

DEPARTMENT OF ENERGY  
ALBUQUERQUE OPERATIONS OFFICE  
CONTRACT NO. DE-AC04-83AL18796

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# **Draft Radiological and Engineering Assessment**

Vicinity Property No. DUR 020

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Remedial Actions  
Contractor  
for the  
Uranium Mill Tailings  
Remedial Actions  
Project



MORRISON  
KNUDSEN

DRAFT

THE RADIOLOGICAL AND ENGINEERING ASSESSMENT

AND FINAL DESIGN

FOR

DURANGO PROPERTY

DU-020

February 11, 1985

PREPARED FOR

URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT OFFICE

UNITED STATES DEPARTMENT OF ENERGY

PREPARED BY

MORRISON-KNUDSEN COMPANY, INC.

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1.0 EXECUTIVE SUMMARY

1.1 Introduction

Property DU-020 is a commercial property located at 3065 Main Avenue, Durango, CO.

1.2 Evaluation and Recommendation

1.2.1 Residual Radioactive Material Involvement

Two areas of contamination were found in the asphalt parking area.

1.2.2 Recommended Remedial Action Option

The recommended option is to remove the contaminated material.

1.2.3 Estimated Costs

The estimated cost for removal of the contaminated material and restoration of the property is \$5,800.00.

1.2.4 Schedule

The estimated duration of the remedial action effort is 3 to 7 days.



## 2.0 ENGINEERING FIELD SURVEY

### 2.1 Property Description

#### 2.1.1 Property Use and Occupancy

Property DU-020 is a commercial property owned by Perry Palmer and Roger Robbins and located at 3065 Main Avenue. The map in Figure 2.1 illustrates the property's vicinity location.

#### 2.1.2 Legal Description

The legal description as recorded with the La Plata County Recorder's Office on Microfilm Nos. 463413 and 369041 follows:

Lot 11, Block 34, in that part of the City of Durango known and platted as the Town of Animas City; formerly described as Lot 80 on Main Street in the Town of Animas City, Colorado; NOW ALSO DESCRIBED as Lot 11, Block 34, Animas City Annexation to the City of Durango, La Plata County, Colorado.

Lots numbered 12 and 13 in Block 34 in that part of the City of Durango formerly known and platted as Town of Animas City, NOW ALSO known as Lots 12 and 13 in Block 34 of the Animas City Annexation to the City of Durango, FORMERLY KNOWN as Lots 76 and 78 on Main Street in the Town in Animas City.

#### 2.1.3 Bordering Properties

The lots are zoned C-2, commercial. They are located less than three miles northeast of the old Vanadium Corporation of America mill tailings site. The property is bounded on the north by a commercial property; on the east Main Avenue; on the south by a commercial property; and on the west by an alley.

### 2.2 Existing Facilities and Structures

#### 2.2.1 Structures

There are two buildings located on the property. The office portion of the building on Lot 13 is a single story wood frame structure on a concrete slab. The warehouse portion of this building is concrete block on a concrete slab. The office building to the south on Lot 11 is a single story wood frame structure on a concrete slab. Concrete sidewalk extends in front of both buildings along Main Avenue just outside the east property line.

The remainder of the property is paved. A concrete storm trough extends along the rear of the office on Lot 13 and diagonally across the asphalt area between the two buildings. A railroad tie planter and flower bed lies on the south side of the office building on Lot 11.

The structures are less than 50 years old and therefore meet the requirements of Stipulation I.a. of the Programmatic Memorandum of Agreement between the DOE, the Colorado Historic Preservation Officer, and the Advisory Council on Historic Preservation.

2.2.2 Utilities

Utilities are serviced to the property as follows:

Electric power - Overhead to northwest corner of warehouse.

Telephone - Overhead to northwest corner of warehouse.

Water - Underground from Main Avenue water main.

Gas - Underground from gas main in alley.

Sewer - Underground from main in alley.

2.2.3 Site Plan and Survey Data

See Figure 2.2 for a site plan of the property. Property survey data and photos are presented in Table 2.1 and Figure 2.3 and 2.4.

TABLE 2.1

COMMERCIAL/INSTITUTIONAL

PROPERTY SURVEY DATA

GENERAL:

Facility Name: A&M Corporation

Address: 3065 and 3067 Main Avenue

Owner: Perry Palmer and Roger B. Robbins

Occupancy: Employees/Occupants (Full Time): N/A

Employees/Occupants (Part Time): N/A

Remarks: 1-1/2 Buildings Stand on the Property; the Building to the North is  
Occupied by 2 Businesses and has 2 Sections - a 1 Story & Warehouse  
the Corp. Owns 1/2 of the Bldg to the South

PROPERTY DESCRIPTION:

Structure: (Identify) Action Electrical (East)/Mountain Plumbing (West)

: SQ FT N/A Levels One/Warehouse

: Construction Type Action Elec = Wood Frame/Plumbing = Conc Blk

: Foundation Concrete Slab

Remarks: The one story (east 1/2) has brick on street side, wood lap siding on  
south side and stucco on north side. The warehouse has a garage door  
on the northwest side.

Structure: (Identify) Mountain Plumbing (North 1/2 of Bldg)

: SQ FT \_\_\_\_\_ Levels Single Story

: Construction Type Wood Frame

: Foundation Concrete Slab

Remarks: Building has stucco finish with brick on street side.

TABLE 2.1

COMMERCIAL/INSTITUTIONAL

PROPERTY SURVEY DATE

Facility Name: A&M Corporation

PROPERTY DESCRIPTION:

Driveway/Access: Concrete: \_\_\_\_\_ Asphalt: X Gravel: \_\_\_\_\_

Remarks: On north side of buildings and from Main Avenue to alley between buildings.

Sidewalks: Concrete: \_\_\_\_\_ X Asphalt: \_\_\_\_\_

Remarks: Along Main Avenue

Fences: Chain link of \_\_\_\_\_ Mesh \_\_\_\_\_ Wood \_\_\_\_\_

Remarks: Approx. 2'X4' High Wood Fence Between Action Elec/Mtn Plumbing and the Adjacent Building to the North Along Main Avenue

Grounds: Lawn None

Trees None

Shrubs None

Grading Relatively Flat

Soil Type \_\_\_\_\_

Remarks Railroad tie planter and flower bed along south side of Action Electrical office.

Existing Survey Plot: Yes

TABLE 2.1

COMMERCIAL/INSTITUTIONAL

### PROPERTY SURVEY DATA

Facility Name: A&M Corporation

UTILITIES: Heating: Gas X Electric \_\_\_\_\_ Oil \_\_\_\_\_  
Hot Water \_\_\_\_\_ Other \_\_\_\_\_

Remarks: \_\_\_\_\_

Air Conditioning: Elec. Heating Pump \_\_\_\_\_ Gas \_\_\_\_\_

Evap. Cooler \_\_\_\_\_ Other \_\_\_\_\_

Remarks: \_\_\_\_\_

Electric Line Location: Overhead to northwest corner of  
warehouse.

Gas Line Location: Underground from gas main in alley.

Water Line Location: Underground from Main Avenue water main.

(See Drawing)

Sewer Line Location: Underground from main in alley. (See Drawing)

Telephone Line Location: Overhead to northwest corner of  
warehouse.

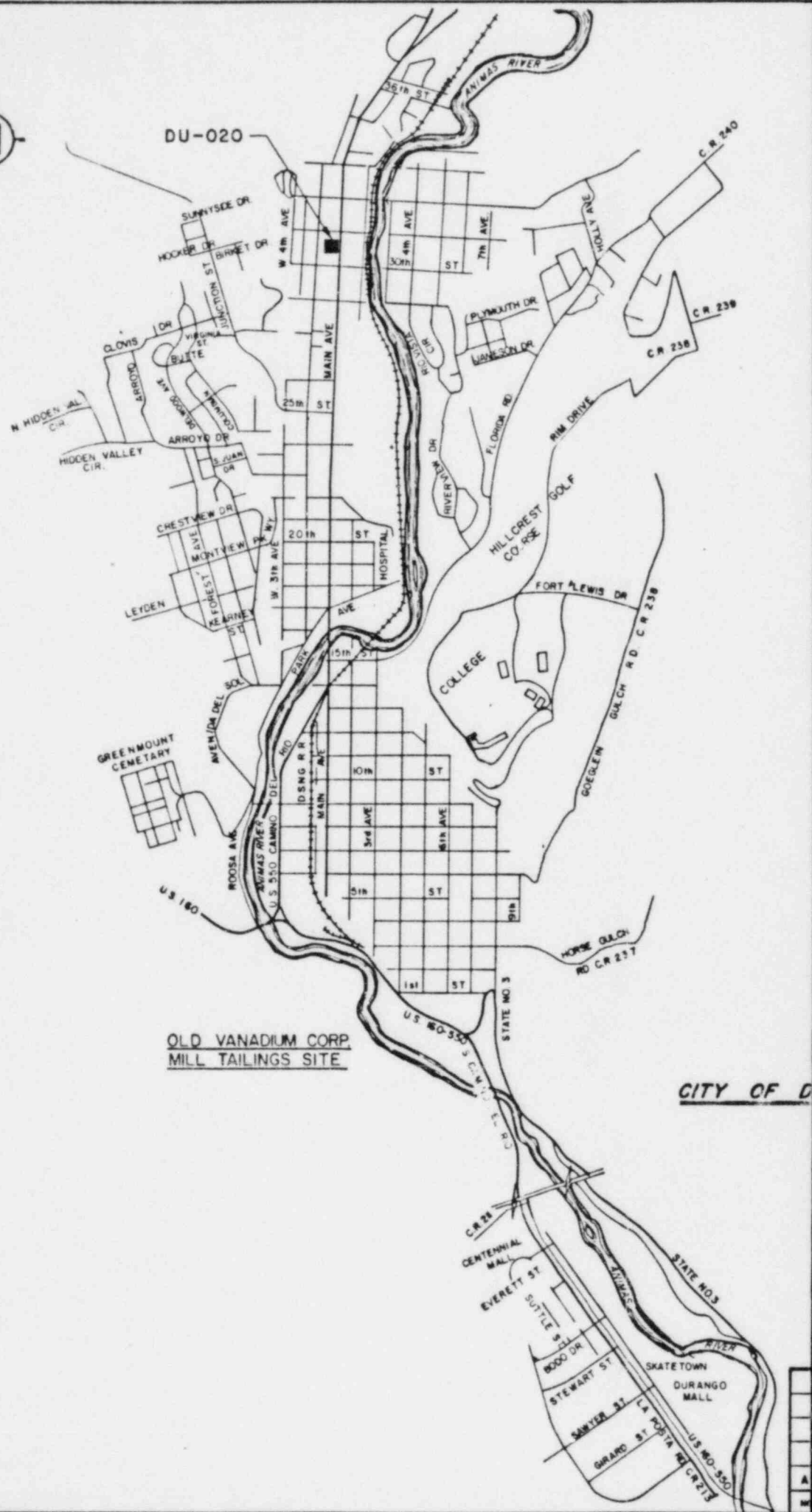
BUILDING CODES AND ZONING:

