wm-48

Department of Energy
Albuquerque Operations Office
P. O. Box 5400
Albuquerque, New Mexico 87115

AUG 14 1989

Mr. Edward F. Hawkins
Chief, U.S. Nuclear Regulatory
Commission, Region IV
Uranium Recovery Field Office
P.O. Box 25325
Denver, CO 80225

Dear Ed,

Enclosed for your information are Durango PIDs 03-S-17 and 03-S-18. These PIDs refer to the tailings embankment dewatering and monitoring wells to be sealed. If you have any questions, please call Elizabeth Damler of my staff at (505) 846-1224.

Sincerely,

Mark L. Matthews
Acting Project Manager
Uranium Mill Tailings Project Office

Enclosure

DF02
1/1

89-0905

wm-48

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Enclosure

89-0905

MORRISON KNUDSEN

UMTRA PROJECT OFFICE
PROJECT INTERFACE DOCUMENT

8009U/0199U

Site	Date	PID No.	Site No.	Vic Pro No.
Durango	5/16/89	03-S-18	03	
Originator and Location	**Phone**	**Organization**	**Answer By:**	**References:**
M. L. Wesely	(415) 442-7517	MKES		**Subcontract:**
Subject				**Subcontract No:**
Additional Monitor Wells to Be Sealed				

Description of Problem and Recommended Solution ☐ Clarification ☒ Change

Problem: Monitor Wells DUR-82-03 and DUR-82-24 are within the proposed excavation for thorium contaminated soils in the raffinate ponds area. These two wells will be difficult to maintain during construction activities and conceivably will not be maintained during the U.S. Bureau of Reclamation construction activities for the Animas/La Plata intake structure.

Solution: The DOE in their letter of May 9, 1989 directed the closure of DUR-82-03 and DUR-82-24.

- Remove DUR-82-03 and DUR-82-24 from Table 02090-2 "Wells to Be Saved" in Subcontract Document Section 02090 - Sealing Abandoned Wells, Page 3.
- Insert into Table 02090-1 "Wells to Be ~~Saved~~ Sealed" the following:

(Continued on back page).

Originator M. Wesely 6/16/89
Signature Date

Disposition ☐ Approved ☐ Disapproved ☒ Approved as Noted

Criteria Change? ☐ Yes ☒ No
(If Yes, DOE approval required)

Class II

RAC Site Manager for MAY 6/22/89
RAC Project Control William W Polan 6/22/89
RAC Engineering/Design 6/20/89
RAC Construction Engineer Robert E Cooney
Reviewed for Quality Requirements Bill Condon 6-22-89
Signature Date

Distribution	Name	Location		Name	Location
RAC Site Mgr.	M. Thomson		RAC Constr. Engr. Mgr.	K Cooney	
DOE Proj Engr.	E. Dowler		RAC Qual. Mgr.	J Cole	
TAC Site Mgr.	W Jackson		Other	J Long	J Oldham
RAC Site Qual. Engr.	B Heede			J Hymas	
RAC HS&E Mgr.	B. Mayer			D Mora	

Cost/Time Est.
☐ Attached
☒ Not Required
☐ DOE Approval Req.

0104C

MK-067-MM(10/84)

8143U/0201U

MORRISON KNUDSEN

UMTRA PROJECT OFFICE
PROJECT INTERFACE DOCUMENT

Site	Date	PID No.	Site No.	Vic Pro No.
Durango	06/08/89	03-S-17	03	
Originator and Location: M. L. Wesely	Phone: 415 442-7517	Organization: MKES	Answer By:	References: Subcontract: Subcontract No:

Subject

Tailings Embankment Dewatering and Monitoring

Description of Problem and Recommended Solution ☐ Clarification ☒ Change

Problem: In October 1988, a seep developed on the lower eastern slope of the tailings disposal cell. Water taken from monitor wells installed in November 1988 showed elevated levels of contamination along with elevated levels of stored water within the cell.

Solution: A dewatering system of 17 wells will be installed to pump contaminated water from the disposal cell and to determine the feasibility of continued dewatering. The attached specification outlines the work to be performed.

Originator: Marjorie L. Wesely (Signature) — Date

Disposition: ☒ Approved ☐ Disapproved ☐ Approved as Noted

Criteria Change? ☐ Yes ☒ No
(If Yes, DOE approval required)

Class II

	Signature	Date
RAC Site Manager	[signature]	6/19/89
RAC Project Control	William W. [signature]	6/19/89
RAC Engineering/Design	F. J. Feeziz	6/15/89
RAC Construction Engineer	Robert E. Cooney	6/20/89
Reviewed for Quality Requirements	Bill Condron	6-20-89

Distribution	Name	Location		Name	Location
RAC Site Mgr.	M. Thomson		RAC Constr. Engr. Mgr.	R. Cooney	
DOE Proj Engr.	F. Danker		RAC Qual. Mgr.	P. Cole	
TAC Site Mgr.	M. Jackson		Other	J. Long, J. Oldham	
RAC Site Qual. Engr.	B. Steele			J. Uymas	
RAC HS&E Mgr.	B. Meyer			D. Mann	

Cost/Time Est.: ☐ Attached ☒ Not Required ☐ DOE Approval Req.

