SPECIFICATIONS

DIVISION 1 - GENERAL REQUIREMENTS

The following sections describe the general requirements of this project.

01010 – SUMMARY OF WORK

The Lake Valley Mine Safeguard Project - Phase II area is located in and around the ghost town of Lake Valley, seventeen miles south of the town of Hillsboro, in Sierra County, New Mexico. The project area (see Figures 1 and 2) is on private land in Sections 20, 21, 28, and 29, of Township 18 South, Range 7 West.

This project involves the following work:

- Backfilling of 24 mine openings using mine waste, other nearby material and material imported from designated borrow areas where specified. Blasting is allowed at one designated mine opening and as otherwise allowed by the Project Engineer.

- Construction of bat gates in six adits and one stope opening, including one placed inside a rock bulkhead, one inside a polyurethane foam (PUF) plug, one with a cast-in-place concrete plug and three inside toroid tire plug closures, all with corrugated steel pipe culverts.

- Construction of airflow closures with corrugated steel pipe risers inside polyurethane foam (PUF) plugs with precast concrete units and concrete collars at two shafts, and construction of a grated airflow closure into an existing concrete collar at one shaft.

- Construction of horizontal bat compatible closures at two shafts with corrugated steel pipe risers, precast concrete units and concrete collars, and including a PUF plug at one of those shafts and a large toroid tire plug at the other.

- Construction of bat cupolas at two shafts, one with a polyurethane foam plug, corrugated steel pipe riser, scoria fill, precast concrete units and concrete collar and one with a concrete footing placed on a cast-in-place concrete hollow core plug.

- Construction of a polyurethane foam plug closure, with PVC drainpipe, steel sleeve and grated cover, at one shaft.

- Construction of large toroid tire plug closures at nine shafts, one adit and one stope opening with small toroid mats and geotextile mesh and cloth.

- Construction of a corrugated steel pipe column plug at one stope opening.

- Construction of steel mesh airflow closures with rock anchors at five shafts and an underground powder house including placement of boulders as a barrier around one of the shafts.
- Construction of a welded wire fence with barbed wire along a highwall.
- Construction of a steel grate at a mill hopper opening.
- Closure of temporary construction access roads.
- Seeding of all areas disturbed by construction.

Note the time restrictions for closure of some of the mine features, as detailed in Table II of Division 2, and for blasting.

Demobilization shall be conducted in such a manner to ensure that the Contractor leaves all project areas in as good or better condition than before disturbance.

01011 – SUMMARY OF PROJECT AND CONSTRUCTION ACCESS

The project site consists of 27 shafts, four pits, 12 stopes, four open cuts, one tunnel and 8 adits, all of which are dangerous to the public at large. Mine features to be safeguarded in this project and the methods and time restrictions for safeguarding are summarized in Table II in Division 2.

To the maximum extent practicable, construction access is limited to existing jeep trails and roads, except as otherwise shown, specified, or allowed by the Project Manager.

The traffic-prohibited area indicated on Figure 4 is believed to be over large underground stopes with thin and possibly unstable layer of rock. All construction equipment, including ATV's and light trucks, and personal vehicles are prohibited from traveling within this area. Any travel within this area shall be solely at the Contractor's risk. There may be other areas with similar conditions and the Contractor shall be responsible for thoroughly investigating site conditions and scheduling his equipment, equipment operations, personnel, and safety procedures to prevent accidents and injuries.

01012 – AVOIDANCE AREAS FOR PRESERVATION OF CULTURAL AND BIOLOGICAL RESOURCES

The Contractor shall avoid designated cultural and biological resources including those shown in the Drawings. The Contractor shall avoid these features with all heavy equipment and shall cooperate with the Project Manager for access routes to be taken to the mine openings associated with these features. No construction disturbances (including excavation, fill and

stockpiling of construction materials) or moving of artifacts shall take place within designated avoidance areas. Avoidance zones extend to five meters (16.4 feet) from the designated structures, except where construction is indicated within this zone in which case the disturbance within the avoidance zone shall be minimized as practicable. The Project Manager or Project Engineer may designate special avoidance areas.

Wherever the Contractor is working with equipment near designated avoidance features and avoidance areas and wherever construction access routes pass next to these features, the Contractor shall place four-foot high, temporary, high-visibility barrier fencing (Hi-Vis, ADPI, or equivalent) around the features. Barrier fencing shall be removed upon completion of work.

The Contractor shall bear all direct, indirect, and consequential costs of repairs due to unauthorized damage caused by his operations to cultural and biological resources to be avoided. These costs shall include but are not limited to fees and charges of engineers, attorneys, and other professionals, made necessary thereby.

The Contractor shall cooperate fully to preserve archaeological and historic artifacts and any threatened or endangered species found within the project area. If the Contractor encounters a previously uninventoried archaeological site, historic site, or species listed as or proposed to be listed as threatened or endangered, the Contractor shall terminate all further operation in that immediate area until the archaeological or biological preservation agencies have had the opportunity to survey the site. This termination shall not preclude continuation of work in other areas nor shall it entitle the Contractor to additional payment in any form, other than an extension of time, unless the Contractor is substantially precluded from working on the entire project.

01015 – CONTRACTOR'S USE OF THE PREMISES

The Contractor shall take reasonable measures to avoid traffic conflicts between vehicles of the Contractor's employees and private citizens and to avoid overloading of any driveways, roads and streets. The Contractor shall limit the access of equipment and trucks to the project site and provide protection for any improvements over which trucks and equipment must pass to reach the job site.

01025 – MEASUREMENT AND PAYMENT

The measurement for payment is as defined below. Payment shall be made based on the applicable unit or lump sum price bid therefor in the Bid Form (Section 00300). The estimated quantities of materials and work required to complete the project are approximations only and are given as a basis for calculation upon which the contract award will be determined. All estimated quantities could vary considerably and will depend on the actual conditions encountered at the time the work is performed. AML reserves the right to decrease or increase any or all of the quantities of materials or work as may be deemed necessary during the project.

01027 – APPLICATIONS FOR PAYMENT

All Applications for Payment for work performed under this contract shall whenever practicable, first be reviewed by the Project Manager before being submitted to:

Mining and Minerals Division
Energy, Minerals, and Natural Resources Department
State of New Mexico
1220 South St. Francis Drive
Santa Fe, New Mexico 87505

All Applications for Payment shall include appropriate backup, such as daily reports, load counts, and cross-sections. Contract amount equals total base bid plus gross receipts tax.

01028 – PRICES

The following subsections describe the lump sum and unit prices to be paid under this contract.

I. Lump Sum Prices

The basis of payment of lump sum prices as outlined in the Bid Form is as follows:

A. Mobilization

Payment for Mobilization will be made at the lump sum prices bid therefor in the Bid Form but shall not exceed ten percent (10%) of the total base bid. It is the intent of this specification to provide for the Contractor to receive 100 percent of the mobilization bid item by the time he has completed ten percent of his total original contract amount less mobilization. Total original contract amount less mobilization shall mean the total amount bid as compensation for the contract, excluding gross receipts tax, less the amount bid for mobilization. For lesser amounts of work completed (less than 10%), the Contractor shall receive a prorated portion of the mobilization.

In addition, payment for Mobilization will not be made until the Project Engineer's approval of an adequate performance. An "adequate performance" will be satisfied when the Contractor has shown the ability to successfully perform the required tasks of this project as outlined in these Specifications to the satisfaction of the Project Engineer. In case of any weather delays, compensation for additional Mobilization will not be made.

Payment for Mobilization shall include all equipment, fees, fuel, insurance, labor, permits, personnel, supervision and transportation to assemble, drive, operate, place, position, provide security measures for, and transport equipment, field offices, fuel, implements, machinery, materials, and support facilities to and at the job site in conformance with the Project

Manager's directives and these Specifications. This amount shall include complete Mobilization no matter how often equipment is transported to individual sites within the project area.

B. Backfilling of Specified Mine Features

Payment for backfilling to close the specified mine features will be made at the lump sum price bid therefor in the Bid Form. This price shall include all work necessary to complete the closures in accordance with the specifications. This work shall include complete specified demolition of existing structures at the mine features, stacking of salvageable materials and disposal of debris; the tasks necessary to access the mine features, including clearing as necessary; excavation, transportation, and placement of backfill; blasting as allowed; grading of backfill and borrow areas; and including all equipment, labor, material, and supervision costs necessary to complete installation.

C. Construction of Specified Polyurethane Foam Closures

Payment for construction of the specified polyurethane foam closures will be made at the lump sum price bid therefor in the Bid Form. This price shall include all work necessary to complete the installation in accordance with the Drawings and specifications. This includes site preparation, the tasks necessary to access the mine features, clearing as necessary, demolition as specified, preservation of site features as specified, specified site work, installation of survey caps, all construction materials other than the polyurethane foam itself (including formwork, drain pipe, drainage grate and frame, and accessories) and all equipment, labor and supervision necessary for complete installation.

D. Construction of Specified Hollow Core Closures, Horizontal Bat Compatible Closures, Airflow Closures, Bat Gates, Bat Cupolas, Grouted Rock Closures and Toroid Tire Plugs

Payment for construction of the specified hollow core closures, horizontal bat compatible closures, airflow closures, bat gates, bat cupolas, grouted rock closures and toroid tire plugs will be made at the lump sum price bid therefor in the Bid Form. This price shall include all work necessary to complete the installation in accordance with the drawings and specifications, including site preparation, excavation and backfill, fabrication, formwork, construction materials, other than polyurethane foam where required (including structural steel and steel assemblies, used tires, geogrid mesh, geotextile cloth, anchor bars, grating, corrugated steel pipe risers, precast concrete units, cast-in-place concrete, grout, reinforcing steel, anchor bolts, rock, bolts and nuts, drain pipes, scoria fill and drainage aggregate), welding, and all equipment, labor, and supervision necessary for complete installation.

II. Unit Prices

The methods of measurement and the basis of payment of unit prices as outlined in the Bid Form are as follows:

A. Welded Wire Fence

Measurement for payment for welded wire fencing will be made by the linear foot along the top of the fence from outside to outside of end posts for each continuous run of fence. Payment for welded wire fencing will be made by the unit price per linear foot bid therefor in the Bid Form. This price shall include all work necessary to complete the installation of fence in accordance with the drawings and specifications, including site preparation and providing and installing all fencing, posts and appurtenances and all equipment, labor, material and supervision costs necessary to complete installation.

B. Polyurethane Foam.

Measurement for payment for polyurethane foam (PUF) will be made by estimating the accepted quantity of foam installed in the specified mine openings.

For machine applied foam, the proportioner shall have a direct reading device to monitor output of components and the PUF applicators shall inform the Project Manager of the constant to be used to estimate PUF quantities actually installed. The Project Manager may examine barrels of material with a dipstick with the assistance of the PUF applicators in order to provide a second measure of quantities installed.

For poured-in-place foam, measurements of the amounts of component material used will be the basis for calculating the amount of foam installed. The Project Manager may examine barrels of material with a dipstick with the assistance of the PUF applicators in order to confirm the measurement of quantities installed.

Measurement for payment will be based on attaining the specified thickness of foam to create a plug within the openings and computations of volumes installed will be based on the specified minimum nominal density of the polyurethane foam.

For pre-bagged foam, the manufacturer's standard rated volume of expanded foam per bag and the number of bags used in the specified mine openings will be used to estimate the quantity of foam installed.

No payment will be made for off-ratio PUF or for PUF lost due to form failure.

C. High-Strength Steel Mesh

Measurement for payment for providing and installing high-strength steel mesh will be made along the accepted perimeter of each installed mesh panel to calculate the square footage of mesh installed. Payment for this item will be made at the unit price per square foot bid therefor in the Bid Form. This price shall include all work necessary to complete the installation of steel mesh in accordance with the drawings and specifications, including site preparation, materials (including steel mesh, clamps, and accessories) and backfilling above the mesh as

required and all equipment, labor, material and supervision costs necessary to complete installation.