Building Code: UBC X BOCA       


Remarks: \_\_\_\_\_

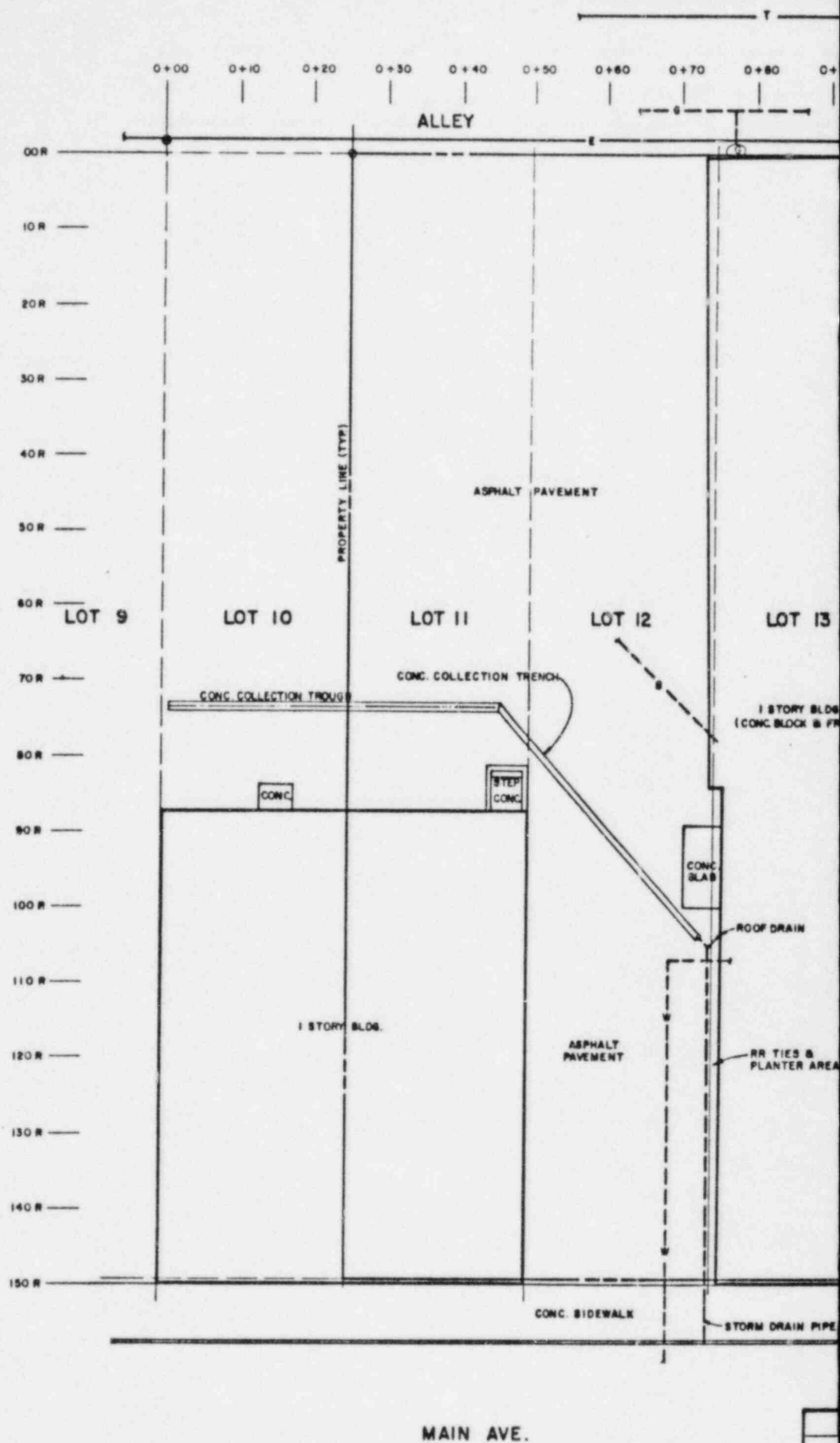
Zoning Jurisdiction: City of Durango

Present Facility Zoning: C-2 Business District

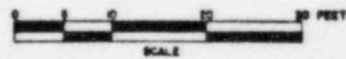




U. S. DEPARTMENT OF ENERGY									
ALBUQUERQUE, NEW MEXICO									
DESIGNED/DRAWN <i>W.D.L. SUN</i>	<p>FIGURE 2.1</p> <p>VICINITY MAP DU-020</p> <p>DURANGO, COLORADO</p> <p>URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT</p>								
CHECKED <i>W.D.L.</i>									
REVIEWED <i>W.D.L.</i>									
RECOMMENDED <i>W.D.L.</i>									
APPROVED <i>W.D.L.</i>	DATE	DOE PROJECT MANAGER	DATE	DOE PROJECT ENGINEER	DATE				
NR		NR		NR					
		MORRISON KNUDSEN		PROJECT NO. DE-AC04-83AL18796		DRAWING NO. DU-020-005		REV. A	



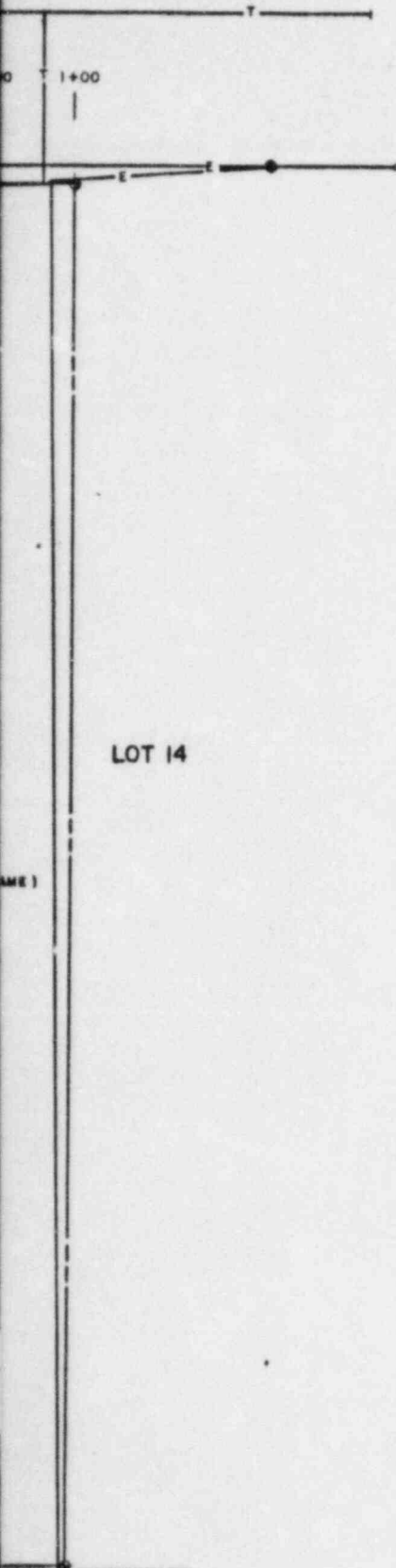
MAIN AVE.



1

1





# LEGEND

W	WATER LINE
G	GAS LINE
GM	GAS MAIN
S	SEWER LINE
SM	SEWER MAIN
STM	STORM SEWER
E	ELECTRICAL LINE
T	TELEPHONE LINE
TV	CABLE TV
- - -	PROPERTY LINE
- x - x - x	FENCE LINE
⊗ G, W or E	METER
⊗ G or W	VALVE
⊙	PROPERTY PIN
●	POWER POLE

NOTE: OVERHEAD SERVICE DENOTED BY SOLID LINE.  
UNDERGROUND SERVICE DENOTED BY DASHED LINE.

