

United States Department of Energy



Remedial Action Plan and Site Conceptual Design for Stabilization of the Inactive Uranium Mill Tailings Site at Ambrosia Lake, New Mexico

Final

Volume III: Appendix F, Final Plans and Specifications

Appendix B of the
Cooperative Agreement
No. DE-FC04-85AL19454

September 1990

Uranium Mill Tailings Remedial Action Project



UNITED STATES DEPARTMENT OF ENERGY
Albuquerque, New Mexico

**Uranium Mill Tailings
Remedial Action Project
(UMTRAP)**

Ambrosia Lake, New Mexico

Main Construction Subcontract AMB-4

Subcontract Documents

Final Design for Construction

Bid Schedule

Special Conditions

Specifications

Subcontract Drawings

September 1990



MK-ENVIRONMENTAL SERVICES
A DIVISION OF MK-FERGUSON

UMTRA PROJECT - AMBROSIA LAKE, NEW MEXICO
MAIN CONSTRUCTION SUBCONTRACT
SUBCONTRACT DOCUMENTS AMB-4
FINAL DESIGN FOR CONSTRUCTION
SEPTEMBER 1990

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AMBROSIA LAKE, NEW MEXICO
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SECTION 00310

BID SCHEDULE

Name of Bidder _____ Date: _____

Following are the prices bid for completion of the Work as required by the Subcontract Documents:

Item No.	Spec. Section	Description*	Unit	[Estimated]** Quantity	Unit Price	Amount
<u>000 - MOBILIZATION</u>						
001	01019	Mobilization	L.S.	100%	N/A	_____
002	SC-19	Payment for Bond Premium	L.S.	100%	N/A	_____
<u>200 - SITE PREPARATION</u>						
201	01500	Construction Facilities	L.S.	100%	N/A	_____
[Text Deleted]**						
[202]**	02050	Removal, Demolition and Disposal of Membrane Liner	L.S.	100%	N/A	_____
[203]**	02060	Removal, Demolition and Disposal of Existing Utilities	L.S.	100%	N/A	_____
[204]**	02090	Sealing of Abandoned Wells	L.F.	1,210		_____
[205]**	02200	North Swale U.C.M. Excavation	C.Y.	85,100		_____
[206]	02200	Temporary Diversion Ditches and Temporary Collection Ditches U.C.M. Excavation	C.Y.	12,100]**		_____

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Item No.	Spec. Section	Description*	Unit	[Estimated]** Quantity	Unit Price	Amount
[Text Deleted]**						
[207]**	02200	Demolition Debris Burial Pit U.C.M. Excavation	C.Y.	92,500		
[208	02200	North Swale and East Swale U.C.M. Fill	C.Y.	15,900]**		
[Text Deleted]**						
[209	02771	Membrane Liner for Temporary Collection Ditches and Retention Basin	S.Y.	15,000]**		
[210	02833	Woven Wire Fence	L.F.	2,310]**		
<u>400 - TAILINGS PILE</u>						
401	02200	Excavation of Contaminated Materials from Northern Portion and Southeast Corner of Existing Tailings Pile, and Placement in Tailings Embankment	C.Y.	1,000,000		
[402	02200	Excavation of Contaminated Materials from Other Areas of the Site Within Final Site Boundary, and Placement in Tailings Embankment	C.Y.	610,000]**		
[403	02200	Excavation of Contaminated Materials from Areas Outside the Final Site Boundary and Placement in Tailings Embankment	C.Y.	450,000]**		

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Item No.	Spec. Section	Description*	Unit	[Estimated]** Quantity	Unit Price	Amount
[404]**	02200	Disposal of Demolished Materials and Debris from Area A into the Tailings Embankment	[L.S.	100%	N/A]**	_____
[405	02200	Disposal of Demolished Materials and Debris from Area B into the Demolition Debris Burial Pit and U.C.M. Backfill	C.Y.	61,200]**	_____	_____
[Text Deleted]**						
[406]**	02200	Furnish and Install Displacement Monuments	Each	8	_____	_____
[407	02050	Removal, Demolition and Disposal of Buried Concrete	C.Y.	300	_____	_____]**
[408	02081	Removal, Transportation and Disposal of Hazardous Waste and Non-Hazardous Waste	L.S.	100%	N/A	_____]***
<u>500 - COVER</u>						
501	02200	Radon Barrier U.C.M. Fill	C.Y.	450,000****	_____	_____
<u>600 - EROSION PROTECTION</u>						
601	02278	Furnish and Place Riprap Material, Type A	C.Y.	[51,800****]+	_____	_____
602	02278	Furnish and Place Riprap Material, Type B	C.Y.	34,700****	_____	_____

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Item No.	Spec. Section	Description*	Unit	[Estimated]** Quantity	Unit Price	Amount
603	02278	Furnish and Place Riprap Material, Type C	C.Y.	31,100****	_____	_____
604	02278	Furnish and Place Bedding Material	C.Y.	69,100****	_____	_____
<u>800 - SITE RESTORATION</u>						
801	02200	Wastewater Retention Basin U.C.M. Backfill	C.Y.	33,700	_____	_____
[Text Deleted]**						
[802	02200	Finish Grading of Site U.C.M. Fill and U.C.M. Backfill for Temporary Collection and Temporary Diversion Ditches	C.Y.	133,900]**	_____	_____
[803]**02935		Permanent Seeding	Acre	700	_____	_____
TOTAL (SUBCONTRACT PRICE)					\$	_____

* For complete description of a Bid Item and for measurement and payment provisions, see Part 4 of the Specification Section cited.

[**** Quantity based on thickness dimension shown on the Subcontract Drawings. For additional details, see measurement provisions in Part 4 of the Specification Section cited.]**

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SC-1 DEFINITIONS

A. Wherever used in the Subcontract Documents the following terms have the meanings indicated which are applicable to both the singular and plural thereof:

1. Access Control Area - The area occupied by and in the immediate vicinity of administration facilities including, but not limited to, access control trailer, sanitary facilities, decontamination pad and its contaminated water collection sump, equipment and materials laydown and storage area, employee and service vehicle parking area, and the roadway connecting vehicular gate to decontamination pad.
2. Addenda - Written and/or graphic instruments issued prior to opening of Bids which clarify, correct or change the bidding documents.
3. [ALARA - The designation 'ALARA' is an acronym for "as low as reasonably achievable".]**
4. [Asbestos - All the asbestiform varieties of serpentinite (chrysotile), riebeckite (crocidolite), cummingtonite-grunerite, anthophyllite, and actinolite-tremolite.]**
- [5.]** Bid - The offer or proposal of the bidder submitted on the prescribed form setting forth the prices for the Work to be performed.
- [6.]** Bonds - Bid, performance and payment bonds.
- [7.]** Construction Facilities - The construction, operation and maintenance of temporary features required during the construction phase of the permanent facilities. These facilities are specified in Section 01500.
- [8. Contaminated Materials (C.M.) - Tailings and other materials having radioactive contamination levels greater than specified in the applicable US Environmental Protection Agency Standards, or limits specified for free release of demolished materials and debris. Contamination levels, which may be based on radium, thorium or other radionuclides, shall be as determined by the Contractor. These standards are presented in the Federal Register, 48FR602, January 5, 1983: "Standards for Remedial Actions at Inactive Uranium Processing Sites" and for demolished materials and debris, in applicable limits available from the Contractor.]**

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- [9.]** Contractor's Office Area - The area occupied by the temporary field offices as shown on the Subcontract Drawings.
- [10.]** Controlled Area - Some areas on the construction site have localized restrictions because of potential health hazards. Such areas are marked by ribbons, signs, and tags.]**
- [11.]** Day - Day shall mean a calendar day of 24 hours.
- [12.]** Fiscal Year: October 1 through September 30.
- [13.]** General Requirements - Division 1 of the Specifications.
- [14.]** Lower-Tier Subcontractor/Other Subcontractor:
- a. Lower-tier Subcontractor - An individual firm or corporation having a direct contract with the Subcontractor.
 - b. Other Subcontractor - An individual firm or corporation (other than the Subcontractor) having a direct contract with the Contractor for other work on the project.
- [15.]** Notice of Award - The written notice by Contractor to the apparent successful bidder stating that upon compliance by the apparent successful bidder with the conditions precedent enumerated therein, within the time specified, Contractor will sign and deliver the Agreement.
- [16.]** Notice to Proceed - A written notice given by Contractor to Subcontractor fixing the date on which the Subcontract Time will commence to run and on which Subcontractor shall start to perform Subcontractor's obligations under the Subcontract Documents.
- [17.]** Permanent Facilities - Relocation of existing utilities; [construction of tailings embankment and permanent drainage swales and ditches; sealing of abandoned wells; and finish grading and seeding.]**
- [18.]** Project - The total construction of which the Work to be provided under these Subcontract Documents is a part as indicated elsewhere in the Subcontract Documents.

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- [19.]** Shop Drawings - All drawings, diagrams, illustrations, schedules and other data which are specifically prepared by or for Subcontractor to illustrate some portion of the Work and all illustrations, brochures, standard schedules, performance charts, instructions, diagrams and other information prepared by a Supplier/Subcontract or submitted by Subcontractor to illustrate material or equipment for some portion of the Work.
- [20.]** Site Manager - The authorized representative of the Contractor who is assigned to the site or any part thereof.
- [21.]** Specifications - Those portions of the Subcontract Documents consisting of written technical descriptions of materials, equipment, construction systems, standards and workmanship as applied to the Work and certain administrative details applicable thereto.
- [22.]** Subcontract Change Notice/Change Order - A document signed by Subcontractor and Contractor authorizing an addition, deletion, revision, or clarification of the Work, modified in writing and issued on or after the Effective Date of the Agreement.
- [23.]** Subcontract Drawings - The drawings which show the character and scope of the Work to be performed and which are referred to in the Subcontract Documents.
- [24.]** Subcontract Modification - A document issued to incorporate Subcontract Change Notices/Change Orders and adjustments in the Subcontract Price or Subcontract Time or to modify Subcontract.
- [25.]** Subcontract Price - The moneys payable by Contractor to Subcontractor under the Subcontract Documents as stated in the Agreement.
- [26.]** Subcontract Time - Duration of time specified in the Subcontract Agreement Form for the completion of the Work under the Subcontract. The time commences from the date or the day specified in the Notice to Proceed, and may be specified in terms of number of calendar days available to complete the Work, or in terms of the date on or before which to complete the Work.
- [27.]** Tailings Embankment - See Section 02200.

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- [28.]** Temporary Facilities - See Construction Facilities in Paragraph 7 above.
- [29.]** Temporary Roads - Improvements to existing roads and construction of new roads, if any, carried out by the Subcontractor, for his convenience in the performance of the Subcontract. Such work is not designed and detailed on the Subcontract Drawings.
- [30. Uncontaminated Materials (U.C.M.) - All materials having radioactive contamination levels less than specified in the applicable US Environmental Protection Agency Standards, or limits specified for free release of demolished materials and debris. Contamination levels which may be based on radium, thorium or other radionuclides shall be as determined by the Contractor. These standards are presented in the Federal Register, 48FR602, January 5, 1983: "Standards for Remedial Actions at Inactive Uranium Processing Sites" and for demolished materials and debris, in applicable limits available from the Contractor.]**
- [31.]** Work - The entire completed construction required under the Subcontract Documents. Work is the result of performing services, furnishing labor and furnishing and incorporating materials and equipment into the construction, as required by the Subcontract Documents.
- B. The other terms such as Contractor, Subcontractor, Government, DOE, Subcontract Administrator, Subcontract Documents, MK-F and Site of Work are defined in Article GP-2 of General Provisions.

SC-2 HOLIDAYS

- A. [The following days will be observed as holidays by MK-Ferguson Company, and shall be observed by the Subcontractor and lower tier subcontractors:]**

New Year's Day
Martin Luther King Jr.'s Birthday
Presidents' Day
Memorial Day
Independence Day
Labor Day
Thanksgiving Day
Friday, Day after Thanksgiving Day
Christmas Day

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1. Furnishing all materials, equipment, plant, labor, transportation, construction equipment and machinery, tools, appliances, fuel, power, light, heat, telephone, water, sanitary facilities, decontamination facilities and all other facilities and incidentals as specified in Section 01500.
 2. Furnishing temporary controls including, but not limited to, dust control, erosion control, noise control, pollution control, surface water control and access and traffic control as specified in Section 01560.
- B. Subcontractor shall be responsible for installing, constructing, maintaining, operating, removing and disposing of the construction facilities and temporary controls through the term of the Subcontract.

SC-7 [CONSTRUCTION ENVIRONMENT, SAFETY AND HEALTH MANAGEMENT PROGRAM]**

A. Contractor Safety Program:

1. The Subcontractor shall comply with the Construction [Environment,]** Safety and Health Management Program (Document No. MK-UMTRA-4). [A condensed version of this document is available upon request from the Contractor's office in Albuquerque, New Mexico.]**
2. The successful bidder will be issued a copy of the Construction [Environment,]** Safety and Health Management Program Document with the [Notice to Proceed]** by the Contractor's Subcontract Administrator.
3. A table of contents for the Construction [Environment,]** Safety and Health Management Program is listed below:

[CONSTRUCTION ENVIRONMENT, SAFETY AND HEALTH MANAGEMENT PROGRAM
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[4. The Subcontractor shall comply with radiological programs and procedures required in the current revisions of the RAC/MK-F Health Physics Procedures, Health Physics Monitoring Plan, the Site Specific Health Physics Monitoring Plan, and/or DOE Orders as applicable.]**

B. [Construction Environment, Safety and Health Initial Indoctrination and Training:

1. All construction personnel working on the site shall receive the basic Construction Environment, Safety and Health Initial Indoctrination and Training. The Indoctrination and Training will cover such matters as first aid and medical responsibilities, emergency actions, etc. The indoctrination will be oral or written (approximately 30 minutes). It will be presented to construction personnel either individually or on a group basis. No construction personnel will be permitted to work without having received this basic indoctrination.
2. The use of respirators for radiological protection may be necessary on this Project. Respirators for any other kind of protection shall be furnished by the Subcontractor. If respirator use becomes necessary, for radiological protection, the respirators will be provided by the Contractor with training in the proper use to perform specific tasks. This instruction is approximately two hours long and will be provided to the Subcontractor at no extra cost. The Subcontractor shall notify the Contractor's Representative at least one (1) week in advance of the time that the training is desired. Note, that individuals with beards or facial hair that interferes with a proper respirator seal will not be accepted for respirator training.]**
3. No payment will be made to the Subcontractor for his employees' attendance at Safety and Health Initial Indoctrination and Training Program or respirator training provided by the Contractor. Full compensation for such costs will be considered incidental to the Work of this Subcontract.
4. [All employees must have a written medical qualification to wear a respirator before they can perform work which requires the use of a respirator. Based upon requirements in OSHA 29 CFR 1910.134 and criteria established by the Contractor's Medical

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Director, and upon recommendations listed in the American National Standards Institute, ANSI 288.2-1980, "Practices for Respiratory Protection", all employees who will or may be required to wear respirators on this project shall complete a medical questionnaire and will be given pulmonary function and blood pressure tests by the Contractor at initial assignment and annually thereafter. This information will be evaluated by the Contractor's Medical Director between the hours of 8 a.m. and 4 p.m., Monday through Friday, and if it is determined to meet specific criteria, a written qualification to safely wear a respirator will be issued to the employee within 24 hours, upon receipt of the information. If a written qualification is not issued by the Contractor's Medical Director, the Subcontractor is responsible for scheduling and payment of any additional medical evaluations, and must submit to the Site Manager a written medical release for their employees' use of respirators. Where applicable, the Contractor's Medical Director will select a local qualified Occupational Physician to perform the additional Subcontractor employee evaluations.]**

C. Electrical Precautions:

1. Personnel Ground Fault Protection: All electrical conductors used in construction, operating on single phase, 120 vac, 15 or 20 amperes circuits, shall be equipped with UL listed Ground Fault Circuit Interrupters set at five (5) milliamperes plus (+) or minus (-) one (1) milliampere. [All electrical conductors, portable electric tools and their identification, installation and usage shall be in compliance with applicable OSHA standards set forth in Section 29 CFR 1926.404 of the OSHA 2207 construction industry publication.]**
2. Electrical Clearance Requirement: All electrical circuit connections shall be made on de-energized systems. Working clearance for energized systems shall be 3 feet for 0 to 150 volts and 4 feet for 151 to 600 volts. The work shall be performed by a qualified journeyman electrician or by an apprentice electrician under the direct supervision of a qualified journeyman electrician.

D. Smoking, Drinking, Eating and Chewing Restrictions: No smoking will be permitted in the immediate vicinity of

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any flammable liquids, gases or highly combustible material, or in any area posted as a non-smoking area. No smoking, drinking, eating or chewing will be permitted in any controlled area.

E. Ladders, Scaffolds, and Man Lifts: All man-lift equipment, ladders, and scaffolding shall be in compliance with applicable OSHA (29 CFR 1926) standards and be subject to inspection by the Contractor prior to and during its use.

F. Trench/Excavation Barricades:

1. [Trenching, excavation, shoring, bracing, and barricading requirements shall be in accordance with OSHA standard, 29 CFR 1926, Subpart P, revision effective January 2, 1990.]**

2. The following forms of protection shall be required for open trenches/excavations adjacent to occupied buildings, crossing pedestrian crosswalks and paths, at street intersections, and crossing or adjacent to sidewalks and driveways:

a. Barricades shall be positioned on each side of the trench and stationed at a maximum of ten (10) foot intervals. Spacing on each side of the trench shall alternate to show that a front view depicts barricades at five (5) foot intervals.

b. Whenever possible, each barricade shall be positioned at least two (2) feet away from the open trench or excavation.

c. Each barricade shall be equipped with a yellow flasher of at least eight (8) inches in diameter. (NOTE: Temporary barricades used during daylight operations do not require flashers.) Street side flashers shall be directed parallel with the street, curb side flashers and flashers along pedestrian routes shall be facing in the direction of pedestrian traffic.

d. When continuous solid barricades are not provided, interconnecting ropes or tape shall be attached to all barricades. When rope is used, streamers shall be attached at 2-3 foot intervals.

e. Walkways and/or bridges with standard guard rails, shall be provided at all pedestrian cross-

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ing points except for trench width 2'-0" and less where a barricade straddling the trench on either side of the walkway may be used.

- f. Where vehicle traffic must cross trenching operations, metal plate covers shall be provided to support all motor vehicles.
- g. Where trenches or excavations interrupt a doorway, ramp, or other exits/entrances to buildings, the doors shall be locked or blocked and a sign displayed to indicate the condition that exists.

G. Notification of Occurrences: Subcontractors shall advise the Contractor immediately upon occurrence of any non-routine events, occurrences, incidents, or accidents, etc., particularly in situations such as lost time accidents and ambulance calls.

H. Responsibility:

1. Subcontractor Safety Responsibility:

- a. [The Subcontractor shall designate in writing a qualified person to implement at all times the Construction Environment, Safety and Health Management Program at the work site. The designated person shall have authority for actions and for control of work activity to prevent accidents. The Subcontractor's safety representative shall be a full-time employee whose primary responsibility is to implement the Construction Environment, Safety and Health Management Program and who reports directly to the Subcontractor's management. The safety representative may have other duties at the site. The Contractor reserves the right to reject any safety person designated by the Subcontractor and considered unqualified by the Contractor.]**
- b. Daily work area safety and health inspections are required and appropriate action shall be taken to correct noncompliance conditions. [Certification of corrective action shall be made in writing.]**

2. Contractor Safety Responsibility:

- a. Contractor Safety Department personnel or designated representatives will make regular continu-

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ing inspections of all facilities and operations within the scope of the Subcontract. [These inspections will include the facilities and all all operations of the Subcontractor, but do not in any way relieve the Subcontractor of his responsibility for compliance with the provisions of the Construction Environment, Safety and Health Management Program.]**

- b. Daily work area safety and health inspections will be made by Contractor personnel.
- I. [Galvanized Materials: Personal respiratory protection or ventilation is required if a heat process takes place with galvanized materials.]**
- J. Back Up Alarms: All [construction]** equipment shall have functioning audible back up alarms while in use on an UMTA project.
- K. [Asbestos: The Subcontractor shall submit the following to the Contractor for review before work start up:
 - 1. A Certificate of Insurance Coverage, including, but not limited to, the following. These insurance coverage requirements are supplemental to other requirements specified in [Article]** GC-7 of the General Conditions.
 - a. Asbestos Exclusions on Workmen's Compensation or Liability policies will not be accepted. However, separate policies will be satisfactory.
 - b. Whether coverage is on an occurrence or claims made basis, it is required that the coverage or policy be extended or kept in force for at least twenty-four (24) months after completion of the Subcontract.
 - c. The Subcontractor shall provide evidence of coverage by submitting a Certificate of Insurance stating that such exclusions or coverage are in effect.
 - 2. An Asbestos Handling and Removal Plan shall be required if asbestos materials are uncovered during site excavations. The asbestos materials shall be buried in the disposal cell using acceptable cell design criteria. Asbestos materials shall be buried and covered with at least 12 inches of compacted soil within 24 hours of transportation to the cell.

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3. Asbestos Removal Permit: See Article SC-11.B.]**

[L.]** Unidentified Waste Materials: Unidentified wastes will be identified by the Contractor through laboratory analysis. If the materials are identified as hazardous, the Subcontractor [shall comply with the applicable standards for personnel safety and health protection.]**

[M.]** Industrial Hygiene:

[1. Noise:

- a. The UMTRA Project shall comply with the OSHA Construction Occupational Noise Exposure Regulation 29 CFR 1926.52. Sound level surveys and noise dosimetry will be conducted on a continuous basis by the Contractor for both the Contractor and Subcontractor personnel. Noise monitoring data will be available to the Subcontractor for evaluation. Hearing protection is required for any personnel exposed to 85 dB(A) or above.
- b. The Subcontractor shall provide baseline and annual audiometric testing (hearing tests), if it is practical to track employees, and training to any employee exposed above 85 dB(A) 8-hour Time Weighted Average (TWA), as required to have an effective hearing conservation program. The baseline audiometric test shall be given to employees within 6 months of hire date. Costs of audiograms and training shall be funded by the Subcontractor without cost to the employee. Subcontractors or their individual employees, who work on an UMTRA site for less than 6 months are not required to perform audiometric tests for purposes of this Subcontract.
- c. The Contractor will ensure Subcontractor compliance with the OSHA 29 CFR 1926.52 regulation by reviewing Subcontractor records and interviewing Subcontractor employees as necessary.]**

[2. Dust: Subcontractor's dust control provisions shall be adequate to prevent personnel from potential inhalation exposure to Silica or Nuisance Particulates. Contractor's Safety Department will conduct ongoing dust monitoring and will keep the Subcontractor informed about the need for respiratory protection. The Subcontractor shall provide dust masks or the necessary respiratory protection for silica where radiological contamination is not present.]**

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3. [Prior to confined space entry, the Subcontractor shall read and comply with the confined space entry procedures developed by the Contractor. The procedures require that a permit be completed and kept at the work place. Atmospheric testing will be performed prior to confined space entry for percent Oxygen, Carbon Monoxide, Combustibles and Hydrogen Sulfide.]** Testing will be done using a direct reading instrument assigned to the Contractor's Health and Safety personnel.
 - [4. Hazard Communication: The Subcontractor shall comply with the OSHA Hazard Communication Program for the Construction Industry. The required compliance activities include but are not limited to:
 - a. Current-Chemical Inventories
 - b. Material Safety Data Sheets for all Chemicals
 - c. Proper labeling of all chemical containers.
 - d. Complete written program available to all work place employees.
 - e. Appropriate training to all employees on hazards of the workplace as required in OSHA 29 CFR 1926.59.
 5. General Hazards: The Subcontractor shall be responsible for controlling general hazards as identified by the Contractor. General hazards include heat stress, ultra violet radiation, chemical exposures and biological agents with potential to cause illness or injury to site personnel.]**
- [N. Construction Motor Vehicles, Heavy Equipment and Machinery Inspections and Maintenance:
1. Construction Motor Vehicles:
 - a. Vehicles that are in operation within an off-highway jobsite shall comply with 29 CFR 1926.601.
 - b. Vehicles that operate on highways or any public roads shall comply with the North American Uniform Out-of-Service Criteria (which the Subcontractor is responsible for obtaining). In addition, the Subcontractor shall implement and comply with all requirements of the Contractor Fleet Safety Compliance Manual and the Truck Inspection Plan.

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- c. Inspection reports and repair records shall be submitted to the Contractor's Site Manager prior to the initial use of all Motor Vehicles. Any additional inspection reports or repair records as required by the Truck Inspection Plan shall also be submitted to the Site Manager.

2. Heavy Equipment and Machinery:

- a. The Subcontractor shall designate a competent person to inspect the operating safety conditions of all construction Heavy Equipment and Machinery. The Heavy Equipment and Machinery shall be inspected prior to their use and frequently during their use to make certain that they are in safe operating condition. All deficiencies shall be repaired and defective parts replaced before continued use of the equipment or machinery. Records of inspections and repairs shall be maintained by the Subcontractor and be submitted weekly to the Contractor.
- b. A thorough annual inspection of the hoisting machinery shall be made by a competent person or by a government or private agency recognized by the U.S. Department of Labor, and inspection reports shall be maintained.
- c. Inspection reports and repair records shall be submitted to the Contractor's Site Manager prior to the use of such construction vehicles, machinery and equipment on the Project.
- d. Material handling Heavy Equipment shall comply with 29 CFR 1926.602.]**

SC-8 HEALTH PHYSICS

The Subcontract work area is a radiologically controlled area. All work shall be governed by the essential requirements given in the following paragraphs:

A. Work Conditions:

1. Radiation/Contamination Areas: Radiation/contamination controlled areas shall be established on a case-by-case basis at the discretion of the Site Manager. Protective clothing for contamination control will be provided to the Subcontractor at no charge on

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a loan basis. Clothing will be issued by Contractor personnel when required at the access control gate. [Compliance with required protective clothing standards is mandatory.]**

2. Radiation Dressing Requirements:

a. All controlled area protective clothing, when required, shall be put on and removed at the controlled area boundary. [The Subcontractor shall ensure that removed items are properly stored in a weatherproof facility inside the controlled area boundary and that storage areas are maintained in proper order. Access control trailers specified in Section 01560 may be used for storage of protective clothing.]**

b. When required, protective clothing for contamination control could consist of coveralls, gloves, and rubber boots, shoecovers or any combination of the above. Personnel will be required to change out of the protective clothing prior to leaving the controlled area.

3. Personnel Monitoring: All personnel will be required to self-monitor for radioactive contamination upon leaving the controlled area. Personnel will be instructed in self-monitoring procedures in accordance with paragraph 5 below defining Training Requirements.

4. [Monitoring of Vehicles, Equipment and Tools: Vehicles, equipment and tools from the controlled area shall be cleaned of potentially contaminated soils and will be monitored for radioactive contamination by the Contractor before leaving the area.]**

5. Training Requirements: In order to work in the controlled area, personnel shall be trained as Radiation Workers by the Contractor. The training course is approximately four hours long and is available to Subcontractor personnel at no cost for the instruction. [The Subcontractor shall notify the Contractor's representatives at least one day in advance when training is desired.]** Training in the proper use of respirators for performing specific tasks may be required. A test will be given to all personnel at the conclusion of training to establish qualifications as a Radiation Worker. Personnel must

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pass this test to work within the radiation control area. For respirator training and employee requirement, see Articles SC-7.B.2 and SC-7.B.4.

6. Radiation Exposure Limits and Restrictions:

- a. Radiation exposure on this Project is expected to be well within allowable radiation exposures. Whole body radiation exposure in rem shall be determined by Personal Thermoluminescent Dosimeters (TLD) issued to each radiation worker.
- b. Prior to working at the construction site each employee shall provide prior radiation exposure records as applicable.
- c. While working at the construction site each employee is required to wear TLD badges issued and collected daily.
- d. No one under the age of 18 shall be permitted to enter or work in the controlled area.

7. Controlled area restrictions shall be observed by the Subcontractor and applicable precautions taken.

B. Special Examinations:

1. Employees working in radiation control areas may be required to submit a bioassay sample prior to starting work in the radiation control areas and also upon termination or completion of the Subcontract. Certain Subcontractor employees, identified by the Contractor based on potential exposure to airborne radionuclides, will be required to submit quarterly bioassay samples. Employees may be required to submit additional bioassay samples on an occasional basis, to ensure that applicable radionuclide exposure standards are being met. [The Subcontractor shall notify, by verifiable written communication (e.g. certified letter), any employee who fails to provide a required bioassay sample. The communication shall state that urine sample submittal to MK-Ferguson Company representative is a subcontract requirement. Copies of the communication shall be sent to the Contractor's Subcontract Administrator.]** It is the Subcontractor's responsibility to ensure that each employee submits bioassay samples as required by the Subcontract.

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2. The Subcontractor shall notify the Contractor of any personnel terminations or transfers within 8 working hours of such terminations or transfers. The Subcontractor shall also provide the Contractor with weekly lists of all Subcontractor or subtier employees employed by or for the Subcontractor who have been issued TLD radiation exposure badges. These weekly listings shall include full name, social security number, hire date, and termination/transfer date (if applicable), of all such employees.
- C. Health Physics (HP) Personnel: [The Site Manager will monitor the construction work through HP personnel employed by him. The HP personnel will provide radiological surveillance over construction activities and advise supervision on matters concerning radiation safety as related to activities or conditions affecting the construction work. Dust suppression techniques are required to limit exposure to airborne radionuclides to ALARA limits as determined by the Contractor.]**
- D. Warning Signals: Certain circumstances such as unusual or unanticipated radiation levels, presence of toxic substances, or unsafe working conditions may prompt the Contractor to give verbal information or directions, as Warning Signals, directly to the Subcontractor and his employees. The Subcontractor and his employees shall take required actions as directed by the Contractor or his representative. The Subcontractor shall obtain the name and title of the Contractor's representative providing such information.
- E. Disposition of Contaminated Equipment, Tools and Material:
1. The Subcontractor shall use his own or rental equipment in performing the required work under this Subcontract. All tools, vehicles, equipment and material shall be cleaned of visible soil and then will be inspected for radioactive contamination by the Site Manager or his designee prior to removal from the construction area.
 2. Should the Subcontractor's tools, material, or equipment become contaminated, they will have to be decontaminated before removal from the area. If decontamination becomes necessary, the Site Manager will provide instructions for decontamination by the Subcontractor's employees. Decontamination may consist of steam cleaning, dry brushing, or washing with appropriate liquids. Decontamination required beyond

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these described will be handled under Article GP-52, "CHANGES" of the General Provisions. All releases shall be on an ALARA basis as determined by the Contractor.]**

3. If decontamination proves impracticable or impossible, the tools, material, or equipment in question will be retained by the Contractor and an equitable adjustment for same will be negotiated with the Subcontractor provided that:
 - a. There is no fault or negligence of the Subcontractor contributing to the contamination;
 - b. The Subcontractor has followed all the specific instructions of the authorized HP personnel who have surveillance over the work;
 - c. Items or equipment confiscated from the Subcontractor will be documented by a Confiscation [Notice furnished to the Subcontractor by the Contractor and signed by HP personnel and the Site Manager;]**
 - d. The Subcontractor allows reasonable time (a minimum of ten (10) working days, excluding weekends and holidays) in which to attempt decontamination of the item(s) in question. The reimbursement schedule will be as follows:
 - 1) Tools valued less than \$300.00 at 95% of replacement cost.
 - 2) Tools/Equipment \$300.00 and up: If less than one (1) year old or at top of depreciation schedule, at 75% of replacement cost; if at bottom of or off the depreciation schedule, at 50% of replacement cost.
 - e. Failure to agree upon an equitable adjustment shall constitute a dispute within the meaning of Article [GP-41]** of the General Provisions.
 - f. In view of the foregoing, the Subcontractor is encouraged to plan his work so as to minimize the transfer of equipment into and out of the construction area.

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SC-9 SUBMITTALS

Pursuant to Specification Section 01300 - Submittals, the Subcontractor shall submit samples of materials, schedules and reports, shop drawings, product data, manufacturer's instructions, and design calculations and design drawings to the Contractor.

SC-10 QUALITY ASSURANCE

All work shall be performed to the requirements of the Contractor's Quality Assurance Program. [This program meets the applicable requirements of 10 CFR 50 Appendix B and ANSI/ ASME NQA-1-79. The program will be wholly administered by the Contractor [for permanent record purposes.]]** All Quality Records will be generated and maintained by Contractor's personnel.

SC-11 PERMITS

A. The Contractor will provide the following permits and notifications as required, for project activities at the designated mill site and at the borrow areas of quarries shown on the Subcontract Drawings, except as noted below in Articles SC-11.B and SC-11.C:

1. National Pollutant Discharge Elimination System (NPDES) Permit
(New Mexico Environmental Improvement Division and U.S. Environmental Protection Agency)
2. Threatened or Endangered Species Consultation
(U.S. Fish and Wildlife Service)
3. Cultural Resource Clearance
(New Mexico State Historic Preservation Officer)
4. Quarry Use Approval
(U.S. Forest Service, Mount Taylor Ranger District)
5. Special Use Permit - for rock quarry
(U.S. Forest Service, Mount Taylor Ranger District)
6. Notice of Intent to Discharge/Ground Water Discharge Plan
(New Mexico Environmental Improvement Division)
7. Asbestos Removal and Disposal Notification
(New Mexico Environmental Improvement Division)

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8. Well Sealing Notification
(Office of the State Engineer)
- B. [All other permits and notifications, including but not limited to the following, shall be the responsibility of the Subcontractor in accordance with Article GP-47 of the General Provisions. The Subcontractor shall provide copies of all other permits and notifications to the Contractor.]**
 1. Building Demolition Permit
(New Mexico Construction Industries Commission)
 2. Spill Prevention Control and Countermeasures Plan for Fuel/Oil Storage Facilities
(U.S. Environmental Protection Agency)
 3. Bond for Restoration of the Rock Quarry
(U.S. Forest Service, Mt. Taylor Ranger District)
 4. Well Construction Permit
(Office of the State Engineer)
 5. Air Quality Permit - for rock crushers/screens or other stationary air pollution sources
(New Mexico Environmental Improvement Division)
- C. The Contractor will provide the required notifications, permits and agreements for the use of the borrow areas specified in the Specifications or shown on the Subcontract Drawings.
- D. [The Subcontractor shall comply with the provisions of the permits at all times during the execution of the Subcontract. The Contractor will make available to the Bidders the permits and their provisions for review by the Bidders.]**
- E. Separate measurement or payment will not be made for work required of the Subcontractor for obtaining additional permits and for compliance with the provisions of all permits, unless specifically provided for in this Subcontract. All costs in connection with obtaining such permits and for compliance with such permits will be considered incidental to the Subcontract.

SC-12 SUBCONTRACTOR LABOR AND EQUIPMENT RATES

- [A. Within 30 days after receipt of Notice to Proceed, the Subcontractor shall furnish to the Contractor a list of

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all equipment to be used on the Project. The list, as a minimum, shall include the following for each piece of equipment:

1. Equipment number, make, model, type, year of manufacture, capacity and/or horsepower, attachments, and any other information necessary to determine applicable Rental Rate Blue Book for Construction Equipment rates. Attachments, if any shall be reasonable and necessary for the work intended on the job or not be included when calculating appropriate rates.
 2. Hourly rental rate calculated at the Subcontractor's normal rate for each piece of equipment, not to exceed 60 percent of the monthly rate, divided by 176, from the current edition of the Rental Rate Blue Book for Construction Equipment.
 3. An hourly operating rate for fuel, oil, parts, maintenance and repairs, etc. for actual hours of operation only. This rate shall be not more than 100 percent of the operating rate from the current edition of the Rental Rate Blue Book for Construction Equipment.
- B. The above rate information shall also be provided for any subsequent equipment brought onto the site during the term of the Subcontract in addition to the initial list, and shall be provided within five days of the date the equipment arrives.
- C. The initial equipment rate list submittal, with additions, shall be valid for all pieces of equipment from its receipt until January 1 of the following year.
- D. The equipment rate list shall be revised on January 1 of each year with the current Blue Book rates. These rates shall be used until the equipment rate list is revised on January 1 of the following year.
- E. When standby of equipment is required (as referenced in Paragraph H below), the standby rate shall be hourly rental rate calculated at 50 percent of the monthly rate, divided by 176, from the current edition of the Rental Rate Blue Book for Construction Equipment. Maximum standby time allowed shall be for 8 hours in any day, 40 hours in any week, or 176 hours in any month.
- F. The equipment rates in Paragraph A above shall be exclusive of Subcontractor overhead and profit which shall be negotiated.

G. Within 30 days after receipt of Notice to Proceed, the Subcontractor shall furnish to the Contractor labor rates including premium time for all craft designations to be used on the Project as follows:

1. List craft category and classification (i.e., loader operator, 6 cy; truck driver, 3 axle; etc.). The category and classification should be consistent with the Davis-Bacon wage determination for the Project.
2. Labor cost rates including fringe benefits, payroll, taxes, and insurance.
3. Each item in 1 and 2 above shall be listed separately.

The above labor rate information shall be revised and resubmitted on January 1 of each year with current payroll burden rates.

The above labor rates shall be exclusive of Subcontractor overhead and profit which shall be negotiated.

H. The rates provided in Paragraphs A through G above shall be used for changes to the Subcontract where unit prices or other methods of pricing do not apply and shall be used solely at the discretion of the Subcontract Administrator.]**

SC-13 [SUBCONTRACTOR CHANGE NOTICE PROPOSAL]**

The Subcontractor, in connection with any proposal he makes for a Subcontract modification, shall furnish a price breakdown, itemized as required by the Subcontract Administrator. [Unless otherwise directed, the breakdown shall include all estimated labor and equipment hours, and associated costs, materials, subcontracts, and overhead and profit required to permit an analysis, and shall cover all work involved in the change notice, whether such work was deleted, added or changed. Any amount claimed for subtier-subcontractors shall be supported by a similar price breakdown and/or quotes from the subtier-subcontractors. In addition, if the proposal includes a time extension, a justification therefore shall be furnished. The proposal, together with the price breakdown and time extension justification, shall be furnished to the Subcontract Administrator within thirty (30) calendar days after receipt of the change notice.]**

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SC-14 VARIATIONS IN QUANTITIES

In all cases, except cancellation of one or more line items, where the quantity of a unit priced line item in the Subcontract is an estimated quantity, and where the actual quantity of such line item varies by more than 10% above or 10% below the originally estimated quantity stated in the Subcontract, an adjustment in unit price shall be negotiated upon demand of either party for the quantities above or below the stated variation.

SC-15 LAWS AND REGULATIONS

Subcontractor shall give all notices and comply with all laws, ordinances, rules and regulations applicable to the Work. If Subcontractor observes that the Specifications or Subcontract Drawings are at variance therewith, Subcontractor shall give Contractor prompt written notice thereof, and any necessary changes shall be adjusted by an appropriate Modification. If Subcontractor performs any Work knowing or having reason to know that it is contrary to such laws, ordinances, rules and regulations, and without such notice to Contractor, Subcontractor shall bear all costs arising therefrom; however, it shall not be Subcontractor's primary responsibility to make certain that the Specifications and Subcontract Drawings are in accordance with such laws, ordinances, rules and regulations.

SC-16 FUNDING LIMITATIONS

- A. Of the total Subcontract Price, the sum of \$ _____ is presently available for payment to the Subcontractor under this Subcontract during this current fiscal year. It is anticipated that additional funds will be allotted from time to time to this Subcontract subject to Government appropriations available in this fiscal year or succeeding fiscal years. The responsibilities of Contractor are limited by this clause notwithstanding any contrary provision of the "Payments to Subcontractors" clause or any other clause of this Subcontract.
- B. The Subcontractor agrees to perform or have performed work up to the point at which, in the event of termination of this Subcontract pursuant to the clause hereof entitled "Termination for Convenience", the total amount payable by the Contractor (including amounts payable in respect of lower-tier subcontracts and settlement costs),

pursuant to paragraph E. thereof, would in the exercise of reasonable judgment by the Subcontractor approximate the total amount at the time allotted to this Subcontract. The Contractor shall not be obligated in any event to pay or reimburse the Subcontractor in excess of the amount from time to time allotted to this Subcontract, anything to the contrary in this clause or the clauses hereof entitled "Termination for Convenience" as specified in Article [GP-55]** and "Payments to Subcontractors" as specified in Article [GP-38]** of the General Provisions notwithstanding.

- C. It is contemplated that funds presently allotted to this Subcontract will cover the work to be performed until . In the event funds allotted are considered by the Subcontractor to be inadequate to cover the work to be performed until the above date, the Subcontractor shall notify the Subcontract Administrator when the work will reach a point at which, in the event of termination of this Subcontract pursuant to the clause hereof entitled "Termination for Convenience", the total amount payable by the Contractor (including amounts payable in respect of lower-tier subcontracts and settlement costs) pursuant to paragraph E. thereof, will approximate 85% of the total amount then allotted to this Subcontract. Such notice shall be in writing and shall be given not less than 45 days nor more than 60 days prior to the estimated date when such point will be reached. Such notice shall also state the estimated amount of additional funds required to continue performance to the above stated date. The Subcontractor shall, 30 days prior to the date above stated, advise the Subcontract Administrator in writing as to the estimated amount of additional funds which will be required for the timely performance of this Subcontract for the balance of the current fiscal year and the succeeding fiscal year. [If after a period of 60 days after such latter notification, additional funds are not allotted,]** the Subcontractor, by written notice delivered to the Subcontract Administrator at any time before such additional funds are allotted, may elect to treat its responsibility to proceed with the work under this Subcontract as having been terminated. Such a termination shall be considered a termination pursuant to the clause hereof entitled "Termination for Convenience".

- D. The Contractor may at any time prior to the Subcontractor's election to terminate as provided in Paragraph C. above, and with the written consent of the Subcontractor after such election to terminate, allot additional funds

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for continued performance of this Subcontract. The Subcontract Administrator will promptly notify the Subcontractor in writing, of any such allotment and the parties shall: (a) agree on the applicable period of Subcontract performance which shall be covered by such funding; (b) modify the date stated in Paragraph C. above in order to reflect such extended period of coverage; and (c) modify the amount stated in Paragraph A. above. The provisions of Paragraphs B. and C., above, shall apply to such additional allotted funds and modified date.

- E. In the event the Subcontractor incurs additional costs, or is delayed in the performance of the work under this Subcontract, solely by reason of the failure of the Contractor to allot additional funds pursuant to Paragraph D. above in amounts sufficient for the timely performance of this Subcontract, and if additional funds are allotted by the Contractor pursuant to Paragraph D. for continued performance of this Subcontract, then an equitable adjustment may be made in the Subcontract Price (including appropriate target, billing and ceiling prices where applicable) or in the time required for the performance of the work, or both, and this Subcontract may be modified in writing accordingly; provided, that the Subcontractor provides to the Subcontract Administrator written notice of its claim of entitlement to an equitable adjustment prior to the date then stated in Paragraph C.
- F. Nothing in this clause shall affect the right of the Contractor to terminate this Subcontract pursuant to the clause of this Subcontract entitled "Termination for Convenience".

SC-17 CERTIFIED PAYROLLS

In addition to the copies of certified payrolls that are to be submitted each week to the Subcontract Administrator, one copy will also be submitted to the Site Manager.

SC-18 SUBCONTRACTOR'S LIABILITY

The Subcontractor has total liability for all of his own equipment, supplies, tools, etc., brought on the job site or used in the performance of his Subcontract.

SC-19 MEASUREMENT AND PAYMENT

- A. Unless otherwise provided in the Subcontract Documents, no separate measurement or payment will be made for compliance with the provisions of the General Provisions, General Conditions and Special Conditions. Full compensation for such work will be considered to be included in the related items of Bid Schedule or incidental to the Subcontract.
- B. Payment for the cost of premiums paid by the Subcontractor to obtain performance and payment bonds will be as specified in Article [GP-38.E]** of the General Provisions. The Subcontractor shall quote the price for the premiums by the lump sum in the Bid Schedule. (Bid Schedule Item 002)

[SC-20 LIMITATIONS ON SUBCONTRACTING

- A. By submission of an offer and execution of a Subcontract, the Subcontractor agrees that in the performance of the Subcontract:
 - 1. For general construction, the Subcontractor shall perform at least 60 percent of the cost of the Subcontract, not including the cost of materials, with its own employees.
- B. Any deviation from the above limitations on subcontracting requirements will require prior approval of the Contractor.]**

END OF SECTION 00800

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Specification

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Division 1
General Requirements

SECTION 01010

SUMMARY OF WORK

PART 1 - GENERAL

1.1 PROJECT LOCATION AND ACCESS

- A. Project Location: The project site is located in McKinley County in northwest New Mexico. It is 25 miles north of Grants and +100, miles northwest of Albuquerque, New Mexico. The site is in the southwest quarter of Section 28, Township 14 North, and Range 9 West. The topography slopes toward the southwest.
- B. [Borrow area for radon barrier is located approximately one mile north of the site as shown on the Subcontract Drawings.]**
- C. [Borrow area for erosion protection materials is located southeast of the site within the Cibola National Forest near the junction of the New Mexico State Highway 53 and the U.S. Forest Service Road 456. The materials shall be obtained from the basaltic flows that form the La Cuchilla Ridge. Access to the borrow site from Ambrosia Lake is by an existing paved road (approximately 16 miles) and by an existing unpaved road (approximately 4 miles).]**
- D. Construction site access will be granted via an existing access gate.

1.2 SCOPE OF WORK

A. General:

- 1. The Work is generally described as site work related to the excavation of contaminated residual radioactive materials from the abandoned uranium mill tailings pile and windblown areas, and placement of these materials in an embankment with a protective cover. The Work is outlined in Article 1.2.B below. Such Work is more fully detailed in the Specifications and Subcontract Drawings included herein.

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2. The Work includes furnishing all plant, labor, tools, equipment, materials, transportation, and services, and performing all operations necessary for and properly incidental to the construction as shown and noted on the Subcontract Drawings and as specified in these Specifications.

B. The Work Includes:

1. Mobilization: Mobilization as specified in Section 01019.
2. Construction Facilities: Construction facilities as specified in Section 01500.
3. Temporary Controls: Temporary controls as specified in detail in Section 01560.
4. Permanent Facilities: Permanent facilities shall include construction of permanent features including, but not be limited to, the following. Permanent facilities are specified in detail in various Specification Sections:
 - a. Construction of tailings embankment, including disposal of demolished materials and debris.
 - b. Construction of permanent drainage swales.
 - c. Finish grading and seeding.
 - d. Sealing abandoned wells.

C. The above description of the Work is for general information only, and in no way limits the responsibility of the Subcontractor for completing the Work in strict accordance with the Subcontract Drawings and Specifications listed in the Table of Contents.

D. Environmental Observations: The Work shall be performed in strict accordance with the applicable requirements of EPA, McKinley County, State Environmental Improvement Division, and other involved state and federal agencies having jurisdiction, and in accordance with the requirements of General Provisions, General Conditions and Special Conditions.

[Text Deleted]**

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1.[3]**CONSTRUCTION SEQUENCE

- A. [Unless otherwise specified, directed, or modified, the Subcontractor shall follow the recommended sequence of operations as set forth below. Modifications to the sequence shall be subject to the Contractor approval. Full compensation for conforming to such requirements will be considered to be included in the Bid Schedule items of Work and no additional compensation will be allowed therefor.]**
- B. Meetings will be conducted between the Contractor and Subcontractor prior to starting each sequence of construction listed below. The intent of these meetings is to review and discuss specification requirements for that particular sequence of construction. During these meetings, the Subcontractor shall present a construction plan that will outline and detail the equipment, personnel, schedule, and source, transportation, excavation, placement and compaction of materials proposed for each construction sequence as applicable.
- C. The sequence of operations:
1. Mobilization as specified in Section 01019.
 2. [Removal of utilities and some fences; sealing of abandoned wells; installation of radon gas monitors; and construction of the temporary facilities as specified in Section 01500.]**
 3. [Construction of temporary collection ditches.]**
 4. Construction of the tailings embankment and diversion ditches shall conform to the sequence of excavation and placement of contaminated materials indicated on the Subcontract Drawings. Existing tailings pond area and other soft areas shall be prepared as specified in Section 02200 prior to placement of contaminated fill in those areas. Displacement monuments shall be installed as indicated on the Subcontract Drawings. As the embankment construction nears completion, the impermeable membrane liner in the retention basin, spillway and in the temporary collection ditches will be demolished [and either decontaminated or placed]** within the tailings embankment along with any contaminated sediment settled in the retention basin, spillway and the drainage ditch areas.

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5. Construction of the radon barrier layer over the contaminated material in the tailings embankment. The radon barrier layer shall consist of selected uncontaminated material obtained from designated borrow areas.
6. Placing erosion protection materials over the radon barrier layer. The erosion protection materials consist of a layer of bedding material topped by a layer of stone riprap.
7. Construction of riprap toe protection and permanent drainage swales around the tailings embankment.
8. Restoration and finish grading of the areas upslope of the diversion ditches shall be performed as soon as practicable after decontamination of those areas. Restoration and finish grading of the areas downslope of the diversion ditches can proceed concurrently with the construction of the permanent drainage swales.
9. Site Cleanup: Removal and disposal of stockpiled materials, closing of the borrow sites and removal of site perimeter fencing.
10. Site Restoration: Grading of the site and the borrow areas to provide drainage including placement of uncontaminated fill, and revegetation.

[Text Deleted]**

1.[4]**SUBCONTRACT DRAWINGS

- A. A list of Subcontract Drawings and Titles is provided in the Table of Contents of these Subcontract Documents under "Subcontract Drawings".
- B. Where "as shown," "as detailed," "as noted," or words of like meaning are used in the Subcontract Documents, it shall be understood that reference is being made to the Subcontract Drawings unless otherwise specified.

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1.[5]**TIME OF COMPLETION

- [A. The term of this Subcontract shall be 830 calendar days from the receipt of Notice to Proceed.
- B. Termination for default, damages for delay and time extension are specified in Article GP-56 of the General Provisions.]**

1.[6]**CODES AND STANDARDS

- A. Pursuant to [Article GC-3]** of the General Conditions, any material, method, or procedure specified by reference to the number, symbol, or title of a specific specification or standard, such as a Commercial Standard, American National Standard, Federal or State Specification, Industry or Government Code, a trade association code or standard, or other similar standard, shall comply with the requirements in the latest revision thereof and any amendments or supplements thereto in effect on the date of Award of the Subcontract, except as limited to type, class or grade, or modified in such reference.
- B. The code, specification or standard referred to, except as modified in these Specifications, shall have full force and effect as though printed in these Specifications. These Specifications and standards are not furnished to bidders because manufacturers and trades involved are assumed to be familiar with their requirements. The Contractor will furnish, upon request, information as to how copies of the specifications and standards referred to may be obtained.

1.[7]**MANUFACTURERS' SPECIFICATIONS AND INSTRUCTIONS

- A. Unless otherwise indicated or specified, all manufactured materials, products, processes, equipment, or the like shall be installed or applied in accordance with the manufacturers' instructions, directions, or specifications. Said installation or application shall be in accordance with printed instructions furnished by the manufacturer of the material or equipment concerned for use under conditions similar to those at the jobsite. Two copies of such instructions shall be furnished to the Contractor and his acceptance thereof obtained before work is begun.

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- B. Any deviation from the manufacturers' printed recommendations shall be explained and acknowledged as correct for the circumstances, in writing by the particular manufacturer. Subcontractor will be held responsible for all installations contrary to the manufacturers' recommendations. If any item of material or equipment is found to be installed not in accordance with the manufacturer's recommendations, Subcontractor shall make all changes necessary to achieve such compliance.

1.[8]**WORK QUALITY

- A. [Shop and field work shall be performed by qualified craftsmen. All work on this Project shall be performed in accordance with the best practices of the various trades involved and in accordance with the Subcontract Drawings, reviewed shop drawings, and these Specifications.]**
- B. All Work shall be erected and installed plumb, level, square and true, or true to indicated angle, and in proper alignment and relationship to the work of other trades. All finished work shall be free from defects and damage.
- C. [The Contractor reserves the right to reject any materials and work which are not considered to be up to the highest standards of the various trades involved. Such inferior material or work quality shall be repaired or replaced, as directed, at no additional cost to the Contractor.]**

1.[9]**FIELD MEASUREMENT AND TEMPLATES

Subcontractor shall secure all field measurements required for proper and accurate fabrication and installation of the work included in this Subcontract. Exact measurements are the Subcontractor's responsibility. Subcontractor shall also furnish or obtain all templates, patterns, and setting instructions required for the installation of all work. All dimensions shall be verified by the Subcontractor in the field.

1.[10]**ACCESS TO WORK

- A. Pursuant to the requirements of [Article GC-17 of the General Conditions,]** the authorized representatives of the following agencies will also have the right of access to inspect the Work covered by these Subcontract Documents during the performance of this Subcontract:

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1. United States Department of Energy (DOE)
2. United States Nuclear Regulatory Commission (NRC)
3. State of New Mexico
4. McKinley County

B. The inspections will be performed in conjunction with an inspection by the Contractor. Reasonable facilities for the proper handling and inspection of the materials and the Work shall be furnished by the Subcontractor.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

PART 4 - MEASUREMENT AND PAYMENT

(Not Used)

END OF SECTION 01010

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SECTION 01019

MOBILIZATION

PART 1 - GENERAL

1.1 SCOPE

A. This Specification Section covers the following:

1. Organization and mobilization of Subcontractor's forces and equipment;
2. Transporting construction plant and equipment to the site and setting up of same;
3. Transporting tools, materials, and equipment to the site;
4. Furnishing, installation, construction, maintaining, operation, removal and disposal of construction facilities and temporary controls not covered for payment under any other Section; and
5. Furnishing, installing, operation, maintenance and subsequent removal of construction plant, equipment, materials and supplies; decontamination of construction facilities and equipment; cleaning of the site; and restoration and reseeding.

1.2 WORK NOT INCLUDED

Construction facilities and temporary controls paid for in any other Section.

1.3 RELATED WORK

- A. Section 00800 - Special Conditions: Definitions
- B. Section 01500 - Construction Facilities
- C. Section 01560 - Temporary Controls

1.4 DESCRIPTION

A. Mobilization shall include:

1. Furnishing, installation, construction, maintenance and operation of construction facilities identified in Article 1.1.A.4 above, mobilization of all construction equipment, materials, supplies, appurtenances, and the like, manned and ready for commencing and performing the Work.
2. Assembly and delivery to the site of plant, equipment, materials, and supplies necessary for the performance of the Work but which are not intended to be incorporated in the work; preparation of the Subcontractor's work area; complete assembly, and in [safe working order,]** of equipment necessary to perform the required work; personnel services preparatory to commencing actual work; and all other preparatory work required to permit commencement of the actual work on construction items for which payment is provided under the Subcontract.
3. Decontamination of construction facilities, equipment, materials, supplies, and appurtenances.
4. Subsequent removal from the site of all construction equipment, materials, supplies, appurtenances, and the like upon completion of the Work.
5. Subsequent removal and disposal of construction facilities identified in Article 1.1.A.4 above as required by the Contractor.
6. Cleaning, restoration and reseeding of the Site and offsite temporary roads.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

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PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

Measurement for payment for mobilization will be by the lump sum basis.

4.2 PAYMENT

A. Payment for mobilization will be made at the lump sum price quoted therefor in the Bid Schedule, and shall include all items except as specified herein. Payment will be made as follows:

1. Payment of 50 percent of the lump sum price will be made upon completion of "move-in". Move-in is defined as organization of the Subcontractor's manpower and equipment, transporting equipment to the site, and installation of Subcontractor's field office and other supporting structures.

2. Payment of the remaining 50 percent of the lump sum price will be made upon completion of work corresponding to 10 percent of the total price quoted in the Bid Schedule exclusive of the price quoted for mobilization.

B. Payment for furnishing, installing, operating, maintaining and subsequent decontaminating and removing of construction facilities not covered for payment under any other Bid Items will be considered to be included in the Bid Schedule item for Mobilization.

END OF SECTION 01019

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SECTION 01025

MEASUREMENT AND PAYMENT

PART 1 - GENERAL

1.1 SCOPE

- A. This Specification Section covers descriptions of measurement and payment as they apply to this Subcontract. The provisions of this Section shall be supplemental to the requirements specified in General Provisions, General Conditions and Special Conditions.
- B. Measurement methods specified in the individual Sections of these Specifications shall govern if they differ from methods specified in this Section.
- C. [The Subcontractor shall compute all quantities. Such computations [shall] be based upon surveys performed by the Subcontractor and subject to approval by the Contractor before any progress payments related thereto are made.]**

1.2 RELATED WORK

- A. General Provisions - Article [GP-38:]** Payments to Subcontractor.
- B. General Conditions - [Article]** GC-4B: Progress Payment.
- C. Section 00800 - Special Conditions - Article SC-14: Variations in Quantities.
- D. Section 01052 - Layout of Work and Surveys.
- E. Section 01300 - Submittals: Schedule of Values and Progress Payment Schedule.

