631G/D10R/D7R	1,094	2	10	$1,175	$7,832	$9,007						$0	$0	$0
3	Dump 1Eb	14,424	631G/D10R/D7R	821	1	18	$1,586	$10,558	$12,144						$0	$0	$0
4	Dump 1Ec	25,007	631G/D10R/D7R	794	1	31	$2,731	$18,184	$20,915						$0	$0	$0
5	Dump 2A	63,243	631G/D10R/D7R	1,017	1	62	$5,463	$36,368	$41,831						$0	$0	$0
6	Dump 1A						$0	$0	$0						$0	$0	$0
7	Dump 1B						$0	$0	$0						$0	$0	$0
8	Dump 1C						$0	$0	$0						$0	$0	$0
9	Dump 1D						$0	$0	$0						$0	$0	$0
		165,077				173	**$17,064**	**$113,666**	**$130,730**						**$0**	**$0**	**$0**

Closure Cost Estimate
Waste Rock Dumps

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan - Reclamation Plan
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Waste Rock Dumps - Cost Summary

	Labor	Equipment	Materials	Totals
Grading Costs	$587	$4,042	N/A	$4,629
Cover Placement Cost	$17,064	$113,666	N/A	$130,730
Topsoil Placement Cost	$0	$0	N/A	$0
Ripping/Scarifying Cost	$1,087	$7,479	N/A	$8,566
Subtotal Earthworks	**$18,738**	**$125,187**	**$0**	**$143,925**
Revegetation Cost	$12,798	$23,013	$10,231	$46,042
TOTALS	**$31,536**	**$148,200**	**$10,231**	**$189,967**

Waste Rock Dumps - Scarifying/Revegetation Costs

	Description (required)	Slope Area acres	Flat Area acres	Total Surface Area acres	Final Slope Length ft	Flat Area Long Dimension ft	Ripping/ Scarifying Fleet	Slope Scarifying/ Ripping Hours hrs	Flat Area Scarifying/ Ripping Hours hrs	Scarifying/ Ripping Labor Costs $	Scarifying/ Ripping Equipment Cost $	Total Scarifying/ Ripping Costs $	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revgetation Material Cost $	Total Revegetation Cost $
1	Dump 1E	1.93	14.00	15.93	48	2,013	D9R	1	10	$323	$2,224	$2,547	$2,749	$4,943	$2,197	$9,889
2	Dump 1Ea	0.41	3.00	3.41	48	500	D9R	0	2	$59	$404	$463	$589	$1,058	$471	$2,118
3	Dump 1Eb	0.47	4.00	4.47	48	640	D9R	0	3	$88	$606	$694	$771	$1,387	$617	$2,775
4	Dump 1Ec	0.75	7.00	7.75	48	1,003	D9R	1	5	$176	$1,213	$1,389	$1,337	$2,405	$1,069	$4,811
5	Dump 2A	3.60	16.00	19.60	160	2,355	D9R	3	12	$441	$3,032	$3,473	$3,382	$6,082	$2,704	$12,168
6	Dump 1A	0.00	5.00	5.00	48					$0	$0	$0	$863	$1,552	$690	$3,105
7	Dump 1B	0.00	3.00	3.00	48					$0	$0	$0	$518	$931	$414	$1,863
8	Dump 1C	0.00	2.00	2.00	48					$0	$0	$0	$345	$621	$276	$1,242
9	Dump 1D	0.00	13.00	13.00	48					$0	$0	$0	$2,244	$4,034	$1,793	$8,071
		7.16	67.00	74.16				5	32	**$1,087**	**$7,479**	**$8,566**	**$12,798**	**$23,013**	**$10,231**	**$46,042**

Notes: 1) Minimum total ripping hours = 1 (i.e. If total ripping hrs (slope + flat) < 1, then one hour of fleet time is assumed, regardless of acres shown in in scarifying table.)

Closure Cost Estimate
Roads

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan - Reclamation Plan
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Cost Estimate Type: Surety Cost Basis: Alamosa, Colorado

Roads - Cost Summary

	Labor	Equipment	Materials	Totals
Grading Costs	$117	$684	N/A	$801
Cover Placement Cost	$0	$0	N/A	$0
Ripping/Scarifying Cost	$206	$1,415	N/A	$1,621
Subtotal Earthworks	**$323**	**$2,099**		**$2,422**
Revegetation Cost	$1,395	$2,507	$1,115	$5,017
TOTALS	**$1,718**	**$4,606**	**$1,115**	**$7,439**

Roads - User Input — You must fill in ALL green cells and relevant blue cells in this section for each road

	Facility Description			Physical (1) - MANDATORY						User Overrides		Growth Media		
	Description (required)	ID Code	Type	Underlying Ground Slope % grade	Ungraded Slope _H:1V	Cut Slope degrees	Road Width ft	Road Length ft	Slope Replacement Percent %	Regrade Volume (if calculated elsewhere) cy	Disturbed Area (if calculated elsewhere) acres	Growth Media Thickness in	Haul Distance from Growth Media Stockpile ft	Slope from Road to Stockpile % grade
1	Area Roads		Haul Road	1.0	1.0	45.0	20.0	17,424	3%					

Notes:
1. All Physical parameters must be input even if manual overrides for volume or area are used.
2. If Slope from facility to borrow source is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivty Sheet)
3. Because the work required for building roads with a dozer is similar to that required to regrade a road with a dozer, this sheet could be used to provide a rough estimate of road construction costs if a dozer is selected as the grading fleet.

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Roads - Cost Summary

	Labor	Equipment	Materials	Totals
Grading Costs	$117	$684	N/A	$801
Cover Placement Cost	$0	$0	N/A	$0
Ripping/Scarifying Cost	$206	$1,415	N/A	$1,621
Subtotal Earthworks	$323	$2,099		$2,422
Revegetation Cost	$1,395	$2,507	$1,115	$5,017
TOTALS	$1,718	$4,606	$1,115	$7,439

Roads - User Input (cont.)

		Haul Road Safety Berms				
	Description (required)	Berm Length ft	Berm Height ft	Berm Base Width ft	Berm Sideslope Angle _H:1V	Number of Berms (2) (1 or 2 sides)
1	Area Roads	17,424.0	0.5	3.0	3.0	2

(2) Enter 1 if berm on only one side of road, 2 if both sides of road are bermed.

Closure Cost Estimate
Roads

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan - Reclamation Plan
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Roads - Cost Summary

	Labor	Equipment	Materials	Totals
Grading Costs	$117	$684	N/A	$801
Cover Placement Cost	$0	$0	N/A	$0
Ripping/Scarifying Cost	$206	$1,415	N/A	$1,621
Subtotal Earthworks	$323	$2,099		$2,422
Revegetation Cost	$1,395	$2,507	$1,115	$5,017
TOTALS	$1,718	$4,606	$1,115	$7,439

Roads - User Input (cont.) — You must fill in ALL green cells and relevant blue cells in this section for each road

		Grading				Growth Media			Revegetation				
	Description (required)	Regrading Material Condition (select)	Regrading Material Type (select)	Regrading Equipment Fleet (select)	No. of Excavators if grade >30% (select)	Growth Media Material Type (select)	Cover Placement Equipment Fleet (select)	Maximum Fleet Size (user override)	Seed Mix (select)	Mulch (select)	Fertilizer (select)	Scarifying/ Ripping? (select)	Ripping Fleet (select)
1	Area Roads	1.2	Alluvium	Med Excavator	1				User Mix 5 (from	None	None	Yes	Med Dozer

Notes:
1. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table
2. If original slope >30% only excavators are allowed.

Closure Cost Estimate
Roads

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan - Reclamation Plan
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Roads - Cost Summary

	Labor	Equipment	Materials	Totals
Grading Costs	$117	$684	N/A	$801
Cover Placement Cost	$0	$0	N/A	$0
Ripping/Scarifying Cost	$206	$1,415	N/A	$1,621
Subtotal Earthworks	$323	$2,099		$2,422
Revegetation Cost	$1,395	$2,507	$1,115	$5,017
TOTALS	$1,718	$4,606	$1,115	$7,439

Roads - Calculations

Regrading Volume and Footprint Volume

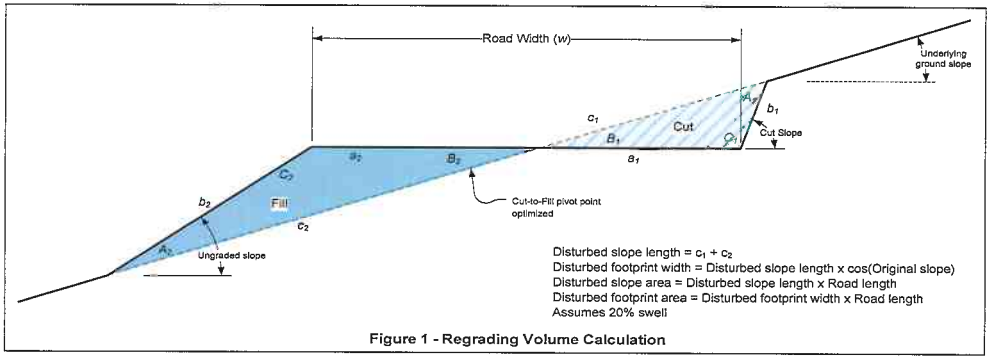


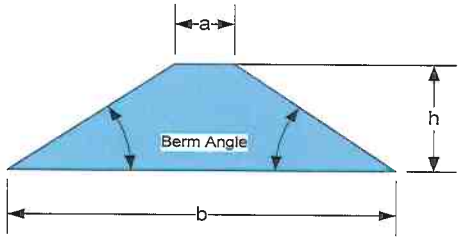
Figure 1 - Regrading Volume Calculation

Will not allow dozer for slopes greater than 30%
For dozer regrading push distance = road width
Assumes dozer push is uphill
Assumes minimum push distance of 100 ft

Safety Berm Volume Calculation

Cross Sectional Area = $\frac{(a+b)}{2} \times h$

Berm Volume = Berm Length x Cross Sectional Area x No. Sides



Total berm volume doubled if both sides of road are bermed.
If length of berm on each side of road is different, input total length of both berms and input 1 for number of sides

Ripping/Scarifying Calculations

Minimum 1 hr ripping/scarifying time per area
Number of passes = Final slope length ÷ Grader width
Travel distance = Number of passes x Road length
Total hours = (Travel distance ÷ Grader productivity) + (Number of passes x Grader maneuver time)
For dozer regrading assumes push distance = 3 x road width

Revegetation Calculations

Minimum of 1 acre crew time per area

Closure Cost Estimate
Roads

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Cost Estimate Type: Surety **Cost Basis:** Alamosa, Colorado

Roads - Cost Summary

	Labor	Equipment	Materials	Totals
Grading Costs	$117	$684	N/A	$801
Cover Placement Cost	$0	$0	N/A	$0
Ripping/Scarifying Cost	$206	$1,415	N/A	$1,621
Subtotal Earthworks	$323	$2,099		$2,422
Revegetation Cost	$1,395	$2,507	$1,115	$5,017
TOTALS	$1,718	$4,606	$1,115	$7,439

Roads - Regrading Costs

	Description (required)	Regrading Volume cy	Recontouring Fleet	Fleet Productivity cy/hr	Total Fleet Hours hr	Total Labor Cost $	Total Equipment Cost $	Total Regrading Cost $
1	Area Roads	978	345B	480	2	$117	$684	$801
		978			2	$117	$684	$801

Closure Cost Estimate
Roads

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Roads - Cost Summary

	Labor	Equipment	Materials	Totals
Grading Costs	$117	$684	N/A	$801
Cover Placement Cost	$0	$0	N/A	$0
Ripping/Scarifying Cost	$206	$1,415	N/A	$1,621
Subtotal Earthworks	$323	$2,099		$2,422
Revegetation Cost	$1,395	$2,507	$1,115	$5,017
TOTALS	$1,718	$4,606	$1,115	$7,439

Roads - Growth Media Costs

	Description (required)	Growth Media Volume cy	Growth Media Replacement Fleet	Fleet Productivity LCY/hr	Number of Trucks/ Scrapers	Total Fleet Hours	Total Labor Cost $	Total Equipment Cost $	Total Growth Media Cost $
1	Area Roads						$0	$0	$0
							$0	$0	$0

Closure Cost Estimate
Roads

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Roads - Cost Summary

	Labor	Equipment	Materials	Totals
Grading Costs	$117	$684	N/A	$801
Cover Placement Cost	$0	$0	N/A	$0
Ripping/Scarifying Cost	$206	$1,415	N/A	$1,621
Subtotal Earthworks	**$323**	**$2,099**		**$2,422**
Revegetation Cost	$1,395	$2,507	$1,115	$5,017
TOTALS	**$1,718**	**$4,606**	**$1,115**	**$7,439**

Roads - Scarifying/Revegetation Costs

	Description (required)	Total Surface Area acres	Final Slope Length ft	Ripping/ Scarifying Fleet	Ripping Hours hrs	Ripping Labor Costs $	Ripping Equipment Cost $	Total Ripping Costs $	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revgetation Material Cost $	Total Revegetation Cost $
1	Area Roads	8.08	20.0	D9R	7	$206	$1,415	$1,621	$1,395	$2,507	$1,115	$5,017
		8.08			7	**$206**	**$1,415**	**$1,621**	**$1,395**	**$2,507**	**$1,115**	**$5,017**

Closure Cost Estimate
Quarries & Borrow Pits

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan - Reclamation Plan
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Waste Rock Dumps - Cost Summary	Labor	Equipment	Materials	Totals
Grading Costs	$29	$202	N/A	$231
Cover Placement Cost	$8,928	$59,519	N/A	$68,447
Topsoil Placement Cost	$0	$0	N/A	$0
Ripping/Scarifying Cost	$1,586	$10,917	N/A	$12,503
Safety Berm Construction Cost	$0	$0	N/A	$0
Subtotal Earthwork	$10,543	$70,638	$0	$81,181
Revegetation Cost	$13,160	$23,661	$10,519	$47,340
Safety Berm Revegetation Cost	$0	$0	$0	$0
	$13,160	$23,661	$10,519	$47,340
TOTALS	$23,703	$94,299	$10,519	$128,521

Quarries & Borrow Pits - User Input

You must fill in ALL green cells in this section for each dump, lift or dump category

	Facility Description			Physical - MANDATORY									Cover				Growth Media			
	Description (required)	ID Code	Type	Underlying Ground Slope % Grade	Ungraded Slope _H:1V	Final Slope _H:1V	Final Top Slope % Grade	Bench or Highwall Height ft	Mid-Bench Length ft	Average Flat Area Long Dimension (ripping distance) ft	Final (Regraded) Footprint acres	Regrade Volume (1) (if calculated elsewhere) cy	Cover Thickness Slopes in	Cover Thickness Flat Areas in	Distance from Cover Borrow ft	Slope from Dump to Cover Borrow % grade	Slope Growth Media Thickness in	Flat Area Growth Media Thickness in	Distance from Growth Media Stockpile ft	Slope from Dump to Stockpile % grade
1	El Grande Quarry		Quarry	1.0	1.2	3.0	3.0	2	2,556	2,936	76.25		9.0	9.0	1,350	3.0				

Notes:
1. All Physical parameters must be input even if manual overrides for volume or area are used.
2. If Slope from facility to borrow source is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivty Sheet)

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Ripping/Scarifying Cost	$1,586	$10,917	N/A	$12,503
Safety Berm Construction Cost	$0	$0	N/A	$0
Subtotal Earthwork	$10,543	$70,638	$0	$81,181
Revegetation Cost	$13,160	$23,661	$10,519	$47,340
Safety Berm Revegetation Cost	$0	$0	$0	$0
	$13,160	$23,661	$10,519	$47,340
TOTALS	$23,703	$94,299	$10,519	$128,521

Quarries & Borrow Pits - User Input (cont.) You must fill in ALL green cells and relevant blue cells in this section for each dump, lift or dump category

		Grading				Cover		Growth Media		Revegetation								
	Description (required)	Regrading Material Condition (select)	Regrading Material Type (select)	Regrading Equipment Fleet (select)	Slot/Side-by-Side (select)	Cover Material Type (select)	Cover Placement Equipment Fleet (select)	Growth Media Material Type (select)	Growth Media Equipment Fleet (select)	Seed Mix Slopes (select)	Seed Mix Flat Areas (select)	Mulch Slopes (select)	Mulch Flat Areas (select)	Fertilizer Slopes (select)	Fertilizer Flat Areas (select)	Slope Scarify/ Rip? (select)	Flat Area Scarify/ Rip? (select)	Scarify/ Ripping Fleet (select)
1	El Grande Quarry	1.2	Alluvium	Med	No	Alluvium	Scraper Dozer			User Mix 5 (fr	User Mix 5 (from Seed Mix sheet)					Yes	Yes	Med Dozer

Notes:
1. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table

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Waste Rock Dumps - Cost Summary

	Labor	Equipment	Materials	Totals
Grading Costs	$29	$202	N/A	$231
Cover Placement Cost	$8,928	$59,519	N/A	$68,447
Topsoil Placement Cost	$0	$0	N/A	$0
Ripping/Scarifying Cost	$1,586	$10,917	N/A	$12,503
Safety Berm Construction Cost	$0	$0	N/A	$0
Subtotal Earthwork	$10,543	$70,638	$0	$81,181
Revegetation Cost	$13,160	$23,661	$10,519	$47,340
Safety Berm Revegetation Cost	$0	$0	$0	$0
	$13,160	$23,661	$10,519	$47,340
TOTALS	$23,703	$94,299	$10,519	$128,521

Quarries & Borrow Pits - User Input (cont.)

	Facility Description	Highwall Berms					Berm Construction		Excavate or Doze	Hauling (if selected method)				Revegetation		
	Description (required)	Berm (or Highwall) Length ft	Berm Height ft	Berm Base Width ft	Berm Sideslope Angle _H:1V	Volume (if calculated elsewhere) cy	Construction Method (select)	Berm Material Type (select)	Berm Construction Equipment Fleet (select)	Berm Hauling Fleet (select)	Distance to Borrow Source ft	Slope to Borrow Source % grade	Maximum Fleet Size (user override)	Seed Mix (select)	Mulch (select)	Fertilizer (select)
1	El Grande Quarry															

Notes:
1. All Physical parameters must be input even if manual overrides for volume or area are used.
2. If Slope from facility to borrow source is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivty Sheet)
3. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table

Quarries & Borrow Pits - Calculations

Regrading Volume Calculation

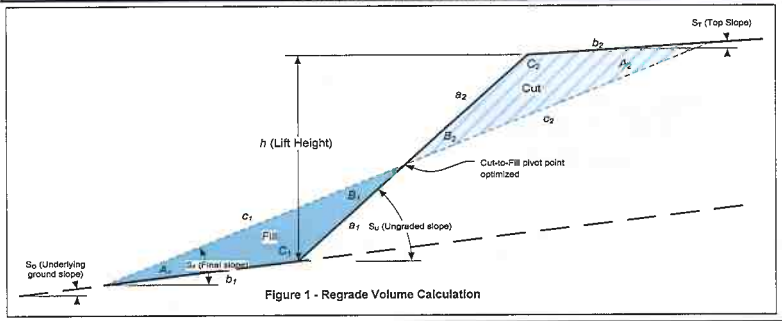
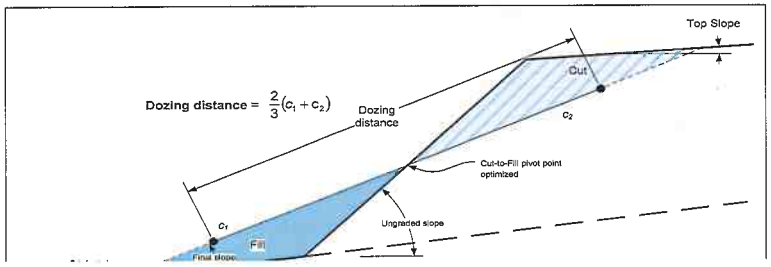


Figure 1 - Regrade Volume Calculation

Regrading Push Distance Calculation

dozing distance: based on 2/3 final cut slope + 2/3 final fill slope (minimum = 50 ft)



Final Slope Area and Footprint Area Calculations

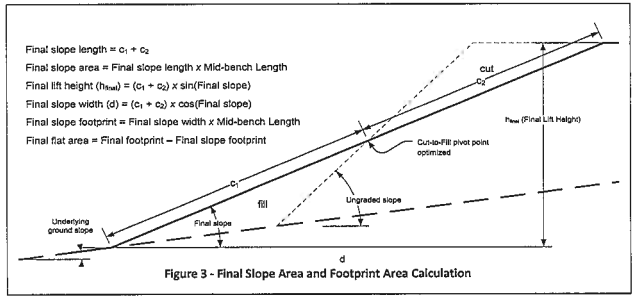


Figure 3 - Final Slope Area and Footprint Area Calculation

Ripping/Scarifying Calculations

Minimum 1 hr ripping/scarifying time per dump

Slopes:
Number of passes = Final slope length ÷ Grader width
Travel distance = Number of passes x Mid-bench length
Total hours = (Travel distance ÷ Grader productivity) + (Number of passes x Grader maneuver time)
Minimum 1 hr