LOT 14

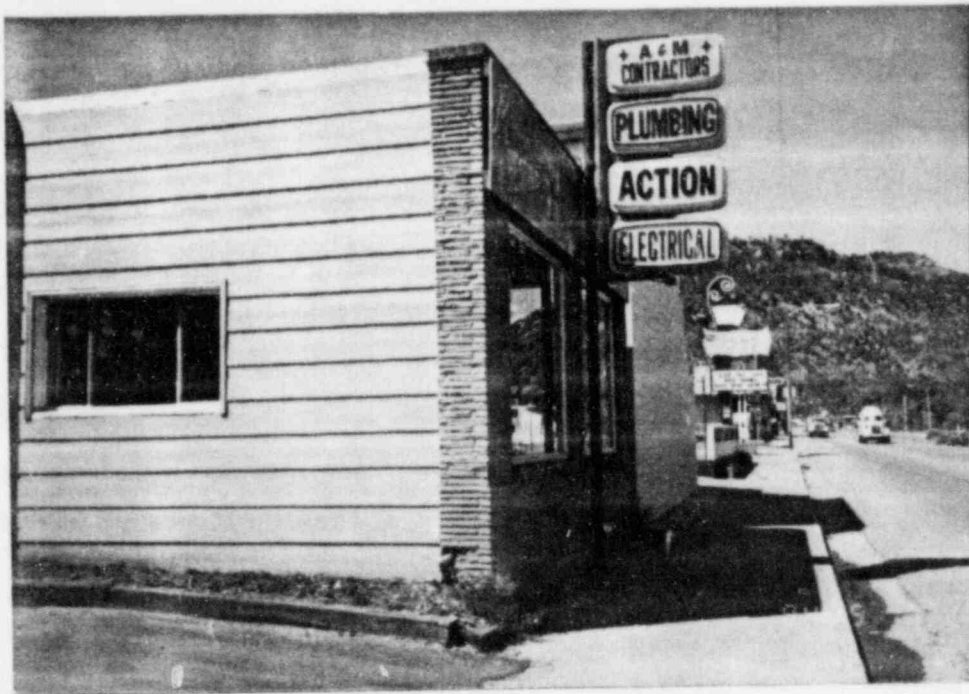
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APERTURE  
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2/1/80	FINAL REA SUBMITTAL	MA	TP	EP	VCP	VAL	-
DATE	REVISIONS	DRAWN BY	CHECKED BY	APPROVAL LGE	APPROVAL DR	PROJ. ENG.	APPROVAL DOE

<b>U. S. DEPARTMENT OF ENERGY</b> ALBUQUERQUE, NEW MEXICO			
FIGURE 2.2 <b>SITE PLAN DU-020</b> DURANGO, COLORADO URANUM MILL TAILINGS REMEDIAL ACTION PROJECT			
DESIGNED <i>[Signature]</i> CHECKED <i>[Signature]</i> REVIEWED <i>[Signature]</i> RECOMMENDED <i>[Signature]</i> APPROVED <i>[Signature]</i>	DATE NR	DOE PROJECT MANAGER NR	DATE NR
PROJECT NO. DE-AC04-83AL18796		DRAWING NO. DU-020-010	
MORRISON KNUDSEN		REV. A	



Action Electrical Looking North



Rear of Property Looking Southeast

Figure 2.3 Property Photos



Mountain Plumbing Office Looking South



Action Electrical Looking East

Figure 2.4 Property Photos

### 3.0 RADIOLOGICAL SURVEY AND ASSESSMENT

#### 3.1 Gamma Exposure Rate Survey

##### 3.1.1 Survey Method

The outdoor contaminated areas identified in the inclusion survey (Results of the Radiological Survey at Property DU-020, ORNL, May 1983) were surveyed in accordance with the RAC UMTRA Procedure 019. The survey was made on a 10' x 10' grid. A surface scan was made of the gridded area with a gamma scintillometer to identify the boundary of the contamination.

No indoor gamma survey was conducted inside the buildings, since the inclusion survey reported that no contamination exists in or under the structures.

##### 3.1.2 Survey Results

Surface gamma readings on the property range from 12 to 21 micro R/hr (Table 3.1). This may be compared with the background for the Durango site of 14 micro R/hr. Gamma readings are artificially low because of the 6 to 8-inch thick asphalt pavement on the property.

A survey of the walls of the concrete block building on the north showed general readings of 18-19 micro R/hr. This is probably from natural radioactivity in the blocks.

#### 3.2 Borehole Survey

##### 3.2.1 Survey Method

A gasoline-powered hand auger was used to drill 4-inch diameter holes in and around the regions identified as contaminated during the gamma survey. The holes were surveyed in compliance with the RAC UMTRA Procedure 018.

3.2.2 Contamination was found in 7 of the 14 outdoor holes augered. The location and depth of the contamination is described in Table 3.2 and is shown in Figure 3.1. Borehole 9, along the buried sewer line, showed no activity above normal background.

3.3 Radon/Radon Daughter Survey

No radon/radon daughter surveys were performed inside buildings at the property, since the inclusion survey reported that no contamination is present in or under the structures. The inclusion survey reported a radon daughter concentration of 0.037 WL in the basement of Building 1 and 0.023WL in Building 2. These values indicate the need for additional information. (RAC measurements will be taken when the working level meters are available at the site).

3.4 Estimated Extent of Contamination

Based on information presently available, two areas of contamination have been identified at the property, as shown on Figure 3.1.

The estimated depth of contamination is 18 inches in Area A. One borehole (#5) indicated a depth of 24 inches. However, the activity count rate was lowering in intensity by 18 inches, and it is unlikely that contamination above EPA standards exists deeper than 18 inches.

In Area B the estimated depth of contamination is 12 inches.

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Radiological and Engineering Assessment: Property DU-020

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Table 3.1  
OUTDOOR GAMMA SURVEY  
Property DU-020

POINT	MICRO R/hr
0+90,00R	16
1+00,00R	16
0+70,20R	16
0+70,50R	16
0+50,60R	21
0+70,60R	16
0+60,80R	16
0+70,80R	16
0+00,88R	16
0+10,88R	16
0+20,88R	16
0+30,88R	16
0+40,88R	16
0+50,90R	17
0+70,90R	16
0+50,95R	17
0+60,95R	16
0+65,95R	16
0+70,95R	17



Table 3.1 - Cont'd.  
OUTDOOR GAMMA SURVEY  
Property DU-020

POINT	MICRO R/hr
0+75,90R	16
0+50,100R	17
0+60,100R	17
0+70,100R	17
0+75,100R	16
0+50,110R	17
0+60,110R	16
0+70,110R	16
0+50,120R	17
0+70,120R	16
0+50,130R	17
0+70,130R	19
0+75,130R	16
0+50,140R	16
0+60,140R	16
0+70,140R	18
0+60,150R	16
0+70,150R	16
1+00,10R	18
1+00,20R	18
1+00,30R	18
1+00,40R	18

Table 3.1 - Cont'd.  
OUTDOOR GAMMA SURVEY  
Property DU-020

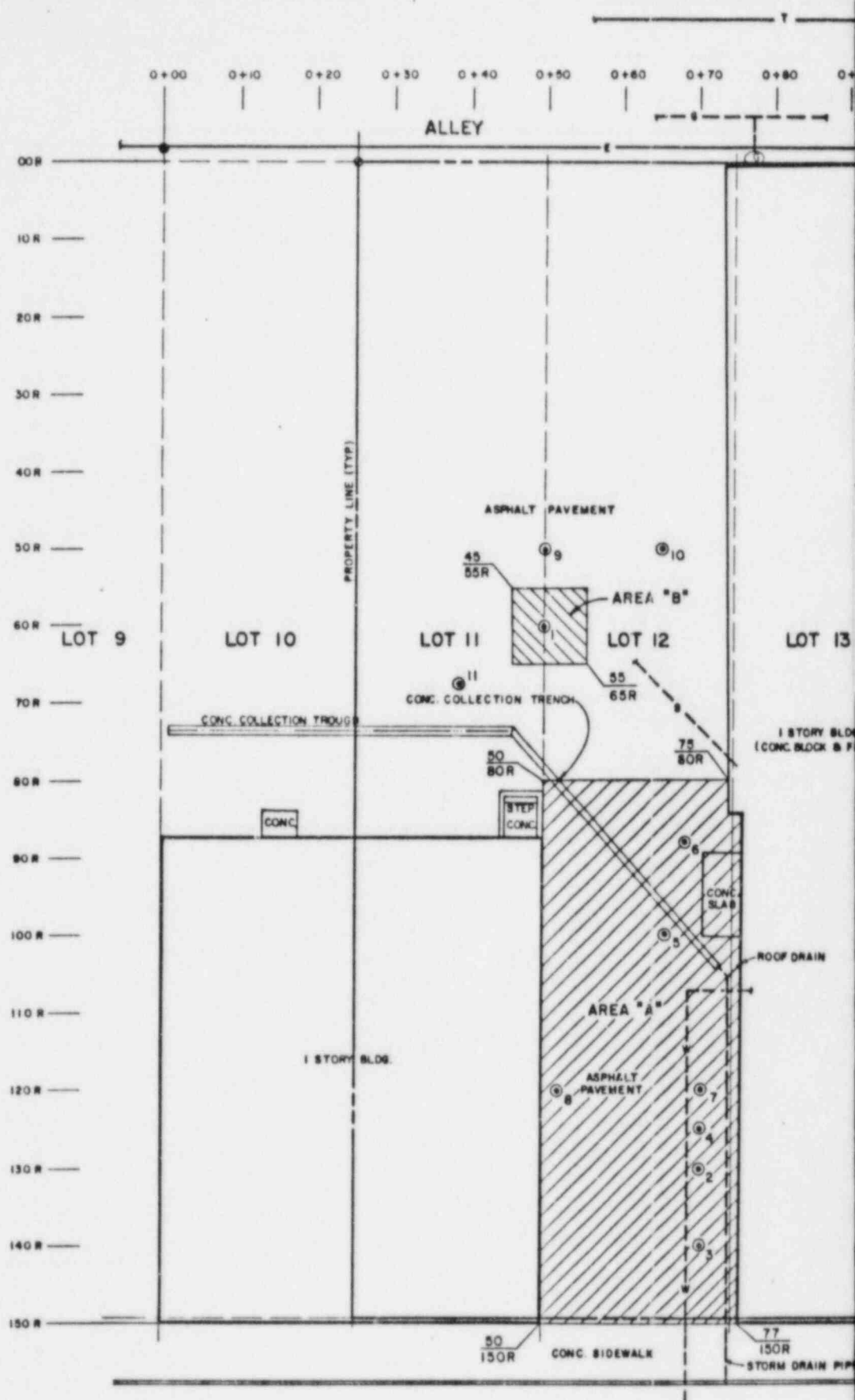
POINT	MICRO R/hr
1+00,50R	18
1+00,60R	18
1+00,70R	18
1+00,80R	18
1+00,90R	18
1+00,100R	18
1+00,110R	18
1+00,120R	18
1+00,130R	18
1+00,140R	17
1+00,150R	17



Table 3.2  
BOREHOLE SURVEY  
Property DU-020

HOLE	LOCATION	CONTAMINATION DEPTH
1	0+50,60R	0-12"
2	0+70,130R	0-18"
3	0+70,140R	0-18"
4	0+70,125R	0-18"
5	0+65,100R	0-24"
6	0+68,88R	0-12"
7	0+70,120R	0-24"*
8	0+52,120R	0-12"
9	0+50,50R	None
10	0+65,50R	None
11	0+38,68R	None
12	1+00,110R	None
13	1+00,60R	None
14	1+00,40R	None

\*Low-level contamination present.