SECTION 02145

TAILINGS EMBANKMENT DEWATERING AND MONITORING

PART 1 - GENERAL

1.1 SCOPE

A. This Specification is for the installation, operation, maintenance, and monitoring of a pumped well system to remove construction water from the uranium tailings embankment at Bodo Canyon. Monitoring of performance of the system is of special importance, to evaluate its effect on removal of water from the constructed fill. The work involves dealing with contaminated water and contaminated materials, and following appropriate safety precautions.

B. This Specification covers the requirements for the following work and equipment:

1. Installation of a system of 17 pumped wells for dewatering the tailings embankment, including drilling and completion of wells, pumps, controls, electrical distribution, switchgear, discharge manifold and miscellaneous accessories.

2. Design and mobilization offsite of a temporary wellpoint system.

3. Furnishing a test vacuum pump, and testing of four wells for vacuum enhancement.

4. Drilling for and installation of piezometers, with filter sand and seals.

5. Operating and maintaining the 17 well system, including monitoring of the instrumentation and reporting of the data.

6. Furnishing, installing, operating, maintaining and removing the temporary wellpoint system if directed.

7. Installing permanent power for the operation of the pumped wells; and if required for (a) booster pumps for transfer of contaminated water for treatment, (b) for a vacuum system, and (c) for the portable water treatment facility.

8. Provide surveying service for well locations, elevations and all other items necessary to complete this scope of work.

9. Furnishing of temporary diesel generated power if the service line from public power is not ready when required.

10. Furnishing, installing, operating, maintaining and removing a 200 ACFM vacuum system if directed.

C. The Work shall conform to (i) the details shown on the Subcontract Drawings, (ii) the provisions of this Specification Section, and (iii) Figures 02145-A, 02145-B and 02145-C enclosed with this Section.

D. The Work shall include furnishing all labor, materials, equipment, tools, accessories and incidentals for performing the work specified in this Section and in the Subcontract Drawings.

1.2 RELATED WORK

A. Special Conditions:

1. Section SC-7: Construction Health and Safety

2. Section SC-8: Health Physics

B. Section 02200 - Earthwork: Disposal of contaminated materials and debris.

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 their basic designations only:

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

C33-86	Standard Specification for Concrete Aggregates
D1586-84	Method for Penetration Test and Split-Barrel Sampling of Soils

1.4 DEFINITIONS

A. Standby Time: For payment purposes, standy time is defined as time during which the Subcontractor is kept waiting by the Contractor and not otherwise employed in drilling, sampling, preparation, pulling off a hole or any other drilling-related activity. Standby time shall not exceed 8 hours per day.

B. Obstructions: For payment purposes, obstructions are defined as cobbles over 3 inches in diameter or other obstructions which prevent an appropriate drill rig from performing.

1.5 QUALITY ASSURANCE

The work of Article 3.2 below shall be performed by a specialist subcontractor qualified and experienced in the design and installation of pumped well systems with vacuum enhancement, and wellpoint systems, piezometer installations, and operating, maintaining and monitoring the performance of dewatering systems. The specialist subcontractor shall be experienced in working with fine grained soils at an elevation of 7500 feet above mean sea level (msl). The specialist subcontractor shall be experienced in and have a written safety policy for working in hazardous areas.

1.6 SUBMITTALS

A. For general submittal requirements, see Section 01300.

B. Description of Equipment: Prior to shipment of equipment to the site, the Subcontractor shall submit for Contractor's approval adequate descriptions of the following, including catalog cuts as appropriate.

1. Drilling equipment proposed for piezometers and pumped wells, including torque and pulldown capacity, and proposed method of drilling and completion.

2. Pumps, controls, switchgear, flow meters and wellhead details.

3. Discharge manifold and electrical distribution.

C. Specialist Subcontractor Qualifications: Prior to beginning work the Subcontractor shall submit for Contractor's

approval the qualifications of the specialist subcontractor selected to perform the work in Article 3.2. The resume shall include as a minimum the following:

1. Form 254 listing the specialist's experience pertinent to the work specified.

2. Resumes of the project manager and superintendent who will be in charge of the work.

D. Contractor's approval of the submittals shall not relieve the Subcontractor of responsibility for performing the work specified.

E. Subcontractor shall submit a schedule including dates for mobilization on site; piezometer well drilling start and completion, pumped well drilling start and completion, installation of piezometers start and completion, and installation of pumping equipment start and completion.

1.7 DELIVERY, STORAGE, AND HANDLING

A. Filter material shall be delivered to the site in bulk or in bags. The material shall be placed on a protective sheet to prevent contact with the ground and shall be protected from the weather by impermeable covering.

B. Bentonite pellets shall be delivered to the site in unopened bags. The bags shall be kept dry and remain unopened until used for well construction.

C. Prior to their use, materials delivered to the site shall be stored in an uncontaminated area and shall be elevated off the ground and covered.

1.8 EXISTING CONDITIONS

A. The contaminated materials in the Bodo Canyon disposal embankment include uranium mine tailings, which range according to available sieve analysis from silty sand to clayey silt, vicinity properties materials which include talus with sand, gravel, silt, clay, cobbles and boulders, miscellaneous rubble from dismantled foundations, and occasional metal parts.

B. For the hazards involved in handling these materials see Article 1.2.A of this Specification.

C. Available sieve analysis may be considered representative of the types of material which might be encountered in the area to be drilled under the scope of work of this Specification. The incidence of cobbles, boulders, rubble and metal parts is expected to be low, but they may be encountered.

