

Specifications for Construction of

GALLUP COAL FIRE MITIGATION PROJECT

Gallup, New Mexico

PROJECT NO. EMNRD-MMD-2024-01

AUTHORIZED BY:

ABANDONED MINE LAND PROGRAM MINING and MINERALS DIVISION STATE OF NEW MEXICO, ENERGY, MINERALS AND NATURAL RESOURCES DEPARTMENT* (with reclamation fees paid by the New Mexico Coal Industry)

FEBRUARY 2023



APPENDIX B SPECIFICATIONS

The technical material and data contained in the specifications were prepared under the supervision and direction of the undersigned, whose seal as a Professional Engineer (P.E.), licensed to practice in the State of New Mexico, is affixed below.



ENGINEER OF RECORD:



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APPENDIX A SPECIFICATIONS

TABLE OF CONTENTS

DIVISION 1 – GENERAL REQUIREMENTS	1-1
01010 - SUMMARY OF WORK	
01011 – Summary of Project and Construction Access	
01012 – Avoidance Areas for Preservation of Cultural and Biological Resources	
01015 – Contractor's Use of the Premises	1-3
01025 – Measurement and Payment	1-3
01027 - Applications for Payment	1-4
01027 - Appleations for 1 dynamic matrix $01028 - $ Prices	1_4
I Lumn Sum Prices	1-4
II. Unit Rate Prices	
01030 – ALTERNATES	
01035 – Modification Procedures	1-8
01036 – Change Order Procedures	1-8
01050 - COORDINATION	1_8
01041 Droject Coordination	1 Q
01041 - 110 Ject Cooldination	
01042 – Mechanical and Electrical Cooldination.	
01045 – JOU SHE AUMINISITATION	
UIUSU - FIELD ENGINEEKING	
01000 – KEGULATOKY KEQUIKEMENTS	
01090 – REFERENCES	
01092 - Abbreviations	
01094 – Definitions	
01100 – SPECIAL PROJECT PROCEDURES	
01135 – Hazardous and Confined Areas Procedures	
I. Bad Air	
II. Heat / Fire Risk	
III. Adit Cave-ins	
IV. Collar Cave-ins	I-13
V. Faling	
V. LOOSE ROCK	
011/0 - Industrial Wastes and Toxic Substances	
01210 – PROJECT MEETINGS	
01210 - Preconstruction Conferences	
01220 - Progress Meetings	
01300 - SUBMITTALS	
01310 - Progress Schedules	
01320 - Progress Reports	
01330 – Health and Safety Plan	
01340 - Shop Drawings, Product Data, and Samples	
01380 - Construction Photographs	
01400 – QUALITY CONTROL	
01405 - Contract Quality Control	1-19
01500 - CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS	1-19
01505 - Mobilization	
01510 - Temporary Utilities	
01516 - Temporary Sanitary Facilities	
01530 – Barriers and Enclosures	
01533 - Tree, Plant and Wildlife Protection	
I. Tree and Plant Protection	
II. Wildlife Protection	

01535 - Protection of Installed Work	
01540 – SECURITY	1-22
01550 – ACCESS ROADS AND PARKING AREAS	1-22
01560 - TEMPORARY CONTROLS	1-22
01561 - Construction Cleaning	1_22
01567 - Dust Control	1_22
01562 Dust Control	1_23
01565 - Fire Prevention and Safety Awareness	1_23
01505 - The Trevention and Safety Awareness	1-24
01570 TDAFFIC DECULATION	
01570 - IRAFFIC REGULATION	1 24
01572 - Flaggels	
015/4 - Haul Koulds	
01500 - PROJECT IDENTIFICATION AND SIGNS	1 25
01000 - FIELD OFFICES AND SHEDS	1 20
01600 - MATERIALS AND EQUIPMENT	
01700 - CUNTRACT CLOSEOUT	
01701 - Contract Closeout Procedures	
01/02 - Final Inspection	
01710 - Final Cleaning	
01720 – PROJECT RECORD DOCUMENTS	
DIVISION 2 – SITEWORK	2-1
02050 – DEMOLITION	
00070 0 1 C D 1 C	21
020/0 - Selective Demolition	
02100 – SITE PREPARATION	2-1 2-1
02100 - SITE PREPARATION	2-1
02100 - SITE PREPARATION	2-1 2-1 2-1 2-2
02100 - SITE PREPARATION	2-1 2-1 2-1 2-2 2-2
02100 - SITE PREPARATION	2-1 2-1 2-1 2-2 2-2 2-2 2-2
02100 - SITE PREPARATION	2-1 2-1 2-1 2-2 2-2 2-2 2-2 2-2
02100 - SITE PREPARATION	2-1 2-1 2-1 2-2 2-2 2-2 2-2 2-2 2-4
02070 - Selective Demolition 02100 - SITE PREPARATION 02110 - Site Clearing 02200 - EARTHWORK 02210 - Stockpile Topsoil 02220 - Excavation 02221 - Excavate Overburden and Coal 02230 - Blend Coal and Overburden 02240 - Backfill Excavation	2-1 2-1 2-1 2-2 2-2 2-2 2-2 2-2 2-2 2-4 2-5
02070 - Selective Demolition 02100 - SITE PREPARATION 02110 - Site Clearing 02200 - EARTHWORK 02210 - Stockpile Topsoil 02220 - Excavation 02221 - Excavate Overburden and Coal 02230 - Blend Coal and Overburden 02240 - Backfill Excavation 02250 - Place Soil cover Over PUF	2-1 2-1 2-1 2-2 2-2 2-2 2-2 2-2 2-2 2-2
02100 - Selective Demolition 02100 - SITE PREPARATION 02110 - Site Clearing 02200 - EARTHWORK 02210 - Stockpile Topsoil 02220 - Excavation 02221 - Excavate Overburden and Coal 02230 - Blend Coal and Overburden 02240 - Backfill Excavation 02250 - Place Soil cover Over PUF 02260 - Grading	2-1 2-1 2-1 2-2 2-2 2-2 2-2 2-2 2-2 2-2
02100 - Site PREPARATION	2-1 2-1 2-1 2-2 2-2 2-2 2-2 2-2 2-2 2-2
02100 - SITE PREPARATION	2-1 2-1 2-1 2-2 2-2 2-2 2-2 2-2 2-2 2-2
02100 - SITE PREPARATION	2-1 2-1 2-1 2-2 2-2 2-2 2-2 2-2 2-4 2-4 2-5 2-5 2-5 2-5 2-6 2-6 2-6 2-7
02100 - SITE PREPARATION	2-1 2-1 2-1 2-2 2-2 2-2 2-2 2-2
02000 - Selective Demolition 02100 - SITE PREPARATION 02110 - Site Clearing 02200 - EARTHWORK 02210 - Stockpile Topsoil 02220 - Excavation 02221 - Excavate Overburden and Coal 02230 - Blend Coal and Overburden 02240 - Backfill Excavation 02250 - Place Soil cover Over PUF 02260 - Grading 02270 - Replace Topsoil. 02280 - Slope Protection and Erosion Control 02800 - SITE IMPROVEMENTS 02900 - LANDSCAPING 02920 - Soil Preparation / Surface Roughening 02930 - Grasses 02933 - Seeding I. Seeding Time	2-1 2-1 2-1 2-2 2-2 2-2 2-2 2-2
 02100 - Selective Demolition 02100 - SITE PREPARATION 02110 - Site Clearing 02200 - EARTHWORK 02210 - Stockpile Topsoil 02220 - Excavation 02221 - Excavate Overburden and Coal 02230 - Blend Coal and Overburden 02240 - Backfill Excavation 02250 - Place Soil cover Over PUF 02260 - Grading 02270 - Replace Topsoil 02280 - Slope Protection and Erosion Control 02800 - SITE IMPROVEMENTS 02900 - LANDSCAPING 02920 - Soil Preparation / Surface Roughening 02921 - Fertilizer 02933 - Seeding I. Seeding Time II. Seed Species and Mixtures 	2-1 2-1 2-1 2-2 2-2 2-2 2-2 2-2
02070 - Selective Demolition 02110 - SITE PREPARATION 02110 - Site Clearing 02200 - EARTHWORK 02210 - Stockpile Topsoil 02220 - Excavation 02221 - Excavate Overburden and Coal 02230 - Blend Coal and Overburden 02240 - Backfill Excavation 02250 - Place Soil cover Over PUF 02260 - Grading 02270 - Replace Topsoil 02280 - Slope Protection and Erosion Control 02800 - SITE IMPROVEMENTS 02900 - LANDSCAPING 02921 - Fertilizer 02933 - Seeding I. Seeding Time II. Seeding Time II. Seeding Methods	2-1 2-1 2-1 2-2 2-3 2-4 2-5 2-5 2-5 2-5 2-5 2-5 2-6 2-7 2-7 2-7 2-7 2-7 2-8 2-8 2-9 2-9 2-9
020/0 - Selective Demolition 02110 - SITE PREPARATION 02110 - Site Clearing 02200 - EARTHWORK 02210 - Stockpile Topsoil 02220 - Excavation 02221 - Excavate Overburden and Coal 02230 - Blend Coal and Overburden 02240 - Backfill Excavation 02250 - Place Soil cover Over PUF 02260 - Grading 02270 - Replace Topsoil 02280 - Slope Protection and Erosion Control 02800 - SITE IMPROVEMENTS 02900 - LANDSCAPING 02921 - Fertilizer 02933 - Seeding 1 Seeding Time 1 Seeding Time 1 Seeding Methods 02940 - Mulching	2-1 2-1 2-1 2-2 2-2 2-2 2-2 2-2
02070 - Selective Demolition 02100 - SITE PREPARATION 02110 - Site Clearing 02200 - EARTHWORK 02210 - Stockpile Topsoil 02220 - Excavation 02221 - Excavate Overburden and Coal 02230 - Blend Coal and Overburden 02240 - Backfill Excavation 02250 - Place Soil cover Over PUF 02260 - Grading 02270 - Replace Topsoil 02280 - Slope Protection and Erosion Control 02800 - SITE IMPROVEMENTS 02900 - LANDSCAPING 02921 - Fertilizer 02933 - Seeding I. Seeding Time II. Seeding methods 02940 - Mulching 02955 - Salvage of Native Plants	2-1 2-1 2-1 2-2 2-4 2-5 2-5 2-5 2-5 2-5 2-5 2-6 2-7 2-7 2-7 2-7 2-7 2-7 2-7 2-7 2-8 2-8 2-9 2-9 2-10 2-11