MAIN AVE.



12

LOT 14

### LEGEND

⊙<sub>8</sub> AUGER HOLE DESIGNATION

ESTIMATED DEPTH OF CONTAMINATION


 12" 18°

Aperture Card

TI  
APERTURE  
CARD

8507100082-03

[illegible]

U. S. DEPARTMENT OF ENERGY										
ALBUQUERQUE, NEW MEXICO										
DESIGNED	UNSW	<p>FIGURE 3.1</p> <p>RADIOLOGICAL SURVEY DATA DU-020</p> <p>DURANGO, COLORADO</p> <p>URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT</p>								
CHECKED	SWN									
REVIEWED										
RECOMMENDED										
APPROVED	NR	DATE	DOE PROJECT MANAGER	DATE	DOE PROJECT ENGINEER	DATE				
			NR			NR				
		MORRISON KNUDSEN			PROJECT NO.			DE-ACO4-83ALI 8796		
					DRAWING NO.			DU-020-015		
								REV. A		

#### 4.0 ENGINEERING ASSESSMENT

Engineering options were formulated and evaluated based on the radiological and engineering assessment for this property. Factors forming the basis of the evaluation were: the extent and location of the contamination, construction costs, and required demolition and constructibility for the various options. Results of the evaluation are detailed below.

##### 4.1 Evaluation of Options

###### 4.1.1 Options

Two options were evaluated for property DU-020:

1. No action should be taken.
2. Complete decontamination of the property including retrieval of the contaminated material and restoration of the property.

Option 2 will include the following:

###### Area "A"

- o Remove railroad ties around planter area and handrail on concrete slab.
- o Demolish and remove asphalt paving and concrete slab with the limits of contamination.
- o Excavate to the depth shown on Figure 4.1.
- o Backfill excavated area with compacted common fill and aggregate base course.
- o Backfill planter area with 18 inches of topsoil.
- o Pave Area "A" with 3 inch thick asphalt.

###### Area "B"

- o Demolish and remove asphalt paving within the limits of contamination.
- o Excavate to the depth shown on Figure 4.1.
- o Backfill with compacted common fill and aggregate base course.
- o Pave Area "B" with 3 inch thick asphalt paving.

4.1.2 Costs

Estimated costs for the activities associated with Option 2 are detailed in Table 4.1. Costs include labor, insurance, material, equipment, supplies, overhead, profit, and contingency. All costs are listed in 1985 dollars. It is anticipated that the time required for the subcontractor to complete the work will be 3 to 7 days.

4.2 Recommendation

The limited cost and amount of remedial action work precluded evaluating any more than these two options. The results of the radiological assessment concluded that contamination levels on the property exceeded EPA guidelines. Therefore, based on these guidelines, it is recommended that Option 2, decontamination of the property, be pursued. The total estimated cost for Option 2 is \$5,800.00.

Table 4.1  
OPTION 2 COSTS

<u>Activity</u>	<u>Unit Price</u>	<u>Quantity</u>	<u>Estimated Cost</u>
Remove concrete ramp	3.00	55 sf	165.00
Remove railroad ties	LS		30.00
Remove asphalt and trench	.20	1,843 sf	368.60
Excavation (Machine)	8.30	109 cy	904.70
Common Backfill	7.20	75 cy	540.00
Aggregate Base Course	13.05	34 cy	443.70
Asphalt Paving	6.00	205 sy	1,230.00
Construct Concrete Ramp and Trench	3.50	88 sf	308.00
Replace Railroad Ties	10.00	4 ea	40.00

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Subtotal	\$4,029.30
5% Subcontractor's Contingency	201.46
20% Overhead and Profit	<u>805.86</u>
Subtotal	5,036.62
15% Engineer's Contingency	<u>755.50</u>
Total (Rounded)	\$5,800.00

## 5.0 TECHNICAL SPECIFICATIONS

Technical specifications applicable to this property are indexed in Table 5.1 . Specifications previously approved by the Department of Energy (DOE) are noted in the table. Also listed are specifications not previously submitted to the DOE which require approval. The text for these additional specifications follow the table.

Table 5.1  
INDEX OF TECHNICAL SPECIFICATIONS

Description		Specifications Previously Approved	Specifications Requiring DOE Approval
SECTION 02110	CLEARING AND GRUBBING	X	
SECTION 02130	CONTAMINATED MATERIAL REMOVAL	X	
SECTION 02200	EXCAVATION AND BACKFILL	X	
SECTION 02500	PAVING AND SURFACING	X	
SECTION 03300	CAST-IN-PLACE CONCRETE	X	



6.0 CONSTRUCTION DRAWINGS

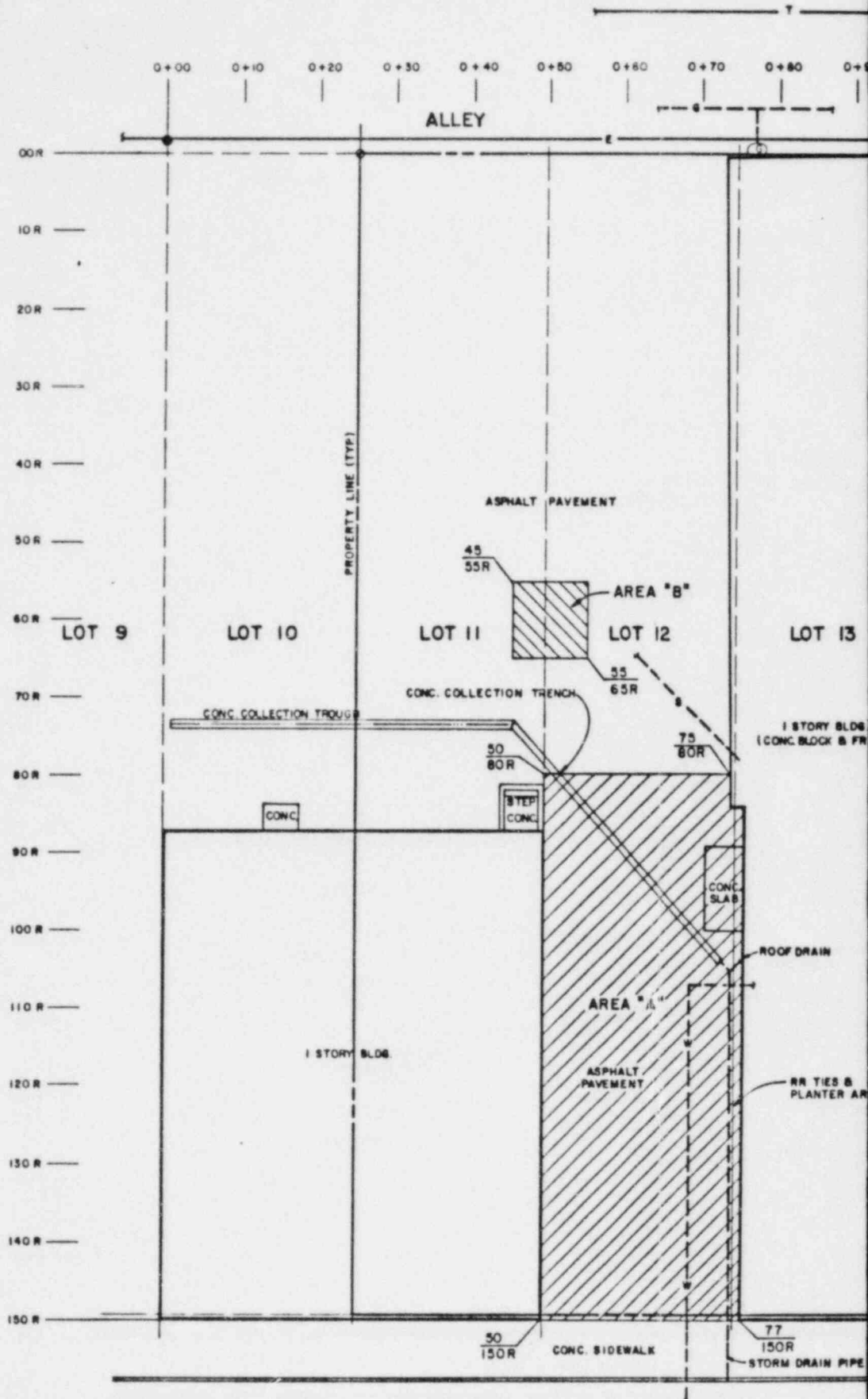
Listed below is an index of the construction drawings required for remedial action on this property. Copies of the drawings follow this section.