D. Water levels from existing monitor wells on the lower reaches of the slope indicate the presence of artesian pressure under existing clay cover. The Subcontractor shall conduct his operations so that the compaction of the tailing embankment fill, or of the clay cover, is not disturbed.

E. It is essential that the existing impermeable liner under the cell not be penetrated or otherwise harmed by the dewatering operations.

F. The Subcontractor shall be responsible for determining existing conditions before and during the work, to accomplish the above purposes.

PART 2 - PRODUCTS

2.1 GENERAL

Equipment shall be decontaminated as directed by the Contractor prior to removal from the site.

2.2 DEEP WELLS AND PIEZOMETER WELLS

PVC pipe, fittings and well screen shall meet the Specifications of the National Sanitation Foundation. All items shall be assembled in accordance with manufacturer's recommendations.

2.3 WELL SCREENS

A. PVC well screen for piezometers and pumped wells shall be machine cut as manufactured by Certainteed Corporation, 750 Swedesford Road, P.O. Box 860, Valley Forge, PA 19482, (215) 341-7000, or equal.

1. Screen for piezometers shall be 1-1/4 inch Schedule 40 PVC, with 0.010 inch slots.

2. Screen for pumped wells shall be 5-1/2 inch OD Schedule 40 PVC with 0.020 inch slots, providing approximately 14 square inches of open area per lineal foot.

2.4 DISCHARGE MANIFOLD

Discharge manifold shall be PVC, aluminum or steel, with appropriate couplings and fittings of size adequate for normal friction and to avoid water hammer.

2.5 FILTER SAND

A. Filter sand for the piezometers shall conform to ASTM C33 (fine aggregate).

B. Filter sand for the pumped wells shall be silica sand with rounded or subrounded grain shape meeting the following criteria:

1. 95-100% Passing No. 10 Sieve

2. 0-5% Passing No. 40 Sieve.

2.6 PUMPS AND CONTROLS

Submersible pumps for the pumped wells shall have a capacity of 10 gpm at 100 feet total dynamic head. Pumps shall be equipped with liquid level controls and throttle valves to operate satisfactorily at average flows as low as 0.1 gpm. Pump controls will include a timer to bring the pumps on line in sequence when power is restored after an interruption. The Subcontractor shall be responsible for designing the pumps and controls for satisfactory operation, and for any maintenance, repair, or replacement during the operating period.

2.7 FLOW METERS

Each pump shall be equipped with a totalizing flow meter suitable for the work specified in this Section. The Subcontractor shall select a suitable flow meter, and be responsible for its maintenance. Flow meters which go out of calibration or otherwise malfunction shall be promptly repaired or replaced.

PART 3 - EXECUTION

3.1 TEMPORARY ELECTRIC POWER

A. The Subcontractor shall provide temporary electric power by constructing a service line for the following facilities:

1. Dewatering Wells: 25 kW, 230 Volts, Single Phase

2. Vacuum System: 15 kW, 230 Volts, Single Phase

3. Transfer Pumps and Treatment Plant: 300 Amp, 460 Volts, 3 Phase

B. In the event the electric service is not completed at the time when testing and operation of the dewatering wells is to begin, the Subcontractor shall furnish a diesel power generator so that the work will not be delayed.

3.2 WORK TO BE PERFORMED BY SPECIALIST SUBCONTRACTOR

A. The following work shall be done by a qualified specialist subcontractor:

1. Drilling and installation of piezometers.

2. Construction of dewatering well system, including drilling and completion of wells, furnishing and installing discharge lines and electrical distribution, pumps, controls and well head fittings.

3. Supervision of operation and maintenance, and monitoring of the dewatering system.

4. Installation and operation of vacuum system if directed.

5. Design and mobilization of temporary wellpoint system.

6. Installation and operation of temporary wellpoint system if directed.

7. Taking SPT and Shelby tube samples as directed by the Contractor.

3.3 DRILLING HOLES AND INSTALLATION OF PIEZOMETERS

A. Subcontractor shall drill six piezometer holes as shown on Figure 02145-C. The three holes northeast of the existing top of slope are expected to encounter few obstructions. The three holes southwest of the top of slope are more likely to encounter frequent obstructions, and if so may not be completed.

B. The work of drilling piezometer holes shall be performed under the supervision of the Contractor's geologist/ engineer (g/e). SPT samples shall be recovered on 5-foot centers below the water table in accordance with the requirements of ASTM D1586. The g/e will examine these samples retrieved, and may direct the recovery of additional samples. The g/e may also direct recovery of Shelby tube samples if materials are found to be suitable for the method. Samples shall be packaged appropriately by the Subcontractor for delivery to the g/e.

C. The number and depth of piezometers to be installed will be determined by the g/e. A maximum of two piezometers will be installed per hole. The Subcontractor shall be responsible for installing the piezometers, filter sand and bentonite pellet seals as directed by the g/e. Plugged or malfunctioning piezometers shall be replaced without additional compensation.

D. Obstructions: If obstructions are encountered during drilling of the piezometers, the Subcontractor will be compensated in accordance with the prices quoted in the Bid Schedule enclosed with this Section. The drill rigs used shall have sufficient torque and pulldown to overcome minor obstructions.