DIVISION 13 – SPECIAL CONSTRUCTION		
13050 - PO	LYURETHANE FOAM CLOSURES	
13051	- Materials and Equipment	
13052	- Material Safety, Handling and Transport	
13055	- Execution	
I.	Formwork	
II.	Polyurethane Foam (PUF)	
III.	Field Quality Control	
IV.	Backfilling	
V.	Cleanup	

TABLES

TABLE I: SEED MIX

DESIGN DRAWINGS

SHEET	
NUMBER	TITLE
01	COVER SHEET
02	ACCESS ROUTE AND DISTURBANCE AREA PLAN
03	ENTERPRISE-BROWN SITE PLAN
04	NAVAJO NO. 1 SITE PLAN
05	NAVAJO NORTH SITE PLAN
06	ENTERPRISE-BROWN EXCAVATION PLAN AND PROFILE
07	NAVAJO NO. 1 EXCAVATION PLAN AND PROFILE

END OF TABLE OF CONTENTS

SPECIFICATIONS

Please Note – Use of Brand Name Specifications: Use of any brand name herein is for the purpose of describing the standard of quality, performance, and characteristics desired and is not intended to limit or restrict competition.

DIVISION 1 – GENERAL REQUIREMENTS

The following sections describe the general requirements of this project. References to Sheet Numbers, refer to the design drawings, which are included in this Project Manual.

01010 – SUMMARY OF WORK

The Gallup Coal Fire Mitigation Project consists of three sites in Gallup, New Mexico. Project areas are located on land owned by Gallup Land Partners, LLC. The Enterprise-Brown mine fire is approximately 1.0 mile north of downtown Gallup, New Mexico (see Sheet No. 02. The Navajo No. 1 mine fire is 2.7 miles north of downtown Gallup (see Sheet No. 02). The Navajo North project area is located 3 miles north of downtown Gallup and approximately one quarter mile north of the Navajo No. 1 site (see Sheet No. 02).

This project involves mass excavation of overburden and coal, mixing and cooling of the excavated coal and backfilling at the Enterprise-Brown and Navajo No. 1 Sites and filling open subsidence features at the Navajo North Site using polyurethane foam (PUF). Work at each site will include the following:

- Enterprise-Brown Site: Excavating approximately 3,025 cubic yards of burning coal and non-burning overburden. Burning coal will be blended with non-burning overburden, allowed to cool, and backfilled into the excavated areas. Construction details are shown on design drawing Sheet Nos. 03 & 06.
- Navajo No. 1 Site: Excavating approximately 6,260 cubic yards of burning coal and nonburning overburden. Burning coal will be blended with non-burning overburden, allowed to cool, and backfilled into the excavated areas. Construction details are shown on design drawing Sheet Nos. 04 & 07.
- Navajo North Site: Backfilling three open subsidence features to mitigate the low potential fall hazard as well as help reduce the amount of air flow through the old mine workings to slow oxidation within the mine. To avoid disturbance of cultural resources, polyurethane foam (PUF) will be used as a backfill material. The PUF can be transported by hand or wheelbarrow along a path designated by AML to avoid disturbance to the area. Feature locations are shown on design drawing Sheet No. 05.

01011 – SUMMARY OF PROJECT AND CONSTRUCTION ACCESS

The Enterprise-Brown site is accessed by proceeding north on N. Cliff Drive to Snell Street, a dirt road north of Gallup, New Mexico.

Access to the Navajo No. 1 site is through a locked Gallup Land Partners gate at the north end of the Gallup Flea Market. The staging area is 1.9 miles north then east on an unimproved dirt road. From the staging area, the fire is a quarter mile to the south.

Access to the Navajo North site is through a locked Gallup Land Partners gate at the north end of the Gallup Flea Market. The parking location for the area is 2.1 miles north then east on an unimproved dirt road. The three features to be mitigated lie within a 350-foot radius of the parking area on the powerline road.

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

The Contractor shall be responsible for thoroughly investigating site conditions and scheduling their 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. The Contractor shall avoid any activities outside of the designated areas of disturbance. Additionally, existing mine features and interpretive displays shall not be removed or damaged as a result of the work. Access routes and methods to construction areas shall be coordinated with the Project Manager prior to mobilizing to targeted mine features. No construction disturbances (including excavation, fill and stockpiling of construction materials) or moving of artifacts shall take place unless directly specified in design documents. Avoidance zones within the designated disturbance area shall extend to five meters (16.4 feet) from the existing mine features 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. The Contractor shall provide a submittal for the barrier fencing to be used prior to installation. Barrier fencing shall be removed upon completion of work. An exception to this requirement may be during performing rock clearing from in front of mine entrances and clearing pedestrian approaches.

The Contractor shall bear all direct, indirect, and consequential costs of repairs due to unauthorized damage caused by the Contractor's 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.

If construction occurs within the migratory bird nesting season (February 15 to September 15), a preconstruction migratory bird survey will be required. If needed, the AML Program will contract an outside consulting firm to perform the bird survey within 10 days to the start of construction. The Contractor shall contact the AML Program Project Engineer at least one month prior to commencement of construction to coordinate this survey or three weeks prior to Notice to Proceed. Failure by the Contractor to timely coordinate a preconstruction migratory bird survey may impact the Contractor's schedule and no additional time or compensation will be granted. Following receipt of NTP, the Contractor shall be responsible for maintaining nest free conditions in construction-impacted areas. The Contractor shall comply with the requirements of the Migratory Bird Treaty Act (MBTA), the United States Fish and Wildlife Service (USFWS), and shall not cause harm or harassment to migratory birds.

If occupied nests are found, the AML Program will coordinate with the New Mexico Game and Fish Department and USFWS to determine the appropriate exclusion buffer. This exclusion buffer will remain until after the juvenile birds have fledged (flown from the nest).

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. If heavy equipment operated on wet or soft roads causes excessive rutting, the damage shall be repaired by grading the road upon completion of the work.

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. 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:

Meghan J. McDonald, P.E. Mining and Minerals Division Energy, Minerals, and Natural Resources Department State of New Mexico 1220 South St. Francis Drive Santa Fe, New Mexico 87505 <u>Meghan.McDonald@emnrd.nm.gov</u>

All Applications for Payment shall include appropriate backup, such as daily reports, load counts, etc. 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. <u>Lump Sum Prices</u>

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

1-1, 2-1 & 3-1. Mobilization/Demobilization

Payment for Mobilization/Demobilization will be made at the lump sum prices bid therefor in the Bid Form. Forty percent (40%) of the lump sum price bid will be paid following completion of moving onto the site including complete assembly in working order of all equipment necessary to perform the required work and the satisfactory storage at the site of all such materials and supplies. Sixty percent (60%) of the lump sum price bid will be paid when all equipment has been removed and satisfactory cleanup operations have been performed following the satisfactory completion of the contract.

In addition, payment for Mobilization/Demobilization will not be made until the Project Engineer's approval of adequate performance. "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/Demobilization shall include minimal improvement/maintenance of roads, 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, temporary sanitary facilities, and support facilities to and at the job site in conformance with the Project Manager's directives and these Specifications. Upon completion of the work under this Contract, the Contractor shall remove all temporary facilities, temporary infrastructure and equipment. The Contractor shall remove from the work site all rubbish, unused materials, and leave all areas in good order and condition, subject to the approval of the Project Manager. This amount shall include complete Mobilization/Demobilization no matter how often equipment is transported to individual sites within the project area.