Flat Areas:
Flat area width = Final flat area ÷ Average long dimensions
Number of passes = Flat area width ÷ Grader width
Travel distance = Number of passes x Average long dimensions
Total hours = (Travel distance ÷ Grader productivity) + (Number of passes x Grader maneuver time)

Revegetation: Minimum 1 acre revegetation crew time per area

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Waste Rock Dumps - Cost Summary

	Labor	Equipment	Materials	Totals
Grading Costs	$29	$202	N/A	$231
Cover Placement Cost	$8,928	$59,519	N/A	$68,447
Topsoil Placement Cost	$0	$0	N/A	$0
Ripping/Scarifying Cost	$1,586	$10,917	N/A	$12,503
Safety Berm Construction Cost	$0	$0	N/A	$0
Subtotal Earthwork	$10,543	$70,638	$0	$81,181
Revegetation Cost	$13,160	$23,661	$10,519	$47,340
Safety Berm Revegetation Cost	$0	$0	$0	$0
	$13,160	$23,661	$10,519	$47,340
TOTALS	$23,703	$94,299	$10,519	$128,521

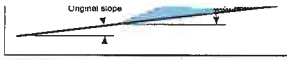
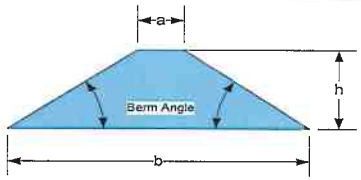


Figure 2 - Dozing Distance Calculation

Safety Berm Volume Calculation

Cross Sectional Area = $\frac{(a+b)}{2} \times h$

Berm Volume = Berm Length x Cross Sectional Area



Dozer productivity assumes push distance of: 100 feet

Dozer:
Length x (Berm Base Width + Dozer Push Distance) - accounts for disturbance created in borrow area

Excavator:
Length x (Berm Base Width + (2 x Excavator Track Width) - accounts for disturbance created in borrow area

Haul & Place:
Length x Berm Base Width - If necessary use Yards sheet to account for disturbance created in borrow area

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	$13,160	$23,661	$10,519	$47,340
TOTALS	$23,703	$94,299	$10,519	$128,521

Quarries & Borrow Pits - Regrading Costs

Productivity = Dozer Productivity x Grade Correction x Density Correction x Operator (0.75) x Material x Visibility x Job Efficiency (0.83) x (Slot/Side-by-Side) x (Altitude Deration)

	Description (required)	Regrading Volume cy	Dozing Distance (see above) ft	Regrading Fleet	Uncorrected Dozer Productivity cy/hr	Grade Correction	Dozing Material	Density Correction	Side-by-Side or Slot Dozing	Total Hourly Productivity cy/hr	Total Dozer Hours hr	Total Labor Cost $	Total Equipment Cost $	Total Regrading Cost $
1	El Grande Quarry	95	50	D9R	2,251	1.6	1.2	0.79	1.0	2,125	1	$29	$202	$231
		95									1	$29	$202	$231

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	$13,160	$23,661	$10,519	$47,340
TOTALS	$23,703	$94,299	$10,519	$128,521

Quarries & Borrow Pits - Cover and Growth Media Costs

		Cover (lower layer)								Growth Media Placement							
	Description (required)	Cover Volume cy	Cover Replacement Fleet	Fleet Productivity LCY/hr	Number of Trucks/ Scrapers	Total Fleet Hours	Cover Labor Cost $	Cover Equipment Cost $	Total Cover Cost $	Growth Media Volume cy	Growth Media Replacement Fleet	Fleet Productivity BCY/hr	Number of Trucks/ Scrapers	Total Fleet Hours	Total Labor Cost $	Total Equipment Cost $	Total Growth Media Cost $
1	El Grande Quarry	92,262	631G/D10R/D7R	1,204	2	76	$8,928	$59,519	$68,447						$0	$0	$0
		92,262				76	$8,928	$59,519	$68,447						$0	$0	$0

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Revegetation Cost	$13,160	$23,661	$10,519	$47,340
Safety Berm Revegetation Cost	$0	$0	$0	$0
	$13,160	$23,661	$10,519	$47,340
TOTALS	$23,703	$94,299	$10,519	$128,521

Quarries & Borrow Pits - Scarifying/Revegetation Costs

	Description (required)	Slope Area acres	Flat Area acres	Total Surface Area acres	Final Slope Length ft	Flat Area Long Dimension ft	Ripping/ Scarifying Fleet	Slope Scarifying/ Ripping Hours hrs	Flat Area Scarifying/ Ripping Hours hrs	Scarifying/ Ripping Labor Costs $	Scarifying/ Ripping Equipment Cost $	Total Scarifying/ Ripping Costs $	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revgetation Material Cost $	Total Revegetation Cost $
1	El Grande Quarry	0.41	75.84	76.25	7	2,936	D9R	0	54	$1,586	$10,917	$12,503	$13,160	$23,661	$10,519	$47,340
		0.41	75.84	76.25					54	$1,586	$10,917	$12,503	$13,160	$23,661	$10,519	$47,340

Notes: 1) Minimum total ripping hours = 1 (i.e. If total ripping hrs (slope + flat) < 1, then one hour of fleet time is assumed, regardless of acres shown in in scarifying table.)

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Buildings & Foundation Demolition Cost Summary

	Labor	Equipment	Materials	Totals
Building Demolition Cost	$22,748	$9,099	N/A	$31,847
Wall Demolition Cost	$10,516	$0	N/A	$10,516
Slab Demolition	$419	$2,883	N/A	$3,302
Subtotal Demolition	$33,683	$11,982	$0	$45,665
Cover Placement Cost	$0	$0	N/A	$0
Growth Media Placement Cost	$0	$0	N/A	$0
Ripping/Scarifying Cost	$203	$1,414	N/A	$1,617
Subtotal Earthworks	$203	$1,414	$0	$1,617
Revegetation Cost	$1,211	$2,170	$966	$4,347
TOTALS	$35,097	$15,566	$966	$51,629

Buildings & Foundation - User Input

You must fill in ALL green cells and relevant blue cells in this section for each building or facility

	Facility Description			Physical - MANDATORY								Foundation Cover (1)			Growth Media (1) (entire footprint)		
	Description (required)	ID Code	Type	Length ft	Width ft	Eve Height ft	Slab Thickness in	Foundation Wall Thickness in	Foundation Wall Height ft	Average Flat Area Long Dimension (ripping distance) ft	Building Area Footprint (including surrounding facilities) acres	Foundation Cover Thickness in	Distance from Foundation Cover Borrow Area ft	Slope from Facility to Borrow Area % grade	Growth Media Thickness in	Distance from Growth Media Stockpile ft	Slope from Facility to Stockpile % grade
1	Office Lunch and Changeroom		Site Facilities - Buildings	60	30	10	8	8	4	70	1.00						
2	Mainteance Shop		Site Facilities - Buildings	60	60	14	8	8	4	70	1.00						
3	Equipment Shop		Site Facilities - Buildings	80	40	18	8	8	4	70	1.00						
4	Drier and Control Room Area		Process - Plant & Buildings	70	60	10	8	8	4	70	1.00						
5	Jaw Crusher Structure		Process - Crushing & Screeni	30	20	10	8	8	15	70	1.00						
6	Tank Farm		Process - Other	47	34	10	8	8	4	70	1.00						
7	Mill Buildings		Site Facilities - Buildings	75	50	10	8	8	4	70	1.00						

Notes:
1. Foundation cover only calculated to cover slab. Growth media estimated over entire footprint area
2. If Slope from facility to borrow source is >20, downhill travel time may be underestimated due to limitation of uphill travel time curves and downhill speed tables from CAT Handbook (see Productivity Sheet)

Buildings & Foundation - User Input (cont.)

You must fill in ALL green cells and relevant blue cells in this section for each building or facility

		Construction Materials		Slab Demolition		Foundation Cover			Growth Media			Revegetation				
	Description (required)	Building Type (select)	Foundation Wall Type (select)	Slab Demo Method (select)	Slab Breaking Equipment Fleet (select)	Cover Material Type (select)	Cover Placement Equipment Fleet (select)	Maximum Fleet Size (user override)	Growth Media Material Type (select)	Growth Media Placement Equipment Fleet (select)	Maximum Fleet Size (user override)	Seed Mix (select)	Mulch (select)	Fertilizer (select)	Scarify/ Rip? (select)	Ripping Fleet (select)
1	Office Lunch and Changeroom	Lg. steel	Block 6 in (150 mm) thick	Break & bury	Lg Excavator							User Mix 5 (from Seed Mix sheet)			Yes	Med Dozer
2	Mainteance Shop	Lg. steel	Block 6 in (150 mm) thick	Break & bury	Lg Excavator							User Mix 5 (from Seed Mix sheet)			Yes	Med Dozer
3	Equipment Shop	Lg. steel	Block 6 in (150 mm) thick	Break & bury	Lg Excavator							User Mix 5 (from Seed Mix sheet)			Yes	Med Dozer
4	Drier and Control Room Area	Lg. steel	Block 4 in (100 mm) thick	Break & bury	Lg Excavator							User Mix 5 (from Seed Mix sheet)			Yes	Med Dozer
5	Jaw Crusher Structure	Lg. steel	Block 4 in (100 mm) thick	Break & bury	Lg Excavator							User Mix 5 (from Seed Mix sheet)			Yes	Med Dozer
6	Tank Farm	Lg. steel	Block 6 in (150 mm) thick	Break & bury	Lg Excavator							User Mix 5 (from Seed Mix sheet)			Yes	Med Dozer
7	Mill Buildings	Lg. mixed	Block 6 in (150 mm) thick	Break & bury	Lg Excavator							User Mix 5 (from Seed Mix sheet)			Yes	Med Dozer

Notes:
1. Material Types are used for density correction based on material densities in Caterpillar Performance Handbook material density table

Buildings & Foundation - Calculations

Building Volume Calculations

Using Means Heavy Construction Cost Data (2004) calculates cubic feet from building dimensions
- Estimage slab thickness and wall thickness if not known
- Assumes that all concrete slabs are reinforced
- Productivity for crew from Means Heavy Construction Cost Data (2004) adjusted for supervision (addressed in Misc. Costs) and Davis-Bacon Wage Rates
- Demolition costs do not include hauling or disposing if debris - Use Waste Disposal module

Slab Demolition Calculations

Minimum 1 hr excavator time for slab demolition

Cover Volume Calculation

Foundation area x cover thickness
- If "Bury in Place" is selected as slab demolition method, cover thickness is adjusted such that total cover (cover + growth media) equals value entered in "Minimum thickness of cover over unbroken slab" cell above

Ripping/Scarifying Calculations

Flat area width = Final flat area ÷ Average long dimensions
Number of passes = Flat area width ÷ Grader width
Travel distance = Number of passes x Average long dimensions
Total hours = (Travel distance ÷ Grader productivity) + (Number of passes x Grader maneuver time)

Revegetation

Minimum 1 acre revegetation crew time per area

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Buildings & Foundation Demolition Cost Summary

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Slab Demolition	$419	$2,883	N/A	$3,302
Subtotal Demolition	$33,683	$11,982	$0	$45,665
Cover Placement Cost	$0	$0	N/A	$0
Growth Media Placement Cost	$0	$0	N/A	$0
Ripping/Scarifying Cost	$203	$1,414	N/A	$1,617
Subtotal Earthworks	$203	$1,414	$0	$1,617
Revegetation Cost	$1,211	$2,170	$966	$4,347
TOTALS	$35,097	$15,566	$966	$51,629

Building & Foundation Demolition Costs

Uses RS Means Heavy Construction Cost Data for building and wall demolition cost calculations. Uses CAT Handbook for slab breaking production.

								Building Demolition			Wall Demolition			Slab Demolition			Total Costs		
	Description (required)	Building Footprint (slab area) sqft	Building Volume cu ft	Wall Length ft	Wall Area sq ft	Slab Demolition Fleet	Slab Volume cy	Total Labor Cost $	Total Equipment Cost $	Total Building Demolition Cost $	Total Labor Cost $	Total Equipment Cost $	Total Wall Demolition Cost $	Total Labor Cost $	Total Equipment Cost $	Total Slab Breaking Cost $	Total Labor Cost $	Total Equipment Cost $	Total Demolition Costs $
1	Office Lunch and Changeroom	1,800	18,000	180	720	385BL	44	$1,800	$720	$2,520	$1,130	$0	$1,130	$59	$406	$465	$2,989	$1,126	$4,115
2	Mainteance Shop	3,600	50,400	240	960	385BL	89	$5,040	$2,016	$7,056	$1,507	$0	$1,507	$59	$406	$465	$6,606	$2,422	$9,028
3	Equipment Shop	3,200	57,600	240	960	385BL	79	$5,760	$2,304	$8,064	$1,507	$0	$1,507	$59	$406	$465	$7,326	$2,710	$10,036
4	Drier and Control Room Area	4,200	42,000	280	1,040	385BL	104	$4,200	$1,680	$5,880	$1,550	$0	$1,550	$65	$447	$512	$5,815	$2,127	$7,942
5	Jaw Crusher Structure	600	6,000	100	1,500	385BL	15	$600	$240	$840	$2,235	$0	$2,235	$59	$406	$465	$2,894	$646	$3,540
6	Tank Farm	1,598	15,980	162	648	385BL	39	$1,598	$639	$2,237	$1,017	$0	$1,017	$59	$406	$465	$2,674	$1,045	$3,719
7	Mill Buildings	3,750	37,500	250	1,000	385BL	93	$3,750	$1,500	$5,250	$1,570	$0	$1,570	$59	$406	$465	$5,379	$1,906	$7,285
			227,480				463	$22,748	$9,099	$31,847	$10,516	$0	$10,516	$419	$2,883	$3,302	$33,683	$11,982	$45,665

Building & Foundation - Foundation Cover and Growth Media Costs

		Foundation Cover								Growth Media							Total Cover & Growth Media Costs		
	Description (required)	Cover Volume cy	Cover Repacement Fleet	Fleet Productivity LCY/hr	Number of Trucks/ Scrapers	Total Fleet Hours	Total Labor Cost $	Total Equipment Cost $	Total Cover Cost $	Growth Media Volume cy	Growth Media Repacement Fleet	Fleet Productivity LCY/hr	Number of Trucks/ Scrapers	Total Fleet Hours	Total Labor Cost $	Total Equipment Cost $	Total Growth Media Cost $	Total Labor Cost $	Total Equipment Cost $	Total Costs $
1	Office Lunch and Changeroom						$0	$0	$0						$0	$0	$0	$0	$0	$0
2	Mainteance Shop						$0	$0	$0						$0	$0	$0	$0	$0	$0
3	Equipment Shop						$0	$0	$0						$0	$0	$0	$0	$0	$0
4	Drier and Control Room Area						$0	$0	$0						$0	$0	$0	$0	$0	$0
5	Jaw Crusher Structure						$0	$0	$0						$0	$0	$0	$0	$0	$0
6	Tank Farm						$0	$0	$0						$0	$0	$0	$0	$0	$0
7	Mill Buildings						$0	$0	$0						$0	$0	$0	$0	$0	$0
							$0	$0	$0						$0	$0	$0	$0	$0	$0

Building & Foundation - Scarifying/Revegetation Costs

					Scarifying/Ripping			Revegetation				Total Scarify & Revegation Costs			
	Description (required)	Flat Area acres	Ripping/ Scarifying Fleet	Scarifying/ Ripping Hours hrs	Scarifying/ Ripping Labor Costs $	Scarifying/ Ripping Equipment Cost $	Total Scarifying/ Ripping Costs $	Revegetation Labor Cost $	Revegetation Equipment Cost $	Revgetation Material Cost $	Total Revegetation Cost $	Total Labor Cost $	Total Equipment Cost $	Total Material Cost $	Total Costs $
1	Office Lunch and Changeroom	1.00	D9R	1	$29	$202	$231	$173	$310	$138	$621	$202	$512	$138	$852
2	Mainteance Shop	1.00	D9R	1	$29	$202	$231	$173	$310	$138	$621	$202	$512	$138	$852
3	Equipment Shop	1.00	D9R	1	$29	$202	$231	$173	$310	$138	$621	$202	$512	$138	$852
4	Drier and Control Room Area	1.00	D9R	1	$29	$202	$231	$173	$310	$138	$621	$202	$512	$138	$852
5	Jaw Crusher Structure	1.00	D9R	1	$29	$202	$231	$173	$310	$138	$621	$202	$512	$138	$852
6	Tank Farm	1.00	D9R	1	$29	$202	$231	$173	$310	$138	$621	$202	$512	$138	$852
7	Mill Buildings	1.00	D9R	1	$29	$202	$231	$173	$310	$138	$621	$202	$512	$138	$852
		7.00		7	$203	$1,414	$1,617	$1,211	$2,170	$966	$4,347	$1,414	$3,584	$966	$5,964

Closure Cost Estimate
Other Demo & Equip Removal

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Cost Estimate Type: Surety **Cost Basis:** Alamosa, Colorado

Other Demolition and Equipment Removal - Cost Summary

	Labor	Equipment	Materials	Totals
Other Demolition	$0	$0	$0	$0
Equipment Removal	$4,936	$6,841	$12,764	$24,541
TOTALS	$4,936	$6,841	$12,764	$24,541

Other Demolition

Facility Description

	Description (required)	ID Code	Type	Quantity	Units	Labor Unit Cost $	Equipment Unit Cost $	Material Unit Cost $
						$0	$0	$0

Notes:

Equipment & Material Removal

Facility Description

	Description (required)	ID Code	Type	Quantity	Units	Labor Unit Cost ($)	Equipment Unit Cost ($)	Material Unit Cost ($)
1	1,000 Gallon Diesel Tank		Site Facilities - Mobile/Fixed Equipn	1	Hours	$68.56	$95.02	$38.25
2	1,000 Gallon Gasoline Tank		Site Facilities - Mobile/Fixed Equipn	1	Hours	$68.56	$95.02	$28.25
3	9,000 Gallon Recycled Burner Fuel Tank		Site Facilities - Mobile/Fixed Equipn	4	Hours	$68.56	$95.02	$345.00
4	21,000 Gallon Recycled Burner Fuel Tank		Site Facilities - Mobile/Fixed Equipn	8	Hours	$68.56	$95.02	$803.00
5	4,000 Gallon Dyed Diesel Tank		Site Facilities - Mobile/Fixed Equipn	3	Hours	$68.56	$95.02	$153.00
6	4,000 Gallon Dyed Diesel Tank		Site Facilities - Mobile/Fixed Equipn	3	Hours	$68.56	$95.02	$153.00
7	1,000 Gallon Dyed Diesel Tank		Site Facilities - Mobile/Fixed Equipn	1	Hours	$68.56	$95.02	$38.25
8	113 Cubic Feet Rod Mill and Rods		Site Facilities - Mobile/Fixed Equipn	2	Hours	$68.56	$95.02	$38.25
9	125 Cubic Feet Air Ducts		Site Facilities - Mobile/Fixed Equipn	2	Hours	$68.56	$95.02	$38.25
10	50 Cubic Feet Baghouse Iron		Site Facilities - Mobile/Fixed Equipn	1	Hours	$68.56	$95.02	$38.25
11	50 Square Feet Screens		Site Facilities - Mobile/Fixed Equipn	1	Hours	$68.56	$95.02	$38.25
12	50 Square Feet Screens		Site Facilities - Mobile/Fixed Equipn	1	Hours	$68.56	$95.02	$38.25
13	60 Inch Wide VSI Crusher		Site Facilities - Mobile/Fixed Equipn	3	Hours	$68.56	$95.02	$38.25
14	54 Inche Wide VSI Crusher		Site Facilities - Mobile/Fixed Equipn	3	Hours	$68.56	$95.02	$38.25
15	10 Feet Long Bucket Elevator		Site Facilities - Mobile/Fixed Equipn	2	Hours	$68.56	$95.02	$38.25
16	10 Feet Long Bucket Elevator		Site Facilities - Mobile/Fixed Equipn	2	Hours	$68.56	$95.02	$38.25
17	390 Square Feet Silo		Site Facilities - Mobile/Fixed Equipn	3	Hours	$68.56	$95.02	$306.00
18	390 Square Feet Silo		Site Facilities - Mobile/Fixed Equipn	3	Hours	$68.56	$95.02	$76.50
19	390 Square Feet Silo		Site Facilities - Mobile/Fixed Equipn	3	Hours	$68.56	$95.02	$76.50
20	390 Square Feet Silo		Site Facilities - Mobile/Fixed Equipn	3	Hours	$68.56	$95.02	$75.50
21	390 Square Feet Silo		Site Facilities - Mobile/Fixed Equipn	3	Hours	$68.56	$95.02	$76.50
22	390 Square Feet Silo		Site Facilities - Mobile/Fixed Equipn	3	Hours	$68.56	$95.02	$76.50
23	390 Square Feet Silo		Site Facilities - Mobile/Fixed Equipn	3	Hours	$68.56	$95.02	$76.50
24	200 Square Feet Silo		Site Facilities - Mobile/Fixed Equipn	2	Hours	$68.56	$95.02	$76.50
25	150 Square Feet Silo		Site Facilities - Mobile/Fixed Equipn	2	Hours	$68.56	$95.02	$76.50
26	341 Square Feet Silo		Site Facilities - Mobile/Fixed Equipn	3	Hours	$68.56	$95.02	$76.50
27	341 Square Feet Silo		Site Facilities - Mobile/Fixed Equipn	3	Hours	$68.56	$95.02	$76.50
28	341 Square Feet Silo		Site Facilities - Mobile/Fixed Equipn	3	Hours	$68.56	$95.02	$76.50
						$4,936	$6,841	$12,764

Notes: **Labor Cost: Demolition Sheer ($29.37/hour) + Truck Driver ($39.19/hr) = $68.56**
Equipment Cost: Demolition Sheer ($47.04/hour) + Haul Truck ($47.98) = $95.02
Material Cost: Disposal $76.50/Ton

Closure Cost Estimate
Monitoring

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan - Reclamation Plan
Date of Submittal: January 15, 2018
File Name: SRCE_Version_1_4_1_017_(August 2018) Final.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: Alamosa Baseline SRCE Cost Data USR 1-2018 El Grande Reclamation Costs (1-15).xlsm
Cost Estimate Type: Surety Cost Basis: Alamosa, Colorado

Reclamation Monitoring & Maintenance - Cost Summary

	Labor	Equipment	Lab & Materials	Totals
Revegetation Maintenance	$1,606	$2,887	$1,284	$5,777
Erosion Maintenance	$0	$0	N/A	$0
Reclamation Monitoring	$7,140	$0	N/A	$7,140
Subtotal Reclamation Monitoring	**$8,746**	**$2,887**	**$1,284**	**$12,917**
Water Quality Monitoring	$0	$0	$0	$0
TOTAL MONITORING	**$8,746**	**$2,887**	**$1,284**	**$12,917**

Reclamation Maintenance

Description	Total Revegetation Surface Area (1,2) acres	% Area Requiring Reseeding	Seed Mix (select)	Area Requiring Reseeding acres	Seed $/acres	Labor $/acres	Equipment $/acres	Totals $
Revegetation Maintenance	186	5%	User Mix 5 (fro	9.3	$137.95	$172.59	$310.31	
Labor								$1,606
Equipment								$2,887
Materials								$1,284
Cost/Acre								$621
							Subtotal	**$5,777**

Notes: 1) Surface area is NOT the same as footprint disturbance area typically used for permitting purposes.