D. Rock Anchors

Measurement for payment for providing and installing rock anchors will be made by the number and type of units properly installed at the high-strength steel mesh closures. Payment for this item of work will be made at the unit price per accepted rock bolt anchor as shown in the Bid Form. This price shall include all work necessary to complete the installation of rock anchors in accordance with the drawings and specifications, including site preparation, hole drilling, anchor test loading, materials (including anchors, grout, compression claws, spike plates, and accessories) and all equipment, labor, materials and supervision costs necessary to complete installation.

E. Seeding

Measurement for payment for seeding will be made by the acre, as measured in the field parallel to the seeded surface using methods acceptable to the Project Engineer.

Payment for seeding will be made at the unit price bid therefor in the Bid Form. This price shall include soil preparation including tilling, topdressing, incorporating specified soil amendments, seeding by broadcasting, mulching and fertilizing, including all equipment, labor, material and supervision costs necessary to complete installation, of all areas disturbed by construction activities.

Disturbed areas include on-site borrow areas, depressions and mounds at shafts, filled areas at adits, temporary access routes, areas occupied by the Contractor for campsites, office, plant sites, equipment parking, haul roads, closed access trails, stockpile and storage areas, service areas and areas stripped of native covering.

01030 – ALTERNATES

Whenever equipment or materials are specified or described in the Contract Documents by using the name of a proprietary item or the name of a particular supplier, the naming of the item is intended to establish the type, function, and quality required. Unless the name is followed by words indicating that no substitution is permitted, the Project Engineer may accept equipment or materials of other suppliers if the Contractor submits sufficient information to allow for adequate determination that the equipment or materials proposed are equivalent or equal to that named.

01035 – MODIFICATION PROCEDURES

The following section describes procedures for making modifications to the contract by change orders. Modifications may involve changes in contract sum, contract time, and scope.

01036 – CHANGE ORDER PROCEDURES

The Contractor shall submit a request for any changes in the work under this contract, in writing, to the Project Engineer. No changes in work or quantities shown shall be authorized until a properly executed Change Order has been issued by MMD. Any work performed outside the original quantities or scope of work, before the issuance of a properly executed Change Order, shall be at the Contractor's risk.

The Contract Time may only be changed by a Change Order. Any claim for an extension in the Contract Time shall be based on written notice delivered to the Project Engineer within fifteen working days of the occurrence of the event causing the claim. The extent of the claim with supporting data shall be included unless the Project Engineer allows additional time to ascertain more accurate data. The Project Engineer shall determine all claims for adjustment in the Contract Time. Any change in the Contract Time resulting from any such claim shall be incorporated in a Change Order. The Contract Time will be extended in an amount equal to time lost due to delays beyond the control of the Contractor if a claim is made therefore as provided above. Such delays shall include, but may not be restricted to, acts or neglect beyond the Contractor's control, epidemics, fires, floods, labor disputes, abnormal weather conditions, or acts of nature. In the event delays in construction occur due to weather, the conditions as outlined above will be in effect. If the Contractor leaves the project area due to a weather delay, the Contractor shall be responsible for assuring that all areas are left in a clean and safe condition as approved and directed by the Project Manager. In case of any weather delays, compensation for additional Mobilization or Demobilization will not be made.

01040 – COORDINATION

The following sections define the parties responsible for coordination of the contract work at the project and job site levels.

01041 - PROJECT COORDINATION

The Project Engineer will send the Contractor Notices to Proceed, Change Orders, other contract documents, and approvals on Applications for Payment. The Project Manager or Project Engineer may issue a Suspension of Work Notice if he has any reasonable basis to believe that the Contractor is violating any condition or term of the contract or specifications, or that violations of health and safety standards will occur unless such notice is issued. No work shall proceed until the Suspension of Work Notice has been vacated.

01042 – MECHANICAL AND ELECTRICAL COORDINATION

The Contractor shall be responsible for the coordination of all mechanical and electrical aspects of the contract work. This includes overseeing of the general operation and maintenance of that equipment.

01043 – JOB SITE ADMINISTRATION

The Contractor shall be responsible for the administration of the contract work at the job site. This includes assuring that all equipment and materials used for the contract work meet the required specifications set forth and that all work is performed in a timely and orderly manner. The Contractor shall be responsible for initiating, maintaining, and supervising all safety precautions and programs concerning the work. The Contractor shall designate a full time on-site superintendent or authorized representative who shall be present or can be contacted readily during project working hours. This person shall represent the Contractor in dealing with the Project Manager and shall insure adherence to these specifications and any other directives.

01050 – FIELD ENGINEERING

The Contractor shall be responsible for locating and avoiding all underground utilities at the contract work site. If damage to the utilities occurs during the contract work, the damage shall be repaired at the Contractor's expense.

The Contractor shall also be responsible for the proper setting of all construction staking. The Contractor shall provide engineering surveys for construction to establish reference points that are necessary to enable the Work to proceed. The Contractor shall be responsible for surveying and laying out the Work, shall protect and preserve any established reference points, and shall make no changes or relocations without the prior written approval of the Project Engineer. The Contractor shall report to the Project Engineer whenever any reference point is lost or destroyed or requires relocation because of necessary changes in grades or locations. The Contractor shall replace and accurately relocate all reference points so destroyed, lost, or moved. When it becomes necessary in the construction of public works, to remove or obliterate any triangulation station, bench mark, corner monument, stake, witness mark, or other reference mark, it shall be the duty of the Contractor in charge of the work to cause to be established by a New Mexico registered land surveyor one or more permanent reference marks which shall be plainly marked as witness corners or reference marks, as near as practicable to the original mark, and to record a map, field notes, or both, with the county clerk and county surveyor of the county wherein located, showing clearly the position of the marks established with reference to the position of the original work. The surveys or measurements made to connect the reference marks with the original mark shall be of at least the same order of precision as the original survey.

01060 – REGULATORY REQUIREMENTS

The Contractor shall keep fully informed of all federal and state laws, all local laws, ordinances, and regulations, and all orders and decrees of bodies or tribunals having any jurisdiction or authority which in any manner affect those engaged or employed on the work or which in any way affect the conduct of the work. The Contractor shall at all times observe and comply with all such laws, ordinances, regulations, orders, and decrees and shall protect and indemnify the State of New Mexico and its representatives against any claim or liability arising from or based on the violation of any such law, ordinance, regulation, order, or decree, whether

by the Contractor or any employees. The Contractor shall procure all permits and licenses, pay all charges, fees, royalties, and taxes, and give all notices necessary and incidental to the due and lawful prosecution of the work.

01090 – REFERENCES

Reference to standard specifications, manuals, or codes of any technical association, organization, or society, or to laws or regulations of any governmental authority, whether such reference be specific or by implication, shall mean the latest standard specification, manual, code, laws, or regulation in effect at the time of opening of Bids, except as may be otherwise specifically stated. However, no provision of any referenced standard specification, manual, or code (whether or not specifically incorporated by reference in the Contract Documents) shall be effective to change the duties and responsibilities of the Contractor.

01092 - ABBREVIATIONS

The following is an explanation of the abbreviations that may be used in the contract documents:

1.	AASHTO	American Association of State Highway and Transportation Officials
2.	ACI	American Concrete Institute
3.	AML	Abandoned Mine Land Program of MMD
4.	ANSI	American National Standards Institute
5.	ASTM	American Society for Testing and Materials
6.	AWS	American Welding Society
7.	CRSI	Concrete Reinforcing Steel Institute
8.	EMNRD	Energy, Minerals, and Natural Resources Department (state)
9.	MMD	Mining and Minerals Division of EMNRD
10.	OSMRE	Office of Surface Mining, Reclamation, and Enforcement (federal)
11.	SAE	Society of Automotive Engineers

01094 – DEFINITIONS

The following is a definition of the terms that may be used in the contract documents (source: A Dictionary of Mining, Mineral, and Related Terms, Paul W. Thrush, Bureau of Mines, Department of the Interior, Washington, D.C., 1968):

1.	adit	A horizontal or nearly horizontal passage driven from the surface for the working or dewatering of a mine.
2.	back	The roof or upper part in any underground mining cavity.
3.	cribbing	The close setting of timber supports when shaft sinking through loose ground.

4.	collar	Timbering or concrete around the mouth or top of a shaft; the junction of a mine shaft and the surface.
5.	drift	A horizontal passage underground.
6.	entry	A haulage road, gangway, or airway to the surface.
7.	gob pile	A pile of heap mine refuse on the surface.
8.	incline	A shaft not vertical; usually on the dip of a vein.
9.	lagging	Planks, slabs, or small timbers placed over the caps or behind the posts of the timbering, not to carry the main weight, but to form a ceiling or a wall, preventing fragments or rock from falling through.
10.	lining	The brick, concrete, cast iron, or steel casing placed around a tunnel or shaft as a support.
11.	loading chute	A three-sided tray for loading or for transfer of material from one transport unit to another.
12.	portal	Any entrance to a mine.
13.	red dog	Material of a reddish color resulting from the combustion of shale and other mine waste dumps on the surface.
14.	shaft	An excavation of limited area compared with its depth, made for finding or mining ore or coal, raising water, ore, rock, or coal, hoisting and lowering personnel and material, or ventilating underground workings.
15.	spoil	The overburden or on-ore material removed in gaining access to the ore or mineral material in surface mining.
16.	stope	An excavation in which ore has been excavated in a series of steps.
17.	stull	A timber prop set between the walls of a stope, or supporting the mine roof.
18.	subsidence	A sinking down of a part of the earth's crust.
19.	talus	A heap of coarse rock waste at the foot of a cliff.

20. tipple — Originally the place where the mine cars were tipped and emptied of their coal, and still used in that sense, although now more generally applied to the surface structures of a mine, including the preparation plant and loading tracks.

21. winze — Interior mine shaft.

01100 – SPECIAL PROJECT PROCEDURES

The following section describes special procedures for alteration, preservation, security, hazardous materials, and other types of projects demanding unique procedures. Safety procedures and methods for all underground work inside abandoned mine entries shall be in accordance with the "New Mexico Mine Safety Code for All Mines," published by the New Mexico Institute of Mining & Technology, The State Inspector of Mines, Bureau of Mine Inspection, P.O. Box W105, Socorro, NM 87801, 1.505.835.5460.

01135 - HAZARDOUS AND CONFINED AREA PROCEDURES

This project requires construction work in, around, and over hazardous and unprotected mine shafts, stopes, adits, and other openings which may be open to the surface or hidden from view by vegetation, trash, debris, or thin and unstable layers of surface materials or rock. The Contractor shall be responsible for thoroughly investigating the site conditions and scheduling his equipment, equipment operations, personnel, and safety procedures to prevent accidents and injuries.

Before entry, the Contractor shall review safety procedures with all persons entering the mine. At least one standby person, whenever possible someone who is trained in CPR and mine rescue procedures, shall remain outside the mine during entry by others. The standby person(s) shall have access to first aid, appropriate rescue equipment, and a vehicle and shall know where the nearest telephone for emergency calls is found. A communication system shall be established between the person(s) working inside the mine and the standby person(s) outside.

All persons entering the mine opening shall wear appropriate clothing and carry appropriate gear, including, as required for the conditions present, harnesses, head, hand and foot protection, life lines, respirators or self-contained breathing apparatuses, and other special equipment. Proper ventilation and adequate lighting at the workplace inside the mine entry shall be provided. The Contractor shall review with his workers and personnel the use of hazardous chemicals or materials, electrical power, or internal combustion engines inside mine entries for safety precautions and procedures.

The Contractor is fully responsible for construction safety and shall keep the Project Manager informed of his hazardous area safety procedures. Following is a discussion of some common abandoned mine hazards and appropriate procedures to be followed.

I. Bad Air

Miners use the term "bad air" to describe an atmosphere that will not support life. The poor air circulation in some mine openings can allow carbon dioxide (CO_2), carbon monoxide (CO), methane, hydrogen sulfide (H_2S), or radon gas to accumulate. These gases are treacherous inside mine openings and even experienced miners have been killed or harmed by entering areas containing them. Carbon monoxide cannot be readily detected and is lethal in very small amounts. The Contractor shall follow the following and other appropriate hazardous bad air procedures.