1.3 MEASUREMENT OF QUANTITIES

- A. Measurement Standards: All work to be paid for at a Contract price per unit of measurement will be measured in accordance with United States Standard Measures. A ton shall consist of 2,000 pounds avoirdupois.

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B. Measurement by Weight:

1. Reinforcing steel, steel shapes, castings, miscellaneous metal, metal fabrications, and similar items, to be paid for by weight, shall be measured by scale or by handbook weights for the type and quantity of material actually furnished and used.
2. Material to be measured and paid for by scale weight shall be weighed on accurate, Contractor-approved scales, furnished by and at the expense of the Subcontractor. Use platform scales of sufficient size and capacity to permit the entire vehicle or combination of vehicles to rest on the scale platform while being weighed. Combination vehicles may be weighed as separate units provided they are disconnected while being weighed. All scales shall be inspected and certified as often as the Contractor may deem necessary to ascertain accuracy. Costs incurred, as a result of regulating, adjusting, testing, inspecting, and certifying scales, shall be borne by the Subcontractor.
3. The Contractor may be present to witness the weighing and to check and compile the daily record of such scale weights; however, in any case, the Contractor will require that the Subcontractor furnish weigh slips and daily summary weigh sheets. A duplicate weigh slip or a load slip for each vehicle weighed shall be delivered to the Contractor at the point of delivery of the material.
4. If the material is shipped by rail, the certified car weights will be accepted, provided that only actual weight of material will be paid for and not minimum car used for assessing freight tariff. Car weights will not be acceptable for material to be passed through mixing plants.
5. Trucks used to haul material being paid for by weight, shall be weighed empty daily and at such additional times as the Contractor may require. Each truck shall bear a plainly legible identification mark. The Contractor may require the weight of the material verified by weighing empty and loaded trucks on such other scales as the Contractor may designate.

C. Measurement By Volume:

1. Measurement by volume will be by the cubic dimension listed or indicated in the Bid Schedule. [Method of

volume measurement will be as specified in the applicable Section of the Specifications or as determined or directed by the Contractor.]**

2. When material is to be measured and paid for on a volume basis and it is impractical to determine the volume by the specified method of measurement, or when requested by the Subcontractor in writing and accepted by the Contractor in writing, the material will be weighed in accordance with the requirements specified for weight measurement. Such weights will be converted to volume measurement for payment purposes. Factors for conversion from weight measurement to volume measurement will be determined by the Contractor and shall be agreed to by the Subcontractor before such method of measurement of pay quantities will be accepted.

D. Measurement by Area: Measurement by area will be by the square dimension listed or indicated in the Bid Schedule. Method of square measurement will be as determined or directed by the Contractor.

E. Linear Measurement: Linear measurement will be by the linear dimension listed or indicated in the Bid Schedule. Method of linear measurement will be as determined or directed by the Contractor. Generally, items, components, or work to be measured will be measured at the centerline of the item in place.

F. Lump-Sum Measurement:

1. Lump-sum measurement will be for the entire item, unit of work, structure, or combination thereof, as listed or indicated in the Bid Schedule.
2. If the Subcontractor requests progress payments for lump-sum items or amounts in the Bid Schedule, such progress payments will be made in accordance with a Schedule of Values for that item as specified in Specification Section 01300 and [Article]** GC-4B of the General Conditions.

1.4 FIELD MEASUREMENT FOR PAYMENT

- A. The Subcontractor shall compute all quantities of Work performed or of materials and equipment delivered to the site, for payment purposes. [All such computations shall be subject to approval by the Contractor before any progress payments related thereto are made.]**

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- B. The Contractor may at any time verify quantities calculated by the Subcontractor in accordance with the provisions of Section 01052 of these Specifications.
- [C. The Subcontractor shall assist the Contractor in the taking of measurements by providing all equipment, workers, and survey crews, as required, for verification of quantities by the Contractor in accordance with the provisions of Section 01052 of these Specifications.
- D. All such assistance in measurement services required of the Subcontractor, as specified, shall be performed under the direction and supervision of the Contractor.]**

1.5 PAYMENT

- A. Payment will be full compensation for furnishing all labor, materials, tools, equipment, transportation, services, and incidentals, as specified, in Article [GP-38]** of the General Provisions and [Article]** GC-4B of the General Conditions, and for performing all work necessary for completing the erection or installation of the item or work classification, including all adjusting and balancing, testing, cleaning, and all other incidental work.
- B. Full compensation for all expense involved in conforming to the requirements for measuring materials or work shall be considered as included in the unit or lump-sum prices paid for the materials or work being measured, and no additional compensation will be permitted therefor.

1.6 VALUES OF UNIT PRICES

- A. The number of units and quantities contained in the Bid Schedule are approximate only, and final payment will be made for the actual number of units and quantities which are incorporated in or made necessary by the Work included in this Subcontract.
- B. In the event that work and/or materials or equipment are required to be furnished to a greater or lesser extent than is indicated by the Subcontract Drawings and Specifications, such work and/or materials or equipment shall be furnished in greater or lesser quantities, and the adjustment in unit price shall be made as specified in Article SC-14 of the Special Conditions.

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1.7 REJECTED MATERIALS

Quantities of material wasted or disposed of in a manner not called for under the Subcontract; rejected loads of material, including material rejected after it has been placed by reasons of the failure of the Subcontractor to conform to the provisions of the Subcontract; material not unloaded from the transporting vehicle; material placed outside the limits indicated on the Subcontract Drawings or established by the Contractor; or material remaining on hand after completion of the Work, will not be paid for, and such quantities shall not be included in the final total quantities. No compensation will be permitted for loading, hauling, and disposing of rejected material.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

Separate measurement for payment will not be made for work required under this Section will be made.

4.2 PAYMENT

Separate payment will not be made for work required under this Section. All costs in connection with the work specified herein will be considered to be included in the related item of work in the Bid Schedule, or incidental to the Subcontract.

END OF SECTION 01025

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SECTION 01052

LAYOUT OF WORK AND SURVEYS

PART 1 - GENERAL

1.1 SCOPE

A. [This Specification Section covers the procedures and accuracy requirements for survey services for the following:

1. Layout of Work.
2. Field measurement of work quantities.
3. Locations of sampling and testing performed by the Contractor.
4. Determination of as-built locations, lines, and grades at completion of the work for preparation of as-built drawings as specified in Section 01300.]**

B. Before commencing any layout of work and surveys, the Subcontractor shall give the Contractor five working days written notice in advance so that the Contractor may witness such work.

1.2 DESCRIPTION

A. Reference Points: The reference points to be provided by the Contractor will include referenced monuments and elevation bench marks in the vicinity of the project. Initial reference points will be furnished by the Contractor. Replacement of Contractor-established reference points by the Contractor will be charged to the Subcontractor at a rate of \$150 per hour. All other necessary reference points shall be established by the Subcontractor.

B. The Subcontractor shall furnish all necessary detail surveys including all lines, grades, and appropriate surveys as specified.

C. The Contractor reserves the right to perform any desired checking and/or correction of the Subcontractor's surveys but this shall not relieve the Subcontractor of responsibility for the adequate performance of the Work.

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- D. Equipment and Personnel: The Subcontractor's instruments and other survey equipment shall be accurate, suitable for the surveys required in accordance with recognized professional standards, and in proper condition and adjustment at all times. [A competent surveyor shall perform the work.]**
- E. Field Notes and Records: The Subcontractor shall record surveys in duplicate page field notebooks. The original pages of such records shall be furnished to the Contractor at intervals required by the Contractor. A duplicate of each field notebook shall be furnished to the Contractor when filled or completed [or to meet the requirements of Article GC-4, Progress Payment.]**
- F. Use by the Contractor: The Contractor may at any time use line and grade points and markers established by the Subcontractor. The Subcontractor's surveys are a part of the Work and may be checked by the Contractor or representatives of the Contractor at any time. The Subcontractor shall be responsible for any lines, grades, or measurements which do not comply with specified or proper tolerances, or which are otherwise defective, and for any resultant defects in the Work. The Subcontractor will be required to conduct re-surveys or check surveys to correct errors indicated by review of the field notebooks or otherwise detected.

1.3 [SURVEYS FOR LAYOUT AND PERFORMANCE OF WORK]**

The Subcontractor shall perform all surveys for layout and performance of the Work, and shall reduce the field notes and make all necessary calculations and drawings necessary to carry out the Work.

1.4 SURVEYS FOR MEASUREMENT FOR PAYMENT

When the Specifications or the Contractor require Bid Schedule items of work to be measured by surveying methods, the Subcontractor shall perform the surveys. All such surveys, including control surveys run for establishing the measurement reference lines, shall be performed in the presence of the Contractor (or a representative of the Contractor) who will witness the surveying operation by signing the field notes or keeping duplicate field notes, at the Contractor's option. The Subcontractor shall reduce the field notes and calculate final quantities for payment purposes. A duplicate of the note reductions and calculations shall be given to the Contractor.

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1.5 [SURVEYS FOR CONTRACTOR SAMPLING AND TESTING LOCATIONS

- A. The Subcontractor shall perform surveying services as specified herein for the locations of Contractor sampling and testing.
- B. Verification of Contaminated Material Cleanup: Upon completion of contaminated material cleanup in any given area, as directed by the Contractor, the Subcontractor shall survey and clearly mark on the ground the locations of verification grid points shown on the Subcontract Drawings. Verification grid points will be used by the Contractor to obtain samples to confirm that contaminated materials have been removed.
- C. Materials Sampling and Testing: The Subcontractor shall provide surveying services to locate positions, both plan and elevation, of in-place material sampling and testing locations used by the Contractor. The number of sampling and testing locations will be determined by the associated Specification Section.
- D. The Subcontractor shall mark sampling locations for radiologic samples in the tailings embankment at locations shown on the Drawings and as specified herein. As contaminated materials are placed in the uppermost 20 feet of contaminated materials, the Subcontractor shall mark each location at each 2-foot increment of elevation.
- E. All sampling and testing location information shall be submitted in writing to the Contractor showing coordinates and elevations.]**

[1.6 SURVEYS FOR AS-BUILT CONDITIONS

- A. The Subcontractor shall provide surveying services for as-built conditions as specified herein.
- B. The Subcontractor shall provide survey data to confirm that as-built locations of the Work conform to the Subcontract Drawings where coordinates and/or elevations are shown.
- C. Where the Subcontract Drawings or Specifications permit variable locations or detail for specific items of the Work, the Subcontractor shall survey the as-built locations or details. Surveys shall be sufficient to define the features or details at any given location.

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- D. The Subcontractor shall survey final disposal locations of all hazardous and non-hazardous materials specified in Section 02081.
- E. The Subcontractor shall survey as-built elevations, at each location shown on the Subcontract Drawings for radiologic sampling of the tailings embankment, for the as-built finished top surface of the following:
 - 1. Contaminated materials
 - 2. Radon barrier
 - 3. Bedding
 - 4. Riprap
- F. The Subcontractor shall survey as-built locations of all slope breaks for the tailings embankment.
- G. The Subcontract Drawings shall be neatly marked in red ink with all as-built survey information and submitted to the Contractor in duplicate.
- H. The requirements for submitting as-built survey data shall not relieve the Subcontractor in any way from his responsibility to conform to the requirements of the Work.]**

[1.7 SURVEYING FOR DISPLACEMENT MONUMENTS

- A. Displacement monuments shall be surveyed immediately following installation and thereafter on a weekly basis. The Subcontractor shall report the coordinates and elevation of the top of the 3/4-inch steel rod and the top of the 1-1/2 inch steel pipe as shown on the Subcontract Drawings.
- B. For displacement monuments having total lengths of steel rod and steel pipe greater than 5 feet, the Subcontractor shall survey the top of the steel rod and steel pipe immediately prior to and following installation at each segment of steel rod or steel pipe during construction, as specified in Article 1.7.A.
- C. The top of steel pipe shall be surveyed at the same location on the diameter of the pipe for each measurement.
- D. Displacement monuments shall be surveyed immediately following any disturbance to any displacement monument.]**

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[1.8]** SURVEYING ACCURACY AND TOLERANCES IN LAYOUT OF [WORK]**

- A. Tolerances in layout of Work shall not exceed the following:

<u>Type of Line or Mark</u>	<u>Horizontal Position</u>	<u>Elevation</u>
Permanent reference points	1 in 10,000	+ .01 ft.
[Reference points for general Excavation and earthwork]**	1 in 2,000	+ .10 ft.

- B. Tolerances for designed thicknesses shown on Subcontract Drawings, with the exception of erosion protection materials, and for elevations shown on the Subcontract Drawings shall be + 0.10 foot. Tolerances on erosion protection material thicknesses are specified in Section 02278.
- C. These tolerances shall not supersede stricter tolerances required by the Drawings or Specifications, or by the governing authorities, and shall not otherwise relieve the Subcontractor of responsibility for measurement in compliance therewith.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

Separate measurement for payment will not be made for work required under this Section.

4.2 PAYMENT

Separate payment will not be made for work required under this Section. All costs in connection with the work specified herein will be considered to be included in the related item of work in the Bid Schedule, or incidental to the Subcontract.

END OF SECTION 01052

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SECTION 01300

SUBMITTALS

PART 1 - GENERAL

1.1 DESCRIPTION

A. This Specification Section describes the requirements for the following submittals:

1. Technical Submittals:

- a. Schedule of Technical Submittals
- b. Shop Drawings
- c. Samples
- d. Product Data
- [e. Certificates of Compliance]**
- [f.]**Manufacturer's Instructions
- [g.]**Design Calculations and Design Drawings
- [h.]**Winter Shutdown Plan
- [i. Drawings Showing Lines and Grades and Survey Data for Conditions at Completion of Construction (as-built)
- j. Erosion Protection Materials Production Plan]**
- [k. Hazardous and Non-Hazardous Materials Submittals]**]

2. General Submittals:

- a. Schedule of General Submittals
- b. Site Mobilization Schedule
- c. Project Construction Schedule
- d. Schedule of Values/Cost Profile
- e. Labor and Equipment Rates
- [f. Hazard Communications Plan
- [g. Safety Plan]**

3. [Submittals Not Requiring Contractor's Approval:]**

- a. Weekly Status Reports
- [b. Weekly Manhour Reports/Equipment Reports/Employee Roster]**
- c. Certified Payroll
- d. [Monthly Construction Schedule Progress Updates]**

B. The requirements specified in this Section shall be supplemental to the requirements specified in General Provisions, General Conditions, Special Conditions and any other requirements specified in individual sections.

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- C. All submittals shall be in the English language.
- D. The Subcontractor shall submit all submittals to the Site Manager. A copy of the submittal, marked "Information Only," shall be sent to the Subcontract Administrator by the Subcontractor.
- E. Technical and General Submittals shall be numerically serialized by type, Technical Submittal with a "T" prefix (T-1, T-2, T-3, etc.) and General Submittals with a "G" prefix (G-1, G-2, G-3, etc.).
- F. The Site Manager will clearly label the submittals as follows and return to the Subcontractor:
 - 1. Approved
 - 2. Approved as Noted
 - 3. Revise and Resubmit
 - 4. Rejected
 - 5. Information Only
- G. When submittals are returned marked with either "Revise and Resubmit" or "Rejected" the Subcontractor shall make such revisions and corrections as required and resubmit the submittal with the same submittal number followed by R1 (Revision One). Example: T-5 - R1.

1.2 TECHNICAL SUBMITTALS

A. Schedule of Technical Submittals:

- 1. [The Subcontractor shall prepare and submit a Technical Submittals Schedule listing all technical submittals required in accordance with this Section. The Technical Submittals Schedule shall be submitted at the preconstruction meeting.]**
- 2. The Technical Submittals Schedule shall separate submittals by major specification section. This schedule shall include submittal delivery dates, required return dates, material delivery dates, and other pertinent data which may be required to ensure that the project schedule is met by the Subcontractor.

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3. This Schedule shall be continually updated to reflect progress and any additions or deletions to the submit-tal schedule. Copies of the updated schedule shall be furnished to the Contractor during the first week of each calendar month.

B. Shop Drawings:

1. Shop drawings shall establish the actual detail of all manufactured or fabricated items, indicate proper relation of adjoining work, and incorporate minor changes of design or construction to suit actual conditions. Shop drawings shall be drawn to scale and shall be completely dimensioned.
2. Sheet sizes of shop drawings shall be 8 1/2 inches x 11 inches, 11 inches x 17 inches, or 22 inches x 34 inches.
3. A clear space of 3 inch by 3 inch shall be provided on each drawing for the Contractor's review stamp and comments.
4. Shop drawings shall be submitted to the Contractor in the form of a reproducible transparency, together with three blackline or blueline prints.
5. After the Contractor has completed his review of shop drawings, he will return one print to the [Subcontractor indicating the approval status as described in Article 1.1.F.]**
6. The Contractor will review and generally return shop drawings within ten days of receipt by the Site Manager but in no case will this process take longer than 30 days.

C. Samples:

1. The Subcontractor shall furnish the Contractor at least three samples of each of the various materials, together with the finish thereon, as specified for and intended to be used on or in the work. Samples shall be sent to the Contractor.
2. The Subcontractor shall submit all samples to the Contractor at least 21 days [or earlier, if so specified elsewhere]** before purchasing, fabricating, applying, or installing such materials and finishes, unless otherwise stated. The Contractor will review the

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samples for visual aspects such as kind, color, pattern, and texture, and will approve or ask for resubmittal of samples generally within 10 days but in no case longer than thirty days of the Subcontractor's submittal. All approvals of samples will be given by the Contractor in writing.

3. Unless otherwise specified in the various sections of these specifications, the Subcontractor shall submit all samples, other than field samples, in triplicate. A cover letter shall accompany the sample and shall list all items being transmitted, designating their particular usage and location in the project.
4. After the Contractor has performed his review and analysis of samples, two samples will be retained and the remaining sample will be returned to the Subcontractor, with the Contractor's comments.
5. Samples shall be submitted and resubmitted until approved as satisfactory. Approval of a sample shall not be taken in itself to change or modify any Subcontract requirement.

All materials, color, pattern and texture in the completed building or structure shall be equal in every respect to that of the approved samples.

6. Each sample shall be identified completely as to product, color, manufacturer, trade name, lot, style, model, location of use, and Subcontract Document reference, as well as the names of the Subcontractor, Supplier, Project and Contractor.
7. Test samples, as designated by the Contractor, may also be selected from the materials or equipment delivered by the Subcontractor to the site for use in the work. If any test sample fails to meet the specification requirements, such materials or equipment which fail the testing, shall be removed and replaced by the Subcontractor with materials or equipment meeting the Specification requirements.
8. Field samples shall be prepared at the site by the Subcontractor in the manner and number as specified in these specifications. Affected finish work shall not be commenced until the Contractor has approved the field samples, in writing.

D. Product Data:

1. Each copy shall be marked to identify applicable products, models, options, and other data; manufacturers' standard data shall be supplemented to provide information unique to the work.
2. The Subcontractor shall submit the number of copies which the Subcontractor requires to be returned, plus two copies which will be retained by the Contractor.

[E. Certificates of Compliance: The Certificate shall clearly identify the applicable materials and reference the applicable Sections of the Subcontract Documents.]**

[F.]**Manufacturer's Instructions: When required by the manufacturer's warranty requirements, the Subcontractor shall submit manufacturer's printed instructions for delivery, storage, shelf life, assembly, installation, adjusting, and finishing.

[G.]**Design Calculations and Design Drawings:

1. Design Calculations: When requested by the Contractor, design calculations shall be submitted to the Contractor for review with all pertinent data, assumptions, objective, criteria, applicable codes, standards and references. The calculations shall be on 8-1/2 by 11-inch or 11 by 17-inch sheets. Each design calculation set shall bear page numbers, titles, revision numbers, date and calculation number. Where multiple number of items are designed in a particular system, the calculations shall be preceded by a table of contents.
2. Design Drawings:
 - a. When requested by the Contractor, design drawings shall be submitted to the Contractor for review.
 - b. Pertinent requirements of Article 1.2.B of this Section shall be applicable for submittal of design drawings.

[H.]**Winter Shutdown Plan: A winter shutdown plan will be required for sites which will shutdown or limit operations for the winter season. [This plan shall include grading modifications to drawings, product data and a narrative of the steps the Subcontractor shall take to address the following subjects:]**

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1. Erosion from wind and water runoff of both contaminated and uncontaminated areas.
2. Slope protection.
3. Temporary ditching.
4. Grading of excavations and embankments to drain.
5. Segregation of contaminated and non-contaminated runoff.
6. Reduction of water in the retention ponds to allow for spring snow melt.
7. Protection of all equipment and piping from damage due to freezing.
8. [Other items may be required by the Contractor such as personnel and equipment to maintain access and to prepare for emergency situations.]**

[I. Drawings Showing Lines and Grades and Survey Data for Conditions at Completion of Work (As-Built): The Subcontractor shall prepare and submit at completion of work drawings showing lines and grades (as-built) and survey data for as-built conditions as specified in Section 01052.

J. Erosion Protection Material Production Plan: See Section 02278, Article 1.6.]**

[K. Hazardous and Non-Hazardous Materials Submittals: See Section 02081, Article 1.4.]***

1.3 GENERAL SUBMITTALS

A. Schedule of General Submittals: [The Subcontractor shall prepare and submit a Schedule of General Submittals listing all General Submittals required in accordance with the requirements of this Section. The Subcontractor shall prepare and make the initial submittal at the preconstruction meeting of all General Submittals required.]**

B. Schedules and Reports:

1. The Subcontractor shall prepare and submit Schedules and Reports in accordance with the requirements of this Section.

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2. The schedules and reports shall describe the Subcontractor's work plan in sufficient detail as delineated below to provide:
 - a. Assurance to the Contractor that the finished work complies accurately with the Subcontract Documents,
 - b. A basis for determining the progress of the work, and
 - c. A basis for the Contractor's internal planning activities.
3. Within fifteen calendar days after Notice to Proceed, the Subcontractor shall provide the Contractor with initial copies of the General Submittals specified in this section. The cost profile shall be submitted within 30 calendar days.
4. The schedules shall be in a reproducible form and all of the same scale or may be combined as approved by the Contractor.
5. Unless otherwise specified, the schedules shall be presented in graphic format and shall be updated for each construction meeting, or at least monthly, and transmitted to the Contractor.
6. The Subcontractor shall obtain approval of the various schedules specified in this Section before submitting the first application for payment. Schedule revisions also require Contractor approval.

C. Site Mobilization Schedule:

1. Format: The Subcontractor shall present, at the pre-construction meeting, the schedule for site mobilization in bar chart format. The schedule shall delineate the establishment of the construction facilities identified in Section 01500 and the Subcontractor's plan for starting the work.
2. Written Narrative: The Site Mobilization Schedule shall be accompanied by a written narrative discussion of the schedule. The narrative shall provide a man-power level by month for the first three months of the job, transportation routes proposed for delivery of major construction equipment to be used on the project, identification of special permits required and when they are needed, and a description of the temporary facilities to be provided.

3. Status and Progress: The status of mobilization schedule items [shall]** be reported in the Weekly Status Report discussed below.

D. Project Construction Schedule:

1. Scheduling: A preliminary issue of the Project Construction Schedule shall be prepared for review at the preconstruction meeting. Fifteen days after receipt of Notice to Proceed the Subcontractor shall issue the Project Construction Schedule for approval and issue the approved Project Construction Schedule ten days after receipt of approval and comments from the Contractor.
2. Format: The Project Construction Schedule shall consist of the following items, each compatible with the other and developed from the same basis:
 - a. Method of Construction Narrative
 - b. CPM Schedule: A time scaled Critical Path Method (CPM) Schedule which depicts proper restraints, activity durations, total float and free float for each schedule activity.
 - c. Critical Milestone Dates as listed below.
 - [1] Start/Complete Mobilization]**
 - [2]** Start/Complete Site Preparation
 - [3]** Start/Complete Tailings Placement
 - [4]** Start/Complete Cover Placement
 - [5]** Start/Complete Erosion Protection
 - [6]** Start/Complete Site Restoration
 - [7] Start/Complete Demobilization]**
 - d. Schedule of Values
3. Method of Construction: Method of construction submitted at the preconstruction meeting with the preliminary schedule shall be a written discussion of the Subcontractor's methods for completing the work. The Subcontractor shall briefly describe his approach to the Subcontract.

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4. The Use of Schedule Float: In as much as the Subcontractor's Schedule represents the Project Construction Schedule, the calculated float for an activity is shared by the Subcontractor and Contractor. Adjustments to the schedule float will be equitably resolved by the Contractor.
5. Computer Generated Schedule: The Subcontractor may generate the CPM Schedule manually or by using a computer. The CPM Schedule shall include all significant items of work.
6. Comments Incorporated: The Subcontractor shall incorporate the Contractor's comments into revisions of the Project Construction Schedule, adjust the manpower loading as required and resubmit the schedule to the Contractor for approval along with a summary of the changes.
7. Revisions made to the schedule [shall]** be given a new revision number and submitted to the Contractor for approval. A written narrative shall accompany any changes to the logic and/or durations of the Construction Schedule. This narrative shall explain in detail what the change involves, the reason for the change, and any effect to the critical path of the schedule.

E. Schedule of Values/Cost Profile:

1. Each time a construction schedule is submitted, it shall be accompanied by a Schedule of Values for the entire Scope of Work. The Schedule of Values shall conform to the format sample (01300-A) provided with this Section. The Schedule of Values shall be based upon that specific revision of the Construction Schedule, and presented in such a format to clearly provide total period and cumulative cost information for each month for the entire duration of the Subcontract. This Schedule of Values shall be in a form which will provide a correlation between the subcontract bid items and the Subcontractor's schedule activities. The Subcontractor may, at his own risk, plan work in excess of the funding limitations outlined in the Special Conditions.
2. The format and the substance of the finalized Schedule of Values shall be as approved by the Contractor.

F. Labor and Equipment Rates: The Subcontractor shall submit labor and equipment rates as stipulated in Subcontractor Labor and Equipment Rates of the Special Conditions.

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1.4 SUBMITTALS NOT REQUIRING [CONTRACTOR'S]** APPROVAL

A. The Subcontractor shall furnish the following submittals for information only. These submittals will not be approved and returned to the Subcontractor.

1. Weekly Status Reports: The Subcontractor shall submit a Weekly Status Report to the Contractor by Friday noon. The report shall be on a form satisfactory to the Contractor, and shall include items such as a Summary of Work completed and a Two-Week Look Ahead Bar Chart. [Weekly Status Report shall also include each major piece of equipment present on the site, its make, model type, number of hours idle, number of hours used, etc. as required by the Contractor.]**

2. [Weekly Manhour Report/Equipment and Truck Hours Report/Maintenance Report: The Subcontractor shall tabulate total manhours worked each week with a regular and overtime total, equipment hours of operation and truck miles driven each week, listing all data for Subcontractor and lower-tier subcontractor operations. The tabulations shall be prepared and submitted weekly to the Contractor. The Maintenance Report shall be submitted to the Contractor monthly as follows:

a. Preventative Maintenance:

_____ # Items completed within monthly schedule.

_____ # Items not completed within monthly schedule.

b. Corrective Maintenance:

_____ Number of corrective work requests during month.

_____ Number of corrective work requests open at end of month.]**

3. Certified Payrolls: Certified Payrolls are to be submitted in strict compliance with Section 10 of MK-Ferguson Company Standard Documents Package for proposed construction subcontracts.

4. [Monthly Construction Schedule Progress Updates:]** The Subcontractor shall submit an updated schedule, with the Critical Milestones clearly identified, by the first of each month. The status of the CPM Schedule shall indicate percent complete by activity,

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remaining duration of in-progress activities, total float and free float for each schedule activity.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

Separate measurement for payment will not be made for work required under this Section.

4.2 PAYMENT

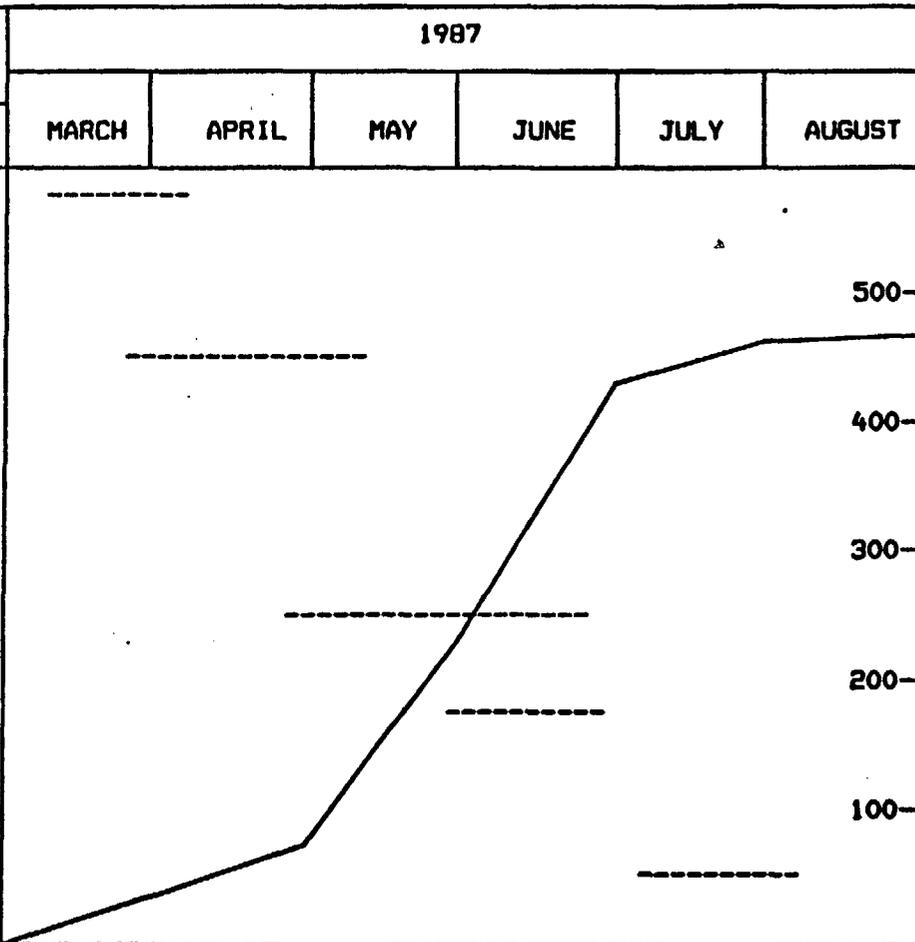
Separate payment will not be made for work required under this Section. All costs in connection therewith shall be considered to be incidental to the applicable items of work to which they pertain.

END OF SECTION 01300

UMTRA PROJECT
SUBCONTRACT DOCUMENTS _____
SCHEDULE OF VALUES

SAMPLE

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DESCRIPTION	SCHEDULE ACTIVITY NUMBER	BID ITEM		1987						TOTAL DOLLARS
		NUMBER	PERCENT	MARCH	APRIL	MAY	JUNE	JULY	AUGUST	
										
MOBILIZATION	1	001	50%							\$32,000
INSTALL FENCE AT CONTRACTOR'S OFFICE	2	901 902	25% 100%						500	\$57,000
EXCAVATION (TAILINGS)	3	204	100%						300	\$320,000
INSTALL REMAINING FENCE	4	901	75%						200	\$21,000
DEMOBILIZATION	5	001	50%						100	\$32,000
TOTAL:		PERIOD		\$31,000	\$40,000	\$152,000	\$207,000	\$30,000	\$2,000	\$462,000
		CUMULATIVE		\$31,000	\$71,000	\$223,000	\$430,000	\$460,000	\$462,000	

CONSTRUCTION START DATE: 3/10/87
CONSTRUCTION COMPLETION DATE: 8/07/87

SECTION 01500

CONSTRUCTION FACILITIES

PART 1 - GENERAL

1.1 SCOPE

- A. This Specification Section covers the requirements for the construction facilities.
- B. Construction facilities shall include, but not be limited to, the following temporary offices, utilities, equipment, materials and services:
1. Subcontractor's Office
 2. Contractor's Offices
 3. Parking Areas
 4. [Janitorial and Maintenance Services]**
 5. Temporary and Existing Roads
 - [6. Snow Removal Services]**
 - [7.]** Storage of Materials and Equipment
 - [8.]** Construction Equipment
 - [9.]** Temporary Sanitary Facilities
 - [10.]** Temporary Electric Power
 - [11. Temporary Water (Potable and Construction)]**
 - [12.]** Decontamination Washwater Systems
 - [13.]** Temporary Heat
 - [14.]** Temporary Telephone Service
 - [15.]** Temporary Fences
- C. The Subcontractor shall be responsible for furnishing, installing, constructing, operating, maintaining, removing and disposing of the facilities as shown on the Subcontract Drawings, as specified in this Specification, and as required by the Contractor for the completion of the Work under the Subcontract. Where the facilities are indicated as existing, the Subcontractor shall be responsible for augmenting, operating, maintaining, removing and disposing of such facilities.
- D. All such temporary facilities shall be located as shown on the Subcontract Drawings, or as directed, and maintained in a clean, safe and sanitary condition at all times until completion of the Subcontract.

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- E. Upon completion of the Subcontract, the temporary facilities shall be left in the status specified in Article [1.22]** of this Section.
- F. The requirements specified herein are in addition to any requirements specified elsewhere in the Subcontract Documents. Temporary facilities shall meet the requirements for all-weather service.
- G. Certain facilities specified in this Section, although referred to in singular, may be required in greater numbers. The number of facilities required shall be as shown on the Subcontract Drawings.
- H. With the exception of electricity, all utilities within the fenced area surrounding office trailers shall be installed underground. Electricity may be installed overhead. Utilities shall include, but not be limited to, telephone, water, sanitary sewer and storm drainage systems. The utilities shall be designed and constructed to provide uninterrupted service during winter.
- I. All land disturbances related to the temporary facilities shall be minimized to the greatest extent possible and the land restored to the extent reasonable and practical, to its original contours by grading to provide positive drainage and by seeding the area to match with existing vegetation.

1.2 RELATED WORK

- A. Section 00800 - Special Conditions: Definitions
- B. Section 01019 - Mobilization: Payment
- C. Section 01300 - Submittals
- D. Section 01560 - Temporary Controls
- E. Section 02050 - Demolition
- F. Section 02935 - Seeding

1.3 APPLICABLE PUBLICATIONS

- A. The Publications listed below form a part of this Specification to the extent referenced. The Publications are referred to in the text by the basic designation only:

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1. [UMTRA Project Construction, Environment, Safety and Health Management Program (MK-UMTRA-4)]**
2. Uniform Building Code (UBC):
1988 Edition, applicable Chapters and Sections.
3. National Fire Protection Association (NFPA), as applicable.
- [4. Occupational Safety and Health Administration, as applicable.]**

B. All required facilities, equipment and utilities shall also be constructed/installed, maintained and operated in accordance with the applicable Federal, State, County, and Utility laws, rules, and regulations. Notwithstanding contrary provisions of General Provisions, General Conditions and Special Conditions, nothing in the Subcontract Drawings and Specifications shall be construed to permit work not conforming to the above.

[C. Unless otherwise specified elsewhere in the Subcontract Documents, the Subcontractor shall be responsible for obtaining applicable local, State and Federal permits and for complying with the provisions of such permits.]**

1.4 SUBMITTALS

General submittal requirements are specified in Section 01300.

1.5 SUBCONTRACTOR'S TEMPORARY OFFICE TRAILER

- A. Subcontractor shall furnish and install, in good condition, on the site, at least one temporary office trailer of suitable size for himself and his office staff.
- B. The trailer shall have a conference room of suitable size for consulting with the Contractor and DOE representatives, etc.
- C. The location of the [trailer]** shall be approved by the Contractor prior to setting in place.

1.6 CONTRACTOR'S TRAILERS

- A. [The Subcontractor shall furnish and install two office trailers and an access control trailer for the Contractor's staff as shown on the Subcontract Drawings.]**

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- [B. In addition, the Subcontractor shall install Contractor-furnished Quality Control (QC) trailer at the access control area, inside the controlled area boundary, as directed by the Contractor.]**
- [C. The office, access control, and QC trailers shall be not less than 720 (12 ft. x 60 ft.) square feet and containing rooms with lockable doors, a toilet room with toilet and wash basin. The layout of the floor plan shall be as approved by the Contractor. The access control trailer shall have a shower for personnel decontamination purposes.]**
- D. [The trailers including office trailers, access control trailer, Contractor furnished laboratory trailer (intersection of Highway 53 and Highway 509) and QC trailer shall be connected to water and power, and shall be properly lighted. Wash basins and toilets shall be furnished and connected to sanitary facilities specified in Article 1.12 or for the access control trailer, the wash basin and shower(s) shall be connected to drain to the decontamination pad sump.]**
- E. [Each trailer shall be provided with steps, stoops, handrails, a deck at the door sill level, skirting all around the trailer and trailer tie downs.]**
- F. [The Contractor's office trailers shall be connected by a covered weatherproof walkway for the 10-foot width and length at door level.]**
- [G. The Subcontractor shall furnish an outside sink with faucet for handwash, an outside faucet for foot wash and a 6-foot square concrete slab, 4-inch thick with a 6-inch high curb and a 6-inch drain in the center of the slab draining to a contaminated water discharge point.]**

1.7 PARKING AREAS

- A. No personal vehicles will be permitted inside the Construction Area. Vehicles used for construction purposes will be allowed inside the area, but will be monitored for radioactive contamination at the access gate or control point before leaving the area.
- B. Subcontractor shall provide additional parking facilities for delivery vehicles, the Contractor's representatives, and authorized visitors in the area designated on the Subcontract Drawings.
- C. For additional requirements, see Section 01560, Article 1.8.

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1.8 [JANITORIAL AND MAINTENANCE SERVICES]**

A. [The Subcontractor shall provide daily janitorial and maintenance services]** including, but not limited to, the following for all Contractor's trailers including existing trailers, toilet facilities and the access control area:

1. Sweep, vacuum, mop, and, if required, polish floors.
2. Clean toilets, doors and windows, office furniture.
3. Collect and dispose of office and yard solid waste.
4. Furnish paper, soap, cups, napkins, light bulbs, etc.
5. Operate and maintain trailer services including, but not limited to, the water supply and wastewater collection systems; heating, ventilating and air-conditioning system; lighting; [and security systems including doors, windows, steps, floors and lighting fixtures.]**

[6. Janitorial and maintenance services shall be provided throughout the term of the Subcontract.]**

[1.9 SNOW REMOVAL SERVICES

A. The Subcontractor shall provide snow removal services in the following areas throughout the term of the Subcontract as required by the Contractor.

1. Walkways to the office trailers.
2. Parking areas.
3. Equipment and material storage areas.
4. Access roads to site facilities as necessary.]**

[1.10]**TEMPORARY AND EXISTING ROADS

A. General: The Subcontractor shall use existing roads to the maximum extent practical. [If additional roads are required for convenience in performance of the Subcontract he may build such roads, including haul roads to radon barrier and riprap borrow areas. All roadwork shall meet the requirements specified in this Section, and Section 01560.]**

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- B. The main dirt road running east-west across the southern end of the site is a private road and shall be maintained and left open at all times. Periodic blading of the portions of the road traveled in conjunction with performance of the work will be required as needed to maintain a smooth travel surface and to clean the road of snow, ice, and mud. Work on any portion of this road shall be performed in a manner to maintain traffic flow at all times. This may be accomplished with short detours, working of a single lane, or similar methods.
- C. Prior to the start of any roadway work over which the county has jurisdiction, the Subcontractor shall submit for review and approval, improvement drawings to the McKinley County authorities. A copy of the drawings shall be submitted to the Contractor. No work shall be performed on such roads without Contractor's and County's approval.
- D. Erosion shall be kept to a minimum and suitable grades and radii of curves shall be maintained to facilitate ease of movement of vehicles and equipment.
- E. Where feasible, road cuts shall be restored to as near original grade and reseeded as required by the agency having jurisdiction over the area.
- F. Construction shall be coordinated with local utilities, fire and police departments, and shall be as approved by the Contractor.
- G. The Subcontractor shall be responsible for providing all necessary bonding required by the applicable city, county and state highway departments.
- H. The Subcontractor shall be responsible for grading, repairs and other maintenance of public and private roads used for construction purposes.

[1.11]**STORAGE OF MATERIALS AND EQUIPMENT

- A. Off-Site Storage: Subcontractor shall make arrangements for exterior storage areas for materials, equipment, and debris. Locations and perimeters of such facilities shall be subject to the approval of the Contractor.

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B. On-Site Storage:

1. Subcontractor shall store construction materials and equipment within boundaries of designated areas or areas approved by the Contractor. [Storage of gasoline or similar fuels shall conform to the requirements of the Construction Environment, Safety and Health Management Program specified in Article SC-7 of the Special Conditions.]**
2. All operations of the Subcontractor, including storage of materials, shall be confined to areas approved. Subcontractor shall be liable for any and all damage caused by him during such use by him of property of the Contractor or other parties. [Materials shall be stored in accordance with manufacturer's instructions as applicable.]**

[1.12]**CONSTRUCTION EQUIPMENT

- A. Subcontractor shall erect, equip, and maintain all construction equipment in accordance with all applicable statutes, laws, ordinances, rules and regulations of the Contractor or other authority having jurisdiction.
- B. Scaffolding, staging, runways, hoists, barricades, and similar equipment required for performance of the Subcontract shall be provided and maintained by the Subcontractor. Hoists or similar equipment shall be provided with operators and signals, as required.
- C. Subcontractor shall provide, maintain, and remove upon completion of the work, all temporary rigging, scaffolding, hoisting equipment, debris boxes, barricades around openings and excavations, fences, ladders, and all other temporary work, as required for all work hereunder, unless otherwise required by the Contractor.
- D. Construction equipment and temporary work shall conform to all the requirements of State, County and Local authorities, OSHA, and underwriters which pertain to operation, safety, and fire hazard. Subcontractor shall furnish and install all items necessary for conformity with such requirements, whether or not called for under the separate sections of these Specifications.
- [E. The Subcontractor shall provide suitable space and lighting for the maintenance of the equipment.]**

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[1.13]**TEMPORARY SANITARY FACILITIES

- A. Subcontractor shall provide temporary sanitary facilities for use by all employees and persons engaged in the Work, including lower-tier subcontractors, Contractor, DOE, their employees and authorized visitors.
- B. Sanitary facilities include enclosed chemical toilets washing sinks, pipes, tanks and pumping equipment. These facilities shall meet the requirements of local public health standards. Open pit or trench latrines will not be permitted.
- C. Chemical toilets and washing sinks shall be provided for use by the Subcontractor, his employees and all other workers and suppliers.
- D. Existing sanitary facilities for use by the Contractor, DOE, and their employees consist of collection pipes, sanitary waste holding tanks and a contaminated water tank. These facilities are located at the Contractor's office area, the access control area and the laboratory trailer near the intersection of Highway 53 and Highway 509.
- E. The Subcontractor shall refurbish as required, operate and maintain the existing facilities throughout the term of the Subcontract. The sanitary waste holding tanks are each approximately 1200 gallon capacity, with two tanks at the Contractor's office facility, one tank at the access control area, and one tank at the laboratory trailer, and shall be kept pumped out at intervals to prevent any overflow.
- F. Contaminated water from the access control and QC trailers wash sinks, the outside sink and foot wash facilities and from the access control trailer shower shall be collected to drain into the decontamination sump by a separate piping system. The contents of the sump shall be pumped into the wastewater retention basin or to the decontamination washwater recycling system. Contaminated water from the laboratory trailer shall be drained to the existing contaminated water tank and be disposed of in the retention basin by the Subcontractor.
- G. Sanitary waste from wash sinks and toilets provided in the Contractor's trailers shall be drained to underground sanitary waste holding tanks by a separate piping system. The contents of the underground sanitary waste holding tanks shall be disposed of offsite as Subcontractor's property.

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- H. During the term of the Subcontract, all tanks shall be kept pumped out at regular intervals to prevent overflow and contamination of the ground, flowing streams or surface drainage.
- I. Sanitary facilities shall be located as shown on the Subcontract Drawings and as approved by the Contractor, and shall be maintained in a sanitary condition during the entire course of the Work. Subcontractor shall keep such facilities adequately supplied with toilet paper, paper toweling, paper cups, etc., as required.
- J. At completion of the Work, sanitary facilities shall be properly disinfected, and the tank and the contents disposed of as required by the Contractor.]**

[1.14]**TEMPORARY ELECTRIC POWER

- A. The Subcontractor shall provide and maintain during the course and progress of the work all electrical power and wiring requirements to facilitate the work of all trades and services associated with the Work. The Subcontractor shall make arrangements with the serving utility, Public Service Company of New Mexico, and shall pay all charges for providing and maintaining electrical service. [The electrical usage charge shall be paid by the Subcontractor.]** All temporary wiring, feeders, and connections, and any standby generators or generating capacity required in excess of the serving utility capacity shall be furnished by the Subcontractor.
- [B. The Subcontractor shall furnish power and lighting to all trailers and for all Work as required, including yard lighting.]**

[C.]**Locations of existing power supply available on the site include the following:

- 1. Access Control Area: Power available is 240/120 volts, 1 phase, 200 amp, 60 Hz service. The Contractor's facilities in this area include (a) Access Control Trailer, (b) Water pump, (c) General area lighting, and [(d) QC trailer.]**
- 2. Contractor's Office Facilities: The power available is 240/120 volt, 1 phase, 320 amp, 60 Hz service. [The Contractor's facilities in this area include Contractor's trailers, pump house, and general area lighting.]**

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3. Deep Well Pump Area: The power available is 480/277 volt, 3 phase, 400 amp, 60 Hz service, capable of starting the deep well pump with a maximum of 3 percent voltage drop. The Contractor's facilities in this area include (a) Pump house, and (b) General area lighting.

[D.]**The Subcontractor shall utilize, operate and maintain existing power supply facilities to the maximum extent practicable; and furnish, install, operate and maintain additional facilities, if required, to provide power and lighting to all trailers, and for all Work as required, at no additional cost to the Contractor.

[E.]**Routing of temporary conductors, including welding leads shall not create a safety hazard nor interfere with operation and maintenance of existing facilities. Approval from Site Manager shall be obtained prior to making connections to existing power panels.

[F.]**All temporary wiring installed by the Subcontractor shall be accomplished in accordance with the requirements of the [National Fire Protection Association (NFPA) Standards Nos. 70 and 70E, using acceptable code materials and equipment.]**

[G.]**There may be times during the period of the subcontract when the Contractor will schedule power outages which will make temporary electrical power unavailable over any of the electrical transmission and distribution systems. Normally, these outages will be scheduled sufficiently in advance to give the Subcontractor prior notification; however, due to operational requirements, it may be necessary to "kill" the lines without prior notification. The Contractor assumes no liability for interruptions, delays, or inconveniences caused to the Subcontractor as a result of such electrical power outages or power failure, scheduled or unscheduled, except that any delay in completion of the work resulting directly from such power outages shall be deemed a delay due to unforeseeable causes beyond the control and without the fault or negligence of the Subcontractor within the meaning of [GP-56 "DEFAULT"]** of the General Provisions, and the Subcontractor shall be entitled to relief in accordance with the provisions of said [Article GP-56,]** provided he gives written notice of such delay in accordance with the requirements thereof. There will be no adjustment in the Subcontract Price due to any such electrical power outage or power failure.

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[H. Temporary power for the Radon Gas Monitor (RGM) Stations and the Air Particulate (AP) Stations: Power provided shall be capable of providing 2-1/2 kW minimum service and shall be 120V, single phase, 60 cycle. The use of generators or temporary power lines shall be at the Subcontractor's option. This power shall be provided and available 30 days prior to contaminated earthmoving activities and maintained for 30 days after completion of the radon barrier cover. Locations of the above stations and availability of power sources shall be as directed by the Contractor. Temporary power shall be removed at the completion of the Subcontract.]**

[1.14]**TEMPORARY WATER

A. General:

1. [All temporary water service]** for drinking, sanitation and construction purposes shall be provided as specified in this Section and as shown on the Subcontract Drawings.
2. [The Subcontractor shall furnish and install or refurbish as necessary, operate and maintain all equipment and materials as required, including necessary tanks, piping, hoses, meters, valves, fixtures and the like to provide water to various points of usage throughout the site.]**
3. Electric power and other requirements shall be as specified in Article [1.14.]**

B. Drinking Water: Chilled drinking water shall be furnished from an approved source for the Subcontractor's personnel and Contractor's personnel [and in all trailers except the QC trailer and laboratory trailer.]**

C. Sanitation Water:

1. Water for domestic use shall be furnished to the following areas as specified in this Section:
 - a. Access Control Area
 - b. Contractor's Office Facilities Area
 - c. Laboratory Trailer (intersection of Highways 53 and 509)]**

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2. Access Control Area: Water shall be furnished to fixtures in the Access Control trailer, [QC trailer]** and to decontamination washwater system. Water supply facilities include the following:
 - a. Existing 3000-gallon water storage tank. It includes appurtenances for venting, cleanout, and outlets.
 - b. Existing 5 HP electrical motor, pump and controls.
 - c. Existing pressure tank, suction, discharge and distribution piping with fittings, fixtures, valves, gages, nozzles, miscellaneous connections, controls, and the like.
 - d. Existing wooden frame structure around the existing water storage tank for protection from weather and vandalism.
3. Contractor's Office Facilities Area: [Water shall be furnished to fixtures in all Contractor's trailers including laboratory trailer.]** Water supply facilities include the following:
 - a. Existing 3000-gallon water storage tank. It includes appurtenances for venting, cleanout, and outlets.
 - b. Existing 2 HP electrical motor, pump and controls.
 - c. Existing pressure tank, suction, discharge and distribution piping with fittings, fixtures, valves, gages, nozzles, miscellaneous connections, controls, and the like.
 - d. Existing wooden frame structure around the existing water storage tank for protection from weather and vandalism.
4. Water Source:
 - a. Water for sanitary use (flushing toilets, washing, etc.) may be obtained from the existing site well.
 - b. The water for sanitary use shall be obtained directly from the well and shall not be obtained from the holding pond adjacent to the well.

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- c. The well water has been tested and is presently suitable for the above purposes (provided that chlorine is added to provide a minimum residual free chlorine value of 0.05 mg/l. On-site testing of the chlorine level shall be performed on a weekly basis by the Subcontractor [and the results shall be submitted weekly to the Contractor.]** It shall not be used for human consumption, i.e., drinking water.
- d. The Contractor will perform periodic sampling and testing of the well water. If the well water becomes unusable for the purposes intended, the Subcontractor shall be directed, under the changes clause of this Subcontract, to provide the necessary water from an alternate source.

D. Construction Water:

1. Construction water shall be obtained from an on-site holding pond. The Subcontractor shall utilize, operate and maintain existing facilities to the maximum extent practicable. If required, the Subcontractor may furnish and install additional equipment to meet his water requirements after receiving approval from the Site Manager. The Subcontractor shall furnish equipment to pump water from the holding pond.
2. The following water supply facilities exist on the site as shown on the Subcontractor Drawings:
 - a. A water well and wooden frame enclosure housing discharge piping, valves, and electrical controls.
 - b. A submersible pump and motor at an approximate depth of 850 feet below the land surface.
 - c. A water holding pond near the water well. The pond is lined with 40 mil nominal polyethylene lining material. The pond also contains high and low water pump shutoff controls.
 - d. A pad mounted 480/277 volt, 3 phase, 400 amp, 60 HZ transformer power supply.
 - e. A water meter.
3. Subcontractor shall comply with applicable State Laws and Regulations pertaining to operation of the well. Daily records of water consumption shall be transmitted to the Site Manager.

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4. Subcontractor shall be responsible for the safe and efficient operation of the facilities. Care shall be exercised to prevent under or over filling of the pond and to prevent damage to the facilities.
- [5. If additional construction water is required, the Subcontractor shall be responsible for furnishing and distributing the additional water required for the Work. The Subcontractor shall obtain all rights and permits for the additional water.]**

[1.16]**DECONTAMINATION WASHWATER SYSTEM

- A. [The Subcontractor shall recondition as required, operate and maintain decontamination washwater system for decontamination of hauling equipment. In accordance with Section 01300, the Subcontractor shall submit plans and details for reconditioning and repair of the decontamination pad, sump and the recirculation system.]**
- B. [Excess contaminated water from the sump shall be used for dust control in contaminated areas or disposed of in the retention basin. The sump shall be cleaned of sediment as needed to prevent sediment overflow.]**
- C. [When no longer needed for control of contamination as determined by the Contractor,]** the Subcontractor shall remove and dispose of all equipment, and restore the area to near original conditions existing prior to the start of the Work. Decontamination pad, sump and pipes shall be demolished and disposed of as specified in Section 02050.

[1.17]**TEMPORARY HEAT

Subcontractor shall provide, at his own expense, all temporary heat as necessary, for proper installation of all work, equipment, and materials, and for the protection of all work and materials against injury from dampness, cold, and freezing.

[1.18]**TEMPORARY TELEPHONE SERVICE

- A. The Subcontractor shall make all necessary arrangements for telephone service for his use.
- B. All cost of telephone service connections shall be borne by the Subcontractor.
- C. The Contractor will provide telephones for his own use.

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[1.19]**TEMPORARY FENCES

The Subcontractor shall maintain existing chain link, woven wire fences and gates through the term of the Subcontract.

[1.20]**SHUT-DOWN TIME OF SERVICES

The Subcontractor shall not disconnect or shut down any part of the existing utilities and services, [except by express written permission of the Contractor.]** The Subcontractor shall submit schedule of estimated shut-down time in order to obtain such permission, and shall notify all interested parties, utilities, county authorities, etc., as required.

[1.21]**MAINTENANCE

A. Subcontractor shall maintain all temporary facilities including, but not limited to, the following in good operating condition as required by the Contractor during the term of the Subcontract:

1. All temporary roads including access control areas for the safe and efficient transport of equipment, supplies and personnel.
2. Decontamination facilities including decontamination pad, sump, water supply tank and pumping equipment.
3. [Contractor's office area and utilities with the exception of telephone service.]**
4. Drainage ditches, culverts and wastewater retention basin.
5. Deep well pump and pond.
6. Lab trailer utilities offsite.
7. Existing fences.
8. Existing roads.

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[1.22]**STATUS AT COMPLETION

A. Upon completion of the Work, or prior thereto when so required by the Contractor, Subcontractor shall:

1. [Remove all temporary facilities including all associated concrete foundations, unless otherwise specified, indicated or directed. Similarly, all areas utilized for temporary facilities shall be reclaimed to substantially their original, natural state.]**
2. Repair existing roads used as temporary roads. Repair work will include recompacting and resurfacing to at least equal or better conditions existing prior to the start of the Subcontract Work.
3. [Remove existing and temporary fences within the limit of contaminated material excavation shown on the Subcontract Drawings; demolish, if contaminated, otherwise dispose of offsite as Subcontractor's property.]** Demolition, if required, shall conform to Section 02050.
4. [Reclaim]** new roads (constructed as temporary roads by the Subcontractor) including existing access road(s) constructed by others and restore the areas to their near original contours by grading, and seed the area to match existing vegetation. For disturbed areas within the site, seeding shall conform to Section 02935. For disturbed areas outside of the site, seeding shall conform to the requirements of the agency having jurisdiction over the area.

[B. All temporary facilities removed by the Subcontractor shall be disposed of offsite by the Subcontractor as his property.]**

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

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PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

Measurement for payment for construction facilities specified in this Section will be by the lump sum. The measurement shall not include items of work already included for payment under other applicable related Sections of the Subcontract.

4.2 PAYMENT

Payment for construction facilities specified in this Section will be by the lump sum price quoted therefor in the Bid Schedule. The price quoted shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals and accessories and for performing all work as specified for designing, furnishing, installing, operating, maintaining, removing and disposal of the facilities. The price shall not include compensation for the items of work for which payment is made under other applicable related Sections of the Subcontract.