This Bid Item shall also include all work necessary to develop and implement the Project Safety Plan, including writing and revising the plan as required, provision and maintenance of safety equipment, conduct of daily safety meetings and all other items necessary and incidental to meeting the specifications of this Bid Item and of the Project Safety Plan.

Mobilization shall also include providing materials for animal exclusion as defined in the beginning of Division 2 – Sitework.

Mobilization shall also include preparation of any other required pre-construction submittals as specified in this manual.

1-2 & 2-2. SWPPP and Sediment Control

Payment for the development of a Storm Water Pollution Prevention Plan (SWPPP) and implementation of stormwater and sediment controls, per the approved Plan will be made at the lump sum price bid therefor in the Bid Form. This price shall include all work necessary to prevent sediment transport from the site in accordance with the drawings and specifications and all equipment, labor, and supervision necessary for executing the SWPPP.

1-10 & 2-10. Project Surveying

There will be no measurement for this Bid Item and payment will be made at the lump sum price shown in the Bid Form. This price will include all work necessary to conduct pre- and post- construction topographic surveys, as well as survey for volume calculations throughout the duration of the project, as dictated by the excavation process.

3-2. Backfill Features with Polyurethane Foam

Payment for this Bid Item will be made at the lump sum price shown in the Bid Form. This price will include all work necessary to backfill the open rock fractures identified at the Navajo North Site with polyurethane foam (PUF). The PUF will be transported by hand or by wheelbarrow along a path designated by the Project Manager from the parking area. CONTRACTOR is responsible for measuring openings and satisfying themselves of the required quantities, prior to bidding.

II. Unit Rate Prices

1-3 & 2-3. Stockpile Topsoil

Payment for this Bid Item will be made at the unit price shown in the Bid Form. This price shall include all work necessary to collect and store topsoil and topsoil-like materials for use during reclamation operations. Salvage and stockpile operations will include the upper four to six inches (4" - 6") of the soil profile from all areas within the project manager delineated excavation areas. Measurement for payment will be made per cubic yard of topsoil stockpiled. The completed stockpile will be surveyed to determine the volume of material moved.

1-4 & 2-4. Excavate Overburden and Coal

Payment for excavation work shall be made at the unit price shown in the Bid Form. This price shall include excavation of overburden (non-carbonaceous), consisting of sandstones and shales, the excavation of burning carbonaceous materials, and excavation of mixing benches. Measurement for payment will be made per cubic yard of excavated materials. The cubic yardage will be measured for payment by surveying the completed excavation(s) and comparing the excavation topography to pre-construction topography minus the volume of topsoil stockpiled and paid for under Bid Items 1-4 and 2-4. This price will include all work necessary to conduct pre- and post- construction topographic surveys, as well as survey for volume control throughout the duration of the project. Survey methods shall be developed to accommodate the excavation, blending, and backfilling sequence adopted to account for construction.

1-5 & 2-5. Blend Coal and Overburden

Payment for this Bid Item will be made at the unit price shown in the Bid Form. Measurement for payment will be made per cubic yard of overburden and coal blended. The volume will be measured and paid for according to the measured excavation volume in Bid Items 1-4 and 2-4. This price shall include all work necessary to blend coal and overburden material within the confines of the mixing area and allow to cool to below 100°F before being utilized as backfill.

1-6 & 2-6. Backfill Excavation

Payment for this Bid Item will be made at the unit price shown in the Bid Form. Measurement for payment will be made per cubic yard of material placed back in the excavation trench. The volume of material estimated for payment during Bid Item 1-4 and 2-4 will be used as measurement for payment for this Bid Item, as all material removed in the excavation will be replaced in the backfill. No adjustment for swelling or shrinkage of material shall be made.

1-7 & 2-7. Final Grade

Payment for this Bid Item will be made at the unit price shown in the Bid Form. This price includes all work necessary to establish the final grade of the sites. Measurement for

payment will be made per acre of re-graded and re-contoured surface. Re-graded and recontoured areas will be measured to the nearest 0.1 acre, by methods approved by the Project Manager.

1-8 & 2-8. Replace Topsoil

Payment for this Bid Item will be made at the unit price shown in the Bid Form. This price will include all work necessary to the placing of previously stockpiles topsoil on disturbed areas. Measurement for payment will be made per cubic yard of replaced. The number of cubic yards of topsoil stockpiled, from Bid Items 1-3 and 2-3, will be used to measure this Bid Item, because all the topsoil will be replaced on the site.

1-9 & 2-9. Revegetation

The unit of measurement for payment for seeding will be per acre revegetated, as measured in the field to the nearest 0.1 acre, parallel to the revegetated surface using methods acceptable to the Project Engineer. Payment for revegetation will be made at the unit price of the Contractor's bid on the Bid Form. This price shall include surface roughening, incorporating fertilizer, mulch, and seeding by hand broadcasting including all equipment, labor, material and supervision costs necessary to complete installation, of all areas disturbed by construction activities.

Any surface disturbance areas of the project must be revegetated. Disturbed areas may include but are not limited to: filled areas, temporary access routes and obliterated roads, areas used for office (as necessary) and sanitation units, equipment parking, closed access trails, stockpile and storage areas, and service areas.

3-3. Place Soil Cover Over PUF

Payment for this Bid Item will be made at the unit price shown in the Bid Form. This price will include all work necessary to place a soil cover two feet thick over the PUF plugs. Soil may be obtained from the area immediately surrounding the subsidence feature, not including avoidance zones. Any additional soil necessary for cover purposes may be imported as needed from the excavated soils at the Navajo No. 1 Site. The number of cubic yards of topsoil stockpiled, from Bid Item 4, along with the number of cubic yards imported, will be used to measure this Bid Item.

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 there is 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. The developed data shall be certified by a licensed surveyor and submitted to the AML.

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 reference d 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:

AASHTO	American Association of State Highway and Transportation Officials
ACI	American Concrete Institute
AML	Abandoned Mine Land Program of MMD
ANSI	American National Standards Institute
ASTM	American Society for Testing and Materials
ATSA	American Traffic Services Association
AWS	American Welding Society
CFR	Code of Federal Regulations
CO	carbon monoxide
CO_2	carbon dioxide
CPR	cardiopulmonary resuscitation
CRSI	Concrete Reinforcing Steel Institute
EMNRD	Energy, Minerals, and Natural Resources Department (state)
H_2S	hydrogen sulfide
HASP	Health and Safety Plan
MBTA	Migratory Bird Treaty Act
MMD	Mining and Minerals Division of EMNRD
NMAC	New Mexico Administrative Code
NMSA	New Mexico Statutes Annotated
NTP	notice to proceed
OSHA	Occupational Safety and Health Administration
OSMRE	Office of Surface Mining, Reclamation, and Enforcement (federal)

Pure Live Seed
polyurethane foam
Society of Automotive Engineers
safety data sheet
United States Fish and Wildlife Service