	Total Volume Growth Media cy	% Volume Requiring Maintenance	Average Growth Media Placement Cost $/CY	Volume Requiring Replacement cy		Labor (assume: 25%) $/acres	Equipment (assume: 75%) $/acres	Total $
Erosion Maintenance	0	5%	$0.00	0		$0.00	$0.00	$0

Notes:

Closure Cost Estimate
Monitoring

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan - Reclamation Plan
Date of Submittal: January 15, 2018
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Reclamation Monitoring & Maintenance - Cost Summary

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Water Quality Monitoring	$0	$0	$0	$0
TOTAL MONITORING	**$8,746**	**$2,887**	**$1,284**	**$12,917**

Reclamation Monitoring

Description	Hrs/Day	Days/Year	Number of Years	Rate $/hr		
Field Work						
Field Geologist/Engineer	2	4	5	$89.26		$3,570
Range Scientist				$74.38		$0
Reporting						
Field Geologist/Engineer	2	4	5	$89.26		$3,570
Range Scientist				$74.38		$0
					Subtotal	**$7,140**
Travel						
	Hrs/Trip hr	**Trips/Year**	**Years**	**Truck Cost** $/hr		
Travel				$3.48		$0
					Subtotal	**$0**
					Total Reclamation Monitoring	**$7,140**

Notes:

Closure Cost Estimate
Monitoring

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan - Reclamation Plan
Date of Submittal: January 15, 2018
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Reclamation Monitoring & Maintenance - Cost Summary

	Labor	Equipment	Lab & Materials	Totals
Revegetation Maintenance	$1,606	$2,887	$1,284	$5,777
Erosion Maintenance	$0	$0	N/A	$0
Reclamation Monitoring	$7,140	$0	N/A	$7,140
Subtotal Reclamation Monitoring	**$8,746**	**$2,887**	**$1,284**	**$12,917**
Water Quality Monitoring	$0	$0	$0	$0
TOTAL MONITORING	**$8,746**	**$2,887**	**$1,284**	**$12,917**

Water and Rock Sample Analysis

Description	Samples #	Events/Year	No. Years	First Sample Year closure year (1-100)	No. of Samplers	Days/Event	Hrs/Day	Analysis Cost $/sample	Supplies $/sample	Lab Cost $
										$0.00

Notes: Sampling labor cost = No. Samplers x Years x Events/year x Days/event x Hour/Day x Labor Rate
Sampling equipment costs include 1 pickup truck for every two samplers

Closure Cost Estimate
Monitoring

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan - Reclamation Plan
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Cost Estimate Type: Surety Cost Basis: Alamosa, Colorado

Reclamation Monitoring & Maintenance - Cost Summary

	Labor	Equipment	Lab & Materials	Totals
Revegetation Maintenance	$1,606	$2,887	$1,284	$5,777
Erosion Maintenance	$0	$0	N/A	$0
Reclamation Monitoring	$7,140	$0	N/A	$7,140
Subtotal Reclamation Monitoring	**$8,746**	**$2,887**	**$1,284**	**$12,917**
Water Quality Monitoring	$0	$0	$0	$0
TOTAL MONITORING	**$8,746**	**$2,887**	**$1,284**	**$12,917**

Ground & Surface Water Monitoring

Pump Costs

Description	No. of units		Years		Cost $
Pump (purchased)		Replacement period (yrs):			$0
				Subtotal Field Work	**$0**

Notes: Replacement period = frequency of pump replacement

Reporting

Description	Hrs/Event	Rate $/hr	Cost $
Field Geologist/Engineer			
		Subtotal Reporting	

Notes:

Closure Cost Estimate
Constr. Mgmt

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan - Reclamation Plan
Date of Submittal: January 15, 2018
File Name: SRCE_Version_1_4_1_017_(August 2018) Final.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: Alamosa Baseline SRCE Cost Data USR 1-2018 El Grande Reclamation Costs (1-15).xlsm
Cost Estimate Type: Surety Cost Basis: Alamosa, Colorado

Construction Management & Road Maintenance - Cost Summary

	Labor	Equipment	Materials	Totals
Construction Management	$82,416	$5,827	N/A	$88,243
Construction Support		$360		$360
Road Maintenance	$0	$0	$0	$0
TOTAL CONSTRUCTION MANAGEMENT	**$82,416**	**$6,187**	**$0**	**$88,603**

Construction Management

Construction Management Staff

Description	Duration mo.	Hours/ Month hr.	Number of Supervisors	Supervisor Rate $/hr	Labor Cost $	Equipment Cost[1] $	Totals $
Active Reclamation	6	160	1	$85.85	$82,416	$5,827	$88,243
Monitoring & Maintenance					$0	$0	$0
				Total Staff	**$82,416**	**$5,827**	**$88,243**

Construction Management Support

Description	Duration mo.	Number of Units		Rental Rate $/mo	Generator Cost $/mo	Equipment Cost[1] $	Totals $
Temporary Office Rental						$0	$0
Temporary Toilets	6	1		$60		$360	$360
					Total Support	**$360**	**$360**

Notes: Office rental assumes only 1 generator required for every 4 trailers

Total Construction Management **$88,603**

Road Maintenance

Description	Fleet Size (select)	Number	Duration mo.	Hours/ Month hr.	Labor Cost $	Equipment Cost $	Totals $
Active Reclamation							
Water Truck					$0	$0	$0
Grader					$0	$0	$0
Monitoring & Maintenance							
Water Truck					$0	$0	$0
Grader					$0	$0	$0

Description	Gallons/ Day	Days/ Month	Duration mo.	Cost/ Gallon $			Totals $
Water Fees							
Water Fees							$0
				Total Project Maintenance	**$0**	**$0**	**$0**

Notes: 1) Supervisor equipment = pickup truck

Closure Cost Estimate

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan - Reclamation Plan Labor Rates
Date of Submittal: January 15, 2018
File Name: SRCE_Version_1_4_1_017_(August 2018) Final.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: Alamosa Baseline SRCE Cost Data USR 1-2018 El Grande Reclamation Costs (1-15).xlsm
Cost Estimate Type: Surety Cost Basis: Alamosa, Colorado

Color Code Key	
User Input - Direct Input	Direct Input
User Input - Pull Down List	Pull Down Selection
Program Constant (can override)	Alternate Input
Program Calculated Value	Locked Cell - Formula or Reference

ZONE ADJUSTMENTS

Cost Basis/Project Region	Alamosa, Colorado	Southern Colorado
Power Equipment Operators	<50 miles	$0.00
Truck Drivers	100-200	$3.00
Laborers	100-200	$3.00

INDIRECT COSTS

Unemployment (%)	1.85%
Retirement/SS/Medicare (%)	0.01%
Workman's Compensation (%)	3.50%

Other Indirects

State Payroll Tax (13),(15),(17),(1	5.50%
Total Other Indirects	5.50%

HOURLY LABOR RATE TABLE

EQUIPMENT TYPE (1) OR JOB DESCRIPTION	Labor Group	Base Rate ($/hr)	Zone Adjustment ($/hr)	Hourly Wage ($/hr)	Fringe ($/hr)	Retirement/ Medicare ($/hr)	Unemployment Insurance ($/hr)	Workman's Compensation ($/hr)	Other Indirect Costs ($/hr)	Total ($/hr)
Equipment Operators ($/hr) (2)										
Bulldozers										
D6R		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
D6R w/ Winch		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
D7R		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
D8R		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
D9R		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
D10R		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
D11R		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
Wheeled Dozers										
824G		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
834G		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
844		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
854G		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
Motor Graders										
120H		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
14G/H		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
16G/H		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
24M		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
Track Excavators										
312C		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
320C		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
325C		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
330C		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
345B		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
365BL		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
385BL		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
Scrapers										
631G		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
637G		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
Wheeled Loaders										
924G		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
928G		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
950G		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
966G		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
972G		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
980G		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
988G		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
990		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
992G		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
994D		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
L2350		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
Shovels										
PC2000		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
PC3000		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
PC4000		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
PC5500		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
PC8000		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
Hydraulic Hammers										
H-120 (fits 325)										
H-160 (fits 345)										
H-180 (fits 365/385)										
Demolition Shears										
S340 (fits 322/325/330)										
S365 (fits 330/345)										
S390 (fits 365/385)										
Demolition Grapples										
G315 (fits 322/325)										
G320 (fits 325/330)										
G330 (fits 345/365)										

Closure Cost Estimate

Labor Rates

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan - Reclamation Plan
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Color Code Key	
User Input - Direct Input	Direct Input
User Input - Pull Down List	Pull Down Selection
Program Constant (can override)	Alternate Input
Program Calculated Value	Locked Cell - Formula or Reference

ZONE ADJUSTMENTS

Cost Basis/Project Region	Alamosa, Colorado	Southern Colorado
Power Equipment Operators	<50 miles	$0.00
Truck Drivers	100-200	$3.00
Laborers	100-200	$3.00

INDIRECT COSTS

Unemployment (%)	1.85%
Retirement/SS/Medicare (%)	0.01%
Workman's Compensation (%)	3.50%
Other Indirects	
State Payroll Tax (13),(15),(17),(1	5.50%
Total Other Indirects	**5.50%**

HOURLY LABOR RATE TABLE

Other Equipment										
420D 4WD Backhoe		$35.67	$0.00	$35.67	$0.00	$0.66	$0.00	$1.25	$1.96	$39.54
428D 4WD Backhoe		$35.67	$0.00	$35.67	$0.00	$0.66	$0.00	$1.25	$1.96	$39.54
CS533E Vibratory Roller		$35.67	$0.00	$35.67	$0.00	$0.66	$0.00	$1.25	$1.96	$39.54
CS633E Vibratory Roller		$35.67	$0.00	$35.67	$0.00	$0.66	$0.00	$1.25	$1.96	$39.54
CP533E Sheepsfoot Compactor		$35.67	$0.00	$35.67	$0.00	$0.66	$0.00	$1.25	$1.96	$39.54
CP633E Sheepsfoot Compactor		$35.67	$0.00	$35.67	$0.00	$0.66	$0.00	$1.25	$1.96	$37.58
Light Truck - 1.5 Ton					$0.00					
Supervisor's Truck					$0.00					
Flatbed Truck					$0.00					
Air Compressor + tools					$0.00					
Welding Equipment					$0.00					
Heavy Duty Drill Rig					$0.00					
Pump (plugging) Drill Rig					$0.00					
Concrete Pump					$0.00					
Gas Engine Vibrator		$35.67	$0.00	$35.67	$0.00	$0.66	$0.00	$1.25	$1.96	$39.54
Generator 5KW					$0.00					
HDEP Welder (pipe or liner)					$0.00					
5 Ton Crane		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
20 Ton Crane		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
50 Ton Crane		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37
120 Ton Crane		$26.49	$0.00	$26.49	$0.00	$0.49	$0.00	$0.93	$1.46	$29.37

NOTES:

(1) Equipment Type:	Catepillar model or equivalent, LeTourneau
(2) Equipment Operator Source:	
(3) Zone Basis:	

Truck Drivers ($/hr) (4)										
725		$33.35	$3.00	$36.35	$0.00	$0.67	$0.00	$1.27	$2.00	$40.30
730		$33.35	$3.00	$36.35	$0.00	$0.67	$0.00	$1.27	$2.00	$40.30
735		$33.35	$3.00	$36.35	$0.00	$0.67	$0.00	$1.27	$2.00	$40.30
740		$33.35	$3.00	$36.35	$0.00	$0.67	$0.00	$1.27	$2.00	$40.30
769D		$33.35	$3.00	$36.35	$0.00	$0.67	$0.00	$1.27	$2.00	$40.30
773E		$33.35	$3.00	$36.35	$0.00	$0.67	$0.00	$1.27	$2.00	$40.30
777D		$33.35	$3.00	$36.35	$0.00	$0.67	$0.00	$1.27	$2.00	$40.30
785C		$33.35	$3.00	$36.35	$0.00	$0.67	$0.00	$1.27	$2.00	$40.30
793C		$33.35	$3.00	$36.35	$0.00	$0.67	$0.00	$1.27	$2.00	$40.30
797B		$33.35	$3.00	$36.35	$0.00	$0.67	$0.00	$1.27	$2.00	$40.30
613E (5,000 gal) Water Wagon		$33.35	$3.00	$36.35	$0.00	$0.67	$0.00	$1.27	$2.00	$40.30
621E (8,000 gal) Water Wagon		$33.35	$3.00	$36.35	$0.00	$0.67	$0.00	$1.27	$2.00	$40.30
777D Water Truck		$33.35	$3.00	$36.35	$0.00	$0.67	$0.00	$1.27	$2.00	$40.30
785C Water Truck		$33.35	$3.00	$36.35	$0.00	$0.67	$0.00	$1.27	$2.00	$40.30
Dump Truck (10-12 yd3)		$33.35	$3.00	$36.35	$0.00	$0.67	$0.00	$1.27	$2.00	$40.30

NOTES:

(4) Truck Driver Source:	
(5) Zone Basis:	

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan - Reclamation Plan
Date of Submittal: January 15, 2018
File Name: SRCE_Version_1_4_1_017_(August 2018) Final.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: Alamosa Baseline SRCE Cost Data USR 1-2018 El Grande Reclamation Costs (1-15).xlsm
Cost Estimate Type: Surety Cost Basis: Alamosa, Colorado

Color Code Key	
User Input - Direct Input	Direct Input
User Input - Pull Down List	Pull Down Selection
Program Constant (can override)	Alternate Input
Program Calculated Value	Locked Cell - Formula or Reference

ZONE ADJUSTMENTS

Cost Basis/Project Region	Alamosa, Colorado	Southern Colorado
Power Equipment Operators	<50 miles	$0.00
Truck Drivers	100-200	$3.00
Laborers	100-200	$3.00

INDIRECT COSTS

Unemployment (%)	1.85%
Retirement/SS/Medicare (%)	0.01%
Workman's Compensation (%)	3.50%
Other Indirects	
State Payroll Tax (13),(15),(17),(1	5.50%
Total Other Indirects	**5.50%**

HOURLY LABOR RATE TABLE

Laborers ($/hr) (6,7)

General Laborer		$22.07	$3.00	$25.07		$0.46	$0.00	$0.88	$1.38	$27.79
Skilled Laborer		$31.87	$3.00	$34.87		$0.65	$0.00	$1.22	$1.92	$38.66
Driller's Helper		$19.62	$3.00	$22.62		$0.42	$0.00	$0.79	$1.24	$25.08
Rodmen (reinforcing concrete)		$24.48	$3.00	$27.48		$0.51	$0.00	$0.96	$1.51	$30.46
Cement finisher		$26.01	$3.00	$29.01		$0.54	$0.00	$1.02	$1.60	$32.16
Carpenter		$27.03	$3.00	$30.03		$0.56	$0.00	$1.05	$1.65	$33.29

NOTES:

(6) Laborer Source:	
(7) Carpenter Source:	
(8) Zone Basis:	

Project Management and Technical Labor ($/hr) (9)

Project Manager		$77.44		$77.44		$1.43	$0.01	$2.71	$4.26	$85.85
Foreman		$60.29		$60.29		$1.12	$0.01	$2.11	$3.32	$66.84
Field Geologist/Engineer		$80.52		$80.52		$1.49	$0.01	$2.82	$4.43	$89.26
Field Tech/Sampler		$69.55		$69.55		$1.29	$0.01	$2.43	$3.83	$77.10
Range Scientist		$67.10		$67.10		$1.24	$0.01	$2.35	$3.69	$74.38
Senior Planning Engineer		$161.04		$161.04		$2.98	$0.02	$5.64	$8.86	$178.53
Project Engineer		$50.61		$50.61		$0.94	$0.01	$1.77	$2.78	$56.11
Mechanic/Fitter		$26.49		$26.49		$0.49	$0.00	$0.93	$1.46	$29.37

NOTES:

(9) Project Manager:	
(9) Foreman Source:	
(9) Techical Labor Source:	
Other Labor Source:	
Other Labor Source:	
†Additional User Markups	
(These are added by the user to the	
base rate to account for site-specific	
conditions or corporate requirements)	

Closure Cost Estimate

Equipment Costs

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan - Reclamation Plan
Date of Submittal: January 15, 2018
File Name: SRCE_Version_1_4_1_017_(August 2018) Final.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: Alamosa Baseline SRCE Cost Data USR 1-2018 El Grande Reclamation Costs (1-
Monthly Rental Basis: 176 hrs month

EQUIPMENT RENTAL RATE TABLE				
EQUIPMENT TYPE (1)	Monthly Owner/Rental Rate	Equipment Hourly Rate	Fuel/Lube/ Wear	Total Rate
Bulldozers				
D6R	$8,670.00	$49.26	$14.50	$63.76
D6R w/ Winch	$15,259.20	$86.70	$14.50	$101.20
D7R	$19,468.58	$110.62	$17.40	$128.02
D8R	$23,460.00	$133.30	$22.62	$155.92
D9R	$29,762.30	$169.10	$33.06	$202.16
D10R	$38,760.00	$220.23	$41.76	$261.99
D11R	$47,954.32	$272.47	$61.48	$333.95
Wheeled Dozers				
824G			$24.94	$24.94
834G			$29.23	$29.23
844			$34.80	$34.80
854G			$44.08	$44.08
Motor Graders				
120H	$9,873.60	$56.10	$9.28	$65.38
14G/H	$16,097.64	$91.46	$14.50	$105.96
16G/H	$23,567.98	$133.91	$17.40	$151.31
24M			$35.96	$35.96
Track Excavators				
312C	$8,445.97	$47.99	$4.36	$52.35
320C	$9,998.54	$56.81	$11.37	$68.18
325C	$13,800.60	$78.41	$15.31	$93.72
330C	$16,809.13	$95.51	$19.02	$114.53
345B	$20,240.83	$115.00	$24.59	$139.60
365BL	$24,771.16	$140.75	$30.62	$171.37
385BL	$28,753.09	$163.37	$40.60	$203.97
Scrapers				
631G	$28,472.01	$161.77	$34.80	$196.57
637G	$32,852.33	$186.66	$55.10	$241.76
Wheeled Loaders				
924G	$8,280.36	$47.05	$6.38	$53.43
928G	$9,903.31	$56.27	$8.12	$64.39
950G	$11,960.52	$67.96	$9.28	$77.24
966G			$13.34	$13.34
972G			$14.50	$14.50
980G			$17.40	$17.40
988G			$28.07	$28.07
990			$39.44	$39.44
992G			$53.36	$53.36
994D			$83.52	$83.52
L2350			$153.12	$153.12
Shovels				