Drawing Number

Drawing Title

DU-020-020

Excavation & Restoration Plan DU-020



# LEGEND

— W —	WATER LINE
— G —	GAS LINE
— GM —	GAS MAIN
— S —	SEWER LINE
— SM —	SEWER MAIN
— STM —	STORM SEWER
— E —	ELECTRICAL LINE
— T —	TELEPHONE LINE
— TV —	CABLE TV
— — —	PROPERTY LINE
— X — X —	FENCE LINE
⊗ G, W or E	METER
⊗ G or W	VALVE
⊙	PROPERTY PIN
●	POWER POLE

Also Available On  
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## TI APERTURE CARD

NOTE: OVERHEAD SERVICE DENOTED BY SOLID LINE.  
UNDERGROUND SERVICE DENOTED BY DASHED LINE.

### NOTES:

1. THE LATEST REVISION OF THE FOLLOWING TECHNICAL SPECIFICATIONS APPLY TO THE REMEDIAL ACTION WORK REQUIRED FOR PROPERTY NO. DU-020.

SECTION 02110  
CLEARING AND GRUBBING

SECTION 02130  
CONTAMINATED MATERIAL REMOVAL

SECTION 02200  
EXCAVATION AND BACKFILL

SECTION 02500  
PAVING AND SURFACING

SECTION 03300  
CAST-IN-PLACE CONCRETE

2. UTILITY LOCATIONS ARE FOR REFERENCE ONLY. ACTUAL LOCATIONS SHALL BE DETERMINED BY THE SUBCONTRACTOR PRIOR TO START OF CONSTRUCTION.
3. THE EXCAVATION LIMITS AND DEPTHS ARE BASED ON A LIMITED NUMBER OF BORINGS TAKEN DURING THE RADIOLOGICAL SURVEYS OF THIS PROPERTY. ADDITIONAL RADIOLOGICAL SURVEYS PERFORMED DURING REMEDIAL ACTION MAY REQUIRE MORE OR LESS EXCAVATION TO BE TAKEN FROM THE DESIGNATED AREAS. ALL CHANGES TO THE LIMITS AND DEPTHS OF EXCAVATION AS SHOWN ON THE DESIGN DRAWINGS SHALL BE AS DIRECTED BY THE CONTRACTOR'S REPRESENTATIVE.

### SCOPE OF WORK

#### AREA "A"

- NOTE LOCATION OF RAILROAD TIES, CONCRETE SLAB AND CONCRETE TRENCH.
- REMOVE AND SALVAGE RAILROAD TIES. DEMOLISH AND REMOVE CONCRETE SLAB. SALVAGE HANDRAIL.
- REMOVE ASPHALT AND CONCRETE TRENCH WITHIN THE LIMITS OF CONTAMINATION.
- PROTECT STORM DRAIN PIPE AND ROOF DRAIN CONNECTION DURING EXCAVATION AND BACKFILL.
- EXCAVATE AREA "A" TO THE LIMITS INDICATED ON THE DRAWING AND TO A DEPTH OF 18 INCHES.
- BACKFILL AREA "A" WITH 9 INCHES OF COMPACTED COMMON FILL, TOP WITH 6 INCHES OF AGGREGATE BASE COURSE AND REPAVE WITH 3 INCH THICK ASPHALT PAVING. MAINTAIN ORIGINAL GRADE FOR DRAINAGE.
- CONSTRUCT NEW CONCRETE SLAB AND TRENCH TO ORIGINAL SIZE AND ELEVATION. REPLACE HANDRAIL. BOTTOM OF SLAB SHALL BE 6 INCHES BELOW GRADE.
- REPLACE RAILROAD TIES AND BACKFILL PLANTER AREA WITH 18 INCHES OF TOPSOIL.

#### AREA "B"

- REMOVE ASPHALT PAVING WITHIN THE LIMITS OF CONTAMINATION.
- EXCAVATE AREA "B" TO A DEPTH OF 12 INCHES.
- BACKFILL WITH 3 INCHES OF COMPACTED COMMON FILL AND 6 INCHES OF AGGREGATE BASE COURSE AND REPAVE WITH 3 INCH THICK ASPHALT PAVING.

LOT 14

## U. S. DEPARTMENT OF ENERGY ALBUQUERQUE, NEW MEXICO

FIGURE 4.1

### EXCAVATION & RESTORATION PLAN DU-020

DURANGO, COLORADO

URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT

DESIGNED BY JUN
CHECKED BY JUN
REVIEWED BY JUN
RECOMMENDED BY JUN
APPROVED BY JUN

NR

NR

NR

PROJECT NO.

DE-AC04-83AL18796

DRAWING NO. DU-020-02G

REV.



MORRISON  
KNUDSEN

8507100082-04

2/1/85	FINAL REA SUBMITTAL	MA	TP	TP	VC	VC	--
DATE	REVISIONS	DESIGN BY	CHECKED BY	APPROVAL LOC	APPROVAL DATE	PROJECT ENG	APPROVAL DATE

APPENDIX A  
SURVEY DATA LOGS

**OUTDOOR GAMMA SCREENING  
SURVEY DATA SHEET**

LOGGING CREW:

ERNEST COUCH  
EDWARD SCHULTZ  
LEVIN BENNELL

SHEET

OF 5

PAGE

1

DATE:

6/29/84

PROPERTY ID:

DU-020

INSTRUMENT ID NO.: LUD. 2220 #3982 w/4410 #16528

BACKGROUND CALCULATION:

#1 \_\_\_\_\_ + #2 \_\_\_\_\_ + #3 \_\_\_\_\_ = \_\_\_\_\_ - 3 = 11,500 COUNTS/MIN

AREA: _____		AREA: _____		AREA: _____		AREA: _____	
POINT ID	READING COUNTS/1MIN	POINT ID	READING COUNTS/1MIN	POINT ID	READING COUNTS/1MIN	POINT ID	READING COUNTS/1MIN
D100+TOR	11320 11160	D150+TOR	14740 14120	D150+SOR	15720 14680	D150+BOR	13310 13970
D110+TOR	12700 11730	D160+TOR	14350 14480	D160+SOR	15060 15320	D160+BOR	16280 16420
D120+TOR	11710 11000	D170+TOR	16220 15600	D170+SOR	16500 15480	D170+BOR	17260 16650
D130+TOR	11930 11650	D100+3OR	12130 12650	D100+6OR	12330 12670	D100+88R	12060 15610
D140+TOR	12730 13020	D110+3OR	12800 12700	D110+6OR	12630 12830	D110+88R	16080 14160
D150+TOR	14220 13420	D120+3OR	12120 12480	D120+6OR	13070 13270	D120+88R	16200 12470
D160+TOR	13560 13370	D130+3OR	13240 12700	D130+6OR	13400 12640	D130+88R	16310 13930
D170+TOR	15160 14670	D140+3OR	12310 12710	D140+6OR	12620 13360	D140+88R	12660 14010
D180+TOR	15990 15680	D150+3OR	15190 14140	D150+6OR	31920 19060	D150+9OR	19020 18810
D190+TOR	17820 17930	D160+3OR	15060 14480	D160+6OR	14610 15610	D160+9OR	14350 15530
D100+TOR	17730 16980	D170+3OR	15940 15830	D170+6OR	16180 15860	D170+9OR	16850 17210
D100+TOR	12220 11930	D100+4OR	12300 12170	D100+7OR	12170 12790	D150+95R	19520 19600
D110+TOR	11590 9650	D110+4OR	12110 12500	D110+7OR	12780 12530	D155+95R	16700 16660
D120+TOR	10650 11090	D120+4OR	12430 12730	D120+7OR	13280 12790	D160+95R	16100 16050
D130+TOR	12420 11890	D130+4OR	12160 12430	D130+7OR	13230 13260	D165+95R	17540 17470
D140+TOR	14340 13230	D140+4OR	12350 13030	D140+7OR	13320 12890	D170+95R	19160 17820
D150+TOR	14320 13640	D150+4OR	14580 14900	D150+7OR	15480 14880	D175+95R	14950 14920
D160+TOR	15000 14770	D160+4OR	14770 15510	D160+7OR	15280 15110	D175+9OR	17130 18600
D170+TOR	15160 14670	D170+4OR	14770 16320	D170+7OR	14260 13630	D150+10OR	18910 16810
D100+2OR	12520 11950	D100+5OR	12120 12160	D100+8OR	13240 12560	D100+10OR	18500 18110
D110+2OR	12160 12520	D110+5OR	12050 12570	D110+8OR	13190 13410	D170+10OR	12960 17370
D120+2OR	12360 12500	D120+5OR	12350 12440	D120+8OR	13000 13410	D175+10OR	16120 14030
D130+2OR	12790 12540	D130+5OR	12760 11920	D130+8OR	13870 14190	D150+11OR	20020 18930
D140+2OR	13720 12930	D140+5OR	13160 13740	D140+8OR	13690 14150	D160+11OR	16560 16540

REMARKS:

"Asphalt 6" to 8" thick is shielding  
the contamination". All measurements  
are in "cpm" Top / - Contact Readings  
Bottom - 1 meter readings.