END OF SECTION 01500

SECTION 01560

TEMPORARY CONTROLS

PART 1 - GENERAL

1.1 SCOPE

- A. This Specification Section covers the requirements for temporary controls required during the construction of the permanent works. Temporary controls shall include related equipment, facilities, and incidentals.
- B. Temporary controls shall include, but not be limited to, the following:
 - 1. Dust Control
 - 2. Noise Control
 - 3. Pollution Control
 - 4. Water Control
 - 5. Access, Traffic and Safety Controls
 - [6. Protection of Exposed Surfaces]**
- C. The Subcontractor shall be responsible for furnishing, installing, constructing, operating, maintaining, removing and disposing of the controls as shown on the Subcontract Drawings, as specified in this Specification, and as required by the Contractor for the completion of the Work under the Subcontract.
- D. All such temporary controls shall be located as shown on the Subcontract Drawings [and as directed by the Contractor,]** and maintained in clean, safe and sanitary condition at all times until completion of the Subcontract.
- E. Upon completion of the Subcontract, the temporary controls shall be left in the status specified in Article [1.11]** of this Section.
- F. The requirements specified herein are in addition to any requirements specified elsewhere in the Subcontract Documents. Temporary controls shall meet the requirements for all-weather service.
- G. All land disturbances related to the temporary controls shall be minimized to the greatest extent possible and the land restored to the extent reasonable and practical, to its original contours by grading to provide positive drainage and by seeding the area as specified in Section 02935.

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1.2 RELATED WORK

- A. Section 00800 - Special Conditions: Noise Control
- B. Section 01019 - Mobilization: Payment
- C. Section 01500 - Construction Facilities
- D. Section 02141 - Dewatering and Drainage
- E. Section 02200 - Earthwork: Site Restoration
- F. Section 02935 - Seeding

1.3 APPLICABLE PUBLICATIONS

- A. The Publications listed below form a part of this Specification to the extent referenced. The Publications are referred to in the text by the basic designation only:
 - 1. UMTRA Project Construction [Environment,]** Safety and Health Management Program (MK-UMTRA-4)
 - 2. New Mexico Highway Department:
"Standard Specifications", as applicable.
 - 3. Uniform Building Code (UBC):
1988 Edition, applicable Chapters and Sections.
 - 4. National Fire Protection Association (NFPA), as applicable.
 - [5. Occupational Safety and Health Administration, Standards as applicable.
 - 6. National Electric Code, Standards as applicable.
 - 7. DOE Order 5480.11, Radiation Protection for Occupational Workers.]**
- B. All required facilities, equipment and utilities shall also be constructed/installed, maintained and operated in accordance with applicable Federal, State, County, and Utility laws, rules, and regulations. Notwithstanding contrary provisions of General Provisions, General Conditions and Special Conditions, nothing in the Subcontract Drawings and Specifications shall be construed to permit work not conforming to such laws, rules and regulations.

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1.4 DUST CONTROL

- A. [The Subcontractor shall be responsible for providing adequate dust control measures during the term of the Subcontract as specified herein and as required by the Contractor. Dust generated by vehicle use, temporary materials stockpiling, temporary stockpiling, mixing of contaminated materials and of uncontaminated materials, and in all areas of the site shall be controlled and minimized by the use of water and water-based surfactants sprayed from hoses or trucks.]**
- B. Dust control shall consist of utilizing water from on-site sources specified below, furnishing required equipment, additives, accessories and incidentals, and carrying out proper and efficient measures to reduce dust nuisance, and to prevent dust originating from construction operations. [Dust control for contaminated materials shall be subject to requirements of Section 02200.]**
- C. Water shall be applied by means of pressure-type distributors or pipe lines equipped with a spray system or hoses with nozzles [that will ensure a uniform application of water.]**
- D. All equipment used for the application of water shall be equipped with a positive means of shut-off.
- E. Unless otherwise permitted by the Contractor or unless all the water is applied by means of pipelines, at least one mobile unit with a minimum capacity of 5,000 gallons shall be available at the site in operating condition for applying water on the project at all times.
- F. To conserve water, the Subcontractor may use chemical additives in dust control water. If such additives are used, furnishing and applying the additives shall be at no additional expense to the Contractor.
- G. The use, location of application, and the amount and type of additives proposed for use by the Subcontractor shall be subject to approval by the Contractor.
- H. The primary sources of water for dust control in contaminated areas at the sites will be recycled water from the wastewater retention basin, or water from tailings and subsoil dewatering to the extent feasible. When these sources are judged inadequate or unacceptable the Subcontractor may, with the Contractor's approval, use water from an on-site [well or]** construction water holding pond as specified in Section 01500.

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I. The source of water for dust control in uncontaminated areas shall be free of radioactive contamination. Water taken directly from the on-site well is acceptable.

[J. Dust in parking areas shall also be controlled.

K. The Subcontractor shall only apply the amount of water necessary for dust control and compaction. Excess water shall not be applied to tailings placed in the disposal cell.]**

1.5 NOISE CONTROL

See Section 00800, Article SC-7, Paragraph [M.1.]**

1.6 POLLUTION CONTROL

A. Pollution of Waterways: The Subcontractor's construction and related activities shall be performed by methods that prevent entrance or accidental spillage of solid or liquid matter, contaminants, debris and other objectionable pollutants and wastes into streams, watercourses, flowing or dry, and underground water sources. Such pollutants and wastes will include, but will not be restricted to refuse, earth and earth products, garbage, cement, concrete, sewage effluent, industrial waste, radioactive substances, hazardous chemicals, oil and other petroleum products, aggregate processing tailings, and mineral salts. Pollutants and wastes shall be disposed of in accordance with applicable permit provisions or in a manner acceptable to and approved by the Contractor.

B. Storage and Disposal of Petroleum Products:

1. Petroleum products covered by this Section include gasoline, diesel fuel, lubricants, heating oils, and refined and used oil. During project construction, all petroleum products shall be stored in such a way as to prevent contamination of all ground and surface waters.

2. Storage facilities shall conform to the requirements of Construction [Environment,]** Safety and Health Management Program specified in Article SC-7 of the Special Conditions.

3. Lubricating Oil: Lubricating oil may be brought into the project area in steel drums or other means, as the

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Subcontractor elects. If the total volume of stored oil is greater than 1320 gallons, then the Subcontractor shall provide secondary containment facilities. Used lubricating oil shall be stored in steel drums, or other approved means, and shall be returned to the supplier for disposal. It shall not be burned or otherwise disposed of at the project area.

4. If the total volume of stored petroleum products is greater than 1320 gallons and these products are stored above ground, the Subcontractor shall prepare a spill prevention control and countermeasure plan in accordance with applicable EPA and other state regulations.

1.7 WATER CONTROL

See Section 02141 - Dewatering and Drainage.

1.8 ACCESS, TRAFFIC AND SAFETY CONTROLS

A. Access Control:

1. Private, personal or agency vehicles not used for authorized construction purposes will not be allowed in the controlled site areas.
2. Parking of private, personal or agency vehicles shall be in a restricted area outside of the controlled site areas as designated by the Site Manager or his representative.

B. Traffic and Safety Controls:

1. The Subcontractor shall post construction areas and roads with traffic control signs or devices used for protection of workmen, the public and equipment. The signs or devices shall conform to the American National Standards Institute [D6.1E-1988]**, Manual on Uniform Traffic Control Devices for Streets and Highways.
2. Signs or traffic control devices shall be removed or covered as soon as they have served their purpose. It is particularly important to remove any markings on road surfaces which under conditions of poor visibility could cause a driver to turn off the road or into traffic moving in the opposite direction.

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3. Barricades for protection of employees shall conform to the portions of the American National Standards Institute [D6.1E-1988]**, Manual on Uniform Traffic Control Devices for Streets and Highways, relating to barricades.
- [4. Material Haul on Private Roads: All requirements stated in the permits shall be followed for using private roads for hauling materials to the processing site.
5. The Subcontractor shall be responsible for providing all necessary bonding required by the applicable city, county and state highway departments.
6. The Subcontractor shall be responsible for grading, repairs and other maintenance of private roads used for construction purposes.]**
- [7.]** Flag persons, properly equipped with International Orange protective clothing and flags, shall be provided at all such times, as necessary, to direct or divert pedestrian or vehicular traffic.
- [8.]** Pursuant to Article [GP-51]** of General Provisions, Section GC-3C of General Conditions, the Subcontractor shall construct and maintain fences, planking, barricades, lights, shoring, and warning signs as required by local authorities and Federal and State safety ordinances, and as required, to protect the Contractor's property from injury or loss and as necessary for the protection of the public, and provide walks around any obstructions made in a public place for carrying on the Work covered in this Subcontract. All such protection shall be left in place and maintained until removal is authorized.
- [9.]** In addition, the Subcontractor shall guard and protect all workers, pedestrians, and the public from [existing mine shafts and vents,]** excavations, blasting operations, construction equipment, all obstructions, and other dangerous items or areas by means of adequate railings, guard rails, temporary walks, barricades, warning signs, sirens, directional signs, overhead protection, planking, decking, danger lights, etc.

[1.9 PROTECTION OF EXPOSED SURFACES

See Section 02200, Article 3.1.A.]**

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[1.10]** MAINTENANCE

Subcontractor shall maintain all temporary controls in good working conditions during the term of the Subcontract for the safe and efficient transport of equipment and supplies, and construction of permanent works, as required by the Contractor.

[1.11]** STATUS AT COMPLETION

A. Upon completion of the Work, or prior thereto, when so required by the Contractor, Subcontractor shall:

1. Remove all temporary controls as required by the Contractor.
2. Restore and seed disturbed areas as specified in Sections 02200 and 02935.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

Separate measurement for payment will not be made for work specified in this Section.

4.2 PAYMENT

Separate payment will not be made for work specified in this Section. Full compensation for such work will be considered to be included in the applicable related items of Work specified elsewhere in the Subcontract Documents or incidental to the Subcontract.

END OF SECTION 01560

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SECTION 01561

CONSTRUCTION CLEANING

PART 1 - GENERAL

1.1 SCOPE

- A. This Specification Section covers furnishing of all labor, materials, equipment, and services, and performing all operations necessary for, and properly incidental to, cleanup during construction and final cleaning of the site, prior to acceptance of the Project by the Contractor as specified herein and in other sections when specified.
- B. The requirements specified in this Section are supplemental to the requirements specified elsewhere in the Subcontract Documents.
- C. Hazardous Waste:
 - 1. The Site Manager shall be notified immediately if suspected hazardous wastes are encountered. The wastes will be fully characterized through laboratory analysis by the Contractor. The Contractor will then identify the wastes for disposal in accordance with the applicable state and federal requirements.
 - 2. If the wastes are identified as radiologically contaminated and suitable for disposal in the tailings embankment, the Subcontractor may be directed by Subcontract Change Notice to remove and dispose of these wastes in the tailings embankment.
 - 3. If the wastes are identified as non-radiologically contaminated (chemical or toxic) and not suitable for disposal in the tailings embankment, the Subcontractor may be directed by Subcontract Change Notice to obtain qualified services for removal and disposal of these wastes.

1.2 RELATED WORK

- A. [Article]** GC-1D - General Conditions
- B. Section 00800 - Special Conditions: Definitions
- [C. Section 02081 - Hazardous and Non-Hazardous Materials.]**

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D. Section 02110 - Site Clearing

E. Section 02200 - Earthwork

1.3 GENERAL

- A. It is required that the entire site be kept in a neat and orderly condition, and the Contractor or his representative may, at any time during construction, order a general cleanup of the site as a part of the work under this Section.
- B. Subcontractor shall dispose of waste, trash, and debris in a safe, acceptable manner, in accordance with applicable laws and ordinances and as prescribed by authorities having jurisdiction. No waste material and debris shall be buried on the site. Burning of trash and debris on the site will not be permitted.
- C. [Location of a dump for trash and debris, length of haul to such a location and all disposal costs shall be the Subcontractor's responsibility.]**

1.4 CLEANUP DURING CONSTRUCTION

- A. Cleanup: [The Subcontractor will be required to clean up construction work areas including all trailers, parking and storage areas and dispose of waste material.]** Cleanup of construction work areas will be required on a daily basis. At the close of each day's work all small quantities of waste and debris resulting from construction activities shall be gathered up and disposed of as designated in paragraph B below. Waste and debris shall not be allowed to accumulate in such quantities as to create an unsightly appearance, or safety or fire hazard, nor shall it interfere in any way with free access to, and operation of existing facilities.
- B. Waste Disposal:

- 1. General: Material determined to be waste will be tested for radioactive contamination prior to removal from the construction site. Testing will be performed by the Contractor at no cost to the Subcontractor to classify the waste into the following two categories for disposal purposes:

- a. Uncontaminated Waste: The Subcontractor shall provide suitable receptacles for all construction office waste material such as wrapping paper,

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discarded containers, etc. Other uncontaminated waste including construction office waste shall be disposed of offsite as Subcontractor's property in a safe, acceptable manner, in accordance with the applicable laws and ordinances and as prescribed by authorities having jurisdiction. No waste material and debris shall be buried on the site. [Text Deleted]**

- b. Contaminated Waste: Waste materials identified as contaminated materials defined in Article SC-1 and materials resulting from demolition operations and [demolished materials stockpiled on site shall be disposed of as specified in Section 02200.]**

1.5 FINAL SITE CLEANUP

- A. Prior to final inspection, the entire site shall be thoroughly cleaned and shall be put into a neat, acceptable condition. All construction waste and unused materials, dunnage, loose rock and stones, excess earth, and debris of any description resulting from the work shall be removed from the entire site.
- B. All construction areas shall be thoroughly cleaned to the satisfaction of the Contractor prior to final acceptance of the completed Subcontract.

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

(Not Used)

PART 4 - MEASUREMENT AND PAYMENT

Separate measurement or payment will not be made for work required under this Section. All costs in connection with the work specified herein will be considered incidental to the Subcontract.

END OF SECTION 01561

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Division 2
Sitework

SECTION 02050

DEMOLITION

PART 1 - GENERAL

1.1 SCOPE

A. [This Specification Section describes the requirements for the removal, demolition and disposal of the following facilities:

1. Temporary facilities as specified in Section 01500.
2. Temporary and existing fences as specified in Section 01500.
3. Membrane liners and ballast from wastewater retention basin and collection ditches.
4. Buried concrete structures and foundations.
5. Miscellaneous rubbish and debris within the limit of contaminated material excavation.]**

1.2 WORK NOT INCLUDED

[Disposal of stockpiled debris in the Demolition Debris Burial Pit shall be as specified in Section 02200.]**

1.3 RELATED WORK

- A. Section 00800 - Special Conditions - Articles SC-7 and SC-8
- B. Section 02060 - Existing Utilities
- C. Section 02090 - Sealing Abandoned Wells
- D. Section 02200 - Earthwork
- E. Section 02771 - Membrane Liner

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PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

3.1 DEMOLITION

A. Pollution Controls:

1. Water sprinkling, temporary enclosures, and other Contractor approved methods shall be used to limit the amount of airborne dust and dirt to the lowest practical level. Demolition work shall comply with governing regulations pertaining to environmental protection.
2. Water shall not be used if it is likely to create hazardous or objectionable conditions such as ice, flooding, or pollution. An approved water-based biodegradable wetting agent (surfactant) such as Dupont "Duponol WAQ" or equal may be used to reduce the quantity of water required.

B. Decontamination Pad, Sump and Fences: The decontamination pad, sump and fences shall be demolished and the contaminated and uncontaminated debris disposed of as specified in this Section.

C. [Solids: Solid metals, concrete, masonry and wooden members shall be cut in pieces to be no greater than 3 feet in any dimension and no more than 27 cubic feet in volume.]**

D. [Membrane Liner and Tires: When no longer required, the synthetic membrane shall be removed, decontaminated and disposed of offsite as the property of the Subcontractor. If the membrane cannot be decontaminated by practical means, it shall be disposed of by cutting into strips, not wider than 20 feet nor longer than 100 feet and placing in the tailings embankment in a manner that would not induce settlement, inhibit water migration, or exceed the 5 percent limit on organic material by volume. The membrane liner shall not be placed closer than 100 feet to the 5(H) to 1(V) sideslope on the top surface of contaminated materials. Tires shall be cut in half circumferentially and disposed of in the tailings embankment.]**

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- E. Removal and disposal of existing utilities shall be as specified in Section 02060.
- F. Sealing of abandoned wells shall be as specified in Section 02090.
- G. Restoration of the areas occupied by the wastewater retention basins, temporary drainage ditches, and decontamination pad and sump shall be as specified in Section 02200.

[H. Buried Concrete Structures and Foundations:

- 1. Buried concrete structures and foundations shall be demolished if they are less than 2 feet below finish grade or if they are contaminated, as determined by the Contractor, and cannot be decontaminated by practical means.
- 2. If underground concrete structures, or portions thereof, including but not limited to, slabs and foundations are encountered, they may be left in place if all of the following conditions are met:
 - a. If the concrete is uncontaminated or is decontaminated by the Subcontractor, and if soil is not contaminated below it, and
 - b. If the top of the concrete is at least 2 feet below finish grade.
- I. Miscellaneous rubbish and debris within the limit of contaminated material excavation shall be removed, demolished, and disposed of in the tailings embankment.]**

3.2 DISPOSAL OF DEMOLISHED MATERIALS AND DEBRIS

- A. [Contaminated demolished materials and debris shall be placed in the tailings embankment, as specified in Section 02200 and as shown on the Subcontract Drawings.]**
- B. Burning of demolished materials and debris will not be permitted.

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PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. With the exception of the following, separate measurement for payment will not be made for removal, demolition and disposal work specified in this Section:

[1. Removal, demolition and disposal of membrane liner and tires.

2. Removal, demolition and disposal of buried concrete structures and foundations.]**

- B. Measurement for payment for the following will be on a lump sum basis:

[1. Removal, demolition and disposal of membrane liner. (Bid Schedule Item 202)]**

[Text Deleted]**

[C. Measurement for payment for removal, demolition and disposal of buried concrete structures and foundations will be by the cubic yards of solid concrete removed. The quantities for payment will be computed from dimensions of solid concrete measured prior to, during, or following removal. (Bid Schedule Item 407)

- D. Separate measurement for payment will not be made for demolition and disposal of (1) access control area, (2) parking area, (3) temporary drainage ditches, (4) wastewater retention basins, (5) decontamination pad and sump, (6) Contractor's office facilities, and (7) existing fences.]**

4.2 PAYMENT

- A. With the exception of the items of Article 4.1.A.1 and 2 above, separate payment will not be made for removal, demolition and disposal of work specified in this Section. Full compensation for such other work will be considered to be included in the applicable related item of Work or incidental to the Subcontract.

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- B. [Payment for the item of Article 4.1.B.1 above will be by the lump sum price quoted therefor in the Bid Schedule.]** The [price]** quoted shall include full compensation for furnishing all labor, materials, equipment, incidentals, and for performing all work including but not limited to demolishing, removing, transporting, and placing.
- [C. Payment for demolition and disposal of buried concrete structures and foundations will be by the unit price quoted therefor in the Bid Schedule. The price quoted shall include full compensation for furnishing all labor, materials, tools, equipment, incidentals, and for performing all work including all clearing, excavating, demolishing, breaking of the debris into small pieces, removal and decontamination of facilities where required, backfilling the areas with uncontaminated fill materials, and removal and disposal of demolished materials and debris as specified in this Section and in Section 02200.]**
- D. Separate payment will not be made for removal, demolition and disposal of (1) access control area, (2) parking area, (3) temporary drainage ditches, (4) wastewater retention basins, and (5) decontamination pad and sump. Full compensation for such work will be considered to be included in the Bid Schedule item for Mobilization as specified in Section 01500.

END OF SECTION 02050

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SECTION 02060

EXISTING UTILITIES

PART 1 - GENERAL

1.1 WORK INCLUDED

- A. This Section describes the requirements for the removal, demolition and disposal of existing utilities shown on the Subcontract Drawings [or encountered during excavation]**.

1.2 DEFINITIONS

Utility: For the purpose of this Section, utility means any service, such as electric power systems; gas distribution systems; telephone; water including fire protection water distribution; storm drain; sanitary sewer services; sand tailings lines; slurry lines; and associated services; and other pipes encountered during excavation of contaminated materials.

1.3 RELATED WORK

- A. Section 00800 - Special Conditions: Article SC-7
- B. Section 01561 - Construction Cleaning

PART 2 - PRODUCTS

(Not Used)

PART 3 - EXECUTION

3.1 GENERAL

- A. Removal or plugging of the utility shall not be undertaken until written approval for such work has been obtained from the Contractor.
- B. Unless otherwise specifically indicated on the Subcontract Drawings or otherwise authorized in writing by the Contractor:

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1. [All aboveground utilities shall be removed and disposed of in the tailings embankment unless shown on the Subcontract Drawings to remain.]**
2. All underground utilities within the tailings pile and from the contaminated areas shall be removed and disposed of in the tailings embankment and the ends of the utilities left shall be plugged.
3. [Underground utilities within uncontaminated areas shall be cut off 1 foot below finish grade with the ends plugged or capped.]**
4. All underground piping larger than 6 inches in nominal diameter abandoned in place or exposed during demolition activities shall be plugged with concrete. [The length of the concrete plug shall be a minimum of 1-1/2 times the diameter of the pipe.]**

C. Relocation of lines, where required, will be performed by others. When the abandoned line is connected to a line that will continue to be used, the abandoned line shall be disconnected first and the in-use line shall be sealed before plugging the abandoned line. The Subcontractor shall remove all subsurface lines encountered in excavations and shall solidly plug the on-site ends with a concrete grout, unless otherwise directed. Subsurface lines to be plugged or removed shall include mains shown on the Subcontract Drawings and all sub-mains and laterals connecting the buildings to the mains even though not specifically shown on the Subcontract Drawings.

D. The Contractor will obtain approval from the affected utility companies including, but not limited to, Gas Company of New Mexico, Public Service Company of New Mexico, and [U.S. West Communications]** before disturbing utilities. Utilities shall be protected from damage by demolition operations until they are removed from service.

[Text Deleted]**

[E.]**

Pipes and Ducts: Pipes and ducts shall be cut to size not greater than 20 feet in length. Pipes and ducts shall be emptied of contents only to the extent to permit removal and demolition. [Contaminated pipes and ducts with inside diameter greater than 6 inches shall be crushed, cut in half longitudinally, or filled with contaminated materials prior to disposal in the tailings embankment.]**

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[F. Crushable or compressible metal or other objects with voids (e.g., corrugated metal, automobile bodies, barrels, drums, including drums in debris Area "A", etc.) that can be compressed or crushed by regular construction equipment used for demolition or earthwork operations travelling over a hard surface shall be crushed or compressed to sizes no greater than 27 cubic feet in volume with least dimension not exceeding 6 inches.]**

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

Measurement for payment for removal, demolition and disposal of existing utilities will be on a lump sum basis.

4.2 PAYMENT

Payment for removal, demolition and disposal of existing utilities will be by the lump sum price quoted therefor in the Bid Schedule. The price quoted shall include full compensation for furnishing all labor, materials, equipment, tools and accessories and for performing all work specified in this Section including, but not limited to, disposal of the demolished materials and debris.

END OF SECTION 02060

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[SECTION 02081]*

HAZARDOUS AND NON-HAZARDOUS MATERIALS

PART 1 - GENERAL

1.1 SCOPE

- A. This Specification Section describes the requirements for handling, transportation of, and on-site disposal of 1) existing stockpiles and containers of radiologically contaminated hazardous materials, 2) existing stockpiles and containers of radiologically contaminated non-hazardous materials from the processing site, and 3) asbestos containing transite pipe if encountered. If transite pipe containing asbestos is encountered, the Subcontractor may be directed to dispose of the asbestos-containing transite pipe by Subcontract Change Notice.
- B. The Subcontractor shall furnish all labor, materials, services, supervision, insurance, and equipment necessary to carry out the handling and disposal work in accordance with regulations of the Environmental Protection Agency (EPA) and the Occupational Safety and Health Administration (OSHA) and any applicable State and local government regulations.
- C. The requirements specified in this Section are supplemental to the requirements specified in General Provisions, General Conditions and Special Conditions.

1.2 CODES AND REGULATIONS

- A. The Subcontractor shall comply with the applicable codes and regulations including, but not limited to, the following:
 - 1. U.S. Department of Labor, Occupational Safety and Health Administration ("OSHA"):
 - a. 29 CFR 1910.120, "Hazardous Waste Operations and Emergency Response".
 - b. 29 CFR 1926.58, "Asbestos".
 - 2. Environmental Protection Agency (EPA):
National Emissions Standard for Hazardous Air Pollutants (NESHAPS) 40 CFR 61, Subparts A and M

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3. State of New Mexico Environmental Improvement Division (EID).

a. Regulations Pertaining to Solid Waste Disposal Sites and Facilities.

b. Other provisions of the Solid Waste Regulations for non-hazardous waste.

B. Posting Regulations: Copies of applicable OSHA, EPA and New Mexico EID regulations shall be obtained by the Subcontractor and one copy of each shall be posted on the job site for the information of his employees.

1.3 EXPOSURE MONITORING

A. All air monitoring for hazardous materials and asbestos fiber shall be performed under the supervision of a "competent person" as defined in 29 CFR 1926.58(b), (e) and Appendix F. Air monitoring in areas where hazardous materials are stored or handled shall comply with 29 CFR 1910.120.

B. The Subcontractor shall document each air sample as required by the Site Manager. Documentation shall include, as a minimum, the date and time, sample number, exact sampling location, name of the individual performing sampling, sampling rate, sampling volume, analytical method, analytical results and limits of quantification and detection in accordance with National Institute of Occupational Safety and Health (NIOSH) analytical methods.

C. All samples shall be analyzed by a Contractor-approved laboratory using approved methods. Results are to be reported to the Site Manager and Contractor's Albuquerque Project Office Safety and Health Department within five (5) working days.

D. Preliminary air sampling shall be sufficient to establish the perimeters of restricted access hazardous work zones as approved by the Contractor.

E. Air samples shall be taken in the breathing zones of workers handling hazardous materials or asbestos containing transite pipe in sufficient numbers to permit estimation of peak and Time Weighted Average (TWA) exposures. As a minimum, for TWA exposures, one personal sample from the worker with the highest probable exposure is required in each asbestos control area per work shift.

1.4 SUBMITTALS

A. The Subcontractor shall, within fifteen days after receipt of Notice to Proceed, prepare and submit the following, as specified in this Section:

1. Hazardous Materials Handling and Disposal Plan.
2. Asbestos Handling, Transportaton and Disposal Plan.
3. Subcontractor Qualifications.
4. Qualifications of Health and Safety Personnel.
5. Training Certificates for all hazardous materials workers in compliance with the provisions of 29 CFR 1910.120.
6. Training Certificates for all Asbestos abatement workers in compliance with 40 CFR 763 (App. C)
7. Training Certificate of one supervisor certified by U.S. E.P.A. National Asbestos Training Center, Satellite Center, or equivalent.

B. Hazardous Materials Handling and Disposal Plan:

1. In addition to the submittals specified in Section 01300, the Subcontractor shall submit a detailed plan of the work procedures to be used in the handling of hazardous materials. Such plan shall include:
 - a. Construction details of the control barrier and the decontamination enclosure system.
 - b. Air monitoring plan.
 - c. Equipment decontamination plan.
 - d. Location of control areas.
 - e. Methods of handling and transporting containers of hazardous materials.
 - f. Disposal plan.
2. This plan shall be approved by the Contractor prior to the start of any work.
3. The Subcontractor and his assigned asbestos abatement and hazardous materials remediation specialist shall

meet with the Contractor prior to beginning work to discuss the plan in detail, including work procedures and safety precautions.

C. Asbestos Handling and Disposal Plan:

1. In addition to the submittals specified in Section 01300, the Subcontractor shall submit a detailed plan of the work procedures to be used in the handling of asbestos-containing materials and other hazardous materials. Such plan shall include:
 - a. Construction details of the control barrier and the decontamination enclosure system.
 - b. Air monitoring plan.
 - c. Equipment decontamination plan.
 - d. Location of control areas.
 - e. Layout of change rooms.
 - f. Personal protective equipment.
 - g. Type of wetting agent and asbestos sealer to be used.
 - h. Disposal plan.
2. This plan shall be approved by the Contractor prior to the start of any asbestos material work.
3. The Subcontractor and his assigned asbestos abatement and hazardous materials remediation specialist shall meet with the Contractor prior to beginning work to discuss the plan in detail, including work procedures and safety precautions.

D. Subcontractor Qualifications:

1. A statement demonstrating Subcontractor's understanding of hazardous materials remediation shall include the following as a minimum:
 - a. Knowledge of OSHA, EPA, NIOSH, DOT, and any other applicable regulations and requirements regarding hazardous materials remediation work practices and equipment.
 - b. Knowledge of the special safety hazards and requirements associated with and hazardous materials remediation work.

- c. Knowledge of the health hazards of site specific hazardous materials.
2. A statement demonstrating Subcontractor's qualifications and experience shall include the following as a minimum:
 - a. The number of years firm has been engaged in hazardous materials remediation.
 - b. List of projects completed in the last five years that are similar in scope to the remediation work. Include names, addresses and telephone numbers of the purchasers of services; the name of the industrial hygienist, if any, overseeing the work; location; and type of work.
 - c. List of all equipment, tools and materials available for use on the remediation work.
 - d. A description of the qualifications and experience of all asbestos, hazardous and non-hazardous material supervisors proposed for the remediation work. Include evidence of previous supervision of at least two hazardous material remediation projects similar in scope and nature to the present project, providing the name, address and telephone number of each of the purchasers of services.
 - e. A description of the hazardous materials training program for employees handling asbestos, hazardous and non-hazardous materials and their supervisors, including duration of course, subject matter and qualifications of the instructor. Minimal qualification for training shall include instruction on the hazards of chemical exposure, on the use, fitting and limitations of respirators and protective clothing, on all aspects of asbestos abatement and hazardous materials work procedures, protective measures, and safety precautions. Describe any special expertise of any of the workers handling asbestos, hazardous and non-hazardous materials.
 - f. A breakdown of the composition of the workforce proposed for handling hazardous materials including percentage of personnel trained and/or experienced, in the handling of hazardous materials.
 - g. A copy of the Subcontractor's Personal Protective Equipment Program including the Respiratory Pro-

tection Program. The Respiratory Protection Program shall comply with 29 CFR 1926.134.

- h. A description of the Subcontractor's Health and Safety surveillance for the employees. Minimal qualifications shall be as specified in 29 CFR 1926.58 and/or applicable state regulations.
- i. A statement regarding the Subcontractor's insurance status.

E. Qualifications of Health and Safety Personnel:

- 1. A statement demonstrating the qualifications and experience of the person responsible for Health and Safety and of air monitoring technicians that the Subcontractor shall employ on this Project shall include the following as a minimum:
 - a. A record of experience qualifying the Health and Safety person as a professional specializing in asbestos abatement and hazardous materials remediation. As a minimum, this shall include a review of previous experience in hazardous materials remediation projects, including the names, addresses and telephone numbers of the purchasers of the services; locations of the work performed; and a review of the industrial hygiene activities performed for each job.
 - b. A statement indicating the Subcontractor's Health and Safety person's degree of authority for effecting corrective actions deemed necessary in his or her judgement for hazardous materials remediation work.
 - c. A description of each air monitoring technician's training in hazardous materials air monitoring, and a review of previous air monitoring experience in hazardous materials removal projects, including the names, addresses and telephone numbers of the purchasers of the services; locations of the work performed; and a review of all air monitoring and other inspection activities performed for each job.
 - d. A statement for each person who may be doing asbestos air sample analysis, indicating the qualifications, training program and experience in asbestos air sample analysis, analytical methods used, dates of training, and average number of

asbestos samples analyzed per month in the last twelve months.

PART 2 - PRODUCTS

2.1 EQUIPMENT

- A. The Subcontractor shall include in the handling, transportation and disposal plans specified in Article 1.4 above, the construction materials, equipment and facilities to be provided.
- B. Construction materials and equipment shall be cleaned and free of asbestos fibers and other hazardous materials (and radioactive contamination as specified in Article SC-8 of the Special Conditions) before removal from hazardous materials and/or radiological site-controlled work areas.
- C. The Subcontractor shall furnish transport vehicles for hauling the hazardous materials to the disposal area and shall provide excavating and compacting equipment for disposal of the hazardous materials in the disposal area.
- D. The Subcontractor shall provide all necessary transport vehicles for hauling the hazardous materials that NMEID will allow for deposit at the disposal site. The Subcontractor's equipment shall conform to U.S. Department of Transportation requirements (49 CFR 170-173) for this on-site haul.

PART 3 - EXECUTION

3.1 GENERAL

- A. Handling, transportation and disposal of hazardous and non-hazardous materials shall conform to the applicable requirements of New Mexico EID Pertaining to Solid Waste Disposal Sites and Facilities.
- B. The hazardous and non-hazardous materials storage area is located east of the tailings pile at N 1,603,690, E 512,040 (southwest corner of storage area). The storage area dimensions are approximately 100 feet by 200 feet. The storage facility is fenced, bermed, posted and locked. Inside the storage area are approximately 185 drums. The drums are placed on pallets, separated by compatibility, and labeled per EPA regulations.

- C. The hazardous and non-hazardous materials storage facility is a permanent feature of the site until the drums have either been removed or deposited in the disposal cell. All site activities shall avoid this area.
- D. Transport and disposal of hazardous and non-hazardous materials shall conform to 49 CFR 170-173.
- E. Any radiologically contaminated asbestos scrap shall be transported to the disposal site and disposed of in the areas designated by the Contractor. The use of such designated area(s) shall appear as part of the Certificate of Designation for the tailings embankment.
- F. The Subcontractor shall demolish the storage area fence and berm after all materials stored therein have been disposed of as specified.
- G. The Subcontractor shall construct restricted access hazard work zones around any areas where hazardous materials are handled. The hazard work zone shall provide a "contamination" area and a "decon" area. The contamination area can only be entered by properly trained personnel and the decon area is designated for decontamination practices such as removal of gear, washing, etc.

3.2 RADIOLOGICALLY CONTAMINATED HAZARDOUS AND NON-HAZARDOUS WASTE

- A. All hazardous material for disposal have been approved for disposal into the cell.
 - 1. Types of Hazardous and Non-Hazardous Wastes Radiologically Contaminated:
 - a. Drums of radioactive sludge.
 - b. Drums of cotton seed insulation.
 - c. Drums of radioactive liquid.
 - d. Drums of radioactive organic liquid.
 - e. Pail of powdered solids.
 - f. Drums of radiologically contaminated soil.
 - g. Drums of radiologically contaminated flammable sludge.

- h. Drums of radiologically contaminated soils/trash/
assorted debris.
 - i. Selenium-rectifier system.
2. Characterization of Wastes: The Subcontractor shall review the characterization data for the radiologically contaminated hazardous and non-hazardous wastes. The data are available in a report prepared by the Contractor dated June 18, 1990.
 3. Disposal Location, Transport, and Burial: The radiologically contaminated hazardous and non-hazardous waste designated for disposal shall be transported and buried in the northwest quadrant of the tailings embankment as directed by the Contractor. Drums shall be placed on the surface or in an excavation at the final disposal location, covered with one foot of loose fill, and rolled by machinery. Fill surrounding drums in the immediate vicinity shall be rolled to a visibly firm condition, but need not be tested for compaction to minimize worker exposure. All materials packed inside 85-gallon poly drums shall be removed and the poly drum shall be decontaminated and removed off-site or shredded and placed in the tailings embankment.
 4. Cleaning Work Areas: Work areas where hazardous materials have been handled shall be cleaned with significant assurance that no residual contamination remains.
- 3.3 DEMOLITION, HANDLING AND DISPOSAL OF ASBESTOS CONTAINING TRANSITE PIPE (ACTP)
- A. Transite Pipe: Transite pipe that is discovered during remedial action activities shall be handled by employees trained in the hazards of asbestos in accordance with OSHA 29 CFR 1926.58. The transite pipe shall be immediately wetted with water and kept wet until buried in the tailings disposal cell. Employees who handle excavated transite pipe will be monitored for airborne asbestos fibers by the Subcontractor's Industrial Hygienist to ensure that exposure remains below the permissible exposure levels.
 - B. Personnel: Only personnel who are adequately trained and knowledgeable in the hazards of asbestos, proper work procedures, use of respiratory protection, and use of

personal protective equipment shall handle the ACTP during the disposal process. Personnel who perform this work shall meet the applicable regulations of OSHA 29 CFR 1926.58.

- C. Asbestos Emissions: No visible emission of dusts will be allowed during the handling, transportation, or disposal process of the ACTP. Adequate dust control measures such as wet methods shall be used to prevent any of the ACTP from releasing fibers. Water sprays shall be used to control fibers during the burial of ACTP in case pipe is broken or crushed.
- D. Handling ACTP: All personnel that handle ACTP during the disposal process shall wear, at a minimum, a half mask respirator with High Efficiency Particulate Air (HEPA) filters.
- E. Work Zones: Work zones shall be constructed around all areas where ACTP is handled during the disposal process. Only personnel adequately trained and protected may enter the work zone area.
- F. Air Monitoring:
 - 1. Air monitoring for asbestos shall be performed by the Subcontractor on personnel who have the highest potential exposures.
 - 2. Results from this monitoring shall be made available to the personnel involved in the disposal process.
 - 3. Air monitoring and analytical techniques shall comply with OSHA 29 CFR 1926.58 requirements.
- G. Transportation of ACTP: All ACTP shall be loaded into a covered vehicle which has been properly lined with polyethylene plastic. The covered vehicle shall ensure that fibers are not released during transportation to the tailings embankment. The inside lining will expedite the decontamination process once the ACTP is off-loaded.
- H. Disposal of ACTP: All ACTP shall be buried within 24 hours of transportation to the tailings embankment. The ACTP shall be covered with one foot of loose fill and rolled by machinery to remove voids. The area shall then be rolled to a visibly firm condition but need not be tested for compaction to minimize worker exposure. The ACTP shall be disposed of at a location as directed by the Contractor, above or adjacent to the existing asbestos disposal location.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

Measurement for payment for handling and disposal of existing stockpiles of hazardous and other non-hazardous waste materials stored in the existing storage area will be on a lump sum basis.

4.2 PAYMENT

Payment for handling and disposal of existing stockpiles of hazardous and other non-hazardous waste materials stored in the existing storage area will be at the lump sum price quoted in the Bid Schedule. The price quoted shall include full compensation for furnishing all labor, materials, equipment, tools, accessories and incidentals and for performing all work as specified including, but not limited to, all fees, permits and all other requirements necessary for compliance with the codes and standards.

END OF SECTION 02081

[c.]** Within 30 days of the completion of well sealings, the Subcontractor shall submit a written well sealing report to the Office of the State Engineer. This report shall contain a list and a map showing all wells that were sealed, a statement that all wells were sealed in accordance with Specification Section 02090, and an explanation of any deviation from the Specification. A copy of the report shall be submitted to the Contractor.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

Measurement for payment for sealing of abandoned wells will be by the linear feet of wells sealed. [The measurement will be from the bottom of the well to the top of the soil-bentonite mixture.]**

4.2 PAYMENT

Payment for sealing of abandoned wells will be by the unit price per linear foot quoted therefor in the Bid Schedule. The price quoted shall include full compensation for furnishing all materials, equipment, tools, accessories, incidentals, labor, and for performing the work specified in this Section including decontamination and disposal of materials and equipment.

END OF SECTION 02090

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SECTION 02090

SEALING ABANDONED WELLS

PART 1 - GENERAL

1.1 SCOPE

- A. This Specification Section describes the requirements for sealing of existing test wells. The approximate locations of the known wells to be sealed are shown on the Subcontract Drawings.
- B. All known wells to be sealed are shown on the Subcontract Drawings. All other wells shall be protected, unless otherwise directed by the Contractor.

1.2 APPLICABLE PUBLICATIONS

- A. The Publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only:
 - 1. Environmental Protection Agency (EPA): Manual of Water Well Construction Practices, EPA-570/9-75-001.
 - 2. American Society for Testing and Materials (ASTM): C150-86 Standard Specification for Portland Cement (Rev. A).

1.3 SITE CONDITIONS

Subcontract Drawings show all known wells on and in the vicinity of the site and work areas. Wells not designated to be sealed shall be protected to prevent damage or contamination with foreign substances during construction. Such wells, if damaged, shall be reconstructed by the Subcontractor at no cost to the Contractor.

PART 2 - PRODUCTS

2.1 MATERIALS

- A. Approved sealing materials are as follows:
 - 1. Cement used for sealing mixtures shall meet the requirements of ASTM C150 "Standard Specification for

Portland Cement," types II (moderate sulfate resistance) or V (high sulfate resistance). The cement type shall be compatible with groundwater encountered in the wells to be sealed.

2. Cement grout shall be composed of one sack of Portland Cement (94 pounds), with 3 to 5 percent, by weight, of commercially processed sodium bentonite, to not more than 6 gallons of potable water in order to achieve a weight of not less than 15 pounds per gallon. The weight of the neat cement shall be sufficient to prevent flow of water into the well from any aquifer penetrated. Calcium chloride may be added to a Portland cement grout to accelerate the set, but it shall not exceed two (2) pounds per sack of dry cement.

PART 3 - EXECUTION

3.1 GENERAL

- A. Wells shall be sealed in a manner that is compatible with the well design and so as not to act as a conduit for future contamination of groundwater. Detailed well sealing criterion are outlined in the Environmental Protection Agency (EPA) Manual of Water Well Construction Practices, EPA-570/9-75-001, Article 56, pages 133-142. The basic premise of the EPA criteria is to seal abandoned wells and to restore, as much as possible, the geohydrologic regime in existence before the well was constructed. The following criteria shall apply to all wells to be sealed on and in the vicinity of the site:
 1. Well sealing operations shall be performed by a licensed drilling contractor, with demonstrated experience in sealing of wells.
 2. All wells shall be sealed in such a manner that they will not act as a conduit for fluids to flow from the specific strata in which they were originally encountered.
 3. All wells shall be located in the field and sealed by the Subcontractor prior to the beginning of stripping, grading or other surface-disturbing activities that will hinder the detection and sealing of wells. If any well cannot be located after a reasonable search, the Subcontractor shall, prior to the commencement of the well sealing operations, submit to the Contractor

a written report documenting the well number, the areas covered and the effort spent in the search.

4. Upon discovery of any unknown wells during the earth-work operations, the Subcontractor shall give the Site Manager immediate verbal notice followed by written confirmation within 24 hours.
5. Wells shall be sealed according to the following procedures:
 - a. The Subcontractor shall check each well to be sealed for obstructions that may interfere with the sealing operation and shall remove any such obstructions [and notify the Contractor]** prior to starting filling operations.
 - b. In order to seal the well properly it is preferable to remove the well casings by methods approved by the Contractor as outlined in Article 56 of the EPA Manual of Water Well Construction Practices. Upon removal, if the casings or the materials are found to be contaminated, they shall be decontaminated as required by the Contractor, or disposed of in the tailings embankment after breaking into lengths not greater than 20 feet. If casing removal is not feasible, the casing shall be perforated, ripped or otherwise disintegrated by methods outlined in Article 56, to ensure grouting of the entire annular space between the casing and the borehole.
 - c. The approved methods for the placement of a grout seal shall be as follows:
 - 1) In wells where casing is removed, the cement grout shall be introduced at the bottom of the well or interval to be sealed (or filled) and placed progressively upward to the top of the well. The grout shall be placed by the use of grout pipe, drop pipe, tremie, cement bucket or dump bailer, in such a way as to avoid segregation or dilution of the sealing materials. Dumping grout material from the top of the well shall not be permitted.
 - 2) In wells where casing is not removed, the calculated amount of neat cement grout required to fill the well interval plus the annular space outside the lining shall be placed within the space to be grouted, running the

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grout through a special cementing packer manufactured for this purpose and installed immediately above the perforated or ripped zone. The grout shall be injected at a pressure calculated to be at least 50 psi greater than the normal hydrostatic pressure within the well at the point of injection.

- d. For all wells located in areas where the construction grade elevation will be greater than or equal to the existing grade surface, existing casings and cement grout seals shall be removed to a minimum depth of 2 feet below the existing grade surface, or as required by the Contractor. Grouting shall extend to 2 feet below the existing grade. The interval from the top of the grout to the existing grade surface shall be filled with a mixture of uncontaminated fine-grained (ML or CL) soil and a minimum of 25 percent by weight of commercially processed sodium bentonite and shall be hand-tamped, as required.
 - e. For all wells located in areas where the construction grade surface will be less than the existing grade surface (i.e. in areas of proposed cut), the existing casings and cement grout seals shall be removed to a minimum of 2 feet below the grade cut elevation as shown on the Subcontract Drawings or as required by the Contractor. Grouting shall extend to 2 feet below the grade cut elevation. The interval from the top of the grout to the existing surface shall be filled with a mixture of uncontaminated fine-grained (ML or CL) soil and a minimum of 25 percent by weight of commercially processed sodium bentonite and shall be hand-tamped, as required.
6. The Subcontractor shall provide the following notification of the well sealing operation:
- a. The Subcontractor shall notify the Contractor [10 days]** prior to commencement of well sealing operations.
 - b. [The Subcontractor shall notify the Contractor of the results of checking each well for obstructions prior to starting filling operations.]**

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SECTION 02110

SITE CLEARING

PART 1 - GENERAL

1.1 SCOPE

This Specification Section describes the requirements for clearing of vegetation, stripping of topsoil, and disposal of cleared and stripped materials.

1.2 DEFINITIONS

- A. Clearing: Clearing is defined as removing brush, other vegetation and trees. All such vegetation and trees shall be cleared down to the natural ground surface.
- B. Topsoil: Topsoil shall consist of natural, friable soil representative of productive soils in the vicinity, and includes roots, organic materials, vegetation, and other materials unsuitable for structural fill. [Topsoil shall be free of any admixture of subsoil, foreign matter, toxic substances, and any material or substance that may be harmful to plant growth.]**
- C. Stripping of Topsoil: [This shall consist of the removal of topsoil, including all roots, organic materials, vegetation, and other unsuitable material.]** Depth of stripping shall be 6 inches unless otherwise indicated elsewhere in the Subcontract Documents.

1.3 RELATED WORK

- A. Section 02200 - Earthwork: Disposal of Contaminated Materials
- B. Section 02935 - Seeding: Topsoil

PART 2 - PRODUCTS

(Not Used)

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PART 3 - EXECUTION

3.1 PRESERVATION OF PROPERTY

Existing improvements, adjacent property, [monitor wells,]** utility and other facilities, and trees and plants that are not to be removed shall be protected from injury or damage.

3.2 CLEARING

- A. Clearing shall be performed on all areas of construction activities. All clearing materials (i.e. brush, other vegetation and trees) [from contaminated areas]** shall be considered contaminated for disposal purpose.
- B. Clearing materials shall be reduced in size as required by the Contractor [and disposed of in fills or in the tailings embankment, depending on whether materials are contaminated or uncontaminated, as specified in Section 02200.]** Burning of clearing materials will not be permitted.

3.3 STRIPPING

- A. Uncontaminated Areas: Stripping will be required in borrow areas for radon barrier and erosion protection materials, and where excavated materials are to be used as fill.
- B. Contaminated Areas: In excavation areas where the contaminated surfaces are covered by vegetation, the removal of topsoil may be carried out together with excavation in one operation.
- C. Stripped material shall be disposed of as specified in Article 3.4.

3.4 STOCKPILING OF UNCONTAMINATED TOPSOIL

- A. Uncontaminated Topsoil: Stockpiling of uncontaminated topsoil shall be performed only when required by the Contractor upon his determination that there is sufficient uncontaminated organic topsoil in the area to justify the operation; otherwise the materials shall be disposed of in an onsite spoil area approved by the Contractor, or as Subcontractor's property. Stockpiled topsoil will be used in finish grading and seeding of the site. Seeding is specified in Section 02935.

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- B. Contaminated Topsoil: Topsoil from contaminated areas shall be disposed of in the tailings embankment as specified in Section 02200.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

Separate measurement for payment will not be made for work specified in this Section. All such work will be considered incidental to the applicable related items of work.

4.2 PAYMENT

Separate payment will not be made for work specified in this Section. Full compensation for such work will be considered incidental to the applicable related items of work.

END OF SECTION 02110

SECTION 02141

DEWATERING AND DRAINAGE

PART 1 - GENERAL

1.1 SCOPE

- A. This Specification Section describes the requirements for dewatering and drainage of work areas and disposal of surface water.
- B. If the groundwater level is higher than the bottom of excavation, the Subcontractor shall dewater the excavation, as required, for performance of work in the dry. Stormwater shall be removed from the excavation to maintain dry conditions.
- C. A dewatering scheme for work in uncontaminated areas is limited to [Text Deleted]** drainage ditches (diversion) and culvert as shown on the Subcontract Drawings. The Subcontractor shall, as required, design and construct additional gravity or pump systems or a combination of both systems for dewatering of uncontaminated water from work areas.
- D. A gravity dewatering scheme for work in contaminated areas is limited to proposed temporary drainage ditches, existing temporary drainage ditches, existing culverts and existing wastewater retention basin as shown on the Subcontract Drawings. [The Subcontractor shall, as required, design and provide additional gravity or pump systems for dewatering of contaminated water from work areas.]** Dewatering from windblown tailings and off-pile areas will be accomplished incrementally as removal of contaminated materials proceeds.
- E. The Subcontractor shall furnish, install and maintain [new drainage pipes (includes culvert pipes) shown on the Subcontract Drawings, and shall maintain existing drainage pipes]**.

1.2 DESCRIPTION

- A. The work of this Section includes, but is not limited to: dewatering [work areas by installing sump pumps in low areas and]** excavations and disposal of water by providing drainage facilities including swales, ditches,

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interceptor dikes, pipes, and other drainage structures. Water from uncontaminated areas shall be pumped, or allowed to flow by gravity, to diversion ditches or drainage ditches leading to existing drainage courses that flow offsite. Water from contaminated areas including the tailings pond shall be pumped, or allowed to flow by gravity, to collection ditches leading to the wastewater retention basin. Wastewater from decontamination pad shall be collected into the existing sump [and either recycled for decontamination, routed to the retention basin, or used for dust control in contaminated areas.]**

- B. The Subcontractor shall be responsible for designing, scheduling, utilizing, providing, and maintaining any dikes, ditches, channels, flumes, drains, pipes, sumps, pumping equipment, monitoring wells, other subsurface dewatering devices, and other temporary diversion and protective work necessary to ensure that construction shall be performed in areas free from water, and that the top of the present tailings pile shall be kept in a drained condition free of standing water. Existing ditches, pipes, culverts, and wastewater retention basin shall be incorporated in the Subcontractor's dewatering and drainage schemes.

1.3 WORK NOT INCLUDED

Drainage work related to construction facilities specified in Section 01500 is not included in the scope of work of this Section.

1.4 RELATED WORK

- A. Section 01300 - Submittals
- B. Section 02200 - Earthwork
- C. Section 02771 - Membrane Liner
- D. Section 02935 - Seeding

1.5 APPLICABLE PUBLICATIONS

- A. The Publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only:

- 1. American Association of State Highway and Transportation Officials (AASHTO):

M36-86 Corrugated Steel Pipe, Metallic Coated for
 Sewers and Drains

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2. National Corrugated Steel Pipe Association (NCSPA):
Corrugated Steel Pipe Installation Recommendations

PART 2 - PRODUCTS

2.1 MATERIALS AND EQUIPMENT

- A. The Subcontractor shall furnish all materials, equipment and appurtenances required for furnishing, installing and removing dewatering facilities, and shall also supply sufficient standby pumping and auxiliary equipment to preclude any interference to pumping operations during periods of breakdown and maintenance.
- B. Drainage Pipes shown on Subcontract Drawings:
1. Drainage pipes: Drainage pipes (CSP) shown on the Subcontract Drawings shall be corrugated steel pipe conforming to AASHTO M36, Type I (circular section), and shall be provided complete with fittings, coupling bands, and all required accessories.
 2. Diameters of pipes shall be as shown on the Subcontract Drawings. Unless otherwise indicated on the Subcontract Drawings the thickness of the pipe shall be 16 gage minimum.

PART 3 - EXECUTION

3.1 DEWATERING PROCEDURES

- A. Water from uncontaminated areas shall be pumped, or allowed to flow by gravity to natural drainage courses including diversion ditches. Erosion protection features including, but not limited to, silt fences, check dams, temporary detention ponds and the like shall be provided by the Subcontractor [Text Deleted]** to minimize off-site siltation in the receiving stream. Subcontractor shall submit to the Contractor, for review, his design, layout and calculations, fifteen days prior to the construction of such features.

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- B. Water from contaminated areas shall be pumped or allowed to flow by gravity to collection ditches leading to the wastewater retention basin. Water from the wastewater retention basin may be used for dust control[, decontamination on the decontamination pad]** and moisture control in contaminated areas of work. Silt fences may be required in some areas during excavation.
- C. The water level in excavation shall be maintained below the lowest point in the excavation until the backfilling of the excavation has been completed, unless otherwise approved by the Contractor.
- [D. Ponding of surface water runoff on contaminated materials during storms shall be minimized. The Subcontractor shall maintain in-progress work or furnish additional drainage facilities as required to minimize ponding.]**

3.2 [DRAINAGE DITCHES]**

- [A]** Diversion and collection ditches shown on the Subcontract Drawings shall be excavated as specified in Section 02200.
- [B. Additional drainage ditches shall be constructed by the Subcontractor as required for collection of contaminated wastewater into the retention basin or to divert uncontaminated water offsite.]**

3.3 DRAINAGE PIPES SHOWN ON SUBCONTRACT DRAWINGS

- A. Unless otherwise shown on the Subcontract Drawings, excavation, installation, backfilling and compaction for drainage pipes shown on the Subcontract Drawings shall conform to the requirements of the National Corrugated Steel Pipe Association (NCSPA). All pipes utilized for temporary drainage during construction shall be removed by the Subcontractor at the completion of site work unless otherwise indicated on the Subcontract Drawings.
- B. The Subcontractor shall be responsible for the maintenance and repair of the drainage pipes.

3.4 SEEDING AND MULCHING

Sides and inverts of ditches, not finished with membrane liner or riprap protection, shall be seeded and mulched as specified in Section 02935.

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3.5 MAINTENANCE

The Subcontractor shall be responsible for the maintenance of drainage facilities during construction. Drainage ditches and pipes may require periodic cleaning. Pipes and ditches shall be kept free of sediment deposits, debris and other materials that may restrict or prevent drainage. The Subcontractor, when directed by the Contractor, shall remove and replace all items not functioning properly, including membrane liner, because of clogging, damage, or deterioration.

3.6 REMOVAL

A. When no longer required for water control:

1. Dewatering equipment shall be removed, decontaminated as required, and disposed of as Subcontractor's property.
2. Contaminated sediments deposited in ditches and the wastewater retention basin shall be removed and placed in the tailings embankment as specified in Section 02200 and as required by the Contractor. Pipes shall be removed and demolished as specified in Section 02050 and the demolished debris shall be placed in the tailings embankment as specified in Section 02200.
3. Areas occupied by the wastewater retention basin, dike, spillway, and temporary drainage ditches shall be restored and graded as specified in Section 02200. Membrane liner shall be disposed of as specified in Section 02050.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

Separate measurement for payment will not be made for work specified in this Section.

4.2 PAYMENT

Separate payment will not be made for dewatering and drainage. Full compensation for such work will be considered to be included in the applicable related item/s of Work under the Subcontract.

END OF SECTION 02141

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SECTION 02200

EARTHWORK

PART 1 - GENERAL

1.1 SCOPE

A. This Specification Section covers the following:

1. The earthwork for, or related to, the following operations:
 - a. Excavation of contaminated materials and construction of the tailings embankment.
 - b. Construction of temporary drainage ditches and permanent drainage swales.
 - c. Subgrade preparation including conditioning of existing tailings pond area and other soft spots, riprap toe protection, and for temporary drainage ditches receiving membrane liner.
 - d. Finish grading of the site including excavation, filling and backfilling of site areas, and restoration and regrading, as required, of site areas including, but not limited to, areas occupied by the wastewater retention basin, spillway and temporary drainage ditches shown on the Subcontract Drawings.
 - e. Excavation and backfill of the demolition debris burial pit.
 - f. Existing East-West Access Road within the limits of the contaminated materials excavation.
 - [g. Borrow area development and restoration.]**
2. Disposal of Demolished Materials and Debris:
 - a. Resulting from work specified in Sections 02050, 02060, 02090, 02110, and 02141 (Other Contaminated Materials).
 - b. Existing stockpiles from Area A.
 - c. Existing stockpiles from Area B.

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3. Furnishing and installing displacement monuments as shown on the Subcontract Drawings.

1.2 WORK NOT INCLUDED

- A. Earthwork related to the construction of offsite construction facilities is not included in this Section.
- B. Earthwork for pipe trenches is not included in this Section.