PC2000			$85.84	$85.84
PC3000			$116.00	$116.00
PC4000			$162.40	$162.40
PC5500			$276.08	$276.08
PC8000			$345.68	$345.68
Hydraulic Hammers				
H-120 (fits 325)				$0.00
H-160 (fits 345)				$0.00
H-180 (fits 365/385)				$0.00
Demolition Shears				
S340 (fits 322/325/330)	$8,280.00	$47.05	$0.00	$47.05
S365 (fits 330/345)	$9,903.00	$56.27	$0.00	$56.27
S390 (fits 365/385)	$11,961.00	$67.96	$0.00	$67.96
Demolition Grapples				
G315 (fits 322/325)	$8,260.00	$46.93	$0.00	$46.93
G320 (fits 325/330)	$9,903.00	$56.27	$0.00	$56.27
G330 (fits 345/365)	$11,961.00	$67.96	$0.00	$67.96
Other Equipment				
420D 4WD Backhoe			$6.96	$6.96
428D 4WD Backhoe			$6.96	$6.96
CS533E Vibratory Roller			$8.70	$8.70
CS633E Vibratory Roller			$11.02	$11.02
CP533E Sheepsfoot Compactor			$8.70	$8.70
CP633E Sheepsfoot Compactor			$11.02	$11.02
Light Truck - 1.5 Ton			$3.48	$3.48
Supervisor's Truck	$660.00	$3.75	$2.32	$6.07
Flatbed Truck			$10.90	$10.90
Air Compressor + tools			$2.32	$2.32
Welding Equipment			$4.64	$4.64
Heavy Duty Drill Rig			$27.84	$27.84
Pump (plugging) Drill Rig			$23.20	$23.20
Concrete Pump			$23.20	$23.20
Gas Engine Vibrator			$2.32	$2.32
Generator 5KW			$3.48	$3.48
HDEP Welder (pipe or liner)			$4.64	$4.64
5 Ton Crane			$6.96	$6.96
20 Ton Crane			$9.28	$9.28
50 Ton Crane			$10.90	$10.90
120 Ton Crane			$12.06	$12.06
Trucks				
725			$10.90	$10.90
730			$12.06	$12.06
735			$17.05	$17.05
740			$17.05	$17.05
769D			$21.46	$21.46
773E			$27.26	$27.26
777D			$38.86	$38.86
785C			$56.26	$56.26
793C			$96.86	$96.86
797B			$136.30	$136.30
613E (5,000 gal) Water Wagon			$13.92	$13.92
621E (8,000 gal) Water Wagon			$24.94	$24.94
777D Water Truck			$38.86	$38.86
785C Water Truck			$56.26	$56.26
Dump Truck (10-12 yd^3)			$12.06	$12.06

NOTES:

(1) Power Equipment Source:	
(2) Power Equipment Type:	Catepillar model or equivalent, LeTourneau loader, Komatsu shovels
(3) Drilliing Equipment Source:	
(4) Other Equipment Source:	

(5) Drill rig includes support (pipe) truck

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan - Reclamation Plan
Date of Submittal: January 15, 2018
File Name: SRCE_Version_1_4_1_017_(August 2018) Final.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: Alamosa Baseline SRCE Cost Data USR 1-2018 El Grande Reclamation Costs (1-15).xlsm

FUEL, LUBE AND WEAR CALCULATIONS

EQUIPMENT TYPE	PM Cost Per Hour (1)	Under carriage or Tires (2)	G.E.T Consumption (3)	Fuel Use Rate gal/hr (4)	Cost@ 2.32/gal	Total Hourly Equipment Cost
Bulldozers						
D6R				6.25	$14.50	$14.50
D6R w/ Winch				6.25	$14.50	$14.50
D7R				7.50	$17.40	$17.40
D8R				9.75	$22.62	$22.62
D9R				14.25	$33.06	$33.06
D10R				18.00	$41.76	$41.76
D11R				26.50	$61.48	$61.48
Wheeled Dozers						
824G		$0.00		10.75	$24.94	$24.94
834G		$0.00		12.60	$29.23	$29.23
844		$0.00		15.00	$34.80	$34.80
854G		$0.00		19.00	$44.08	$44.08
Motor Graders						
120H				4.00	$9.28	$9.28
14G/H				6.25	$14.50	$14.50
16G/H				7.50	$17.40	$17.40
24M				15.50	$35.96	$35.96
Track Excavators						
312C				1.88	$4.36	$4.36
320C				4.90	$11.37	$11.37
325C				6.60	$15.31	$15.31
330C				8.20	$19.02	$19.02
345B				10.60	$24.59	$24.59
365BL				13.20	$30.62	$30.62
385BL				17.50	$40.60	$40.60
Scrapers						
631G				15.00	$34.80	$34.80
637G				23.75	$55.10	$55.10
Wheeled Loaders						
924G				2.75	$6.38	$6.38
928G				3.50	$8.12	$8.12
950G				4.00	$9.28	$9.28
966G				5.75	$13.34	$13.34
972G				6.25	$14.50	$14.50
980G				7.50	$17.40	$17.40
988G				12.10	$28.07	$28.07
990				17.00	$39.44	$39.44
992G				23.00	$53.36	$53.36
994D				36.00	$83.52	$83.52
L2350				66.00	$153.12	$153.12
Shovels						
PC2000				37.00	$85.84	$85.84
PC3000				50.00	$116.00	$116.00
PC4000				70.00	$162.40	$162.40
PC5500				119.00	$276.08	$276.08
PC8000				149.00	$345.68	$345.68
Hydraulic Hammers						
H-120 (fits 325)	N/A					$0.00
H-160 (fits 345)	N/A					$0.00
H-180 (fits 365/385)	N/A					$0.00
Demolition Shears						
S340 (fits 322/325/330)	N/A					$0.00
S365 (fits 330/345)	N/A					$0.00
S390 (fits 365/385)	N/A					$0.00
Demolition Grapples						
G315 (fits 322/325)	N/A					$0.00

Closure Cost Estimate
Equipment Costs

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan - Reclamation Plan
Date of Submittal: January 15, 2018
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G320 (fits 325/330)	N/A					$0.00
G330 (fits 345/365)	N/A					$0.00
Other Equipment						
420D 4WD Backhoe				3.00	$6.96	$6.96
428D 4WD Backhoe				3.00	$6.96	$6.96
CS533E Vibratory Roller				3.75	$8.70	$8.70
CS633E Vibratory Roller				4.75	$11.02	$11.02
CP533E Sheepsfoot Compactor				3.75	$8.70	$8.70
CP633E Sheepsfoot Compactor				4.75	$11.02	$11.02
Light Truck - 1.5 Ton				1.50	$3.48	$3.48
Supervisor's Truck				1.00	$2.32	$2.32
Flatbed Truck				4.70	$10.90	$10.90
Air Compressor + tools			N/A	1.00	$2.32	$2.32
Welding Equipment			N/A	2.00	$4.64	$4.64
Heavy Duty Drill Rig				12.00	$27.84	$27.84
Pump (plugging) Drill Rig				10.00	$23.20	$23.20
Concrete Pump			N/A	10.00	$23.20	$23.20
Gas Engine Vibrator			N/A	1.00	$2.32	$2.32
Generator 5KW			N/A	1.50	$3.48	$3.48
HDEP Welder (pipe or liner)			N/A	2.00	$4.64	$4.64
5 Ton Crane				3.00	$6.96	$6.96
20 Ton Crane				4.00	$9.28	$9.28
50 Ton Crane				4.70	$10.90	$10.90
120 Ton Crane				5.20	$12.06	$12.06
Trucks						
725				4.70	$10.90	$10.90
730				5.20	$12.06	$12.06
735				7.35	$17.05	$17.05
740				7.35	$17.05	$17.05
769D				9.25	$21.46	$21.46
773E				11.75	$27.26	$27.26
777D				16.75	$38.86	$38.86
785C				24.25	$56.26	$56.26
793C				41.75	$96.86	$96.86
797B				58.75	$136.30	$136.30
613E (5,000 gal) Water Wagon				6.00	$13.92	$13.92
621E (8,000 gal) Water Wagon				10.75	$24.94	$24.94
777D Water Truck				16.75	$38.86	$38.86
785C Water Truck				24.25	$56.26	$56.26
Dump Truck (10-12 yd3) (5)	N/A		N/A	5.20	$12.06	$12.06

Notes:

(1) PM Source:	
(2) Undercarriage Source:	
(3) G.E.T. Source:	CAT Historical Data
(4) Fuel Use Source:	Caterpillar Handbook, Edition 35, Ch. 20; or estimated average for smaller vehicles
(5) Dump Truck Oper. Cost Source:	Means Heavy Construction (2008)

Closure Cost Estimate
Equipment Costs

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan - Reclamation Plan
Date of Submittal: January 15, 2018
File Name: SRCE_Version_1_4_1_017_(August 2018) Final.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: Alamosa Baseline SRCE Cost Data USR 1-2018 El Grande Reclamation Costs (1-15).xlsm

TIRE COST TABLES

Equipment	Tire Size	# of Tires Per Piece of Equipment	Cost Per Tire	Tire Cost [1][2]	Life Expectency Hours (Low/Zone A) [3]	Tire Cost per Hour
Bulldozers						
D6R			N/A			
D6R w/ Winch			N/A			
D7R			N/A			
D8R			N/A			
D9R			N/A			
D10R			N/A			
D11R			N/A			
Wheeled Dozers						
824G	29.5R25	4		$0.00	3,500	$0.00
834G	35/65-R33	4		$0.00	3,500	$0.00
844	45/65-R39	4		$0.00	3,500	$0.00
854G	45/65-R45	4		$0.00	3,500	$0.00
Motor Graders						
120H	13PR24	6		$0.00	3,500	
14G/H	20.5R25	6		$0.00	3,500	
16G/H	23.5R25	6		$0.00	3,500	
24M	23.5R25	6		$0.00	3,500	
Track Excavators						
312C			N/A			
320C			N/A			
325C			N/A			
330C			N/A			
345B			N/A			
365BL			N/A			
385BL			N/A			
Scrapers						
631G	37.25R35	4		$0.00	4,000	
637G	37.25R35	4		$0.00	4,000	
Wheeled Loaders						
924G	17.5R25	4		$0.00	4,500	
928G	17.5R25	4		$0.00	4,500	
950G	26.5R25	4		$0.00	4,500	
966G	26.5R25	4		$0.00	4,500	
972G	26.5R25	4		$0.00	4,500	
980G	29.5R25	4		$0.00	4,500	
988G	35/65-33	4		$0.00	4,500	
990	41.25/70-39	4		$0.00	4,500	
992G	45/65R45	4		$0.00	4,500	
994D	55/85R57	4		$0.00	4,500	
L2350	55/85R57	4		$0.00	4,500	
Shovels						
PC2000			N/A			
PC3000			N/A			
PC4000			N/A			
PC5500			N/A			
PC8000			N/A			
Hydraulic Hammers						
H-120 (fits 325)			N/A			
H-160 (fits 345)			N/A			
H-180 (fits 365/385)			N/A			
Demolition Shears						
S340 (fits 322/325/330)			N/A			
S365 (fits 330/345)			N/A			
S390 (fits 365/385)			N/A			
Demolition Grapples						

Closure Cost Estimate
Equipment Costs

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan - Reclamation Plan
Date of Submittal: January 15, 2018
File Name: SRCE_Version_1_4_1_017_(August 2018) Final.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: Alamosa Baseline SRCE Cost Data USR 1-2018 El Grande Reclamation Costs (1-15).xlsm

G315 (fits 322/325)			N/A			
G320 (fits 325/330)			N/A			
G330 (fits 345/365)			N/A			
Other Equipment						
420D 4WD Backhoe	340/80R18-19.5LR24	2		$0.00	3,000	
428D 4WD Backhoe	340/80R18-16.9R28	2		$0.00	3,000	
CS533E Vibratory Roller			N/A			
CS633E Vibratory Roller			N/A			
CP533E Sheepsfoot Compactor			N/A			
CP633E Sheepsfoot Compactor			N/A			
Light Truck - 1.5 Ton		4		$0.00	3,000	
Supervisor's Truck		4		$0.00	3,000	
Flatbed Truck		22		$0.00	3,000	
Air Compressor + tools			N/A			
Welding Equipment			N/A			
Heavy Duty Drill Rig		4		$0.00	3,000	
Pump (plugging) Drill Rig		4		$0.00	3,000	
Concrete Pump			N/A			
Gas Engine Vibrator			N/A			
Generator 5KW			N/A			
HDEP Welder (pipe or liner)			N/A			
5 Ton Crane		4		$0.00	3,000	
20 Ton Crane		4		$0.00	3,000	
50 Ton Crane		6		$0.00	3,000	
120 Ton Crane		6		$0.00	3,000	
Trucks						
725	23.5R25	6		$0.00	2,000	
730	23.5R25	6		$0.00	2,000	
735	26.5R25	6		$0.00	2,000	
740	29.5R25	6		$0.00	2,000	
769D	18.00R33	6		$0.00	6,000	
773E	24.00R35	6		$0.00	5,000	
777D	27.00R49	6		$0.00	5,000	
785C	33.00R51	6		$0.00	4,000	
793C	40.00R57	6		$0.00	4,000	
797B	40.00R57	6		$0.00	4,000	
613E (5,000 gal) Water Wagon	23.5R25	6		$0.00	6,000	
621E (8,000 gal) Water Wagon	33.25R29	6		$0.00	8,000	
777D Water Truck	27.00R49	6		$0.00	5,000	
785C Water Truck	33.00R51	6		$0.00	4,000	
Dump Truck (10-12 yd3)		10		$0.00	6,000	

Notes:

(1) Unit Cost Basis:	Cost per tyre each
(2) Cost Basis:	
(3) Tire Cost Source:	
(4) Tire Wear Source:	Caterpillar Handbook, Edition 37

Closure Cost Estimate
Material Costs

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan - Reclamation Plan
Date of Submittal: January 15, 2018
File Name: SRCE_Version_1_4_1_017_(August 2018) Final.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: Alamosa Baseline SRCE Cost Data USR 1-2018 El Grande Reclamation C
Cost Estimate Type: Surety Cost Basis: Alamosa, Colorado

Revegetation Materials

Seed Mixes

Seed Mix	Description	Cost/Acre
None		
Mix 1	Basins	$710.23
Mix 2	Low Hills	$764.86
Mix 3	Uplands	$819.49
Mix 4	Riparian or Custom	$874.12
User Mix 1		
User Mix 2		
User Mix 3		
User Mix 4		

	Cost/lb	lbs/Acre	Cost/Acre
User Mix 5 (from Seed Mix sheet)	$5.34	$25.83	$137.95

Notes:

Mulch

Item	Cost/lb	lbs/Acre	Cost/Acre
None			
Straw Mulch	$32.78		
Hydro Mulch	$10.92		
Timber Mulch			

Notes:

Closure Cost Estimate
Material Costs

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan - Reclamation Plan
Date of Submittal: January 15, 2018
File Name: SRCE_Version_1_4_1_017_(August 2018) Final.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: Alamosa Baseline SRCE Cost Data USR 1-2018 El Grande Reclamation Cc
Cost Estimate Type: Surety Cost Basis: Alamosa, Colorado

Amendments			
Item	Cost/lb	lbs/Acre	Cost/Acre
None			
Organic Matter	$0.28		$0.00
Treated Sludge			
Chemical	$1.16		$0.00
Notes:			

Closure Cost Estimate
Material Costs

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Cost Estimate Type: Surety Cost Basis: Alamosa, Colorado

Well Abandonment Materials

Description	Cost/50lb bag	Units	Cost/unit*
Cement	$7.81	cy	$37.19
Grout (Low Grade Bentonite)	$39.04	cy	$185.90
Inert Material/Cuttings	$27.54	cy	$131.14
		cy	
		cy	

* Assumes 1 bag mixes with water to make 0.21 y3 or 0.16 m3 of grout/cement slurry.

Monitoring Costs

Description	Units	Cost/unit
Monitor Well Pump	ea.	
Sampling Supplies	ea.	
Maintenance	ea.	$40.80
	ea.	
	ea.	
	ea.	
	ea.	
	ea.	
	ea.	
	ea.	
	ea.	
	ea.	
	ea.	
	ea.	
	ea.	
	ea.	
	ea.	
	ea.	

Closure Cost Estimate
Material Costs

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Cost Estimate Type: Surety Cost Basis: Alamosa, Colorado

Fuel, Etc.

Description	Units	Cost/unit
Off-road Diesel - delivered (1)	$/gal	$2.320
Pickup Truck Mileage	$/mi	
Electical Power	$/kWh	$0.110

Closure Cost Estimate
Material Costs

‹lsm

Revegetation Method				
Slopes				
Disturbance Type	**Seed Application Method**	**Labor** Cost/Acre	**Equipment** Cost/Acre	**Total** Cost/Acre
Waste Rock Dumps	Mechanical Broadcast	$172.59	$310.31	$482.90
Heap Leach	Mechanical Broadcast	$172.59	$310.31	$482.90
Tailings	Hand Broadcast	$226.45		$226.45
Quarries & Borrow Pits	Mechanical Broadcast	$172.59	$310.31	$482.90
Flat Areas and Undifferentiated				
Disturbance Type	**Seed Application Method**	**Labor** Cost/Acre	**Equipment** Cost/Acre	**Total** Cost/Acre
Exploration Trenches	Mechanical Broadcast	$172.59	$310.31	$482.90
Exploration Roads	Mechanical Broadcast	$172.59	$310.31	$482.90
Waste Rock Dumps	Mechanical Broadcast	$172.59	$310.31	$482.90
Heap Leach	Mechanical Broadcast	$172.59	$310.31	$482.90
Tailings	Mechanical Broadcast	$172.59	$310.31	$482.90
Quarries & Borrow Pits	Mechanical Broadcast	$172.59	$310.31	$482.90
Roads	Mechanical Broadcast	$172.59	$310.31	$482.90
Pits	Mechanical Broadcast	$172.59	$310.31	$482.90
Haul Material	Mechanical Broadcast	$172.59	$310.31	$482.90
Foundations & Buildings	Mechanical Broadcast	$172.59	$310.31	$482.90
Sediment & Drainge Control	Mechanical Broadcast	$172.59	$310.31	$482.90
Process Ponds	Mechanical Broadcast	$172.59	$310.31	$482.90
Landfills	Mechanical Broadcast	$172.59	$310.31	$482.90
Yards, Etc.	Mechanical Broadcast	$172.59	$310.31	$482.90
Revegetation Maintenance	Mechanical Broadcast	$172.59	$310.31	$482.90

Closure Cost Estimate
Misc. Unit Costs

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Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: Alamosa Baseline SRCE Cost Data USR 1-2018 El Grande Reclamation Costs (1-15).xlsm
Cost Estimate Type: Surety Cost Basis: Alamosa, Colorado

Revegetation

	Means Number	Unit	Crew	Daily Output	Daily Output User	Materials	Labor	Equipment	Total	Notes
Seeding - Broadcast Hand (1)		acres					$226.45		$226.45	
Seeding - Broadcast Mechanical (1)		acres					$172.59	$310.31	$482.90	
Seeding - Drill (1)		acres		365					$0.00	
Seeding - Hydroseeding (1)				365			$714.00	$1,428.00	$2,142.00	
Shrub Planting - bare root 6-10 in (150- 250mm) (2)	02910-400-0561	ea.	1 Clab	365		$12.24	$12.24		$12.24	
Tree Planting - bare root 11-16 in (270- 400mm) (3)	02910-400-0562	ea.	1 Clab	260		$17.85	$17.85		$17.85	
Cactus Planting (4)		ea.	1 Clab						$0.00	
NOTES:										
(1) Seeding Source:	Various									
(2) Shrub Source:	Various									
(3) Tree Source:	Various									
(4) Cactus Source:	N/A									

Building and Wall Demolition

Hourly productivity rates and crew composition from Means Heavy Construction 2005 Edition by permission of R.S.Means/Reed Construction Data .
All equipment, labor and material unit costs are from Labor Costs, Equipment Costs and Material Costs spreadsheets

	Means Number	Unit	Crew	Daily Output	Daily Output User	Labor	Equipment	Premium	Total	Notes
Building Demolition										
Lg. steel	02220-110-0012	C.F.	B-8	21500		$0.10	$0.04		$0.14	
Lg. concrete	02220-110-0050	C.F.	B-8	15300		$0.14	$0.05		$0.19	
Lg. masonry	02220-110-0080	C.F.	B-8	20100		$0.10	$0.04		$0.14	
Lg. mixed	02220-110-0100	C.F.	B-8	20100		$0.10	$0.04		$0.14	
Sm. steel	02220-110-0500	C.F.	B-3	14800		$0.13	$0.05		$0.18	
Sm. concrete	02220-110-0600	C.F.	B-3	11300		$0.16	$0.06		$0.22	
Sm. masonry	02220-110-0650	C.F.	B-3	14800		$0.13	$0.05		$0.18	
Sm. wood	02220-110-0700	C.F.	B-3	14800		$0.13	$0.05		$0.18	
Wall Demolition										
Block 4 in (100 mm) thick	02220-130-2000	S.F.	1 Clab	180		$1.24	$0.00	20%	$1.49	
Block 6 in (150 mm) thick	02220-130-2040	S.F.	1 Clab	170		$1.31	$0.00	20%	$1.57	
Block 8 in (200 mm) thick	02220-130-2080	S.F.	1 Clab	150		$1.48	$0.00	20%	$1.78	
Block 12 in (300 mm) thick	02220-130-2100	S.F.	1 Clab	150		$1.48	$0.00	20%	$1.78	
Conc 6 in (150 mm) thick	02220-130-2400	S.F.	B-9	160		$8.90	$0.12	10%	$9.92	
Conc 8 in (200 mm) thick	02220-130-2420	S.F.	B-9	140		$10.17	$0.13	10%	$11.33	
Conc 10 in (250 mm) thick	02220-130-2440	S.F.	B-9	120		$11.87	$0.15	10%	$13.22	
Conc 12 in (300 mm) thick	02220-130-2500	S.F.	B-9	100		$14.24	$0.19	10%	$15.87	

Closure Cost Estimate
Misc. Unit Costs

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Date of Submittal: January 15, 2018
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Cost Data File: Alamosa Baseline SRCE Cost Data USR 1-2018 El Grande Reclamation Costs (1-15).xlsm
Cost Estimate Type: Surety Cost Basis: Alamosa, Colorado

Waste Disposal

Unit rates from Means Heavy Construction 2006 Edition by permission of R.S.Means/Reed Construction Data .