E. Instrumentation: Water level observations will be made by hand-held well probes. The Subcontractor may be required to install electronic or pneumatic transducers in the piezometers, and provide readouts for such instruments. If so, such work will be covered by a change order.

F. Monitoring: The Subcontractor shall monitor piezometers and existing monitor wells during operation of the dewatering well system in accordance with Article 3.4.C.

3.4 DEWATERING WELL SYSTEM

A. The Subcontractor shall install a complete dewatering system of seventeen wells as shown on Figure 02145-C, complete with discharge lines, electrical distribution,

pumps, electric controls, valves and flow meters. The Subcontractor shall operate, maintain and monitor the system for the period of time directed.

B. Discharge from the dewatering well system, and from the wellpoint system if used, will be into retention basin DS-4 or as directed by the Contractor. The discharge will be arranged to facilitate taking water samples.

C. Monitoring shall include water level observation in the piezometers and monitor wells, and flow meter readings. The readings shall be taken five days per week and reported on approved forms to the Contractor daily, or less frequently if directed. The Contractor's representative may be making other observations, and taking samples of the water for analysis. The Subcontractor shall provide access to facilitate this effort.

D. Subcontractor may be directed to add or delete wells. The price will be adjusted in accordance with the Bid Schedule.

E. The dewatering well system and all its components will remain the property of the Contractor. The Subcontractor may be directed to remove portions of the system, including disposal of the pumps and surface equipment, and grouting of the wells. Other portions of the system may be converted for longer term operation. Removal or conversion will be paid for under a Change Order.

F. Suggested Method of Dewatering Well Construction: The suggested method is as follows: A 16-inch surface casing will be sealed in the top 24 inches of the embankment. The borehole will be drilled to a depth approximately 2 feet above the impermeable liner, using a 12 x 8-inch hollow stem auger. The well screen and casing will be installed with a bottom centralizer. A water head will be maintained on the hole during extraction of the auger. A wash pipe with 30 to 60 gpm will be inserted to flush the hole of fines, drilling detritus and collapsed tailings, until the return shows less than about 0.5% solids. The wash pipe will be be moved around the annulus, and raised and lowered the length of the well screen. The hole will be sounded to assure full depth, and a water head maintained during placement of the filter sand. Tremie will not be required, but the sand shall be placed in a continuous stream to avoid bridging. Estimates will be made to ensure that the amount of spoil is approximately the same

as the filter sand placed. The sand will be filled to just below the bottom of the clay cover, and a bentonite seal will be placed after the surface casing is removed.

G. The water in the disposal cell can be expected to be contaminated with low level radioactive contamination. The washwater shall be contained in a closed loop.

H. After completion, each well will be surged with a pump or with compressed air to develop the filter, until the water is free of turbidity, and no more than a few fines are removed with each surge.

I. Other methods of well construction and completion may be submitted for approval. An approved method shall include a washing operation similar to the one described, to ensure good quality wells in the fine grained tailings.

J. Sequence of Well Construction: The lower reach of the slope on which the dewatering well system is to be installed contains water heads above the existing clay cover. Subcontractor shall conduct his operations so as not to disturb the cover, or the density of the tailings beneath according to the following sequence:

1. Unless otherwise specified, directed, or modified, the Subcontractor shall follow the sequence of well construction as set forth below. 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.

2. Meeting will be conducted between the Contractor and the 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.

3. Sequence:

   a. Wells shall be constructed in the following sequences:

      1) Piezometer Wells
      2) Row C

3) Row D
4) Row B
5) Row A

b. In the above sequence, an intermediate row of pumped wells on the slope above the zone of artesian pressure is completed first, and immediately put into service. Wells higher on the slope are constructed next. If pumping the intermediate wells provides workable conditions lower on the slope, construction of those wells can proceed. If not, a temporary wellpoint system may be employed, see Articles 3.4.J and 3.5.

K. Testing of Wells: The first two wells constructed shall be tested a minimum of four hours after completion before succeeding wells are begun. The Contractor's representative will witness the tests including estimates of flow and drawdown in the well.

L. Vacuum Testing: The Subcontractor as part of the lump sum for the dewatering well system shall furnish a vacuum pump of at least 10 ACFM, and test four of the wells individually with the air capacity specified above for a period of 24 hours, or less if directed. If the vacuum tests indicate significant improvement in well yield, the Subcontractor may be directed to provide a vacuum system in accordance with Article 3.6.

M. Design and Mobilization of Temporary Wellpoint System: As part of the lump sum for the dewatering well system, the Subcontractor shall design and mobilize a wellpoint system to lower the water pressure in the tailings to three feet below the clay cover at the lower reaches of the slope. The wellpoint system shall include wellpoints, headers, pumps, discharge lines and all accessories necessary to achieve the desired result. It shall be in the status of readiness at a place so it can be delivered to the jobsite within four working days.

N. Obstructions: If obstructions are encountered during drilling of the dewatering wells and piezometer wells, the Subcontractor will be compensated in accordance with the prices quoted in the Bid Schedule. The drill rigs used shall have sufficient torque and pulldown to overcome minor obstructions.

O. Operation and Maintenance: The Subcontractor shall operate and maintain the system of dewatering wells for the period specified in the Bid Schedule. Monitoring

shall be in accordance with Article 3.4.C. An adequate supply of spare pumps, parts for controls and other spares shall be stored on site.