01094 – DEFINITIONS

The following is a definition of the terms that may be used in the contract documents (source: <u>A Dictionary of Mining, Mineral, and Related Terms</u>, 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
h	1 1.	the working of dewatering of a mine.
2.	Dack	The close setting of timber suggests when sheft sinking through lages
3.	cribbing	The close setting of timber supports when shall sinking through loose
4	a a 11 a m	ground. Timboning on concerns a the month of the sheets the investion.
4.	conar	of a mine shaft and the surface
5	decline	See "incline"
<i>5</i> .	drift	A horizontal passage underground
0. 7	entry	A haulage road gangway or airway to the surface
8	ooh nile	A nile of heap mine refuse on the surface
9	incline	A shaft not vertical: usually on the din of a vein
10	lagging	Planks slabs or small timbers placed over the cans or behind the posts
10.	1455115	of the timbering, not to carry the main weight, but to form a ceiling or
		a wall, preventing fragments or rock from falling through.
11.	lining	The brick, concrete, cast iron, or steel casing placed around a tunnel or
	iiiiig	shaft as a support.
12.	loading chute	A three-sided tray for loading or for transfer of material from one
12.	loading chute	A three-sided tray for loading or for transfer of material from one transport unit to another.
12. 13.	loading chute portal	A three-sided tray for loading or for transfer of material from one transport unit to another. Any entrance to a mine.
12. 13. 14	loading chute portal red dog	A three-sided tray for loading or for transfer of material from one transport unit to another. Any entrance to a mine. Material of a reddish color resulting from the combustion of shale and
12. 13. 14.	loading chute portal red dog	A three-sided tray for loading or for transfer of material from one transport unit to another. Any entrance to a mine. Material of a reddish color resulting from the combustion of shale and other mine waste dumps on the surface
12. 13. 14.	loading chute portal red dog	A three-sided tray for loading or for transfer of material from one transport unit to another. Any entrance to a mine. Material of a reddish color resulting from the combustion of shale and other mine waste dumps on the surface.
12. 13. 14. 15.	loading chute portal red dog shaft	A three-sided tray for loading or for transfer of material from one transport unit to another. Any entrance to a mine. Material of a reddish color resulting from the combustion of shale and other mine waste dumps on the surface. An excavation of limited area compared with its depth, made for
12. 13. 14. 15.	loading chute portal red dog shaft	 A three-sided tray for loading or for transfer of material from one transport unit to another. Any entrance to a mine. Material of a reddish color resulting from the combustion of shale and other mine waste dumps on the surface. An excavation of limited area compared with its depth, made for finding or mining ore or coal, raising water, ore, rock, or coal, hoisting
12. 13. 14. 15.	loading chute portal red dog shaft	 A three-sided tray for loading or for transfer of material from one transport unit to another. Any entrance to a mine. Material of a reddish color resulting from the combustion of shale and other mine waste dumps on the surface. 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
12. 13. 14. 15.	loading chute portal red dog shaft	 A three-sided tray for loading or for transfer of material from one transport unit to another. Any entrance to a mine. Material of a reddish color resulting from the combustion of shale and other mine waste dumps on the surface. 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.
12. 13. 14. 15.	loading chute portal red dog shaft	 A three-sided tray for loading or for transfer of material from one transport unit to another. Any entrance to a mine. Material of a reddish color resulting from the combustion of shale and other mine waste dumps on the surface. 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.
 12. 13. 14. 15. 16. 	loading chute portal red dog shaft spoil	A three-sided tray for loading or for transfer of material from one transport unit to another. Any entrance to a mine. Material of a reddish color resulting from the combustion of shale and other mine waste dumps on the surface. 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.
 12. 13. 14. 15. 16. 	loading chute portal red dog shaft spoil	 A three-sided tray for loading or for transfer of material from one transport unit to another. Any entrance to a mine. Material of a reddish color resulting from the combustion of shale and other mine waste dumps on the surface. 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. The overburden or on-ore material removed in gaining access to the ore or mineral material in surface mining.
 12. 13. 14. 15. 16. 17. 	loading chute portal red dog shaft spoil stope	 A three-sided tray for loading or for transfer of material from one transport unit to another. Any entrance to a mine. Material of a reddish color resulting from the combustion of shale and other mine waste dumps on the surface. 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. The overburden or on-ore material removed in gaining access to the ore or mineral material in surface mining. An excavation in which ore has been excavated in a series of steps.

18. stull	A timber prop set between the walls of a stope, or supporting the mine roof.
19. subsidence	A sinking down of a part of the earth's crust.
20. talus	A heap of coarse rock waste at the foot of a cliff.
21. tipple	Originally the place where the mine cars were tipped and emptied of their ore, 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.
22. 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, State Inspector of Mines, Bureau of Mine Inspection, P.O. Box W105, Socorro, NM 87801, 1.505.835.5460.

01135 – HAZARDOUS AND CONFINED AREAS PROCEDURES

This project requires construction work around and over hazardous and unprotected mine shafts, 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 equipment, equipment operations, personnel, and safety procedures to prevent accidents and injuries. The Contractor is fully responsible for thoroughly investigating the site conditions and scheduling equipment, equipment operations, personnel, and safety procedures to prevent accidents and injuries. The Contractor shall follow appropriate procedures in accordance with OSHA regulations. The Contractor shall designate a site safety officer for each shift. The site safety officer shall be present on-site while work is performed. The site safety officer shall be CPR/First Aid trained and certified and shall conduct daily safety tailgate meetings at the start of each shift. Safety incidents shall be reported to the Project Manager as soon as is practicable.

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

I. <u>Bad Air</u>

Miners use the term "bad air" to describe an atmosphere that will not support life. Burning coal and/or poor air circulation in some mine openings can allow carbon dioxide (CO2), carbon monoxide (CO), methane, hydrogen sulfide (H₂S), or radon gas to accumulate. These gases are treacherous 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 not allow entry of personnel into any mine opening and shall be responsible for monitoring air quality around mine openings and in open excavations.

II. Heat / Fire Risk

The project site and work locations are situated over or adjacent to a burning abandoned coal mine. Mine fires, burning mine refuse, and burning mine spoils are highly hazardous. Working in close proximity to and the possibility of encountering burning mine spoil materials present multiple hazards, including but not limited to flare-ups, explosions, poisonous gases, airborne dust, steam and unstable surfaces. Gases, which may vent from excavation areas and onsite fractures may be hot, and may contain toxic gases or combustion by-products in high concentrations, as discussed above.

Surface vents and fractures may occur in and near the work area. Surface temperatures near vents over these sites were measured as high as approximately 250⁰F, during the investigation phase of the project, and higher temperatures are possible.

CONTRACTOR will furnish a functional, calibrated multi-gas meter (combination carbon monoxide, methane, hydrogen sulfide (H_2S) and oxygen meter) which will be in the cab of each piece of equipment working within the project area. Should the air quality alarm sound, all personnel will evacuate from the vicinity to an area with safe atmospheric conditions.

A minimum three-man crew must be on-site at all times. CONTRACTOR is required to supply each work crew with at least two (2) service-ready ABC-type fire extinguishers of 25-pound capacity each or equivalent, and two shovels with pointed spades on site at all times.

In addition, the Contractor shall maintain a full water truck (4,000 gallon minimum capacity) at all times that coal excavation and blending operations are underway.

III. 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 adit entrance.

IV. 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 workers. 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.

V. 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 ensure that anyone falling into them are 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 C.F.R. 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.

The Contractor is responsible for ensuring adequate fall protection and tie/off points are maintained at mine features that are not accessible by heavy equipment. Details should be included in the Contractor's health and safety plan.

VI. Loose Rock

A mine shaft or open stope will weather in much the same way as a cliff. Loose rocks are always found above and behind 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.

VII. <u>Subsidence</u>

The edges of subsidence features (sinkholes, ground cracks, ground holes) contain loose soil and/or fractured and weathered rock that can quickly give way. With the additional weight and vibration of construction machinery and workers the area around the features may become unstable and present a hazard. The Contractor shall determine a safe minimum set-back distance between equipment/personnel and subsidence features. This distance shall be communicated to all personnel on-site and shall be strictly enforced by the Contractor. No workers or personnel shall enter subsidence features. All work shall be performed from above subsidence features, and the Contractor shall follow appropriate cave-in protection procedures.

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 CFR, Part 702799. Additionally, any release of toxic substances (leaks, spills, etc.) greater than the reportable quantity established by 40 CFR, 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 a progress schedule at the preconstruction conference as specified in Section 01310 below and a 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.

01330 – HEALTH AND SAFETY PLAN

The Contractor shall prepare a Health and Safety Plan (HASP) detailing the site-specific hazards and safety precautions associated with site work. The HASP shall comply with OSHA standards and shall include a list of responsible persons, hazard identification, hazard controls and safe practices, emergency and accident response, employee training requirements, SDS, and communication information and procedures.

At a minimum, the HASP must address following hazards and safety concerns that are likely to present themselves during the course of Project completion. When developing the HASP, please list specific types of equipment to be provided by CONTRACTOR, including subcontractor(s), in order to address the safety concern, or specifically state the actions to be taken by CONTRACTOR, including crew and subcontractor(s) order to address the safety concern.

- 1. Driver safety (use of seat belts, observation of speed limits, securing tools and materials, vehicle maintenance).
- 2. Use of personal safety equipment on the job site (Hard hats, hard toe foot wear, work gloves, safety glasses, hearing protection).
- 3. Provision of first aid kit for each work crew.
- 4. Fuel storage.
- 5. Methods of safely transporting and securing welding tanks, equipment and supplies.
- 6. Fire prevention and safety.
- 7. Air Quality monitoring.
- 8. Fall prevention for all work conducted where a fall hazard exists.
- 9. Evaluation and prevention of overhead material falling into the work place.
- 10. Daily safety meetings.
- 11. OSHA compliance/training, certificates required at mobilization.
- 12. Fire Prevention: CONTRACTOR must supply each work crew with two (2) twenty-five pound (25#) Class ABC fire extinguishers. Additionally, each crew member must be supplied with one (1) sharpened round nosed shovel. These must be immediately available to the crew members for use should an uncontrolled ignition occur.
- 13. A multi-gas meter capable of measuring (at a minimum) oxygen (O₂), carbon monoxide (CO), and lower explosive limit for methane (LEL CH₄) must be operated at all times. If the LEL alarm sounds, equipment must be immediately shut down to avoid a potential explosion of methane gas.

The HASP shall also describe hazards related to the COVID-19 Pandemic. The HASP shall include the Contractor's Infections Disease Preparedness and Response Plan, which shall include:

- Where, how, and to what sources of Covid-19 site personnel might be exposed.
- Non-occupational risk factors at home and in community settings.
- Workers' individual risk factors (e.g., older age; presence of chronic medical conditions, including immunocompromising conditions; pregnancy).
- Controls necessary to address these risks.
- Basic infection prevention measures.
- Policies and procedures for prompt identification and isolation of sick people.
- Workplace controls for reducing the risk of Covid-19 spread in the workplace.