	Means Number	Unit	Crew	Daily Output	Materials	Labor	Equipment		Total	Notes
Rubbish Handling										
Dumpster delivery (average for all sizes)	02220-350-0910	ea.			$184.17				$184.17	
Haul (average for all sizes)	02220-350-0920	ea.			$184.17				$184.17	
Rent per month (average for all sizes)	02220-350-0940	ea.			$408.00				$408.00	
Disposal fee per ton (tonne) (average for all sizes)	02220-350-0950	ton			$76.50				$76.50	
NOTES:										
Dumpster Cost Source										
Dumpster Disposal Fee Source:	Varies greatly by authority, distance and contamination									
Hazardous Material Handling - Solids (+ Liquids in drums)										
Pickup fees 55 gal (200 L), drums	02110-300-1100	ea.			$6.55				$6.55	
Bulk material (average)	02110-300-1220/1230	ton			$362.10				$362.10	
Transport - truck load (80 drums, 25 cy (m3), 18 tons)	02110-300-1260/1270	mile			$3.67				$3.67	
Dump site solid disposal fee	02110-300-6000/6020	ton			$163.20				$163.20	
NOTES:										
Solid Handling Cost Source										
Solid Disposal Fee Source:	Varies greatly by authority, distance and contamination									
Hazardous Material Handling - Liquids										
Vacuum Truck Pickup (2200 gal/8300 L)	02110-300-3110	hr.			$193.80				$193.80	
Vacuum Truck Pickup (5000 gal/19000 L)	02110-300-3120	hr.			$316.20				$316.20	
Dump site liquid disposal fee	02110-300-6000/6020	ton			$173.40				$173.40	
NOTES:										
Liquid Handling Cost Source										
Liquid Disposal Fee Source:	Varies greatly by authority, distance and contamination									
Hydrocarbon Contaminated Soils (HCS)										
Insitu Biotreatment	02115-200-2020/2021	C.Y.							$0.00	
HCS disposal fee	02115-200-2050/2055	C.Y.			$163.20				$163.20	
NOTES:										
Insitu Treatement Cost Source										
HCS Disposal Fee Source:										

Closure Cost Estimate
Misc. Unit Costs

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Concrete Structure Installation

Weekly dumpster rental rates from Means Heavy Construction 2005 Edition with permission by R.S.Means/Reed Construction Data .
Weekly dumpster rental rates include haul to off-site disposal site and disposal fees

	Means Number	Unit	Crew	Daily Output	Materials	Labor	Equipment	Premium	Total	Notes
Reinforced Concrete Bulkheads and Shaft Covers										
Grade walls - 15 in (400mm) thick, 8 ft (2.5m) high	03310-240-4300	C.Y.	C-14D	80.02	$2,147.10	$85.40	$3.16		$2,235.66	includes reinforcing
Grade walls - 15 in (400mm) thick, 12 ft (3.7m) high	03310-240-4350	C.Y.	C-14D	26.2	$2,468.40	$260.84	$9.65		$2,738.89	includes reinforcing
Elevated conc, 1-way beam & slab - 15ft (4.6m) span	03310-240-2700	C.Y.	C-14B	20.59	$3,220.66	$342.21	$12.27		$3,575.14	includes reinforcing
Elevated conc, 1-way beam & slab - 25ft (7.5m) span	03310-240-2750	C.Y.	C-14B	28.36	$3,757.44	$248.45	$8.91		$4,014.80	includes reinforcing
Bat Gate/Foam Plug Installation										
Bat Gate (5)		ea.			$6,441.31					materials $/ea. Installed
Culvert Gate (5)		ea.			$2,147.10					materials $/ea. Installed
Adit Foam Plug (6)		ea./C.Y.			$536.78					materials $/cy placed
Production Opening Foam Plug (6)		ea./C.Y.			$322.07					materials $/cy placed
NOTES:										
(5) Bat Gate Source:										
(6) Foam Plug Source:										

Closure Cost Estimate
Misc. Unit Costs

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Misc. Linear Projects

Hourly productivity rates and crew composition from Means Heavy Construction 2005 Edition by permission of R.S.Means/Reed Construction Data .
All equipment, labor and material unit costs are from Labor Costs, Equipment Costs and Material Costs spreadsheets

	Means Number	Unit	Crew	Daily Output	Materials	Labor	Equipment	Premium	Total	Notes
Fencing Installation										
Barbed 3-strand	02820-170-1650	L.F.	B-80A	760	$1.93	$0.88	$0.04		$2.85	
Barbed 4-strand	extrapolated	L.F.	B-80A	570	$2.58	$1.17	$0.05		$3.80	
Barbed 5-strand	02820-130-0920	L.F.	B-80A	456	$3.75	$1.46	$0.06		$5.27	
Chain link 8-10ft (2.5-3m) Install	02820-130-0920	L.F.	B-80C	180	$164.25	$3.71	$0.15		$168.11	
Wood stockade fence 6 ft (2 m) high - Install	02820-510-1240	L.F.	B-80C	150	$209.34	$4.45	$0.19		$213.98	
	user	L.F.							$0.00	
	user	L.F.							$0.00	
	user	L.F.							$0.00	
	user	L.F.							$0.00	
Fencing Removal										
Barbed 3-strand Removal	02220-220-1600	L.F.	2 Clab	430		$1.03	$0.06		$1.09	
Barbed 4-strand Removal	extrapolated	L.F.	2 Clab	355		$1.25	$0.08		$1.33	
Barbed 5-strand Removal	02220-220-1650	L.F.	2 Clab	280		$1.59	$0.10		$1.69	
Chain link 8-10 ft (2.5-3 m) Removal	02220-220-1700	L.F.	B-6	445		$1.53	$1.16		$2.69	
Wood, all types 4-6 ft ("1.5-2 m) high - Removal	02220-220-1775	L.F.	2 Clab	430		$1.03	$0.06		$1.09	
	user	L.F.								
	user	L.F.							$0.00	
	user	L.F.							$0.00	
	user	L.F.							$0.00	
Culvert Removal										
12 in (300 mm) Diameter	02220-220-2900	L.F.	B-6	175	$8.36	$3.88	$2.94		$15.18	
18 in (450 mm) Diameter	02220-220-2930	L.F.	B-6	150	$9.56	$4.53	$3.43		$17.52	
24 in (600 mm) Diameter	02220-220-2960	L.F.	B-6	120	$11.16	$5.66	$4.29		$21.11	
36 in (1m) Diameter	02220-220-3000	L.F.	B-6	90	$13.38	$7.55	$5.72		$26.65	
Pipeline Removal										
0.75 in (20mm) - 4 in (100 mm) diameter	02220-381-1600	L.F.	B-20	700	$5.16	$1.52	$0.04		$6.72	
6 in (150 mm) - 8 in (200 mm)	02220-381-1700	L.F.	B-20	500	$5.81	$2.13	$0.06		$8.00	
10 in (250 mm) - 18 in (450 mm)	02220-381-1800	L.F.	B-20	300	$6.63	$3.55	$0.09		$10.27	
20 in (500 mm) - 36 in (1 m)	02220-381-1900	L.F.	B-20	200	$7.75	$5.33	$0.14		$13.22	
Pipe and Drainpipe Installation										
Water 4in (100mm) 40ft (12m) length, welded HDPE	02510-760-0100	L.F.	B-22A	400	$64.48	$3.26	$2.93		$70.67	
Water 6in (150mm) 40ft (12m) length, welded HDPE	02510-760-0200	L.F.	B-22A	380	$82.62	$3.43	$3.09		$89.14	
Water 12in (300mm) 40ft (12m) length, welded HDPE	02510-760-0500	L.F.	B-22A	260	$172.77	$5.02	$4.51		$182.30	
Drain 4in (100mm) perforated PVC	02620-630-2100	L.F.	B-14	315	$85.16	$5.52	$0.27		$90.95	
Drain 6in (150mm) perforated PVC	02620-630-2110	L.F.	B-14	300	$103.65	$5.80	$0.28		$109.73	
Drain 4in (100mm) corrugated, perf or plain	02620-660-0040	L.F.	2 Clab	1200	$85.16	$0.37	$0.02		$85.55	
Drain 6in (150mm) corrugated., perf or plain	02620-660-0060	L.F.	2 Clab	900	$108.15	$0.49	$0.03		$108.67	

Closure Cost Estimate
Misc. Unit Costs

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Drain Rock Preparation										
Crushing		C.Y.							$16.07	
Screening		C.Y.							$8.57	
TOTAL									$24.64	
Misc.										
Backhoe work	02210-700-0120	C.Y.	B-11M	28		$11.30	$1.99		$13.29	
Powerline and Transformer Removal										
Single Pole		mile							$11,220.00	
Double Pole		mile							$17,850.00	
Transformer (9)		ea.							$28,050.00	
NOTES:										
(7) Single Pole Source:										
(8) Double Pole Source:										
(9) Transformer Source:										

Erosion and Sedimentation Control

Hourly productivity rates and crew composition from Means Heavy Construction 2005 Edition by permission of R.S.Means/Reed Construction Data .
All equipment, labor and material unit costs are from Labor Costs, Equipment Costs and Material Costs spreadsheets

	Means Number	Unit	Crew	Daily Output	Materials	Labor	Equipment	Premium	Total	Notes
Rip-Rap & Rock Lining										
Rip-Rap 3/8 to 1/4 CY (m3) pieces, grouted	02370-450-0110	S.Y.	B-13	80	$25.60	$20.74	$0.93	200%	$141.81	assumes on-site source of rip-rap
Rip-Rap 18 in (450 mm) min thick, no grout	02370-450-0200	S.Y.	B-13	53	$46.08	$31.30	$1.40	200%	$236.34	assumes on-site source of rip-rap
Gabions, 6 in (150 mm) deep	02370-450-0400	S.Y.	B-13	200	$26.78	$8.29	$0.37	15%	$40.75	assumes on-site source rock fill for gabions
Gabions, 9 in (250 mm) deep	02370-450-0500	S.Y.	B-13	163	$41.92	$10.18	$0.46	15%	$60.44	assumes on-site source rock fill for gabions
Gabions, 12 in (300 mm) deep	02370-450-0200	S.Y.	B-13	153	$45.58	$10.84	$0.49	18%	$67.15	assumes on-site source rock fill for gabions
Gabions, 18 in (450 mm) deep	02370-450-0200	S.Y.	B-13	102	$60.88	$16.26	$0.73	25%	$97.34	assumes on-site source rock fill for gabions
Gabions, 36 in (1m) deep	02370-450-0200	S.Y.	B-13	60	$111.12	$27.65	$1.24	60%	$224.02	assumes on-site source rock fill for gabions
HDEP Liner Installation										
Finish grading large area	2310-100-0100	S.F.	B-11L	18000	$0.30	$0.03	$0.05	125%	$0.85	
Compaction-riding, vibrating roller - 12in (300mm) lifts	2315-310-5100	C.Y.	B-10Y	2600	$0.96	$0.21	$0.03	125%	$2.70	
60 mil HDPE	2660-610-0010	S.F.	3 Skwk	1600	$11.92	$0.78	$0.06		$12.76	
80 mil HDPE	user	S.F.	3 Skwk	149		$8.35	$0.62		$8.97	
40 mil VLDPE	user	S.F.	3 Skwk	150		$8.29	$0.62		$8.91	
	user	S.F.	3 Skwk	149		$8.35	$0.62		$8.97	
	user	S.F.	3 Skwk	149		$8.35	$0.62		$8.97	

Closure Cost Estimate
Misc. Unit Costs

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Construction Management Support											
Office Trailer, Furnished, no hook-ups	0150-500-0250	mo.			$637.50				$637.50		
Toilet Portable, chemical	1590-400-6410	mo.			$60.00				$60.00		
TOTAL					$697.50				$697.50		
Pump and Casing Removal											
	Pump Type	Measurement	Unit				Labor	Equipment		Total	Notes
Pump Removal											
	Submersible	ft to pump	L.F.				$4.43	$7.41		$11.84	
	Line Shaft	ft to pump	L.F.				$8.90	$17.29		$26.19	
NOTES:											
(10) Pump Removal Source:											

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EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Crew Size	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
RIPPING					
Rip road Waste rock dumps, heaps, tails - rip flat surfaces Surface preparation Scarify					
Small Dozer w/ multi-shank					
D7R		1	$128.02	$29.37	$157.39
Totals			$128.02	$29.37	$157.39
Medium Dozer w/ multi-shank					
D9R		1	$202.16	$29.37	$231.53
Totals			$202.16	$29.37	$231.53
Large Dozer w/ multi-shank					
D10R		1	$261.99	$29.37	$291.36
Totals			$261.99	$29.37	$291.36
Grader w/ multi-shank					
16G/H		1	$151.31	$29.37	$180.68
Totals			$151.31	$29.37	$180.68
GRADING					
Grading storage and structure areas Grading waste rock dumps and heaps Grading landfills Constructing pit safety berms					
Small Dozer Fleet					
D7R		1	$128.02	$29.37	$157.39
Totals			$128.02	$29.37	$157.39
Medium Dozer Fleet					
D9R		1	$202.16	$29.37	$231.53
Totals			$202.16	$29.37	$231.53
Large Dozer Fleet					
D10R		1	$261.99	$29.37	$291.36
Totals			$261.99	$29.37	$291.36
EXPLORATION GRADING					
Backfilling and grading exploration trenches Grading flat exploration roads					
Small Dozer Fleet					
D6R		1	$63.76	$29.37	$93.13
Totals			$63.76	$29.37	$93.13
Medium Dozer Fleet					
D7R		1	$128.02	$29.37	$157.39
Totals			$128.02	$29.37	$157.39
Large Dozer Fleet					
D8R		1	$155.92	$29.37	$185.29
Totals			$155.92	$29.37	$185.29

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan - Reclamation Plan
Date of Submittal: January 15, 2018
File Name: SRCE_Version_1_4_1_017_(August 2018) Final.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: Alamosa Baseline SRCE Cost Data USR 1-2018 El Grande Reclamation Costs (1-15).xlsm
Cost Estimate Type: Surety Cost Basis: Alamosa, Colorado

EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Crew Size	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
EXCAVATING					
Earthen Berms					
Diversion ditch excavation and backfill					
Underground openings backfill - excavate and place					
Pit berm construction (excavator option)					
Small Excavator					
325C		1	$93.72	$29.37	$123.09
Totals			$93.72	$29.37	$123.09
Medium Excavator					
345B		1	$139.60	$29.37	$168.97
Totals			$139.60	$29.37	$168.97
Large Excavator					
385BL		1	$203.97	$29.37	$233.34
Totals			$203.97	$29.37	$233.34
EXCAVATE AND RECONTOUR					
Recontour large roads (haul roads, access roads, etc.)					
Ponds - Excavate and pull liner and bury					
Small Excavator + Dozer					
325C		1	$93.72	$29.37	$123.09
D7R		1	$128.02	$29.37	$157.39
Total Equipment			$221.74	$58.74	$280.48
Medium Excavator + Dozer					
345B		1	$139.60	$29.37	$168.97
D9R		1	$202.16	$29.37	$231.53
Totals			$341.76	$58.74	$400.50
Large Excavator + Dozer					
385BL		1	$203.97	$29.37	$233.34
D10R		1	$261.99	$29.37	$291.36
Totals			$465.96	$58.74	$524.70
EXPLORATION ROAD/PAD RECONTOUR					
Recontour small roads (exploration roads, service roads, etc.)					
Cut and Fill reclamation on slopes					
Drill pad recountour					
Drill sump backfill					
Small Dozer					
D6R		1	$63.76	$29.37	$93.13
Totals			$63.76	$29.37	$93.13
Large Dozer					
D8R		1	$155.92	$29.37	$185.29
Totals			$155.92	$29.37	$185.29
Grader					
14G/H		1	$105.96	$29.37	$135.33
Totals			$105.96	$29.37	$135.33
Small Excavator					
320C		1	$68.18	$29.37	$97.55
Totals			$68.18	$29.37	$97.55
Medium Excavator					
325C		1	$93.72	$29.37	$123.09
Totals			$93.72	$29.37	$123.09

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan - Reclamation Plan
Date of Submittal: January 15, 2018
File Name: SRCE_Version_1_4_1_017_(August 2018) Final.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: Alamosa Baseline SRCE Cost Data USR 1-2018 El Grande Reclamation Costs (1-15).xlsm
Cost Estimate Type: Surety Cost Basis: Alamosa, Colorado

EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Crew Size	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
LOAD, HAUL AND PLACE MATERIAL					
Rock placement					
Haul overburden for backfill					
Haul borrow for backfill					
Haul cover or growth media					
Small Truck/Loader Fleet					
725		Calculated	$10.90	$40.30	$51.20
966G	Loader	1	$13.34	$29.37	$42.71
D7R		1	$128.02	$29.37	$157.39
Totals			$152.26	$99.04	$251.30
Medium Truck/Loader Fleet					
740		Calculated	$17.05	$40.30	$57.35
988G	Loader	1	$28.07	$29.37	$57.44
D8R		1	$155.92	$29.37	$185.29
Totals			$201.04	$99.04	$300.08
Large Truck/Loader Fleet					
769D		Calculated	$21.46	$40.30	$61.76
988G	Loader	1	$28.07	$29.37	$57.44
D7R		1	$128.02	$29.37	$157.39
Totals			$177.55	$99.04	$276.59
Extra Large Truck/Loader Fleet					
777D		Calculated	$38.86	$40.30	$79.16
992G	Loader	1	$53.36	$29.37	$82.73
D7R		1	$128.02	$29.37	$157.39
Totals			$220.24	$99.04	$319.28
Scraper/Dozer Fleet					
631G		Calculated	$196.57	$29.37	$225.94
D10R		1	$261.99	$29.37	$291.36
D7R		1	$128.02	$29.37	$157.39
Totals			$586.58	$88.11	$674.69
Tandem Scraper Fleet					
637G		2	$241.76	$29.37	$271.13
D7R		1	$128.02	$29.37	$157.39
Totals			$369.78	$58.74	$428.52
MISC. LOAD AND HAUL AND EARTHWORKS					
Sludge removal					
Drainage controls					
Misc. - Cat 325B Excavator / 10-12 yd3 Truck					
325C		1	$93.72	$29.37	$123.09
Dump Truck (10-12 yd3)		1	$12.06	$40.30	$52.36
Totals			$105.78	$69.67	$175.45
Misc. - Cat D9R Dozer/ Loader (5 yd3) / 10-12 yd3 Truck					
D9R		1	$202.16	$29.37	$231.53
966G		1	$13.34	$29.37	$42.71
Dump Truck (10-12 yd3)		1	$12.06	$40.30	$52.36
Totals			$227.56	$99.04	$326.60
Misc. - Cat D6 Dozer / Cat 966 Loader / 10-12 yd3 Truck					
D6R		1	$63.76	$29.37	$93.13
966G		1	$13.34	$29.37	$42.71
Dump Truck (10-12 yd3)		1	$12.06	$40.30	$52.36
Totals			$89.16	$99.04	$188.20