1.3 RELATED WORK

- A. Section 01300 - Submittals
- B. Section 02050 - Demolition
- C. Section 02060 - Existing Utilities
- D. Section 02090 - Sealing Abandoned Wells
- E. Section 02110 - Site Clearing
- F. Section 02141 - Dewatering and Drainage
- G. Section 02278 - Erosion Protection
- H. Section 02935 - Seeding

1.4 DEFINITIONS

- A. Contaminated materials and uncontaminated materials are defined in Article SC-1 of the Special Conditions.
- B. Excavation: Excavation shall include excavation of topsoil, silt, clay, sand, gravel, talus, soft or disintegrated rock, boulders or detached pieces of solid rock; and shall also include removal and reshaping of mill tailings deposits and other contaminated material. Excavation shall be classified into: 1) Contaminated materials excavation and 2) Uncontaminated materials excavation.
- C. Contaminated Materials (C.M.) Excavation: Contaminated materials excavation shall include excavation of contaminated materials from the existing tailings pile, and wind-blown and off-pile areas, including wet tailings, building debris and rippable rock (as defined below). [Text Deleted]**

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- D. Uncontaminated Materials (U.C.M.) Excavation: Uncontaminated materials excavation shall include excavations of uncontaminated materials from the various areas of the site, including but not limited to excavations for embankment, drainage ditches, demolition debris burial pit, trenches, swales, and finish grading.
- E. Overexcavation: Overexcavation is defined as excavation carried out beyond the lines and grades indicated on the Subcontract Drawings or in the Subcontract Specifications.
- F. Percent Maximum Density: Percent maximum density is a percentage of the maximum density obtained by the test procedure presented in ASTM D698, as applicable.
- G. Optimum Moisture Content: See ASTM D698.
- H. Topsoil: [See Section 02110.]**
- I. Tailings Embankment: Tailings embankment shall consist of relocated contaminated materials from other areas of the site, contaminated in situ and relocated materials of the tailings pile, demolished materials and debris, and the protective cover materials placed and compacted as shown on the Subcontract Drawings and as specified in this Section and Section 02278.
- J. Cover: Cover shall consist of layers of the following fill materials placed over the contaminated materials in the tailings embankment as shown on the Subcontract Drawings:
 - 1. Bedding material and riprap material.
 - 2. Radon barrier material.
- K. [Finish grading shall include embankment, excavation,]** fill and backfill of various areas of the site and the vicinity including, but not limited to, the areas occupied by the wastewater retention basin, spillway, and temporary drainage ditches, as required and as specified in this Specification.
- L. Temporary Drainage Ditches: Temporary drainage ditches include diversion and collection ditches as shown on the Subcontract Drawings.
- R. Rippable Rock: Rippable rock is defined as mineral matter in place and of such hardness and texture that it can be

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effectively loosened or broken down by ripping in a single pass with a late model tractor-mounted hydraulic ripper equipped with one digging point of standard manufacturer's design adequately sized for use with and propelled by a crawler-type tractor rated between [500]** and [550]** net flywheel horsepower, operating in low gear [Text Deleted]**

- S. Disposal of Demolished Materials and Debris: Disposal shall include loading and transporting demolished materials and debris from existing stockpiles or from demolition operations performed under the Subcontract, and unloading, placing and compacting in the final placement location as indicated on the Subcontract Drawings.

1.5 APPLICABLE PUBLICATIONS

- A. The Publications listed below form a part of this Specification to the extent referenced. The Publications are referred to in the text by the basic designation only:

1. American Society for Testing and Materials (ASTM):

D422-63	Method for Particle-Size Analysis of Soils
D698-78	Test Methods for Moisture-Density Relations of Soils and Soil-Aggregate Mixtures Using 5.5 lb. (2.49-kg) Rammer and 12-in. (305-mm) Drop
D1140-54	Test Method for Amount of Material in Soils Finer than the No. 200 (75-um) Sieve
D1556-82	Test Method for Density of Soil in Place by the Sand-Cone Method
D2167-84	Test Method for Density and Unit Weight of Soil In-Place by the Rubber-Balloon Method
D2216-80	Test Method for Laboratory Determination of Water (Moisture) Content of Soil, Rock, and Soil-Aggregate Mixtures
D2487-85	Test Method for Classification of Soils for Engineering Purposes
D2922-81	Test Methods for Density of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)

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- D3017-78 Test Method for Moisture Content of Soil and Soil-Aggregate in Place by Nuclear Methods (Shallow Depth)
- D4318-84 Test Method for Liquid Limit, Plastic Limit, and Plasticity Index of Soils
- D4643-87 Standard Test Method for Determination of Water (Moisture) Content of Soil by Microwave Oven Method

[2. Text Deleted.]**

1.6 QUALITY ASSURANCE

- A. [The Contractor will take soil samples and perform moisture-density, gradation and soil classification-related tests to ascertain that the work is being performed in compliance with these Specifications.]** Samples may be taken at the place of excavation, stockpiles, or on the fill itself. The Contractor will conduct the density and other tests on the fill and related laboratory testing as frequently as the Contractor considers necessary. The Subcontractor shall remove surface material and render assistance as necessary to enable sampling and testing.
- B. Methods of Sampling and Testing:
 - 1. In-Place Density: ASTM D1556, D2167, or D2922
 - 2. Liquid Limit, Plastic Limit and Plasticity Index: ASTM D4318
 - 3. Particle Size Analysis: ASTM D422
 - 4. Percentage Passing No. 200 Sieve: ASTM D1140
 - 5. Moisture Content: ASTM D2216, [D3017]** or D4643
 - 6. Laboratory Moisture-Density Relations: ASTM D698
 - 7. Soil Classification: ASTM D2487
 - 8. In-Place Moisture Content: ASTM D3017
- C. Suitability of Materials: The suitability of all materials for foundations and backfill will be determined by

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the Contractor. Fill material shall be approved material from borrow areas or required excavations.

- D. The Contractor may direct that inspection trenches or test pits be cut into fills to determine that the Specifications have been met. Such trenches or pits will be of limited depth and size, and shall be backfilled with the material excavated therefrom, or other fill material meeting the requirements for the zones cut into. Backfill shall be compacted to a density at least equal to that of the contiguous fill.
- E. When the Contractor directs inspection trenches or test pits to be excavated into fills and/or backfills and materials are found to meet all Specification requirements, the excavation and refilling shall be paid for as additional work pursuant to the applicable provisions of the General Conditions. Inspection trenches or test pits, and the refilling of the same, shall be at the Subcontractor's expense when it is found that the materials do not meet the Specification requirements.
- F. Tolerances: See Specification Section 01052, Article 1.5.

1.7 SUBMITTALS

General submittal requirements are specified in Section 01300.

1.8 PROTECTION

- A. [The Subcontractor shall preserve and protect the following:]**
 1. Trees, shrubs and other features remaining as a portion of final grading.
 2. Bench marks and monuments, existing structures, fences, walks, pavings, curbs, etc. from equipment and vehicular traffic.
 3. Utilities not specified for removal.
 4. Excavations from cave-in by shoring, bracing, sheet-piling, underpinning or by other methods.
 5. Bottoms of excavations and soil adjacent to and beneath foundations from frost.

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6. [Perimeter of excavation to prevent surface water runoff into excavation.]**
7. Monitor wells to be saved.
8. Finished work.
9. Existing features not part of this Subcontract, e.g., mine shaft access, mine vents, existing roads, or existing well(s).
10. [Archaeological areas identified by the Contractor or encountered during the work.]**
- [11. Displacement monuments.]**

PART 2 - PRODUCTS

2.1 UNCONTAMINATED FILL MATERIALS

A. General:

- [1. Fill materials shall be obtained from sources as specified below:
 - a. Uncontaminated common/general fill materials shall be obtained from required excavations or from the borrow area for radon barrier shown on the Subcontract Drawings.
 - b. Radon barrier materials shall be obtained from the borrow area for radon barrier shown on the Subcontract Drawings.
 - c. Other fill materials shall be obtained from required excavations and borrow areas shown on the Subcontract Drawings, or from other Contractor approved borrow areas selected by the Subcontractor.]****
2. The Subcontractor shall be responsible for obtaining required permits and approvals for Subcontractor-selected borrow areas in accordance with the provisions of Article SC-11 of the Special Conditions. Designation of a borrow area does not indicate that all material within that area meets the Specification requirements specified herein.

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- a. The Subcontractor shall make his own determination of any processing or selective excavation that may be required, and shall perform testing as required to meet the Specifications for the various construction materials.
 - b. Submittals for approval of sources proposed for use by the Subcontractor shall include boring logs, borrow area maps and supporting laboratory test data. [The Subcontractor also shall provide evidence of availability, right of access to private property, including access by the Contractor, for sampling and testing, and his plan for hauling the materials to the site.]** Submittals for approval of sources for uncontaminated fill materials shall be received by the Contractor at least 30 days [Text Deleted]**** before use of the material at the site. The Contractor may perform additional tests to determine if the materials meet the requirements specified herein.
 - [c. Approval of Subcontractor proposed borrow sources will be based on evidence of compliance with the requirements specified herein and shown on the Subcontract Drawings, on the results of Subcontractor and Contractor tests, and on verification by the Subcontractor that the volume of materials available is sufficient for construction requirements.]****
3. Gradations: Gradations specified shall be as determined after delivery to the site, except where normal compaction operations reduce materials to acceptable sizes, in which case in-place gradations shall be acceptable. A delay of 24 hours may result between sampling and availability of test results.
- B. Uncontaminated Common/General Fill Materials: Uncontaminated fill materials for general fill shall conform to the following requirements. All references to "uncontaminated fill" or "uncontaminated fill materials" shall mean "uncontaminated common/general fill" or "uncontaminated common/general fill materials".
1. Uncontaminated fill material shall not contain more than 5 percent organic material, by volume, or other deleterious substances.

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2. Maximum particle size shall not be greater than the compacted lift thickness in any dimension, except as noted hereinafter. Individual large stones shall be distributed within the fill materials to provide visual void-free mass, and be able to meet the requirements of Article 3.8. For fill areas under pavement locations, maximum stone dimension allowed in the upper 6 inches of the fill shall be 4 inches. Larger stones may be utilized in initial backfill in the lower layers of finish grading of the site.

C. Radon Barrier Materials: Radon barrier materials shall conform to the following requirements:

1. Radon barrier materials shall be uncontaminated soils obtained from the designated borrow area. [The Subcontractor shall perform selective excavation and processing of the radon barrier material]** to ensure that the material meets the requirements specified in Paragraph 2. below.
2. Radon barrier materials shall consist of soils with classification of CL, CH, ML, MH, SC and SM when classified in accordance with the requirements of ASTM D2487, and graded with maximum particle size of 2 inches and minimum of 25 percent passing No. 200 Sieve. In addition, materials shall consist predominantly of soils with a minimum of 40 percent passing No. 200 Sieve. For the purpose of this Subcontract, the word "predominantly" shall mean that at least 4 test results out of each consecutive 5 test results excluding retests shall indicate a minimum of 40 percent passing No. 200 sieve to meet the requirements of this Section. Compliance with these Specifications will be determined by the Contractor.
3. Material shall be compactable to the required density specified in Article 3.9, at moisture contents specified in Article 3.6.
4. Radon barrier materials shall not contain clearly visible organic matter or other deleterious substances.
- [5. Radon barrier materials shall be processed to reduce clod sizes to one inch or smaller.
6. Radon barrier area excavation shall be as specified in Article 3.3.C.3.
7. Radon barrier borrow area restoration shall be as specified in Article 3.11.]**

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2.2 CONTAMINATED FILL MATERIALS

Contaminated materials defined in Article SC-1 of the Special Conditions result from the clearing, stripping and excavation operations in contaminated areas. [These materials shall include materials excavated from tailings pile, windblown and other offpile areas, contaminated sediments from drainage ditches and wastewater retention basin, sump, and materials from underneath the floor slabs of contaminated structures.]**

2.3 EXISTING STOCKPILES OF DEMOLISHED MATERIALS AND DEBRIS IN AREAS A AND B

A. Demolished materials and debris stockpiled on site by others consist of pieces of wood, concrete, masonry, and steel members including, but not limited to, the following:

1. Process equipment such as ore storage bins, ball mills, Pachuca tanks, screw conveyor and acid leaching tanks.
2. Concrete rubble, structural steel members, sheet metal siding, vessels, [drums,]** tanks, heat exchangers and process piping.
3. Electrical equipment such as transformers, high voltage switchgear, motor control centers and panel boards.

B. [Existing stockpiles of demolished materials and debris are located in two areas designated as Stockpile Area A and Stockpile Area B on the Subcontract Drawings.]** The debris is stockpiled in five or less number of categories, in each area, as follows:

1. Pipes and Ducts
2. Tanks[, Drums]** and Vessels
3. Structural Steel and Miscellaneous Metal
4. Concrete and Masonry
5. Wood, Sheet Rock, Building Insulation, Built-up Roofing, etc.

C. [All demolished materials and debris except materials and debris in Stockpile Area B, will be considered as contaminated materials for disposal purposes unless otherwise directed by the Contractor.]**

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2.4 OTHER CONTAMINATED MATERIALS

Other contaminated materials shall include demolished materials and debris resulting from work specified in Sections 02050, 02060 and 02090 and contaminated cleared vegetation and silt resulting from Sections 02110 and 02141 of the Subcontract Documents.

PART 3 - EXECUTION

3.1 [PROTECTION OF EXPOSED SURFACES

A. During seasonal shutdowns and during other periods of prolonged exposure (more than six weeks) of excavated or filled areas, the Subcontractor shall provide labor, materials and equipment, as required by the Contractor, to maintain and protect exposed surfaces of uncontaminated and contaminated materials against wind erosion and excessive stormwater erosion. Prior to the application of protective erosion control measures, the exposed surfaces shall be sloped to drain and compacted with a smooth drum roller to eliminate ruts and ridges formed by construction equipment. Unless otherwise approved by the Contractor, acceptable methods of erosion protection are as follows:

1. Spraying with Water containing Chemical Additives: Acceptable chemical additives are CPB-12 as manufactured by Wen-Don Corporation, 206 South 2nd Street, Price, Utah, 84501 and "Soil Seal Concentrate" as manufactured by Soil Stabilization Products Company of Merced, California, or approved equal. Mixing and application shall be in accordance with the manufacturer's recommendations, or
2. Covering exposed surfaces with geotextile fabric such as "Supac" as manufactured by Phillips Fibers Corporation of Sacramento, California, or approved equal. Handling and installation shall be as recommended by the manufacturer of the product.]***

[B. Contaminated Materials: Contaminated material stockpiles shall be maintained to prevent ponding of stormwater and to facilitate stormwater runoff both during shutdowns and during ongoing operations and as specified in Section 02141.]**

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[C. Following a seasonal shutdown or period of prolonged exposure, the Contractor will verify by density tests, that the last lift placed of materials previously placed and accepted by tests has been maintained at the applicable minimum specified density. Verification by density tests will be performed at frequencies commensurate with those specified in Article 3.6.B.1 of this Section. Materials failing to meet specified density requirements shall be removed or reworked to satisfy the minimum specified density requirements.]***

[D. Following a seasonal shutdown or period of prolonged exposure, the Contractor will verify by moisture tests that the last lift placed of radon barrier materials previously placed and accepted by tests has been maintained at the applicable minimum specified moisture content. Verification by moisture content tests will be performed as specified in Article 3.6.C.8 of this Section. Materials failing to meet specified moisture content requirements shall be reworked or replaced to satisfy radon barrier requirement. If the last lift of radon barrier requires reworking due to inadequate moisture content, underlying materials will be tested by the Contractor to determine the amount of material to be reworked or replaced.]****

3.2 EARTHWORK - GENERAL

A. Preparation:

1. Clearing and stripping shall be as specified in Section 02110.
2. Required lines, levels, contours and datum shall be identified before the start of earthwork operations.
3. The Subcontractor shall verify the existing above-ground and underground utilities, identify them, and notify the Contractor immediately of his finding, if any, for appropriate action.

B. Dewatering and Drainage: Prior to commencement of earthwork operations, the Subcontractor shall verify that the dewatering and drainage facilities including temporary drainage ditches are constructed and operational in accordance with the requirements of Section 02141.

C. In order to avoid cross-contamination of uncontaminated material, the contaminated and uncontaminated materials shall be kept separated during earthwork operations.

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Stockpiles of contaminated materials shall be placed on contaminated areas and the drainage collected in the retention basin.

- D. Earthwork shall conform to lines and grades indicated on the Subcontract Drawings or specified in this Section.
- E. The excavated uncontaminated materials shall be used as fill in various areas of the site including the construction of dikes, general fill, roadway fill, structure fill, backfill, and fill for the final grading of the site, as required. Uncontaminated excavated material may be stockpiled for later use.

[F. Moisture Addition to Contaminated Materials:

- 1. Moisture shall only be added to contaminated materials for environmental dust control requirements. The Subcontractor shall use special measures such as fine spray nozzles to add moisture to contaminated materials, as approved by the Contractor, to minimize the amount of moisture added for dust control. The Subcontractor shall perform his operations to minimize the need for moisture addition to the extent practicable. Moisture addition shall not be permitted for the convenience of the Subcontractor. Water from the wastewater retention basin may only be used for dust control in contaminated areas and on-site contaminated haul roads.
- 2. Dust control moisture shall be added to contaminated fill materials at the place of excavation preceding placement of the materials in the tailings embankment. Moisture shall not be added to contaminated materials in the tailings embankment area except when it is determined to be absolutely necessary for environmental dust control. Moisture added to radon barrier materials in the tailings embankment area shall be applied in a manner that prevents runoff onto contaminated materials.]***

3.3 EXCAVATION

A. General:

- 1. [Excavation shall be carried out to the lines and grades indicated on the Subcontract Drawings or specified herein, or, in the case of contaminated materials, as required by the Contractor's Health Physics Personnel.]**

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2. At all times, the Subcontractor shall conduct his operations in such a manner as to prevent free standing water and contamination of uncontaminated materials. The Subcontractor shall, as a minimum, take the following measures to safeguard against such problems:
 - a. Water leaving contaminated excavation area or contaminated area otherwise disturbed by construction activities shall be routed into the retention basin as specified in Section 02141.
 - b. Exposed surfaces of contaminated and uncontaminated materials excavations shall be protected from erosion as specified in Article 3.1 above.
3. The Subcontractor shall remove all excavated material from the excavation site and dispose of it in fills required at the site or as initial backfill at the site or use it for other purposes, as approved by the Contractor.
4. Unsuitable or low density subgrade material not readily capable of in-place compaction shall be excavated as directed by the Contractor and disposed of as specified in Article 3.4, except for existing tailings pile materials.
5. Adequate working space for safety of personnel shall be provided within the limits of the excavation.
6. Except as otherwise noted, care shall be exercised to preserve the material below and beyond the lines of all excavation. Where excavation is carried below grade, the Subcontractor shall backfill to the required grade or to indicated invert grade, as specified, and recompact the backfill to meet the existing conditions.
- [7. Existing footings may be found buried greater than 2 feet below grade.]**
- [8.]** Excavation for the convenience of the Subcontractor shall conform to the limits approved by the Contractor and shall be at no additional expense to the Contractor.
- [9.]** Excavated material shall be placed at sufficient distance from edge of excavations to prevent cave-ins or bank slides.

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[10.]** Where practicable, suitable materials removed from excavation shall be used as fill or backfill.

[11. Underground piping may be encountered during excavation and shall be plugged as specified in Section 02060, Article 3.1.B.4.]**

B. Contaminated Materials Excavation:

1. The Subcontractor shall minimize the open excavation area of contaminated materials at any time during excavation work. The Subcontractor shall operate from one or two sides at one time, progressing uniformly to opposite sides for completion, unless directed otherwise by the Site Manager. Contaminated materials shall be excavated to the depths indicated on the Subcontract Drawings, or as required by the Contractor, and placed in the proper part of the tailings embankment. The contaminated material will be excavated generally in priority of its placement in the embankment indicated on the Subcontract Drawings, to minimize rehandling and stockpiling. Excavation shall be carried out to the limits and grades required by the [Contractor]**, except as indicated otherwise on the Subcontract Drawings for [the areal extent]** of contaminated material excavation. Rock requiring drilling and blasting operations shall not be included in this excavation.
2. During the excavation operation, tests will be performed by the Contractor to determine radioactive contamination of the material to be excavated.

C. Uncontaminated Materials Excavation:

1. Demolition Debris Burial Pit Excavation: After wind-blown and other contaminated materials are excavated from the area, uncontaminated materials shall be excavated as indicated on the Subcontract Drawings.
2. Drainage Ditches and Swales Excavation:
 - a. General: Ditches and swales shall be cut accurately to the cross sections and grades where indicated. All roots, stumps, rock, and foreign matter in the sides and bottom of ditches and swales shall be trimmed and dressed or removed to conform to the slope, grade, and shape of section indicated. Care shall be taken not to excavate

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ditches and swales below the grades indicated. Excessive ditch and swale excavation shall be backfilled to grade with satisfactory, thoroughly compacted material. Ditches and swales shall be maintained until final acceptance of the work.

b. Temporary Drainage Ditches:

- 1) Temporary drainage ditches shall be excavated at locations shown on the Subcontract Drawings to collect and transport wastewater and water-bound contaminated material to the retention basin during construction, and to divert and transport storm runoff away from the construction area.
- 2) Temporary drainage ditches shall be excavated, fine graded, compacted, and maintained to provide drainage during construction.
- 3) Subgrade of temporary drainage ditches carrying contaminated water shall be protected with membrane liner as shown on the Subcontract Drawings during construction. Membrane liner is specified in Specification Section 02771.

c. Permanent Drainage Swales: Swales shall be excavated true to line and grade. Any erosion which occurs to swale excavation before final acceptance of the work shall be repaired with compacted backfill. All such repairs shall be at Subcontractor's expense and shall not be included in pay quantities, unless otherwise shown on the Subcontract Drawings.

3. Radon Barrier Borrow Area Excavation:

- a. The Subcontractor shall notify the Contractor at least 60 days in advance of opening any borrow area so that adequate time will be allowed for testing the material.
- b. All rights for access and use of the borrow area and material will be obtained by the Contractor.
- c. Necessary clearing, grubbing, and disposal of debris shall be performed by the Subcontractor as incidental operations to the borrow excavation.

- d. The material shall be excavated after stripping the topsoil to a minimum depth of 6 inches. [The material shall be ripped as required by the Subcontractor and shall be excavated or otherwise processed to obtain a composite mixture in minimum one foot depth increments.]**
- e. Excavations for radon barrier materials will be monitored by a qualified technician employed by the Contractor.

3.4 DISPOSAL OF EXCAVATED MATERIALS

- A. Contaminated Materials: All contaminated materials excavated from the tailings pile, retention basin, windblown, and other areas of the site shall be used in the construction of the tailings embankment as specified herein. Contaminated material will be placed in the tailings embankment by priority as indicated on the Subcontract Drawings. Radiological monitoring of contaminated materials or construction expediency may change placement priority, as directed by the Contractor.
- B. Uncontaminated Materials:
 - 1. Uncontaminated materials excavated from the site, including excavations for trenches, drainage ditches and retention basins which do not classify as contaminated materials, shall be used as uncontaminated material fill for construction of various features including site grading, or stockpiled for later use, as specified in this Section and as required by the Contractor.
 - 2. Where used in fills, such material shall be transported directly from the excavation and placed in its final position in such fills whenever possible. If required by the Subcontractor's schedule, the material may be placed temporarily in stockpiles at approved locations. Material in stockpile shall be protected from contamination of any kind that would render it unsuitable for use in fills.
 - 3. Excess uncontaminated excavated materials from approved onsite areas shall be used for final grading of the site and for other uncontaminated material fills, including backfill of radon barrier borrow area, as specified in this Section, or as required by the Contractor.

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4. Unsatisfactory Materials: [Unsatisfactory excavated uncontaminated material including rock generated during the Work and not approved for use in the Work shall be disposed of in areas approved by the Contractor.]**

C. Garbage, refuse, debris, oil, and any waste material which is harmful to the environment shall be removed from the job site and disposed of offsite in a manner approved by the authority having jurisdiction over the disposal site.

D. All operations in the stockpile areas throughout the Work shall be in strict conformity with the requirements of this Section. The Subcontractor shall ensure that silty water from the stockpile areas does not enter nearby waterways. [If required to control silt in runoff water, temporary dikes, detention ponds, silt fence, or other facilities shall be constructed by the Subcontractor.]**

3.5 DISPOSAL OF DEMOLISHED MATERIALS AND DEBRIS AND OTHER CONTAMINATED MATERIALS

A. General: Disposal of demolished materials and debris and other contaminated materials specified in the following paragraphs shall conform to the applicable provisions of this Specification Section, Subcontract Drawings, and as directed by the Contractor:

1. Existing Stockpiles of Demolished Materials and Debris:

a. Demolished materials and debris from Area A shall be placed in the construction of the tailings embankment. [Voids in drums, pipes, and utilities shall be reduced as specified in Sections 02050 and 02060.]**

b. [Demolished materials and debris from Area B shall be placed in the Demolition Debris Burial Pit as indicated on the Subcontract Drawings. All reasonable efforts shall be made to minimize the amount of soil transferred with the materials and debris, including the use of grapples, rock-type slotted-bottom front end loader buckets, or other suitable devices.]**

2. Other contaminated materials defined in Article 2.4 of this Section shall be placed in the construction of the tailings embankment.

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3.6 FILL CONSTRUCTION

A. General Requirements:

1. Clearing and stripping shall conform to Section 02110.
2. Fill materials shall be placed and compacted to the lines and grades shown on the Subcontract Drawings or as required by the Contractor.
3. Prior to placing uncontaminated fill materials, the subgrade will be radiologically surveyed by the Contractor to confirm that EPA standards have been met. These radiological surveys may cause delays to back-fill operations of up to seven working days. The Subcontractor shall plan his work accordingly.
4. If any portion of the materials placed as fill does not meet the specified requirements, the Subcontractor shall remove such material and replace it with fill materials meeting the [specifications]** at no additional cost to the Contractor.
5. Constructed fills shall be maintained to meet the requirements of this Specification until final completion and acceptance of the work. This shall include all measures to prevent erosion or contamination during construction, including contamination by radioactive material. [During the work and during seasonal or other extended shutdowns,]** all exposed surfaces shall be protected with special treatments specified in Article 3.1 above.

B. Placing Requirements:

1. Prior to placement of materials, the in-place density of the subgrade shall be as specified in Article 3.9. Subgrade preparation, where required, shall be as specified in Article 3.8.
2. No materials shall be placed on any portion of the subgrade or against or upon any structure until consent to place such fill has been obtained from the Contractor.
3. Fill materials may require moisture conditioning (wetting or drying) prior to compaction. [Moisture addition to contaminated material shall be as specified in Article 3.2.F.]* Some tailings particularly will re-

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quire spreading, disking, and extended drying time prior to compaction. Moisture content and compaction test data for tailings are included in the Information for Bidders document. [The Subcontractor shall make his own determination of the need for and extent of drying in order to achieve specified placement and compaction requirements.]**

4. Fill materials shall be placed in continuous and approximately horizontal lifts but not flatter than 2 percent for their full length and width unless otherwise specified or specifically permitted by the Contractor.
5. Contaminated materials excavated from the tailings pile shall be placed in the lower lifts of the tailings embankment, unless otherwise indicated. Contaminated materials excavated from the windblown and off-pile areas shall be placed on the sides and in the upper portions of the tailings embankment.
6. Method of dumping and spreading the materials shall ensure uniform distribution of the material.
7. [Loose thickness of each lift of materials shall not be greater than that required to achieve the specified compaction, or as otherwise specified herein, and in no case shall exceed 12 inches.]**
- [8. Cover Construction:
 - a. Three-foot six-inch thick radon barrier shall be placed in five lifts. Each lift shall be approximately 8 to 9-inch thick compacted. The Subcontractor shall provide survey control on each of the five 8 to 9-inch thick compacted lifts.
 - b. Radon barrier materials shall be moisture conditioned a minimum of two hours prior to compaction. Moisture shall be added as necessary to maintain a moisture content for two hours prior to compaction equal to or greater than optimum moisture content, as determined according to ASTM D698. Moisture shall not be mixed or otherwise worked into the first lift of radon barrier materials after placement of the materials over the contaminated materials.
 - c. In placing and working the first layer of radon barrier, care shall be taken to avoid mixing in any of the underlying radiologically contaminated soil.

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- d. Moisture added to the radon barrier materials shall be applied in a manner that prevents runoff onto contaminated materials.
- e. Placement and compaction of bedding and erosion protection materials shall be as specified in Section 02278.]**

[9.]** Unless otherwise indicated, fill materials shall be placed to a grade no flatter than 2 percent to facilitate drainage of water. [Ponding of surface runoff on contaminated materials shall be minimized as specified in Section 02141.]** In areas where ponding cannot be prevented or ponding has occurred and fill is required to be placed, placing shall begin only after the area is dewatered and permission to place is obtained from the Contractor.

[10.]** Materials shall not be placed on frozen subgrade or embankment material foundations, nor shall frozen material be used as fill.

[11.]** Disposing of bulky materials including demolition debris shall be done with care to minimize the volume of voids created in the disposal embankment fill. Such bulky materials shall be placed in the lower lifts of the tailings embankment as determined by the Contractor.

[12.]** When no longer needed for control of contamination, as determined by the Contractor, the wastewater retention basin, the dikes, the spillway, and the temporary drainage ditches shall be removed and the area restored and finish graded as shown on the Subcontract Drawings.

C. Compaction Requirements:

1. Each lift of fill materials shall be compacted to a minimum density specified in Article 3.9.
2. During compaction the moisture content of fill material shall be maintained to achieve specified density. Uniform moisture distribution shall be obtained by disking, blading, or other methods approved by the Contractor prior to compaction of a lift. [Text Deleted]**
3. If the surface of the prepared foundation or the rolled surface of any lift of fill is too dry or too smooth to bond properly with the lift of material to

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be placed thereon, it shall be scarified and moistened by sprinkling to the acceptable moisture content prior to placement of the next lift of fill.

4. If the rolled surface of any lift of the fill in place is too wet for proper compaction of the lift of fill material to be placed thereon, it shall be removed, allowed to dry or worked with harrow, scarifier, or other suitable equipment to reduce the water content to the required amount, and then recompacted before the next succeeding lift of fill is placed.
5. Fill placed at densities lower than the specified minimum density or at moisture contents outside the specified acceptable range of moisture content shall be reworked to meet the density and moisture requirements or removed and replaced by acceptable fill compacted to meet these requirements.
6. Uncontaminated fill material in the stockpile areas shall be placed by spreading with a bulldozer and track walking. Lift thickness before compaction shall not exceed one foot. Compaction shall be accomplished by routing of hauling and spreading equipment units.
7. [Radon Barrier: Compaction of radon barrier shall be accomplished according to the following requirements:
 - a. The radon barrier shall be compacted in five lifts as specified in [3.6.B.8.a]**** above.
 - b. Compaction of radon barrier shall be accomplished using tamping foot rollers.
 - c. During compaction of radon barrier materials, moisture content shall be maintained to within minus one to plus three percent of the optimum moisture content as determined by ASTM D698.
 - d. Once minimum specified density is achieved for radon barrier, additional compaction shall not be performed.
 - e. The top surface of each compacted radon barrier lift, except for the uppermost lift, shall be indented or scarified to a depth of 1 inch to 2 inches just prior to placement of the overlying loose lift. Scarification shall be accomplished by suitable equipment capable of accurate depth control. Indentations by the tamping foot roller remaining after special compaction is achieved are

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acceptable provided that the specified indentation depth is achieved. [Each top surface of compacted radon barrier material shall then be moisture conditioned immediately prior to placement of the next lift. Moisture addition shall be sufficient to promote softening of the surface, and will be subject to Contractor's approval.]****

f. The top surface of the final layer of radon barrier shall be compacted with the tamping foot roller, then bladed and compacted by the use of a smooth drum roller.]**

[8. Moisture content of preceding in-place radon barrier lift with the exception of top 2 inches shall be maintained at not less than optimum minus one percent. The moisture content shall be maintained as specified until the next lift, including bedding material, is placed and compacted. The Contractor will verify this specification requirement, as necessary, by testing in-place moisture content of samples taken from 2 to 4 inches beneath the top surface of the compacted radon barrier lift.]*

3.7 FIELD QUALITY CONTROL

A. General: The Contractor will take samples and perform tests throughout the construction period, and the Sub-contractor shall cooperate in providing access for the Contractor to areas where testing is to be performed and shall schedule his placing to avoid interference with the testing operations. Testing of temporary facilities will be as directed by the Site Manager.

B. Tests: The Contractor will perform the following tests on a regular basis:

1. In-place density and moisture content tests for compacted materials where density is specified will be as follows:

a. A minimum of one test per 1000 cubic yards of contaminated and uncontaminated material placed.

b. A minimum of one test per 500 cubic yards of radon barrier material placed.

2. [Classification Tests: A minimum of one test per 1000 cubic yards of radon barrier material placed.]**

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3. [Gradation Tests: A minimum of one test per 1000 cubic yards of radon barrier material placed.]**

3.8 SUBGRADE PREPARATION

- A. Subgrade Preparation: Subgrade preparation includes fine grading and compaction of existing surfaces, excavations (including temporary drainage ditches, backfills, and conditioning of existing tailings pond and other soft spots, embankments (including stockpiles) upon which pavement, riprap toe protection, surfacing, base, subbase, bedding materials, riprap, membrane liner or other structures are constructed.
- B. The entire surface of the subgrade shall be scarified and mixed to a depth of at least 6 inches. Compaction shall be carried out for the full area below finished subgrade to at least the density specified in Article 3.9 below. Soft areas developed or encountered during working shall be corrected as specified in Paragraphs C and D below.
- [C. Disturbance of existing tailings pile surface shall be minimized, as determined by the Contractor, to facilitate trafficability and subgrade preparation.]**

[D.]**Previously Existing Tailings Pond Area:

1. General: [The subgrade of the previously existing pond area shown on the Subcontract Drawings shall be prepared to construct fill and backfill as specified herein. Unknown depth and consistency of sediments and tailings occur in the area due to surface runoff from the existing pile to the pond area.]**
2. Requirements: [Construction of fill above elevation 6985 feet within the existing pond area shall meet the requirements of Article 3.6. If excavation and backfill method is used, all backfill over 5 feet thick shall meet the requirements of Article 3.6. In situ materials at or below elevation 6985 feet shall be treated as specified to meet fill and backfill specifications.]**
3. Methods: [Subcontractor shall be responsible for selecting a method or methods of subgrade preparation to achieve specified fill and backfill compaction, subject to approval by the Contractor. Subcontractor may use excavation and backfill, mixing with additional materials, synthetic geofabrics, diking and drying, demolition debris disposal or other methods.

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Chemical additives or impermeable membranes shall not be used unless otherwise approved by the Contractor. Any materials mixed with in-situ materials shall consist of contaminated fill materials approved by the Contractor. At least 60 days prior to placing fill in this area, the Subcontractor shall verify that his proposed method shall achieve required results within a test area as directed by the Contractor. Prior to approval of method, the Contractor will perform tests, as required, to verify that the specified results are achieved.])**

[E.] Other Soft Areas: [Soft areas encountered on the existing tailings pile surface, other than the existing tailings pond area, shall be prepared to the extent practicable as specified in Article 3.8.B as determined by the Contractor. In soft areas that cannot support construction equipment, or fail to meet density requirements, materials approved by the Contractor shall be mixed with and placed in lifts on the existing tailings pile surface and compacted. Compaction shall be sufficient to ensure that material placed over one foot higher than existing ground surface in such areas shall meet compaction density requirements of Article 3.9. Treatment of soft areas shall be subject to Contractor's approval.])**

3.9 COMPACTION DENSITIES

A. [Subgrade and each lift of embankment and backfill material except Demolition Debris Burial Pit shall be compacted to at least the following percentage of maximum dry density, as determined by ASTM D698:])**

1. For riprap toe protection:

a. Subgrade preparation 95 percent

2. For all other areas:

a. Subgrade preparation and embankment, except b. below 90 percent

b. Buttress material [Text Deleted]* [and uppermost 2 feet of contaminated material beneath radon barrier]** 95 percent

[c. Radon barrier material 100 percent]*

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[B. Percentage of maximum dry density will be reported rounded to the nearest tenth (0.1) of a percent.]**

3.10 DISPLACEMENT MONUMENTS

[A. Displacement monuments shall be furnished and installed by the Subcontractor as shown on the Subcontract Drawings.

B. Displacement monuments shall be protected by the Subcontractor from any disturbance. Any disturbance to displacement monuments shall be reported immediately to the Contractor.

C. Any displacement monument disturbed excessively as determined by the Contractor shall be replaced within seven days by the Subcontractor. Replacement shall be as directed by the Contractor. Replacement of displacement monuments due to excessive disturbance by the Subcontractor or a lower-tier subcontractor shall be made at no additional cost to the Contractor.]**

[3.11 RADON BARRIER BORROW AREA

A. Requirements for fencing, developing, hauling from, and restoration of the radon barrier borrow area are specified herein. Radon barrier material acceptability is specified in Article 2.1.C and excavation is specified in Article 3.3.C.3.

B. Fencing Requirements:

1. The Subcontractor shall furnish, install, and, where specified, either leave or remove fencing to meet the requirements herein. The radon barrier borrow area and haul road shall be fenced to exclude grazing animals. Type of fence and fence construction shall be the responsibility of the Subcontractor and will be subject to approval by the Contractor.

2. The portion of the borrow area in Sections 22 and 27, Township 14N, Range 9W, N.M.P.M. shall be fenced and furnished with a gate and lock. The fence, gate, and lock shall be left as the Contractor's property at the completion of the Work. The gate shall be a panel-type and shall be installed at a location as directed by the Contractor to provide access for the property owner. The Subcontractor shall provide five keys for the lock to the Contractor.

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3. The portion of the borrow area in Section 28 Township 14N, Range 9W, and the haul road to the site shall be fenced. The fence shall be removed at the end of the borrow area activities and shall be disposed of off-site as the Subcontractor's property.

C. Haul Route: The Subcontractor shall haul barrier materials on a route as directed by the Contractor. Construction, maintenance, and restoration of any temporary haul road shall be the Subcontractor's responsibility.

D. Development:

1. Stripped materials and materials not acceptable for radon barrier shall be stockpiled within the borrow area and shall be used for restoration of the borrow area.

2. The Subcontractor shall perform topographic surveys of the borrow areas before the borrow area is disturbed, annually during borrow area excavation, and after restoration of the borrow area. The Subcontractor shall determine and submit to the Contractor the quantity of material removed following each annual survey, along with the results of each survey. Quantities shall be determined based on comparison of each topographic survey with the preceding survey. Topographic surveys and quantity calculations shall be subject to Contractor's approval.

E. Restoration:

1. Borrow area shall be restored by grading and seeding after all required material has been removed.

2. Excavated material not suitable for radon barrier shall be used to backfill excavations and the borrow area shall be graded for positive drainage and to prevent ponding. Restored excavation sideslopes shall not be steeper than 10 (horizontal) to 1 (vertical).

3. The six inches of stockpiled stripping material shall be spread uniformly over the graded excavated areas.

4. All disturbed areas shall be fertilized, seeded, and mulched as specified in Section 02935.]**

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PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Measurement for payment for the following items of contaminated materials (C.M.) excavations and fills will be by the cubic yards of material excavated. [The quantities for payment will be computed by the average end area method from surveys conducted before and after excavation operations.]** Separate measurement for payment will not be made for placing the excavated materials in fills or in stockpiles:

1. Excavation of contaminated materials from northern portion and southeast corner of existing tailings pile, and placement in tailings embankment. (Bid Schedule Item 401)
2. [Excavation of contaminated materials from other areas of the site which are within the final site boundary, and placement in the tailings embankment. Other areas within the final site boundary shall include, but not be limited to, mill site area, off-pile areas and windblown areas.]** (Bid Schedule Item 402)
- [3. Excavation of contaminated materials from areas of the site which are outside the final site boundary, and placement in the tailings embankment. These areas shall include, but not be limited to, windblown areas, the Voght Tank ditch and the Voght Tank area. (Bid Schedule Item 403)]**

B. Measurement for payment for the following items of uncontaminated materials (U.C.M.) excavation will be by the cubic yards of material excavated. [The quantities for payment will be computed by the average end area method from surveys conducted before and after excavation operations.]**

1. North Swale U.C.M. Excavation (Bid Schedule Item 205)
2. [Temporary Diversion Ditches and Temporary Collection Ditches U.C.M. Excavation (Bid Schedule Item 206)]**
- [3. Demolition Debris Burial Pit U.C.M. Excavation (Bid Schedule Item 207)]**

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- C. Measurement for payment for the following items of uncontaminated materials (U.C.M.) fill or backfill will be by the cubic yards of material placed. [The quantities for payment will be computed from the lines and dimensions shown on the Subcontract Drawings where indicated, by the average end area method from surveys conducted before and after fill placement.
1. North Swale and East Swale U.C.M. Fill (Bid Schedule Item 208)
 2. Radon Barrier U.C.M. Fill (Bid Schedule Item 501). Radon barrier thickness for measurement will be as indicated in the Subcontract Drawings.
 3. Wastewater Retention Basin U.C.M. Backfill (Bid Schedule Item 801)
 4. Finish Grading of Site including Backfill for Temporary Collection Ditches and Temporary Diversion Ditches - U.C.M. Fill and Backfill (Bid Schedule Item 802)]**
- D. [Measurement for payment for disposal of demolished materials and debris from Area A into tailings embankment will be on a lump sum basis. (Bid Schedule Item 404)
- E. Measurement for payment for disposal of demolished materials and debris from Area B including U.C.M. backfill into the Demolition Debris Burial Pit will be by the cubic yards of the materials and debris actually disposed of. The quantities for payment will be computed by the average end area method from surveys conducted before and after placement in the Burial Pit. (Bid Schedule Item 405).]**
- F. Separate measurement for payment will not be made for the following items, and such work will be considered incidental to the related items of work:
1. Excavation and backfill of pipe trenches.
 2. Subgrade preparation of embankment, riprap toe protection, and temporary drainage ditches to be protected by membrane liner.
 - [3. Temporary stockpiling, stockpile maintenance and re-handling of excavated materials.
 4. Borrow area excavation, maintenance , restoration, reseeding and incidental activities.

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5. Disposal of demolished materials and debris in the tailings embankment resulting from work specified in Section 02090.

6. Disposal of contaminated cleared materials in the tailings embankment resulting from work specified in Section 02110.

7. Protection of exposed surfaces during shutdown.]**

G. Measurement for payment for disposal of demolished materials and debris resulting from work specified in Sections 02050 and 02060 (in the tailings embankment) will be as specified in those Sections.

H. Measurement for payment for furnishing and installing displacement monuments will be by the number of monuments installed. [(Bid Schedule Item 406)]**

I. Overexcavation: Overexcavation for the Subcontractor's convenience or due to error or lack of control by the Subcontractor will not be measured for payment. At the discretion of the Contractor, overexcavation shall be backfilled with compacted contaminated or uncontaminated fill, as required, at the Subcontractor's expense.

J. No separate measurement for payment will be made for any other excavations or fills specified in this Section.

4.2 PAYMENT

A. Payment for the items of Article 4.1.A above will be by their applicable unit prices per cubic yard quoted therefor in the Bid Schedule. [The prices quoted shall include full compensation for excavating, hauling, and placing the excavated materials in their final locations including all clearing, stripping, grading, shaping, preparing subgrade, compacting, temporary stockpiling, stockpile maintenance and required rehandling.]**

B. Payment for the items of Article 4.1.B above will be by their applicable unit prices per cubic yard quoted therefor in the Bid Schedule. [The prices quoted shall include full compensation for excavating, hauling, and placing the excavated materials in temporary stockpiles, or in spoil areas if excess or unsuitable for use as fill, as required, including all clearing, stripping, grading, shaping, compacting and maintaining such stockpiles or areas as specified.]**

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- C. Payment for the items of Article 4.1.C above will be by their applicable unit prices per cubic yard quoted therefor in the Bid Schedule. [The prices quoted shall include full compensation for excavating materials from required excavations, borrow areas and stockpiles where required, hauling materials and placing the excavated materials in their final locations including all clearing, stripping, grading, shaping, preparing subgrade, compacting, and fencing and restoration of borrow areas.]**
- D. [Payment for disposal of demolished materials and debris from Area A into the tailings embankment will be by the lump sum price quoted therefor in the Bid Schedule. The price quoted shall include full compensation for loading, transporting, unloading, removing voids, placing and compacting the demolished materials and debris in the tailings embankment.]**
- E. Payment for disposal of demolished materials and debris from Area B into the Demolition Debris Burial Pit will be by the unit price per cubic yard quoted therefor in the Bid Schedule. [The price quoted shall include full compensation for loading, transporting, unloading, placing and compacting the debris and U.C.M. backfill in the Pit.]**
- F. Separate payment will not be made for the items mentioned in Article 4.1.F above. All costs for such work will be considered to be included in the prices quoted for the applicable related items of work.
- G. Payment for disposal of demolished materials and debris resulting from work specified in Sections 02050 and 02060 (in the tailings embankment) will be as specified in those Sections.
- H. Payment for furnishing and installing displacement monuments will be by the unit price per each quoted therefor in the Bid Schedule.
- I. Separate payment will not be made for any other excavations or fills specified in this Section. All costs for excavations or for furnishing and placing such fills will be considered to be included in the related items of excavation.
- [J. Separate payment will not be made for any other work specified in this Section. All costs for such work will be considered to be included in the related payment items of this Section.]**

END OF SECTION 02200

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2. The seeding rates shown are for seed applied by mechanical broadcasting; [these rates may be reduced by 50 percent if a drill is used.]**

B. Cover: The following seed mix shall be used for seeding of final grades [except drainage swales and ditches:]**

<u>Seed Species</u>	<u>Seeding Rate Pure Live Seed (Pounds Per Acre)</u>
Western Wheatgrass (Arriba)	3
Indian Ricegrass (Paloma)	3
Alkali Sacaton (Salado)	1
Sand Dropseed	1
Four-Wing Saltbrush (Rincon or Santa Rita)	1
Rocky Mountain Penstemon (Bandera)	<u>0.5</u>
Total	9.5

2.2 ACCEPTANCE OF SEED

Final acceptance of seed will be made by the Contractor based on the following: Seed shall be furnished separately or in mixture in standard sealed containers with the following information provided by the seed vendor on each seed container label: (1) seed name; (2) lot number; (3) net weight; (4) percentages of purity and of germination; (5) seed coverage, in acres, on a pure live seed basis; and (6) percentage of maximum weed seed content clearly marked for each species of seed. Seeds shall be packaged by the vendor in even acre coverage containers. The Subcontractor shall furnish the Contractor duplicate copies of a statement by the vendor, certifying that each lot of seed has been tested by a recognized laboratory for seed testing within 6 months of date of delivery. This statement shall include: (1) name and address of laboratory, (2) date of test, (3) lot number for each kind of seed, and (4) results of tests as to name, percentages of purity and of germination, and percentage of weed content, for each kind of seed furnished, and, in case of a mixture, the proportions of each kind of seed.

[Text Deleted]**

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[2.3]** FERTILIZER

Fertilizer shall be a standard commercial grade that provides the minimum percentage of available nutrients specified. Fertilizer shall be furnished in new, clean, and sealed containers with the name, weight, and guaranteed analysis of contents clearly marked. A liquid form of fertilizer containing the minimum percentage of available nutrients may be used.

[2.4]** MULCH

Mulch shall consist of cereal straw. Cereal straw shall be from grain crops that are free from all viable seed, mold, or other objectionable material. Mulch shall be in an air-dry condition and suitable for placing with mulch blower equipment. Final acceptance of mulch will be by the Contractor.

[2.5]** WATER

Water used in the planting or care of vegetation shall be free of oils, acids, alkalies, salts, or any substance injurious to plant life.

PART 3 - EXECUTION

3.1 PREPARATION

- A. Timing: [All final grades not covered by gravel or riprap shall be seeded as soon as practical after their completion. Timing of seeding will be directed by the Contractor in accordance with the recommendation of the SCS. It is anticipated that seeding will be permitted in late June or late October through November.]** Seeding materials shall not be applied during windy weather, when the ground is excessively wet or frozen, or when snow is present.
- B. Grading and Seedbed Preparation: Before applying seed for permanent cover of a given area, any stockpiled topsoil and select fill shall be put in place and the area shall be graded as shown on the Drawings, with surfaces sloping gradually towards drainage courses, with no enclosed low spots where water can accumulate. Areas to be seeded that have been damaged by erosion or other causes shall be res-

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tored prior to seeding and then cultivated to provide a reasonably firm but friable seedbed. A minimum of 6 inches of surface soil shall be in a loose condition at the time of fertilizer and seed application.

- C. Enrichment: Drainage swales[, ditches]** and final grades shall be enriched by applying fertilizer to the surface of prepared soil prior to the application of the seed and mulch. Nitrogen fertilizer shall be applied at the rate of 60 pounds per acre, unless Subcontractor can demonstrate to the Contractor that a different fertilizer mix or a lesser rate of application is justified on the basis of laboratory testing of the soil to be seeded.

3.2 APPLICATION

- A. [Seed shall be applied by a rangeland drill to a depth of 0.5 to 0.75 inch or by broadcasting.]** To the greatest extent possible, seeding shall be oriented along (parallel to) land contours. [Hydroseeding shall not be used.]**
- [B. If broadcast seeding method is used, cultivated areas shall be treated by dragging chain or wire mesh, or other suitable equipment, over the seeded surface to enhance soil cover of the seed.
- C. Immediately following enrichment and seeding, and dragging if applicable, mulch shall be applied at a rate of 2 tons per acre to all areas seeded, and the mulch shall be crimped with a mulch crimper.]**

3.3 CARE DURING CONSTRUCTION

The Subcontractor shall be responsible for protecting and caring for areas seeded before final acceptance of the work. The Subcontractor shall repair any damage to seeded areas caused by erosion or construction operations without additional compensation.

3.4 PLANT ESTABLISHMENT

[The Subcontractor shall be responsible for caring for seeded areas, as required, and in accordance with the written recommendations of the SCS until adequate vegetative cover is established.]**

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PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Measurement for payment for seeding will be by the acres of surfaces actually seeded and approved.
- B. Separate measurement for payment will not be made for any incidental work and services; [e.g., loosening the surface, applying lime and fertilizer, mulching, or mowing.]**

4.2 PAYMENT

- A. Payment for seeding will be by the unit price per acre quoted therefor in the Bid Schedule. The price quoted shall include full compensation for furnishing all materials, tools, equipment, incidentals, labor, and for performing all work specified herein for complete work.
- B. Separate payment will not be made for any incidental work and services. Full compensation for such work will be considered to be included in the applicable related item of work or incidental to the Subcontract.

END OF SECTION 02935

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SECTION 02935

SEEDING

PART 1 - GENERAL

1.1 SCOPE

This Specification Section covers seeding. All disturbed exposed areas not covered by riprap shall be seeded as required to control erosion.

1.2 MATERIAL STORAGE

- A. Seeds shall be stored in sealed waterproof containers in a cool, dry location and shall be kept out of direct sunlight until ready for use.
- B. Fertilizer shall be delivered and stored in waterproof containers that clearly show the chemical analysis and name of manufacturer.

[1.3 SUBMITTALS

The Subcontractor shall submit to the Contractor, the recommendation of the U.S. Soil Conservation Service (SCS) for the timing of seeding within 30 to 90 days prior to performing seeding.]**

PART 2 - MATERIALS

2.1 SEED MIX

A. Drainage Swales [and Ditches:]**

- 1. [The seed mix for areas within 100 feet of center line of north and east drainage swales and within drainage ditches shall consist of the following:]**

<u>Seed Species</u>	<u>Seeding Rate (Pounds of Pure Live Seed Per Acre)</u>
Slender Wheatgrass (Primar)	6
Western Wheatgrass (Arriba)	<u>6</u>
Total	12

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SECTION 02278

EROSION PROTECTION

PART 1 - GENERAL

1.1 SCOPE

A. This Specification Section describes the requirements for the following:

1. Furnishing and placing riprap and bedding materials for tailings embankment cover and riprap toe protection.
2. Restoration of the borrow area.

1.2 WORK NOT INCLUDED

Erosion protection related to construction facilities specified in Section 01500 is not included in the scope of work of this Specification.

1.3 RELATED WORK

- A. Section 01300 - Submittals
- B. Section 02200 - Earthwork: Subgrade Preparation

1.4 APPLICABLE PUBLICATIONS

A. The publications listed below form a part of this Specification to the extent referenced. The publications are referred to in the text by the basic designation only:

[1.]* American Society for Testing and Materials (ASTM):

C88-83 Test Method for Soundness of Aggregates by Use of Sodium Sulfate or Magnesium Sulfate

C127-84 Test Method for Specific Gravity and Absorption of Coarse Aggregate

[C131-89 Test Method for Resistance to Degradation of Small-Size Coarse Aggregate by Abrasion and Impact in the Los Angeles Machine]**

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[C136-84a Method for Sieve Analysis of Fine and Coarse Aggregates (Rulers or Templates may be Substituted for Sieves for Gradation of Particles Larger Than 3 Inches)*

C295-85 Practice for Petrographic Examination of Aggregates for concrete.

[2. International Society for Rock Mechanics (ISRM), 1981, Rock Characterization Testing and Monitoring, ISRM Suggested Methods, E. T. Brown, Editor, Pergamon Press, New York:

a. Suggested Method for Determining Indirect Tensile Strength by the Brazil Test, pp. 120-121

b. Suggested Method for Determination of the Schmidt Rebound Hardness, pp. 101-102]*

[Text Deleted]*

1.5 PERMITS

The Contractor will provide permits for the use of borrow areas shown on the Subcontract Drawings as specified in Article SC-11 of Special Conditions. [If the Subcontractor uses other sources for bedding materials, he shall be responsible for obtaining all required permits.]* [The Subcontractor shall perform the Work in accordance with the requirements of all applicable permits, including haul road maintenance and haul operation requirements.]**

1.6 SUBMITTALS

A. [The technical submittal covering the production of erosion protection materials shall include, but not be limited to, the following:

1. Narrative acknowledging permit stipulations for each rock borrow source.
2. Mining plan.
3. Use, handling and storage of explosives.
4. Expected quarry breakage or pit analysis.
5. Required combined product gradation.

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6. Production analysis.
7. Flow diagram of production plant showing all products and wastage in tons per hour.
8. Plant layout showing individual pieces of equipment.
9. Complete list of equipment with manufacturers' models, capacities, horsepower and expected production curves.
10. Schedule.
11. Manpower required.
12. Handling of finished products.
13. Safety.
14. Maintenance of public and on site haul roads.
15. Dust control.
16. Protection of archaeological sites.
17. Quality control.]**

B. [During production of riprap and bedding materials, the Subcontractor shall submit gradation test results, in triplicate, in accordance with Article 2.1 below. For riprap and bedding materials, gradation tests for each type material shall be performed a minimum of four times during production.]*** [An initial sample shall be obtained and tested during the early stages of production activities. Additional samples shall be obtained and tested when approximately one-third and two-thirds of the total volume of material has been produced, and a final sample shall be obtained and tested near completion of production activities. If the total volume of material for each riprap type or bedding material is greater than 30,000 cubic yards, a gradation test shall be performed for each additional 10,000 cubic yards, or fraction thereof produced. The frequency for performing the gradation tests shall be when approximately 100 cubic yards of material has been produced and near completion of production activities.]**

[C. If the Subcontractor decides to use other sources for bedding material, a site inspection report containing the information specified in Articles 2.1.A.3 and 2.1.A.4 below shall be submitted, in triplicate, to the Contractor

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for review of the source, in accordance with the requirements of Section 01300. The site inspection report shall be submitted 90 days prior to production of the material. The Subcontractor shall also provide access to the source for the Contractor for the purpose of investigating and sampling the source materials at least 90 days prior to production of the bedding material.]*

[D.]* The Subcontractor shall submit, in writing, the name and qualifications of his proposed testing laboratory to the Contractor for approval. The Subcontractor's proposed laboratory shall meet the requirements of ASTM D3740-80.

PART 2 - PRODUCTS

2.1 MATERIALS

A. General:

- [1. Material Sources: Riprap materials shall be obtained from the source specified in Section 01010. Right of access to this source and any royalty payment which may be required will be provided by the Contractor. Bedding materials shall be obtained from the source specified in Section 01010 or a source proposed by the Subcontractor and approved by the Contractor. Right of access to and any royalty payment which may be required for any Subcontractor-proposed bedding source shall be the responsibility of the Subcontractor.
2. Approval of the source as a borrow area does not mean that all materials excavated will meet the requirements of this Specification. Processing, selective quarrying, or both, will generally be necessary to meet the gradation and quality requirements of this Section.
3. Subcontractor-Proposed Bedding Material Source: The basis for approval of sources proposed by the Subcontractor for bedding materials shall be as follows:]*
 - [a. A site inspection report by an engineering geologist which shall be submitted by the Subcontractor and shall include, as a minimum, an evaluation of soundness, hardness, and durability for three samples representative of the proposed source.]***
[The evaluation of durability will be based in part

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on petrographic examination of rock types available from the source. Representativeness of samples will be determined by the Contractor, based on precise location and source of sample taken in relation to the whole borrow area. The site inspection report shall include location of all samples and methods of sampling.