An oxygen meter shall be used to test air before and while any personnel work inside a mine opening. The oxygen meter shall be a National Mine Service (NMS) OX231 oxygen meter or equivalent. The oxygen meter shall continuously monitor oxygen levels and have an audible warning signal. If the oxygen level falls below 19 percent, all personnel shall withdraw from the working area in the mine until the oxygen content increases to safe levels.

Any remedy for increasing oxygen content of the working area or providing ventilation from the surface shall be determined in consultation with the Project Manager.

II. Adit Cave-ins

Cave-ins are a danger in any abandoned mine. Disturbances such as vibrations caused by walking, speaking, blasting, hammering, percussion drilling, or construction equipment may cause a cave-in inside an inactive mine. The Contractor shall follow appropriate adit cave-in protection procedures, including scaling and barring of loose rock before beginning work in an area, shoring of decayed or weak timber framing, and shoring, jacking, or rock bolting of materials in the back (roof) and sides of the adits.

III. Collar Cave-ins

The collar or top of a shaft, stope, or subsidence often contains decomposed rock, decayed timbers, and other conditions that allow for rapid disintegration at the opening. With the additional weight and vibration of construction machinery, workers, and backfilling operations near the mine opening, the area around the collar can slide into the opening, along with nearby machinery and men. Backfilling operations can tear loose cribbing or lining in a shaft leading to collapse at the collar. The Contractor shall follow appropriate collar cave-in protection procedures.

IV. Falling

Because a shaft or stope has little light, the feeling of height and normal reaction to "pull back" is not evident to most persons. Many abandoned mine shafts, stopes, and winzes are deep enough to insure that anyone that falls down them is badly injured or killed. Rescue operations of a fallen person can also be extremely hazardous.

The Contractor shall follow appropriate hazardous fall protection procedures. This includes proper lighting, barricades, fences, personal fall arrest systems, guardrails, covers, safety net systems, safety monitoring systems, and other protection as suitable for the conditions. Fall protection shall be in accordance with OSHA regulations regarding construction fall protection (OSHA 29 CFR Subpart M). These regulations establish a six-foot threshold for the height at which fall protection is required, require employers to provide training for each employee who might be exposed to a fall hazard, and prohibit the use of body belts for fall protection and the use of non-locking snap hooks.

V. Loose Rock

A mineshaft or open stope will weather in much the same way as a cliff. Loose rocks are always found on timbers or on the walls. A small rock that falls a sufficient distance can penetrate a person's skull. The Contractor shall follow appropriate hazardous loose rock protection procedures, including scaling of loose rock, construction of shields, and wearing of head protection.

01170 - INDUSTRIAL WASTES AND TOXIC SUBSTANCES

The Contractor shall comply with all applicable laws and regulations existing or hereafter enacted or promulgated regarding industrial wastes and toxic substances. In any event, the Contractor shall comply with the Toxic Substances Control Act of 1976, as amended (15 U.S.C. 2601, et seq.) regarding any toxic substances that are used, generated by or stored at the project site. See 40 C.F.R., Part 702799. Additionally, any release of toxic substances (leaks, spills, etc.) greater than the reportable quantity established by 40 C.F.R., Part 117, shall be reported as required by the Comprehensive Environmental Response, Compensation and Liability Act of 1980, Section 102b. A copy of any report required or requested by any federal agency or state government because of a reportable release or spill of any toxic substances shall be furnished to the Project Engineer concurrent with the filing of the reports to the involved federal agency or state government.

01200 – PROJECT MEETINGS

The following sections describe the required project meetings that the Contractor is expected to attend.

01210 - PRECONSTRUCTION CONFERENCES

Before starting work at the site, a conference will be held to review the construction schedules; to establish procedures for handling documents, drawings, other submissions, and for processing Applications for Payment; and to establish a working understanding between the parties as to the nature of the project. Present at the conference will be the Project Manager, the Project Engineer, the Contractor, the Contractor's superintendent, and other persons as appropriate. The Contractor shall present his progress schedule at the preconstruction conference

as specified in Section 01310 below and his fire prevention and awareness plan as specified in Section 01565 below.

01220 - PROGRESS MEETINGS

Progress meetings may be held during construction for purposes of scheduling and coordination of work. Throughout the life of the project, the Contractor shall keep the Project Manager and Project Engineer well informed of the schedule of work.

01300 – SUBMITTALS

The following sections describe the required documents and reports to be submitted by the Contractor during the contract work.

01310 - PROGRESS SCHEDULES

The Contractor shall provide a detailed progress schedule to be followed in completing the work. This schedule shall be submitted in writing at the preconstruction conference and shall show the anticipated time required by the Contractor to complete each item of work in the Bid Form. Schedules may be prepared as a horizontal bar chart with a separate bar for each major portion of work or operation, identifying the first workday of each week.

01320 - PROGRESS REPORTS

The Contractor shall submit written accurate daily progress reports to the Project Manager. The reports shall include but are not limited to work accomplished, quantities of unit price bid items installed, including load tickets as appropriate, records of any complaints including corrective actions taken, records of visitors to the site, and records of any personal injury or property damage incidents. The Contractor's authorized representative shall meet the Project Manager a minimum of once each week to verify and sign-off on all payable units of work performed during that week. The authorized representatives from both parties shall be designated at the start of the project during the preconstruction conference.

01340 - SHOP DRAWINGS, PRODUCT DATA, AND SAMPLES

The Contractor shall submit shop drawings, product data, and samples as required in the specifications. Submittals shall be organized such that each submittal covers items in no more than one specification section. The Contractor shall allow a minimum of 21 calendar days for the Project Engineer's review; shorter periods for Project Engineer's review will not be acceptable. The Contractor shall allow acceptable time for the entire review process including transmittal, initial Project Engineer's review, correction and resubmission, final review, and distribution.

Engineering data and shop drawings covering all equipment and fabricated materials shall be submitted to the Project Engineer for review and comments. These data shall include

drawings and descriptive information in sufficient detail to show the kind, size, arrangement, and operation of component materials and devices; the external connections, anchorages, and supports required; and performance characteristics and dimensions needed for installation and correlation with other materials and equipment. Data submitted shall include drawings showing essential details of any changes proposed by the Contractor.

It shall be the duty of the Contractor to check all data and shop drawings for completeness before submittal for Project Engineer's review. Each drawing or data sheet shall have indicated thereon the proposed use of the item as it pertains to the Work. Catalog cuts, pages, or copies submitted for review shall have items proposed for use in the Work clearly marked and identified. The current catalog number, date, and revision and drawing number (if applicable) shall be included.

Deviations from the drawings or specifications shall be identified on each submittal and shall be referenced in the Contractor's transmittal letter. The submittal for such deviations shall also include details of changes proposed and modifications required for all affected portions of the Work.

Shop drawings and other review data shall be submitted to the Project Engineer only from the Contractor.

The Contractor's submittal of shop drawings and other review material shall represent that he has reviewed the details and requirements of the Contract Documents, that he has coordinated the subject of the submittal with other portions of the Work, and that he has verified dimensions, quantities, construction details, materials, and installation criteria, as applicable for the Work. The Contractor shall accept full responsibility for the completeness of each submittal and, for re-submittals, verify that exceptions noted on the previous submittal have been accounted for.

Any requirement for more than one resubmission or delay in obtaining Project Engineer's review of submittals will not entitle the Contractor to an extension of Contract Time unless authorized by Change Order.

The Project Engineer's review of drawings and data submitted by the Contractor will cover only general conformity to the drawings and specifications, external connections, and dimensions that affect the plans and layout. The Project Engineer's disposition of submittals will not constitute a blanket approval of all dimensions, quantities, and details of the material, equipment, or item shown. Regardless of the corrections made in, or disposition given to, such drawings and data by the Project Engineer, the Contractor shall be responsible for the accuracy of such drawings and data and for their conformity and compliance with the contract documents.

No work shall be performed in connection with the fabrication or manufacture of materials and equipment, nor shall any material, accessory, or appurtenance be purchased until the drawings and data therefor have been reviewed.

Four copies of each drawing and necessary data shall be submitted to the Project Engineer. Each drawing or data sheet shall be clearly marked as instructed above. Submittals will be accepted only from the Contractor.

When the drawings and data are returned NOT APPROVED or RETURNED FOR CORRECTION, corrections shall be made as noted by the Project Engineer and four corrected copies resubmitted as instructed above.

When drawings and data are returned marked NO EXCEPTIONS NOTED, EXCEPTIONS NOTED, or RECORD COPY, no additional copies need be submitted.

The Project Engineer will return two copies with comments to the Contractor. The Contractor shall send additional copies with the original submittal if the Contractor requires more than two copies.

All drawings and data, after final processing by the Project Engineer, shall become a part of the contract documents and the work shown or described thereby shall be performed in conformity therewith unless otherwise required by the Project Engineer.

01380 - CONSTRUCTION PHOTOGRAPHS

The Contractor may provide routine periodic construction photographs to support Applications for Payment and to supplement Project Record Documents.

01400 – QUALITY CONTROL

The following sections outline the duties, responsibilities, and qualifications of inspectors, testing laboratories, and the Contractor's quality control requirements required to perform the contract work.

01405 - CONTRACT QUALITY CONTROL

The Contractor shall be responsible for the maintenance of quality control throughout the period of the contract work. This includes making periodic spot checks to assure that equipment, materials, and construction quality, meet the contract specifications.

01410 - TESTING LABORATORY SERVICES

Independent commercial testing laboratories shall perform all tests required by the contract documents to determine compliance with the specifications. The testing laboratories shall be in the regular business of testing services in accordance with the specifications for which tests are required, and shall be

staffed with trained and experienced technicians, equipped properly, and fully qualified to perform the specified tests in accordance with reference standards.

All testing services for tests of materials required by the contract documents shall be the responsibility of the Contractor. The Project Engineer shall review all sources of materials before delivery of the materials to the job site. Before the performance of any testing the Contractor shall obtain the concurrence of the Project Engineer for the laboratory or laboratories selected by the Contractor.

The Contractor shall require the producer or manufacturer of materials, for which the specifications require inspection or testing services during the production or manufacturing process, to arrange for and pay an independent organization to perform the specified services.

The Project Manager will determine the exact time and location of field sampling and testing. The Project Manager or Project Engineer may require additional sampling and testing as necessary to assure that materials conform to the contract documents. The Contractor shall pay the costs of any retesting or re-sampling required when initial tests or samples fail to meet the specified requirements.

Written reports of tests furnished by the Contractor for the Project Engineer's review shall be submitted in conformance to the procedures set forth in Section 01340.

01500 – CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS

The following sections specify the types of construction facilities and temporary controls the Contractor shall provide for completion of the contract work.

01505 - MOBILIZATION

The Contractor shall furnish and mobilize all specified construction facilities, temporary controls, equipment, labor, materials, power, supervision, and supplies to the site and commence work within ten working days after receipt via certified mail of the Notice to Proceed. Mobilization includes everything necessary to complete the required contract work. The Contractor shall inform the Project Manager of plans and schedules to move all equipment, machinery, and supplies to the job site. The Contractor shall locate and position the staging area including field offices, parking, storage, and support facilities as directed and approved by the Project Manager. All equipment and machinery shall be moved onto the job site in conformance with previously approved plans and schedules. It is the Contractor's responsibility to arrange for storage facilities for equipment and materials. City, state, federal, or other public or private property shall not be used as temporary storage or parking areas for any equipment or materials

unless written clearance is obtained by the Contractor from the appropriate public officials or private individuals. The Contractor must be prepared to move all necessary equipment to each construction site within the project area. This movement of equipment shall be at the Contractor's expense and should be covered under Bid Item No. 1, Mobilization, on the Bid Form.

01510 - TEMPORARY UTILITIES

The following sections describe temporary utilities, controls, facilities, and construction aids required during construction. They include requirements for installation, maintenance, and removal.