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan - Reclamation Plan
Date of Submittal: January 15, 2018
File Name: SRCE_Version_1_4_1_017_(August 2018) Final.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: Alamosa Baseline SRCE Cost Data USR 1-2018 El Grande Reclamation Costs (1-15).xlsm
Cost Estimate Type: Surety Cost Basis: Alamosa, Colorado

EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Crew Size	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
CONCRETE BREAKING					
Slab demolition					
Footing demolition					
Wall demolition					
Small - Cat 325B Excavator w/ H140D s Hammer					
325C		1	$93.72	$29.37	$123.09
H-120 (fits 325)		1	$0.00	$0.00	$0.00
D9R		1	$202.16	$29.37	$231.53
Totals			$295.88	$58.74	$354.62
Medium - Cat 345B Excavator w/ H180D s Hammer					
345B		1	$139.60	$29.37	$168.97
H-160 (fits 345)		1	$0.00	$0.00	$0.00
D9R		1	$202.16	$29.37	$231.53
Totals			$341.76	$58.74	$400.50
Large - Cat 385B Excavator w/ H180D s Hammer					
385BL		1	$203.97	$29.37	$233.34
H-180 (fits 365/385)		1	$0.00	$0.00	$0.00
D9R		1	$202.16	$29.37	$231.53
Totals			$406.13	$58.74	$464.87
DRILL HOLE ABANDONMENT					
Drill Hole - Grout or Cement					
Pump (plugging) Drill Rig		1	$23.20	$0.00	$23.20
Driller's Helper		2	$0.00	$50.16	$50.16
Totals			$23.20	$50.16	$73.36
Drill Hole - Inert Media (Means Crew B-11M+ 1 Laborer)					
420D 4WD Backhoe		1	$6.96	$39.54	$46.50
General Laborer		1	$0.00	$27.79	$27.79
Totals			$6.96	$67.33	$74.29
Drill Hole - Casing Perforation or Removal					
Heavy Duty Drill Rig		1	$27.84	$0.00	$27.84
Driller's Helper		2	$0.00	$50.16	$50.16
Totals			$27.84	$50.16	$78.00
MAINTENANCE FLEET					
Road Grading, Dust Suppression, Clean Up					
Maintenance - Small Water Truck and Cat 14G Grader					
613E (5,000 gal) Water Wagon		1	$13.92	$40.30	$54.22
120H		1	$65.38	$29.37	$94.75
Totals			$79.30	$69.67	$148.97
Maintenance - Medium Water Truck and Cat 16G Grader					
613E (5,000 gal) Water Wagon		1	$13.92	$40.30	$54.22
14G/H		1	$105.96	$29.37	$135.33
Totals			$119.88	$69.67	$189.55
Maintenance - Large Water Truck and Cat 16G Grader					
621E (8,000 gal) Water Wagon		1	$24.94	$40.30	$65.24
16G/H		1	$151.31	$29.37	$180.68
Totals			$176.25	$69.67	$245.92
PROJECT SUPERVISION					
Foreman		1	$0.00	$66.84	$66.84
Supervisor's Truck		1	$6.07	$0.00	$6.07
Totals			$6.07	$66.84	$72.91

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan - Reclamation Plan
Date of Submittal: January 15, 2018
File Name: SRCE_Version_1_4_1_017_(August 2018) Final.xlsm
Model Version: Version 1.4.1
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Cost Estimate Type: Surety Cost Basis: Alamosa, Colorado

EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Crew Size	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
MEANS CREW DEFINITIONS					
Crew composition from Means Heavy Construction 2005 Edition by permission of R.S.Means/Reed Construction Data . For use with misc. unit costs where Means is the source for productivity					
1 Clab - Seedling Planting/Block Wall Demolition					
General Laborer		1	$0.00	$27.79	$27.79
Totals			$0.00	$27.79	$27.79
2 Clab - Barbed Wire/Wood Fence Removal, Drainpipe Installation, Pumping, Evaporation					
General Laborer		2	$0.00	$55.58	$55.58
Light Truck - 1.5 Ton		1	$3.48	$0.00	$3.48
Totals			$3.48	$55.58	$59.06
2 Clab + Excavator - Pond Liner Cut and Fold					
General Laborer		2	$0.00	$55.58	$55.58
325C		1	$93.72	$29.37	$123.09
Totals			$93.72	$84.95	$178.67
2 Clab + Welder - Bat Gates					
General Laborer		2	$0.00	$55.58	$55.58
Welding Equipment		1	$4.64	$0.00	$4.64
Light Truck - 1.5 Ton		1	$3.48	$0.00	$3.48
Totals			$8.12	$55.58	$63.70
3 Clab - Foam Adit Plugs					
General Laborer		2	$0.00	$55.58	$55.58
420D 4WD Backhoe		1	$6.96	$39.54	$46.50
Light Truck - 1.5 Ton		1	$3.48	$0.00	$3.48
Totals			$10.44	$95.12	$105.56
3 Clab + Welder - Culvert Bat Gate					
General Laborer		2	$0.00	$55.58	$55.58
Welding Equipment		1	$4.64	$0.00	$4.64
420D 4WD Backhoe		1	$6.96	$39.54	$46.50
Light Truck - 1.5 Ton		1	$3.48	$0.00	$3.48
Totals			$15.08	$95.12	$110.20
3 Clab D - 3 Laborers + Foreman - Decontamination					
General Laborer		3	$0.00	$83.37	$83.37
Foreman		1	$0.00	$66.84	$66.84
Supervisor's Truck		1	$6.07	$0.00	$6.07
Light Truck - 1.5 Ton		1	$3.48	$0.00	$3.48
Totals			$9.55	$150.21	$159.76
3 SKWK - Liner Installation					
Skilled Laborer		3	$0.00	$115.98	$115.98
HDEP Welder (pipe or liner)		1	$4.64	$0.00	$4.64
420D 4WD Backhoe		1	$6.96	$39.54	$46.50
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00
Totals			$11.60	$155.52	$167.12

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan - Reclamation Plan
Date of Submittal: January 15, 2018
File Name: SRCE_Version_1_4_1_017_(August 2018) Final.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: Alamosa Baseline SRCE Cost Data USR 1-2018 El Grande Reclamation Costs (1-15).xlsm
Cost Estimate Type: Surety Cost Basis: Alamosa, Colorado

EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Crew Size	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
B-3 - Small Building Demolition					
LABOR					
General Laborer		2	$0.00	$55.58	$55.58
Foreman		1	$0.00	$66.84	$66.84
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00
EQUIPMENT					
928G		1	$64.39	$29.37	$93.76
Dump Truck (10-12 yd3)		2	$24.12	$80.60	$104.72
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00
Totals			$88.51	$232.39	$320.90
B-6 - Chain Link Fence/Culvert Removal					
General Laborer		2	$0.00	$55.58	$55.58
928G		1	$64.39	$29.37	$93.76
Totals			$64.39	$84.95	$149.34
B-8 - Large Building Demolition					
LABOR					
General Laborer		2	$0.00	$55.58	$55.58
Foreman		1	$0.00	$66.84	$66.84
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00
EQUIPMENT					
928G		1	$64.39	$29.37	$93.76
20 Ton Crane		1	$9.28	$29.37	$38.65
Dump Truck (10-12 yd3)		2	$24.12	$80.60	$104.72
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00
			$0.00		$0.00
Totals			$97.79	$261.76	$359.55
B-9 - Concrete Wall Demolition					
General Laborer		4	$0.00	$111.16	$111.16
Foreman		1	$0.00	$66.84	$66.84
Air Compressor + tools			$2.32	$0.00	$2.32
Totals			$2.32	$178.00	$180.32

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan - Reclamation Plan
Date of Submittal: January 15, 2018
File Name: SRCE_Version_1_4_1_017_(August 2018) Final.xlsm
Model Version: Version 1.4.1
Cost Data: User Data
Cost Data File: Alamosa Baseline SRCE Cost Data USR 1-2018 El Grande Reclamation Costs (1-15).xlsm
Cost Estimate Type: Surety Cost Basis: Alamosa, Colorado

EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Crew Size	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
B-10Y - General Compaction					
General Laborer		1	$0.00	$27.79	$27.79
CS533E Vibratory Roller		1	$8.70	$39.54	$48.24
Totals			$8.70	$67.33	$76.03
B-11L - Fine Grading for Evaporation Pond Liner Base					
General Laborer		1	$0.00	$27.79	$27.79
14G/H		1	$105.96	$29.37	$135.33
Totals			$105.96	$57.16	$163.12
B-11M - Backhoe Work					
420D 4WD Backhoe		1	$6.96	$39.54	$46.50
Totals			$6.96	$39.54	$46.50
B-12G - Rip-Rap Machine Placed (Modified)					
966G		1	$13.34	$29.37	$42.71
325C		1	$93.72	$29.37	$123.09
Light Truck - 1.5 Ton		1	$3.48	$0.00	$3.48
Totals			$110.54	$58.74	$169.28
B-13 - Grouted Rip-Rap & Gabion Baskets					
General Laborer		4	$0.00	$111.16	$111.16
Foreman		1	$0.00	$66.84	$66.84
20 Ton Crane		1	$9.28	$29.37	$38.65
Totals			$9.28	$207.37	$216.65
B-14 PVC Drain Pipe Installation					
Foreman		1	$0.00	$66.84	$66.84
General Laborer		4	$0.00	$111.16	$111.16
420D 4WD Backhoe		1	$6.96	$39.54	$46.50
Light Truck - 1.5 Ton		1	$3.48	$0.00	$3.48
Totals			$10.44	$217.54	$227.98
B-20 - Remove Pipelines					
Foreman		1	$0.00	$66.84	$66.84
Skilled Laborer		1	$0.00	$38.66	$38.66
General Laborer		1	$0.00	$27.79	$27.79
Light Truck - 1.5 Ton		1	$3.48	$0.00	$3.48
Totals			$3.48	$133.29	$136.77
B-22A - HDEP Installation - Pipe or Liner					
Skilled Laborer		1	$0.00	$38.66	$38.66
General Laborer		2	$0.00	$55.58	$55.58
D7R		1	$128.02	$29.37	$157.39
Light Truck - 1.5 Ton		1	$3.48	$0.00	$3.48
420D 4WD Backhoe		1	$6.96	$39.54	$46.50
Generator 5KW		1	$3.48	$0.00	$3.48
HDEP Welder (pipe or liner)		1	$4.64	$0.00	$4.64
Totals			$146.58	$163.15	$309.73
B-80A - Install Barbed Wire Fence					
General Laborer		3	$0.00	$83.37	$83.37
Light Truck - 1.5 Ton		1	$3.48	$0.00	$3.48
Totals			$3.48	$83.37	$86.85

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan - Reclamation Plan
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Model Version: Version 1.4.1
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Cost Estimate Type: Surety Cost Basis: Alamosa, Colorado

EQUIPMENT FLEETS

ACTIVITY AND FLEET		Standard Crew Size	EQUIPMENT UNIT COST (Hourly)	TOTAL LABOR UNIT COST (Hourly)	TOTAL COST (Hourly)
B-80C - Install Chain Link Fence (Flatbed truck has small crane)					
General Laborer		3	$0.00	$83.37	$83.37
Light Truck - 1.5 Ton		1	$3.48	$0.00	$3.48
Totals			$3.48	$83.37	$86.85
C-14B - Elevated Concrete Slabs (Reinforced Concrete Shaft Covers)					
Foreman		1	$0.00	$66.84	$66.84
Supervisor's Truck		1	$6.07	$0.00	$6.07
Carpenter		16	$0.00	$532.64	$532.64
General Laborer		2	$0.00	$55.58	$55.58
Rodmen (reinforcing concrete)		4	$0.00	$121.84	$121.84
Cement finisher		2	$0.00	$64.32	$64.32
Gas Engine Vibrator		1	$2.32	$39.54	$41.86
Concrete Pump		1	$23.20	$0.00	$23.20
Totals			$31.59	$880.76	$912.35
C-14D - Concrete Walls Formed in Place (Reinforced Concrete Adit Bulkheads)					
Foreman		1	$0.00	$66.84	$66.84
Supervisor's Truck		1	$6.07	$0.00	$6.07
Carpenter		18	$0.00	$599.22	$599.22
General Laborer		2	$0.00	$55.58	$55.58
Rodmen (reinforcing concrete)		2	$0.00	$60.92	$60.92
Cement finisher		1	$0.00	$32.16	$32.16
Gas Engine Vibrator		1	$2.32	$39.54	$41.86
Concrete Pump		1	$23.20	$0.00	$23.20
Totals			$31.59	$854.26	$885.85

Closure Cost Estimate
Seed Mixture

Project Name: Dicaperl El Grande Closeout Plan - Reclamation Plan - Reclamation Plan
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File Name: SRCE_Version_1_4_1_017_(August 2018) Final.xlsm
Model Version: Version 1.4.1
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Cost Estimate Type: Surety **Cost Basis:** Alamosa, Colorado

Seed Mixture

Common Name	Scientific Name	Species Number of Seeds / lb	Species % in Mix	PLS/acre	Cost/Lb	Cost/Acre
Grasses						
Blue Grama	*Bouteloua gracilis*		12.00	0.98	2.68	$2.63
Sideoats Grama	*Bouteloua curtipendula*		8.00	2.12	3.26	$6.91
Westerm Wheatgrass	*Pascopyrum smithii*		15.00	9.21	6.73	$61.98
Sand Dropseed			8.00	0.10	10.40	$1.04
Bottlebrush squirreltail			10.00	2.83	3.52	$9.96
Rocky Mountain Penstemon			4.00	0.44	7.95	$3.50
Purple Prairie Clover			4.00	1.30	6.12	$7.96
Western Yarrow			5.00	0.12	1.90	$0.23
Lewis Flax			5.00	1.15	2.45	$2.82
Mexican Hat			5.00	0.46	6.73	$3.10
Desert Marigold			5.00	0.32	10.40	$3.33
Munro Globemallow			3.00	0.42	2.52	$1.06
Forbs						
Flourwing Saltbush			3.00	3.18	7.95	$25.28
Basin Big Sage			4.00	0.11	6.12	$0.67
Fridged Sageworth			6.00	0.09	1.90	$0.17
Cliffrose			3.00	3.00	2.44	$7.32
Shrubs						
Total				$25.83		$137.95

Source:

Notes:

Format Version:	*SRCE Data File v1.12*
File Name:	*Alamosa Baseline SRCE Cost Data USR 1-2018 El Grande Reclamation Costs (1-15).xlsm*
Date:	*October 13, 2017*
Cost Type:	*User Data*
Author/Source:	*CDM Smith*

Units of Measure:	**Imperial**

No. of Bases/Regions:	1

Basis/Region	Basis/Region Name	Basis/Region Description
Basis 1	*Alamosa, Colorado*	Southern Colorado
Basis 2		
Basis 3		
Basis 4		
Basis 5		
Basis 6		
Basis 7		
Basis 8		
Basis 9		
Basis 10		
Basis 11		
Basis 12		
Basis 13		
Basis 14		
Basis 15		

Equipment Costs

File Name:	*Alamosa Baseline SRCE Cost Data USR 1*
Date:	*October 13, 2017*
Cost Basis:	*User Data*
Author/Source:	*CDM Smith*

Monthly Rental Basis (operating hrs/ period)	*176*	*176*			

MONTHLY EQUIPMENT RATE TABLE [Cost Per Month] (1)

EQUIPMENT TYPE (2)	Basis 1	Basis 2	Basis 3	Basis 4	Basis 5
	Alamosa, Colorado				
Bulldozers					
D6R	$8,670				
D6R w/ Winch	$15,259				
D7R	$19,469				
D8R	$23,460				
D9R	$29,762				
D10R	$38,760				
D11R	$47,954				
Wheeled Dozers					
824G					
834G					
844					
854G					
Motor Graders					
120H	$9,874				
14G/H	$16,098				
16G/H	$23,568				
24M					
Track Excavators					

Equipment Costs

File Name:	*Alamosa Baseline SRCE Cost Data USR 1*
Date:	*October 13, 2017*
Cost Basis:	*User Data*
Author/Source:	*CDM Smith*

Monthly Rental Basis (operating hrs/ period)	*176*	*176*			
312C	$8,446				
320C	$9,999				
325C	$13,801				
330C	$16,809				
345B	$20,241				
365BL	$24,771				
385BL	$28,753				
Scrapers					
631G	$28,472				
637G PP	$32,852				
Wheeled Loaders					
924G	$8,280				
928G	$9,903				
950G	$11,961				
966G					
972G					
980G					
988G					
990					
992G					
994D					
L-2350					
Shovels					
KOM PC2000					
KOM PC3000					

Equipment Costs

File Name:	*Alamosa Baseline SRCE Cost Data USR 1*
Date:	*October 13, 2017*
Cost Basis:	*User Data*
Author/Source:	*CDM Smith*

Monthly Rental Basis (operating hrs/ period)	*176*	*176*			
KOM PC4000					
KOM PC5500					
KOM PC8000					
Hydraulic Hammers					
H-120 (fits 325)					
H-160 (fits 345)					
H-180 (fits 365/385)					
Demolition Shears					
S340 (fits 322/325/330)	$8,280				
S365 (fits 330/345)	$9,903				
S390 (fits 365/385)	$11,961				
Demolition Grapples					
G315 (fits 322/325)	$8,260				
G320 (fits 325/330)	$9,903				
G330 (fits 345/365)	$11,961				
Other Equipment					
420D 4WD Backhoe					
428D 4WD Backhoe					
CS533E Vibratory Roller					
CS663E Vibratory Roller					
CP533E Sheepsfoot Compactor					
CP663E Sheepsfoot Compactor					
Light Truck - 1.5 Ton					
Supervisor's Truck	$660				
Flatbed Truck					

Equipment Costs

File Name:	*Alamosa Baseline SRCE Cost Data USR 1*
Date:	*October 13, 2017*
Cost Basis:	*User Data*
Author/Source:	*CDM Smith*

Monthly Rental Basis (operating hrs/ period)	*176*	*176*			
Air Compressor + tools					
Welding Equipment					
Heavy Duty Drill Rig					

Equipment Costs

File Name:	*Alamosa Baseline SRCE Cost Data USR 1*
Date:	*October 13, 2017*
Cost Basis:	*User Data*
Author/Source:	*CDM Smith*

Monthly Rental Basis (operating hrs/ period)	*176*	*176*			
Pump (plugging) Drill Rig					
Concrete Pump					
Gas Engine Vibrator					
Generator 5KW					
HDEP Welder (pipe or liner)					
5 Ton Crane					
20 Ton Crane					
50 Ton Crane					
120 Ton Crane					
Trucks					
725 (articulated)					
730 (articulated)					
735 (articulated)					
740 (articulated)					
769D					
773E					
777D					
785C					
793C					
797B					
613E (5,000 gal) Water Wagon					
621E (8,000 gal) Water Wagon					
777D Water Truck					
785C Water Truck					
Dump Truck (10-12 yd^3) (5)					

Equipment Costs

File Name:	*Alamosa Baseline SRCE Cost Data USR 1*
Date:	*October 13, 2017*
Cost Basis:	*User Data*
Author/Source:	*CDM Smith*

Monthly Rental Basis (operating hrs/ period)	*176*	*176*			

NOTES:					
(1) Power Equipment Source:					
(2) Power Equipment Type:	Catepillar model or equivalent, LeTourneau loader, Komatsu shovels	Catepillar model or equivalent, LeTourneau loader, Komatsu shovels	Catepillar model or equivalent, LeTourneau loader, Komatsu shovels	Catepillar model or equivalent, LeTourneau loader, Komatsu shovels	Catepillar model or equivalent, LeTourneau loader, Komatsu shovels
(3) Drilliing Equipment Source:					
(4) Other Equipment Source:					

PREVENTATIVE MAINTENANCE COST [Cost Per Hour] (1)

EQUIPMENT TYPE	Basis 1	Basis 2	Basis 3	Basis 4	Basis 5
	Alamosa, Colorado				
Bulldozers					
D6R					
D6R w/ Winch					
D7R					
D8R					
D9R					
D10R					
D11R					
Wheeled Dozers					
824G					
834G					
844					

Equipment Costs

File Name:	*Alamosa Baseline SRCE Cost Data USR 1*
Date:	*October 13, 2017*
Cost Basis:	*User Data*
Author/Source:	*CDM Smith*

Monthly Rental Basis (operating hrs/ period)	*176*	*176*			
854G					
Motor Graders					
120H					
14G/H					
16G/H					
24M					
Track Excavators					
312C					
320C					
325C					
330C					
345B					
365BL					
385BL					