- b. The Subcontractor shall have a qualified laboratory perform the six (6) types of tests listed in Table A on each sample (minimum of 3 samples) obtained from the proposed source, unless existing particle sizes at the source are inadequate to perform Schmidt Hammer or Tensile Strength tests as specified. Special attention shall be given to ensure that the samples are representative of the proposed rock materials. Test samples shall be obtained from within the precise locations of rock deposits from which materials will be produced.
- c. Results of the specified tests shall be used to obtain rock quality scores using the criteria given in Table A. The score for each test is determined by multiplying the appropriate weighting factor by the score (0 to 10) based on the specific test result. The final score for each sample is the ratio of the sum of the individual test scores (six tests) to the maximum possible score, expressed as a percentage. To be acceptable, the final score must be no less than 80 percent.

4. The materials shall be free from radioactive or other contamination.]*

B. Riprap Materials:

1. Material shall be dense, sound [basalt]* rock, resistant to abrasion, free from cracks, seams, and other defects [as shown in the petrographic examination and during field inspection in accordance with Article 3.3.A.1 below.]* [Dense, sound basalt rock shall be non-vesicular, slightly vesicular, or moderately vesicular basalt.]*
2. The shape of at least 75 percent of the material, by weight, shall be such that the minimum dimension is not less than one third of the maximum dimension.

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3. Quality: [The following tests will be performed by the Contractor.]**

<u>Tests</u>	<u>Designation</u>	<u>Requirements</u>
Specific Gravity (Saturated Surface Dry Basis)	ASTM C127	Not less than 2.60. Average of any five consecutive test re- sults shall be not less than 2.65.
Soundness	ASTM C88	Na ₂ SO ₄ Test: Not more than 5 percent loss of weight after 5 cycles.

4. Gradation: Riprap materials shall be reasonably well graded within the following limits:

<u>U.S. Standard Sieve Size (Square Openings)</u>	<u>Percent Passing (by weight)</u>
<u>Type A</u>	
4-inch	100
2-inch	23-98
1-1/2-inch	15-50
1-inch	2-25
1/2-inch	0-5
<u>Type B</u>	
7-inch	100
5-inch	40-98
4-inch	28-60
3-inch	15-36
1-1/2-inch	0-5
<u>Type C</u>	
18-inch	100
12-inch	38-78
10-inch	26-50
6-inch	2-20
4-inch	0-5

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C. Bedding Materials:

1. Bedding materials shall be obtained from [materials acceptable as specified for riprap, except that subsections 2.1.B.2 and 2.1.B.4 shall not apply, or from other sources]* approved by the Contractor. The Subcontractor shall process the materials, as required, to meet the gradation requirements specified below.
2. Gradation: Bedding materials shall be reasonably well graded within the following limits:

<u>U.S. Standard Sieve Size (Square Openings)</u>	<u>Percent Passing (by weight)</u>
[3 inches	100
2 inches	95-100
1/2-inch	45-90
No. 4	22-53
No. 8	10-35
No. 30	0-7]*

- D. Source Quality Control: [The Subcontractor shall provide a qualified engineering geologist to monitor materials acquisition and production to ensure that only materials acceptable under Articles 2.1.A, 2.1.B and 2.1.C. and confirmed by the Contractor are processed. During excavation or blasting of materials, the Contractor will inspect the site to ensure that stripping and material selection procedures are adequate to prevent inclusion of highly vesicular basalt or other unsuitable materials in processed materials. The Contractor reserves the right to inspect and test the materials.]*

PART 3 - EXECUTION

3.1 PLACEMENT AND COMPACTION

- A. Subgrade preparation for riprap toe protection shall conform to Specification Section 02200.
- B. Where the required bedding material thickness is 6 inches or less, the bedding material shall be spread and compacted in one layer. Where the required thickness is more than 6 inches, the material shall be spread and compacted in two or more layers of approximately equal thickness and the maximum compacted thickness of any one layer shall not exceed 6 inches.

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- C. [Each layer of bedding material shall be track-walked by one pass of a track-type tractor with a ground pressure of 8 pounds per square inch or greater. The bedding surface shall not be rolled smooth prior to placement of overlying riprap.]**
- D. Riprap material shall be placed so that the larger pieces are uniformly distributed and the smaller pieces serve to fill the spaces between them to provide well-keyed, densely placed layers of riprap of the specified thicknesses.
- E. Riprap material may be end-dumped and shall be placed by means to achieve the results specified in Paragraph 3.1 D. above. Care shall be exercised to prevent displacement of bedding materials [and to prevent breakage of riprap.]**
- F. Construction equipment other than [placing,]** spreading and compaction equipment shall not be allowed to move over the placed riprap material and bedding material layers except at equipment crossovers as designated by the Contractor. Each crossover shall be cleaned of all contaminating materials and approved by the Contractor before additional materials are placed in these areas. [Construction equipment for placing, spreading and compaction may move over placed riprap and bedding layers. The Contractor may restrict such traffic to minimize damage to completed layers. Areas of riprap and bedding layers damaged by construction equipment shall be restored to meet the requirements of the Specifications.]**

3.2 TOLERANCES

- A. The material layers shall be placed generally to the limits and thicknesses shown on the Subcontract Drawings within the following tolerances:
 - 1. Bedding material shall not be placed in an area until the radon barrier is within 0.1 foot of the final elevations shown on the Subcontract Drawings.
 - 2. The minimum in-place thickness [of riprap]** shall not be less than 100 percent of the thickness shown.
 - 3. The maximum in-place thickness [of riprap]** shall not be more than [135]** percent of the thickness shown.

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4. Local irregularities will be permitted provided that such irregularities do not form noticeable mounds, ridges, swales or depressions which in the opinion of the Contractor could cause concentrations of surface runoff or form ponds or gullies.

3.3 FIELD QUALITY CONTROL

- A. The placement of the materials will be monitored to ensure that the following requirements are met:

1. [Material of the correct type and quality is being placed. Individual pieces greater than or equal to 8 inches in diameter not meeting the requirements noted in Article 2.1.B.1 shall be removed per Paragraph C below. Pockets or concentrated areas of materials, less than 8 inches in diameter, not meeting the requirements of Article 2.1.B.1 shall be removed per Paragraph C below. Individual pieces less than 8 inches in diameter not meeting the requirements of Article 2.1.B.1 may be left in place provided that concentrations do not exist.]**
2. The material being placed is clean and free of unsuitable material.
3. The material is being loaded, transported and placed in a manner which minimizes segregation and degradation.
4. The material is being placed to line and grade within the tolerances and limits designated in Article 3.2 above.
5. The material placed meets the gradation requirements specified.

- B. Materials segregated or not placed according to the above requirements shall be [regraded, adjusted, or removed and replaced]** using appropriate equipment, to conform with the tolerances and limits given above, at no additional cost to the Contractor.

- C. Materials not meeting the requirements of this Section shall be removed and replaced with specified materials at no additional cost to the Contractor. Rejected materials shall be disposed of at designated disposal sites and at no additional cost to the Contractor. Materials not meeting the grading requirements shall be reprocessed or dis-

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carded. The Contractor may require modification of the processing and grading operations to ensure that the specified grading requirements are met.

- D. [During placement of riprap and bedding materials, the Contractor will perform a minimum of four gradation tests in accordance with Articles 2.1.B.4 and 2.1.C.2 above. An initial sample will be obtained and tested during the early stages of placement activities. Additional samples will be obtained and tested when approximately one-third and two-thirds of the total volume of material has been placed, and a final sample will be obtained and tested near completion of placement activities. If the total volume of material placed for each riprap or bedding material is greater than 30,000 cubic yards, a gradation test will be performed for each additional 10,000 cubic yards, or fraction thereof placed.]**
- E. For placement control purposes a 50' x 50' (or other size approved by the Contractor) test area shall be constructed for each size of riprap using material meeting gradation requirements, and placed to the required thickness. This section shall be used to show what material meeting specifications looks like after placement, and to calibrate "eyes" of inspectors and other interested persons. If properly constructed on the embankment, the section can become part of the completed erosion protection.

3.4 RESTORATION OF BORROW AREAS

Restoration of borrow areas shall be as [required by applicable permits.]**

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. Measurement for payment for furnishing and placing of the following materials will be by the cubic yards of material placed. [The quantities will be calculated from thickness dimensions shown on the Subcontract Drawings, and by using average end area methods from surveys conducted before and after placement for the areal extent of placement. Additional material placed to meet specified tolerances, exceeding thickness dimensions shown on the Subcontract Drawings, will not be measured for payment.]**

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1. Riprap Material, Type A
2. Riprap Material, Type B
3. Riprap Material, Type C
4. Bedding Material

4.2 PAYMENT

Payment for furnishing and placing the materials of Article 4.1.A above, will be by their applicable unit prices per cubic yard quoted therefor in the Bid Schedule. The prices quoted shall include full compensation for the development of the source (where applicable) including obtaining required permits (if applicable), clearing, stripping and excavating; processing the materials; testing and evaluating the materials; transporting to placement locations; placing; compacting and consolidating complete in place; and for restoration of the borrow areas.

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[TABLE A
ROCK QUALITY SCORING CRITERIA]***

	Weighting Factor			Score										
	Lime- stone	Sand- stone	Igne- ous	10	9	8	7	6	5	4	3	2	1	0
[Specific Gravity	12	5	9	2.75	2.70	2.65	2.60	2.55	2.50	2.45	2.40	2.35	2.30	<2.3
Absorption (%)	13	5	2	0.1	0.3	0.5	0.67	0.83	1.0	1.5	2.0	2.5	3.0	>3.0
Sodium Sulfate (%)*	4	3	11	1	3	5	6.7	8.3	10	12.5	15	20	25	>25
Abrasion (%)**	1	8	1	1	3	5	6.7	8.3	10	12.5	15	20	25	>25
Schmidt Hammer	11	13	3	70	65	60	54	47	40	32	24	16	8	<8
Tensile Strength (psi)	5	4	10	1400	1200	1000	833	666	500	400	300	200	100	<100

1. Scores derived from Tables 6.2 and 6.7 of Ref. 1.
2. Any rock to be used must be qualitatively rated at least "fair" in a petrographic examination conducted by a geologist experienced in petrographic analysis.
3. Weighting Factors derived from Table 7 of Ref. 2, based on inverse of ranking of test methods for each rock type.
4. Test methods should be standardized (ASTM, e.g.) and should be those used in Ref. 2.

Ref. 1 Lindsey, C.G., Long, L.W., and Begej, C.W. (1982), Long-Term Survivability of Riprap for Armoring Uranium Mill Tailings and Covers: A Literature Review, U.S. Nuclear Regulatory Commission, NUREG/CR-2642.

Ref. 2 De Puy, G.W., "Petrographic Investigations of Rock Durability and Comparisons of Various Test Procedures," Engineering Geology, Vol. 2, No. 2, July 1965.]***

* 5 Cycles
** 100 Revolutions

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SECTION 02771

MEMBRANE LINER

PART 1 - GENERAL

1.1 SCOPE

[This Specification Section describes the requirements for the following:

- A. Furnishing, installing, maintaining, removing and disposing of membrane liner systems for temporary collection drainage ditches.
- B. Refurbishing, repairing or replacing, as required, existing liner systems for retention basin and ditches, and maintaining, removing and disposing of existing liner systems for retention basin and ditches.]**

1.2 SYSTEM DESCRIPTION

- A. Liner system shall consist of liner, adhesives and accessories required for sterilizing ground and installing liner, and other appurtenances.
- B. The ditches, where lining is required, will carry water produced from stormwater runoff, decontamination and dewatering operations, including sediment transportation.
- [C. The retention basin shall collect and store water from ditches for evaporation.]**

1.3 RELATED WORK

- A. Section 01300 - Submittals
- B. [Section 02050 - Demolition]**
- [C.]**Section 02200 - Earthwork

1.4 APPLICABLE PUBLICATIONS

- A. The Publications listed below form a part of this Specification to the extent referenced. The Publications are referred to in the text by the basic designation only:
 - 1. American Society for Testing and Materials (ASTM):
 - D792-86 [Test Methods for Specific Gravity, Relative Density and Density of Plastics by Displacement]**

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2. National Sanitation Foundation (NSF):

[SN 54 Flexible Membrane Liners (Revised November 1985)]**

3. Federal Standards (FS):

101C Test Methods for Puncture Resistance and Elongation Test (Method 2065.1)

[Text Deleted]**

1.5 QUALITY ASSURANCE

A. Manufacturer: The manufacturer of the liner shall have manufactured in excess of 10,000,000 square feet of membrane liner. The manufacturer shall also certify in writing that the liner meets or exceeds the NSF Standard 54 physical properties as specified in this Section, and shall withstand a minimum of 5 years of outdoor weathering without cover. The certification shall also state that the liner material is formulated from 100 percent virgin domestic, first quality raw materials.

B. Fabricator: The liner fabricator shall have fabricated in excess of 10,000,000 square feet of liner.

C. Installation Supervisor: The Installation Supervisor shall have supervised installation of lining material in excess of 1,000,000 square feet of liner.

[Text Deleted]**

1.6 SUBMITTALS

A. General submittal requirements are specified in Section 01300.

B. The Subcontractor shall submit the following to the Contractor for review and approval 30 days before placement of the material:

1. Product data.

2. Samples of material and accessories.

3. Certificate signed by the manufacturer stating that the system proposed meets the Specification.

4. Installation details.

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5. [Fabricator's or manufacturer's installation, repair, refurbishing and replacement instructions.]**
6. Test reports.
7. Qualifications of installer and supervisor in accordance with the requirements of Article 1.5.C.
8. Certification from a recognized independent testing laboratory that the liner meets the requirements of this Specification and is suitable for its intended purpose.

1.7 SITE CONDITIONS

The site is at an approximate elevation of 6980 feet and is located near Grants, New Mexico. Temperatures may vary from less than 0°F to a high of 100°F. Maximum wind speeds may reach 90 mph. The wastewater retention basins and spillways are anticipated to be in operation for 3 years.

1.8 WARRANTY

- A. Liner materials and factory seams shall be [warranted]** free from defects in materials and workmanship for a period of 5 years from the date of acceptance. Installation and field seams shall be warranted free of defects for a period of 5 years from the date of acceptance.
- B. Upon written notification by the Contractor, the Subcontractor shall promptly and completely repair or replace defective lining materials on site which become apparent during such 5-year period. Such repair or replacement shall be done at no cost to the Contractor. The Subcontractor shall be responsible for removal and proper disposal of all liquids, soil, or contaminated materials required to enable him to carry out the necessary repairs.

PART 2 - PRODUCTS

2.1 ACCEPTABLE MANUFACTURERS

The liner material shall be the product of (1) a manufacturer successfully engaged in the business of manufacturing liner materials for the last five years, or (2) a manufacturer meeting the requirements of Article 1.5.A above.

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2.2 MATERIAL

- A. The thermoplastic elastomer lining material shall be manufactured from a synthetic rubber compound and shall be high density polyethylene (HDPE) or polyethylene (PE), chlorinated polyethylene (CPE), or polyvinyl chloride (PVC), specifically compounded for use in hydraulic facilities. In addition, the lining material shall be formulated to withstand a minimum of 5 years of outdoor exposure without cover.
- B. The liner shall have a smooth uniform surface with no visible defects and shall be free of holes, blisters, gels, undispersed ingredients and any contamination or defect that may affect its serviceability. The liner shall be uniform in thickness with a maximum 10 percent deviation from the nominal thickness. The edges shall be straight and free of nicks and cuts. Inspection for pinholes shall be made prior to shipment to the field.
- C. The liner material shall be specifically compounded to conform to the physical properties set forth in the National Sanitation Foundation Standard SN54 and the standards set forth below.

<u>Property</u>	<u>Test Method</u>	<u>Data</u>
<u>High Density Polyethylene (HDPE) or Polyethylene (PE)*</u>		
Density	ASTM D792	0.93 gms/cc min.
Gauge (Nominal)		40 mils
Puncture Resistance	FED STD 101C Method 2065.1	[60]** lbs. min.
<u>Chlorinated Polyethylene (CPE)</u>		
Gauge (Nominal)		30 mils
Puncture Resistance	FED STD 101C Method 2065.1	[60]** lbs. min.
<u>Polyvinyl Chloride (PVC)</u>		
Gauge (Nominal)		30 mils
Puncture Resistance	FED STD 101C Method [2065.1]**	[50]** lbs. min.

- * The specifications for High Density Polyethylene (HDPE) and Polyethylene (PE) are listed in the National Sanitation Foundation Standard SN54 under High Density Polyethylene (HDPE).

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2.3 FABRICATION

The roll goods shall be factory fabricated into optimum sized panels up to 20,000 square feet, using an approved seaming method as prescribed by the manufacturer. When the seam is tested for shear and peel, failure of the material including the seam shall not occur at the bonded surfaces.

PART 3 - EXECUTION

3.1 GENERAL

[The liner systems shall be installed or, for existing liner systems, repaired, refurbished, or replaced as shown on the Subcontract Drawings and as recommended by the manufacturer and the fabricator.]**

3.2 GROUND SURFACE PREPARATION

- A. Surfaces to be lined shall be smooth and free of sharp rocks and vegetation. If the liner is not applied within 15 days of surface preparation, the surface shall be protected against growth of vegetation by the application of a suitable short-lived soil sterilant as approved by the Contractor. The soil sterilant used shall be compatible with the liner material to ensure against damaging the liner.
- B. Certification from the Installation Supervisor shall be required stating that the surface on which the liner is to be placed is acceptable. No installation of lining shall commence until this certification is furnished to the Contractor. The receiving surface shall be kept in the accepted condition until the installation of the lining is accomplished.

3.3 FIELD SEAMS

- A. PVC/CPE Liner: All field seams for PVC or CPE liner materials shall be performed using only the fabricator's approved methods, adhesives and application directions. The minimum width of overlap of field seams shall be 4 inches. The contact surfaces of the panel overlap shall be cleaned to remove all dirt, dust or other foreign materials. A nominal 6-inch overlap of liner panels shall be

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allowed to keep dirt out of the field seams. When bonding the seams, the temperature of the sheet and adhesive shall be not less than 55°F. Artificial heat shall be applied if ambient conditions create lower temperatures.

B. HDPE or PE Liner:

1. Field joints shall be made with overlapping adjacent sheets and inserting a ribbon of fusion joining resin between the overlapping sheets or over the joint between them. Appropriate alternate seaming procedures as recommended by the manufacturer or fabricator such as a hot air or hot wedge method may be proposed for the Contractor's approval. The minimum width of overlap of field seams shall be 3 inches.

a. Joints between liner sheets shall be field welded using the fabricator's fusion joining apparatus and technique. The joining procedure shall consist of softening the liner material by heated air. Directly following the application of heat, a minimum 1-1/2 inch wide hot strip of the same HDPE or PE from which the sheet is made shall be extruded between the overlapping sheets. The overlapping sheets shall then be pressed together with a minimum pressure of 14 psi to form the fusion joint.

b. Penetrations through the liner for pipes, flashings, patches, and the like shall be field welded using a fusion joint gun. The joining procedure will consist of softening the liner material by heated air. Directly following the application of heat, a hot strip of the same material from which the sheet is made shall be extruded over the joint to produce the fusion joint.

c. [Prior to fusion joining, all areas to become joint interfaces shall be cleansed.]**

d. Fusion joining shall not take place unless the sheet is dry and shall not be attempted when the ambient temperature is below 45°F or above 90°F as determined by the Contractor.

3.4 INSPECTION AND TESTING

A. HDPE or PE Liner:

1. All fusion joined seams shall be visually examined and probed for voids or imperfect bonds.

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2. All fusion joined seams shall be ultrasonically tested along their entire lengths with a testing device furnished by the Subcontractor. The device shall be capable of locating weld defects including internal cracks, unjointed interfaces, voids, cavities, gravel inclusions and other foreign particles above 1 mm (0.04 inches) in size. The Subcontractor shall furnish to the Contractor a copy of the ultrasonic test results coordinated with the seam pattern shown on the approved Shop Drawings.
3. All seams made for the HDPE or PE liner shall be tested using vacuum testing in addition to ultrasonic testing. Vacuum testing shall consist of placing a rectangular box (approximately 30 inches long) into the liner seam. The suction chamber shall be connected to the vacuum pump. A foaming agent shall be applied to the seam area under test to indicate possible leaks. The seam shall be maintained under 5 psig suction for a minimum of 10 seconds, and certification given to the Contractor that the seams will provide a film tearing bond. The test areas shall have a minimum of 3-inch overlap from the previous test section.
4. Defects found during the testing shall be repaired and retested. Such tests and adjustments shall be repeated until, in the opinion of the Contractor, the repairs are satisfactory and complete. All repairs shall be made by the Subcontractor at no additional expense to the Contractor.
5. The Subcontractor shall furnish to the Contractor, on a daily basis, if requested, seam samples for testing cut from that days installation. The samples may be tested to determine strength and durability. Any seams not meeting the requirements specified herein shall be repaired by the Subcontractor at no additional expense to the Contractor.
6. The Subcontractor shall repair all areas damaged by sampling immediately after the sample is taken. The repairs shall be made at no additional expense to the Contractor.

B. PVC/CPE Liner:

1. All field seams shall be air lance tested along their entire lengths using one eighth inch orifice at 50 psi.

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2. Defects found during the testing shall be repaired and retested. Such tests and adjustments shall be repeated until, in the opinion of the Contractor, the repairs are complete. All repairs shall be made by the Subcontractor at no additional expense to the Contractor.
3. The Subcontractor shall furnish to the Contractor, on a daily basis, if requested, seam samples for testing cut from that days installation. The samples may be tested to determine strength and durability. Any seams not meeting the requirements specified herein shall be repaired by the Subcontractor at no additional expense to the Contractor.
4. The Subcontractor shall repair all areas damaged by sampling immediately after the sample is taken. The repairs shall be made at no additional expense to the Contractor.

[3.5] GAS VENTS AND LINER HOLD-DOWNS

- A. Gas vents as recommended by the manufacturer and the fabricator and approved by the Contractor shall be installed in the liner around the perimeter of the basin. Vents shall have a minimum diameter of 4 inches, located 6 inches below the top of the dike and at a maximum spacing of 50 feet on centers.
- B. Liner hold-downs, as recommended by the manufacturer and the fabricator and approved by the Contractor, shall be installed over the liner on the embankment and excavation slopes. The holddowns shall be placed on maximum 30-foot centers or over every field seam, whichever is closer.]**

[3.6]**ANCHORING

During installation, necessary precautions shall be taken to insure the liner will not be damaged or moved by wind, rain or dust. The liner shall be installed in such a manner that the liner will be protected from damage or movement by wind, water, and dust. Venting to prevent damage to the liner shall be provided per the manufacturer's recommendations.

[3.7]**MAINTENANCE

The Subcontractor shall maintain and if required, repair synthetic membrane to provide protection from runoff erosion and contamination.

** P.I.D. 16-S-12

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Membrane Liner

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[3.8]**REMOVAL AND DISPOSAL OF MEMBRANE LINER

After the completion of the construction phase or when retention basin and collection ditches are no longer required, the synthetic membrane shall be removed, decontaminated or demolished and disposed of as specified in Section 02050 and as required by the Contractor.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

- A. [Measurement for payment for furnishing and installing membrane liner for temporary collection ditches and for repairing, refurbishing, or replacing existing membrane liner for ditches and retention basin will be by the square yards of material installed, repaired, refurbished or replaced.]** The quantities for payment will be calculated from the lines and dimensions shown on the Sub-contract Drawings. Overlaps shall not be measured for quantity calculations. The surfaces shall be measured parallel to the liner material installed. [(Bid Schedule Item 209)]**
- B. Measurement for payment for preparation of subgrade shall be as specified in Section 02200.
- C. Measurement for payment for removal and disposal of membrane liner will be as specified in Section 02050.

4.2 PAYMENT

- A. [Payment for furnishing and installing membrane liner for temporary collection ditches and for repairing, refurbishing, or replacing existing membrane liner for ditches, and retention basin will be by the unit price per square yard quoted therefor in the Bid Schedule.]** The price quoted shall include full compensation for furnishing all labor, materials, tools, equipment, Installation Supervisor, incidentals and for performing all work including, but not limited to, installation, seaming, excavating, backfilling of anchor trenches, and maintaining of all liners, as specified.
- B. Payment for preparation of subgrade shall be as specified in Section 02200.
- C. Payment for removal and disposal of membrane liner will be as specified in Section 02050.

END OF SECTION 02771

** P.I.D. 16-S-12

Document No. 3885-AMB-S-01-00407-03
Issued for Construction-Revision 1
Membrane Liner

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[SECTION 02833]**

WOVEN WIRE FENCE

PART 1 - GENERAL

1.1 SCOPE

This Specification Section describes the requirements for furnishing, installing, maintaining, removal and disposal of rectangular woven wire fence as shown on the Subcontract Drawings and as specified in this Section.

1.2 APPLICABLE PUBLICATIONS

A. The Publications listed below form a part of this Specification to the extent referenced. The Publications are referred to in the text by the basic designation only:

1. American Society for Testing and Materials (ASTM):

All6-81	Specification for Zinc-Coated (Galvanized) Steel Woven Wire Fence Fabric
A121-86	Specification for Zinc-Coated (Galvanized) Steel Barbed Wire
C33-86	Specification for Concrete Aggregates
C94-86	Specification for Ready-Mixed Concrete (Rev. B)
C150-86	Specification for Portland Cement (Rev. A)

PART 2 - PRODUCTS

2.1 MATERIALS

A. Fencing shall include rectangular woven wire, posts, barbed wire, and all appurtenances and accessories required for complete installation.

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Woven Wire Fence

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- B. Barbed wire shall conform to the requirements of ASTM A121, and shall consist of three lines of double stranded 12-1/2-gage diameter, Class 3 coating, galvanized wire either 2-point or 4-point barbs spaced at 5-inch intervals.
- C. Rectangular woven wire shall be 12-1/2-gage galvanized steel wire conforming to the requirements of ASTM A116, Class 3 coating. The height shall be 32 inches consisting of eight horizontal wires with vertical stays spaced 6 inches apart.
- D. Line post shall be tee, channel or U-bar shape, 1.33 lbs. per foot.
- E. Braces shall be 1-1/4-inch Schedule 40 steel pipe, or steel angle section, 2 x 2 x 3/16 inches.
- F. End, corner and pull posts shall be 2-inch Schedule 40 steel pipe, or steel angle section 2-1/2 x 2-1/2 x 1/4 inches.
- G. Hardware for connecting members shall conform to commercial standards.

2.2 CONCRETE

Concrete: ASTM C94; 2500 psi at 28 days; normal Portland cement conforming to ASTM C150; 3-inch slump; maximum 1-inch size aggregates conforming to ASTM C33; and clean water. [The Subcontractor shall submit a mix design to the Contractor for approval.]**

PART 3 - EXECUTION

3.1 INSTALLATION

- A. General: Wire fence shall be constructed in accordance with the details shown on the Subcontract Drawings unless otherwise directed by the Contractor.
- B. Line posts shall be set plumb and to the depth and spacing shown on the Subcontract Drawings.
- C. Fence wire shall be stretched by mechanical stretcher or other device designed for such use. The length between pull posts shall not exceed 660 feet for woven wire.

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Document No. 3885-AMB-S-01-00408-03

Issued for Construction-Revision 0

Woven Wire Fence

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- D. Archaeological Sites: The Subcontractor shall install fencing to protect archaeological sites as shown on the Subcontract Drawings. Coordinates of these sites and bearings of boundaries are shown in attached Table 02833-A.

3.2 CONCRETE PLACEMENT

Concrete shall be placed around posts in a continuous pour. Each post shall be checked for vertical and top alignment, and shall be held in position during placement and finishing operations.

3.3 MAINTENANCE AND REMOVAL

The fence constructed under the Subcontract shall be maintained during the term of the Subcontract and later removed and disposed of as Subcontractor's property when no longer required as determined by the Contractor.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

Measurement for payment for furnishing and installing woven wire fence to protect archaeological sites will be by the linear feet of fence installed as shown on the Subcontract Drawings. Measurements will be made along the top of the fence to the nearest foot.

4.2 PAYMENT

Payment for furnishing and installing woven wire fence will be by the unit price per linear foot quoted therefor in the Bid Schedule. Payment shall include full compensation for furnishing all labor, tools, equipment, and incidentals, and for performing all work involved in constructing fences, including any clearing, stripping, tree removal, excavation, concrete or cement, complete in place, including maintenance, removal and disposal, as shown on the Subcontract Drawings and as accepted by the Contractor.

END OF SECTION 02833

Document No. 3885-AMB-S-01-00408-03

Issued for Construction-Revision 0

Woven Wire Fence

02833 - 3

AMB-4

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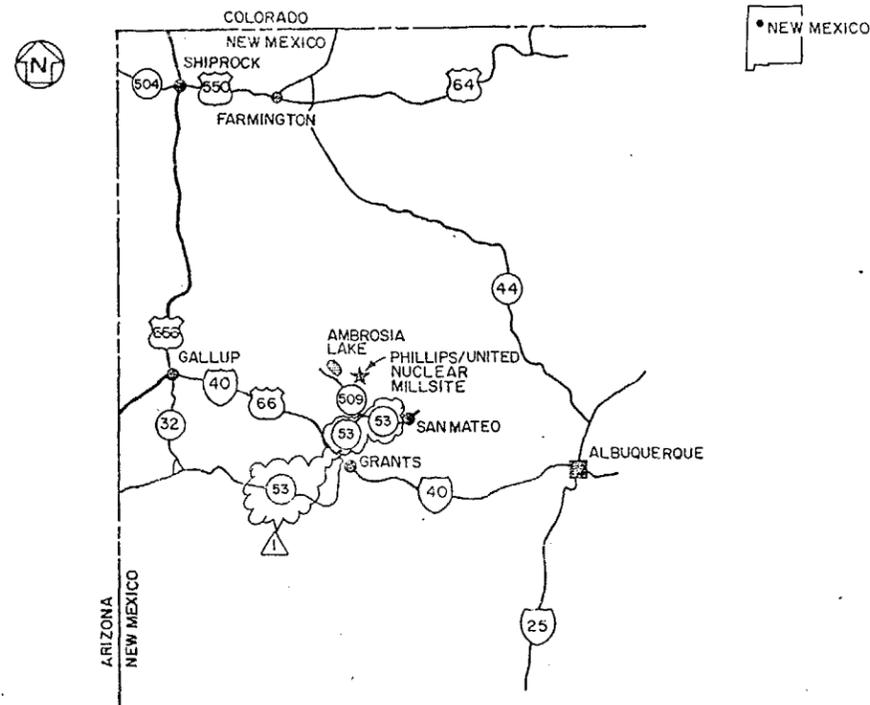
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TABLE 02833-A

<u>Archaeological Site</u>	<u>Hub and Tack Coordinates and Boundary Distances and Bearings</u>
LA50355	Hub and Tack - N 1,608,071.44 E 516,059.93 N 31° 22' 10" W - 101.03' N 69° 41' 21" E - 112.36' S 21° 47' 31" E - 99.86' S 70° 05' 30" E - 95.56'
LA50356	Hub and Tack - N 1,608,338.31 E 516,527.66 N 38° 29' 51" W - 144.98' N 49° 11' 33" E - 115.48' S 41° 25' 25" E - 131.50' S 42° 58' 18" W - 123.47'
LA50357	Hub and Tack - N 1,605,768.83 E 516,338.89 N 87° 54' 50" W - 86.26' N 05° 07' 22" E - 192.52' N 87° 29' 21" E - 100.57' S 11° 27' 04" W - 203.75'
LA50373	Hub and Tack - N 1,606,847.37 E 513,807.76 N 38° 03' 37" E - 124.77' S 52° 08' 37" E - 118.61' S 23° 05' 36" W - 89.95' N 67° 02' 57" W - 146.92'

Note: All Hubs and Tacks are on site boundary corners.

Subcontract Drawi

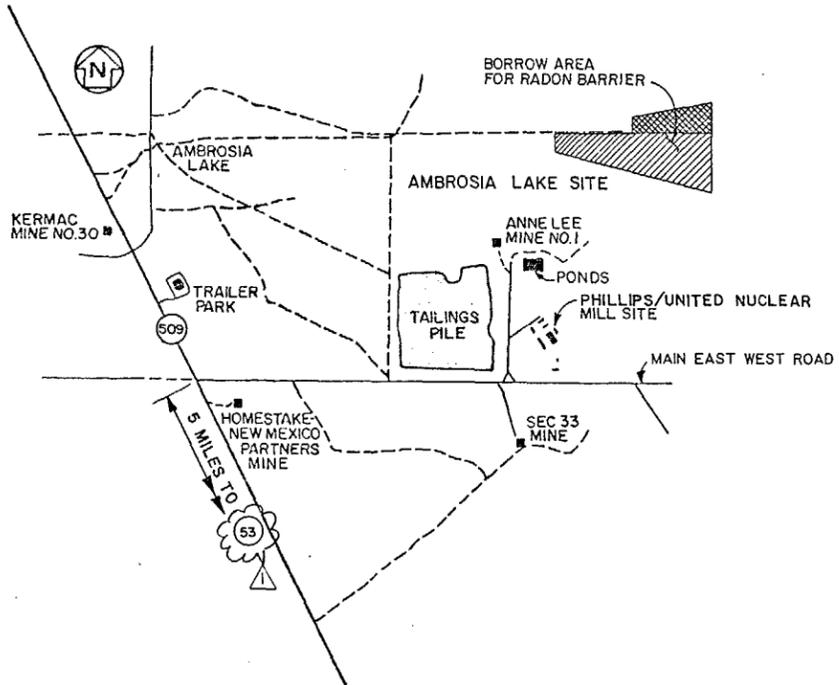


- LEGEND:**
- US INTERSTATE
 - US HIGHWAY
 - STATE ROAD
 - LIGHT-DUTY ROAD
 - UNIMPROVED DIRT ROAD

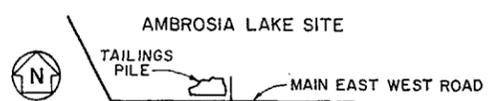
LIST OF DRAWINGS

DRAWING NO.	DRAWING TITLE
AMB-PS-10-0401	TITLE SHEET
AMB-PS-10-0402	VICINITY MAP, LOCATION MAP & LIST OF DRAWINGS
AMB-PS-10-0403	FINAL SITE PLAN
AMB-PS-10-0404	CONSTRUCTION FACILITIES AND DRAINAGE PLAN
AMB-PS-10-0405	EXISTING RETENTION BASIN PLAN AND DETAILS
AMB-PS-10-0406	CONTAMINATED MATERIAL EXCAVATION PLAN (SHEET 1 OF 3)
AMB-PS-10-0407	CONTAMINATED MATERIAL EXCAVATION PLAN (SHEET 2 OF 3)
AMB-PS-10-0408	CONTAMINATED MATERIAL EXCAVATION PLAN (SHEET 3 OF 3)
AMB-PS-10-0409	NORTH SWALE GRADING PLAN
AMB-PS-10-0410	TAILINGS EMBANKMENT GRADING PLAN
AMB-PS-10-0411	TAILINGS EMBANKMENT SECTIONS AND DETAILS
AMB-PS-10-0412	HORIZONTAL AND VERTICAL CONTROL
AMB-PS-10-0413	FENCING AND DIVERSION DITCHES PLAN
AMB-PS-10-0414	WOVEN WIRE FENCE AND MISCELLANEOUS DETAILS
AMB-PS-10-0415	EXISTING UTILITIES PLAN
AMB-PS-10-0416	EAST SWALE AREA GRADING PLAN
AMB-PS-10-0417	MONITOR WELL ABANDONMENT AND BORING LOCATION PLAN
AMB-PS-10-0418	MISCELLANEOUS SECTIONS AND DETAILS (SHEET 1 OF 3)
AMB-PS-10-0419	MISCELLANEOUS SECTIONS AND DETAILS (SHEET 2 OF 3)
AMB-PS-10-0420	MISCELLANEOUS SECTIONS AND DETAILS (SHEET 3 OF 3)
AMB-PS-10-0421	EXISTING CHAIN LINK FENCE AND OFFICE FACILITIES DETAIL
AMB-PS-10-0422	WEST SITE AREA GRADING PLAN
AMB-PS-10-0423	DEMOLITION DEBRIS BURIAL PIT
AMB-PS-10-0424	SITE GRID SYSTEM

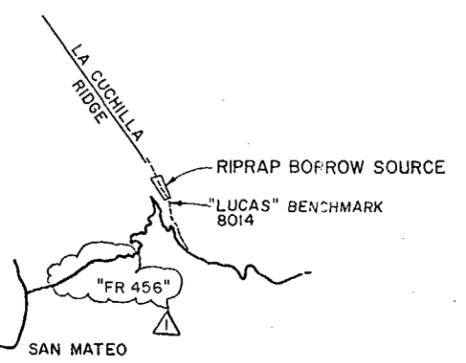
LOCATION MAP
SCALE 10 0 10 20 30 40 MILES



VICINITY MAP
SCALE 1000 0 1000 3000 FEET



RIPRAP BORROW SOURCE



QA REVIEWED FOR QUALITY REQUIREMENTS BY [Signature] 4/23/88



MAIN CONSTRUCTION SUBCONTRACT AMB-4

U. S. DEPARTMENT OF ENERGY
ALBUQUERQUE, NEW MEXICO

AMBROSIA LAKE SITE
AMBROSIA LAKE, NEW MEXICO

VICINITY MAP, LOCATION MAP & LIST OF DRAWINGS

DESIGNED [Signature]	DRAWN RBC	PROJECT ENGINEER DATE [Signature] 21 Apr 88 DATE [Signature] 6/20/88
CHECKED F.B. Guras	INSPECTED [Signature]	
RECOMMENDED [Signature]	APPROVED F.J. FELIZ	
PROJECT NO. DE-AC04-83AL18796 DRAWING NO. AMB-PS-10-0402 REV. 1		

MORRISON-KNUDSEN ENGINEERS, INC.
UMTRA PROJECT
160 HOWARD ST. SAN FRANCISCO, CA 94105

NO.	DATE	REVISIONS	BY	CK	E.B.D. MGR.	CHIEF ENG.	QA MGR.	OOE APP.
612519d	7/25/80	REVISED ROUTE NOS. AND LIST OF DRAWINGS	AMP	FEG	MJ	GG	DA	MA
612519d	4/28/88	ISSUED FOR CONSTRUCTION						

U.S. DEPARTMENT OF ENERGY
ALBUQUERQUE, NEW MEXICO
AMBROSIA LAKE SITE
FINAL SITE PLAN

DESIGNED: *[Signature]*
 CHECKED: *[Signature]*
 INSPECTED: *[Signature]*
 RECOMMENDED: *[Signature]*
 APPROVED: *[Signature]*

DATE: 27 Apr 88
 DATE: 12/198

PROJECT NO. DE-AC04-83AL18796
 DRAWING NO. AMB-PS-10-0403

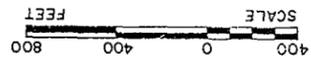
MORRISON-KNUDSEN ENGINEERS, INC.
 10 HOWARD ST SAN FRANCISCO, CA 94103

UMTRA PROJECT
 DELETED ARCHAEOLOGICAL SITES

ISSUED FOR CONSTRUCTION
 12/88

REVISIONS

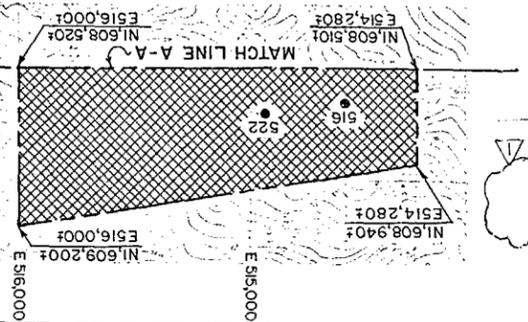
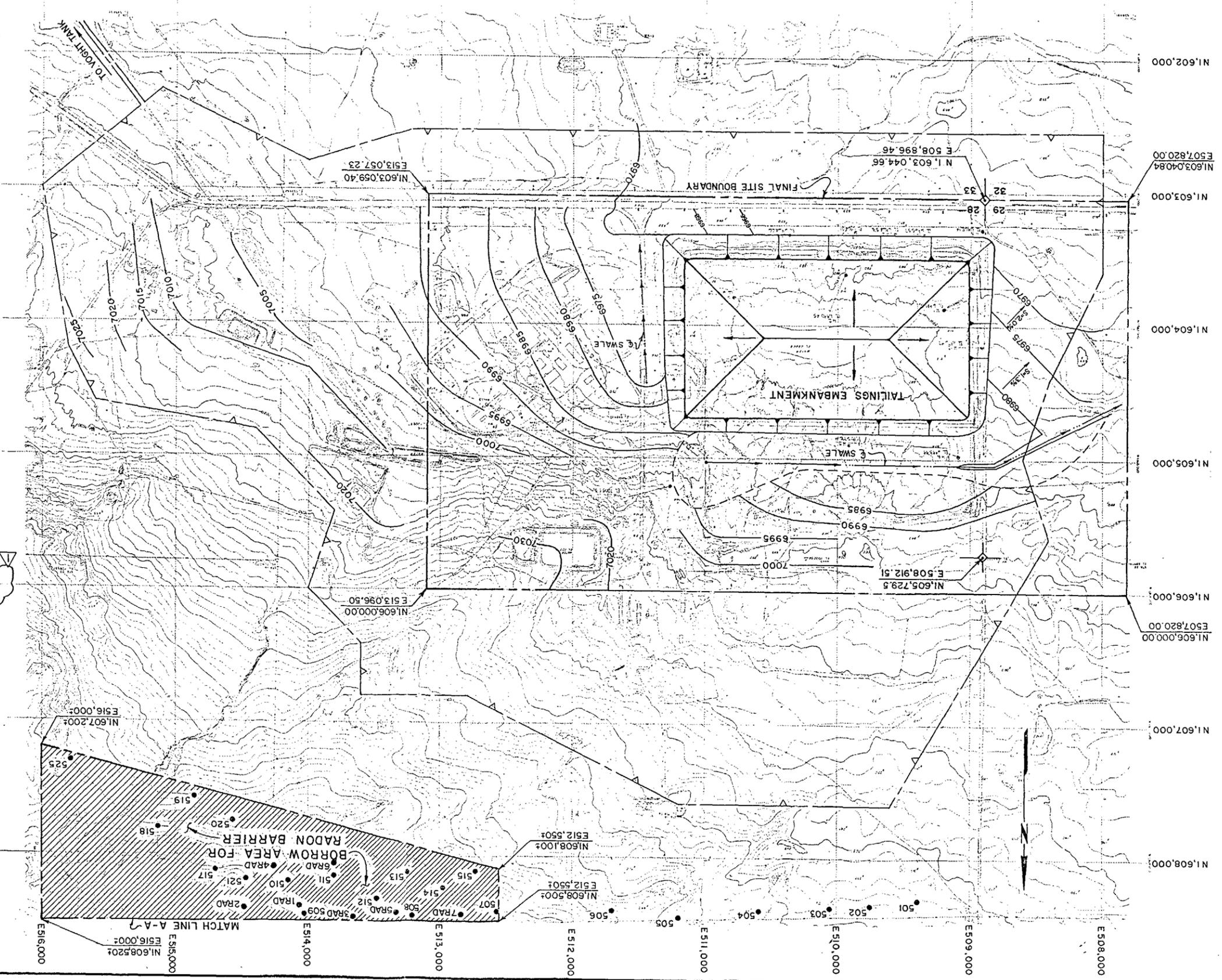
NO.	DATE	BY	CHK	ENG	CHIEF	DATE
1	12/88	MSB	MSB	MSB	MSB	12/88

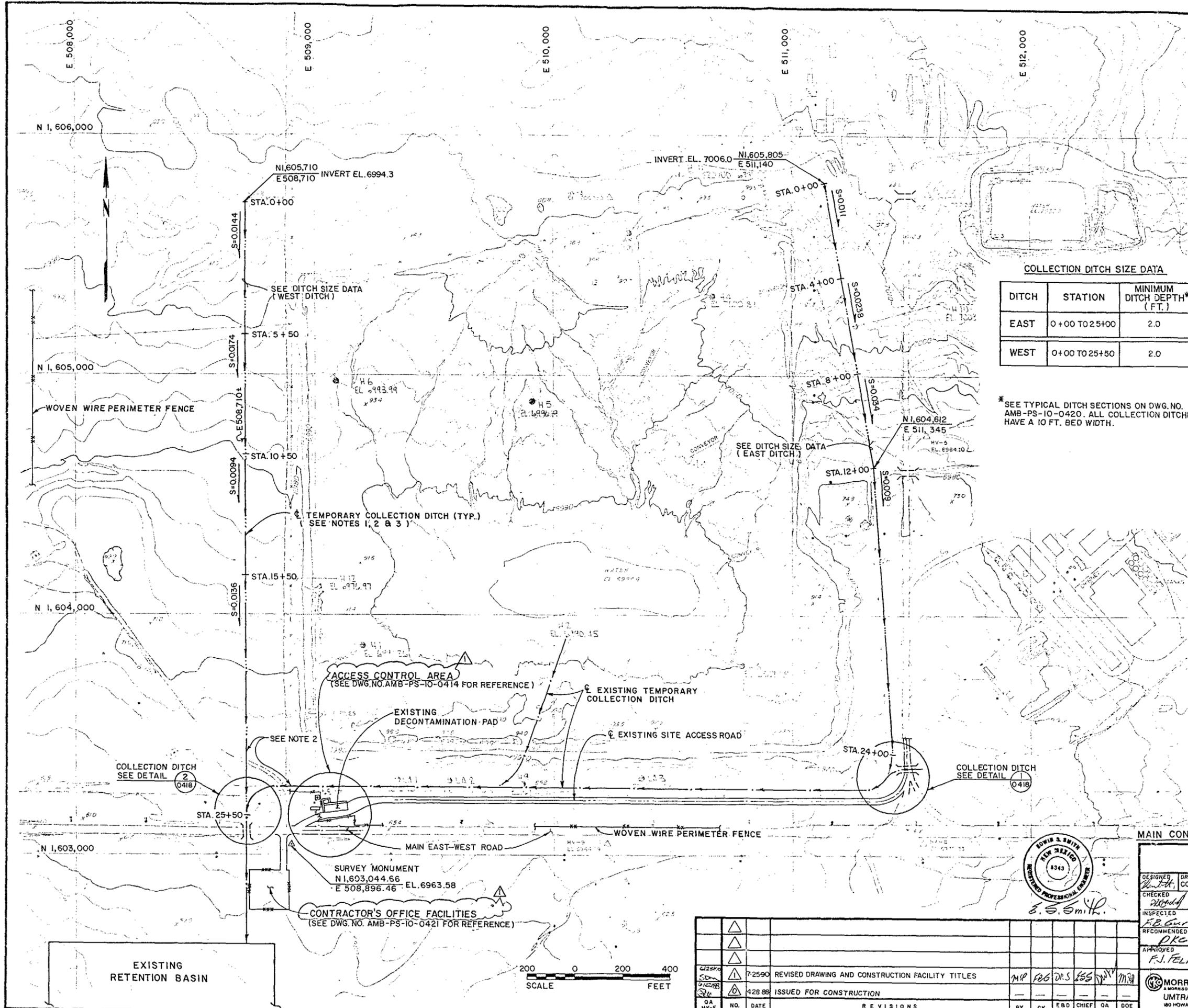


- LEGEND:**
- EXISTING SITE FEATURES AND CONTOURS (1981 & 1986 SURVEY)
 - CONSTRUCTION GRID COORDINATE (N.M.W.Z.)
 - EMBANKMENT
 - FINAL SITE BOUNDARY
 - EXISTING ROAD
 - FINAL GROUND SURFACE CONTOURS & ELEVATIONS
 - SURVEY MONUMENT
 - PERMANENT DRAINAGE SWALE
 - LIMIT OF CONTAMINATED MATERIAL
 - TEST PIT LOCATION
 - PRIMARY SOURCE OF BORROW MATERIAL
 - SECONDARY SOURCE OF BORROW MATERIAL

- REFERENCE DRAWINGS:**
- AMB-PS-10-0404 CONSTRUCTION FACILITIES AND DRAINAGE PLAN
 - AMB-PS-10-0406 CONTAMINATED MATERIALS EXCAVATION PLAN (SHEET 1 OF 3)
 - AMB-PS-10-0407 CONTAMINATED MATERIALS EXCAVATION PLAN (SHEET 2 OF 3)
 - AMB-PS-10-0408 CONTAMINATED MATERIALS EXCAVATION PLAN (SHEET 3 OF 3)
 - AMB-PS-10-0409 NORTH SWALE GRADING PLAN
 - AMB-PS-10-0410 TAILINGS EMBANKMENT GRADING PLAN
 - AMB-PS-10-0416 EAST SWALE GRADING PLAN
 - AMB-PS-10-0422 WEST SITE AREA GRADING PLAN

- NOTES:**
1. TOPOGRAPHY TAKEN FROM OLYMPUS AERIAL SURVEY, INC. (1981 & 1986 SURVEY).
 2. WHERE APPLICABLE, FINAL SITE GRADING CONTOURS SHALL MAINTAIN THE EXISTING TOPOGRAPHIC FEATURES WITH MINIMUM DISTURBANCE UNLESS SPECIFICALLY STATED IN THE DRAWINGS.





- NOTES:**
1. SUBCONTRACTOR SHALL CONSTRUCT TEMPORARY COLLECTION DITCHES AT THE APPROXIMATE LOCATIONS SHOWN ON THE DRAWING. SUBCONTRACTOR SHALL PROVIDE ADDITIONAL FACILITIES AS NECESSARY TO DIRECT ALL SURFACE WATER FROM CONTAMINATED AREAS TO THE TEMPORARY COLLECTION DITCHES AND RETENTION BASIN, AND FROM UNCONTAMINATED AREAS TO DIVERSION DITCHES OR UNCONTAMINATED, OFF-SITE AREAS.
 2. SUBCONTRACTOR SHALL PROVIDE AND MAINTAIN VEHICLE CROSSINGS OF ALL TEMPORARY DRAINAGE DITCHES.
 3. SUBCONTRACTOR SHALL CLEAN AND MAINTAIN EXISTING CULVERTS SHOWN ON THE DRAWING.

COLLECTION DITCH SIZE DATA

DITCH	STATION	MINIMUM DITCH DEPTH* (FT.)
EAST	0+00 TO 25+00	2.0
WEST	0+00 TO 25+50	2.0

* SEE TYPICAL DITCH SECTIONS ON DWG. NO. AMB-PS-10-0420. ALL COLLECTION DITCHES HAVE A 10 FT. BED WIDTH.