**OUTDOOR GAMMA SCREENING  
SURVEY DATA SHEET**

LOGGING CREW: ERNEST CAUCH  
EDWARD SCHULTZ  
LEVON BENALLY

SHEET 2 OF 5 PAGE 2  
DATE: 6/29/84  
PROPERTY ID: DV-020

INSTRUMENT ID NO.: LVD 2220 #31982 w/4910 #16528

BACKGROUND CALCULATION:

#1 \_\_\_\_\_ + #2 \_\_\_\_\_ + #3 \_\_\_\_\_ = \_\_\_\_\_ - 3 = 11,500 COUNTS/1MIN

AREA: _____		AREA: _____		AREA: _____		AREA: _____	
POINT ID	READING COUNTS/1MIN	POINT ID	READING COUNTS/1MIN	POINT ID	READING COUNTS/1MIN	POINT ID	READING COUNTS/1MIN
0170H10R	17090	01100H10R	23950				
	16930		26160				
0175H10R	15860	01100H10R	23880				
	14710		22700				
0150H10R	20470	01100H10R	23700				
	19570		26670				
0160H10R	15310	01100H10R	23830				
	16470		26700				
0170H10R	16910	01100H10R	24410				
	17170		24310				
0175H10R	14620	01100H10R	23280				
	14750		24240				
0150H10R	18290	01100H10R	22100				
	17580		23430				
0160H10R	15620	01100H10R	22070				
	17060		21840				
0170H10R	27010	01100H10R	21620				
	19960		22000				
0175H10R	14910	01100H10R	21420				
	15900		21870				
0150H10R	17660						
	17340						
0160H10R	16020	01100H10R	14260				
	16710		12010				
0170H10R	24160	01100H10R	13710				
	17560		12330				
0175H10R	15900	0120H15	12870				
	14930		11830				
0150H10R	15360	0130H15	13440				
	14860		11700				
0160H10R	16580	0140H15	14420				
	16070		12550				
0170H10R	16860	0180H15	15350				
	15530		15330				
0175H10R	14570	0190H15	15110				
	15080		15170				
01100H10R	21920						
	24730						
01100H10R	23330						
	25420						
01100H10R	22750						
	27570						
01100H10R	23680						
	26640						
01100H10R	23300						
	25820						

REMARKS: ASPHALT 6" TO 8" THICK IS SHIELDING  
THE CONTAMINATION". ALL MEASUREMENTS ARE  
IN "CPM" TOP - CONTACT READINGS  
BOTTOM - 1 METER READINGS.

# BOREHOLE LOG

LOGGING CREW: ERNIE COUCH  
F. INNIS  
LEVON BENALLY

SHEET 3 OF 5 PAGE 3

DATE: 6/29/84

PROPERTY ID: DV-020

INSTRUMENT ID NO. LWD. 2220 #31982 w/440 #16528 AREA: DURANGO, COLORADO

NOTES: 1. ALL HOLES ARE 4" DIA. UNLESS OTHERWISE NOTED.

2. RECORD UNUSUAL CONDITIONS, SUCH AS THE PRESENCE OF WATER IN BOREHOLES AND DEPTH, CASING TYPE AND THICKNESS IF USED, CONCRETE CORES AND THICKNESS, OBSTRUCTIONS, UTILITIES, ETC., IN THE REMARKS SECTION.

①		②		③		④	
HOLE ID: <u>0150460R</u>		HOLE ID: <u>01701130R</u>		HOLE ID: <u>01704140R</u>		HOLE ID: <u>01704125R</u>	
TIME DRILLED: _____		TIME DRILLED: _____		TIME DRILLED: _____		TIME DRILLED: _____	
TIME LOGGED: _____		TIME LOGGED: _____		TIME LOGGED: _____		TIME LOGGED: _____	
SOIL TYPE: _____		SOIL TYPE: _____		SOIL TYPE: _____		SOIL TYPE: _____	
DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN
SURFACE		SURFACE		SURFACE		SURFACE	
0"	<u>37920</u>	0"	<u>35690</u>	0"	<u>33980</u>	0"	<u>33620</u>
6"	<u>82560</u>	6"	<u>100630</u>	6"	<u>85790</u>	6"	<u>74560</u>
12"	<u>26340</u>	12"	<u>121170</u>	12"	<u>107200</u>	12"	<u>116160</u>
18"	<u>23240</u>	18"	<u>46910</u>	18"	<u>39490</u>	18"	<u>49000</u>
24"	<u>24240</u>	24"	<u>29920</u>	24"	<u>28780</u>	24"	<u>29530</u>
30"		27" <u>26310</u>		29" <u>27480</u>		30"	<u>27080</u>
36"		36"		36"		36"	
42"		42"		42"		42"	
48"		48"		48"		48"	
54"		54"		54"		54"	
60"		60"		60"		60"	
66"		66"		66"		66"	
72"		72"		72"		72"	
78"		78"		78"		78"	
84"		84"		84"		84"	
90"		90"		90"		90"	
96"		96"		96"		96"	

REMARKS: "Asphalt 6" to 8" thick is shielding  
the contamination". All readings  
in "cpm" - Background bore hole  
ave. 23,000 cpm. Holes drilled until  
rocks were encountered.

# BOREHOLE LOG

LOGGING CREW: ERNIE COUCH  
J. LINDS  
LEWIS BENALLY

SHEET 4 OF 5 PAGE 4  
 DATE: 6/29/84  
 PROPERTY ID: DV-020

INSTRUMENT ID NO. 402220 #3782 w/4410 #16528 AREA: DURANGO, COLORADO

NOTES: 1. ALL HOLES ARE 4" DIA. UNLESS OTHERWISE NOTED.  
 2. RECORD UNUSUAL CONDITIONS, SUCH AS THE PRESENCE OF WATER IN BOREHOLES AND DEPTH, CASING TYPE AND THICKNESS IF USED, CONCRETE CORES AND THICKNESS, OBSTRUCTIONS, UTILITIES, ETC. IN THE REMARKS SECTION.

⑤ HOLE ID: 01651100R HOLE ID: 0168188R HOLE ID: 01701120R HOLE ID: 01521120R  
 TIME DRILLED: \_\_\_\_\_ TIME DRILLED: \_\_\_\_\_ TIME DRILLED: \_\_\_\_\_ TIME DRILLED: \_\_\_\_\_  
 TIME LOGGED: \_\_\_\_\_ TIME LOGGED: \_\_\_\_\_ TIME LOGGED: \_\_\_\_\_ TIME LOGGED: \_\_\_\_\_  
 SOIL TYPE: \_\_\_\_\_ SOIL TYPE: \_\_\_\_\_ SOIL TYPE: \_\_\_\_\_ SOIL TYPE: \_\_\_\_\_

DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN
SURFACE	<u>30120</u>	SURFACE	<u>21280</u>	SURFACE	<u>17720</u>	SURFACE	<u>19790</u>
0"	<u>45590</u>	0"	<u>25010</u>	0"	<u>19490</u>	0"	<u>22870</u>
6"	<u>123040</u>	6"	<u>49130</u>	6"	<u>29060</u>	6"	<u>39100</u>
12"	<u>168210</u>	12"	<u>45630</u>	12"	<u>38870</u>	12"	<u>47820</u>
18"	<u>65880</u>	18"	<u>31290</u>	18"	<u>40720</u>	18"	<u>32390</u>
24"	<u>36050</u>	24"	<u>26880</u>	24"	<u>36780</u>	24"	<u>26290</u>
<del>30"</del> 28"	<u>32270</u>	<del>30"</del> 28"	<u>26290</u>	30"	<u>35010</u>	<del>30"</del> 28"	<u>26030</u>
36"		36"		36"		36"	
42"		42"		42"		42"	
48"		48"		48"		48"	
54"		54"		54"		54"	
60"		60"		60"		60"	
66"		66"		66"		66"	
72"		72"		72"		72"	
78"		78"		78"		78"	
84"		84"		84"		84"	
90"		90"		90"		90"	
96"		96"		96"		96"	

REMARKS: ASPHALT 6" TO 8" THICK IS SHIELDING  
THE CONTAMINATION". ALL READINGS  
IN cpm" - BACKGROUND BORE HOLE  
AVE. 23,000 CPM. HOLES DRILLED  
UNTIL ROCKS WERE ENCOUNTERED.



**BOREHOLE LOG**

LOGGING CREW: ERNIE COUCH SHEET 5 OF 5 PAGE 5  
J. INNIS DATE: 7/2/84  
LEON BEMILL PROPERTY ID: DV-020  
 INSTRUMENT ID NO. L.D. 2220 # 37982 4/4410 # 16523 AREA: DURANGO COLORADO

NOTES: 1. ALL HOLES ARE 4" DIA. UNLESS OTHERWISE NOTED.  
 2. RECORD UNUSUAL CONDITIONS, SUCH AS THE PRESENCE OF WATER IN BOREHOLES AND DEPTH, CASING TYPE AND THICKNESS IF USED, CONCRETE CORES AND THICKNESS, OBSTRUCTIONS, UTILITIES, ETC., IN THE REMARKS SECTION.

HOLE ID: <u>0+50+50R</u>	HOLE ID: <u>0+65+50R</u>	HOLE ID: <u>0+38+68R</u>	HOLE ID: _____
TIME DRILLED: _____	TIME DRILLED: _____	TIME DRILLED: _____	TIME DRILLED: _____
TIME LOGGED: _____	TIME LOGGED: _____	TIME LOGGED: _____	TIME LOGGED: _____
SOIL TYPE: _____	SOIL TYPE: _____	SOIL TYPE: _____	SOIL TYPE: _____

DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN
SURFACE		SURFACE		SURFACE		SURFACE	
0"	15700	0"	15790	0"	14000	0"	
6"	20560	6"	19780	6"	15440	6"	
12"	20380	12"	20390	12"	17820	12"	
18"	19370	18"	21320	18"	18310	18"	
24"	20180	24"	21070	24"	21670	24"	
30"/27"	20470	30"/28"	21110	30"	22840	30"	
36"		36"		36"		36"	
42"		42"		42"		42"	
48"		48"		48"		48"	
54"		54"		54"		54"	
60"		60"		60"		60"	
66"		66"		66"		66"	
72"		72"		72"		72"	
78"		78"		78"		78"	
84"		84"		84"		84"	
90"		90"		90"		90"	
96"		96"		96"		96"	

REMARKS: ASPHALT 6" TO 8" THICK IS SHIELDING  
THE CONTAMINATION". ALL READINGS  
IN "CPM" - BACKGROUND BORE HOLE AVE.  
23,000 CPM. HOLES DRILLED UNTIL ROCKS  
WERE ENCOUNTERED.