01516 - TEMPORARY SANITARY FACILITIES

The Contractor shall provide temporary sanitation facilities during the contract work. The facility shall be installed on the project site in a location removed from the immediate contract work area. The facility shall be locked to prevent unauthorized access during the times work is not conducted. The Contractor shall remove the facility upon completion of the contract work and restore the area.

01530 – BARRIERS AND ENCLOSURES

The Contractor shall provide barricades with blinking markers for all equipment on roadways and pedestrian walkways. The barricades shall be no less than twenty feet from the front and rear of any equipment in the described rights-of-way. Traffic control devices shall be in substantial conformance with the American Traffic Services Association (ATSA) Guide for Work Area Traffic Control. The Contractor shall remove the barricades upon completion of the contract work.

01533 - TREE, PLANT AND WILDLIFE PROTECTION

I. Tree and Plant Protection

Environmental disturbance shall be kept to a practical minimum.

In steep areas and around vegetation, the Contractor shall, before beginning work, discuss the planned extent and nature of disturbance with the Project Manager. Existing plants and trees shall be protected from damage or injury resulting from the Contractor's operations. Damaged trees and shrubs shall be trimmed to remove broken limbs where minor damage has occurred. Where directed by the Project Manager, cut or scarred surfaces of trees or shrubs shall be treated with a heavy coat of a tree sealant approved by the Project Manager.

II. Wildlife Protection

All area wildlife, including bats and owls, that may use the mine features are protected, and this hazard abatement effort shall not adversely affect them. Shooting at and chasing wildlife is prohibited.

At or before the preconstruction conference, the Contractor shall submit a construction schedule, which includes anticipated dates of closure of specified mine features, in accordance with Section 01310. Based on this schedule the AML biological staff will give authorization to proceed on closure of the mine features that require netting, tarping, or smoke bombing to exclude animals before closure. It is solely the Contractor's responsibility to obtain this authorization. Normally a minimum of one week written notice of the dates of closure is needed from the Contractor to the AML biological staff. After approval of the schedule, any need for changes shall be coordinated with the AML biological staff a minimum of 48 hours before closure of the features. The Contractor's failure to follow this procedure may result in stoppage of the construction activity at his expense until the biological staff can reschedule netting and tarping of the specified features.

The Contractor shall aid AML staff in using smoke bombs to expel remaining bats or other animals before backfilling or closing a mine feature, in covering the entrances of designated mine features with tarps or other barricades after the animals have exited and in removing the barricades following closure. The Contractor shall provide sufficient numbers and sizes of tarps, polyethylene sheets or other satisfactory covers for this purpose.

All mine openings, except those whose workings can be fully visually checked by the Project Manager and those which are safeguarded by the construction of bat closures, airflow closures or high-strength steel mesh, shall be tarped or netted before closure and require agreement on the dates of closure

During construction of bat closures, the Contractor shall schedule his activities so the bats can readily pass through the partially completed closures from one hour before sunset until sunrise. In addition, during construction of bat closures at shafts, the Contractor shall take positive measures to reduce the rock and other material that drop into those mine features.

Internal combustion engines, including those used on air compressors, shall be placed such that exhaust from the engine is not drawn into the mine openings.

01535 - PROTECTION OF INSTALLED WORK

The Contractor shall protect installed work and control traffic in the immediate area to prevent damage from subsequent operations.

01540 – SECURITY

The Contractor shall act to assure the protection of the contract work and equipment at the contract work site. The Contractor shall furnish, install, and maintain safety fences around any hazardous or high-voltage equipment at the site for the duration of the project. Where appropriate, the Contractor shall restrict access to the project site by barricading access roads during off-hours and by posting "No Admittance" and "Hard Hat Area" signs.

01550 – ACCESS ROADS AND PARKING AREAS

Unless otherwise indicated, all Contractor personnel and equipment shall enter and leave the project site via existing roads and trails. Upon the regrading, recontouring, or reclamation of any part of the site, further vehicular use shall be limited to that necessary to complete operations. Any access routes that are determined by the Project Manager to be maintained throughout the project duration shall be left in as good or better condition than the condition before the start of the project. Existing roads and trails shall be used whenever possible.

Equipment shall be "walked" or operated cross-country to travel to work sites where roads do not exist. The Contractor shall advise the Project Manager and obtain prior approval every time any road blading, clearing, or dozing is required for access. Topdressing shall be stripped and stockpiled before blading as directed by the Project Manager. All unspecified roads, trails, or travel routes shall be regraded to approximate original contours, reclaimed, and revegetated, as necessary, in conformance with the specifications at no additional cost to EMNRD. Where directed by the Project Manager, the Contractor shall build earthen berms to discourage vehicular traffic and to control erosion on closed temporary construction access roads.

01560 – TEMPORARY CONTROLS

The Contractor shall take all reasonable steps to reduce any inconvenience and disruption to the public because of this project. The Contractor shall provide the following temporary controls for the duration of the contract work.

01561 - CONSTRUCTION CLEANING

The Contractor shall keep the contract work area, equipment, and adjacent areas free from spillages of construction and maintenance materials during the contract work. The Contractor shall also provide for the containment of solid debris created by unpackaging construction materials and waste from meals consumed at the contract work site. The Contractor shall assure the cleanup and removal of all spillages and solid debris to an approved disposal site at the end of each contract workday.

01562 - DUST CONTROL

The Contractor shall take all necessary measures to control dust emanations from the construction equipment. The Contractor shall assure that the equipment used in the contract work is fitted with all standard dust control devices. To maintain the health and safety of project personnel, dust control measures at this site shall comply with all local, state, and federal health and safety regulations. The Contractor shall be prepared to begin dust control measures anytime at the request of the Project Manager. Water for dust control shall be distributed in sufficient quantity and at proper times by water trucks equipped with spray bars approved by the Project Manager. The quantity of water required and the frequency of watering shall be dependent upon the weather and the site's surface conditions and may vary throughout the project duration.

01564 - NOISE CONTROL

The Contractor shall assure that all equipment used in the contract work is fitted with standard noise suppression devices.

01565 - FIRE PREVENTION AND SAFETY AWARENESS

The Contractor shall develop an emergency plan that will outline precautionary measures and identify initial attack resources and procedures in case of a fire incident. This plan will be submitted to the Project Manager at the Pre-Construction meeting. The Project Manager will then provide feedback about the plan. The Contractor shall provide the fire emergency plan to all individuals working on this project.

Examples of precautionary measures might be:

1. Inspect all motorized and mechanized equipment to insure mufflers and spark arresters are operating properly.

2. Insure personnel are properly trained on the safe use of welding torches, arc welders, generators, saws, power grinders, chainsaws, and other tools and are also familiar with the potential of this equipment to create hot sparks and ignite fires.

3. Avoid welding or cutting in areas next to and above flammable materials or during windy conditions. This would pertain to materials inside the mine as well as outside the mine. Welding shall not take place within 25 feet of polyurethane foam during application. After its application, welding shall not take place above it without first covering the surface with at least 6" of fill material.

Examples of resources and procedures might be:

1. Maintain adequate fire extinguishers, water tanks, sprayers, and other equipment at the work site that would enable personnel to immediately extinguish any accidental ignition.

2. Have personnel observe the work area while welders are operating (welders cannot see where the sparks are falling when he is under the welding hood).

3. Assign an individual to be responsible for the area being "safe" (no hot sparks, iron is cold) before leaving the work site.

4. Develop an emergency notification procedure in case the fire incident is or appears to be reaching an out-of-control status.

The Contractor shall obey all fire restrictions declared by the landowner(s) (i.e. U.S. Forest Service or Bureau of Land Management).

01570 – TRAFFIC REGULATION

The Contractor shall take the following measures for regulation of traffic at the contract work site.

01572 - FLAGGERS

The Contractor shall post flaggers during the off-loading and onloading of equipment or materials in roadways at the contract work site. The flaggers shall halt traffic during the off-loading or onloading process or direct traffic to an alternate route.

01574 - HAUL ROUTES

The Contractor shall consult with the authority having jurisdiction in establishing public thoroughfares to be used for haul routes and site access.

01580 – PROJECT IDENTIFICATION AND SIGNS

At least one temporary project sign shall be furnished and erected by the Contractor at the most convenient point of public access to the project site. The project identification sign shall be installed within ten working days after the receipt via certified mail of the Notice to Proceed or within five days after the Contractor initially mobilizes to the project site, whichever comes first. The sign is to be a minimum of four feet by eight feet by three quarter inch (4' x 8' x 3/4") exterior grade plywood and is to give the project title, project number, and other data within the box on the Title Page (Section 00001). Exterior quality paint in contrasting colors shall be used. The Contractor shall remove sign, framing, supports, and foundations at completion of Project and restore the area. The costs connected to the construction, painting, erection, and later removal of the sign should be covered under Bid Item No. 1, Mobilization, on the Bid Form.

01590 – FIELD OFFICES AND SHEDS

Portable or mobile buildings, or buildings constructed with floors raised above ground, may be provided by the Contractor in locations approved by the Project Manager and the landowner. At completion of work, the Contractor shall remove all buildings, foundations, utility services, and debris and restore areas.

01600 – MATERIALS AND EQUIPMENT

All materials and equipment required to complete the work shall be as specified. Any substitution to the specified products requires prior approval by the Project Engineer.

01700 – CONTRACT CLOSEOUT

The following sections specify the duties and responsibilities of the Contractor to close out the contract.

01701 - CONTRACT CLOSEOUT PROCEDURES

When work is completed, the Contractor shall submit project record documents to the Project Manager.

01702 - FINAL INSPECTION

Upon written notice from the Contractor that the entire Work or an agreed portion thereof is complete, the Project Engineer will make a final inspection with the Project Manager and Contractor and will notify the Contractor in writing of all particulars in which this inspection reveals that the Work is incomplete or defective. The Contractor shall immediately take such measures as are necessary to remedy such deficiencies.

01710 - FINAL CLEANING

After completion of all work, the Contractor shall demobilize and remove all equipment, materials, spills, supplies, and trash from the project site and shall reclaim all areas disturbed by the Contractor's activities. Unless otherwise specified, developed, maintained roads that existed before commencement of the Contractor's activities need not be reclaimed, but must be left in a condition equal to or better than what existed before the Contractor's activities began. Fences, gates, plants, sod, and other surface materials disrupted by these operations shall be replaced or restored to original or better conditions immediately upon completion of work at the site. Other damage to private or public property shall be immediately repaired. All such cleanup, repair, or replacement work shall be done at the Contractor's expense and to the satisfaction of the Project Manager pending approval of the appropriate public officials and property owners. Payment for Demobilization should be covered under Bid Item No. 1, Mobilization, on the Bid Form.

01720 – PROJECT RECORD DOCUMENTS

The Contractor shall prepare final Project Record Documents providing information regarding all aspects of the Work, both concealed and visible, to enable future modification of the Work to proceed without lengthy and expensive site measurement, investigation, and examination. At Contract closeout, the Contractor shall deliver Project Record Documents and samples under provisions of Section 01701.

END OF DIVISION 1

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DIVISION 2 – SITEWORK

The following sections describe the sitework to be performed under this contract.

02050 – DEMOLITION

The following section describes selective demolition to be performed under this contract.

02070 - SELECTIVE DEMOLITION

The mine openings may require the removal of debris such as boards, signs, timbers, wire, etcetera. Salvageable materials shall be neatly stacked on the site, while trash shall be properly disposed of at the Contractor's expense at an appropriate licensed landfill. All fasteners shall be removed from the lumber and timbers. All specified or established avoidance areas shall be avoided and the recommendations of the archaeological report and the State Historic Preservation Office (SHPO) will be followed.

Other debris and timbers that may cause bridging of backfill material or otherwise interfere with construction shall be removed as directed by the Project Manager.

02100 – SITE PREPARATION

Before closure of the mine features, the Contractor shall provide tarps and assist AML biological staff in excluding animals from the features to be closed. Refer to the requirements in Section 01533.