Equipment Costs

File Name:	*Alamosa Baseline SRCE Cost Data USR 1*
Date:	*October 13, 2017*
Cost Basis:	*User Data*
Author/Source:	*CDM Smith*

Monthly Rental Basis (operating hrs/ period)	*176*	*176*			
Scrapers					
631G					
637G PP					
Wheeled Loaders					
924G					
928G					
950G					
966G					
972G					
980G					
988G					
990					
992G					
994D					
L-2350					
Shovels					
KOM PC2000					
KOM PC3000					
KOM PC4000					
KOM PC5500					
KOM PC8000					
Hydraulic Hammers					
H-120 (fits 325)	N/A	N/A	N/A	N/A	N/A
H-160 (fits 345)	N/A	N/A	N/A	N/A	N/A
H-180 (fits 365/385)	N/A	N/A	N/A	N/A	N/A

Equipment Costs

File Name:	*Alamosa Baseline SRCE Cost Data USR 1*
Date:	*October 13, 2017*
Cost Basis:	*User Data*
Author/Source:	*CDM Smith*

Monthly Rental Basis (operating hrs/ period)	*176*	*176*			
Demolition Shears					
S340 (fits 322/325/330)	N/A	N/A	N/A	N/A	N/A
S365 (fits 330/345)	N/A	N/A	N/A	N/A	N/A
S390 (fits 365/385)	N/A	N/A	N/A	N/A	N/A
Demolition Grapples					
G315 (fits 322/325)	N/A	N/A	N/A	N/A	N/A
G320 (fits 325/330)	N/A	N/A	N/A	N/A	N/A
G330 (fits 345/365)	N/A	N/A	N/A	N/A	N/A
Other Equipment					
420D 4WD Backhoe					
428D 4WD Backhoe					
CS533E Vibratory Roller					
CS663E Vibratory Roller					
CP533E Sheepsfoot Compactor					
CP663E Sheepsfoot Compactor					
Light Truck - 1.5 Ton					
Supervisor's Truck					
Flatbed Truck					
Air Compressor + tools					
Welding Equipment					
Heavy Duty Drill Rig					
Pump (plugging) Drill Rig					
Concrete Pump					
Gas Engine Vibrator					
Generator 5KW					

Equipment Costs

File Name:	*Alamosa Baseline SRCE Cost Data USR 1*
Date:	*October 13, 2017*
Cost Basis:	*User Data*
Author/Source:	*CDM Smith*

Monthly Rental Basis (operating hrs/ period)	*176*	*176*			
HDEP Welder (pipe or liner)					
5 Ton Crane					
20 Ton Crane					
50 Ton Crane					
120 Ton Crane					
Trucks					
725 (articulated)					
730 (articulated)					
735 (articulated)					
740 (articulated)					
769D					
773E					
777D					
785C					

Equipment Costs

File Name:	*Alamosa Baseline SRCE Cost Data USR 1*
Date:	*October 13, 2017*
Cost Basis:	*User Data*
Author/Source:	*CDM Smith*

Monthly Rental Basis (operating hrs/ period)	*176*	*176*			
793C					
797B					
613E (5,000 gal) Water Wagon					
621E (8,000 gal) Water Wagon					
777D Water Truck					
785C Water Truck					
Dump Truck (10-12 yd3) (5)					
(1) PM Source:					

G.E.T CONSUMPTION [Cost Per Hour] (1) (Wear Items)

EQUIPMENT TYPE	Basis 1 *Alamosa, Colorado*	Basis 2	Basis 3	Basis 4	Basis 5
Bulldozers					
D6R					
D6R w/ Winch					
D7R					
D8R					
D9R					
D10R					
D11R					
Wheeled Dozers					
824G					
834G					

Equipment Costs

File Name:	*Alamosa Baseline SRCE Cost Data USR 1*
Date:	*October 13, 2017*
Cost Basis:	*User Data*
Author/Source:	*CDM Smith*

Monthly Rental Basis (operating hrs/ period)	*176*	*176*			
844					
854G					
Motor Graders					
120H					
14G/H					
16G/H					
24M					
Track Excavators					
312C					
320C					
325C					
330C					
345B					
365BL					
385BL					
Scrapers					
631G					
637G PP					
Wheeled Loaders					
924G					
928G					
950G					
966G					
972G					
980G					

Equipment Costs

File Name:	*Alamosa Baseline SRCE Cost Data USR 1*
Date:	*October 13, 2017*
Cost Basis:	*User Data*
Author/Source:	*CDM Smith*

Monthly Rental Basis (operating hrs/ period)	*176*	*176*			
988G					
990					
992G					
994D					
L-2350					
Shovels					
KOM PC2000					
KOM PC3000					
KOM PC4000					
KOM PC5500					
KOM PC8000					
Hydraulic Hammers					
H-120 (fits 325)					
H-160 (fits 345)					
H-180 (fits 365/385)					
Demolition Shears					
S340 (fits 322/325/330)					
S365 (fits 330/345)					
S390 (fits 365/385)					
Demolition Grapples					
G315 (fits 322/325)					
G320 (fits 325/330)					
G330 (fits 345/365)					
Other Equipment					
420D 4WD Backhoe					

Equipment Costs

File Name:	*Alamosa Baseline SRCE Cost Data USR 1*
Date:	*October 13, 2017*
Cost Basis:	*User Data*
Author/Source:	*CDM Smith*

Monthly Rental Basis (operating hrs/ period)	*176*	*176*			
428D 4WD Backhoe					
CS533E Vibratory Roller					
CS663E Vibratory Roller					
CP533E Sheepsfoot Compactor					
CP663E Sheepsfoot Compactor					
Light Truck - 1.5 Ton					
Supervisor's Truck					
Flatbed Truck					
Air Compressor + tools	N/A	N/A	N/A	N/A	N/A
Welding Equipment	N/A	N/A	N/A	N/A	N/A
Heavy Duty Drill Rig					
Pump (plugging) Drill Rig					
Concrete Pump	N/A	N/A	N/A	N/A	N/A
Gas Engine Vibrator	N/A	N/A	N/A	N/A	N/A
Generator 5KW	N/A	N/A	N/A	N/A	N/A
HDEP Welder (pipe or liner)	N/A	N/A	N/A	N/A	N/A
5 Ton Crane					
20 Ton Crane					
50 Ton Crane					
120 Ton Crane					
Trucks					
725 (articulated)					
730 (articulated)					
735 (articulated)					
740 (articulated)					
769D					

Equipment Costs

File Name:	*Alamosa Baseline SRCE Cost Data USR 1*
Date:	*October 13, 2017*
Cost Basis:	*User Data*
Author/Source:	*CDM Smith*

Monthly Rental Basis (operating hrs/ period)	*176*	*176*			
773E					
777D					
785C					
793C					
797B					
613E (5,000 gal) Water Wagon					
621E (8,000 gal) Water Wagon					
777D Water Truck					
785C Water Truck					
Dump Truck (10-12 yd3) (5)					
Notes: (1) G.E.T. Source:	CAT Historical Data	CAT Historical Data	CAT Historical Data	CAT Historical Data	QLD rates

TIRE COST TABLE [Cost Per Tire[1,2,3]]

EQUIPMENT TYPE	Basis 1 *Alamosa, Colorado*	Basis 2	Basis 3	Basis 4	Basis 5
Bulldozers					
D6R	N/A	N/A	N/A	N/A	N/A
D6R w/ Winch	N/A	N/A	N/A	N/A	N/A
D7R	N/A	N/A	N/A	N/A	N/A
D8R	N/A	N/A	N/A	N/A	N/A
D9R	N/A	N/A	N/A	N/A	N/A
D10R	N/A	N/A	N/A	N/A	N/A
D11R	N/A	N/A	N/A	N/A	N/A

Equipment Costs

File Name:	*Alamosa Baseline SRCE Cost Data USR 1*
Date:	*October 13, 2017*
Cost Basis:	*User Data*
Author/Source:	*CDM Smith*

Monthly Rental Basis (operating hrs/ period)	*176*	*176*			
Wheeled Dozers					
824G					
834G					
844					
854G					
Motor Graders					
120H					
14G/H					
16G/H					
24M					
Track Excavators					
312C	N/A	N/A	N/A	N/A	N/A
320C	N/A	N/A	N/A	N/A	N/A
325C	N/A	N/A	N/A	N/A	N/A
330C	N/A	N/A	N/A	N/A	N/A
345B	N/A	N/A	N/A	N/A	N/A
365BL	N/A	N/A	N/A	N/A	N/A
385BL	N/A	N/A	N/A	N/A	N/A
Scrapers					
631G					
637G PP					
Wheeled Loaders					
924G					
928G					
950G					

Equipment Costs

File Name:	*Alamosa Baseline SRCE Cost Data USR 1*
Date:	*October 13, 2017*
Cost Basis:	*User Data*
Author/Source:	*CDM Smith*

Monthly Rental Basis (operating hrs/ period)	*176*	*176*			
966G					
972G					
980G					
988G					
990					
992G					
994D					
L-2350					
Shovels					
KOM PC2000	N/A	N/A	N/A	N/A	N/A
KOM PC3000	N/A	N/A	N/A	N/A	N/A
KOM PC4000	N/A	N/A	N/A	N/A	N/A
KOM PC5500	N/A	N/A	N/A	N/A	N/A
KOM PC8000	N/A	N/A	N/A	N/A	N/A
Hydraulic Hammers					
H-120 (fits 325)	N/A	N/A	N/A	N/A	N/A
H-160 (fits 345)	N/A	N/A	N/A	N/A	N/A
H-180 (fits 365/385)	N/A	N/A	N/A	N/A	N/A
Demolition Shears					
S340 (fits 322/325/330)	N/A	N/A	N/A	N/A	N/A
S365 (fits 330/345)	N/A	N/A	N/A	N/A	N/A
S390 (fits 365/385)	N/A	N/A	N/A	N/A	N/A
Demolition Grapples					
G315 (fits 322/325)	N/A	N/A	N/A	N/A	N/A
G320 (fits 325/330)	N/A	N/A	N/A	N/A	N/A

Equipment Costs

File Name:	*Alamosa Baseline SRCE Cost Data USR 1*
Date:	*October 13, 2017*
Cost Basis:	*User Data*
Author/Source:	*CDM Smith*

Monthly Rental Basis (operating hrs/ period)	*176*	*176*			
G330 (fits 345/365)	N/A	N/A	N/A	N/A	N/A
Other Equipment					
420D 4WD Backhoe					
428D 4WD Backhoe					
CS533E Vibratory Roller	N/A	N/A	N/A	N/A	N/A
CS663E Vibratory Roller	N/A	N/A	N/A	N/A	N/A
CP533E Sheepsfoot Compactor	N/A	N/A	N/A	N/A	N/A
CP663E Sheepsfoot Compactor	N/A	N/A	N/A	N/A	N/A
Light Truck - 1.5 Ton					
Supervisor's Truck					
Flatbed Truck					
Air Compressor + tools	N/A	N/A	N/A	N/A	N/A
Welding Equipment	N/A	N/A	N/A	N/A	N/A
Heavy Duty Drill Rig					
Pump (plugging) Drill Rig					
Concrete Pump	N/A	N/A	N/A	N/A	N/A
Gas Engine Vibrator	N/A	N/A	N/A	N/A	N/A
Generator 5KW	N/A	N/A	N/A	N/A	N/A
HDEP Welder (pipe or liner)	N/A	N/A	N/A	N/A	N/A
5 Ton Crane					
20 Ton Crane					
50 Ton Crane					
120 Ton Crane					
Trucks					
725 (articulated)					

Equipment Costs

File Name:	*Alamosa Baseline SRCE Cost Data USR 1*
Date:	*October 13, 2017*
Cost Basis:	*User Data*
Author/Source:	*CDM Smith*

Monthly Rental Basis (operating hrs/ period)	*176*	*176*			
730 (articulated)					
735 (articulated)					
740 (articulated)					
769D					
773E					
777D					
785C					
793C					
797B					
613E (5,000 gal) Water Wagon					
621E (8,000 gal) Water Wagon					
777D Water Truck					
785C Water Truck					
Dump Truck (10-12 yd3) (5)					
Notes:					
(1) Unit Cost Basis:	Cost per tyre each	Cost per tyre each	Cost per tyre each	Cost per tyre each	Cost per tyre each
(2) Cost Basis:					
(3) Tire Cost Source:					
(4) Tire Wear Source (defined in model):	Caterpillar Handbook, Edition 37	Caterpillar Handbook, Edition 37	Caterpillar Handbook, Edition 37	Caterpillar Handbook, Edition 37	Caterpillar Handbook, Edition 37

File Name:	*CostData STD 3.xls*
Date:	*December 1, 2005*
Cost Basis:	*Standardized Data*
Author/Source:	*CDM Smith*

Administrative Cost Rates (%)

	Cost Ranges for Indirect Cost Percentages				
	<=	<=	<=	>	
1. Engineering, Design and Construction (ED&C) Plan (7)	$500,000	$2,500,000	$25,000,000	$25,000,000	Small Plan
Variable Rate	8%	6%		4%	0%
	<=	<=	<=	>	
2. Contingency (8)	$500,000	$5,000,000	$50,000,000	$50,000,000	Small Plan
Variable Rate	10%	8%	6%	4%	0%
3. Insurance (9)	1.5%	of labor costs			
4. Bond (10)	3.0%	of the O&M costs if O&M costs are >$100,000			
5. Contractor Profit (11)	10.0%	of the O&M costs			
	<=	<=	<=	>	
6. Contract Administration (12)	$1,000,000	$15,000,000	$25,000,000	$25,000,000	
Variable Rate	10%	8%		6%	

RECLAMATION COST ESTIMATION SUMMARY SHEET FOOTNOTES

NOTE :

2017 MOB/DEMOB using R.S. MEANS and SRCE equipment and DAVIS-BACON wages

blue font is for project specific user input

Miles one way from Washoe County Courthouse

Miles to project, one way: 81

Dicperal El Grande Mine

Hours travel time @ 55 MPH: 1.47

Equipment	Mobilization $/hour (1)	$ Flat Rate load & unload (2)	$/hour Deadhead (empty return cost (3)	Disassembly and assembly (4)	Permit cost $ (5)	Pilot car costs	# of units	One Way Mob Cost	Total Mob and Demob Cost
Bulldozers									
D6R	$ 101	$ 101	$ 101	$ -	$ -	$ -		$ -	$ -
D7R	$ 134	$ 134	$ 134	$ -	$ 25	$ 134	1	$ 689	$ 1,379
D8R	$ 158	$ 158	$ 158	$ -	$ 25	$ 188	1	$ 835	$ 1,670
D9R	$ 158	$ 158	$ 158	$ -	$ 25	$ 188	1	$ 835	$ 1,670
D10R	$ 158	$ 158	$ 158	$ 25,100	$ 25	$ 282		$ -	$ -
D11R (two transports) (7)	$ 158	$ 158	$ 158	$ 89,640	$ 25	$ 188		$ -	$ -
Motor Graders									
14G/H	$ 101	$ 101	$ 101	$ -	$ -	$ -	1	$ 397	$ 794
16G/H	$ 134	$ 134	$ 134	$ -	$ 25	$ 94		$ -	$ -
Track Excavators									
320C	$ 134	$ 134	$ 134	$ -	$ -	$ -		$ -	$ -
325C	$ 134	$ 134	$ 134	$ -	$ -	$ -		$ -	$ -
345B	$ 158	$ 158	$ 158	$ -	$ 25	$ 188	1	$ 835	$ 1,670
385BL	$ 158	$ 158	$ 158	$ 27,400	$ 25	$ 188		$ -	$ -
Scrapers									
631G	$ 158	$ 158	$ 158	$ -	$ 25	$ 188	3	$ 2,505	$ 5,011
637G PP	$ 158	$ 158	$ 158	$ -	$ 25	$ 188		$ -	$ -
Wheeled Loaders									
928G	$ 101	$ 101	$ 101	$ -	$ -	$ -		$ -	$ -
966G	$ 101	$ 101	$ 101	$ -	$ -	$ -		$ -	$ -
972G	$ 134	$ 134	$ 134	$ -	$ -	$ -		$ -	$ -
988G	$ 134	$ 134	$ 134	$ -	$ 25	$ 94	2	$ 1,298	$ 2,595
992G (two transports) (7)	$ 158	$ 158	$ 158	$ 47,800	$ 25	$ 188		$ -	$ -
Hydraulic Hammers									
H-120 (fits 325) no charge, mobilize with m	$ -	$ -	$ -	$ -	$ -	$ -		$ -	$ -
H-160 (fits 345) no charge, mobilize with m	$ -	$ -	$ -	$ -	$ -	$ -		$ -	$ -
H-180 (fits 365/385) no charge, mobilize wi	$ -	$ -	$ -	$ -	$ -	$ -		$ -	$ -
Other Equipment									
420D 4WD Backhoe	$ 101	$ 101	$ 101	$ -	$ -	$ -		$ -	$ -
CS563E Vibratory Roller	$ 101	$ 101	$ 101	$ -	$ -	$ -		$ -	$ -
Light Truck - 1.5 Ton	$ 64	$ 64	$ 64	$ -	$ -	$ -		$ -	$ -
Supervisor's Truck	$ 54	$ 54	$ 54	$ -	$ -	$ -		$ -	$ -
Air Compressor + tools	$ 76	$ 76	$ 76	$ -	$ -	$ -		$ -	$ -
Welding Equipment	$ 76	$ 76	$ 76	$ -	$ -	$ -		$ -	$ -
Heavy Duty Drill Rig	$ 411	$ 411	$ 411	$ -	$ -	$ -		$ -	$ -
Pump (plugging) Drill Rig	$ 411	$ 411	$ 411	$ -	$ -	$ -		$ -	$ -
Concrete Pump	$ 76	$ 76	$ 76	$ -	$ -	$ -		$ -	$ -
Gas Engine Vibrator	$ 76	$ 76	$ 76	$ -	$ -	$ -		$ -	$ -
Generator 5KW	$ 76	$ 76	$ 76	$ -	$ -	$ -		$ -	$ -
HDEP Welder (pipe or liner)	$ 76	$ 76	$ 76	$ -	$ -	$ -		$ -	$ -
5 Ton Crane Truck	$ 93	$ 93	$ 93	$ -	$ -	$ -		$ -	$ -
25 Ton Crane	$ 142	$ 142	$ 142	$ -	$ -	$ -		$ -	$ -
Trucks									
725	$ 101	$ 101	$ 101	$ -	$ -	$ -		$ -	$ -
740	$ 134	$ 134	$ 134	$ -	$ 25	$ 94	4	$ 2,595	$ 5,190
769D	$ 134	$ 134	$ 134	$ -	$ 25	$ 188		$ -	$ -
777D (two transports) (8)	$ 158	$ 158	$ 158	$ 49,400	$ 25	$ 282		$ -	$ -
613E (5,000 gal) Water Wagon	$ 158	$ 158	$ 158	$ -	$ -	$ -		$ -	$ -
621E (8,000 gal) Water Wagon	$ 158	$ 158	$ 158	$ -	$ 25	$ 188		$ -	$ -
Dump Truck (10-12 yd^3)	$ 167	$ 167	$ 167	$ -	$ -	$ -		$ -	$ -
Miscellaneous									
Equipment for dry hole abandonment (420D 4\	$ 101	$ 101	$ 101	$ -	$ -	$ -		$ -	$ -
Pilot car (Light Truck)	$ 54	$ 54	$ 54	$ -	$ -	$ -		$ -	$ -
Truck Tractor + Lowbed Trailer 75 ton	$ 158	$ 158	$ 158	$ -	$ -	$ -		$ -	$ -
Truck Tractor + Flatbed Trailer 40 ton	$ 134	$ 134	$ 134	$ -	$ -	$ -		$ -	$ -
Light Truck + Flatbed Trailer 25 ton	$ 76	$ 76	$ 76	$ -	$ -	$ -		$ -	$ -
							14		$ 19,979

Footnotes and explanations of assumptions

(1) The sum of the cost of equipment from either the SRCE or RSM equipment tab plus Davis-Bacon labor tab

(2) Assumes minimum of 30 minutes load and secure and 30 minutes unsecure and unload machine.

(3) No "Deadhead" (empty) charge for Mob up to 50 miles. More than 50 miles the cost of deadhead same rate as loaded miles.

(4) Only large equipment requires disassembly for transport. Includes cost of mechanic + mechanic's truck + crane operator + crane.

(5) Nevada Dept. of Transportation overdimensional permits are $25 per trip or $60 per year.

(6) Sum of mobilization plus all ancillary costs for one way loaded and return empty.

(7) Two transports are required but the second transport does not need pilot cars or permits or a heavy duty trailer.

(8) Two transports required with both requiring full complement of pilot cars and permits.