P. Pumps which cease to function shall be repaired or replaced within one working day.

3.5 TEMPORARY WELLPOINT SYSTEM

A. If the well construction sequence suggested in Article 3.4.J does not create workable conditions on the lower reach of the slope on the desired schedule, the Subcontractor may be directed to furnish, install, operate, maintain and remove the temporary wellpoint system mobilized offsite under Article 3.4.M. The Subcontractor shall be responsible for the adequacy of the system to accomplish the desired result of lowering the water table to three feet below the bottom of the clay cover.

B. The temporary wellpoint system will remain the property of the Subcontractor. The Subcontractor shall be responsible for decontamination of equipment before removal from the site.

3.6 VACUUM SYSTEM

A. The Subcontractor may be directed to furnish, operate, maintain and remove a vacuum system of 200 ACFM capacity to enhance the yield of the dewatering wells. The system shall include a manifold to connect the 17 wells, float valves, cooling arrangements and other accessories to ensure reliable continuous operation at 22-inches Hg vacuum at an elevation of 7500 feet above msl.

B. The vacuum system shall remain the property of the Subcontractor. The Subcontractor shall be responsible for decontamination of the equipment before removal from the site.

3.7 ABANDONMENT

Should the Subcontractor elect or be required to abandon a well, the well hole shall be backfilled with cuttings or other material approved by the Contractor.

3.8 DISPOSAL OF MATERIALS

Debris, rubbish, and other materials resulting from drilling operations shall be removed from the site, and the site shall be left in a neat presentable condition.

3.9 ANTI-CROSS-CONTAMINATION MEASURES

A. The Subcontractor shall at all times make diligent efforts to prevent the contamination or cross-contamination of all wells and borings. The Subcontractor shall avoid the deliberate or inadvertent introduction of foreign, toxic and contaminating substances into the well or boring. Such substances include but are not limited to oil, grease, hydraulic fluid and fuels.

B. The drilling rigs, tools, drilling stem, and all other appurtenant equipment shall arrive on site in a clean condition. Once on site, cleaning will be required if the equipment leaves the project site or becomes contaminated. Additional cleaning required in such cases shall be performed under the supervision of and at the discretion of the Contractor.

PART 4 - MEASUREMENT AND PAYMENT

4.1 MEASUREMENT

A. Measurement for payment for the following will be by the lineal feet of holes drilled, or per lineal feet drilled and subsequently abandoned by the Subcontractor due to obstructions, with approval of the g/e:

1. Drilling of Piezometers

2. Abandonment of Piezometer Holes

3. Abandonment of Dewatering Holes

B. Measurement for payment for the following will be by the number of units, as directed and approved by the g/e:

1. Moving to New Piezometer Hole

2. SPT Samples

3. Shelby Samples

4. Install Piezometers

5. Dewatering Wells Less than 17 (Credit)

6. Dewatering Wells More than 17

7. Moving to New Dewatering Well Hole

8. Demobilization/Remobilization of Dewatering Well Rig

C. The following will not be measured for payment. Payment will be by lump sum for the work specified.

1. Provide Permanent Electric Power

2. Furnish and Install System of 17 Dewatering Wells as Specified

3. Design and Mobilize Offsite a Temporary Wellpoint System

4. Furnish, Install and Remove Temporary Wellpoint System

5. Furnish, Install and Remove 200 ACFM Vacuum System

D. The following will be measured for payment per unit of time the work is accomplished:

1. Standby of Piezometer Drill Rig and Crew, per Hour

2. Provided Diesel Generated Power, per Day

3. Standby for Dewatering Well Rig and Crew, per Hour

4. Standby of Bare Dewatering Well Rig, per Day

5. Operation, Maintenance and Monitoring of Dewatering Well System, per Month (Beginning of operation will be measured from when 5 wells are in continuous operation. End of operation will be measured when directed by Contractor.)

6. Operate and Maintain Temporary Wellpoint System, per Week

7. Operate and Maintain 200 ACFM Vacuum System, per Month

4.2 PAYMENT

A. Payment for the items of Article 4.1 above will be by their applicable lineal foot, unit, lump sum or unit time prices quoted therefor in the Bid Schedule.

B. No payment will be made for wells abandoned by the Subcontractor due to lack of material, inadequate or faulty equipment, careless operating procedures or other Subcontractor negligence. No payment will be made for sealing of wells resulting from abandonment of wells due to Subcontractor's negligence or operating error. No payment will be made for incidentals, such as cleaning equipment, which are not specifically listed as payment items in the Bid Schedule.