- REFERENCE DRAWINGS:**
- AMB-PS-10-0405 RETENTION BASIN PLAN AND DETAILS
 - AMB-PS-10-0414 WOVEN WIRE FENCE AND MISCELLANEOUS DETAILS
 - AMB-PS-10-0418 MISCELLANEOUS SECTIONS AND DETAILS (SHEET 1 OF 3)
 - AMB-PS-10-0419 MISCELLANEOUS SECTIONS AND DETAILS (SHEET 2 OF 3)
 - AMB-PS-10-0420 MISCELLANEOUS SECTIONS AND DETAILS (SHEET 3 OF 3)

- LEGEND:**
- ☉ NEW TEMPORARY COLLECTION DITCH
 - EXISTING CULVERT
 - CHAIN LINK FENCE AND GATE
 - WOVEN WIRE FENCE
 - ☉ EXISTING TEMPORARY COLLECTION DITCH

QA REVIEWED FOR QUALITY REQUIREMENTS
BY: *Steve L. Leach*, 6/22/88

MAIN CONSTRUCTION SUBCONTRACT AMB-4

U. S. DEPARTMENT OF ENERGY
ALBUQUERQUE, NEW MEXICO

AMBROSIA LAKE SITE
AMBROSIA LAKE, NEW MEXICO

CONSTRUCTION FACILITIES AND DRAINAGE PLAN

DESIGNED <i>[Signature]</i>	DRAWN CCR/RBC
CHECKED <i>[Signature]</i>	INSPECTED F.B. Curas
RECOMMENDED DKE	APPROVED P.J. FELIZ
DATE 4/27/88	DATE 4/27/88

DOE PROJECT ENGINEER
[Signature] 6/2/88

MORRISON-KNUDSEN ENGINEERS, INC.
A MORRISON-KNUDSEN COMPANY
UMTRA PROJECT
180 HOWARD ST SAN FRANCISCO, CA 94105

PROJECT NO.
DE-AC04-83AL18796

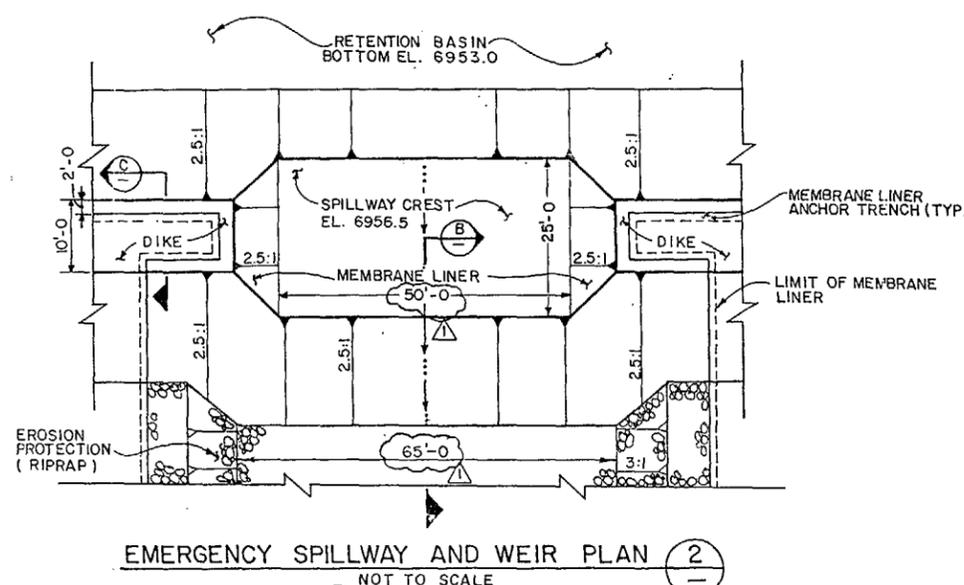
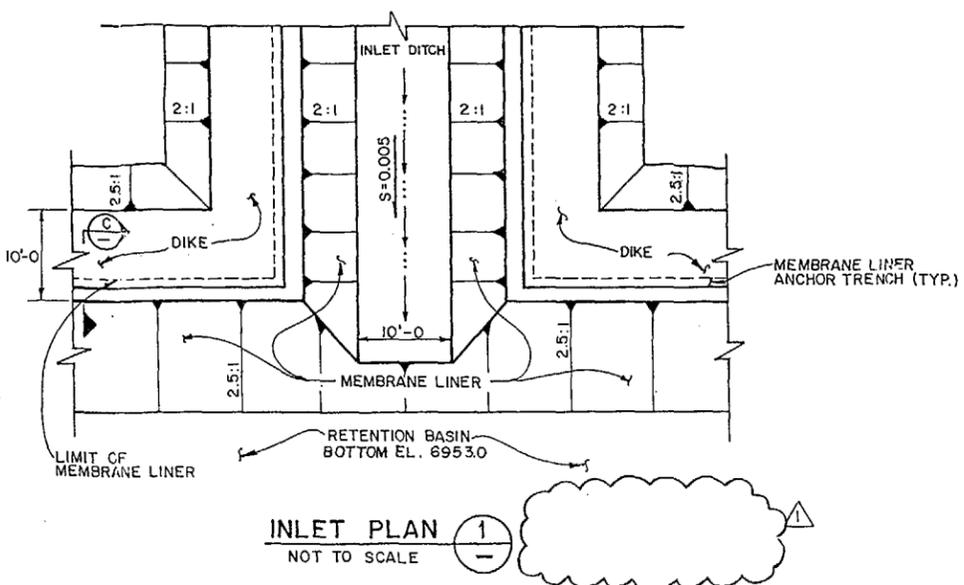
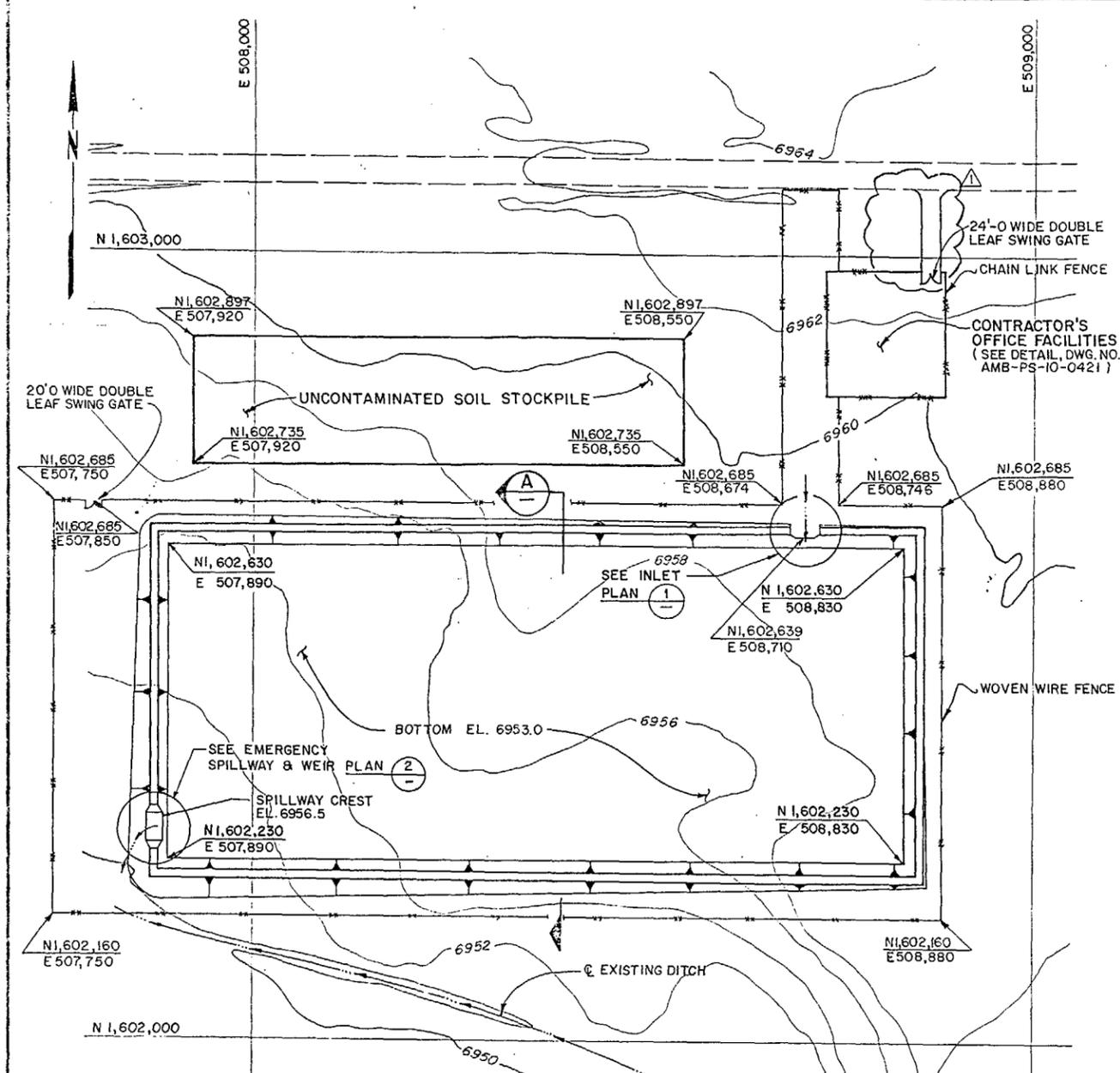
DRAWING NO.
AMB-PS-10-0404

REV. 1

NO.	DATE	REVISIONS	BY	CK	F&D MGR.	CHIEF ENG.	QA MGR.	DOE APP.
1	7-25-90	REVISED DRAWING AND CONSTRUCTION FACILITY TITLES	MIP	FBG	DR.S	ESS	WVW	MW
2	4-28-88	ISSUED FOR CONSTRUCTION						



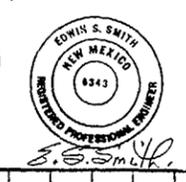
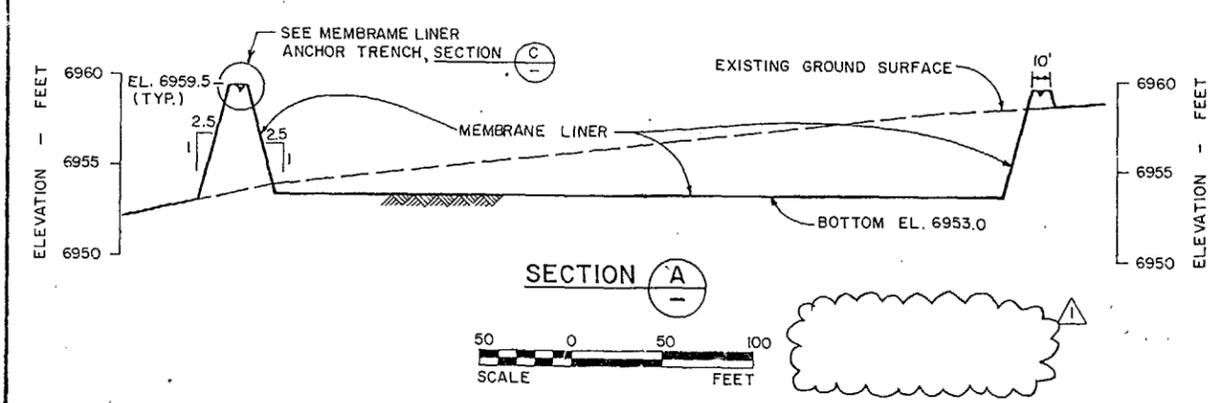
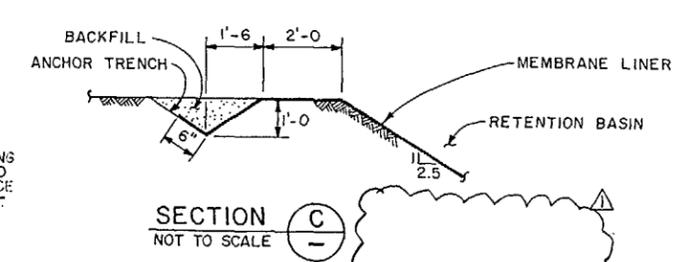
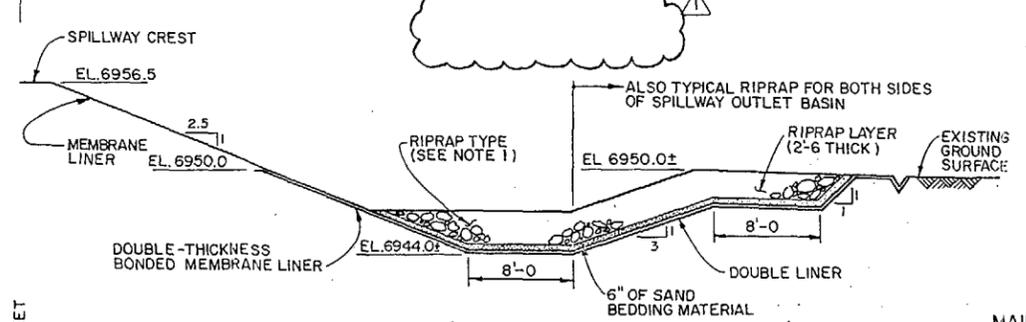
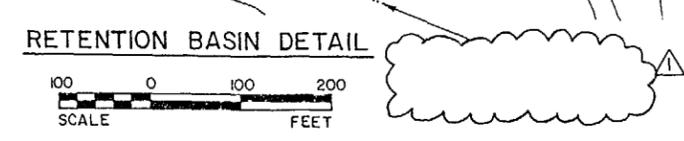
EXISTING RETENTION BASIN



- NOTES:**
- COLLECTED WATER MAY BE USED DURING TAILINGS COMPACTION, FOR MATERIAL PREPARATION OR DUST CONTROL ON CONTAMINATED MATERIALS ONLY. REMAINING WATER SHALL BE DISPOSED OF BY EVAPORATION.
 - RETENTION BASIN SHALL BE BACKFILLED TO RESTORE AREA TO APPROXIMATE ORIGINAL GRADE.

- REFERENCE DRAWINGS:**
- AMB-PS-10-0403 FINAL SITE PLAN
 - AMB-PS-10-0404 CONSTRUCTION FACILITIES AND DRAINAGE PLAN
 - AMB-PS-10-0421 EXISTING CHAIN LINK FENCE AND OFFICE FACILITIES DETAIL

- LEGEND:**
- EXISTING SITE FEATURES & CONTOURS (1981 & 1986 SURVEY)
 - CONSTRUCTION GRID COORDINATE
 - CONSTRUCTED SLOPE
 - EXISTING ROAD
 - DIRECTION OF FLOW



NO.	DATE	REVISIONS	BY	CK	E.B.D. MGR.	CHIEF ENG.	QA MGR.	D.P.F. APP.
725-90		DELETED "AS-BUILT", REVISED SPILLWAY DIMENSIONS AND CONTRACTOR'S OFFICE FACILITIES	MP	FG	DRS	SSB	JUN	MAL
42888		ISSUED FOR CONSTRUCTION						

MAIN CONSTRUCTION SUBCONTRACT AMB-4

U. S. DEPARTMENT OF ENERGY
ALBUQUERQUE, NEW MEXICO

AMBROSIA LAKE SITE
AMBROSIA LAKE, NEW MEXICO

**EXISTING RETENTION BASIN
PLAN AND DETAILS**

DESIGNED: [Signature] DRAWN: AMC
CHECKED: [Signature]
INSPECTED: [Signature]
RECOMMENDED: [Signature]

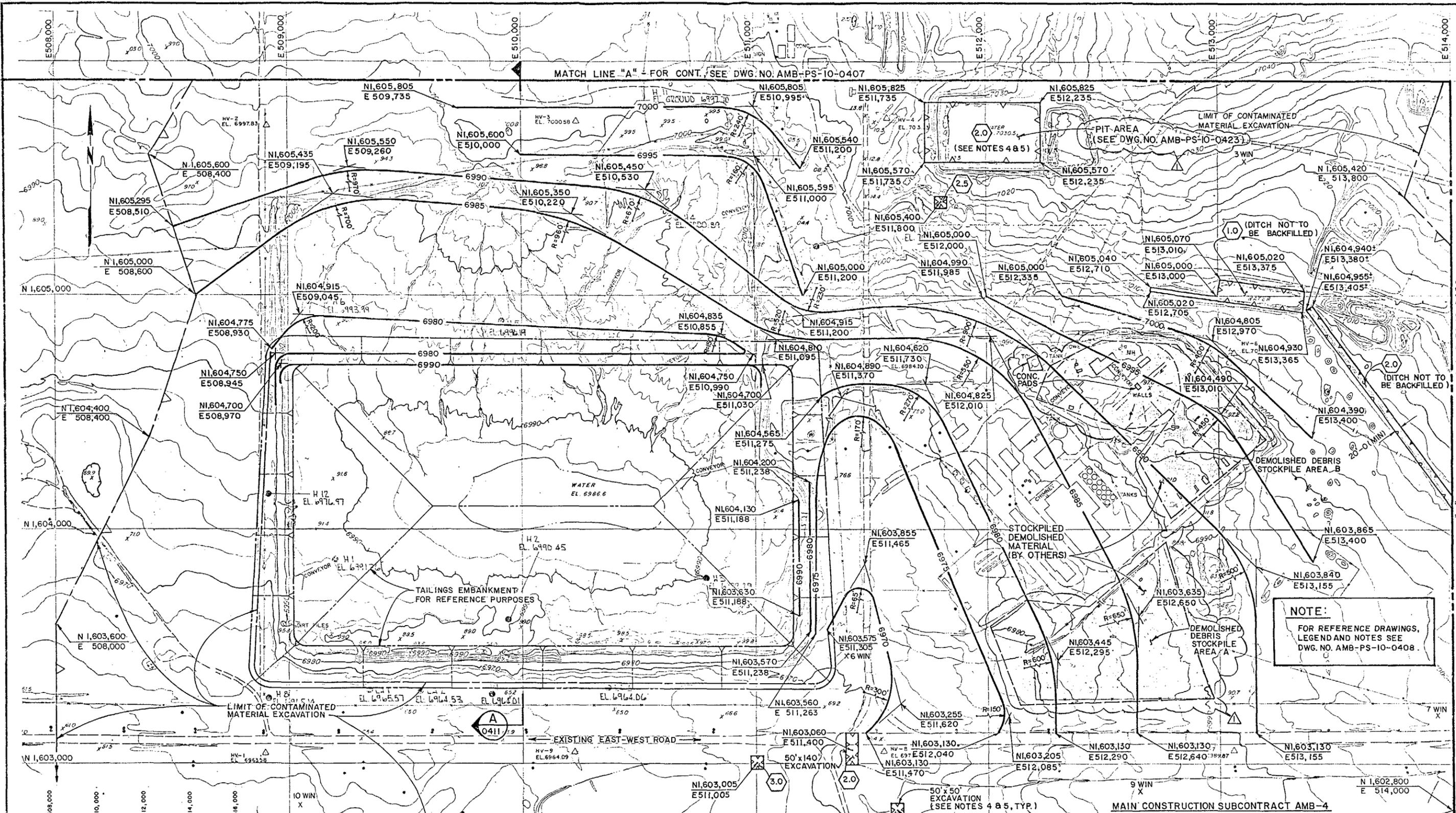
APPROVED: F.J. FELIZ DATE: 4/27/88

DATE: 27 Apr 88
DATE: 4/27/84

PROJECT ENGINEER: [Signature] DATE: 6/27/88

MORRISON-KNUDSEN ENGINEERS, INC.
A MORRISON-KNUDSEN COMPANY
UMTRA PROJECT
180 HOWARD ST. SAN FRANCISCO, CA 94105

PROJECT NO. DE-AC04-83AL18796
DRAWING NO. AMB-PS-10-0405
REV 1



MATCH LINE "A" - FOR CONT. SEE DWG. NO. AMB-PS-10-0407

MATCH LINE "B" - FOR CONT., SEE DWG. NO. AMB-PS-10-0408

NOTE:
FOR REFERENCE DRAWINGS,
LEGEND AND NOTES SEE
DWG. NO. AMB-PS-10-0408.

U. S. DEPARTMENT OF ENERGY
ALBUQUERQUE, NEW MEXICO

AMBROSIA LAKE SITE
AMBROSIA LAKE, NEW MEXICO
CONTAMINATED MATERIAL EXCAVATION
PLAN (SHEET 1 OF 3)

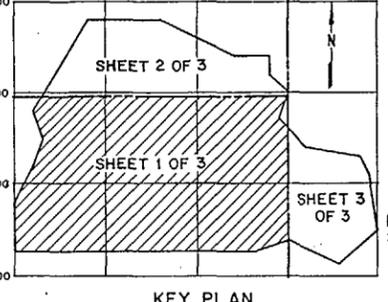
DESIGNED
DRAWN
CHECKED
INSPECTED
RECOMMENDED
APPROVED

DATE 4/27/86
DATE 27 Apr 88
DATE 1/27/95

MORRISON-KNUDSEN ENGINEERS, INC.
UMTRA PROJECT
180 HOWARD ST. SAN FRANCISCO, CA 94105

PROJECT NO. DE-AC04-83AL18796
DRAWING NO. AMB-PS-10-0406
REV. 1

NO.	DATE	REVISIONS	BY	CK	E & D MGR.	CHIEF ENG.	QA MGR.	DOE APP.
42888		ISSUED FOR CONSTRUCTION						
72590		ADDED PIT AREA REFERENCE AND REVISED DEBRIS STOCKPILES	MSJ	PUG	DRS	ESS	WMM	MJA

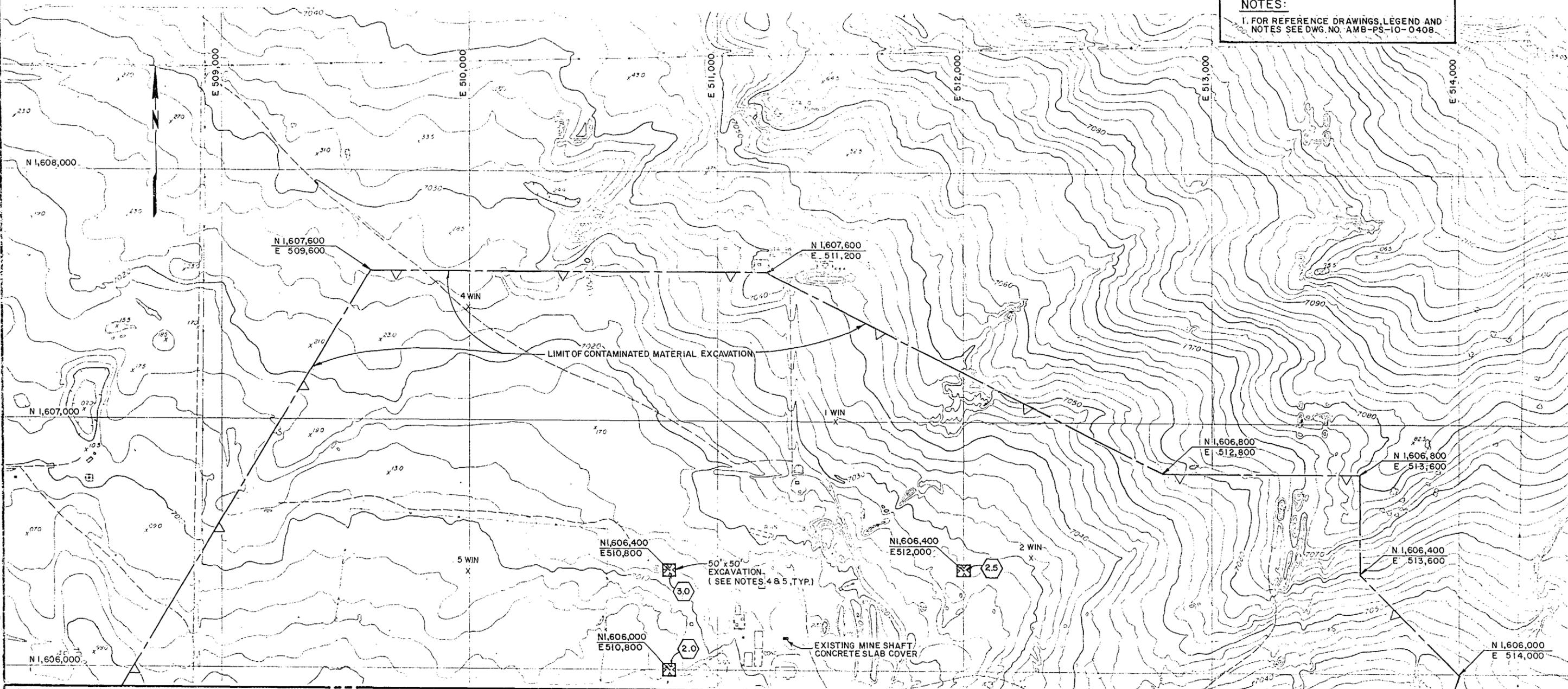


TO N 1,602,550
E 508,000

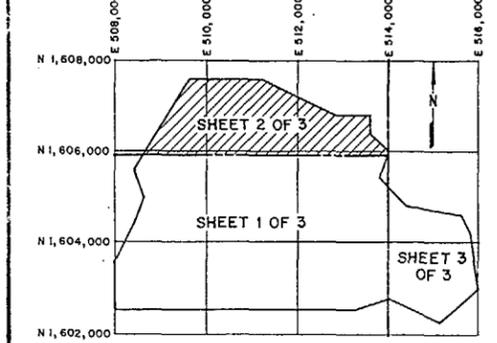
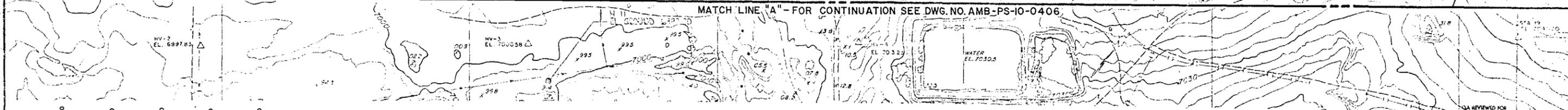
TO N 1,602,550
E 513,210

SCALE
0 200 400
FEET

NOTES:
 1. FOR REFERENCE DRAWINGS, LEGEND AND NOTES SEE DWG. NO. AMB-PS-10-0408.



MATCH LINE "A" - FOR CONTINUATION SEE DWG. NO. AMB-PS-10-0406.



NO.	DATE	REVISIONS	BY	CK	E & D MGR.	CHIEF ENG.	QA MGR.	DOE APP.
42888		ISSUED FOR CONSTRUCTION						

MAIN CONSTRUCTION SUBCONTRACT AMB-4

U. S. DEPARTMENT OF ENERGY
 ALBUQUERQUE, NEW MEXICO

AMBROSIA LAKE SITE
 AMBROSIA LAKE, NEW MEXICO

CONTAMINATED MATERIAL EXCAVATION PLAN (SHEET 2 OF 3)

DESIGNED <i>[Signature]</i>	DRAWN <i>[Signature]</i>
CHECKED <i>[Signature]</i>	INSPECTED <i>[Signature]</i>
RECOMMENDED <i>[Signature]</i>	APPROVED <i>[Signature]</i>

DATE: 4/27/88

DATE: 27 Apr 88

DATE: 1/27/86

DOE PROJECT ENGINEER: *[Signature]*

PROJECT NO. DE-AC04-83AL18796

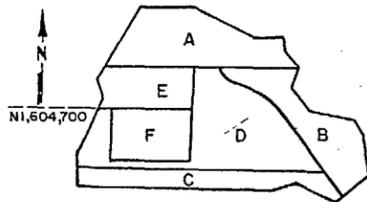
DRAWING NO. AMB-PS-10-0407

MORRISON-KNUDSEN ENGINEERS, INC.
 A MORRISON-KNUDSEN COMPANY
 UMTRA PROJECT
 180 HOWARD ST. SAN FRANCISCO, CA 94105

SEQUENCE OF EXCAVATION AND PLACEMENT OF CONTAMINATED MATERIALS

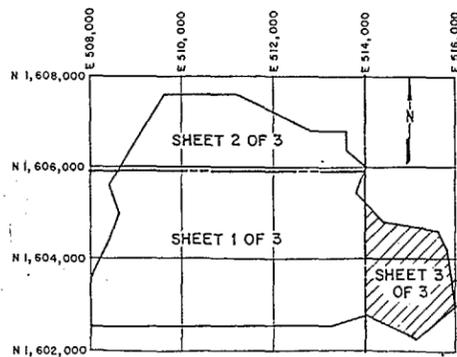
(SEE SOURCE AND PLACEMENT PRIORITY DIAGRAM BELOW)

- I. WATER SHALL NOT BE ALLOWED TO POND ON TOP OF THE TAILINGS PILE AND SHALL BE DRAINED TO RETENTION BASIN. THE UNDERLYING SURFACE SHALL BE PREPARED AS SPECIFIED.
- II. RESHAPE AND TRIM (AS REQUIRED) EAST, WEST AND SOUTH SIDES OF EXISTING TAILINGS PILE SOUTH OF N1,604,700± (AREA F).
- III. DEMOLISHED MATERIALS FROM STOCKPILE AREA A SHALL BE PLACED AND DISTRIBUTED UNIFORMLY ON THE TAILINGS PILE AS SPECIFIED. DEMOLISHED MATERIALS FROM STOCKPILE AREA B SHALL BE PLACED IN THE DEMOLITION DEBRIS BURIAL PIT AS STATED ON DWG. NO. AMB-PS-10-0423.
- IV. EXCAVATE CONTAMINATED MATERIALS FROM AREAS A, B AND C, DITCH TO VOGHT TANK AREA. CONSTRUCT BUTTRESS AND DIVERSION DITCHES. STOCKPILE THE REMAINING EXCAVATED CONTAMINATED MATERIALS IN AREA D, EAST OF THE EXISTING TAILINGS PILE.
- V. EXCAVATE CONTAMINATED MATERIAL FROM AREA E (EXISTING TAILINGS PILE NORTH OF N1,604,700±) AND PLACE ON AREA F.
- VI. PLACE ALL CONTAMINATED MATERIALS IN AREA D ON AREA F.



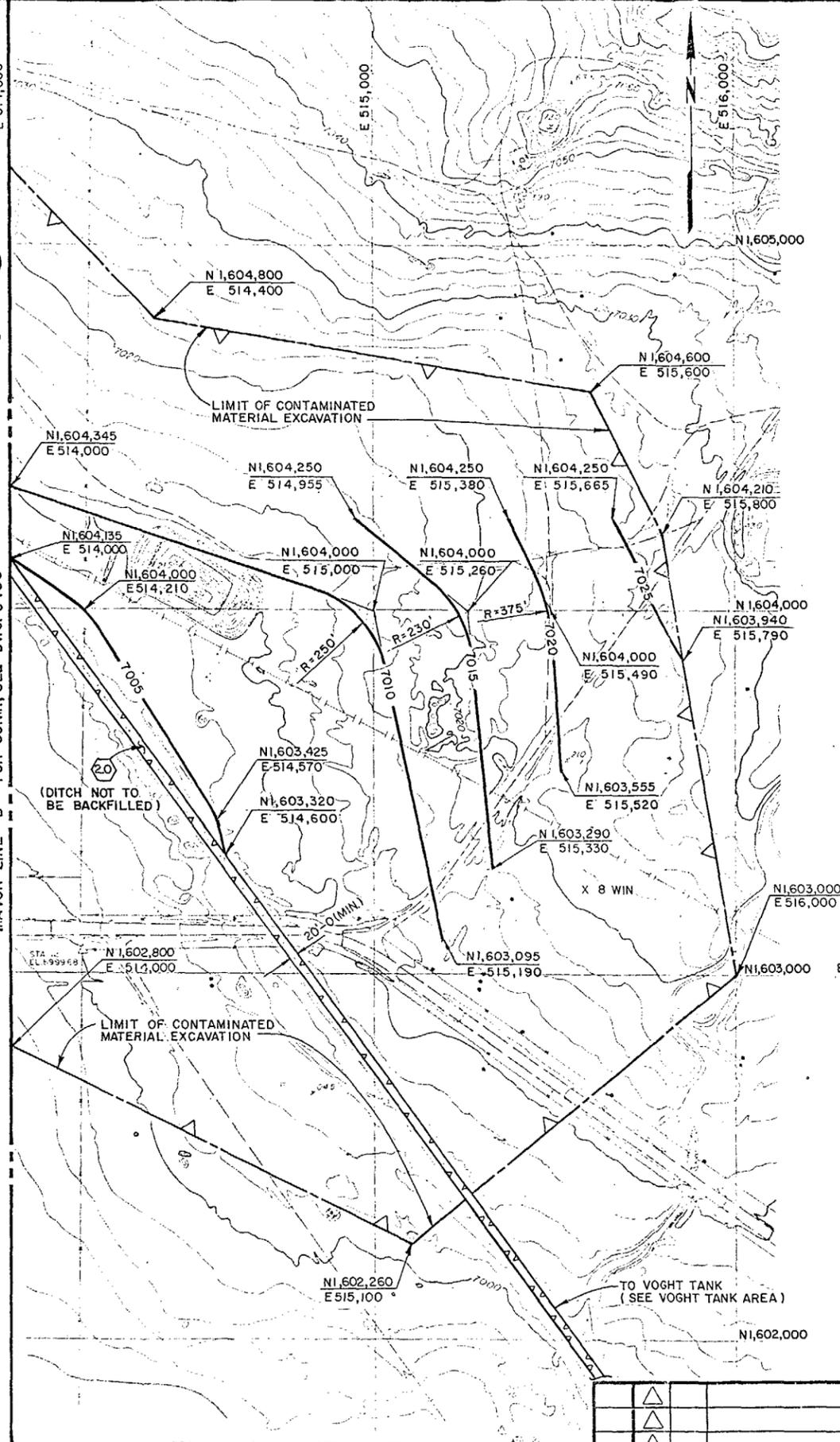
AREA	DESCRIPTION
A	NORTH OF DIVERSION DITCH
B	EAST OF DIVERSION DITCH
C	SOUTH OF MAIN EAST-WEST ACCESS ROAD
D	MILL SITE AND MISCELLANEOUS AREAS
E	TAILINGS PILE AREA NORTH OF N1,604,700±
F	TAILINGS PILE AREA SOUTH OF N1,604,700±

SOURCE AND PLACEMENT PRIORITY DIAGRAM
(SEE DWG. NO. AMB-PS-10-0410)
NOT TO SCALE



KEY PLAN

MATCH LINE "B" - FOR CONT., SEE DWG. 0406



NOTES: (CONT'D)

8. EXCAVATION SLOPES WITHIN TAILINGS PILE SHALL NOT BE STEEPER THAN 5(H):1(V).
9. EXCAVATION OF CONTAMINATED MATERIALS FROM DITCH TO VOGHT TANK, VOGHT TANK IMPOUNDMENT AREA, AND ADJACENT AREAS SHALL BE DIRECTED BY THE CONTRACTOR. FOR BIDDING PURPOSES, 36,000 CUBIC YARDS OF CONTAMINATED MATERIAL EXCAVATION IS PROVIDED IN THE BID SCHEDULE BASED ON APPROXIMATELY 1 FOOT DEPTH OF EXCAVATION IN DITCH TO VOGHT TANK AND 5 FEET DEPTH OF EXCAVATION FROM VOGHT TANK IMPOUNDMENT AREA.
10. BASE COURSE FOR ALL RECONSTRUCTED ROADWAY SHALL HAVE A MINIMUM THICKNESS OF ONE FOOT. THE FINAL GRADE SHALL MATCH THE EXISTING GRADE PRIOR TO EXCAVATION.
11. THE MATERIALS AND CONSTRUCTION REQUIREMENTS OF BASE COURSE SHALL BE IN ACCORDANCE WITH SECTION 304.2 AND 304.3 OF THE NEW MEXICO STATE HIGHWAY DEPARTMENT STANDARD SPECIFICATIONS.
12. EXISTING STRUCTURES SHOWN IN THE 1981 AND 1986 SURVEYS HAVE PREDOMINANTLY BEEN DEMOLISHED. REMAINING CONCRETE STRUCTURES AND FOUNDATIONS, AND UTILITIES SHALL BE REMOVED, DEMOLISHED AND DISPOSED OF AS SPECIFIED.

NOTES:

1. ALL EXCAVATED SLOPES SHALL NOT BE STEEPER THAN 2(H):1(V), EXCEPT AS INDICATED.
2. FINAL EXCAVATED LIMITS IN ALL AREAS WILL BE DETERMINED BY THE CONTRACTOR.
3. ALL WORK ON THE MAIN EXISTING EAST-WEST ROAD SHALL BE AS SPECIFIED AND DIRECTED BY THE CONTRACTOR.
4. ISOLATED AREAS OF EXCAVATION SHALL BE BACKFILLED WITH CLEAN FILL TO MEET THE FINAL GRADE OF THE SURROUNDING GROUND SURFACE UNLESS SHOWN OTHERWISE.
5. GROUND SURFACES SHALL BE GRADED TO DRAIN TO PREVENT PONDING.
6. EXCAVATION WITHIN THE LIMIT OF CONTAMINATED MATERIAL EXCAVATION SHALL BE 6 INCHES DEEP EXCEPT AS SHOWN OTHERWISE, OR AS DIRECTED BY THE CONTRACTOR.
7. EXCAVATION OF CONTAMINATED MATERIAL SHALL NOT EXTEND OUTSIDE OF LIMIT OF 6 INCHES CONTAMINATED MATERIAL EXCAVATION UNLESS DIRECTED OTHERWISE BY THE CONTRACTOR, EXCEPT FOR EXCAVATION FOR VOGHT TANK DITCH AND IMPOUNDMENT AREA, AS SHOWN ON THE DRAWINGS.

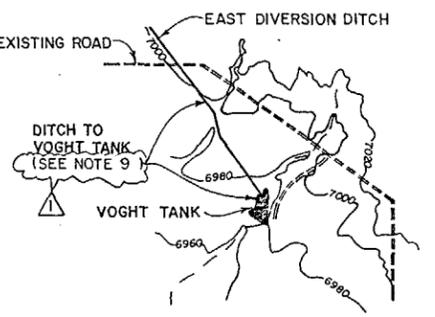
(NOTES CONTINUED ON LEFT SIDE)

REFERENCE DRAWINGS:

- AMB-PS-10-0402 VICINITY MAP, LOCATION MAP & LIST OF DRAWINGS
- AMB-PS-10-0403 FINAL SITE PLAN
- AMB-PS-10-0406 CONTAMINATED MATERIAL EXCAVATION PLAN (SHEET 1 OF 3)
- AMB-PS-10-0407 CONTAMINATED MATERIAL EXCAVATION PLAN (SHEET 2 OF 3)
- AMB-PS-10-0410 TAILINGS EMBANKMENT GRADING PLAN
- AMB-PS-10-0413 FENCING AND DIVERSION DITCHES PLAN
- AMB PS 10 0423 DEMOLITION DEBRIS BURIAL PIT.

LEGEND:

- 7040- EXISTING SITE FEATURES AND CONTOURS (1981 AND 1986 SURVEY)
- == == EXISTING ROAD
- N1,602,000 CONSTRUCTION GRID COORDINATE
- 7025- EXCAVATED BOTTOM CONTOUR
- △ △ LIMIT OF CONTAMINATED MATERIAL EXCAVATION
- ⊙ DEPTH OF EXCAVATION
- ▭ ISOLATED EXCAVATION DEEPER THAN 6'
- 8 WIN X SURFACE SAMPLE - WINDBLOWN CONTAMINATED MATERIAL
- ☁ DEMOLISHED DEBRIS STOCKPILE AREAS



T14N, R9W, SECTION 34

VOGHT TANK AREA

NOT TO SCALE



NO.	DATE	REVISIONS	BY	CK	E&D MGR.	CHIEF ENG.	QA MGR.	DOE APP.
72590		REVISED SEQUENCE, ADDED NOTE 12, AND REVISED LEGEND, NOTE 4, AND VOGHT TANK NOTE REFERENCE	MSP	FBG	DRS	EGS		
42888		ISSUED FOR CONSTRUCTION						

MAIN CONSTRUCTION SUBCONTRACT AMB-4

U. S. DEPARTMENT OF ENERGY
ALBUQUERQUE, NEW MEXICO

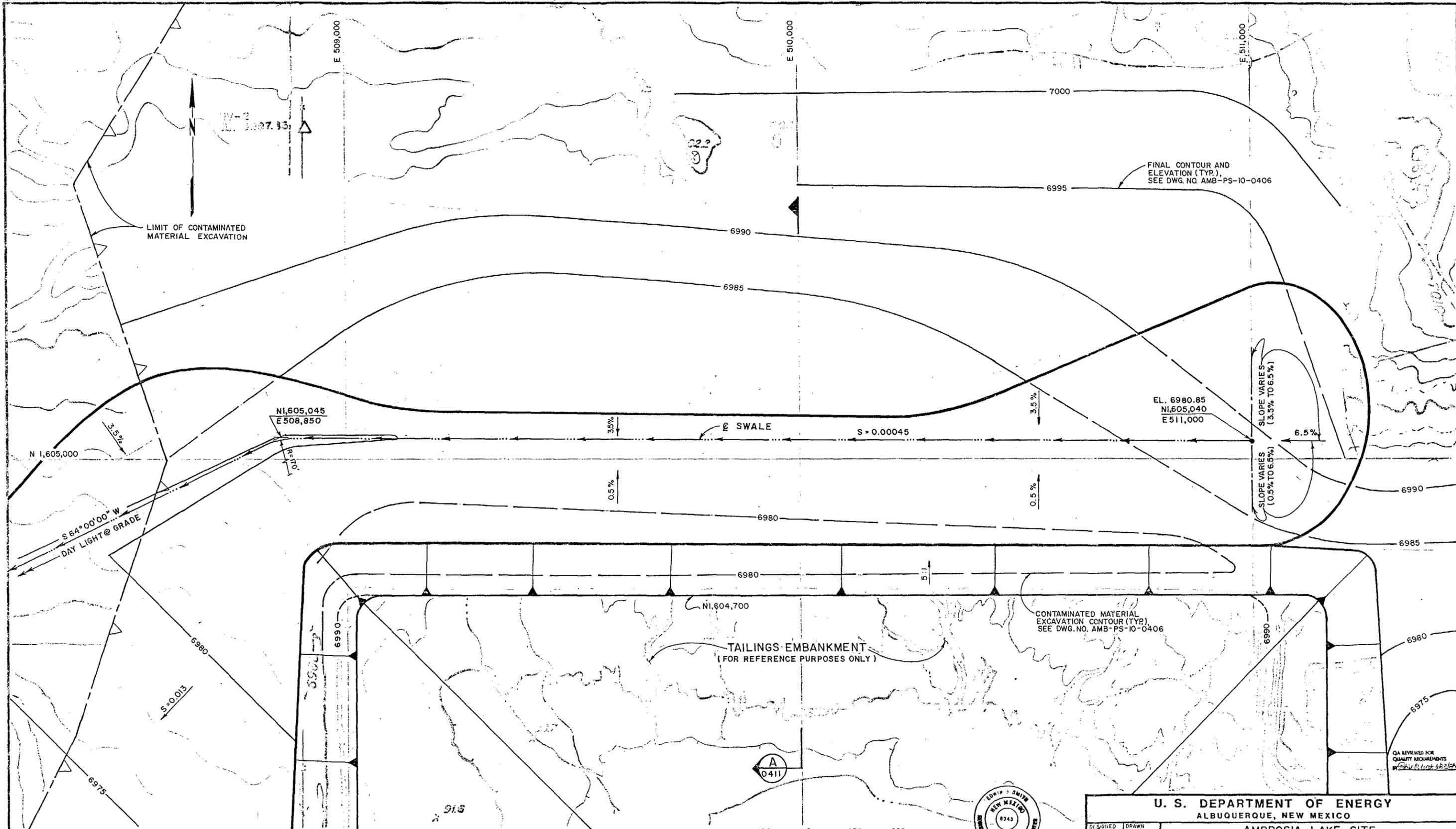
AMBROSIA LAKE SITE
AMBROSIA LAKE, NEW MEXICO

CONTAMINATED MATERIAL EXCAVATION PLAN (SHEET 3 OF 3)

DESIGNED	DRAWN	DATE	DOE PROJECT ENGINEER	DATE
CHECKED	NBR	4/27/88	John W. Cantor	4/27/88
INSPECTED				
RECOMMENDED				
APPROVED				
F.J. Feliz				

MORRISON-KNUDSEN ENGINEERS, INC.
UMTRA PROJECT
180 HOWARD ST. SAN FRANCISCO, CA 94105

PROJECT NO. DE-AC04-83AL18796
DRAWING NO. AMB-PS-10-0408 REV 1



REFERENCE DRAWINGS:

- AMB-PS-10-0403 FINAL SITE PLAN
- AMB-PS-10-0406 CONTAMINATED MATERIAL EXCAVATION PLAN (SHEET 1 OF 3)
- AMB-PS-10-0410 TAILINGS EMBANKMENT GRADING PLAN
- AMB-PS-10-0411 TAILINGS EMBANKMENT SECTIONS AND DETAILS



MAIN CONSTRUCTION SUBCONTRACT AMB-4

NO.	DATE	REVISIONS	BY	CK	E & D MGR	CHIEF ENG	QA MGR	DOE APP
428-88		ISSUED FOR CONSTRUCTION						

U. S. DEPARTMENT OF ENERGY
ALBUQUERQUE, NEW MEXICO

AMBROSIA LAKE SITE
AMBROSIA LAKE, NEW MEXICO

NORTH SWALE GRADING PLAN

DESIGNED <i>[Signature]</i>	DRAWN NBR/RCove	DATE 4/27/88	DATE 4/27/88
CHECKED <i>[Signature]</i>	INSPECTED F.B. Gargas	DATE 4/27/88	DATE 4/27/88
APPROVED F.J. KELIC	RECOMMENDED P.L.C.	DATE 4/27/88	DATE 4/27/88

MORRISON-KNUDSEN ENGINEERS, INC.
UMTRA PROJECT
90 HOWARD ST. SAN FRANCISCO CA 94105

PROJECT NO. **DE-ACO4-83AL18796**
DRAWING NO. **AMB-PS-10-0409** REV 0

N 1,605,000

E 509,000

E 510,000

E 511,000

LIMIT OF RIPRAP TOE PROTECTION
(SEE TYPICAL SECTION, DWG. NO.
AMB-PS-10-0420)

SWALE (SEE DWG. NO. AMB-PS-10-0409)

NOTES:

- FOR SEQUENCE OF EXCAVATION AND PLACEMENT OF CONTAMINATED MATERIALS SEE DWG. NO. AMB-PS-10-0408.
- DEMOLISHED MATERIALS FROM STOCKPILE AREA A SHALL BE HANDLED AND PLACED WITHIN THE AREA SHOWN ACCORDING TO THE SPECIFICATIONS. NESTING OF PIPES AND OTHER DEMOLISHED MATERIALS SHALL NOT BE ALLOWED. SPACING BETWEEN PIPES SHALL BE THREE PIPE DIAMETERS (BASED ON THE LARGER ADJACENT PIPE SIZE) OR ONE FOOT WHICHEVER IS GREATER.
- CONTAMINATED MATERIAL FILL SHALL BE CONSTRUCTED APPROXIMATELY HORIZONTALLY OVER THE ENTIRE TAILINGS EMBANKMENT AREA.
- FINAL EMBANKMENT TOP SLOPE ELEVATIONS SHALL BE ADJUSTED TO ACCOMMODATE ACTUAL QUANTITIES OF MATERIALS PLACED, UPON APPROVAL OF THE CONTRACTOR. MINIMUM AND MAXIMUM TOP SLOPES ARE 3.5% AND 4.0% RESPECTIVELY. INTERSECTION OF TOP SLOPES SHALL BE APPROXIMATELY AS SHOWN.
- PREVIOUSLY EXISTING POND AREA SHOWN SHALL BE TREATED ACCORDING TO THE SPECIFICATIONS.
- SEE DWG. NO. AMB-PS-10-0420 FOR TYPICAL DISPLACEMENT MONUMENT DETAIL. 5-FOOT DEPTH OF PLATE INDICATES LOCATION AT BOTTOM OF RADON BARRIER LAYER (SEE NOTE 1, DWG. NO. AMB-PS-10-0411). OTHER DEPTHS INDICATE PLATE LOCATIONS APPROXIMATELY AT SUBGRADE ELEVATION FOR CONTAMINATED MATERIAL FILL. ALL PLATES SHALL BE LOCATED 1 FOOT ABOVE ALL DEMOLITION DEBRIS WITHIN 50 FOOT RADIUS.

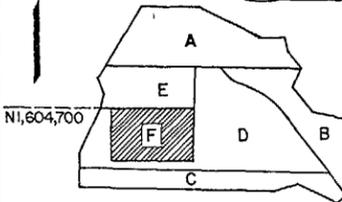
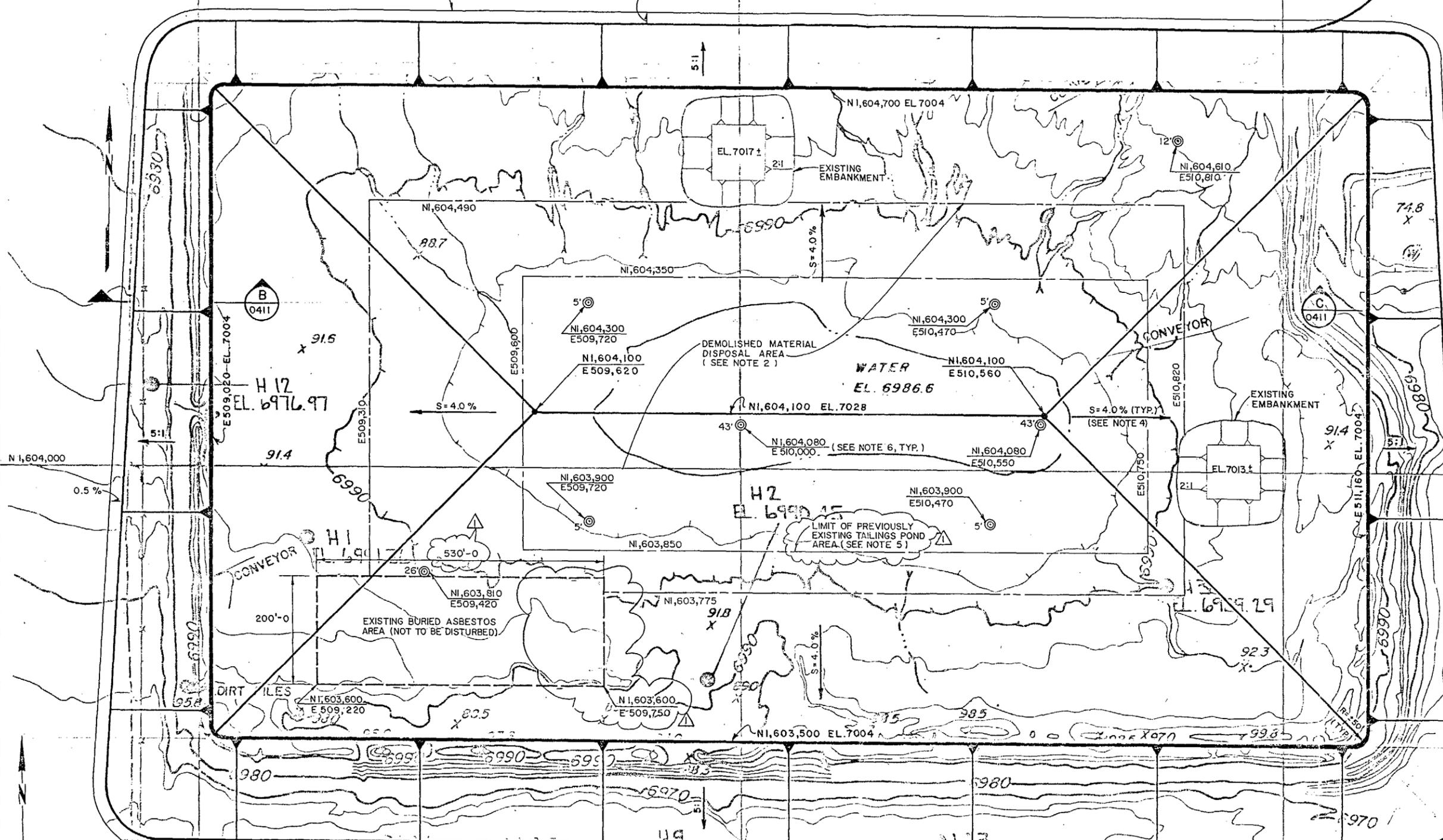
REFERENCE DRAWINGS:

- AMB-PS-10-0403 FINAL SITE PLAN
- AMB-PS-10-0406 CONTAMINATED MATERIALS EXCAVATION PLAN (SHEET 1 OF 3)
- AMB-PS-10-0408 CONTAMINATED MATERIALS EXCAVATION PLAN (SHEET 3 OF 3)
- AMB-PS-10-0409 NORTH SWALE GRADING PLAN
- AMB-PS-10-0411 TAILINGS EMBANKMENT SECTIONS AND DETAILS
- AMB-PS-10-0420 MISCELLANEOUS SECTIONS AND DETAILS (SHEET 3 OF 3)

LEGEND:

- 6950 EXISTING CONTOURS & SITE FEATURES (1981 SURVEY)
- N1,604,000 CONSTRUCTION GRID COORDINATE
- EMBANKMENT SIDE SLOPE
- EXISTING ROAD
- 5' @ DISPLACEMENT MONUMENT LOCATION AND DEPTH OF PLATE FROM FINAL GROUND SURFACE

QA REVIEWED FOR QUALITY REQUIREMENTS BY: [Signature] 4/22/88



MAIN CONSTRUCTION SUBCONTRACT AMB-4

NO.	DATE	REVISIONS	BY	CK	E&D MGR.	CHIEF ENGR.	QA MGR.	DOE APP.
72590		REVISED NOTES 2 AND 5 AND LIMIT OF BURIED ASBESTOS	WSP	FEG	DRS	ESS	JWV	WSP
42888		ISSUED FOR CONSTRUCTION						

U. S. DEPARTMENT OF ENERGY
ALBUQUERQUE, NEW MEXICO

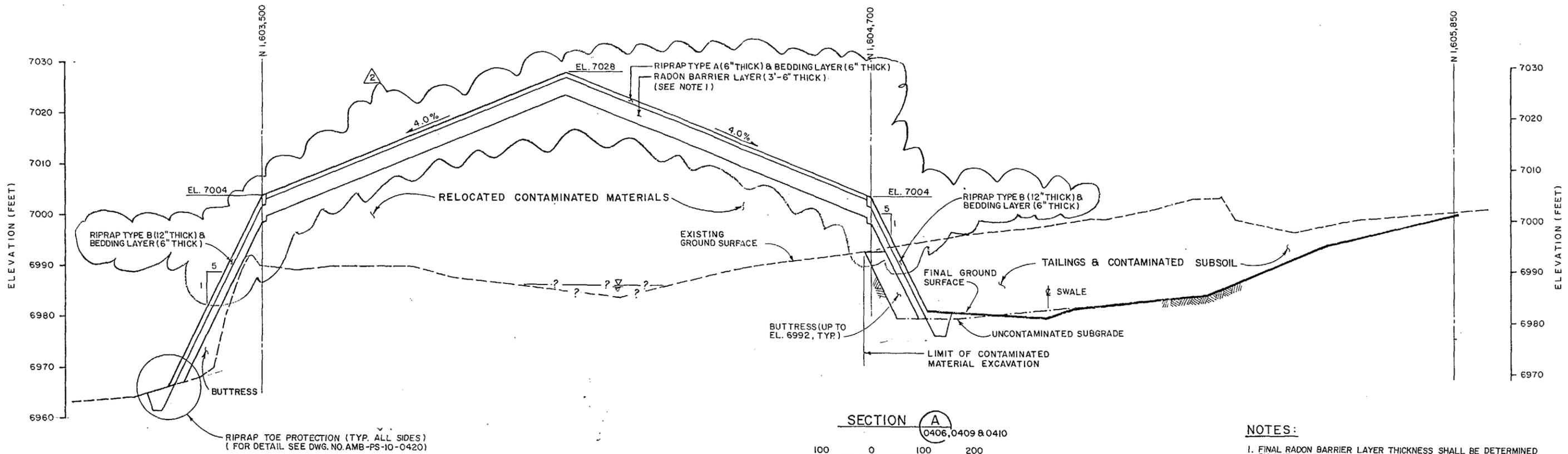
AMBROSIA LAKE SITE
AMBROSIA LAKE, NEW MEXICO
TAILINGS EMBANKMENT
GRADING PLAN

DESIGNED: [Signature]
DRAWN: [Signature]
CHECKED: [Signature]
INSPECTED: [Signature]
RECOMMENDED: [Signature]

APPROVED: F.J. FELIZ
DATE: 4/27/88
DOE PROJECT ENGINEER: [Signature]
DATE: 4/29/88

MORRISON-KNUDSEN ENGINEERS, INC.
A MORRISON-KNUDSEN COMPANY
UMTRA PROJECT
150 HOWARD ST. SAN FRANCISCO, CA 94105

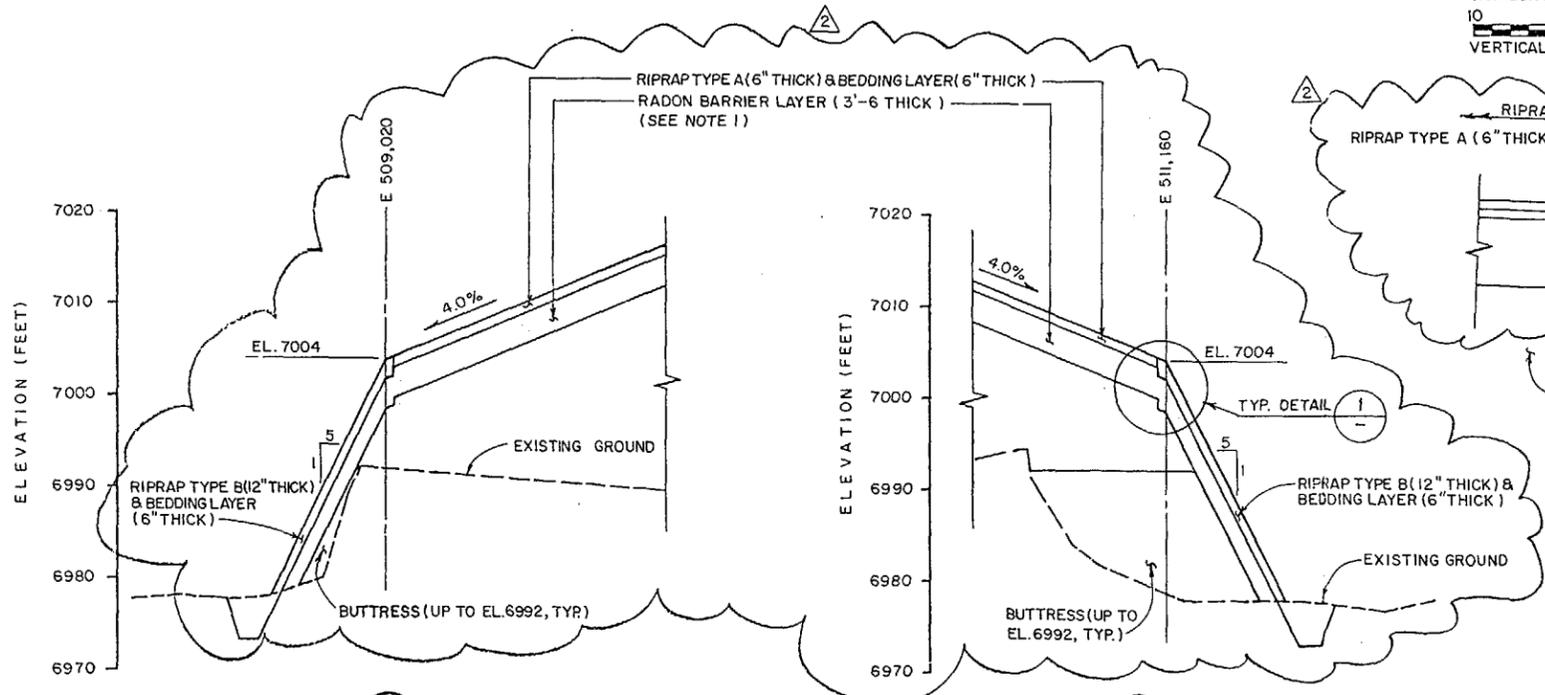
PROJECT NO. DE-AC04-83AL18796
DRAWING NO. AMB-PS-10-0410
REV. 1



- NOTES:**
- FINAL RADON BARRIER LAYER THICKNESS SHALL BE DETERMINED BY THE CONTRACTOR.
 - BORROW AREA FOR RADON BARRIER MATERIAL IS SHOWN ON DWG. NO. AMB-PS-10-0403. SUBCONTRACTOR SHALL BE RESPONSIBLE FOR SELECTIVE EXCAVATION AS NECESSARY TO OBTAIN ACCEPTABLE MATERIALS ACCORDING TO THE SPECIFICATIONS. TEST PIT LOGS IN RADON BARRIER BORROW AREA ARE AVAILABLE FROM THE CONTRACTOR.