Additional information and safety resources related to COVID-19 can be found on OSHA's website: https://www.osha.gov/SLTC/covid-19/

Contractor shall follow New Mexico Department of Health Public Health Orders, Executive Orders, and COVID safe practices for construction. Additional information maybe be found on the New Mexico Department of Health Coronavirus Disease 2019 webpage at https://cv.nmhealth.org/.

The Contractor shall submit a draft of the HASP to the Project Manager for review and comment a minimum of one month before mobilization to the site. The Contractor shall finalize the HASP and submit a final copy to the Project Manager prior to beginning work on the project site.

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 14 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 there on 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 <u>only</u> from the Contractor.

The Contractor's submittal of shop drawings and other review material shall represent that the Contractor has reviewed the details and requirements of the Contract Documents, has coordinated the subject of the submittal with other portions of the Work, and 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 <u>only</u> 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

At the request of the AML Program, the Contractor shall 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.

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 30 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 Nos. 1-1, 2-1 & 3-1, 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, and made available to MMD personnel. The facility shall be installed on the project site in a location removed from the immediate contract work area. Sanitation facilities (portable toilet units) shall include a handwash station. Sanitation unit(s) shall be staked down to prevent tipping from high winds. The facility shall be locked to prevent unauthorized access during the times work is not conducted.

Sanitation facilities shall be maintained and serviced at least twice a month, unless more frequent service is necessary. 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 owls, that may use the mine features are protected, and this safeguard project shall not adversely affect them. To comply with wildlife restrictions, construction is limited to certain periods of the year. Should construction activities take place during the migratory bird nesting season (February 15 - September 15), a pre-construction nesting bird survey will be completed by the AML Program or representatives of the AML Program to locate any active nest that would need to be avoided. This survey should be conducted no more than 10 days prior to the start of construction. If occupied nests are found, they must be avoided until the young have fledged to comply with the requirements of the MBTA. 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 the Contractor's 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 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.

01535 - PROTECTION OF INSTALLED WORK

The Contractor shall protect installed work and control traffic in the immediate area to prevent damage from subsequent operations. Installed work includes existing safeguard measures (gates, adit closures, vents, etc.) and interpretive signs/infrastructure.

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 open excavations and 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.

The Contractor shall be responsible for the safety and security of equipment and materials. The Contractor may not claim damages or hold the State of New Mexico, the property owner, the property custodian, or the design engineer responsible for stolen, damaged, or vandalized materials and/or equipment. The work site will be accessible to the public during the construction period and fencing the entire site for security purposes is not practical.

Temporary fencing shall be placed around active work areas during off-hours.

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. Vegetation and topsoil shall be stripped and stockpiled before blading or grading previously undisturbed areas 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. 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 truck(s) equipped with spray bars, cannons, and hoses (of sufficient lengths) 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.

There is no source of water on site for dust suppression. The contractor shall be responsible for identifying a source for water and providing dust suppression at no additional cost to the project.

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. 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. Implement a Hot Work Permit process to be issued for each hot work event.
- 2. Maintain adequate fire extinguishers, water tanks, sprayers, and other equipment at the work site that would enable personnel to immediately extinguish any accidental ignition.
- 3. Have personnel observe the work area while welders are operating (welders cannot see where the sparks are falling when the welder is under the welding hood).
- 4. Assign an individual to be responsible for the area being "safe" (no hot sparks, iron is cold) before leaving the work site.
- 5. 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) or adjoining property management agencies (i.e. University of New Mexico, U.S. Forest Service, and/or Bureau of Land Management).

01566 – PUBLIC SAFETY

Efforts to protect visitors from injury due to execution of the work shall be taken wherever practical. Examples of procedures that shall be followed include:

- 1. Use of caution signage.
- 2. Maintaining cleared unimpeded access to upper parking area.
- 3. Securing of unused materials and equipment.
- 4. Cordon off active work areas using temporary chain link fencing or construction safety fencing at a minimum.

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 on-loading of equipment or materials in roadways at the contract work site access road entrance and/or during cleaning of the roadway surface. The flaggers shall halt traffic during the off-loading or on-loading 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. Any damage to the site access road from driving on wet/muddy surface shall be repaired at the end of the project, or as directed to maintain public access to the site.

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 proposed sign location, message content, and font size shall be preapproved by contractor submittal, including sign mockup, prior to installation. 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 of this document. 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 Nos. 1-1, 2-1 & 3-1, Mobilization, on the Bid Form.

Sample of Sign:



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. This shall include sweeping or cleaning the asphalt pavement on the roadway if mud or soil is tracked onto the asphalt from the site access road. 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

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 sites may require the removal of debris such as boards, signs, timbers, wire, temporary fencing, etcetera. Salvageable materials (e.g. T-posts and temporary chain link fencing) 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 State Historic Preservation Office (SHPO) will be followed.

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

02100 – SITE PREPARATION

02110 - SITE CLEARING

This work shall consist of 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.

Trimming shall consist of pruning low-hanging branches from trees and shrubs designated to remain to provide enough clearance for construction activities. Removal shall consist of cutting vegetation flush with the ground surface and the satisfactory disposal of trees, brush, and any other vegetation. The Contractor shall perform selective tree and shrub removal and trimming only in designated work areas as shown on the drawings.

The Contractor shall remove vegetation outside of the migratory bird nesting season (February 15-September 15). If any vegetation is to be removed during the migratory bird nest season, the Contractor shall contact the Project Manager four weeks prior to the removal to allow for completion of a migratory bird survey.

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.

All vegetation from trimming and removal operations shall be spread along and adjacent to the disturbed area as practicable and as designated by the Project Manager.

02200 – EARTHWORK

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

02210 – Stockpile Topsoil

All topsoil and topsoil-like materials, as determined by Project Manager, from within the proposed surface disturbance area will be collected and stored for use during reclamation operations. For bidding purposes, salvage and stockpile operations will include the upper four to six inches (4-6") of the soil profile from all areas within the Project Manager delineated stockpile and excavation areas identified on the drawings. Actual removal of soil materials may be to a shallower or deeper depth depending upon local conditions, including, but not limited to depth to bedrock. Project Manager will determine depth of excavation as topsoil removal operations proceed.

The actual excavation area from which topsoil will be salvaged will be determined and delineated in the field by Project Manager prior to excavation. See design drawing Sheets for surface disturbance and approximate stockpile and excavation area delineation boundaries at each site.

The topsoil will be hauled to a temporary stockpile(s) area(s) located within the project area at a location agreed upon by Contractor and Project Manager. The topsoil in the stockpile will be stored at slopes no steeper than two horizontal to one vertical (2H: 1V).

Topsoil shall be stored with signs provided by Contractor indicating that the material is topsoil, and is not to be disturbed. Once all salvaged soil is removed to the stockpile, a berm will be constructed around the entire perimeter of the stockpile. The berm shall consist of, non-carbonaceous, overburden materials.

02220 - EXCAVATION

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

02221 – EXCAVATE OVERBURDEN AND COAL

At each site excavation activities will include excavation of overburden (noncarbonaceous) material, consisting of soil, sandstones and shales, and the excavation of coal or carbon, some of which may be hot, smoldering or burning.

At the Enterprise-Brown site, surface expression of the fire is limited to several warm venting fractures in a small sandstone outcrop. This outcrop is the sandstone caprock over the Black Diamond coal seam. The coal bed is approximately 4-8 feet thick and dips at approximately three degrees to the east-northeast. Depth to mine floor or base of coal seam increase from west to east from 19 to 29 feet across the site and the coal/mined interval is covered by a weathered sandstone roof with a thickness ranging from 8 to 12 feet.

At the Navajo No. 1 site, the surface expression of the fire is largely limited to the southeast facing slope of a small, northeast-southwest trending mesa. The mesa is capped with a moderately hard, fractured sandstone, and the No. 2 coal bed outcrops at the southeast base of the slope. A series of southwest-northeast trending tension cracks have developed north of the coal seams as the fire has burned back into the hillside and caused sloughing of the overburden. From the coal outcrop along the southeast facing slope, the depth to the main coal seam increases to the northwest with a maximum depth of approximately 27 feet to the base of the coal seam.

The Contractor shall utilize excavating equipment capable of excavating through the sandstone overburden to reach the coal seams. Hydraulic hammer attachments may be utilized, but blasting will not be allowed.

Burning coal is defined as any coal particle exhibiting a temperature of one hundred degrees Fahrenheit (100°F) or greater. Because the purpose of this project is to eliminate burning coal (to the extent possible) from the subsurface, temperature measurements taken during construction will dictate the degree of excavation which is necessary. Temperature measurements shall be made using a handheld non-contact Infrared Thermometer, operated in accordance with manufacturer's recommendations. Measurement shall be made of material removed from the excavation and all measurements shall be recorded in a log book maintained at the project site. Location and depth of measurement shall be recorded along with temperature reading.