END OF SECTION 02145

ATTACHMENT TO SECTION 02145

TAILINGS EMBANKMENT DEWATERING AND MONITORING

BID SCHEDULE

Name of Bidder _____ Date: _____

Following are the prices bid for completion of the Work as required by Section 02145:

Item No.	Description*	Unit	Approx. Quantity	Unit Price	Amount
1.	Drilling for Piezometers	L.F.	300	_____	_____
2.	Abandonment of Piezometer Hole Due to Obstructions	L.F.	20	_____	_____
3.	Moving to New Piezometer Hole Because of Obstruction	Each	1	_____	_____
4.	SPT Samples	Each	20	_____	_____
5.	Shelby Samples	Each	2	_____	_____
6.	Install Piezometers	Each	9	_____	_____
7.	Standby of Piezometer Drill Rig and Crew	Hour	5	_____	_____
8.	Provide Permanent Electric Power	L.S.	100%	N/A	_____
9.	Provide Diesel Generated Power	Day	5	_____	_____
10.	Furnish and Install System of 17 Dewatering Wells as Specified	L.S.	100%	N/A	_____
11.	For Dewatering Wells Less Than 17 (Credit)	Each	1	_____	_____
12.	For Dewatering Wells More Than 17	Each	1	_____	_____

Item No.	Description*	Unit	Approx. Quantity	Unit Price	Amount
13.	Abandonment of Dewatering Well Holes Due to Obstruction	L.F.	20	_____	_____
14.	Moving to New Dewatering Well Hole due to Obstructions	Each	1	_____	_____
15.	Standby for Dewatering Well Rig	Hour	10	_____	_____
16.	Standby of Bare Dewatering Well Rig	Day	2	_____	_____
17.	Demobilize/Remobilize Dewatering Well Rig	Each	1	_____	_____
18.	Operation, Maintenance and Monitoring of Dewatering Well System	Month	4	_____	_____
19.	Design and Mobilize Offsite a Temporary Wellpoint System	L.S.	100%	N/A	_____
20.	Furnish, Install and Remove Temporary Wellpoint System	L.S.	100%	N/A	_____
21.	Operate and Maintain Temporary Wellpoint System	Week	4	_____	_____
22.	Furnish, Install and Remove 200 ACFM Vacuum System	L.S.	100%	N/A	_____
23.	Operate and Maintain Vacuum System	Month	4	_____	_____
	TOTAL PRICE				$_____

* For complete description of a Bid Item and measurement and payment provisions, see Part 4 of Specification Section 02145.