- REFERENCE DRAWINGS:**
- AMB-PS-10-0406 CONTAMINATED MATERIALS EXCAVATION PLAN (SHEET 1 OF 3)
 - AMB-PS-10-0409 NORTH SWALE GRADING PLAN
 - AMB-PS-10-0410 TAILINGS EMBANKMENT GRADING PLAN
 - AMB-PS-10-0420 MISCELLANEOUS SECTIONS AND DETAILS (SHEET 3 OF 3)

- LEGEND:**
- ▽ PONDED SURFACE WATER (VARIES SEASONALLY)



RIPRAP TRANSITION
TYPICAL DETAIL 1
NOT TO SCALE



MAIN CONSTRUCTION SUBCONTRACT AMB-4

U. S. DEPARTMENT OF ENERGY
ALBUQUERQUE, NEW MEXICO

AMBROSIA LAKE SITE
AMBROSIA LAKE, NEW MEXICO

TAILINGS EMBANKMENT SECTIONS AND DETAILS

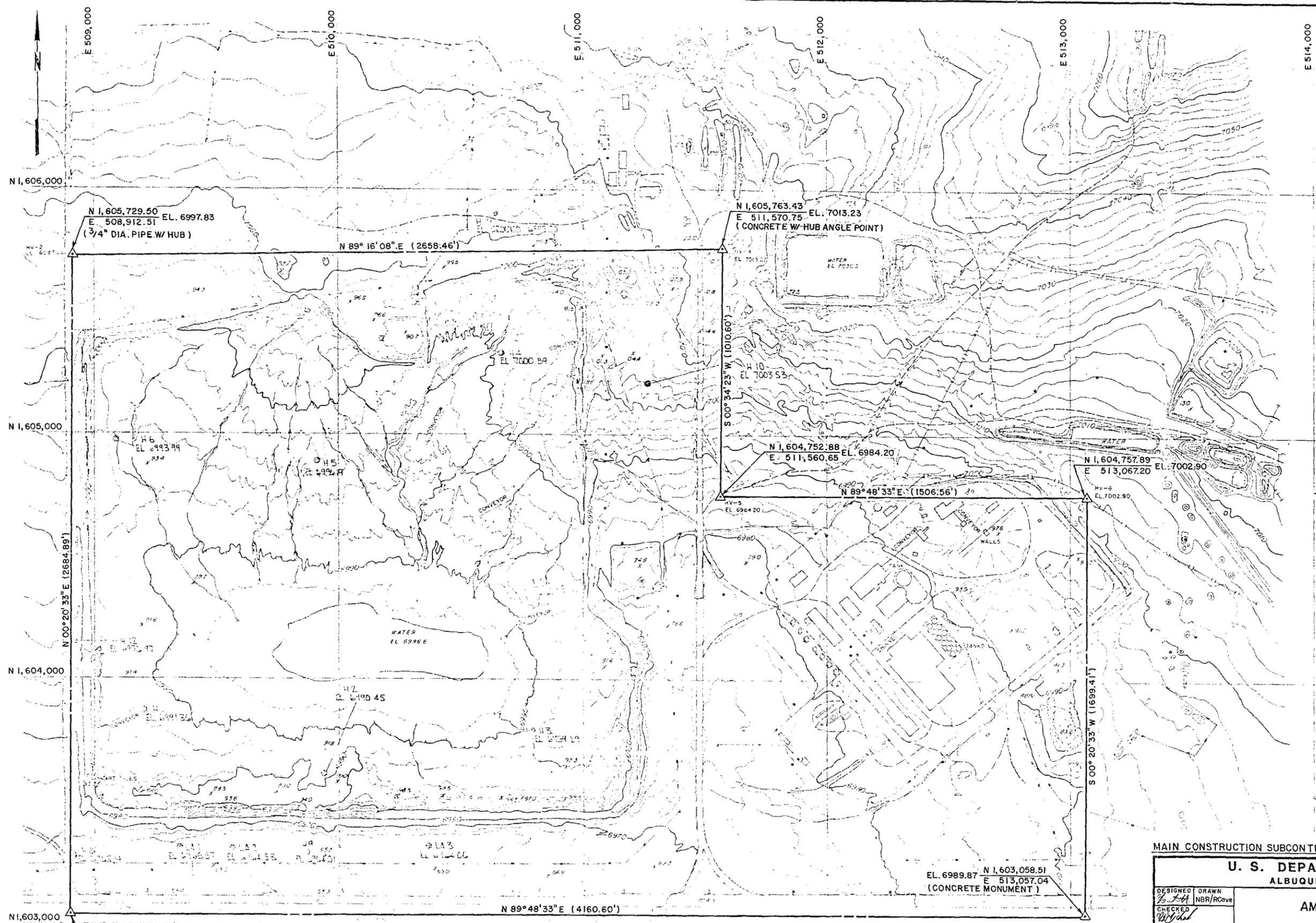
DESIGNED 2/2/88 NBR/RCove	DRAWN NBR/RCove	CHECKED F.B. Guras	INSPECTED PKC	RECOMMENDED PKC	APPROVED F.J. FELIZ	DATE 4/27/88	DATE 7/27/88	DATE 7/27/88	DATE 7/27/88
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PROJECT NO. DE-AC04-83AL18796
DRAWING NO. AMB-PS-10-0411
REV. 2

MORRISON-KNUDSEN ENGINEERS, INC.
UMTRA PROJECT
180 HOWARD ST. SAN FRANCISCO, CA 94105

NO.	DATE	REVISIONS	BY	CK	E&D MGR.	CHIEF ENG.	QA MGR.	DOE APP.
83090		REVISED TOP SLOPE RIPRAP TYPE A THICKNESS FROM 12" TO 6"	JCP	FBS	DRS	EBB	DWJ	MJA
72590		REVISED TO SHOW TYPICAL RIPRAP TOE PROTECTION ON ALL SIDES	MSP	FBS	DRS	EBB	DWJ	MJA
42888		ISSUED FOR CONSTRUCTION						

QA REVIEWED FOR QUALITY REQUIREMENTS
11/27/88
W. Smith



- NOTES:**
1. SURVEY PREPARED BY THE WAYJOHN SURVEYING CO., ALBUQUERQUE, NEW MEXICO, 1981.
 2. GRID SYSTEM IS BASED ON NEW MEXICO COORDINATE SYSTEM, WESTERN ZONE.

- LEGEND:**
- EXISTING SITE FEATURES & CONTOURS (1981 & 1986 SURVEY)
 - CONSTRUCTION GRID COORDINATE

QA REVIEWED FOR QUALITY REQUIREMENTS BY: *Edwin S. Smith* 6/22/88

MAIN CONSTRUCTION SUBCONTRACT AMB-4

U. S. DEPARTMENT OF ENERGY ALBUQUERQUE, NEW MEXICO			
AMBROSIA LAKE SITE AMBROSIA LAKE, NEW MEXICO			
HORIZONTAL AND VERTICAL CONTROL			
DESIGNED <i>W. J. H.</i>	DRAWN NBR/RCOVE	DATE 4/27/88	DATE 27 Apr 88
CHECKED <i>W. J. H.</i>	INSPECTED <i>A. B. Gures</i>	DATE 4/27/88	DATE 6/27/88
RECOMMENDED <i>PKC</i>	APPROVED <i>F. J. FELIZ</i>	DATE 4/27/88	DATE 6/27/88
PROJECT NO. DE-AC04-83AL18796		PROJECT ENGINEER <i>John K. Anton</i>	
DRAWING NO. AMB-PS-10-0412		REV. 0	
MORRISON-KNUDSEN ENGINEERS, INC. A MORRISON-KNUDSEN COMPANY UMTRA PROJECT 180 HOWARD ST SAN FRANCISCO, CA 94105			



NO.	DATE	REVISIONS	BY	CK	ERD MGR	CHIEF ENG.	QA MGR.	DOE APP.
42888		ISSUED FOR CONSTRUCTION						

N 1,603,044.66 E 508,896.46 EL. 6963.58
(1/2" DIA. PIPE W HUB)

EL. 6989.87 N 1,603,058.51 E 513,057.04
(CONCRETE MONUMENT)

N 89° 16' 08" E (2658.46')

N 1,605,763.43 E 511,570.75 EL. 7013.23
(CONCRETE W- HUB ANGLE POINT)

N 1,604,752.88 E 511,560.65 EL. 6984.20

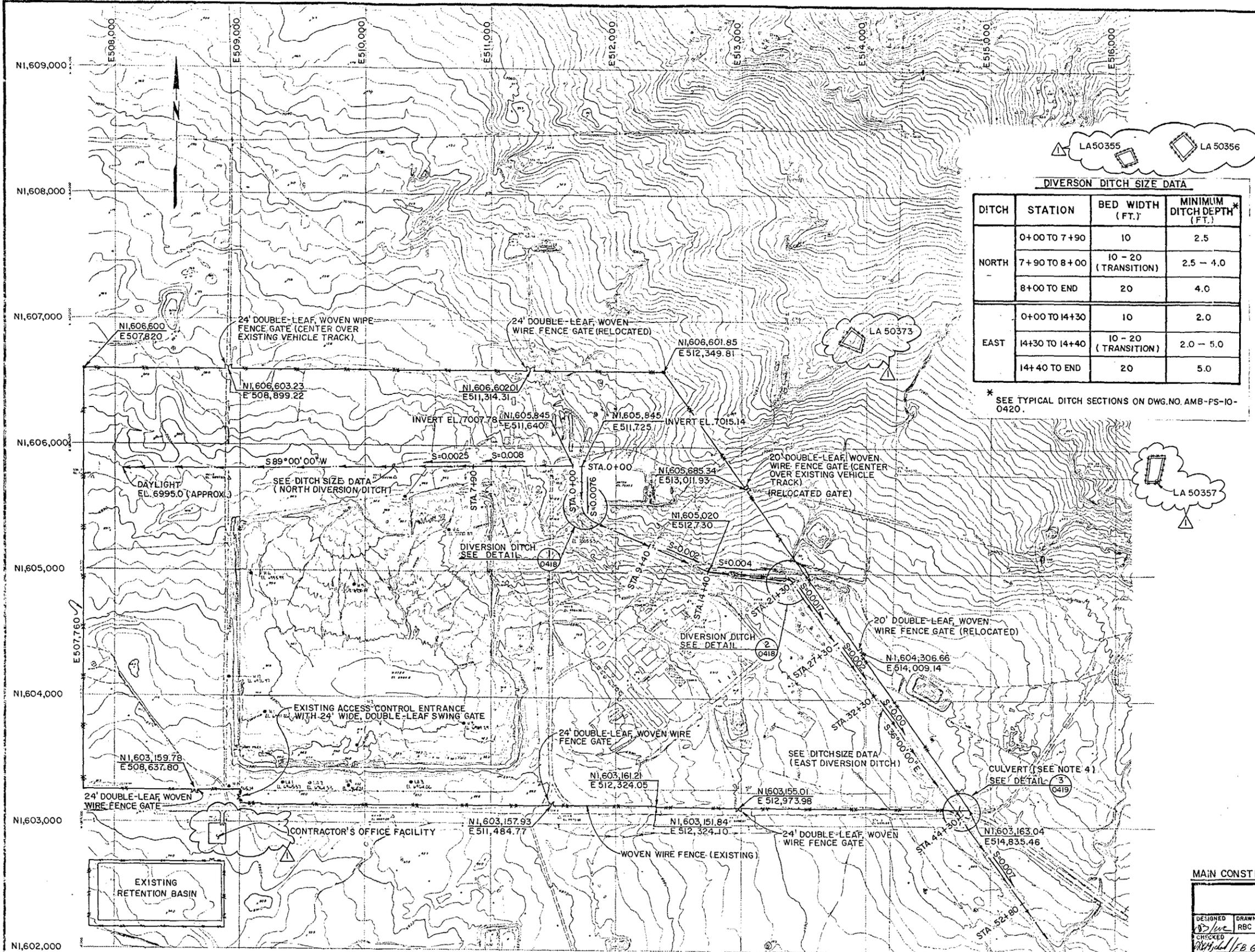
N 1,604,787.89 E 513,067.20 EL. 7002.90

N 89° 48' 33" E (1506.56')

S 00° 20' 33" W (1689.41')

N 89° 48' 33" E (4160.60')

N 00° 20' 33" E (2684.89')



LA50355 LA 50356

DIVERSION DITCH SIZE DATA

DITCH	STATION	BED WIDTH (FT.)	MINIMUM DITCH DEPTH (FT.)
NORTH	0+00 TO 7+90	10	2.5
	7+90 TO 8+00	10 - 20 (TRANSITION)	2.5 - 4.0
	8+00 TO END	20	4.0
EAST	0+00 TO 14+30	10	2.0
	14+30 TO 14+40	10 - 20 (TRANSITION)	2.0 - 5.0
	14+40 TO END	20	5.0

* SEE TYPICAL DITCH SECTIONS ON DWG. NO. AMB-PS-10-0420.

- NOTES:**
1. ARCHAEOLOGICAL SITES SHALL BE PROTECTED WITH NEW WOVEN WIRE FENCE 10 FEET CLEAR ALL ROUND THE SITE. THE FENCE SHALL BE REMOVED ONLY AFTER COMPLETION OF ALL SUBCONTRACT WORK.
 2. FOR COORDINATES AND DETAILS OF ARCHAEOLOGICAL SITES SEE SPECIFICATIONS.
 3. AREA WITHIN BOUNDARIES OF ARCHAEOLOGICAL SITES SHALL NOT BE DISTURBED.
 4. PERIMETER FENCE SHALL BE REMOVED ONLY AFTER COMPLETION OF ALL SUBCONTRACT WORK.
 5. DIVERSION DITCHES SHALL BE CONSTRUCTED ONLY AFTER AREAS UPSLOPE OF DITCHES HAVE BEEN DECONTAMINATED, AS APPROVED BY THE CONTRACTOR.
 6. EAST DIVERSION DITCH SHALL BE CONSTRUCTED ONLY AFTER DITCH TO VOGHT TANK AND VOGHT TANK IMPOUNDMENT AREA HAVE BEEN DECONTAMINATED, AS APPROVED BY THE CONTRACTOR.
 7. CULVERT SHOWN SHALL BE INSTALLED AND REMAIN FOLLOWING THE COMPLETION OF THE SUBCONTRACT.

- REFERENCE DRAWINGS:**
- AMB-PS-10-0403 FINAL SITE PLAN
 - AMB-PS-10-0408 CONTAMINATED MATERIAL EXCAVATION PLAN (SHEET 3 OF 3)
 - AMB-PS-10-0418 MISCELLANEOUS SECTIONS AND DETAILS (SHEET 1 OF 3)
 - AMB-PS-10-0419 MISCELLANEOUS SECTIONS AND DETAILS (SHEET 2 OF 3)
 - AMB-PS-10-0420 MISCELLANEOUS SECTIONS AND DETAILS (SHEET 3 OF 3)
 - AMB-PS-10-0414 WOVEN WIRE FENCE AND MISCELLANEOUS DETAILS

- LEGEND:**
- 6990 EXISTING SITE FEATURES & CONTOURS (1981 & 1986 SURVEY)
 - EXISTING WOVEN WIRE PERIMETER FENCE & GATE
 - N1,605,000 CONSTRUCTION GRID COORDINATE
 - EXISTING ROAD
 - ☒ DIVERSION DITCH
 - STA. 7+90 STATION
 - CULVERT
 - LA 50357 ARCHAEOLOGICAL SITE TO BE PROTECTED
 - HUB & TACK
 - NEW WOVEN WIRE FENCE

QA REVIEWED FOR QUALITY REQUIREMENTS BY: *[Signature]* 6/22/88

MAIN CONSTRUCTION SUBCONTRACT AMB-4

U. S. DEPARTMENT OF ENERGY
ALBUQUERQUE, NEW MEXICO

AMBROSIA LAKE SITE
AMBROSIA LAKE, NEW MEXICO

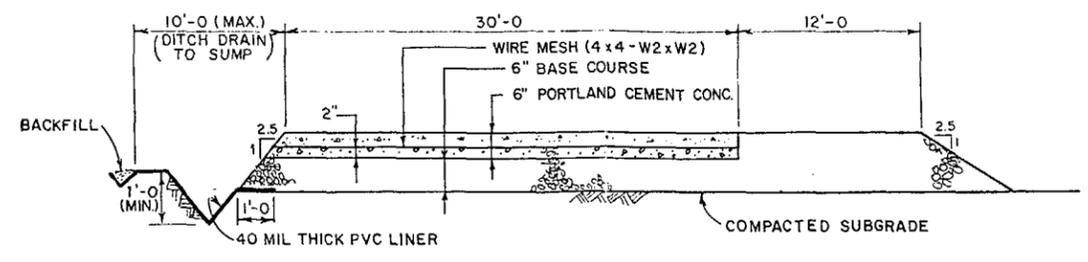
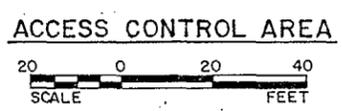
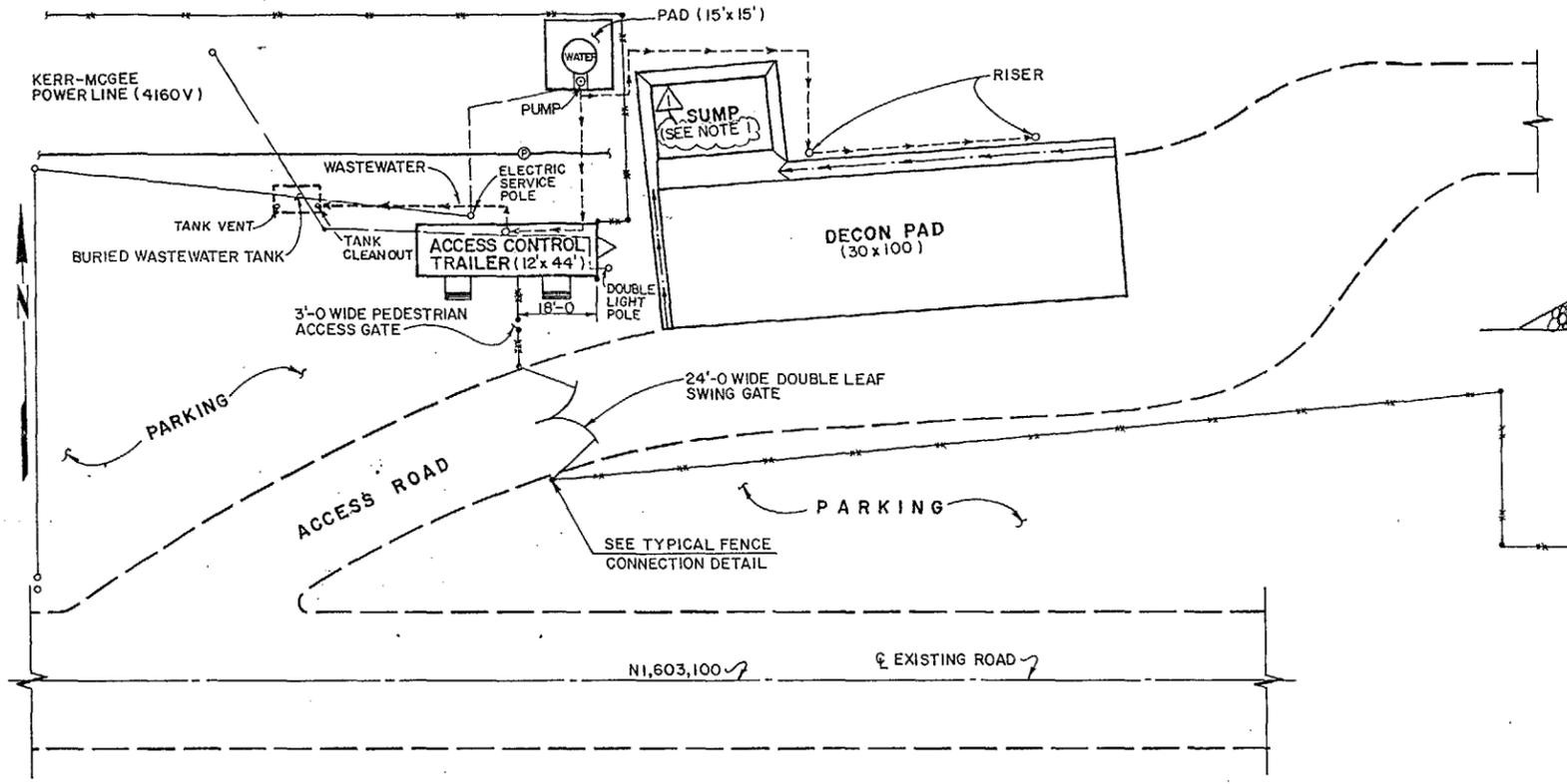
FENCING AND DIVERSION DITCHES PLAN

DESIGNED <i>[Signature]</i>	DRAWN RBC	MORRISON-KNUDSEN ENGINEERS, INC. A MORRISON-KNUDSEN COMPANY 180 HOWARD ST. SAN FRANCISCO, CA 94105	DATE 4/27/88	DATE 4/27/88
CHECKED <i>[Signature]</i>	INSPECTED F. G. Guroc		DATE 27 Apr 88	DATE 4/27/88
RECOMMENDED PKC	APPROVED F. J. FELIZ		DATE 27 Apr 88	DATE 4/27/88
PROJECT NO. DE-AC04-83AL18796			DATE 4/27/88	DATE 4/27/88

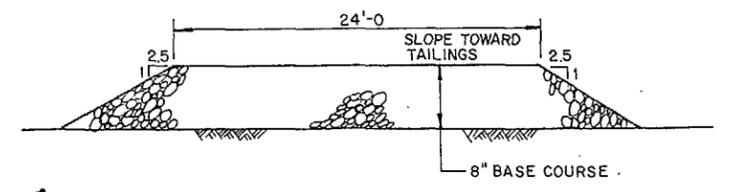
PROJECT NO. DE-AC04-83AL18796
DRAWING NO. AMB-PS-10-0413

NO.	DATE	REVISIONS	BY	CK	E & D MGR.	CHIEF ENG.	QA MGR.	DOE APP.
72590		ADDED ARCHAEOLOGICAL SITES WITH FENCE; REVISED OFFICE FACILITY	msp	RBC	DRS	ESS	WV	AK
42888		ISSUED FOR CONSTRUCTION						

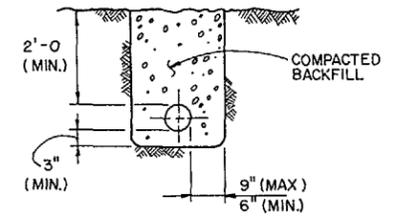




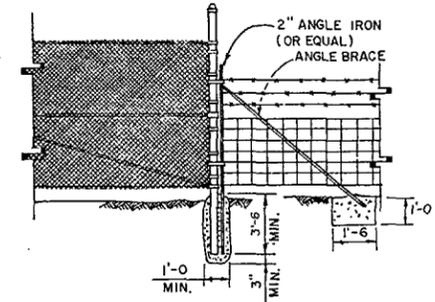
TYP. DECONTAMINATION PAD SECTION
NOT TO SCALE



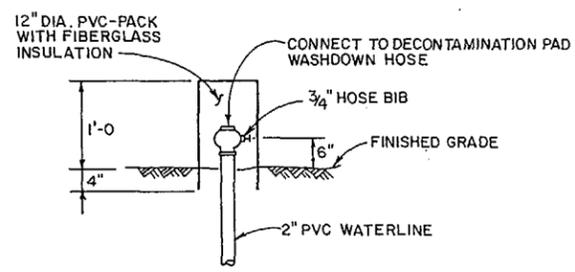
TYPICAL ACCESS ROAD SECTION
NOT TO SCALE



TYPICAL BEDDING AND BACKFILL
FOR UTILITIES
NOT TO SCALE



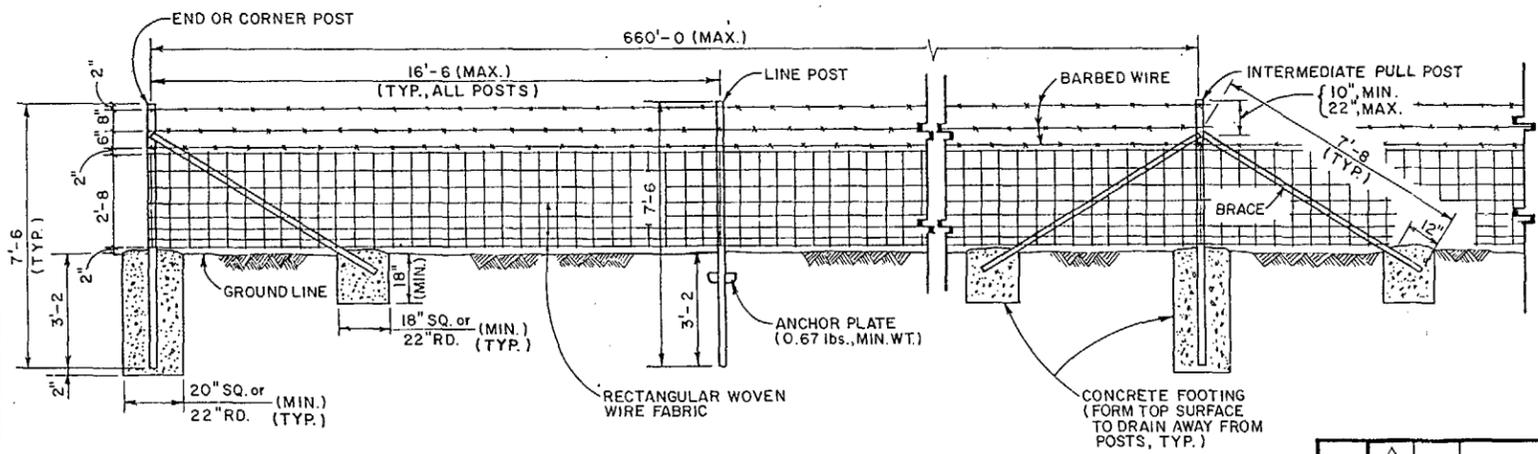
TYPICAL FENCE CONNECTION DETAIL
CHAIN LINK FENCE TO WOVEN WIRE FENCE
NOT TO SCALE



TYPICAL STUB DETAIL
NOT TO SCALE

NOTE:
1. SUMP SHALL BE LINED WITH CONCRETE.

- REFERENCE DRAWINGS:
- AMB-PS-10-0404 CONSTRUCTION FACILITIES AND DRAINAGE PLAN
 - AMB-PS-10-0413 FENCING AND DIVERSION DITCHES PLAN
 - AMB-PS-10-0421 EXISTING CHAIN LINK FENCE AND OFFICE FACILITIES



TYPICAL RECTANGULAR WOVEN WIRE FENCE ASSEMBLY
NOT TO SCALE



MAIN CONSTRUCTION SUBCONTRACT AMB-4

U. S. DEPARTMENT OF ENERGY
ALBUQUERQUE, NEW MEXICO

DESIGNED: *[Signature]* DRAWN: RBC
CHECKED: *[Signature]*
INSPECTED: *[Signature]*
RECOMMENDED: *[Signature]*

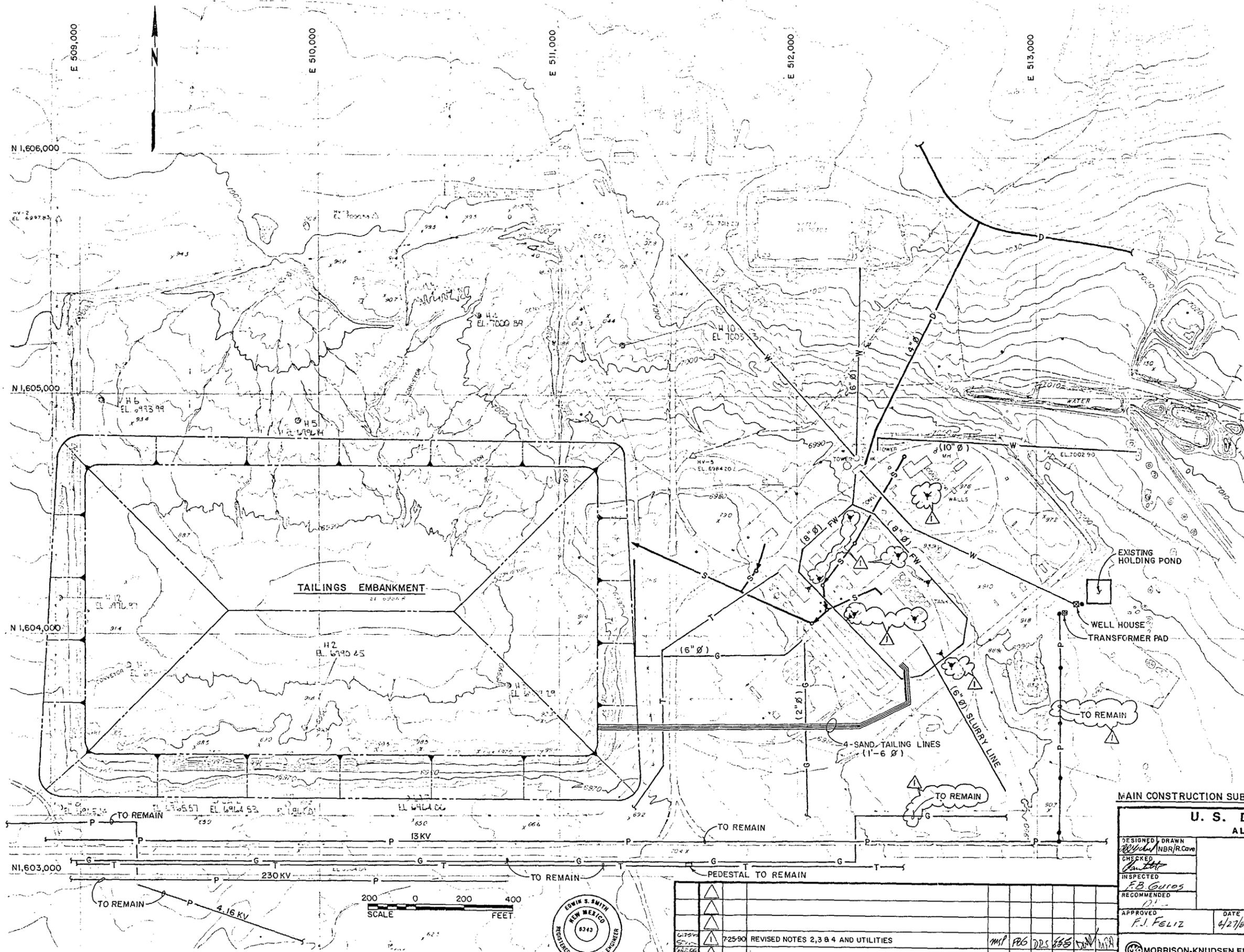
APPROVED: F.J. FELIZ DATE: 4/27/88
DATE: 27 Apr 88
DATE: 1/27/89

PROJECT NO. DE-AC04-83AL18796
DRAWING NO. AMB-PS-10-0414 REV 1

MORRISON-KNUDSEN ENGINEERS, INC.
A MORRISON-KNUDSEN COMPANY
160 HOWARD ST. SAN FRANCISCO, CA 94105

NO.	DATE	REVISIONS	BY	CK	E & D MGR.	CHIEF ENG.	QA MGR.	DOE APP.
1	7-25-80	REVISED DRAWING TITLE AND ADDED SUMP NOTE	MSF	ABG	DRS	SSS	WNY	AA
2	4-28-88	ISSUED FOR CONSTRUCTION						

QA REVIEWED FOR QUALITY REQUIREMENTS BY: *[Signature]* 4/22/88



- NOTES:**
1. ALL LOCATIONS SHOWN ARE APPROXIMATE AND SHALL BE VERIFIED BY THE SUBCONTRACTOR IN THE FIELD.
 2. ALL ENCOUNTERED PIPING WITHIN TAILINGS EMBANKMENT AREA SHALL BE REMOVED AND DISPOSED OF AS SPECIFIED FOR DEMOLITION DEBRIS IN STOCKPILE AREA A.
 3. ALL UNDERGROUND PIPING WITHIN THE EXCAVATED DEPTH FOR CONTAMINATED MATERIALS SHALL BE REMOVED AND DISPOSED OF AS SPECIFIED.
 4. ALL UNDERGROUND PIPING DEEPER THAN THE EXCAVATED DEPTH FOR CONTAMINATED MATERIALS SHALL BE ABANDONED IN PLACE AS SPECIFIED.
 5. ELEVATIONS AND TYPES OF UNDERGROUND PIPING ARE UNKNOWN UNLESS INDICATED.
 6. ALL INTERFERING PORTIONS OF EXISTING UTILITIES SHALL BE REMOVED AS DIRECTED BY CONTRACTOR UNLESS NOTED OTHERWISE.
 7. ADDITIONAL UTILITIES AND TANKS NOT SHOWN MAY BE ENCOUNTERED DURING CONSTRUCTION. SUBCONTRACTOR SHALL INFORM CONTRACTOR OF ALL UNDERGROUND FACILITIES NOT SHOWN AND OBTAIN CONTRACTOR'S APPROVAL BEFORE CONTINUING WORK IN AREAS WHERE ADDITIONAL UNDERGROUND FACILITIES ARE ENCOUNTERED.

REFERENCE DRAWINGS:

AMB-PS-10-0406 CONTAMINATED MATERIALS EXCAVATION PLAN (SHEET 1 OF 3)

- LEGEND:**
- 7000- EXISTING SITE FEATURES & CONTOURS (1981 & 1986 SURVEY)
 - N1,605,000 CONSTRUCTION GRID COORDINATE
 - T- TELEPHONE
 - G- GAS
 - P- OVERHEAD POWER
 - S- SANITARY SEWER
 - FW- FIRE WATER
 - W- WATER
 - D- DRAINAGE CULVERT
 - ▽ FIRE HYDRANT

QA REVIEWED FOR QUALITY REQUIREMENTS BY *[Signature]* 6/22/88

MAIN CONSTRUCTION SUBCONTRACT AMB-4

U. S. DEPARTMENT OF ENERGY
ALBUQUERQUE, NEW MEXICO

AMBROSIA LAKE SITE
AMBROSIA LAKE, NEW MEXICO

EXISTING UTILITIES PLAN

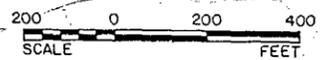
DESIGNED / DRAWN <i>[Signature]</i> NBR/R.Cove	DATE 4/27/88	DATE 27 Apr 88	DATE 4/27/88
CHECKED <i>[Signature]</i>	DATE 4/27/88	DATE 27 Apr 88	DATE 4/27/88
INSPECTED <i>[Signature]</i>	DATE 4/27/88	DATE 27 Apr 88	DATE 4/27/88
RECOMMENDED <i>[Signature]</i>	DATE 4/27/88	DATE 27 Apr 88	DATE 4/27/88
APPROVED F.J. FELIZ	DATE 4/27/88	DATE 27 Apr 88	DATE 4/27/88

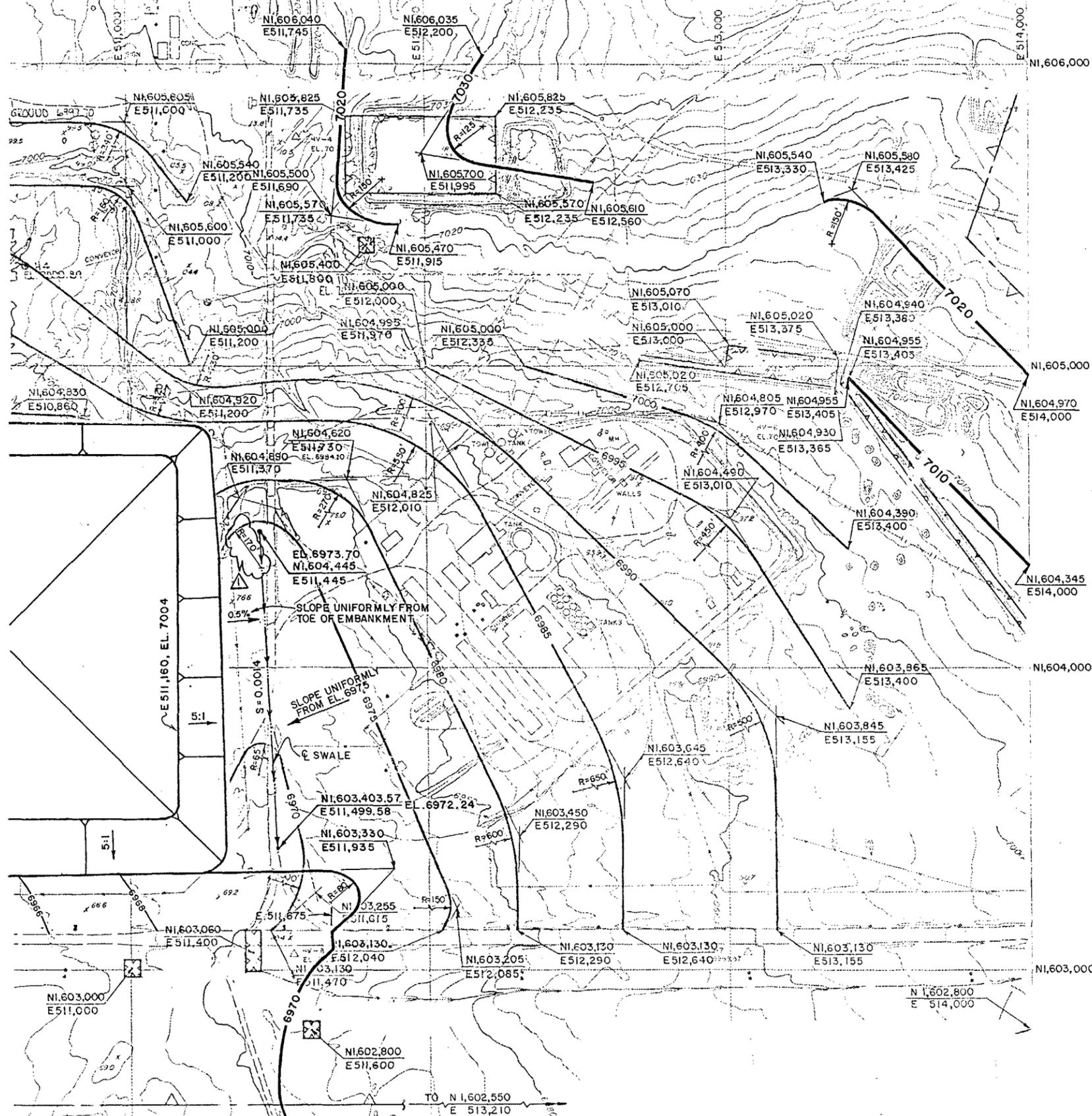
PROJECT NO. DE-AC04-83AL18796

DRAWING NO. AMB-PS-10-0415

MORRISON-KNUDSEN ENGINEERS, INC.
UMTRA PROJECT
180 HOWARD ST. SAN FRANCISCO, CA 94105

NO.	DATE	REVISIONS	BY	CK	ERD MGR	CHIEF ENG.	QA MGR.	DOE APP.
1	7-25-90	REVISED NOTES 2,3 & 4 AND UTILITIES	MCP	FBO	DLS	SSS	WV	MFA
2	4-28-88	ISSUED FOR CONSTRUCTION						





NOTES:
 1. FINAL GROUND SURFACES SHALL BE GRADED TO DRAIN TO PREVENT PONDING.

REFERENCE DRAWINGS:
 AMB-PS-10-0403 FINAL SITE PLAN
 AMB-PS-10-0406 CONTAMINATED MATERIALS EXCAVATION PLAN (SHEET 1 OF 3)
 AMB-PS-10-0407 CONTAMINATED MATERIALS EXCAVATION PLAN (SHEET 2 OF 3)
 AMB-PS-10-0408 CONTAMINATED MATERIALS EXCAVATION PLAN (SHEET 3 OF 3)

LEGEND:
 -7000- EXISTING SITE FEATURES & CONTOURS UNLESS INDICATED OTHERWISE (1981 SURVEY)
 -6970- FINISH GROUND SURFACE CONTOUR
 NI,606,400 CONSTRUCTION GRID COORDINATE
 --- EXISTING ROAD
 -7000- CONTAMINATED MATERIAL EXCAVATION CONTOUR

CA REVIEWED FOR QUALITY REQUIREMENTS BY Phil Lott 4/22/88



MAIN CONSTRUCTION SUBCONTRACT AMB-4

U. S. DEPARTMENT OF ENERGY
 ALBUQUERQUE, NEW MEXICO

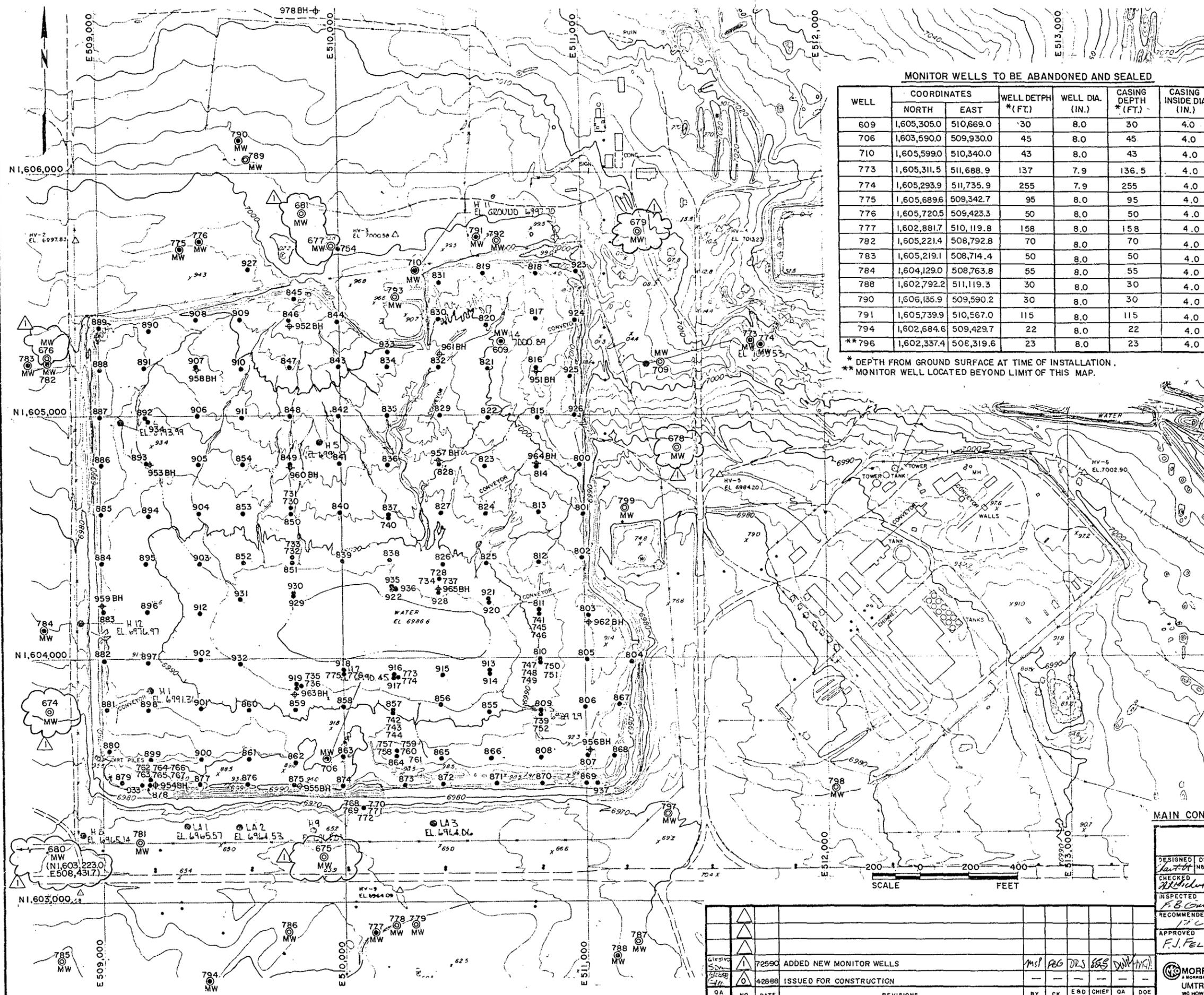
AMBROSIA LAKE SITE
 AMBROSIA LAKE, NEW MEXICO

EAST SWALE AREA GRADING PLAN

DESIGNED NBR/R Cove	DRAWN NBR/R Cove
CHECKED NBR/R Cove	INSPECTED F.B. Garas
RECOMMENDED NBR/R Cove	RECOMMENDED NBR/R Cove
APPROVED F.J. FELIZ	DATE 4/27/88
DATE 27 Apr 88	DOB PROJECT ENGINEER John R. R. Contreras
PROJECT NO. DE-AC04-83AL18796	DATE 4/27/88
MORRISON-KNUDSEN ENGINEERS, INC. 180 HOWARD ST. SAN FRANCISCO, CA 94105	DRAWING NO. AMB-PS-10-0416



NO.	DATE	REVISIONS	BY	CK	E & D MGR.	CHIEF ENG.	QA MGR.	DOE A/P
1	7-25-90	ADDED CONTOUR RADIUS	MJP	FBG	DRS	EGS	SWV	NJR
2	4-28-88	ISSUED FOR CONSTRUCTION						



MONITOR WELLS TO BE ABANDONED AND SEALED

WELL	COORDINATES		WELL DEPTH *(FT.)	WELL DIA. (IN.)	CASING DEPTH *(FT.)	CASING INSIDE DIA. (IN.)
	NORTH	EAST				
609	1,605,305.0	510,669.0	30	8.0	30	4.0
706	1,603,590.0	509,330.0	45	8.0	45	4.0
710	1,605,590.0	510,340.0	43	8.0	43	4.0
773	1,605,311.5	511,688.9	137	7.9	136.5	4.0
774	1,605,293.9	511,735.9	255	7.9	255	4.0
775	1,605,689.6	509,342.7	95	8.0	95	4.0
776	1,605,720.5	509,423.3	50	8.0	50	4.0
777	1,602,881.7	510,119.8	158	8.0	158	4.0
782	1,605,221.4	508,792.8	70	8.0	70	4.0
783	1,605,219.1	508,714.4	50	8.0	50	4.0
784	1,604,129.0	508,763.8	55	8.0	55	4.0
788	1,602,792.2	511,119.3	30	8.0	30	4.0
790	1,605,135.9	509,590.2	30	8.0	30	4.0
791	1,605,739.9	510,567.0	115	8.0	115	4.0
794	1,602,684.6	509,429.7	22	8.0	22	4.0
**796	1,602,337.4	508,319.6	23	8.0	23	4.0

* DEPTH FROM GROUND SURFACE AT TIME OF INSTALLATION.
** MONITOR WELL LOCATED BEYOND LIMIT OF THIS MAP.

NOTES:

- GROUND WATER DATA AND SUBSURFACE EXPLORATION LOGS ARE AVAILABLE FROM THE CONTRACTOR.
- MONITOR WELLS TO BE SAVED SHALL BE PROTECTED DURING CONSTRUCTION AND SHALL NOT BE CUT OR DISTURBED UNLESS OTHERWISE DIRECTED BY THE CONTRACTOR. MONITOR WELLS TO BE PROTECTED DURING CONSTRUCTION SHALL BE CAREFULLY SUPPORTED IF EXCAVATION BELOW EXISTING GROUND SURFACE IS REQUIRED, UNLESS DIRECTED OTHERWISE BY THE CONTRACTOR.
- THE SUBCONTRACTOR SHALL NOTIFY THE CONTRACTOR IMMEDIATELY IF ANY WELLS NOT SHOWN ARE ENCOUNTERED DURING CONSTRUCTION. SUCH WELLS SHALL BE PROTECTED UNLESS DIRECTED OTHERWISE BY THE CONTRACTOR.
- MONITOR WELLS SHOWN TO BE RETAINED MAY NOT INDICATE ALL WELLS TO BE PROTECTED OR PRECISE LOCATIONS. ANY WELLS NOT SHOWN ON THIS DRAWING DISCOVERED DURING CONSTRUCTION SHALL BE REPORTED TO THE CONTRACTOR AS SPECIFIED.
- THE FOLLOWING WELLS SHALL BE RETAINED AND PROTECTED: 674, 675, 676, 677, 678, 679, 680, 681, 709, 778, 779, 781, 785, 786, 787, 789, 792, 793, 797, 798 AND 799. THE CONTRACTOR WILL PROVIDE COORDINATES OF THESE WELLS.

REFERENCE DRAWINGS:

LEGEND:

- 814 ● PIEZOCONE HOLE
- 956 BH + GEOTECHNICAL BORE HOLE
- 794 MW ○ MONITOR WELL TO BE ABANDONED AND SEALED
- 797 MW ○ MONITOR WELL TO BE RETAINED



MAIN CONSTRUCTION SUBCONTRACT AMB-4

U. S. DEPARTMENT OF ENERGY
ALBUQUERQUE, NEW MEXICO

AMBROSIA LAKE SITE
AMBROSIA LAKE, NEW MEXICO

MONITOR WELL ABANDONMENT
AND BORING LOCATION PLAN

DESIGNED <i>[Signature]</i>	DRAWN <i>[Signature]</i>	CHECKED <i>[Signature]</i>	INSPECTED <i>[Signature]</i>	RECOMMENDED <i>[Signature]</i>	APPROVED <i>[Signature]</i>	DATE 4/27/88	DGE PROJECT ENGINEER <i>[Signature]</i>	DATE 4/27/88
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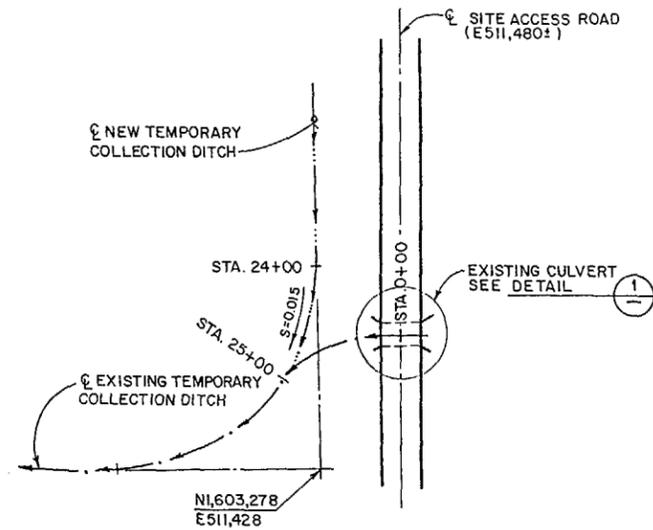
PROJECT NO. DE-AC04-83AL18796

MORRISON-KNUDSEN ENGINEERS, INC.
UMTRA PROJECT
90 HOWARD ST. SAN FRANCISCO, CA 94105

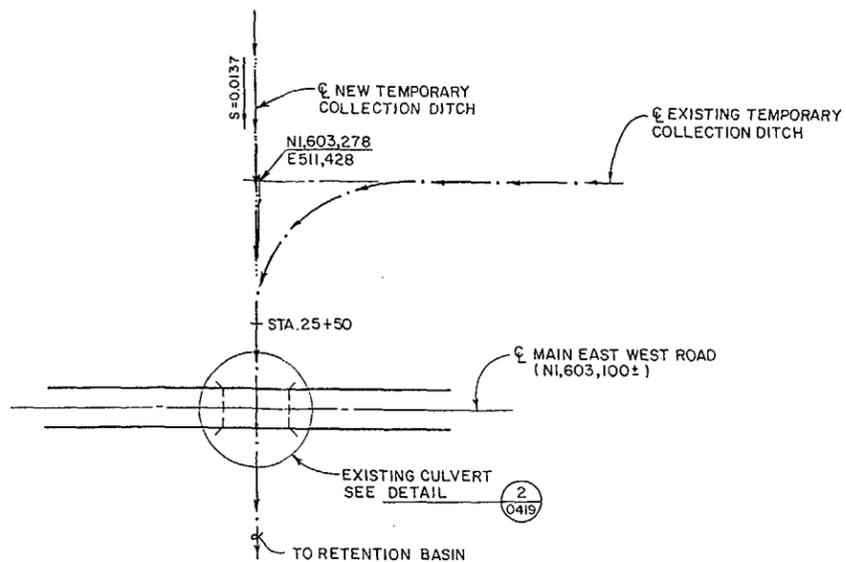
DRAWING NO. AMB-PS-10-0417 REV. 1

NO.	DATE	REVISIONS	BY	CK	E & D MGR	CHIEF ENG.	QA MGR.	DOE APP.
72590		ADDED NEW MONITOR WELLS	MSP	ABG	DRS	GRS	DMW	MGR
42888		ISSUED FOR CONSTRUCTION						

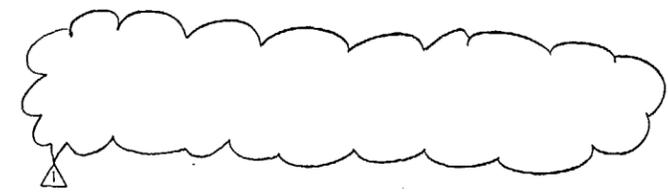
QA REVIEWED FOR QUALITY REQUIREMENTS BY *[Signature]* 4/22/88



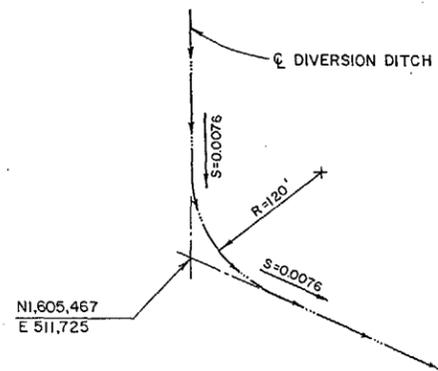
COLLECTION DITCH DETAIL 1
NOT TO SCALE



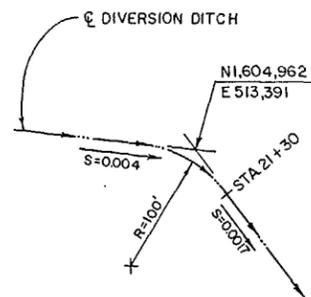
COLLECTION DITCH DETAIL 2
NOT TO SCALE



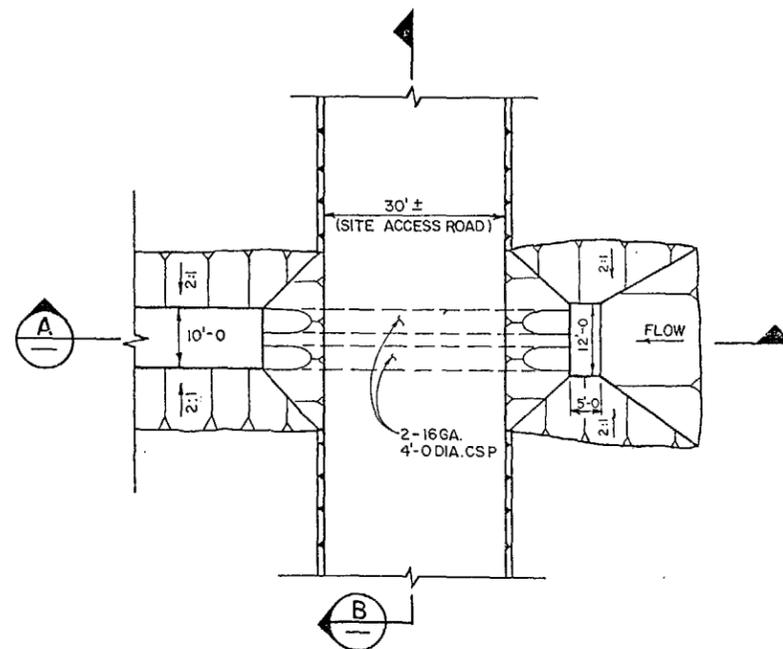
- REFERENCE DRAWINGS:**
- AMB-PS-10-0404 CONSTRUCTION FACILITIES AND DRAINAGE PLAN
 - AMB-PS-10-0405 RETENTION BASIN PLAN AND DETAILS
 - AMB-PS-10-0408 CONTAMINATION MATERIAL EXCAVATION PLAN (SHEET 3 OF 3)
 - AMB-PS-10-0413 FENCING AND DIVERSION DITCHES PLAN
 - AMB-PS-10-0419 MISCELLANEOUS SECTIONS AND DETAILS (SHEET 2 OF 3)
 - AMB-PS-10-0420 MISCELLANEOUS SECTIONS AND DETAILS (SHEET 3 OF 3)



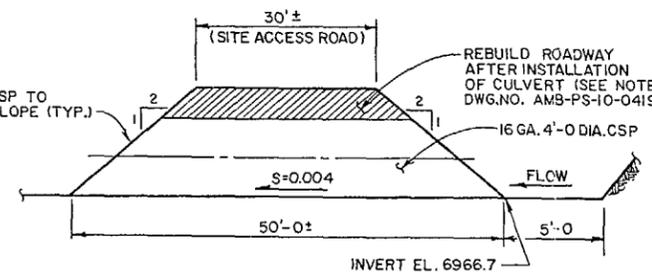
DIVERSION DITCH DETAIL 1
NOT TO SCALE



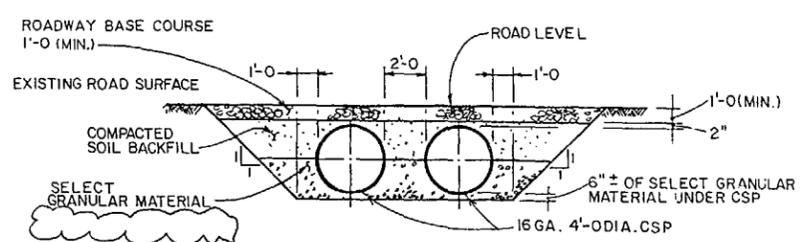
DIVERSION DITCH DETAIL 2
NOT TO SCALE



CULVERT DETAIL 1
NOT TO SCALE



CULVERT SECTION A
NOT TO SCALE



CULVERT SECTION B
NOT TO SCALE

- LEGEND:**
- EXISTING COLLECTION DITCH
 - NEW COLLECTION DITCH
 - S=0.005 INVERT SLOPE
 - CULVERT
 - EXCAVATION

AS REVIEWED FOR UTILITY REQUIREMENTS
6/22/88



NO.	DATE	REVISIONS	BY	CK	E.B.D. MGR.	CHIEF ENG.	QA MGR.	DOE APP.
1	7/25/90	DELETED "AS BUILT" AND NOTE	MSF	FBG	DRS	ESS	MDW	MAH
2	4/28/88	ISSUED FOR CONSTRUCTION						