02110 - SITE CLEARING

This work shall consist of clearing, grubbing, trimming, removing and disposing of vegetation and debris in accordance with these specifications, except those items designated to remain. This work shall also include the preservation from damage or defacement of all vegetation and items designated to remain.

Within construction limits for borrowing backfill material, all surface debris, roots, stumps, trees, and other objectionable protruding obstructions shall be cleared with the Project Manager's concurrence.

02200 – EARTHWORK

The following sections describe the earthwork to be performed under this contract.

Generally the following sequence of earth moving operations is required:

A. Available topdressing shall be stripped from all borrow and fill areas, bladed access roads, and other areas to be disturbed and stockpiled nearby for use in accordance with Section 02921. Vegetation smaller than three inches in diameter shall remain in the stockpiled topdressing and later spread with the topdressing. Where topdressing is unavailable, not retrievable, or judged by the Project Manager to be unsuitable, other suitable on-site material that can support vegetation shall be designated in the specifications or by the Project Manager for use as topdressing.

B. Project shafts, stopes, adits, and subsidences shall be backfilled and the areas graded as specified.

C. Lastly, the stockpiled or other suitable topdressing shall be spread on the areas specified and all disturbed areas. These areas shall be seeded, mulched, and fertilized as specified.

02202 - BLASTING

Where required by these specifications or allowed by the Project Engineer, blasting will be permitted for portions of the work which may be expedited thereby and if written permits are granted by the authorities having jurisdiction. Those authorities shall have the right to limit the use of explosives or to order the discontinuance of any blasting methods that endanger any part of any public or private property, the safety of inhabitants of the area, or the traveling public.

The Contractor may enlist the services of an experienced blaster for advice on blasting methods and protection of existing structures and facilities. Blasting shall be done so that no damage results to any building, facility, pipeline, underground mine void to be preserved, or structure on or off the site of the work, or above or below ground line. Any damage suffered because of blasting shall be repaired at the Contractor's expense. Generally, delayed blasts shall be used to reduce vibration and flyrock.

Blasting will not be permitted where existing mine structures or workings are specified to be left intact for underground habitat or protected and where blasting damage to such mine structures or workings is likely.

To protect possible nearby nesting raptors, blasting will be permitted only within the following period: *September 1 through April 30*.

A blasting plan shall be submitted to the Project Engineer a minimum of ten days before any blasting. The blasting plan shall consist of, but will not be limited to, the following:

1. The supplier and manufacturer of the explosives or blasting agents;

2. The quantity and type of explosives or blasting agents or any combinations proposed for use with proof of date and place of purchase;

3. The name of the explosive supervisor in the Contractor's employ or of the subcontractor proposed to supervise the blasting operations, the training and experience of the blasting supervisor, and copies of Federal and State permits for storage and use of explosives;

4. Compliance with County and State regulations and notification to the respective County offices a minimum of 48 hours before commencing blasting operations;

5. Identification of the specific areas where blasting will take place, direction of fall, maximum wind velocity permitted, dates and times when blasting will occur; and

6. Provisions to be taken for employee and public safety.

Review of the blasting plan by the Project Engineer shall not relieve the Contractor from full responsibility, including safety and completion of the work as specified.

The Contractor shall fully comply with all laws, ordinances, applicable safety code requirements, and regulations concerning the handling, storage, and use of explosives and the protection of life and property, including new work. All explosives shall be securely stored according to all laws and ordinances, and all such storage places shall be clearly marked. Where no local laws or ordinances apply, storage shall be provided satisfactorily to the Project Manager and usually not closer than 1000 feet from any road or from any building or camping area or place of human occupancy.

All necessary precautions, including the control of blasting, shall be taken to preserve the material below and beyond the established line of all excavation in the soundest condition possible. Any damage to the work due to the Contractor's operations, including shattering of the material beyond the required excavation lines or damage to public or private property, including utilities, shall be repaired at the expense of and by the Contractor. Slopes shattered or loosened by blasting, including unstable and hanging rock, and loose and unstable flyrock produced by blasting shall be taken down at the expense of and by the Contractor.

All structures near the project area, such as observatories, water towers, pipelines, and other utilities, tunnels, dams, impoundments, and underground mines shall be protected from damage by establishment of a maximum allowable limit on the ground vibration.

02210 - GRADING

The following sections describe the grading to be performed under this contract.

02211 - ROUGH GRADING

Unless otherwise specified or indicated, all cut and fill slopes shall be rough graded so that slopes are not steeper than three horizontal to one vertical (3h:1v) in earth, two horizontal to one vertical (2h:1v) in incompetent rock and very rocky soils, and one half horizontal to one vertical (0.5h:1v) in competent rock. Where specified and as directed by the Project Manager, the Contractor shall grade sites and construct drainage ditches around safeguarded mine features to divert storm water away from those features.

Where cut slopes in competent rock are steeper than one and a half horizontal to one vertical (1.5h:1v), the maximum uninterrupted vertical height of the slopes shall be no more than ten feet. A series of slopes, each at between one half horizontal to one vertical (0.5h:1v) and one and a half horizontal to one vertical (1.5h:1v), may be constructed in competent rock if horizontal benches or terraces a minimum of six feet wide, with inslopes of at least 4 percent, are built at a vertical spacing of no more than ten feet.

02212 - DECOMPACTION

Before construction demobilization and following the need for any construction access to each abandoned mine site, the Contractor shall decompact areas compacted by construction activity, including temporary work areas and access trails, and staging, storage and parking areas. Areas where more than four feet of overburden material has been removed shall also be decompacted.

Where bedrock is exposed at the surface, such decompaction will not be required. Decompaction methods shall be effective at reducing soil density to a minimum depth of twelve inches (except where bedrock is closer to the surface) and shall be accomplished without inverting the soil layers. Where practicable, ripping shall be done along the contour. Alternatives to ripping or auguring for decompaction shall be acceptable to the Project Engineer.

02216 - ACCESS ROAD CLOSURES

Before construction demobilization and following the need for any construction access to the abandoned mine site, the Contractor shall close temporary construction access roads as specified and as directed by the Project Manager. The Contractor shall outslope the road surface and remove all berms along the outer edge of the road. By grading material toward the cut bank, the Contractor shall take care not to spill graded material over the fill slope. The outslope shall be enough to divert water over the bank at approximately four to eight percent.

The Contractor shall construct berms and cross-ditches, as shown in the drawings and as directed by the Project Manager, to restrict vehicular access and control erosion.

In addition, cross-drains shall be located to divert water where the road traverses a ridge, above and below road junctions, above steep incurves to prevent bank cutting and to keep road surface water from entering a draw, below sharp incurves to prevent water from a draw from coursing down the road, and below seeps and springs.

02220 - EXCAVATING, BACKFILLING, AND COMPACTING

The following sections describe the excavating, backfilling, and compacting to be performed under this contract.

02222 - EXCAVATION

The Contractor shall reopen as necessary the adits, shafts, stopes, and subsidences that may be partially closed, by mucking out the debris, earth, and rock plugging or partially plugging them. Before removing any backfill or borrow, the Contractor shall discuss with the Project Manager where material shall be excavated, and shall obtain the Project Manager's approval of the excavation plan.

02223 - BACKFILLING OF MINE OPENINGS

This work shall consist of backfilling mine openings with onsite or imported fill materials as designated in the specifications or as directed by the Project Manager.

I. General

Before backfilling mine openings, the Contractor shall remove cribbing, garbage, wood and other materials as specified and as directed by the Project Manager. All trash and debris shall be hauled to a permitted landfill or transfer station.

Backfill material shall be free of snow, ice, frozen lumps, logs, timbers, significant amounts of woody or vegetative debris, other deleterious materials and materials of such size and shape that they may bridge the opening being filled.

Hand backfilling is an option at sites difficult for equipment access or too steep to operate equipment safely.

II. Adit Backfilling

Unless otherwise specified, adits shall be backfilled to a minimum depth of fifteen feet from the inner top of the fill to the outer top of the fill. No spaces shall be left between the top of the fill and the back (roof) of the adit that exceed three inches and no space shall be left between the top of the fill and the back (roof) of the adit at the entrance of the adit. In certain situations, a tamping device or fabricated ram may be required to place the necessary fill.

Wherever practicable or as directed by the Project Manager, the entire length of backfill shall consist of rocks to reduce the chances of erosion of the material and discourage anyone from digging through the fill.

Where the opening to an adit is recessed into a hill slope, the trench in front of the adit shall be partially backfilled as shown on the Drawings and with no abrupt changes in the slope between the backfilled entry and the surrounding ground.

III. Shaft, Pit and Open Stope Backfilling

Shafts, pits, stopes, declines, trenches and subsidence features shall be backfilled completely from the bottom of the feature to the specified minimum distance above or below the surface.

In shafts and stopes with intact or partially intact cribbing or lining to remain, the maximum size of backfill material shall have no dimension exceeding twelve inches. Care shall be taken during backfilling to reduce damage to the cribbing or lining to prevent bridging of fill materials on collapsed timbers and to minimize potential for collapse of the collar.

Where judged to be feasible by the Project Manager, the Contractor may break collapsed timbers deeper than can practicably be removed by other methods by dropping heavy rock, boulders, or broken concrete during the initial stages of backfill.

Wherever practicable, at least 80 percent by weight of fill material shall be larger than ¾ inch. In shafts, stopes and declines, the coarsest available backfill material shall be used from the bottom of each drift level to a minimum height of five times the diameter or diagonal dimension of the shaft above the drift floor level.

IV. Slow Backfill

Slow backfill is designated for closure of some features; the purpose is to create enough loud noise, vibration and dust to expel bats and birds that may be in the underground mine workings. Hand backfilling is by definition slow backfill and will not require special procedures unless directed otherwise by the Project Manager.

When using equipment, the following procedure shall be followed. The first one-quarter cubic yard of fill material placed to backfill the shaft or stope shall be slowly placed into the mine opening. Fill operations shall then cease for two minutes to allow time for bats and birds to escape. After three repetitions of quarter-yard fill increments interspersed with waiting periods of two minutes, this procedure shall be repeated using one-half cubic yard increments, again with two-minute pauses between fill operations. To the extent practicable, fill material for the slow backfill process shall be gravel-sized and not larger than 1½ inches.

The Project Manager may require the Contractor to vary this procedure. Variations may be made depending on the size and depth of the mine opening, the complexity of the underground workings, the availability of properly sized material at the fill site and his judgment of the effect of the operation on bats and birds in the openings.

After this initial slow placement of backfill material and with the concurrence of the Project Manager, the Contractor may proceed with normal backfilling operations.

V. Final Layer of Fill

Wherever practicable, the final eight- to twelve-inch layer of the fill at mine openings shall be soil of comparable quality to the undisturbed soil surrounding the backfilled feature. Note the topdressing requirements of Section 02921.

02224 - BORROW

Except where otherwise specified or indicated, fill shall come from the areas immediately at and surrounding the mine features or from nearby mine waste piles as the Project Manager directs. Preferentially, mine waste material shall be used. Material may come from other areas as required and as directed by the Project Manager.

For indicated mine openings and as required, fill material shall be taken from designated borrow areas as indicated in the drawings. Any other non-designated borrow sources shall be approved before use by the Project Manager and, for borrow sites on nearby BLM lands, by the Bureau of Land Management. Topdressing at onsite borrow areas shall be stripped and stockpiled before borrow operations. Haul routes for borrow material shall be approved by the Project Manager before commencement of hauling.

Except as otherwise noted or allowed by the Project Manager, the Contractor shall not use any mine waste material from within avoidance areas, shall avoid undermining the cultural features within avoidance areas during borrow operations, and shall not leave disturbed slopes in the mine waste steeper than two horizontal to one vertical (2h:1v) outside avoidance areas.

02229 - COMPACTION

Material used for fill shall be compacted whenever possible using multiple passes with available heavy equipment. The fill in adits, shafts, stopes, and subsidences shall obtain a compaction density not less than what the equipment can reasonably obtain to the satisfaction of the Project Manager.

Where vibratory compaction equipment is used, it shall be the Contractor's responsibility to insure that vibrations do not damage nearby structures or underground mine voids.