END OF ATTACHMENT TO SECTION 02145

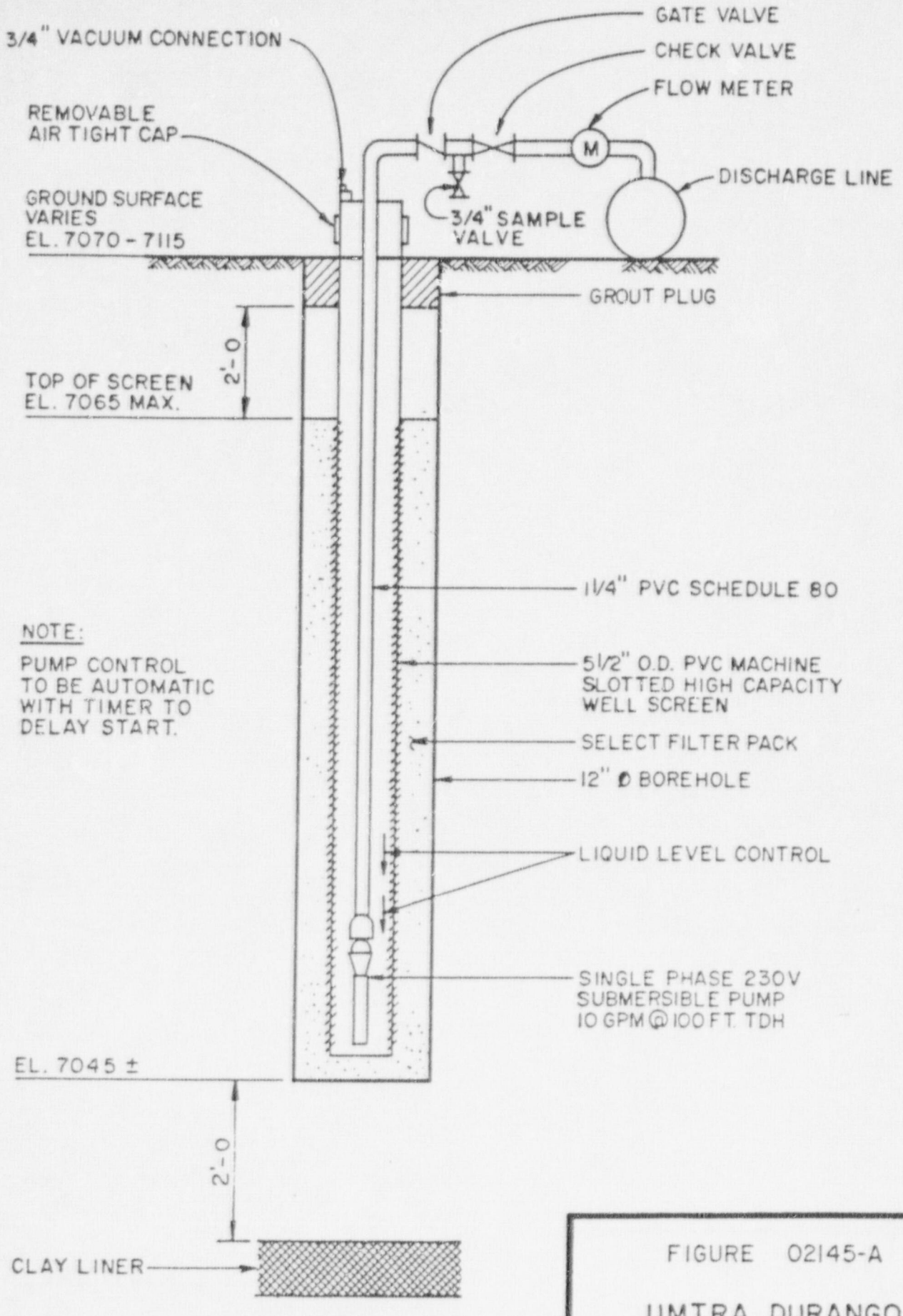


FIGURE 02145-A

UMTRA DURANGO
WELL DETAIL

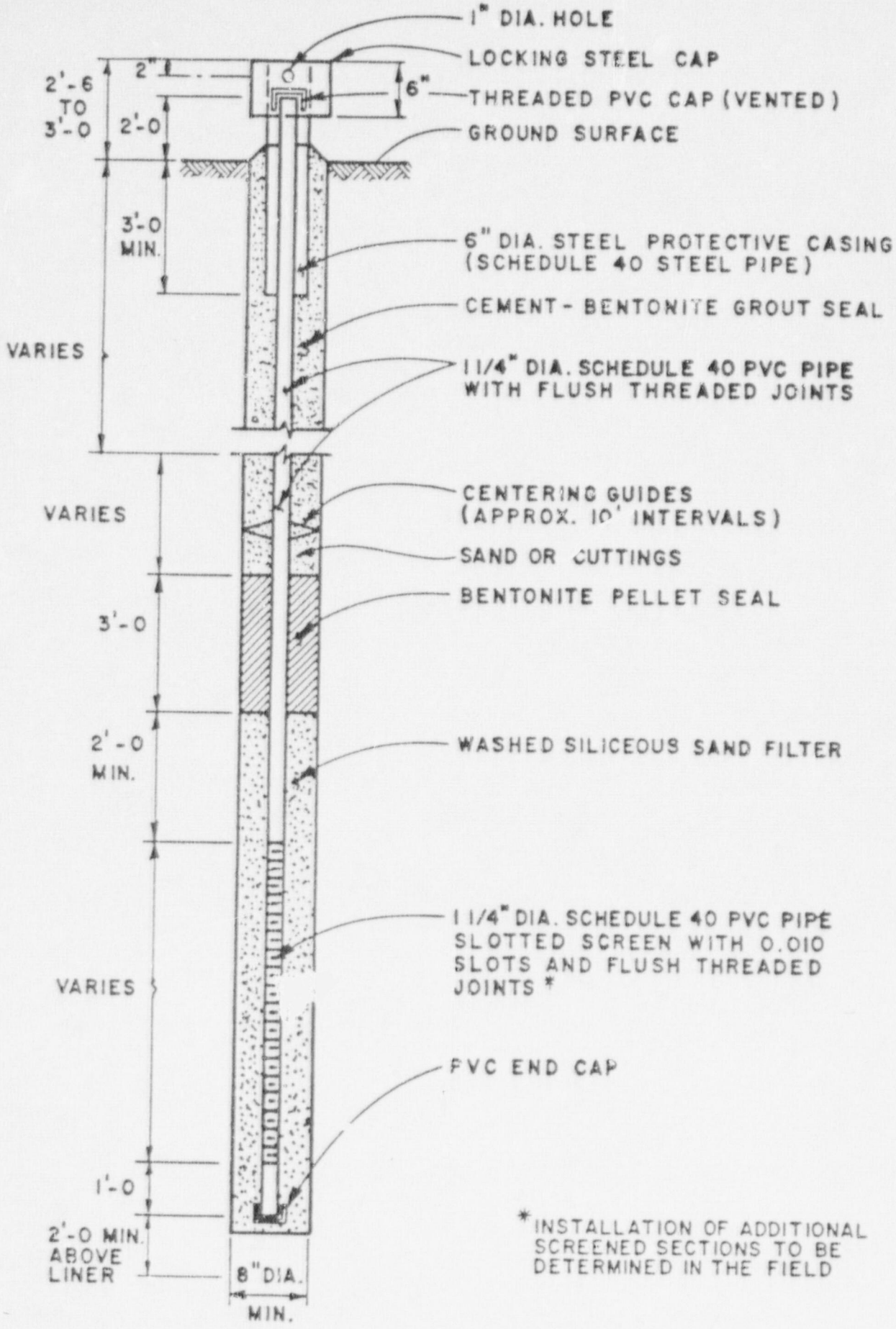
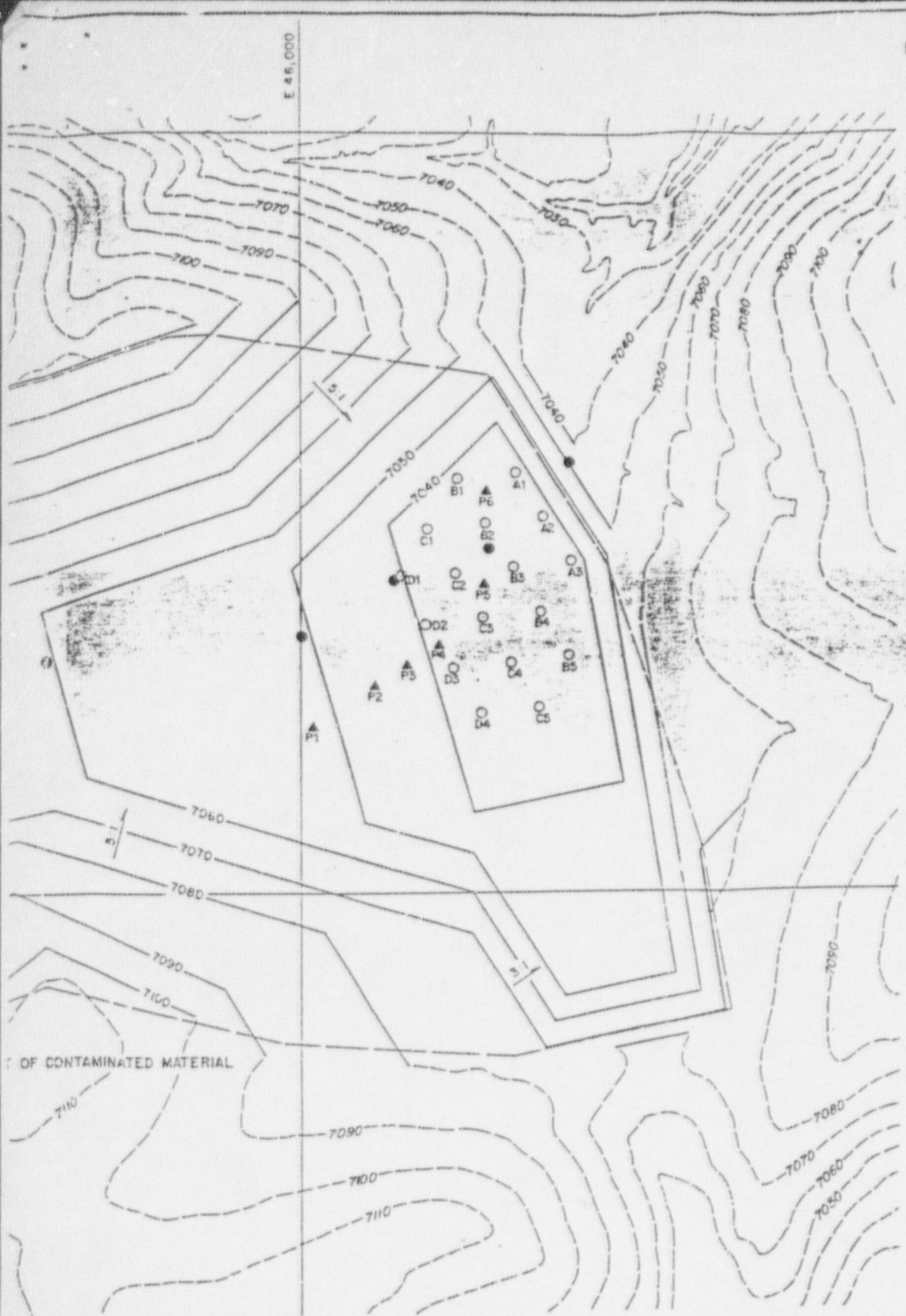