MAIN CONSTRUCTION SUBCONTRACT AMB-4

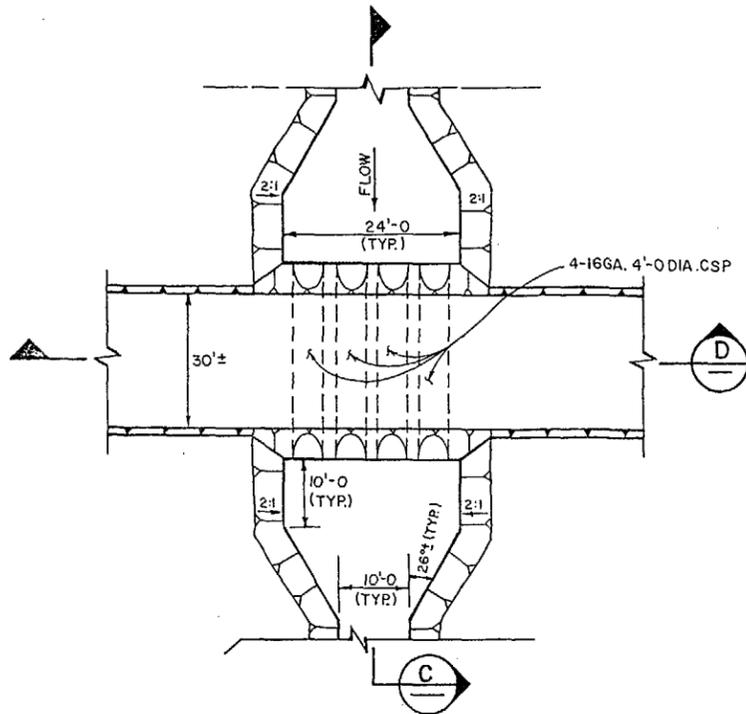
U. S. DEPARTMENT OF ENERGY
ALBUQUERQUE, NEW MEXICO

AMBROSIA LAKE SITE
AMBROSIA LAKE, NEW MEXICO

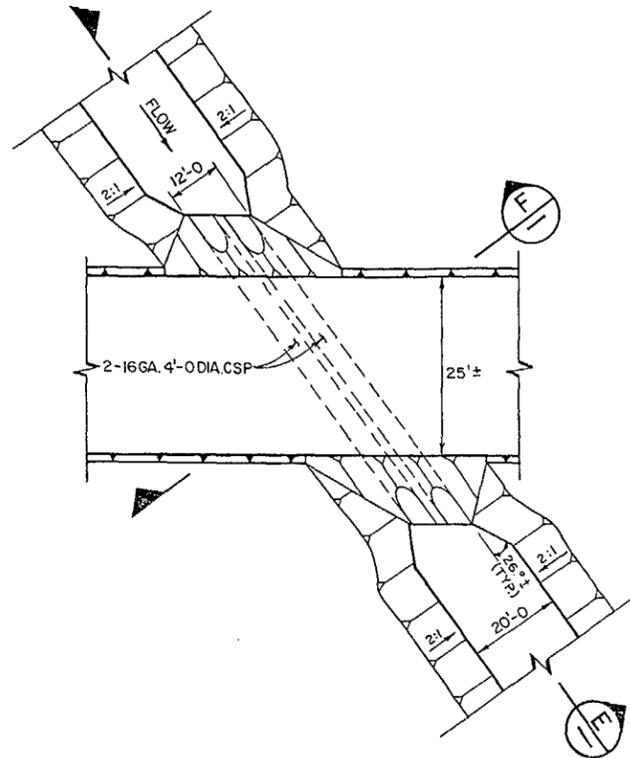
MISCELLANEOUS SECTIONS AND DETAILS
(SHEET 1 OF 3)

DESIGNED COB	DRAWN RBC	CHECKED RBC	INSPECTED RBC	RECOMMENDED DKC	APPROVED R.F. FELIZ	DATE 4/27/88	DATE 27 Apr 88	DOE PROJECT ENGINEER John R. D. Antonio	DATE 4/27/88
PROJECT NO. DE-AC04-83AL18796							DRAWING NO. AMB-PS-10-0418		

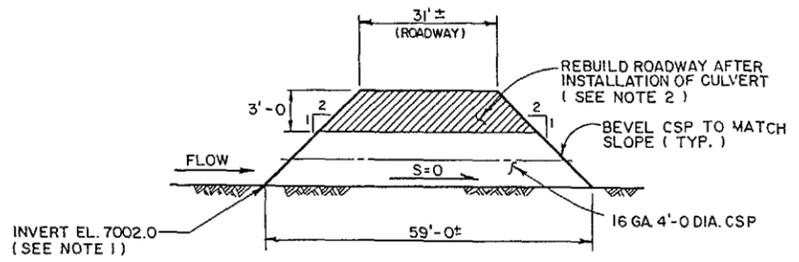
MORRISON-KNUDSEN ENGINEERS, INC.
A MORRISON-KNUDSEN COMPANY
180 HOWARD ST. SAN FRANCISCO, CA 94105



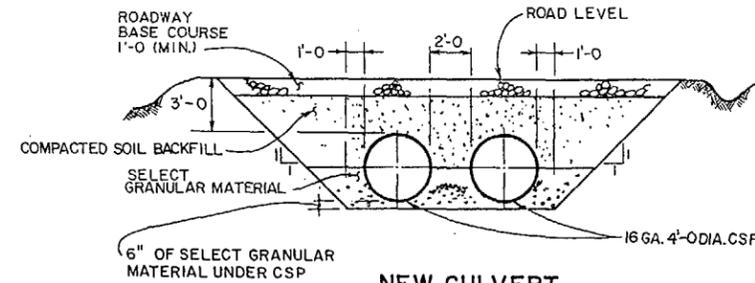
**CULVERT
DETAIL 2**
NOT TO SCALE
0418



**NEW CULVERT
DETAIL 3**
NOT TO SCALE
0413



**NEW CULVERT
SECTION E**
NOT TO SCALE



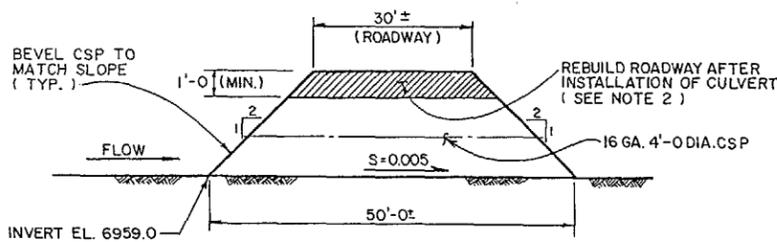
**NEW CULVERT
SECTION F**
NOT TO SCALE

NOTES:

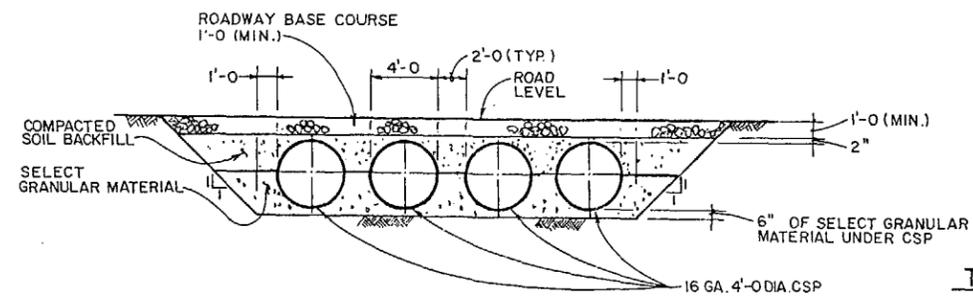
1. INVERT ELEVATION OF DIVERSION DITCH CULVERT UNDER MAIN EAST-WEST ROAD DEPENDS ON EXTENT OF CONTAMINATED MATERIALS EXCAVATION FROM EXISTING DITCH.
2. SUBCONTRACTOR SHALL REBUILD ROADWAY AS SHOWN TO ACHIEVE CONDITIONS PRIOR TO CONSTRUCTION. SEE NOTE 10 AND 11 ON DRAWING NO. AMB-PS-10-0408, FOR REFERENCE.

REFERENCE DRAWINGS:

- AMB-PS-10-0404 CONSTRUCTION FACILITIES AND DRAINAGE PLAN
- AMB-PS-10-0405 RETENTION BASIN PLAN AND DETAILS
- AMB-PS-10-0408 CONTAMINATED MATERIAL EXCAVATION PLAN (SHEET 3 OF 3)
- AMB-PS-10-0413 FENCING AND DIVERSION DITCHES PLAN
- AMB-PS-10-0418 MISCELLANEOUS SECTIONS & DETAILS (SHEET 1 OF 3)



**CULVERT
SECTION C**
NOT TO SCALE



**TYPICAL DIVERSION DITCH
TRANSITION DETAIL**
NOT TO SCALE

LEGEND:

- S=0.005 INVERT SLOPE
- EXCAVATION
- EMBANKMENT

QA REVIEWED FOR QUALITY REQUIREMENTS BY: *Shirley D. Scott* 6/22/88

MAIN CONSTRUCTION SUBCONTRACT AMB-4

U. S. DEPARTMENT OF ENERGY
ALBUQUERQUE, NEW MEXICO

AMBROSIA LAKE SITE
AMBROSIA LAKE, NEW MEXICO

MISCELLANEOUS SECTIONS AND DETAILS
(SHEET 2 OF 3)

DESIGNED: *W. B. Smith*
DRAWN: *RBC*
CHECKED: *RBC*
INSPECTED: *A. B. G...*
RECOMMENDED: *P. K. Chen*

APPROVED: *F. J. FELIZ*

DATE: 4/27/88
DATE: 27 Apr 88
DOE PROJECT ENGINEER: *John R. D. Antonio*
DATE: 4/22/88

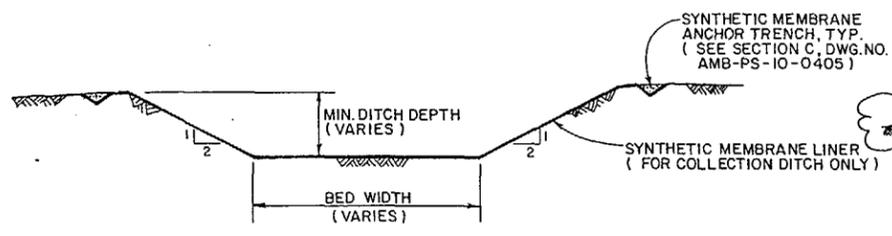
MORRISON-KNUDSEN ENGINEERS, INC.
UMTRA PROJECT
180 HAYWARD ST. SAN FRANCISCO, CA 94105

PROJECT NO. DE-ACO4-83AL18796
DRAWING NO. AMB-PS-10-0419
REV. 1

NO.	DATE	REVISIONS	BY	CK	E & D MGR.	CHIEF ENG.	QA MGR.	DOE APPR.
1	7-25-90	DELETED "AS BUILT"	MSP	FB6	DES	ESS	JUN	TR 31
2	4-28-88	ISSUED FOR CONSTRUCTION						

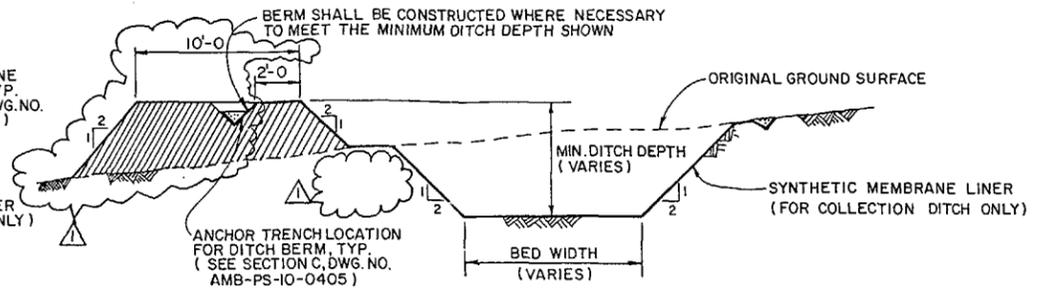


E. S. Smith



TYPICAL DITCH SECTION

NOT TO SCALE

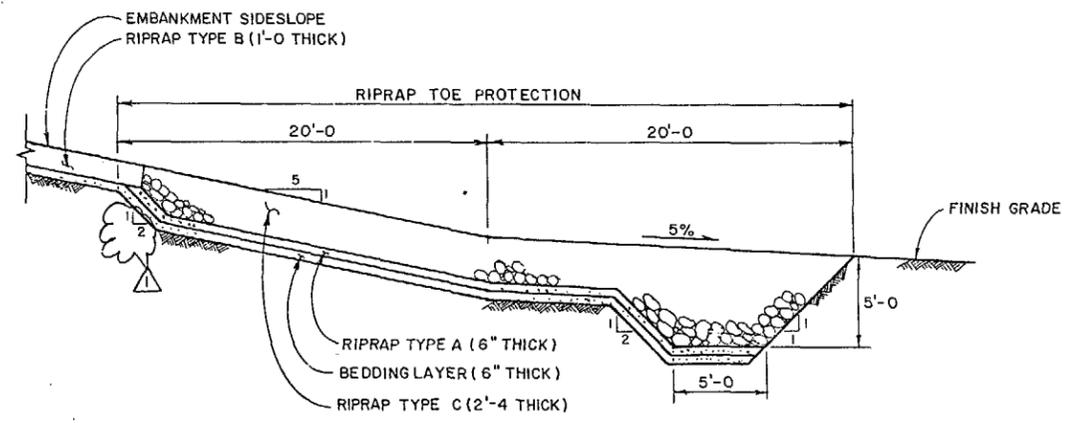


TYP. DITCH SECTION WITH DOWN SLOPE BERM

NOT TO SCALE

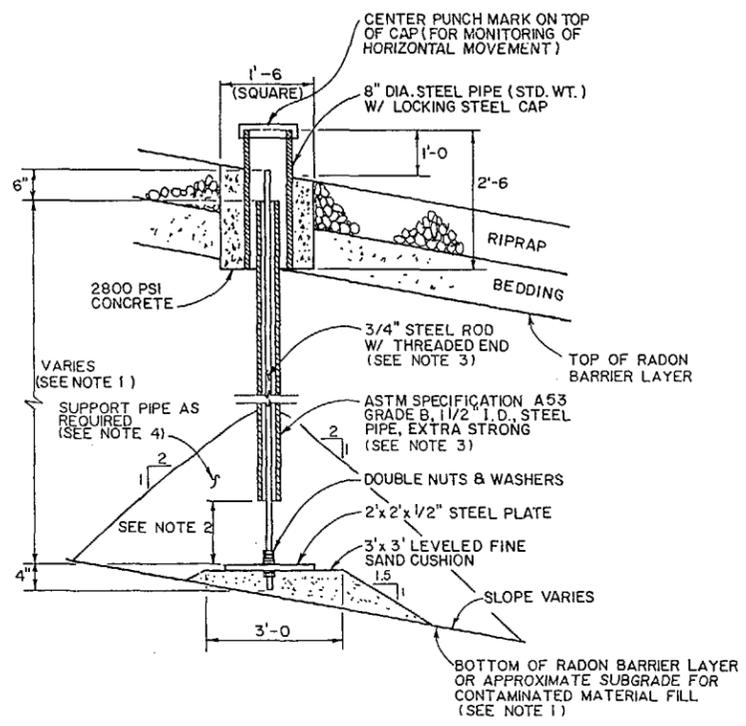
- NOTES:**
1. LENGTH OF PIPE AND ROD AND LOCATION OF PLATE VARY AS SHOWN ON DWG. NO. AMB-PS-10-0410.
 2. CLEAR SPACE OF 1'-0" SHALL BE PROVIDED AS SHOWN FOR DISPLACEMENT MONUMENTS WITH PLATES LOCATED AT APPROXIMATE CONTAMINATED MATERIAL FILL SUBGRADE. PIPES SHALL BE PLACED DIRECTLY ON PLATES LOCATED AT BOTTOM OF RADON BARRIER LAYER. PIPE SHALL NOT BE ATTACHED TO PLATES OR RODS.
 3. PIPES AND RODS WITH TOTAL LENGTH GREATER THAN 5 FEET SHALL BE INSTALLED IN 5-FOOT SECTIONS AS FILL CONSTRUCTION PROGRESSES. RODS SHALL BE SECURELY FLUSH-COUPLED AS REQUIRED. PIPES SHALL BE SECURELY COUPLED SUCH THAT INSIDE DIAMETER IS NOT LESS THAN 1/2" I.D. AT ANY POINT. PIPES SHALL BE CAPPED AT ALL TIMES TO PREVENT ENTRANCE OF FOREIGN MATTER.
 4. PIPES SHALL BE SUPPORTED BY FILL COMPACTED BY LIGHT WEIGHT TAMPERS WITHIN 5 FEET OF PIPES TO MEET SAME COMPACTION REQUIREMENTS AS FOR ADJACENT FILL. CARE SHALL BE TAKEN TO ENSURE THAT PIPES REMAIN NOMINALLY CENTERED AROUND RODS.

- REFERENCE DRAWINGS:**
- AMB-PS-10-0404 CONSTRUCTION FACILITIES AND DRAINAGE PLAN
 - AMB-PS-10-0405 RETENTION BASIN PLAN AND DETAILS
 - AMB-PS-10-0410 TAILINGS EMBANKMENT GRADING PLAN
 - AMB-PS-10-0411 TAILINGS EMBANKMENT- SECTIONS AND DETAILS
 - AMB-PS-10-0413 FENCING AND DIVERSION DITCHES PLAN



TYPICAL RIPRAP TOE PROTECTION SECTION

NOT TO SCALE



TYP. DISPLACEMENT MONUMENT DETAIL

NOT TO SCALE



MAIN CONSTRUCTION SUBCONTRACT AMB-4

U. S. DEPARTMENT OF ENERGY
ALBUQUERQUE, NEW MEXICO

AMBROSIA LAKE SITE
AMBROSIA LAKE, NEW MEXICO

MISCELLANEOUS SECTIONS AND DETAILS
(SHEET 3 OF 3)

DESIGNED: W. J. [Signature] / DRAWN: RBC / CHECKED: [Signature] / INSPECTED: [Signature] / RECOMMENDED: P. K. Chen / APPROVED: F. J. FELIZ

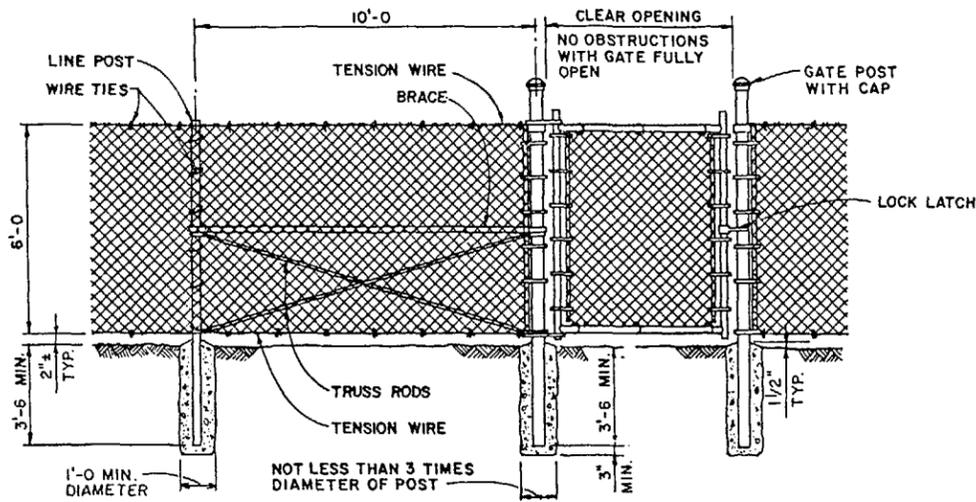
DATE: 4/27/88 / DATE: 11/27/89 / DATE: 9/29/88

DOE PROJECT ENGINEER: John R. Antonino

MORRISON-KNUDSEN ENGINEERS, INC.
UMTRA PROJECT
180 HOWARD ST. SAN FRANCISCO, CA 94105

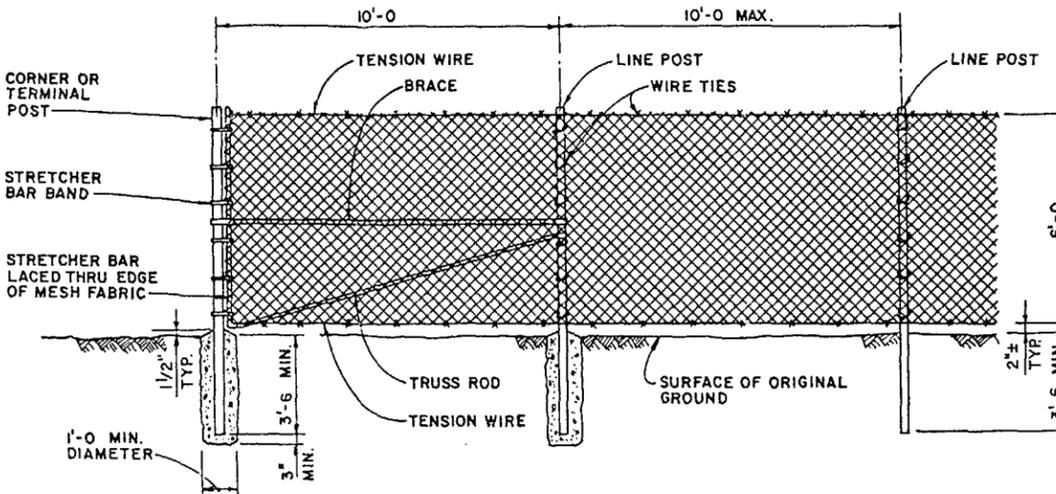
PROJECT NO. DE-AC04-83AL18796
DRAWING NO. AMB-PS-10-0420
REV. 1

QA MK-F	NO.	DATE	REVISIONS	BY	CK	EBD MGR.	CHIEF ENG.	QA MGR.	DOE APP.
	72590		REVISED DITCH BERM, NOTE 3 AND SLOPE CHANGE UNDER RIPRAP TOE PROTECTION	MSP	FBS	DRS	ESS	DW	MJA
	42888		ISSUED FOR CONSTRUCTION						



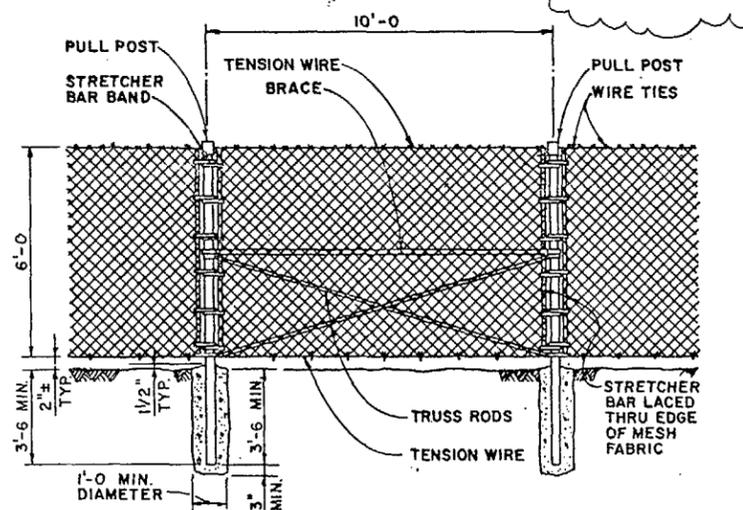
TYPICAL SINGLE SWING GATE DETAIL

(NOT TO SCALE)



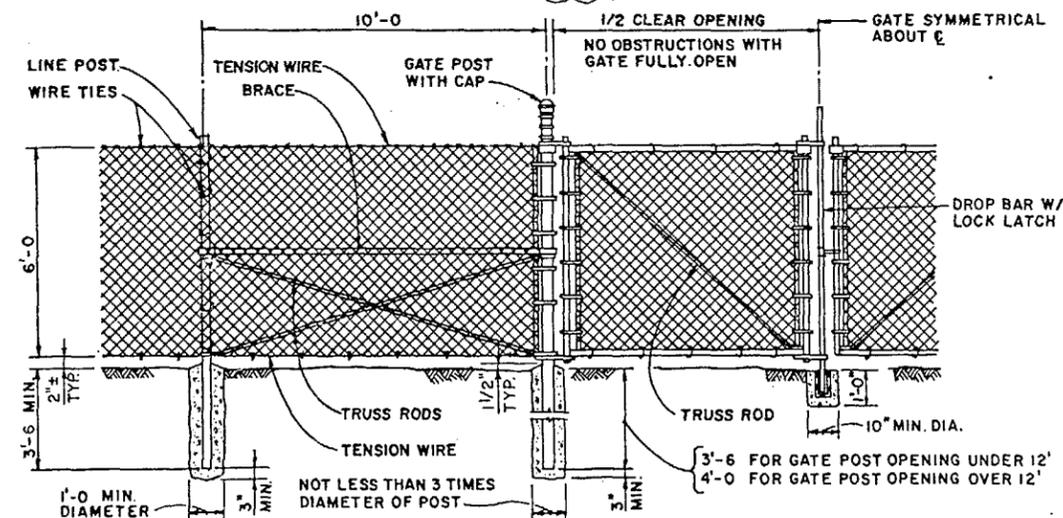
TYPICAL CORNER AND TERMINAL DETAIL

(NOT TO SCALE)



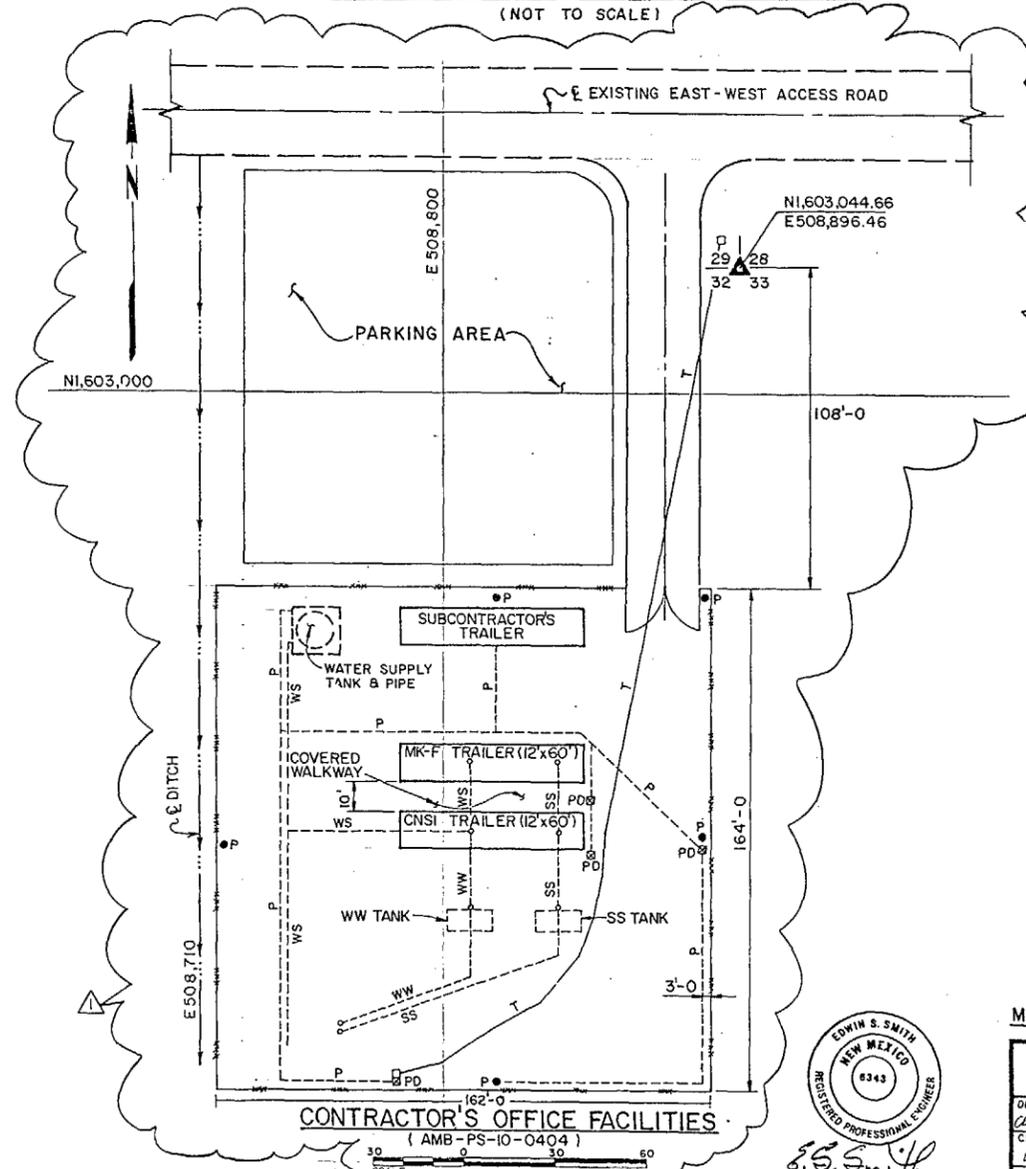
TYPICAL PULL POST ASSEMBLY

(NOT TO SCALE)



TYPICAL DOUBLE SWING GATE ASSEMBLY

(NOT TO SCALE)



REFERENCE DRAWINGS:

- AMB-PS-10-0404 CONSTRUCTION FACILITIES & DRAINAGE PLAN
- AMB-PS-10-0405 RETENTION BASIN PLAN & DETAILS
- AMB-PS-10-0413 FENCING AND DIVERSION DITCH PLAN

LEGEND:

- CHAIN LINK FENCE & GATE (EXISTING)
- WW --- WASTEWATER LINE (EXISTING)
- WS --- WATER SUPPLY LINE (EXISTING)
- SS --- SANITARY SEWER LINE (EXISTING)
- P POWER OR LIGHT POLE (EXISTING)
- T TELEPHONE PEDESTAL (EXISTING)
- PD POWER PEDESTAL (EXISTING)



MAIN CONSTRUCTION SUBCONTRACT AMB-4

U. S. DEPARTMENT OF ENERGY
ALBUQUERQUE, NEW MEXICO

AMBROSIA LAKE SITE
AMBROSIA LAKE, NEW MEXICO

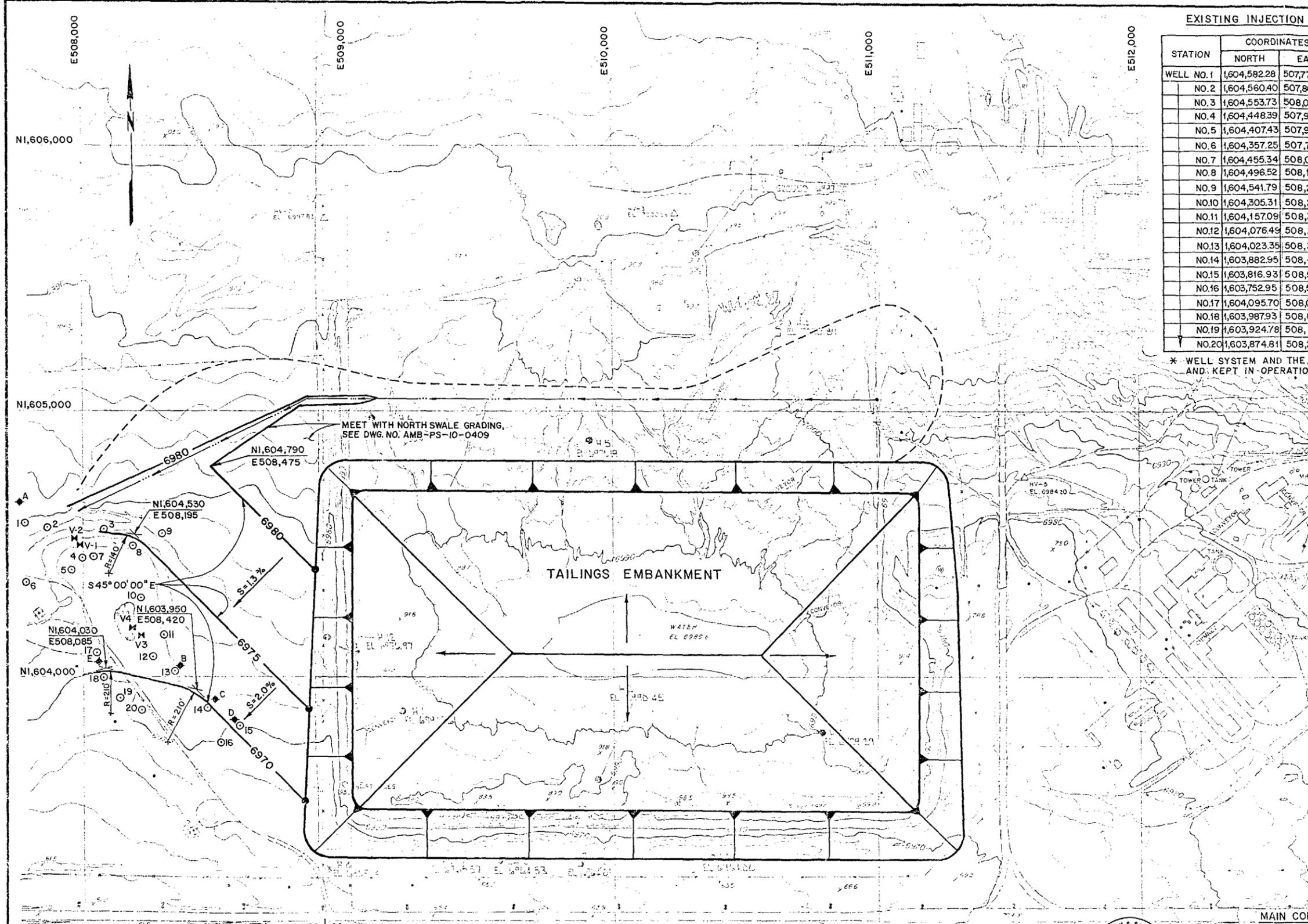
EXISTING CHAIN LINK FENCE & OFFICE FACILITIES DETAIL

DESIGNED RB/E.G.	DRAWN RB/E.G.	CHECKED RB/E.G.	INSPECTED RB/E.G.	RECOMMENDED RB/E.G.	APPROVED F.L. FELIZ	DATE 4/27/88	DATE 27 Apr 88	DOE PROJECT ENGINEER John R. W. Antonio	DATE 6/10/88
PROJECT NO. DE-AC04-83AL18796							DRAWING NO. AMB-PS-10-0421		

MORRISON-KNUDSEN ENGINEERS, INC.
180 HOWARD ST. SAN FRANCISCO, CA 94105

NO.	DATE	REVISIONS	BY	CK	E.B.D. MGR.	CHEF. ENG.	QA MGR.	DOE APP.
725-90		REVISED CONTRACTOR'S OFFICE FACILITIES AND DELETED 'AS-BUILT'	MSP	PBG	DRS	SSS	DWV	DA
428-88		ISSUED FOR CONSTRUCTION						

QA REVIEWED FOR QUALITY REQUIREMENTS BY [Signature] 4/22/88



EXISTING INJECTION WELL COORDINATES *

STATION	COORDINATES		STATION	COORDINATES	
	NORTH	EAST		NORTH	EAST
WELL NO. 1	1,604,582.28	507,779.76	VALVE NO. 1	1,604,450.69	507,995.91
NO. 2	1,604,560.40	507,869.04	VALVE NO. 2	1,604,448.03	507,992.81
NO. 3	1,604,553.73	508,079.18	VALVE NO. 3	1,604,434.30	508,207.28
NO. 4	1,604,448.39	507,996.09	VALVE NO. 4	1,604,174.21	508,177.62
NO. 5	1,604,407.43	507,956.14			
NO. 6	1,604,357.25	507,783.84	INTERSECT "A"	1,604,655.18	507,762.10
NO. 7	1,604,455.34	508,040.80	"B"	1,604,033.18	508,354.44
NO. 8	1,604,496.52	508,184.14	"C"	1,603,913.79	508,484.77
NO. 9	1,604,541.79	508,298.53	"D"	1,603,839.56	508,566.59
NO. 10	1,604,305.31	508,212.92	"E"	1,604,059.98	508,054.27
NO. 11	1,604,157.09	508,301.09			
NO. 12	1,604,076.49	508,253.33			
NO. 13	1,604,023.35	508,343.36			
NO. 14	1,603,882.95	508,463.32			
NO. 15	1,603,816.93	508,590.43			
NO. 16	1,603,752.95	508,507.54			
NO. 17	1,604,095.70	508,049.70			
NO. 18	1,603,987.93	508,072.14			
NO. 19	1,603,924.78	508,131.04			
NO. 20	1,603,874.81	508,214.13			

* WELL SYSTEM AND THE INTERCONNECTING HOSES SHALL BE PROTECTED AND KEPT IN OPERATION AT ALL TIMES DURING SITE WORK.

REFERENCE DRAWINGS

- AMB-PS-10-0403 FINAL SITE PLAN
- AMB-PS-10-0409 NORTH SWALE GRADING PLAN
- AMB-PS-10-0410 TAILINGS EMBANKMENT GRADING PLAN

LEGEND:

- EXISTING SITE FEATURES AND CONTOURS (1982 & 1986 SURVEY)
- CONSTRUCTION GRID COORDINATE
- EMBANKMENT
- EXISTING ROAD
- FINAL GROUND SURFACE CONTOURS & ELEVATIONS
- SURVEY MONUMENT
- INJECTION WELL NUMBER
- INTERSECTION JUNCTION LETTER
- VALVE NUMBER

QA REVIEWED FOR QUALITY REQUIREMENTS BY *Shirley L. Smith* 4/22/88

MAIN CONSTRUCTION SUBCONTRACT AMB-4



U. S. DEPARTMENT OF ENERGY
ALBUQUERQUE, NEW MEXICO

AMBROSIA LAKE SITE
AMBROSIA LAKE, NEW MEXICO

WEST SITE AREA GRADING PLAN

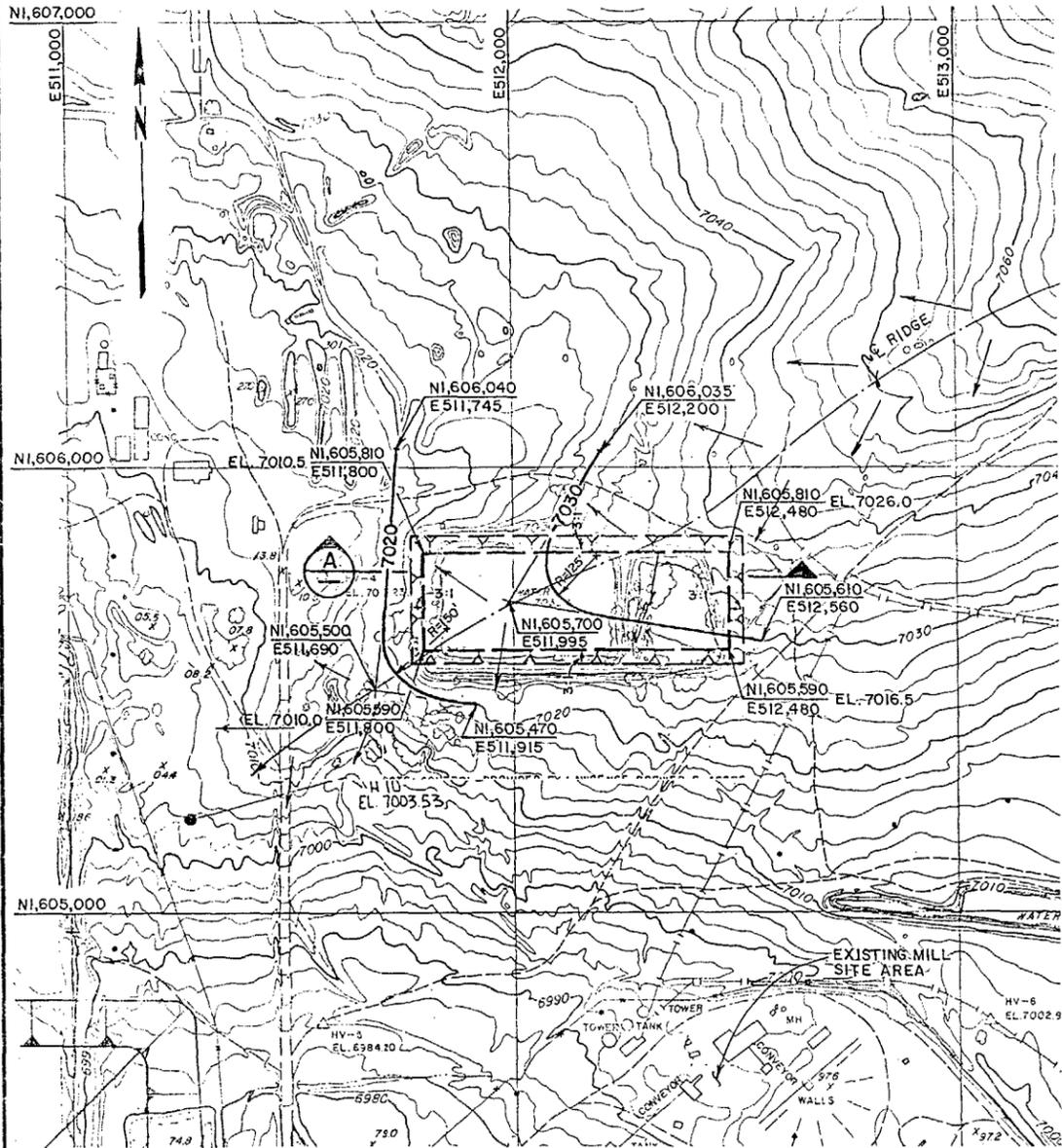
DESIGNED <i>[Signature]</i>	DRAWN RBC/	DATE 27 Apr 88 4/27/88	DOE PROJECT ENGINEER <i>[Signature]</i>	DATE 4/22/88
CHECKED <i>[Signature]</i>	INSPECTED <i>[Signature]</i>			
RECOMMENDED <i>[Signature]</i>	APPROVED F.J. FELIZ			
PROJECT NO. DE-AC04-83AL18796				

MORRISON-KNUDSEN ENGINEERS, INC.
A MORRISON-KNUDSEN COMPANY
UMTRA PROJECT
180 HOWARD ST. SAN FRANCISCO, CA 94105

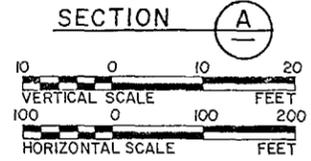
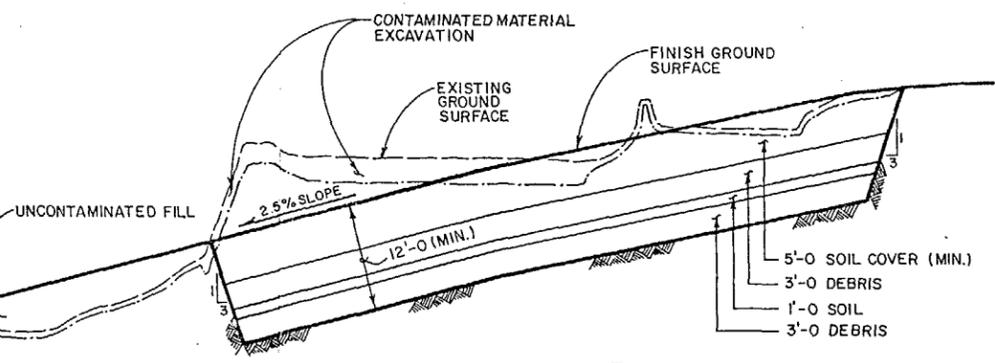
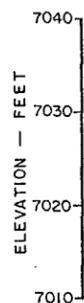
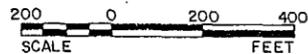
DRAWING NO. AMB-PS-10-0422 REV. 0

NO.	DATE	REVISIONS	BY	CK	E&D MGR.	CHIEF ENG.	QA MGR.	DOE APP.
42888		ISSUED FOR CONSTRUCTION						





DEMOLITION DEBRIS BURIAL PIT PLAN



E.S. Smith

DEMOLITION DEBRIS BURIAL PIT CONSTRUCTION SEQUENCE

- I. REMOVE CONTAMINATED SOIL FROM THE PIT AREA AS SHOWN ON DWG. NO. AMB-PS-10-0406.
- II. EXCAVATE THE PIT AS INDICATED IN THIS DRAWING. THE PIT SHALL BE EXCAVATED TO A DEPTH OF AT LEAST 12 FEET BENEATH THE FINISH GROUND SURFACE.
- III. PLACE THE FIRST THREE FOOT THICK LAYER OF DEMOLISHED MATERIALS AND FILL THE VOIDS WITHIN THIS LAYER WITH UNCONTAMINATED SOIL FROM THE PIT EXCAVATION.
- IV. PLACE THE ONE FOOT UNCONTAMINATED SOIL COVER FROM THE PIT EXCAVATION.
- V. PLACE THE SECOND THREE FOOT THICK LAYER OF DEMOLISHED MATERIALS AND FILL THE VOIDS WITHIN THIS LAYER WITH UNCONTAMINATED SOIL FROM THE PIT EXCAVATION.
- VI. PLACE THE FIVE FOOT UNCONTAMINATED SOIL COVER. ALL SOIL LAYERS (INCLUDING ITEM IV) WILL BE MOISTURE CONDITIONED IN MAXIMUM 8 INCH THICK LOOSE LIFTS TO WITHIN MINUS 3 TO PLUS 3 PERCENT OF OPTIMUM MOISTURE CONTENT ACCORDING TO ASTM D 698. COMPACTION WILL BE PERFORMED BY A MINIMUM OF 4 PASSES WITH A CRAWLER TRACTOR HAVING A TRACK CONTACT PRESSURE OF 8 PSI OR GREATER, OR BY OTHER EQUIPMENT THAT PRODUCES EQUIVALENT OR GREATER COMPACTION.
- VII. FINISH GRADE THE PIT AREA AS SHOWN IN THIS DRAWING.

REFERENCE DRAWINGS:

- AMB-PS-10-0406 CONTAMINATED MATERIAL EXCAVATION PLAN SHEET 1 OF 3
- AMB-PS-10-0416 EAST SWALE AREA GRADING PLAN

LEGEND:

- EXISTING SITE FEATURES & CONTOURS (1981 SURVEY)
- FINISH GROUND SURFACE CONTOUR
- CONSTRUCTION GRID COORDINATE
- EXCAVATION SLOPE
- FLOW DIRECTION

QA REVIEWED FOR QUALITY REQUIREMENTS BY *Steve S. Lott* 4/22/88

CONSTRUCTION SUBCONTRACT AMB-4

U. S. DEPARTMENT OF ENERGY
ALBUQUERQUE, NEW MEXICO

AMBROSIA LAKE SITE
AMBROSIA LAKE, NEW MEXICO

DEMOLITION DEBRIS BURIAL PIT

DESIGNED <i>UAC</i>	DRAWN RBC/	DATE 4/27/88	DATE 4/27/88
CHECKED <i>J.C. Pate</i>	INSPECTED <i>ARM</i>	DATE 4/27/88	DATE 4/27/88
RECOMMENDED <i>P.K. Chan</i>	APPROVED <i>F.J. FELIZ</i>	DATE 4/27/88	DATE 4/27/88

PROJECT ENGINEER: *John R. Anderson*

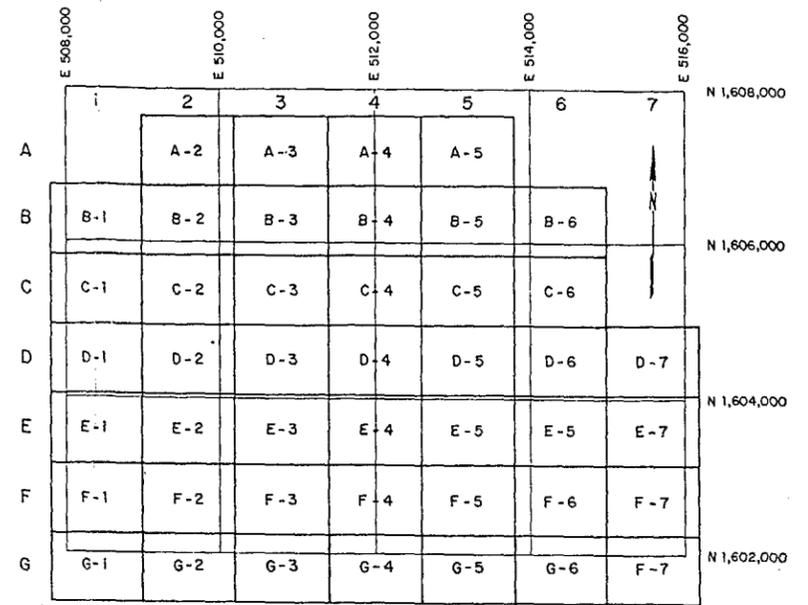
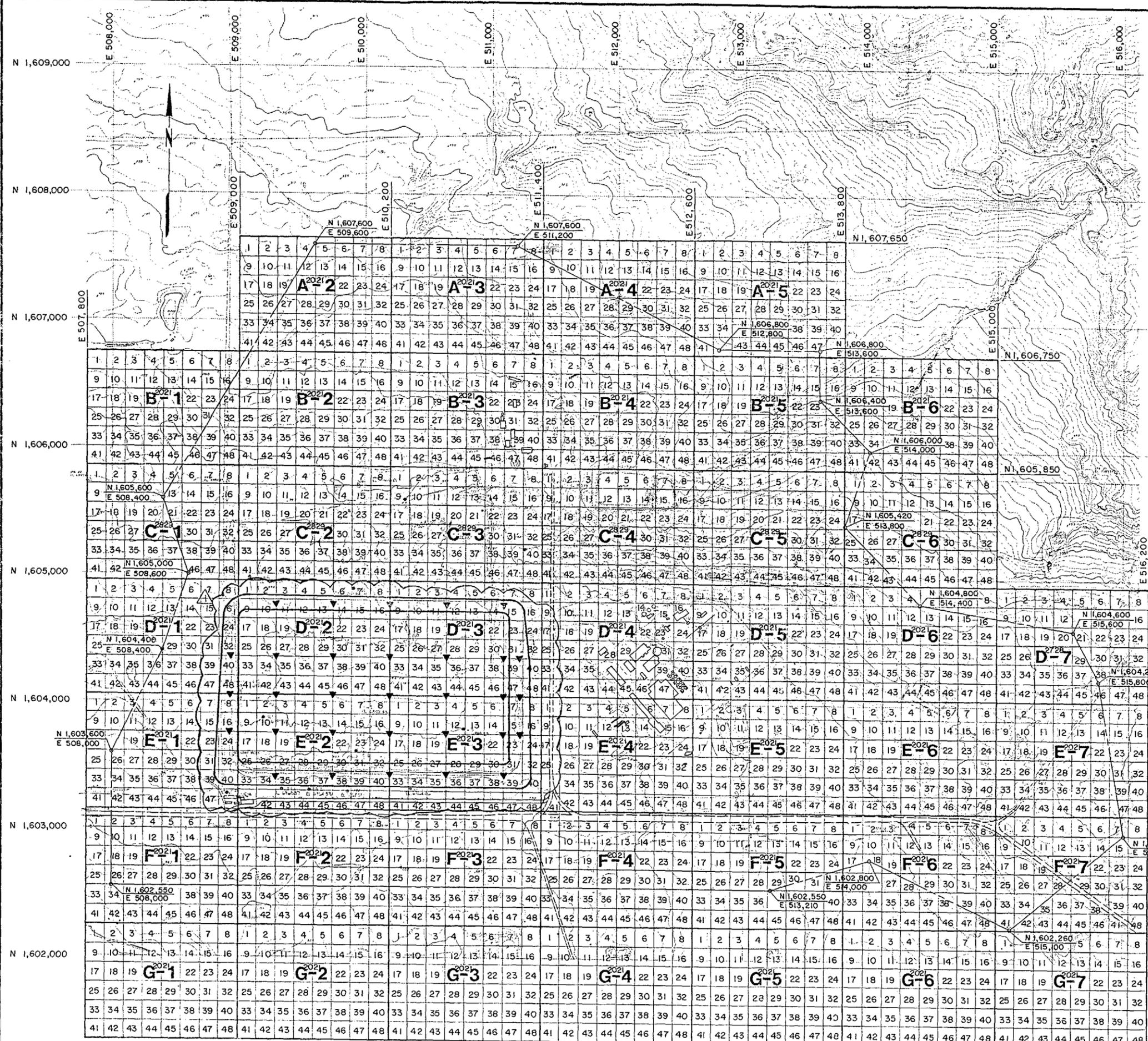
MORRISON-KNUDSEN ENGINEERS, INC.
UMTRA PROJECT
180 HOWARD ST. SAN FRANCISCO, CA 94105

PROJECT NO. **DE-AC04-83AL18796**

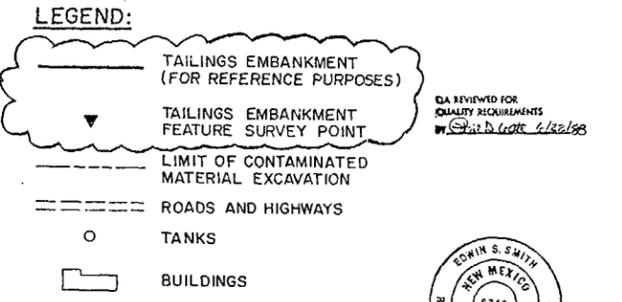
DRAWING NO. **AMB-PS-10-0423**

REV. **1**

NO.	DATE	REVISIONS	BY	CK	E&D MGR.	CHIEF ENG.	QA MGR.	DOE APP.
725-90		REVISED CONTACT PRESSURE FOR BACKFILL COMPACTION	<i>MSP</i>	<i>FBG</i>	<i>DRS</i>	<i>ESS</i>	<i>ONV</i>	<i>M.J.M.</i>
42888		ISSUED FOR CONSTRUCTION						



NOTE:
 THE SUBCONTRACTOR SHALL SURVEY TAILINGS EMBANKMENT FEATURES AS SPECIFIED AT THE LOCATIONS SHOWN. SURVEY LOCATIONS ON SIDESLOPES SHALL BE 100 FEET DOWNSLOPE OF THE INTERSECTION OF THE TOPSLOPE AND SIDESLOPE ALONG THE GRID COORDINATE LINE SHOWN. SURVEY LOCATIONS MAY BE REVISED BY THE CONTRACTOR.



MAIN CONSTRUCTION SUBCONTRACT AMB-4

DESIGNED	AMC	DATE	6-20-88
DRAWN	AMC	DATE	6-20-88
CHECKED	AMC	DATE	6-20-88
INSPECTED	AMC	DATE	6-20-88
RECOMMENDED	AMC	DATE	6-20-88
APPROVED	AMC	DATE	6-20-88

U. S. DEPARTMENT OF ENERGY
ALBUQUERQUE, NEW MEXICO

AMBROSIA LAKE SITE
AMBROSIA LAKE, NEW MEXICO

SITE GRID SYSTEM

DESIGNED: AMC
 DRAWN: AMC
 CHECKED: AMC
 INSPECTED: AMC
 RECOMMENDED: AMC
 APPROVED: AMC

DATE: 6-20-88
 PROJECT ENGINEER: [Signature]
 DATE: 6/20/88

MORRISON-KNUDSEN ENGINEERS, INC.
 A MORRISON-KNUDSEN COMPANY
 UMITRA PROJECT
 900 HOWARD ST. SAN FRANCISCO, CA 94105

PROJECT NO. **DE-AC04-83AL18796**
 DRAWING NO. **AMB-PS-10-0424** REV. 1