02270 - SLOPE PROTECTION AND EROSION CONTROL

The following sections describe the slope protection and erosion control to be performed under this contract.

02276 - PRECAST STACKABLE CONCRETE UNITS

Precast stackable concrete units shall have a minimum 28-day compressive strength of 3000 psi. The concrete shall have adequate freeze/thaw protection with a maximum moisture absorption of 8 percent. Exterior dimensions may vary. Units shall be capable of a convex radius of 25 inches. Construction drawings are based on the "Cottage/Country Stone" units by Rockwood Retaining Walls, Inc. (http://www.rockwoodwalls.com) and any of their authorized manufacturers or distributors. These units are four inches high, twelve inches wide, and eight and a half inches deep with an approximate weight of 26½ pounds. Color of units shall be as selected by the Project Engineer.

Units from other manufacturers may be acceptable, following review by the Project Engineer. Any substitution shall have equal quality of construction, similar materials, and the same performance characteristics as that specified. If the Project Engineer accepts the proposed substitution, the Contractor shall accept the unqualified responsibility for the performance of the substituted item. Changes or modifications of construction caused by the substitution shall be the responsibility of the Contractor and shall be at his sole expense.

I. Drainage Aggregate

Drainage aggregate shall be angular, clean stone or granular fill meeting the following gradation as determined in accordance with ASTM D422.

Sieve Size	Percent Passing
1 inch	100
3/4 inch	75-100
No. 4	0-60
No. 40	0-50
No. 200	0-5

Drainage aggregate shall be placed in uncompacted layers of eight inches or less and compacted by slicing with a shovel or vibrating.

II. Scoria Fill

Scoria fill shall be clean, crushed scoria (or other approved equivalent lightweight aggregate) with a dry unit weight of no more than 46 pounds per cubic foot and with not less than 95% passing a 1½" sieve and with not less than 90 percent retained on a #4 sieve.

Scoria fill shall be placed in uncompacted layers of eight inches or less and compacted by slicing with a shovel or vibrating.

The Contractor shall excavate to the lines and grades shown on the construction drawings and as required for the footing dimensions. The first course shall be aligned by using a string line at straight walls sections and each face unit leveled side-to-side and front to back. The first course of units shall be placed side by side so they are touching. Units shall be placed side by side for the full length of the wall. Proper alignment may be achieved with the aid of a string line or offset from a baseline. The clean granular fill behind the units shall be placed and compacted by slicing with a shovel as each course is finished. All excess material shall be swept from the top of units before installing the next course.

Permanent mechanical connection shall be made at the top two courses with construction adhesive. Adhesive shall be applied to the top surface of units below and the upper units then placed into position. All surfaces shall be clean, dry and free of dust, oil, grease, frost, and moisture. Adhesive shall be a one-part, water-resistant, freeze-thaw stable, super strength, flexible, and quick curing industrial adhesive that conforms to ASTM 2339. The adhesive shall be "SB-10 Paver Bond Powerseal Adhesive" by Surebond, Inc. (http://www.surebond.com), or approved equivalent.

The Contractor shall follow the manufacturers' installation recommendations for concrete units and adhesive.

02600 - PIPED UTILITY MATERIALS

The following sections describe piped utility materials to be installed under this Contract.

02613 - CORRUGATED METAL PIPE

Corrugated metal pipe and connectors shall be manufactured and inspected in conformance with the requirements of AASHTO M36 and as hereinafter specified. The size and gauge of the pipe to be furnished shall be as shown in the drawing or specified herein. Nominal diameter or dimensions as referred to in AASHTO M36 shall be defined as the minimum inside dimension of the pipe.

Materials for corrugated metal pipe, pipe arches, and appurtenances shall be as specified in AASHTO M36. Pipe in which the seams indicate slippage or unraveling will be rejected. The butt-welding joint at sheet ends will be acceptable if a good weld is performed and damaged spelter coating is satisfactorily repaired. Sawed ends on pipes will be permitted provided all

burrs are removed. Spelter coating damaged by welding or fabrication shall be repaired and recoated in accordance with AASHTO M36. Corrugated steel pipe shall be 16-gage minimum.

Bands for connecting helically corrugated pipe with re-rolled ends or corrugated metal pipe shall conform to the requirements of AASHTO M36. Flange bands will not be permitted. The bottom of the installed pipe shall be in contact with the shaped bedding throughout its full length. Pipe shall be inspected before any backfill is placed. Any pipe found out of alignment, unduly settled, or damaged shall be taken up and re-laid or replaced

02800 - SITE IMPROVEMENTS

Cattle guards, curbs, fences, gates, gutters, sidewalks, and other road or street improvements destroyed, removed, or damaged during construction shall be replaced with the same type and dimensions of units removed and shall be equal to and consistent with the undisturbed portions of the improvements existing before the project.

02820 - FENCES

Fencing Specifications shall conform to the requirements set forth in AASHTO M181, the New Mexico Standard for Public Works Construction, Section 410 and NMSA 1978, Sections 77-16-1 through 77-16-18.

I. General

The Contractor shall submit one test certificate each to the Project Engineer certifying that the fencing materials conform to the requirements herein provided. When the locations of manufacturing plants allow, the plants may be inspected for compliance with specified manufacturing methods and material samples will be obtained for laboratory testing for compliance with material quality requirements. This can be the basis for acceptance of manufacturing lots as to quality. All materials will be subject to inspection for acceptance as to condition to check for compliance before or during incorporation of materials in the work. All fences shall be installed in the locations specified and as directed by the Project Manager.

II. Wire Fence

This work shall consist of the construction of fence and gates in substantial compliance with the specifications, lines and grades shown on the plans or established by the Project Engineer.

A. Welded Wire Fabric and Wire

All fences shall consist of welded wire fabric and line wires spaced as indicated.

1. PVC-coated barbed wire shall be manufactured in accordance with ASTM F1665, which requires two strands of 14 gauge (0.080") metallic-coated core wire with four-point 14 gauge (0.080") zinc-coated or aluminum alloy barbs. The PVC coating shall be class 1 extruded or class 2a extruded and adhered. The spacing on the barbs shall be Type 1, 5 inches on center.

2. Welded wire fabric shall be fabricated using 14 gauge (0.080") wires with stay wires (wires running the width or height of the roll) at 2" spacing and line wires (wires running the length of the roll) at 4" spacing. The fabric shall be galvanized after welding and then coated with black PVC. The PVC coating shall be ultraviolet-resistant. Welded wire shall conform to ASTM A185, A370 and A853 and zinc coating to ASTM A90, A123 and A153 and shall be welded wire mesh by Riverdale Mills Corporation, or approved equivalent.

3. Tie wires for fastening welded wire fabric and barbed wire to steel posts shall be not less than thirteen gauge (0.109-inch) coated diameter and galvanized conforming to ASTM A112. Eleven gauge (0.120-inch) coated diameter or heavier wire fasteners or metal clamps may be used instead of tie wires when approved in advance by the Project Engineer.

B. Brace Panels and Posts

Intermediate brace, gate brace and corner panels shall be prefabricated assemblies, "Easy Fence" by D-C Industries (Coalville, Utah, 435.336.2404) or approved equivalent, which require no concrete footings. They shall be installed following the manufacturer's recommendations.

Line posts shall be metal. All posts shall be of the type, size and length shown on the plans and as herein provided.

Metal posts shall be fabricated from rail, billet, or commercial grade steel conforming to ASTM A702 and shall be galvanized or painted green as required. All metal posts throughout the project shall be either galvanized or painted the same color green. Galvanizing shall conform to ASTM A123. When painted green, the posts shall be cleaned of all loose scale before finishing and painted with one or more coats of weather resistant, air baking or drying, green paint or enamel.

Metal line posts shall consist of heavy-duty steel spaced sixteen and one half feet apart. Metal line posts shall have a minimum weight of 1.33 pounds per foot exclusive of anchor plates. A minus tolerance not to exceed 5 percent of the minimum weight of each post will be permitted. A plus tolerance of two inches and a minus tolerance of one inch in the length of each post will be permitted. Metal line posts may be I-beam, T-beam, U-beam, Y-beam, or H-column section.

Line posts shall be provided with corrugations, lugs, ribs, or notches spaced approximately one inch on centers to engage the required fence wire in designated spaces. Posts

with punched tabs to be crimped around the wire will not be accepted. Anchor plates shall be an area of not less than eighteen square inches, shall weigh not less than 0.67 pound each and shall be securely welded, bradded, swaged, or riveted to each line post in a way that prevents displacement when the posts are driven.

C. Fittings

All fittings, hardware and appurtenances for fences shall be commercial quality steel, malleable iron, or wrought iron and shall be galvanized in accordance with the requirements of ASTM A153. Fittings shall be black PVC-coated with ultraviolet-resistant coating.

III. Construction

The Contractor shall perform such clearing and grubbing as may be necessary to construct the fence to the required grade and alignment. At locations where fence runs are completed, appropriate adjustment in post spacing shall be made to conform to the requirements for the type of closure indicated.

The tops of all posts shall be set to the required depth and alignment. Cutting off the tops of posts shall be allowed only with the approval of the Project Manager and under the conditions specified. Wire or fencing of the size and type required shall be firmly attached to the posts and braced in the manner indicated. All wire shall be stretched tautly and shall be installed to the required elevations. At each location where an electric transmission, distribution, or secondary line crosses any of the fences covered by these specifications, the Contractor shall furnish and install a ground conforming to National Electrical Code requirements if conditions warrant such installation.

Wire fences shall be constructed in conformity with the details and at locations shown on the plans or staked by the Project Manager. All posts shall be set plumb and to the depth and spacing shown on the plans. Excavations for footings and anchors shall be to dimensions shown on plans or established by the Project Engineer. Metal line posts may be driven. Posthole backfill shall be placed in thin layers and each layer solidly compacted. Posts set in rock shall be placed as directed by the Project Manager.

Mechanical stretcher or other device designated for such use shall stretch fence wire and welded wire fabric. Stretching by motor vehicle will not be permitted. The length between pull posts shall not exceed nine hundred ninety feet for barbed wire fence.

Intermediate braces shall be placed at intervals not to exceed nine hundred ninety feet and shall be spaced evenly between corner posts.

Corner posts and braces shall be placed at appropriate fence angles or bends.

Fence materials of the same manufacturer, type, or process, conforming with the specifications and details shown on the plans, shall be used throughout the work unless otherwise authorized in writing by the Project Engineer.

02890 - SURVEY CAPS

A new six-foot long nominal 3½ -inch inside diameter galvanized steel pipe (4.0" O.D., minimum 9.11 lbs./ft.) shall be installed in front of backfilled and safeguarded mine features as indicated in Table II. The lower two feet of pipe shall be set in concrete a minimum of one foot in diameter and the upper twelve inches of pipe shall extend above grade. The Contractor shall grout a survey cap, provided by the Project Manager, into the pipe using a non-shrink grout, such as Moly Parabound, Pour Rock, or Quikrete. Alternately, where the Project Manager concurs, the Contractor may drill and grout a cap in undisturbed, competent rock or concrete immediately next to each specified feature. This is the preferred method at structural closures with exposed concrete or grout or nearby competent rock.

02900 - LANDSCAPING

The following sections describe revegetation to be performed under this contract.

02920 - SOIL PREPARATION / EXTREME SURFACE ROUGHENING

Prior to seedbed preparation, the Contractor shall grade all disturbed areas as described, decompact those areas specified above, and apply extreme roughening as specified below. Disturbed areas include the mine backfill borrow areas, depressions and mounds at safeguarded shafts, filled areas at adits, temporary access and haul routes, closed access roads, areas stripped of native vegetation and any other surface disturbed areas except as otherwise specified.

On slopes up to 1.5h:1v, the soil surface in areas to be seeded shall be prepared to be continuously rough and hummocky. This shall be accomplished by using an excavator bucket, or other acceptable methods that produce similar results, to create pockets and furrows to trap water and create favorable microclimates for plant growth. Basins shall be 18 to 24-inches deep and the width of the bucket (up to four-feet wide).