# BOREHOLE LOG

LOGGING CREW:

Ernest Couch
Edward Schultz
Julius B. Bailey

 INSTRUMENT ID NO LD2220 #29824440 #76528

Supplemental Information

 SHEET 1 OF 1 PAGE 1

 DATE: October 29, 1984

 PROPERTY ID: DU-020

 AREA: Durango, Colorado.

- NOTES: 1. ALL HOLES ARE 4" DIA. UNLESS OTHERWISE NOTED.  
 2. RECORD UNUSUAL CONDITIONS, SUCH AS THE PRESENCE OF WATER IN BOREHOLES AND DEPTH, CASING TYPE AND THICKNESS IF USED, CONCRETE CORES AND THICKNESS, OBSTRUCTIONS, UTILITIES, ETC., IN THE REMARKS SECTION.

HOLE ID: <u>0+100+110R</u>		HOLE ID: <u>0+100+60R</u>		HOLE ID: <u>0+100+40R</u>		HOLE ID: _____	
TIME DRILLED: _____		TIME DRILLED: _____		TIME DRILLED: _____		TIME DRILLED: _____	
TIME LOGGED: _____		TIME LOGGED: _____		TIME LOGGED: _____		TIME LOGGED: _____	
SOIL TYPE: _____		SOIL TYPE: _____		SOIL TYPE: _____		SOIL TYPE: _____	
DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN
SURFACE		SURFACE		SURFACE		SURFACE	
0"	<u>21500</u>	0"	<u>25010</u>	0"	<u>22730</u>	0"	
6"	<u>20260</u>	6"	<u>22260</u>	6"	<u>20980</u>	6"	
12"	<u>19380</u>	12"	<u>21290</u>	12"	<u>19470</u>	12"	
<del>18" 14</del>	<u>19060</u>	<del>18" 15</del>	<u>20750</u>	<del>18" 15</del>	<u>20270</u>	18"	
24"		24"		24"		24"	
30"		30"		30"		30"	
36"		36"		36"		36"	
42"		42"		42"		42"	
48"		48"		48"		48"	
54"		54"		54"		54"	
60"		60"		60"		60"	
66"		66"		66"		66"	
72"		72"		72"		72"	
78"		78"		78"		78"	
84"		84"		84"		84"	
90"		90"		90"		90"	
96"		96"		96"		96"	

REMARKS:

Show holes between bldgs  
background is 23000 cpm, all counts in  
CPM.



MORRISON  
KNUDSEN

OUTDOOR GAMMA SCREENING  
SURVEY DATA SHEET

LOGGING CREW:

ERNEST COUCH  
EDWARD SCHULTZ  
LEON BENALLY

SHEET 1 OF 5 PAGE 1

DATE: 6/29/84

PROPERTY ID: DU-020

INSTRUMENT ID NO.: LUD. 2220 #3782 w/410 #16528

BACKGROUND CALCULATION:

#1 \_\_\_\_\_ + #2 \_\_\_\_\_ + #3 \_\_\_\_\_ = \_\_\_\_\_ + 3 = 11,500 COUNTS/1MIN

AREA: _____		AREA: _____		AREA: _____		AREA: _____	
POINT ID	READING COUNTS/1MIN	POINT ID	READING COUNTS/1MIN	POINT ID	READING COUNTS/1MIN	POINT ID	READING COUNTS/1MIN
D100+00R	11320 11160	D150+20R	14240 14120	D150+50R	15720 14680	D150+80R	13310 13970
D110+00R	12700 11730	D160+20R	14350 14480	D160+50R	15060 15320	D160+80R	16280 16420
D120+00R	11210 11000	D170+20R	16270 15600	D170+50R	16500 15480	D170+80R	17260 16650
D130+00R	11930 11650	D100+30R	12130 12650	D100+60R	12330 12670	D100+88R	12060 15610
D140+00R	12730 13020	D110+30R	12800 12700	D110+60R	12630 12830	D110+88R	16080 14160
D150+00R	14270 13420	D120+30R	12120 12480	D120+60R	13070 13270	D120+88R	16700 12470
D160+00R	13560 13370	D130+30R	13240 12700	D130+60R	13400 12640	D130+88R	16310 13930
D170+00R	15160 14670	D140+30R	12310 12710	D140+60R	12620 13360	D140+88R	12660 14010
D180+00R	15990 15680	D150+30R	15190 14140	D150+60R	31920 19060	D150+90R	19070 18810
D190+00R	17820 17930	D160+30R	15060 14480	D160+60R	14610 15610	D160+90R	14350 15530
D200+00R	17230 16980	D170+30R	15740 15830	D170+60R	16180 15860	D170+90R	16850 17710
D100+10R	12220 11930	D100+40R	12300 12120	D100+70R	12170 12790	D150+95R	19520 19600
D110+10R	11590 9650	D110+40R	12110 12500	D110+70R	12760 12530	D155+95R	16700 16660
D120+10R	10650 11090	D120+40R	12430 12730	D120+70R	13280 12790	D160+95R	14000 16050
D130+10R	12420 11890	D130+40R	12160 12430	D130+70R	13230 13260	D165+95R	17540 12470
D140+10R	14340 13230	D140+40R	12350 13030	D140+70R	13320 12890	D170+95R	19160 12820
D150+10R	14320 13640	D150+40R	14580 14900	D150+70R	15480 14880	D175+95R	14950 14920
D160+10R	15000 14770	D160+40R	14770 15510	D160+70R	15280 15110	D175+90R	17130 18600
D170+10R	15160 14670	D170+40R	14770 16320	D170+70R	14260 13630	D150+100R	18910 16810
D100+20R	12520 11950	D100+50R	12120 12160	D100+80R	13240 12560	D100+100R	18500 18110
D110+20R	12160 12520	D110+50R	12050 12570	D110+80R	13190 13410	D110+100R	17960 17370
D120+20R	12360 12500	D120+50R	12350 12440	D120+80R	13000 13410	D175+100R	16120 14030
D130+20R	12790 12540	D130+50R	12260 11920	D130+80R	13870 14190	D150+110R	20020 18930
D140+20R	13120 12930	D140+50R	13160 13740	D140+80R	13670 14150	D160+110R	16560 16540

REMARKS: "ASPHALT 6" TO 8" THICK IS SHIELDING  
THE CONTAMINATION". ALL MEASUREMENTS  
ARE IN "CPM" TOP - CONTACT READINGS  
BOTTOM - 1 METER READINGS.



# **OUTDOOR GAMMA SCREENING SURVEY DATA SHEET**

LOGGING CREW: ERNEST CAICH  
EDWARD SCHULTZ  
LEVON BENALLY

SHEET 2 OF 5 PAGE 2  
 DATE: 6/29/84  
 PROPERTY ID: DV-020

INSTRUMENT ID NO.: LUD-2220 #31982 w/4910 #16528

BACKGROUND CALCULATION:

#1 \_\_\_\_\_ + #2 \_\_\_\_\_ + #3 \_\_\_\_\_ = \_\_\_\_\_ - 3 = 11,500 COUNTS/1MIN

AREA: _____		AREA: _____		AREA: _____		AREA: _____	
POINT ID	READING COUNTS/1MIN	POINT ID	READING COUNTS/1MIN	POINT ID	READING COUNTS/1MIN	POINT ID	READING COUNTS/1MIN
0170H10R	17090	01100H10R	23750				
	16930		26160				
0175H10R	15860	01100H10R	23850				
	14710		22700				
0150H10R	20470	01100H10R	23700				
	19570		26670				
0160H10R	15310	01100H10R	23830				
	16470		26700				
0120H10R	16910	01100H10R	24410				
	17170		24310				
0175H10R	14670	01100H10R	23280				
	14250		24240				
0150H10R	18230	01100H10R	22100				
	17580		23430				
0160H10R	15620	01100H10R	22070				
	17060		21840				
0170H10R	27010	01100H10R	21620				
	19960		22000				
0175H10R	14910	01100H10R	21020				
	15900		21870				
0150H10R	17660						
	17340						
0160H10R	16020	01100H10R	14260				
	16710		12010				
0170H10R	24160	01100H10R	13710				
	17560		12330				
0175H10R	15900	0120H10R	12870				
	14930		11530				
0150H10R	15360	0130H10R	13440				
	14860		11700				
0160H10R	16580	0140H10R	14920				
	16070		12550				
0170H10R	16860	0180H10R	15350				
	15530		15330				
0175H10R	14570	0190H10R	15110				
	15080		15170				
01100H10R	21970						
	24730						
01100H10R	23330						
	25420						
01100H10R	22750						
	27570						
01100H10R	23680						
	26640						
01100H10R	23300						
	25820						

REMARKS: ASPHALT 6" TO 8" THICK IS SHIELDING.  
THE CONTAMINATION". ALL MEASUREMENTS ARE  
IN "CPM" TOP - CONTACT READINGS  
BOTTOM - 1 METER READINGS.



## BOREHOLE LOG

LOGGING CREW: ERNIE COUCHSHEET 3 OF 5 PAGE 3F. INNISDATE: 6/29/84LEVON BENALLYPROPERTY ID: DV-020INSTRUMENT ID NO. LWD 2220 #3782 w/440 #16528 AREA: DURANGO, COLORADO

NOTES: 1. ALL HOLES ARE 4" DIA. UNLESS OTHERWISE NOTED.