Removed overburden shall be stockpiled in a designated area at a location approved by the Project Manager. Trenching and excavation is hazardous and must be completed in accordance with all applicable Occupational Safety and Health Administration (OSHA) regulations. Quantity estimates and the drawings have been developed assuming a slope grade (angle) of one and one-half horizontal to one vertical (1.5H: 1V). The sidewalls may be excavated at a steeper angle based on classifications and evaluations made by a Competent Person (as defined in OSHA Regulation 29 CFR 1926; Subpart P) employed by the Contractor, subject to the approval of the Project Manager. The primary hazard of trenching and excavation is employee injury from sidewall collapse. To minimize the potential of sidewall collapse if the sidewalls are excavated at a steeper angle than one and one-half horizontal to one vertical (1.5H: 1V), a safety bench, will be constructed every fifteen feet (15') of elevation below the top of the excavation. As a result, the sidewall configuration will consist of a series of fifteen feet (15') tall highwalls and five foot (5') wide benches. Safety benches are not required if side slopes are excavated at one and one-half horizontal to one vertical (1.5H: 1V) or flatter, unless instructed by a Competent Person. Personnel access into the excavation shall be restricted. If mixing is performed within the excavation, access for the purposes of measuring the temperature of mixed materials may be allowed, subject to the approval of the Competent Person employed by the Contractor, and approved by the Project Manager. No active excavation activities shall be performed during such entry.

Excavation operations will proceed in a manner that maximizes excavation of the overburden and coal, while maintaining a safe work environment. Excavation will occur until

in-situ coal temperatures below one hundred degrees Fahrenheit (100°F) are consistently encountered at freshly exposed coal at or beyond the excavation limits shown. Excavation limits will be determined by Project Manager during project execution, based on infrared thermometer measurements or other means to measure in-situ coal temperatures. Project Manager will determine when excavation is complete.

Contractor shall submit an excavation plan with its bid for the project, presenting an approach and sequencing to perform excavation, mixing, and backfilling operations to safely meet project objectives. It is recommended that excavation of overburden materials be performed across the planned excavation area first to within approximately two feet of the coal seam. The coal seam may then be excavated in limited areas or strips through the base of the excavation and removed for blending with overburden, as described in Section 02230. Following the completion of blending, the adequately cooled and blended material may be placed back in the area or strip from which the coal was excavated, in accordance with the backfilling Specifications in Section 02240. Work shall be sequenced and performed such that exposed fresh or burning coal is not left exposed overnight or during extended non-work periods. Contractor shall be responsible for surveying the full extent of the excavations, pre and post project as well as at each stage of excavation, for measurement and payment purposes, subject to the approval of the Project Manager. If the final excavation of the coal bed is performed in increments, this will require multiple surveys to allow the calculation of the complete quantity excavated.

<u>The Project Manager, Project Engineer, or designated representative of the NM AML</u> <u>Program must be on-site during all excavation operations. Failure to notify the Project Manager</u> <u>of excavation timing will result in loss of payment for material moved during that time period.</u> <u>The oversight representative will be available between 8:00am and 5:00pm, Monday through</u> <u>Friday, except holidays.</u>

02230 – BLEND COAL AND OVERBURDEN

The Contractor will designate or construct a mixing area or bench at a location approved by the Project Manager. This mixing area may be located within the excavation or within a designated area beyond the excavation limits protected by a surrounding earthen berm. The mixing area will serve as the cooling pad for the burning coal and as the area to mix overburden and coal. As excavation moves throughout the project area, the mixing area may move as well. The size of the cooling/blending bench may vary, based on the current excavation cut.

Simultaneous with excavation operations, coal (burning/non-burning) and overburden will be blended within the confines of the designated mixing area. Excavated overburden and coal will be mixed at a minimum of three parts overburden to one part coal (3:1), and allowed to cool to below 100°F before being utilized as backfill. Mixing will be accomplished using a dozer, scraper, or excavator bucket to efficiently and thoroughly mix the overburden and burning coal materials. Blending will occur in no greater than three foot (3') lifts, to ensure materials are mixed to the correct ratio. Blending of burning and non-burning materials must be carefully observed so that burning materials do not leave the mixing area. Blending will NOT be permitted in extremely windy conditions, as determined by the Project Manager. The Contractor shall maintain a full water truck (4,000 gallon minimum capacity) at all times that coal excavation and blending operations are underway. Water may be utilized as necessary to control dust and to aid in the cooling and extinguishing process. Temperature measurements shall be made at multiple locations throughout the blended material and the approval of the designated representative of the NM AML Program will be required prior to utilizing the blended material as backfill.

The Project Manager, Project Engineer, or designated representative of the NM AML Program must be on-site during all blending operations. Failure to notify the Project Manager of blending timing will result in loss of payment for material moved during that time period. The oversight representative will be available between 8:00am and 5:00pm, Monday through Friday, except holidays.

02240 – BACKFILL EXCAVATION

Once cooled (to less than 100°F) and blended, all excavated materials will be replaced into the excavation to recreate the approximate pre-disturbance topography of all excavated areas. The backfilled landform must resemble to surrounding topography, shed water in a non-erosive fashion, and have slopes no steeper than 2.5H:1V, or that of surrounding existing grade.

Fine grained (six inches (6") in diameter or less) non-carbonaceous overburden material will be selectively placed against the final cut face of the exposed coal. Acceptable fine grained material will be free of any coal or carbonaceous shale. This material must be placed in the cut so that it extends from the base of the excavation to a minimum elevation of five feet (5') above the top of the exposed coal. A minimum of eight feet (8') of fine-grained material must be backfilled laterally away from the coal outcrop and compacted in two foot (2') lifts against the exposed coal seam(s). Fine grained materials can be screened on-site from the excavated overburden using a static screen, or grizzly.

Excavated materials will be backfilled against the cut slope to an elevation consistent with adjacent, undisturbed topography which facilitates non-erosive drainage. All excavated and blended materials will be utilized. Backfilling operation can occur simultaneously with excavation operations once blending of cooled coal and non-carbonaceous overburden is accomplished. Backfill will be compacted in three foot (3') lifts.

02250 - PLACE SOIL COVER OVER PUF

Following backfill of subsidence features with PUF at the Navajo North Site, a two foot thick soil cover will be placed over each PUF plug. Soil may be obtained from the area immediately surrounding the subsidence feature, not including avoidance zones, or excess overburden material excavated from the other two sites may be brought the Navajo North Site for this purpose.

02260 - GRADING

Following backfill of excavated areas, the final grade of the site must be established. The reconstructed ground surface will undulate to promote a diverse landform, and will be graded so

that the slope is not steeper than 2.5H: 1V, or that required to match adjoining existing grade. Ridges and valleys will be established to mimic the surrounding landscapes and promote positive drainage.

The final topography of the backfilled excavation area, stockpile locations and any other areas disturbed during project construction must closely resemble the natural pre-existing topography of the area. No coal or carbonaceous material shall be left exposed on the final surface.

02270 – REPLACE TOPSOIL

Following completion of the backfilling and grading operations, soil materials salvaged from the site will be redistributed to all disturbed areas. The soil will be distributed to a uniform depth across all areas from which soil was salvaged, including excavation, backfill, and stockpile locations, per Project Manager direction.

02280 – SLOPE PROTECTION AND EROSION CONTROL

The Contractor shall take measures to control erosion and subsequent sediment carried off the project sites and access roads due to construction activities. These controls shall be included in the Storm Water Pollution Prevention Plan (SWPPP) to be developed by the Contractor in accordance with guidelines given by the U.S. Environmental Protection Agency. Sediment control measures shall be placed wherever soil disturbed by construction could erode and be carried beyond the limits of construction. These areas include areas disturbed by construction activities, temporary access and haul roads, and temporary earth stockpiles.

Erosion and sediment control measures shall be placed as grading and earthmoving operations progress. The operation shall not progress at a distance further than the distance that sediment control installations can be placed by the end of daily operations. Areas of surface disturbance shall be kept to a practicable minimum. Best Management Practices (BMPS's) will be implemented to contain any sediment generated during earthmoving and other reclamation activities. Erosion control BMP's to be implemented may include silt fence, straw wattles, hay bales, and/or earthen berms along excavation boundaries and at the toe of all slopes being disturbed by reclamation activities. Erosion control will also be used above any depression or swale where sediment laden water could pool, and along the margins of any open water adjacent to ground disturbing activities. Straw Wattles will be utilized at the end of the project to protect regraded and revegetated slopes, as specified in Section 2920.