The most common construction method is to dig a bucket load of soil and then drop it from two to three feet above the soil surface. The process shall be repeated in a random, continuous and overlapping pattern. Finished roughened soils shall be difficult to walk over. On fine silty and clayey soils, the pocks shall be as large as practicable, resembling moguls on a ski slope. No work shall be done when the moisture content of the soil is unfavorable (too wet or extremely dry) or the ground is in a nontillable condition.

The specified topsoil, fertilizer and mulch shall be spread just before and incorporated during the extreme surface roughening procedure. After roughening, seed shall be broadcast or

hydroseeded as specified below. In areas with extremely dry and loose soil, the Project Manager may require the Contractor to wait until the soil has settled before seeding.

Large and small boulders may be left exposed on site prior to seeding, either singly or in groupings that blend with the natural surroundings, as directed by the Project Manager. The Project Manager may require that additional boulders be placed on site to enhance visual variation and provide wildlife habitat.

Unless the soil is severely compacted or as otherwise noted, soil preparation will not be required for discontinuous, isolated areas of disturbance less than 0.05 acres (approximately 2500 square feet or 50 feet by 50 feet), such as areas around mine portal closures.

The extent of seedbed preparation shall not exceed the area on which the entire seeding operation can be applied to such prepared seedbed before any surfaces crusting or loss of seed and fertilizer due to erosion. If erosion or crusting occurs, the entire area affected shall be reworked beginning with seedbed preparation.

02921 - TOPDRESSING

As specified, on construction sites, mined areas, and other critical areas where the existing surface material is either chemically or physically unsuited to support adequate vegetation, the best available soil material shall be evenly spread on the surface in sufficient depths to maintain plant growth. Available topdressing in all areas to be disturbed shall be set aside prior to deeper soil disturbance for excavation, mine feature backfilling and access road blading.

Topdressing shall be applied generally along the contour, but if hazardous conditions arise, the application may be in another direction. In all cases, placement shall be such that erosion is kept to a minimum. All topdressed slopes shall be prepared by extreme roughening before planting to reduce erosion.

02930 - GRASSES

The following section describes the seeding to be conducted under this contract.

02933 - SEEDING

Following completion of seedbed preparation, the Contractor shall seed areas according to the Specifications and as follows:

I. Seeding Time

Seeding shall be accomplished between June 15 and August 31 of each year, unless specific permission in writing is issued by the Project Engineer to allow seeding before or after these dates. Seeding shall not be done when the soil is too wet or too dry or otherwise ntellable.

II. Seed Species and Mixtures

To assure AML that the seed purchased shall exhibit the characteristics associated with the given variety, and that it is genetically pure, the Contractor shall provide certified seed of named varieties. For the unnamed varieties, the seed shall be obtained by the Contractor from a source adapted to the climate and soil in which it is being planted; that is, a similar land resource area which is not more than approximately three hundred miles south or about two hundred miles east, north, or west. The percentage of each species comprising seed mixtures for application is outlined below. The mixture is to be used for revegetation of areas defined above in Section 02920. Seed species and varieties, which are well adapted to the soil, climate, and topography of the disturbed areas, shall be used in revegetation and are discussed below.

III. Seeding Methods

A. Broadcasting/Hydroseeding

The seed shall be broadcast or hydroseeded. When broadcast seeding, passes shall be made over the site to be seeded such that an even distribution of seed is obtained. Broadcast seeding shall take place immediately following the completion of final soil preparation. Broadcast seeding shall not be conducted when wind velocities would prohibit an even seed distribution. Broadcast seeding shall be followed by hand raking, manual use of a drag chain, or sweeping with sturdy tree or shrub branches to cover seed. This shall be done over the entire seeded area but shall not be so extreme as to reduce the extent of soil relief.

Broadcast seeding of large areas shall be done using hand-operated “cyclone-type” mechanical seeders. All seeding equipment used shall be equipped with a metering device and set to the appropriate seeding rate.

Broadcast seeding of small areas of disturbance, less than 0.05 acres (approximately 2500 square feet or 50 feet by 50 feet) may be done by hand scattering. Raking of small areas is not necessary if there is sufficient surface roughness to ensure that seeds will fall in crevices and other micro-topographic depressions that weather and gravity will cause the to be covered and stay in place.

After completion of the broadcast seeding and seed covering, organic debris such as logs, tree stumps and grubbed vegetation shall be randomly redistributed across the sites. This shall be done at the Project Manager’s direction for the purpose of creating visual variation,

ground shading, and production of wildlife habitat. Care shall be taken to avoid leveling the soil surface.

B. Completion

If the Contractor is scheduled to close the project outside the specified seeding time when seeding is the only incomplete item, the Contractor shall complete only seed bed preparation and 75 percent of the lump sum bid price for seeding will be retained. Then the job shall be held open for seeding during the next seeding season with the remainder of the bid price being paid upon completion and acceptance of seeding. Application of a final layer of mulch, at the rates described below, shall then be carried out after seeding.

If all of the work required by the contract, except seeding, is completed before seeding is accomplished because of seasonal limitations, partial acceptance of the work will be made with final acceptance delayed until seeding has been accomplished in accordance with these specifications. Liquidated damages will not be assessed against the Contractor during the interim period between the dates of partial acceptance and final acceptance if such delay is the result of seasonal limitations.

C. Seeding Rates

Seeding rates are given in Table I. Pure Live Seed (PLS) expresses seed quality. PLS is a percentage of pure, viable seed in a particular lot of seed. PLS is calculated by multiplying the percent total germination by the percent purity and dividing by one hundred (100):

$$\text{Percent PLS} = \frac{\text{Purity x Germination}}{100}$$

Table I – *SEED MIX / Lake Valley Mine Safeguard Project – Phase II*

No.	Species	Scientific Name	Variety	Application Rate Lb. PLS/Ac.
1	Indian ricegrass	*Achnatherum hymenoides*	Paloma	2.16
2	Purple three-awn	*Aristida purpurea*		0.52
3	Blue grama	*Bouteloua gracilis*	Hachita	0.91
4	Bottlebrush squirreltail	*Elymus elymoides*		0.68
5	Galleta grass	*Hilaria jamessii*	Viva (florets)	0.82
6	Alkali sacaton	*Sporobolus airoides*	Salado	0.05
7	Sand dropseed	*Sporobolus cryptandrus*		0.02
8	Blue flax	*Linum lewisii*		0.45
9	Desert globemallow	*Sphaeralcea ambigua*		0.26
10	Scarlet globemallow	*Sphaeralcea coccinea*		0.26

11	Fourwing saltbush	*Atriplex canescens*	3.35
12	New Mexico saltbush	*Atriplex obovata*	0.63
13	Turpentine bush	*Haplopappus laricifolius*	0.20
14	Burro-weed	*Haplopappus tenuisectus*	0.10
		Total	10.41

All seed shall comply with the New Mexico Seed Law NMSA 1978, Sections 76-10-11 through -22 and the New Mexico Department of Agriculture (NMDA) 21 NMAC 18.4.1 (Seed Standards and Classifications). Invoices or bag labels showing purity and germination for all seed shall be provided to the Project Manager before seeding.

The Contractor shall protect and care for seeded areas until final acceptance of the work, and shall repair all damage to seeded areas caused by pedestrian or vehicular traffic at no additional cost to EMNRD.

02940 – MULCHING

The Contractor shall apply mulch to all seedbed areas. Mulching will not be permitted when the wind velocity exceeds fifteen miles per hour. The mulch type shall be coarse bark and/or wood chips or chunks, pecan shells, or approved equivalent. Materials shall be wind resistant. No more than 15 percent, by loose volume, shall pass through a 0.25-inch sieve. The mulch shall not contain resin, tannin, or other compounds in quantities that would be detrimental to plant life. Sawdust or materials with noxious seed or plants will not be acceptable. Chipped, but uncomposted, yard waste will not be acceptable unless the material is certified to be free of weed seed.

The mulch shall be spread uniformly over the prepared area either by hand or with a mechanical mulch spreader. Mulch shall be applied by the Contractor to all seeded areas immediately after seeds are planted to provide suitable surface litter for improvement of moisture conditions and to reduce the potential for damaging erosion or soil blowing which might occur before or during plant establishment.

The rate of application of woody mulch shall be 35 to 40 cubic yards per acre (approximately ¼-inch thick after spreading).

02955 – SALVAGE OF NATIVE PLANTS

Before any area is disturbed for access, borrow, fill or other construction activities, the Contractor shall thoroughly scout the area for native plant species. All significant plants shall be avoided wherever practicable. Of those that need to be disturbed, the Contractor shall salvage those that can be replanted, as the Project Manager directs and as specified below. Species that

shall be salvaged include prickly pears (*Opuntia spp.*) and other cactus species, including pincushion types.

Plants to be salvaged shall be dug from the soil before earthmoving operations, preserving as many roots and as much of the soil around the roots as practicable. The south side of the plant and the soil line shall be marked with paint or marking crayons. When transplanted the plant shall be placed in the same orientation it was exposed to before harvesting.

The top half of prickly pear pads shall be cut from the mother plant. Before replanting, cactus roots on the mother plant and the cut prickly pear pads shall be allowed to dry in a shaded, ventilated location for at least two weeks but no more than six weeks. Cactus of other species and other salvaged plants shall be planted as soon as possible but no more than one week after harvest.

Salvaged plants shall be placed into well-drained soil, preferably in areas that have been disturbed by construction activities and along closed access roads. The soil in the planting areas shall be tested before planting by filling a planting hole with water. If the water drains within four hours, the site is suitable.

The cactus plants shall be placed into the planting hole at their original orientation and planting height to avoid sunburn and stem decay. The bottom one-third of the cut prickly pear pads shall be covered with soil, with the pads oriented so that their broad sides face east and west. The planting holes shall be backfilled with native, unamended soil and the air in the soil worked out by gently moving the soil with a rod or pole. The plants shall be watered in at the time of planting; no further watering is required. Larger specimens shall be staked as necessary as determined by the Project Manager.

02970 – LANDSCAPE MAINTENANCE

The following section describes the fertilizing to be conducted under this contract.

02971 – FERTILIZING

During final soil preparation, the Contractor shall work 75 pounds of nitrogen per acre (1.7 pounds per thousand square feet) in an organic fertilizer and 220 pounds per acre (5.0 pounds per thousand square feet) of humate into the surface soil. Acceptable organic fertilizers include “Biosol 6-1-3,” available from Rocky Mountain Bio-Products, Inc. (http://www.biosol.com), “Fertil-Fibers” 6-4-1 (Quatro Environmental, Inc. 619.522.0044) and “Sustane 5-2-4” (Sustane/Natural Fertilizer of America, 800.352.9245).

Note that application rates for the organic fertilizer are based on its nitrogen content. Thus, 1,250 pounds per acre of Biosol or Fertil-Fibers (29 pounds per 1000 square feet) or 1,500 pounds per acre of Sustane (34 pounds per 1000 square feet) would be required.

Humate shall be 70% grade humus or better. Electrical conductivity (E.C.) of the humate shall be less than 8.0 µmhos/cm. One source of humate is Mesa Verde Resources, P.O. Box 8632, Albuquerque, N.M. (505.268.5330).

The Contractor shall provide bag labels, invoices, analyses, or other documentation showing the purity and composition of the fertilizer and humate to the Project Manager.

56 - SUBMITTALS

Complete data and specifications for the precast stackable concrete units, construction adhesive, drainage aggregate, scoria fill, organic-based fertilizer (if use of other than the products specified is proposed), humate, and accessories shall be submitted in accordance with the procedure set forth in Section 01340.

Table II
PROJECT SUMMARY INCLUDING APPROXIMATE MINE OPENING DIMENSIONS AND MINE FILL VOLUME ESTIMATES

The approximate mine opening dimensions and mine fill volume estimates are provided only for the information of the potential Bidder. The Abandoned Mine Land Program makes absolutely no guarantee of their accuracy or precision. Volume estimates are of the material that may be required to fill the mine cavities and adjacent areas as indicated, including an allowance for shrinkage, irregularities and known underground mine voids. All mine features are irregular in shape. Estimates of mine fill volumes are generally not indicated at structural closures; excavation, fill and other earthmoving activities there are considered incidental to the work. Mine fill volume estimates are indicated at those structural closures with significant volumes of earthwork required.