(9) Pilot Car costs based on SRCE light truck costs and Davis-Bacon wages

(10) SRCE costs based on July 2017 vendor quotes.

(11) RS Means costs based on R.S. Means Heavy Construction Cost Data, 2017, Q2

(12) Davis Bacon wages based on 2017 determination.

ASSEMBLY AND DISASSEMBLY OF SELECTED EQUIPMENT

Equipment	Disassembly	Assembly	Total
Bulldozers			
D6R	$0.00	$0.00	$0.00
D7R	$0.00	$0.00	$0.00
D8R	$0.00	$0.00	$0.00
D9R	$0.00	$0.00	$0.00
D10R	$12,550.00	$12,550.00	$25,100.00
D11R (two transports) (7)	$44,820.00	$44,820.00	$89,640.00
Motor Graders			
14G/H	$0.00	$0.00	$0.00
16G/H	$0.00	$0.00	$0.00
Track Excavators			
320C	$0.00	$0.00	$0.00
325C	$0.00	$0.00	$0.00
345B	$0.00	$0.00	$0.00
385BL	$13,700.00	$13,700.00	$27,400.00
Scrapers			
631G	$0.00	$0.00	$0.00
637G PP	$0.00	$0.00	$0.00
Wheeled Loaders			
928G	$0.00	$0.00	$0.00
966G	$0.00	$0.00	$0.00
972G	$0.00	$0.00	$0.00
988G	$0.00	$0.00	$0.00
992G (two transports) (7)	$23,900.00	$23,900.00	$47,800.00
Hydraulic Hammers			
H-120 (fits 325) no charge, mobilize with machine	$0.00	$0.00	$0.00
H-160 (fits 345) no charge, mobilize with machine	$0.00	$0.00	$0.00
H-180 (fits 365/385) no charge, mobilize with machine	$0.00	$0.00	$0.00
Other Equipment			
420D 4WD Backhoe	$0.00	$0.00	$0.00
CS563E Vibratory Roller	$0.00	$0.00	$0.00
Light Truck - 1.5 Ton	$0.00	$0.00	$0.00
Supervisor's Truck	$0.00	$0.00	$0.00
Air Compressor + tools	$0.00	$0.00	$0.00
Welding Equipment	$0.00	$0.00	$0.00
Heavy Duty Drill Rig	$0.00	$0.00	$0.00
Pump (plugging) Drill Rig	$0.00	$0.00	$0.00
Concrete Pump	$0.00	$0.00	$0.00
Gas Engine Vibrator	$0.00	$0.00	$0.00
Generator 5KW	$0.00	$0.00	$0.00
HDEP Welder (pipe or liner)	$0.00	$0.00	$0.00
5 Ton Crane Truck	$0.00	$0.00	$0.00
25 Ton Crane	$0.00	$0.00	$0.00
Trucks			
725	$0.00	$0.00	$0.00
740	$0.00	$0.00	$0.00
769D	$0.00	$0.00	$0.00
777D (two transports) (8)	$24,700.00	$24,700.00	$49,400.00
613E (5,000 gal) Water Wagon	$0.00	$0.00	$0.00
621E (8,000 gal) Water Wagon	$0.00	$0.00	$0.00
Dump Truck (10-12 yd^3)	$0.00	$0.00	$0.00
Miscellaneous			
Equipment for dry hole abandonment (420D 4WD Backhoe)	$0.00	$0.00	$0.00
Pilot car (Light Truck)	$0.00	$0.00	$0.00
Truck Tractor + Lowbed Trailer 75 ton	$0.00	$0.00	$0.00
Truck Tractor + Flatbed Trailer 40 ton	$0.00	$0.00	$0.00
Light Truck + Flatbed Trailer 25 ton	$0.00	$0.00	$0.00

Based on July 2017 quote from Cashman Equipment Company.

2017 PILOT CAR CALCULATIONS FOR MOVING HEAVY EQUIPMENT

Equipment	Light Truck $ / hour (1)	Driver @ laborer wages $/hr	# of Pilot cars (2)	Hours of Travel @ 55MPH	Deadhead miles (3)	$/mile deadhead (3)	Total Equipment $	Total Labor $	TOTAL Equip + Labor
Bulldozers									
D6R	$27.08	$36.69	0	1.47	81	$0.50	$0.00	$0.00	$0.00
D7R	$27.08	$36.69	1	1.47	81	$0.50	$45.95	$88.46	$134.41
D8R	$27.08	$36.69	2	1.47	81	$0.00	$79.75	$108.07	$187.82
D9R	$27.08	$36.69	2	1.47	81	$0.00	$79.75	$108.07	$187.82
D10R	$27.08	$36.69	3	1.47	81	$0.00	$119.62	$162.11	$281.73
D11R (two transports) (7)	$27.08	$36.69	2	1.47	81	$0.00	$79.75	$108.07	$187.82
Motor Graders									
14G/H	$27.08	$36.69	0	1.47	81	$0.00	$0.00	$0.00	$0.00
16G/H	$27.08	$36.69	1	1.47	81	$0.00	$39.87	$54.04	$93.91
Track Excavators									
320C	$27.08	$36.69	0	1.47	81	$0.00	$0.00	$0.00	$0.00
325C	$27.08	$36.69	0	1.47	81	$0.00	$0.00	$0.00	$0.00
345B	$27.08	$36.69	2	1.47	81	$0.00	$79.75	$108.07	$187.82
385BL	$27.08	$36.69	2	1.47	81	$0.00	$79.75	$108.07	$187.82
Scrapers									
631G	$27.08	$36.69	2	1.47	81	$0.00	$79.75	$108.07	$187.82
637G PP	$27.08	$36.69	2	1.47	81	$0.00	$79.75	$108.07	$187.82
Wheeled Loaders									
928G	$27.08	$36.69	0	1.47	81	$0.00	$0.00	$0.00	$0.00
966G	$27.08	$36.69	0	1.47	81	$0.00	$0.00	$0.00	$0.00
972G	$27.08	$36.69	0	1.47	81	$0.00	$0.00	$0.00	$0.00
988G	$27.08	$36.69	1	1.47	81	$0.00	$39.87	$54.04	$93.91
992G (two transports) (7)	$27.08	$36.69	2	1.47	81	$0.00	$79.75	$108.07	$187.82
Hydraulic Hammers									
H-120 (fits 325) no charge, mobilize with machine	$27.08	$36.69	0	1.47	81	$0.00	$0.00	$0.00	$0.00
H-160 (fits 345) no charge, mobilize with machine	$27.08	$36.69	0	1.47	81	$0.00	$0.00	$0.00	$0.00
H-180 (fits 365/385) no charge, mobilize with mac	$27.08	$36.69	0	1.47	81	$0.00	$0.00	$0.00	$0.00
Other Equipment									
420D 4WD Backhoe	$27.08	$36.69	0	1.47	81	$0.00	$0.00	$0.00	$0.00
CS563E Vibratory Roller	$27.08	$36.69	0	1.47	81	$0.00	$0.00	$0.00	$0.00
Light Truck - 1.5 Ton	$27.08	$36.69	0	1.47	81	$0.00	$0.00	$0.00	$0.00
Supervisor's Truck	$27.08	$36.69	0	1.47	81	$0.00	$0.00	$0.00	$0.00
Air Compressor + tools	$27.08	$36.69	0	1.47	81	$0.00	$0.00	$0.00	$0.00
Welding Equipment	$27.08	$36.69	0	1.47	81	$0.00	$0.00	$0.00	$0.00
Heavy Duty Drill Rig	$27.08	$36.69	0	1.47	81	$0.00	$0.00	$0.00	$0.00
Pump (plugging) Drill Rig	$27.08	$36.69	0	1.47	81	$0.00	$0.00	$0.00	$0.00
Concrete Pump	$27.08	$36.69	0	1.47	81	$0.00	$0.00	$0.00	$0.00
Gas Engine Vibrator	$27.08	$36.69	0	1.47	81	$0.00	$0.00	$0.00	$0.00
Generator 5KW	$27.08	$36.69	0	1.47	81	$0.00	$0.00	$0.00	$0.00
HDEP Welder (pipe or liner)	$27.08	$36.69	0	1.47	81	$0.00	$0.00	$0.00	$0.00
5 Ton Crane Truck	$27.08	$36.69	0	1.47	81	$0.00	$0.00	$0.00	$0.00
25 Ton Crane	$27.08	$36.69	0	1.47	81	$0.00	$0.00	$0.00	$0.00
Trucks									
725	$27.08	$36.69	0	1.47	81	$0.00	$0.00	$0.00	$0.00
740	$27.08	$36.69	1	1.47	81	$0.00	$39.87	$54.04	$93.91
769D	$27.08	$36.69	2	1.47	81	$0.00	$79.75	$108.07	$187.82
777D (two transports) (8)	$27.08	$36.69	3	1.47	81	$0.00	$119.62	$162.11	$281.73
613E (5,000 gal) Water Wagon	$27.08	$36.69	0	1.47	81	$0.00	$0.00	$0.00	$0.00
621E (8,000 gal) Water Wagon	$27.08	$36.69	2	1.47	81	$0.00	$79.75	$108.07	$187.82
Dump Truck (10-12 yd^3)	$27.08	$36.69	0	1.47	81	$0.00	$0.00	$0.00	$0.00
Miscellaneous									
Equipment for dry hole abandonment (420D 4WD Backhoe)	$27.08	$36.69	0	1.47	81	$0.00	$0.00	$0.00	$0.00
Pilot car (Light Truck)	$27.08	$36.69	0	1.47	81	$0.00	$0.00	$0.00	$0.00
Truck Tractor + Lowbed Trailer 75 ton	$27.08	$36.69	0	1.47	81	$0.00	$0.00	$0.00	$0.00
Truck Tractor + Flatbed Trailer 40 ton	$27.08	$36.69	0	1.47	81	$0.00	$0.00	$0.00	$0.00
Light Truck + Flatbed Trailer 25 ton	$27.08	$36.69	0	1.47	81	$0.00	$0.00	$0.00	$0.00

(1) Assume Pilot car is Light Truck @ SRCE cost and Davis Bacon wages for driver at laborer wage rates.

(2) Transportation widths from Caterpillar Performance Handbook Ed. 35.

(2) Number of pilot cars required from Nevada DOT:

http://www.nevadadot.com/business/trucker/overdimensional/#pilot

NUMBER OF LANES	LOAD WIDTH	PILOT CARS REQUIRED
2	12'1" to 14' wide	ONE, fore
2	14'1" to 16' wide	TWO, 1 fore and 1 aft
2	16'1" to 17' wide	THREE, 1 fore, 1 aft and 1 in LEAD
4	14'1" to 16' wide	ONE, aft
4	16'1" to 17' wide	TWO, 1 fore and 1 aft

(3) Average of 5 pilot car contractors charges for deadhead charges.(2007)

SRCE EQUIPMENT RENTAL + OPERATION RATES FROM COST DATA NV2017

Equipment	Weekly Rental Rate	Equipment Hourly Rate
Bulldozers		
D6R	$3,300	$82.50
D7R	$3,600	$90.00
D8R	$6,400	$160.00
D9R	$7,700	$192.50
D10R	$10,700	$267.50
D11R (two transports) (7)	N/A	
Motor Graders		
14G/H	$4,833	$120.83
16G/H	$7,000	$175.00
Track Excavators		
320C	$2,480	$62.00
325C	$2,800	$70.00
345B	$4,600	$115.00
385BL	$7,500	$187.50
Scrapers		
631G	$5,333	$133.33
637G PP	N/A	
Wheeled Loaders		
928G	$2,000	$50.00
966G	$3,700	$92.50
972G	$4,400	$110.00
988G	$7,000	$175.00
992G (two transports) (7)	N/A	
Hydraulic Hammers		
H-120 (fits 325) no charge, mobilize with machine	$1,400	$35.00
H-160 (fits 345) no charge, mobilize with machine	$4,000	$100.00
H-180 (fits 365/385) no charge, mobilize with machine	$4,283	$107.07
Other Equipment		
420D 4WD Backhoe	$1,140	$28.50
CS563E Vibratory Roller	$2,050	$51.25
Light Truck - 1.5 Ton	$1,083	$27.08
Supervisor's Truck	$694	$17.35
Air Compressor + tools	$975	$24.38
Welding Equipment	$642	$16.05
Heavy Duty Drill Rig	$14,100	$352.50
Pump (plugging) Drill Rig	$14,100	$352.50
Concrete Pump	$3,995	$99.88
Gas Engine Vibrator	$140	$3.50
Generator 5KW	$210	$5.25
HDEP Welder (pipe or liner)	$2,057	$51.43
5 Ton Crane Truck	$1,369	$34.23
25 Ton Crane	$3,325	$83.13
Trucks		$0.00
725	$5,000	$125.00
740	$5,000	$125.00
769D	N/A	
777D (two transports) (8)	N/A	
613E (5,000 gal) Water Wagon	$2,000	$50.00
621E (8,000 gal) Water Wagon	$3,667	$91.68
Dump Truck (10-12 yd^3)	$5,000	$125.00
Miscellaneous		
Equipment for dry hole abandonment (420D 4WD Backhoe)	$1,140	$28.50
Pilot car (Light Truck)		
Truck Tractor + Lowbed Trailer 75 ton		
Truck Tractor + Flatbed Trailer 40 ton		
Light Truck + Flatbed Trailer 25 ton		

R.S. MEANS EQUIPMENT COSTS FROM 2017				
Equipment	Operating weight, tons (from CPH) or self mob cost basis	RSM Crew No.	RSM Bare Cost (equipment) per day	RSM Bare Cost (equipment) per hour
Bulldozers				
D6R	23	B-34U	$465.00	$58.13
D7R	30	B-34N	$734.80	$91.85
D8R	42	B-34K	$922.20	$115.28
D9R	55	B-34K	$922.20	$115.28
D10R	73	B-34K	$922.20	$115.28
D11R (two transports) (7)	124	B-34K	$922.20	$115.28
Motor Graders				
14G/H	21	B-34U	$465.00	$58.13
16G/H	27	B-34N	$734.80	$91.85
Track Excavators				
320C	25	B-34N	$734.80	$91.85
325C	32	B-34N	$734.80	$91.85
345B	54	B-34K	$922.20	$115.28
385BL	98	B-34K	$922.20	$115.28
Scrapers				
631G	51	B-34K	$922.20	$115.28
637G PP	57	B-34K	$922.20	$115.28
Wheeled Loaders				
928G	13	B-34U	$465.00	$58.13
966G	25	B-34U	$465.00	$58.13
972G	28	B-34N	$734.80	$91.85
988G	56	B-34N	$734.80	$91.85
992G (two transports) (7)	110	B-34K	$922.20	$115.28
Hydraulic Hammers				
H-120 (fits 325) no charge, mobilize with machine	mobilized with machine			$0.00
H-160 (fits 345) no charge, mobilize with machine	mobilized with machine			$0.00
H-180 (fits 365/385) no charge, mobilize with machine	mobilized with machine			$0.00
Other Equipment				
420D 4WD Backhoe	8	B-34U	$465.00	$58.13
CS563E Vibratory Roller	12	B-34U	$465.00	$58.13
Light Truck - 1.5 Ton	self mobilization @ SRCE cost			$0.00
Supervisor's Truck	self mobilization @ SRCE cost			$0.00
Air Compressor + tools	towed behind light truck	A-3D	$268.40	$33.55
Welding Equipment	towed behind light truck	A-3D	$268.40	$33.55
Heavy Duty Drill Rig	self mobilization @ SRCE cost			$0.00
Pump (plugging) Drill Rig	self mobilization @ SRCE cost			$0.00
Concrete Pump	towed behind light truck	A-3D	$268.40	$33.55
Gas Engine Vibrator	towed behind light truck	A-3D	$268.40	$33.55
Generator 5KW	towed behind light truck	A-3D	$268.40	$33.55
HDEP Welder (pipe or liner)	towed behind light truck	A-3D	$268.40	$33.55
5 Ton Crane Truck	self mobilization @ RSM cost	01 54 3360 2800	$273.80	$34.23
25 Ton Crane	self mobilization @ RSM cost	01 54 3360 2500	$665.00	$83.13
Trucks				
725	25	B-34U	$465.00	$58.13
740	36	B-34N	$734.80	$91.85
769D	39	B-34N	$734.80	$91.85
777D (two transports) (8)	80	B-34K	$922.20	$115.28
613E (5,000 gal) Water Wagon	16	B-34K	$922.20	$115.28
621E (8,000 gal) Water Wagon	40	B-34K	$922.20	$115.28
Dump Truck (10-12 yd^3)	self mobilization @ SRCE cost			$0.00
Miscellaneous				
Equipment for dry hole abandonment (420D 4WD Backhoe)	8	B-34U	$465.00	$58.13
Pilot car (Light Truck)	self mobilization @ RSM cost	A-3A	$140.00	$17.50
Truck Tractor + Lowbed Trailer 75 ton	self mobilization @ RSM cost	B-34K	$922.20	$115.28
Truck Tractor + Flatbed Trailer 40 ton	self mobilization @ RSM cost	B-34N	$734.80	$91.85
Light Truck + Flatbed Trailer 25 ton	self mobilization @ RSM cost	A-3D	$268.40	$33.55

2017 DAVIS BACON WAGE RATES FOR THE OPERATORS TRANSPORTING HEAVY EQUIPMENT

LABOR DESCRIPTOR	Operating Weight, tons	Group #	BASE WAGE SUNV2014-014 (09/08/2016) July 2017 determination	Area pay	FRINGES	BASE WAGE + FRINGES	UNEM-PLOY-MENT 3%	FICA 7.65%	WORK-MANS COMP. (1) 8.40%	TOTAL
Bulldozers										
D6R	23	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
D7R	30	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
D8R	42	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
D9R	55	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
D10R	73	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
D11R (two transports) (7)	124	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
Motor Graders										
14G/H	21	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
16G/H	27	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
Track Excavators										
320C	25	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
325C	32	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
345B	54	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
385BL	98	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
Scrapers										
631G	51	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
637G PP	57	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
Wheeled Loaders										
928G	13	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
966G	25	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
972G	28	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
988G	56	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
992G (two transports) (7)	110	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
Hydraulic Hammers										
H-120 (fits 325) no charge, mobilize with machine	mob with machine	with machine	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
H-160 (fits 345) no charge, mobilize with machine	mob with machine	with machine	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
H-180 (fits 365/385) no charge, mobilize with machine	mob with machine	with machine	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
Other Equipment										
420D 4WD Backhoe	8	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
CS563E Vibratory Roller	12	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
Light Truck - 1.5 Ton	self mobilization @ SRCE cost	Labor 1	$30.82	$0.00	$0.00	$30.82	$0.92	$2.36	$2.59	$36.69
Supervisor's Truck	self mobilization @ SRCE cost	Labor 1	$30.82	$0.00	$0.00	$30.82	$0.92	$2.36	$2.59	$36.69
Air Compressor + tools	towed behind light truck	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
Welding Equipment	towed behind light truck	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
Heavy Duty Drill Rig	self mobilization @ SRCE cost	Equip Oper (10)	$49.36	$0.00	$0.00	$49.36	$1.48	$3.78	$4.15	$58.76
Pump (plugging) Drill Rig	self mobilization @ SRCE cost	Equip Oper (10)	$49.36	$0.00	$0.00	$49.36	$1.48	$3.78	$4.15	$58.76
Concrete Pump	towed behind light truck	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
Gas Engine Vibrator	towed behind light truck	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
Generator 5KW	towed behind light truck	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
HDEP Welder (pipe or liner)	towed behind light truck	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
5 Ton Crane Truck	self mobilization @ RSM cost	Equip Oper (10a)	$49.55	$0.00	$0.00	$49.55	$1.49	$3.79	$4.16	$58.99
25 Ton Crane	self mobilization @ RSM cost	Equip Oper (11)	$49.79	$0.00	$0.00	$49.79	$1.49	$3.81	$4.18	$59.27
Trucks										
725	25	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
740	36	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
769D	39	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
777D (two transports) (8)	80	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
613E (5,000 gal) Water Wagon	16	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
621E (8,000 gal) Water Wagon	40	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
Dump Truck (10-12 yd^3)	self mobilization @ SRCE cost	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
Miscellaneous										
Equipment for dry hole abandonment (420D 4WD Backhoe)	8	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
Pilot car (Light Truck)	self mobilization @ SRCE cost	Labor 1	$30.82	$0.00	$0.00	$30.82	$0.92	$2.36	$2.59	$36.69
Truck Tractor + Lowbed Trailer 75 ton	self mobilization @ SRCE cost	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45

Truck Tractor + Flatbed Trailer 40 ton	self mobilization @ SRCE cost	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45
Light Truck + Flatbed Trailer 25 ton	self mobilization @ SRCE cost	Truck Driver Dump	$31.50	$0.00	$4.16	$35.66	$1.07	$2.73	$3.00	$42.45