Unless temporarily demobilized from the project area due to specified seasonal limitations, the Contractor shall inspect the erosion and sediment control features at least biweekly and within 24 hours of each rainfall. The Contractor shall repair any erosion and sediment control feature within seven days following the inspection during which damage is noted or following notification by the Project Manager that repairs are required. Repairs shall be initiated within 24 hours of damage occurring to erosion control features that could result in a discharge of sediment into a stream, arroyo or water impoundment. All erosion and sediment control measures shall be maintained by cleaning or replacement as needed, or as directed by the Project Manager. These measures shall be fully effective for the purpose intended until permanent erosion control measures are in place and operational. Temporary erosion and sediment control features shall remain in place after construction operations are completed, unless otherwise designated in the contract, and shall be maintained until the date of final acceptance of the project.

02800 - SITE IMPROVEMENTS

Cattle guards, fences, gates, 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.

02900 - LANDSCAPING

The following sections describe revegetation to be performed under this contract. Revegetation shall be required at areas disturbed during construction and as specified by the AML Project Manager.

02920 - SOIL PREPARATION / SURFACE ROUGHENING

Prior to seedbed preparation, the Contractor shall grade all disturbed areas as described and roughen the surface as specified below.

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 small pockets and furrows to trap water and create favorable microclimates for plant growth.

Straw Wattles will be used for erosion and sediment control following the completion of earth moving operations, placed along contour of reconstructed slopes, spaced at intervals of five feet (5') vertically along slopes with a final grade steeper than 10%, or 10 feet horizontal to 1 foot vertical (10H:1V) throughout the project area.

Acceptable straw wattles will be manufactured from rice straw, and must be wrapped in tubular plastic netting. The netting, which must have a strand thickness of 0.03 inches, must consist of 85% high density polyethylene, 14% ethyl vinyl acetate and 1% color for ultra violet inhibition. The wattles must be a nominal nine (9) inches in diameter and a nominal twenty five (25) feet long, with a weight of approximately thirty five (35) pounds each.

Wattles will be installed on contour in trenches that are three to five inches (3" - 5") in depth, and nine inches (9") wide. Wattles will be anchored in the trench by 1" x 1" by 24" stakes on four (4) foot centers. The ends of adjacent wattles must be butted one to another. Wattles must be certified weed free.

After roughening, seed shall be broadcast 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 2,500 square feet or 50 feet by 50 feet).

The extent of seedbed preparation shall not exceed the area on which the entire seeding operation can be applied. Seed shall be applied before soil surface crusting occurs. Loss of seed and fertilizer due to erosion shall be prevented from occurring. If crusting or erosion occurs, the entire area affected shall be reworked beginning with seedbed preparation.

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, too dry, or otherwise untillable as determined by the Project Manager.

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 the closest available source adapted to the climate and soil. 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

The seed shall be broadcast. 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 as determined by the Project Manager. 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 and raking to ensure seeds are not exposed on 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.

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):

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

Class	Plant Species (Common Name/ <i>Scientific Name</i>)	Pure Live Seed (pounds per acre)
Shrubs	Four wing saltbush (Atriplex canescens)	0.40
	Rubber rabbitbrush (Ericameria nauseosa)	0.20
Graminoids	Indian Ricegrass (Achnatherum hymenoides)	2.50
	Blue Grama (Bouteloua gracilis)	3.50
	Sideoats Grama (Bouteloua curtipendula)	2.00
	Bottlebrush squirreltail (Elymus elymoides)	1.00
	Alkali sacaton (Sporobolus airoides)	2.00
	Galleta Grass (Pleuraphis jamesii)	2.00
Forbs	Narrow-leaf Penstemon (Penstemon strictus)	1.00
	Desert Paintbrush (Castilleja chromosa)	1.50
	Scarlet Globemallow (Sphaeralcea coccinea)	1.50

TABLE I - SEED MIX

All seed shall comply with NMSA 1978, Sections 76-10-11 through -22 and 21.18.4 NMAC, 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. Plant trimmings generated from onsite activities may be shredded and used for mulch; however, deliberately trimming vegetation for the sole purpose of making mulch is not allowed.

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 140 to 160 cubic yards per acre (approximately 1-inch thick after spreading).

02955 – SALVAGE OF NATIVE PLANTS

Before any area is disturbed for access, borrow, fill or other construction activities, the Contractor, accompanied by the AML Project Manager, shall thoroughly scout the area for native plant species. All significant plants shall be marked by the Project Manager and avoided by the Contractor 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.

Cactus 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 nearby uncompacted native soil, preferably in areas that have been disturbed by construction activities and along closed access roads.

Any transplanted 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.

02990 - SUBMITTALS

Complete data and specifications for the following items shall be submitted in accordance with the procedure set forth in Section 01340:

- Materials:
 - Fill materials
 - Seed mix
 - o Mulch
 - Straw Wattles
- Excavation Plan (Section 02220)

END OF DIVISION 2

DIVISION 13 – SPECIAL CONSTRUCTION

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

13050 - POLYURETHANE FOAM CLOSURES

The following section describes the polyurethane foam (PUF) closures to be installed in the specified mine features. The work consists of installing a bottom form (as needed), installing PUF to specifications, and backfilling over the PUF to the specified level, and.

The Contractor shall inform the Project Engineer and Project Manager of the times and places at which PUF is to be placed at least three working days in advance.

13051 - MATERIALS AND EQUIPMENT

Unless otherwise specified, polyurethane foam (PUF) shall have a minimum installed density of 1.85 pounds per cubic foot (pcf). Machine-applied or poured-in-place PUF shall be equivalent to SWD Urethane Co. "SWD 425," North Carolina Foam Inc. "NCFI-811," Foam Concepts LLC, "EFS Equipment-less Foam Sealant", Mine Seal, LLC, "PUF-Seal" or Urethane Contractors Supply and Consulting "SES III 2.0 Pour." Bagged PUF shall be equivalent to Foam Concepts Inc. "EFS Equipment-less Foam Sealant" or Mine Seal, LLC "PUF-Seal," or approved equal.

PUF characteristics shall conform to the following standards:

PUF CHARACTERISTIC	STANDARD	SPECIFICATION
Density	As specified	ASTM D1622
Closed Cell Content	>85%	ASTM D6226
Compressive Strength	25 psi minimum	ASTM D1621
Water Absorption	0.2 lbs./sq. ft. maximum	ASTM D2842
Exothermic Reaction Rate	Low	-
Fire Resistance	High	-

PUF used in mine closures shall not contain chlorinated fluorocarbons (CFC's) or hydrochlorofluorocarbons (HCFC's).

For poured foam, separate component measuring and mixing containers shall be used. Each component shall be assigned a specific measuring container, each marked with a predetermined volume level corresponding to the required mix ratio. The components shall always be measured in the same quantities, the components added in a separate container, and thoroughly mixed using an appropriate mixing device. In all cases, measuring and mixing of poured PUF shall be done in strict accordance with manufacturer's recommendations, including maintenance of recommended temperatures of the components for mixing and placement. The Contractor shall supply a proper thermometer and use it to check each mixed batch. The manufacturer shall package bagged foam with pre-measured amounts of each component. Foam shall be used prior to the end of the manufacturer's designated shelf life.

If the Contractor specifies the use of an application gun, it shall be capable of mixing plural components in the proper ratio at the minimum acceptable output of four pounds per minute. The gun shall be a Gusmer AR mechanically self-cleaning design or equivalent. Application guns constructed by individuals or manufacturers not typically used in the PUF industry may be used if warranted by the PUF supplier or manufacturer.

The proportioning unit shall be capable of attaining a minimum temperature of 125°F and shall be a Gusmer Model H-11 or equivalent. For remote project locations, or with the approval of the Project Manager, smaller capacity proportioners will be acceptable. In this event the proportioner shall be the Gusmer FF or equivalent.

Minimum heated hose length from proportioner to gun shall be 80 feet. The hose shall maintain or increase component temperature from the proportioner. Longer heated hose lengths may be required depending upon the distance from the proportioning unit to the reclamation site. Approval of the Project Manager is required for the use of any length of unheated hose on a PUF closure.

13052 - MATERIAL SAFETY, HANDLING AND TRANSPORT

Materials shall be stored in accordance with the manufacturer's recommendations. All safety precautions outlined by the Polyurethane Division of the Society of Plastics Industries, NFPA, OSHA, EPA, and the manufacturer's Safety Data Sheets (SDS) shall be observed. SDS and technical data sheets shall be on-site and available at all times.

There shall be no welding, smoking, or open flames within 25 feet of PUF application. A minimum 15-pound, class ABC, fire extinguisher shall be on site during foam application.

Workers wearing organic respirator masks and safety glasses or goggles shall apply PUF. State or federal regulations requiring additional safety equipment shall supersede these requirements. Workers wearing respirator masks shall follow the training, fit testing, medical surveillance, and other relevant requirements specified in 29 CFR 1910.134.

The Contractor shall follow all applicable state and local regulations for the transport and use of PUF and chemicals required for cleanup. The Contractor shall obtain any required permits for transportation. In the event of a component leak or spill, the Contractor shall notify the appropriate agencies and jurisdictions.

An oxygen meter shall be used to test air before and during installation of the bottom forms or any other work more than 10 feet 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. 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.