For bat and owl protection, construction at some mine openings is limited to certain periods of the year. **At sites with construction time restrictions, allowable work periods are italicized below. Work outside the specified periods shall take place only with the written permission of the Project Engineer.**

AML NUMBER	MINE OPENING	DIMENSIONS (FEET)	VOLUME (C.Y.)	WORK REQUIRED/COMMENTS
SITE 045 CAROLINA LODE				
045-001T	Tunnel	10½'Wx7'Hx21'D (South) 7'Wx4'Hx15'D (North)	95 25	Backfill from upper ends of north and south openings, (no blasting allowed). Preserve blacksmith shop site below at 045-003T Stope
045-002T	Decline Adit	7'Wx6'Hx54'D	50	Remove timbers at entry; Muck open collapsed entry; Backfill; Install survey cap
045-003T	Stope Opening	Highly variable	-	Preserve blacksmith shop site; Construct corrugated steel pipe (CSP) column plug
045-004T	Stope Opening	26'Wx14'H	700	Construct bat gate in CSP with toroid tire plug; Backfill around CSP with imported fill and nearby material as indicated; Preserve timber stulls in mine workings; Preserve blacksmith shop at 045-003T Stope; Construct fence along top edge of open pit as indicated; Install survey cap; *October 1 through April 30;* Close temporary construction access road
045-005Ta	Adit	10'Wx2.6'H	-	Construct toroid tire plug; *September 1 through April 30*

AML NUMBER	MINE OPENING	DIMENSIONS (FEET)	VOLUME (C.Y.)	WORK REQUIRED/COMMENTS
045-005Tb	Shaft	2.6'x5'	-	Construct bat compatible closure with CSP riser and toroid tire plug; Install survey cap; *September 1 through April 30*
045-006T	Adit Openings	9'Wx6'Hx31'D (Upper) 3½'Wx2½'Hx10' D (Lower)	45 5	Backfill upper & lower openings
045-026T	Adit	5'Wx1.5'H	500	Construct bat gate in CSP; Backfill with local and imported fill; Preserve timber stull at entry; Install survey cap; *September 1 through April 30;* Close temporary construction access road
045-055S	Shaft	25'Dia.x23'D	190	Backfill to surface
045-056S	Shaft	5½'x7½'x60'D	30	Remove timbers at collar; Construct toroid tire plug; Backfill; Install survey cap
045-057S	Shaft	7'x10'x9'D	15	Remove timbers; Hand backfill to –4' (four feet below finish grade)
045-091S	Shaft	5½'x7'x46'D	90	Remove timbers as required; Construct toroid tire plug; Backfill; Install survey cap
045-114S	Shaft	5½'x7½'x52'D	-	Remove timber cover and collar as required; Construct toroid tire plug; Backfill; Install survey cap
045-118S	Shaft	3½'x4½'x93'D	-	Construct grated airflow closure with CSP riser in polyurethane foam plug (PUF); Preserve existing timber collar as indicated; Install survey cap; *September 1 through April 30*
045-119S	Stope Opening	8'x9'x21'D	-	Construct high-strength steel mesh cover with boulder barrier
045-120Sa	Shaft	4 ½'x8'x35'D	20	Remove timbers at collar; Construct toroid tire plug; Backfill; Install survey cap
045-120Sb	Stope Openings	38'Wx11'H; 22'Wx3½'H; 4'Wx2'H	300	Construct toroid tire plugs; Backfill; Construct boulder barrier across road to F. 045-120b stope openings; Install survey cap; *September 1 through April 30*
045-121S	Shaft Adit	5½'x7½'x24'D 5'Wx4'Hx9'D	35 15	Remove timber cover; Slow backfill shaft to –3'; Backfill adit; *May 1 through September 30*

AML NUMBER	MINE OPENING	DIMENSIONS (FEET)	VOLUME (C.Y.)	WORK REQUIRED/COMMENTS
045-122S	Shaft (Roberts Shaft)	4'x4'x72'D	-	Construct bat cupola with concrete footing placed on cast-in-place concrete hollow core plug; Preserve timber lining as indicated; Remove steel cover plate; Install survey cap; *September 1 through April 30*
045-132S	Decline Adit/ Stope Opening	50'Wx7'H Max.	300	Construct toroid tire plug, bat gate in CSP, and PUF plug; Backfill with imported fill; Preserve timber loadout as indicated; Construct two tank traps along access road; Install survey cap; *September 1 through April 30*
SITE 046 NORTH CAROLINA LODE				
046-006Oca	Stope/ Tunnel	Variable	45	Preserve nearby muck wall; Backfill (may blast or collapse rock bridge); *May 1 through August 31*
046-006Ocb	Collapse	2'x4'x2'D	1	Slow backfill to surface; *May 1 through August 31*
046-006Occ	Shaft/ Stope	3½'x4½'x8'D	8	Remove timbers at collar; Smoke bomb; Slow backfill to surface; *May 1 through August 31*
046-006Ocd	Collapse/ Stope	4'x16'x3'D	8	Smoke bomb; Slow backfill to surface; Preserve adjacent stone wall; *May 1 through August 31*
046-007T	Adit	5'Wx1½'H	-	Construct CSP with connection to CSP for 045-026T adit; Install survey cap in pipe above opening; *September 1 through April 30*
046-011OC	Open Cut / Stope	16'x30'x15'D	160	Smoke bomb lower underground opening; Slow backfill to –8'; Leave hole in fill to view muck wall at end; *May 1 through August 31*
046-011T	Collapsed Stope	Variable	-	Collapse thin rock roofs (estimated construction time is ½ to ¾ hour with equipment); *May 1 through August 31*
046-012OC	Open Cut	7'x10'x6'D	10	Backfill to –2'; *May 1 through August 31*
046-013OC	Open Cut	9'x33'x6'D	50	Backfill to –2', including drift (2'Hx5'Wx15'D); *May 1 through August 31*
046-015OC	Open Cut	3½'x12'x7'D	5	Backfill to –4'; *May 1 through August 31*
046-028S	Shaft	4'x7'x23'D	-	Construct high-strength steel mesh cover; Preserve timbers at collar; Close temporary construction access road

AML NUMBER	MINE OPENING	DIMENSIONS (FEET)	VOLUME (C.Y.)	WORK REQUIRED/COMMENTS
046-040S	Shaft	4½'x7'x188'D	-	Smoke bomb; Remove timbers at collar; Construct polyurethane foam (PUF) plug; Install survey cap
046-052S	Shaft	5½'x7'x114'D	50	Remove timber cover; Construct toroid tire plug; Install survey cap
046-053S	Shaft	4½'x7½'x20'D	-	Construct high-strength steel mesh cover; Close temporary construction access road
046-054S	Stope	14'x19'x10'D	65	Backfill to –4'
046-096S	Shaft	5'x7'x23'D	25	Remove timber cover; Construct toroid tire plug; Install survey cap; Close temporary construction access road
046-115S	Shaft	4'x7½'x42'D	100	Remove timber cover, lining and ladder at collar; Construct bat cupola with PUF plug, CSP riser, scoria fill, precast concrete units and concrete collar; Install survey cap; Close temporary construction access road; *September 1 through April 30*
046-124S	Stope Opening	5'x5½'x6'D	100	Construct toroid tire plug; Install survey cap; Close temporary construction access road
046-133S	Shaft (Office Shaft)	3½'x7½'x150'	-	Construct grated airflow closure in existing concrete collar; Preserve loadout and headframe; Remove timbers at shaft collar only as required for construction; Construct PUF plug and rock fill as indicated; Install survey cap
SITE 047 EMPORIA LODE				
047-016S	Shaft	4'x6½'x53'D	-	Remove timber collar; Construct bat compatible closure with PUF plug, CSP riser, scoria fill, precast concrete units and concrete collar; Install survey cap; *May1 through September 30*
047-016T	Decline Adit (Manganese Decline)	5½'Wx7'H	200	Construct bat gate in CSP with PUF plug; Remove timbers at entry only as required for construction; Backfill adjacent blind adit with imported fill as needed (approx. 5'Wx5'Hx10'D); Install survey cap; *October1 through April 30*

AML NUMBER	MINE OPENING	DIMENSIONS (FEET)	VOLUME (C.Y.)	WORK REQUIRED/COMMENTS
047-019S	Shaft	3'x7'x24'D	20	Heavy smoke bomb to remove owls; Remove timber lining as required; Slow backfill to surface; *November 1 through March 30*
047-024S	Shaft	4'x6½'x13'D	45	Remove timber cover; Construct toroid tire plug; Install survey cap
047-028T	Stope Openings/ Trench/ Pit/ Adit	Variable Variable 5'x7'x8'D 2.7'Hx8'W	160	Backfill southeast and southwest stope openings; Backfill trench and pit to –4' (Collapse small rock bridge); Construct bat gate in CSP with grouted rock bulkhead in northeast adit opening; Install survey cap; *September 1 through April 30*
047-029OC	Decline Adit (Emporia Decline)	3'Wx8'H	120	Construct bat gate in CSP with toroid tire plug; Backfill with <u>imported</u> and nearby material; Install survey cap; *September 1 through April 30*
047-0305	Shaft	4½'x6'x23'D	100	Construct toroid tire plug; Backfill; install survey cap; *September 1 through April 30*
047-031S	Pit	13'x14'x6'D	15	<u>Hand backfill</u> to –4'
047-033S	Shaft	5'x 6'x76'D	100	Smoke bomb to remove owls; Remove timber cribbing as required; Slow backfill to surface; Install survey cap; *April 1 through September 30*
047-034S	Shaft	5½'x5½'x94'D	-	Construct airflow closure with double PUF plugs, CSP riser, scoria fill, precast concrete units and concrete collar; Remove timber lining as indicated; Install survey cap; *September 1 through April 30*
047-038S	Shaft / Decline Adit (Savage Decline)	3½'Wx3'H decline in 16'x19'x20'D pit	250	Muck open decline entry; Construct bat gate in CSP with cast-in-place concrete plug; Backfill with <u>imported</u> and nearby material as indicated; Install survey cap; *September 1 through April 30*
047-040ST	Powder House	Variable	-	Construct high-strength steel mesh cover; Preserve timber door and door frame; Install survey cap
047-041P	Pit	3½'x7'x6'D	2	<u>Hand backfill</u> to –4'

AML NUMBER	MINE OPENING	DIMENSIONS (FEET)	VOLUME (C.Y.)	WORK REQUIRED/COMMENTS
047-117S	Shaft (Outhouse)	5'x8'x35'D	55	Backfill to –4' with imported fill; Access will be flagged in field; Preserve as much of timber collar as practicable; Install survey cap
047-301P	Pit with drifts	4'x8'x7'D 2-4'Wx4'H drifts	15	Backfill to surface of pit at entry; *September 1 through April 30*
SITE 048 STREIBY LODE				
048-008S	Stope Opening	5'x6'x8'D	-	Construct high-strength steel mesh cover; Install survey cap; *September 1 through April 30*
SITE 054 LITTLE BOY LODE				
054-082S	Shaft	6'x9'x154'D	-	Construct high-strength steel mesh cover; Install survey cap; *September1 through April 30;* Close temporary construction access road
054-083S	Pit	7'x10'x8'D	10	Backfill to –4'
SITE 055 ARIZONA LODE				
055-036S	Shaft	6'x7'x82'D	150	Smoke bomb; Preserve rails at shaft opening; Slow backfill to -1'; Preserve rock wall at shaft opening; Install survey cap
SITE 056 SILVER REEF LODE				
056-037ST	Hopper Opening	2'x6'x2'D	4	Construct steel grate at hopper opening above crusher; Preserve mill structure
		TOTAL (ROUNDED)	4500	

END OF DIVISION 2

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