FIGURE 02145-B

TEMPORARY PIEZOMETER INSTALLATION DETAIL



NOTE:

CONTOURS ARE NOT THE TOP OF THE 2 FT LINE BUT ARE THE BASE CONTOURS

WELL AND PIEZOMETER	COORDINATES	
	NORTH	EAST
A1	42,555	46,28[illegible]
A2	42,496	46,32[illegible]
A3	42,438	46,362
B1	42,547	46,21[illegible]
B2	42,488	46,24[illegible]
B3	42,429	46,28[illegible]
B4	42,370	46,32[illegible]
B5	42,312	46,36[illegible]
C1	42,480	46,17[illegible]
C2	42,421	46,20[illegible]
C3	42,362	46,24[illegible]
C4	42,302	46,28[illegible]
C5	42,244	46,319
D1	42,418	46,13[illegible]
D2	42,355	46,16[illegible]
D3	42,297	46,20[illegible]
D4	42,238	46,24[illegible]
P1	42,219	46,018
P2	42,271	46,100
P3	42,300	46,143
P4	42,326	46,18[illegible]
P5	42,405	46,24[illegible]
P6	42,530	46,24[illegible]

LEGEND:

- ● EXISTING WELLS
- ○ PROPOSED PUMPING WELLS
- ▲ NEW PIEZOMETERS
- —7070— FOUNDATION CONTOURS
- --7070-- NATURAL CONTOURS

100 0 100 200
SCALE FEET

BASE MAP:

LAND SURVEYING COMPANY, INC. TOPOGRAPHIC MAP ENTITLED "BODO CANYON," DATED 15 APRIL 1985.

NO.	DATE	REVISIONS	BY	CK	E&D MGR.	CONST ENG.	QA MGR.	DOE APP.
△								
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△								
△								
△								

U. S. DEPARTMENT OF ENERGY
ALBUQUERQUE, NEW MEXICO

DESIGNED | DRAWN
CHECKED
INSPECTED
RECOMMENDED
APPROVED | DATE | DOE PROJECT ENGINEER

DURANGO SITE
DURANGO, COLORADO
BODO CANYON DISPOSAL SITE

LAYOUT FOR 17 WELLS AND INSTRUMENTATION

MORRISON-KNUDSEN ENGINEERS, INC.
UMTRA PROJECT

PROJECT NO. DE-AC04-83AL187
DRAWING NO. FIGURE 02145-C