13055 - EXECUTION

Debris, soil, and loose rock in each of the features shall be cleared wherever PUF will be installed. A reasonable effort shall be made to excavate any soils down to bedrock or based upon the limitation of the equipment used and safe equipment travel. Due to the shape of the subsided features (wider at the top than the bottom), subsidence feature(s) shall be over excavated to accommodate the appropriate thickness/depth of PUF material to support the overburden load and allow for maximum adhesion along the walls of the subsidence feature(s). Soils shall be separated for use as cover.

I. Formwork

The bottom form and cross members may consist of any commonly available building materials capable of sustaining an initial lift of two to four feet of PUF. Acceptable cross member materials include, but are not limited to, reinforcing steel, 2x4's, dowels, cardboard tubes, and fabric air-inflated plugs. Acceptable bottom form materials include, but are not limited to, foam that has been poured and allowed to cure, wire sheeting (e.g., hog wire) affixed to geonet material, plywood, cardboard, paneling, and carpeting. Any combination of the above materials will be acceptable. Alternate bottom forms shall be reviewed with the Project Engineer prior to use.

The formwork shall be installed at that level specified in the drawings or as directed by the Project Engineer following uncovering by the Contractor of the existing conditions within the mine opening. Unless otherwise indicated, cross members may be placed at an angle no greater than 20 degrees from the horizontal as long as both ends are seated in competent rock. The bottom form shall be set over the cross members.

All bottom forms shall be completed prior to the application of any polyurethane foam. The Contractor shall provide the Project Manager with a list of installed depth to bottom forms for polyurethane foam closures. Any breach in the bottom form caused by rock fall or other reason shall be repaired prior to the arrival of PUF applicators at that site. The Contractor shall be responsible for the integrity of the bottom form and the loss of any polyurethane should it fail.

II. Polyurethane Foam (PUF)

The depth, or thickness, of polyurethane foam (PUF) installed to plug a feature opening shall be a minimum of two times the smallest dimension of the opening. Loose rock and overburden may be removed from around the opening using hand tools to accommodate the placement of a bottom or back form for the PUF.

In large pours, PUF can get hot enough to actually melt and even burn. This may leave a hollowed out plug or "eggshell" that has very little strength. The remaining foam will be cracked and discolored, very similar to severe UV damage.

Polyurethane foam shall be installed in lifts with a maximum rise of 18 inches. The lifts shall be installed no sooner than 20 minutes apart (and no sooner than 30 minutes apart for ambient air temperatures above 84°F) and have a maximum lift height of three vertical feet per hour. Installed PUF lifts shall pass through the tack free stage before applying the next lift. At no time shall sprayed or poured PUF cut into the rising foam. The PUF shall be applied in such a manner that the entire void is filled, that shadow zones or voids are not created during PUF application, and that temperatures are not raised to unsafe levels.

The Project Manager may use an infrared non-contact thermometer to monitor exothermic generation. If the ambient air temperature is below 60F, extra time will be required to allow the PUF to fully expand and may prevent each lift from reaching a full height of 18 inches. Every degree of ambient air temperature over 65°F adds at least two degrees to the temperature of the rising foam. Ambient air temperatures above 90°F can cause problems with PUF formation. PUF application shall cease if heating or off-ratio foam is observed. The Contractor shall remedy off-ratio foam and demonstrate proper quality PUF to the Project Manager before application resumes. The surface temperature should reach a plateau and start to drop before resuming foam installation. If using bulk foam, reduce the quantity per bucket as the day heats up.

Bagged or poured-in-place polyurethane foam shall be placed in strict accordance with the manufacturer's recommendations, including the need for thorough mixing of components. If required by the Project Engineer, the manufacturer of bagged or poured-in-place polyurethane foam shall provide a certified representative experienced in the placement of their product for a minimum of one eight-hour day. This representative will direct field operations and instruct the Contractor in the proper mixing, placement, and safety procedures for bagged or poured-in-place PUF.

The surfaces of the void to be filled shall be as free as possible of grease and standing water. PUF shall not be applied to surfaces with running water. Remedial action for such situations shall be reviewed with the Project Manager. Polyurethane foam shall not be applied directly to a debris plug, but shall be applied to a bottom form of known physical and chemical properties. PUF shall not be applied during rain unless the foam is fully protected from interaction with water by a physical barrier.

If off-ratio PUF is observed, the applicator must stop, correct the imbalance, and continue application with the proper ratio PUF. Correction and determination of the foam ratio shall be done on a plastic sheet away from the work area. Any lift of off-ratio PUF comprising over two percent of the intended PUF column heights shall be removed. An amount of off-ratio PUF less than two percent of the specified volume may remain if allowed to cool and if the outer perimeter of off-ratio PUF is removed. If off-ratio foam comprises more than 10 % of the specified PUF volume, five percent of the price bid for the site will be deducted as a penalty.

The Contractor shall be responsible for lost or damaged equipment. Damages or claims arising from PUF overspray shall be the responsibility of the Contractor. Under no circumstances shall foreign material be placed in the PUF material unless specifically specified or authorized by the Project Manager. Non-PUF materials shall be non-toxic and non-hazardous and shall not compromise the strength or water saturation characteristics of the PUF. Upon reaching the specified grade level for application of PUF, the Contractor shall undertake cleanup of PUF operations.

III. Field Quality Control

The Project Manager, or their designated representative, will make periodic checks of the quality of PUF applied. The principal check on quality will be visual. Acceptable PUF shall be tan-white to buff in color with no vesicles and a smooth to coarse orange peel surface. Any one of the following conditions shall cause PUF application to cease and efforts to correct the off-ratio condition begun.

Condition	Possible Cause
Dark PUF color Smooth and Glassy Friable or Brittle PUF Improper Density	Excess A Component
Light in Color to White Bad Cell Structure Mottled Appearance Blowholes or Pinholes	Excess B Component
Slow Rise Poor Cell Structure Frequent Equipment Clogging Slow Curing Poor Physical Properties	Bad Material
Air Bubbles on Surface Tension Cracks on Surface Excessive Air Bubbles	Pouring Too Fast Between Lifts

At any time during PUF application the Project Manager may call for a density test. The Contractor shall provide and fill a container for this purpose and the sample will be tested for density. The density of the sample shall be within the range of 1.85 to 3.00 pounds per cubic foot. Density tests indicating that PUF installed is not within the minimum specified range shall cause corrective action resulting in PUF within the acceptable nominal range, less deviation due to barometric pressure changes from Standard Temperature and Pressure.

The Contractor shall conduct density tests of PUF at no additional expense to EMNRD. At the discretion of the Project Manager, density tests showing PUF in the acceptable range will be taken in the center of the cavity to which PUF is being applied. A sampling box constructed of sheet aluminum and lined with polyethylene shall be lowered into the cavity to take a representative sample of PUF just above the level of installed polyurethane. At the option of the Project Manager, up to three one-cubic-foot samples of PUF may be taken from the job site for density analysis at the Contractor's expense. In addition, at the option of the Project Manager, up to three samples of up to 100 cubic inches in volume may be taken for on-site tensile strength testing at the Contractor's expense. PUF shall be provided for the samples at no additional cost to EMNRD.

IV. Backfilling

To protect the PUF from vandalism if the site is to be left unattended, two to six inches of fill shall be uniformly shoveled over the foam as soon as possible after the last layer of PUF has solidified. No sooner than 96 hours after PUF application, the remaining void above the PUF plug shall be backfilled. The first two-foot lift of fill shall be placed by hand, bucket, or chute to lower the velocity of impact against the PUF. With approval of the Project Manager, this fill may be placed by streaming from heavy equipment such as a loader bucket. The depths and types of fill over the PUF shall be as indicated or specified in the contract documents or as directed by the Project Manager. Unless otherwise indicated, the minimum cover shall be 18 inches of common fill.

Unless otherwise specified or directed by the Project Manager, common fill above polyurethane foam closures shall be nearby cohesionless material with no pieces larger than six inches in diameter, free of debris or trash, and containing no materials classified as toxic or hazardous. The unit weight of the fill material shall be less than 130 lb/cu. Ft.

Fill above the polyurethane foam closures shall be placed in a manner that will prevent damage to the polyurethane foam plug and riser pipes and will allow these structures to assume the load from the fill gradually and uniformly.

The use of riding vibratory compaction equipment shall be prohibited above polyurethane foam closures and vibrations due to other construction equipment operations shall be kept to a minimum in these areas. With care and for the minimum acceptable period of time, small walkbehind compaction equipment, such as rammer tampers, may be used in these areas.

V. Cleanup

The Contractor shall clean the site of all PUF fragments and overspray. PUF overspray greater than ¹/₈-inch thick on timbers or historic materials shall be scraped or ablated to ¹/₈ inch minus to permit ultraviolet degradation of over sprayed polyurethane. Tools and equipment shall be cleaned in such a manner as to avoid injury to vegetation or wildlife. Handling of chemicals used in cleanup shall comply with all applicable local, State and Federal regulations.