2. RECORD UNUSUAL CONDITIONS, SUCH AS THE PRESENCE OF WATER IN BOREHOLES AND DEPTH, CASING TYPE AND THICKNESS IF USED, CONCRETE CORES AND THICKNESS, OBSTRUCTIONS, UTILITIES, ETC., IN THE REMARKS SECTION.

①		②		③		④	
HOLE ID: <u>0150160R</u>		HOLE ID: <u>01701130R</u>		HOLE ID: <u>01701140R</u>		HOLE ID: <u>01701125R</u>	
TIME DRILLED: _____		TIME DRILLED: _____		TIME DRILLED: _____		TIME DRILLED: _____	
TIME LOGGED: _____		TIME LOGGED: _____		TIME LOGGED: _____		TIME LOGGED: _____	
SOIL TYPE: _____		SOIL TYPE: _____		SOIL TYPE: _____		SOIL TYPE: _____	
DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN
SURFACE		SURFACE		SURFACE		SURFACE	
0"	<u>37920</u>	0"	<u>35690</u>	0"	<u>33980</u>	0"	<u>33620</u>
6"	<u>82560</u>	6"	<u>100630</u>	6"	<u>85790</u>	6"	<u>74560</u>
12"	<u>26340</u>	12"	<u>121170</u>	12"	<u>107200</u>	12"	<u>116160</u>
18"	<u>23240</u>	18"	<u>46910</u>	18"	<u>39490</u>	18"	<u>49000</u>
24"	<u>24240</u>	24"	<u>29920</u>	24"	<u>28780</u>	24"	<u>29530</u>
30"		<del>30"</del> <u>27"</u> <u>26310</u>		<del>30"</del> <u>29"</u> <u>27480</u>		30"	<u>27080</u>
36"		36"		36"		36"	
42"		42"		42"		42"	
48"		48"		48"		48"	
54"		54"		54"		54"	
60"		60"		60"		60"	
66"		66"		66"		66"	
72"		72"		72"		72"	
78"		78"		78"		78"	
84"		84"		84"		84"	
90"		90"		90"		90"	
96"		96"		96"		96"	

REMARKS: "ASPHALT 6" TO 8" THICK IS SHIELDING  
THE CONTAMINATION". ALL READINGS  
IN "CPM" - BACKGROUND BORE HOLE  
AVE. 23,000 CPM. HOLES DRILLED UNTIL  
ROCKS WERE ENCOUNTERED.

# BOREHOLE LOG

LOGGING CREW: ERNIE COUCH  
J. LINDS  
LEON BENALLY

SHEET 4 OF 5 PAGE 4  
 DATE: 6/29/84  
 PROPERTY ID: DV-020

INSTRUMENT ID NO. 402220 #3792 w/4410 #16528 AREA: DURANGO, COLORADO

- NOTES: 1. ALL HOLES ARE 4" DIA. UNLESS OTHERWISE NOTED.  
 2. RECORD UNUSUAL CONDITIONS, SUCH AS THE PRESENCE OF WATER IN BOREHOLES AND DEPTH, CASING TYPE AND THICKNESS IF USED, CONCRETE CORES AND THICKNESS, OBSTRUCTIONS, UTILITIES, ETC. IN THE REMARKS SECTION.

HOLE ID: <u>01651100R</u>		HOLE ID: <u>0168188R</u>		HOLE ID: <u>01704120R</u>		HOLE ID: <u>01521120R</u>	
TIME DRILLED: _____		TIME DRILLED: _____		TIME DRILLED: _____		TIME DRILLED: _____	
TIME LOGGED: _____		TIME LOGGED: _____		TIME LOGGED: _____		TIME LOGGED: _____	
SOIL TYPE: _____		SOIL TYPE: _____		SOIL TYPE: _____		SOIL TYPE: _____	
DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN
SURFACE	<u>30120</u>	SURFACE	<u>21280</u>	SURFACE	<u>17720</u>	SURFACE	<u>19790</u>
0"	<u>45590</u>	0"	<u>25010</u>	0"	<u>19490</u>	0"	<u>22870</u>
6"	<u>123040</u>	6"	<u>49130</u>	6"	<u>29060</u>	6"	<u>39100</u>
12"	<u>168210</u>	12"	<u>45630</u>	12"	<u>38870</u>	12"	<u>47820</u>
18"	<u>65880</u>	18"	<u>31290</u>	18"	<u>40720</u>	18"	<u>32390</u>
24"	<u>36050</u>	24"	<u>26880</u>	24"	<u>36780</u>	24"	<u>26290</u>
30"	<u>32220</u>	30"	<u>26290</u>	30"	<u>35010</u>	30"	<u>26030</u>
36"		36"		36"		36"	
42"		42"		42"		42"	
48"		48"		48"		48"	
54"		54"		54"		54"	
60"		60"		60"		60"	
66"		66"		66"		66"	
72"		72"		72"		72"	
78"		78"		78"		78"	
84"		84"		84"		84"	
90"		90"		90"		90"	
96"		96"		96"		96"	

REMARKS: ASPHALT 6" TO 8" THICK IS SHIELDING  
THE CONTAMINATION". ALL READINGS  
IN cpm" - BACKGROUND BORE HOLE  
AVE. 23,000 CPM. HOLES DRILLED  
UNTIL ROCKS WERE ENCOUNTERED.

**BOREHOLE LOG**

LOGGING CREW: ERNIE COUCH SHEET 5 OF 5 PAGE 5  
J. INNIS DATE: 7/2/84  
LEVON BENALLY PROPERTY ID: DV-020  
 INSTRUMENT ID NO. LWD 2220 # 3782 4/4410 # 16523 AREA: DURANGO COLORADO

NOTES: 1. ALL HOLES ARE 4" DIA. UNLESS OTHERWISE NOTED.  
 2. RECORD UNUSUAL CONDITIONS, SUCH AS THE PRESENCE OF WATER IN BOREHOLES AND DEPTH, CASING TYPE AND THICKNESS IF USED, CONCRETE CORES AND THICKNESS, OBSTRUCTIONS, UTILITIES, ETC., IN THE REMARKS SECTION.

HOLE ID: <u>0+50+50R</u>	HOLE ID: <u>0+65+50R</u>	HOLE ID: <u>0+38+68R</u>	HOLE ID: _____
TIME DRILLED: _____	TIME DRILLED: _____	TIME DRILLED: _____	TIME DRILLED: _____
TIME LOGGED: _____	TIME LOGGED: _____	TIME LOGGED: _____	TIME LOGGED: _____
SOIL TYPE: _____	SOIL TYPE: _____	SOIL TYPE: _____	SOIL TYPE: _____

DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN
SURFACE		SURFACE		SURFACE		SURFACE	
0"	15700	0"	15790	0"	14000	0"	
6"	20560	6"	19780	6"	15440	6"	
12"	20380	12"	20390	12"	17820	12"	
18"	19370	18"	21320	18"	18310	18"	
24"	20180	24"	21070	24"	21670	24"	
30"/27"	20470	30"/28"	21110	30"	22840	30"	
36"		36"		36"		36"	
42"		42"		42"		42"	
48"		48"		48"		48"	
54"		54"		54"		54"	
60"		60"		60"		60"	
66"		66"		66"		66"	
72"		72"		72"		72"	
78"		78"		78"		78"	
84"		84"		84"		84"	
90"		90"		90"		90"	
96"		96"		96"		96"	

REMARKS: Asphalt 6" to 8" thick is <sup>SHIELDING</sup> sealing the contamination. All Readings In "cpm" - Background Bore Hole Ave. 23,000 cpm. Holes Drilled until Rocks were Encountered.



# BOREHOLE LOG

LOGGING CREW:

Ernest Couch

Edward Schultz

Julius B. Bailey

INSTRUMENT ID NO ND2220 #3982440 #16528

Supplemental Information

SHEET 1 OF 1 PAGE 1

DATE: October 29, 1984

PROPERTY ID: DO-020

AREA: Durango, Colorado.

- NOTES: 1. ALL HOLES ARE 4" DIA. UNLESS OTHERWISE NOTED.  
2. RECORD UNUSUAL CONDITIONS, SUCH AS THE PRESENCE OF WATER IN BOREHOLES AND DEPTH, CASING TYPE AND THICKNESS IF USED, CONCRETE CORES AND THICKNESS, OBSTRUCTIONS, UTILITIES, ETC., IN THE REMARKS SECTION.

HOLE ID: <u>Q+100+11R</u>		HOLE ID: <u>Q+100+60R</u>		HOLE ID: <u>Q+100+40R</u>		HOLE ID: _____	
TIME DRILLED: _____		TIME DRILLED: _____		TIME DRILLED: _____		TIME DRILLED: _____	
TIME LOGGED: _____		TIME LOGGED: _____		TIME LOGGED: _____		TIME LOGGED: _____	
SOIL TYPE: _____		SOIL TYPE: _____		SOIL TYPE: _____		SOIL TYPE: _____	
DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN	DEPTH	COUNTS/.1MIN
SURFACE		SURFACE		SURFACE		SURFACE	
0"	<u>21500</u>	0"	<u>25010</u>	0"	<u>22730</u>	0"	
6"	<u>20260</u>	6"	<u>22260</u>	6"	<u>20980</u>	6"	
12"	<u>19380</u>	12"	<u>21290</u>	12"	<u>19470</u>	12"	
<u>18 1/4</u>	<u>19060</u>	<u>18 1/5</u>	<u>20750</u>	<u>18 1/5</u>	<u>20270</u>	18"	
24"		24"		24"		24"	
30"		30"		30"		30"	
36"		36"		36"		36"	
42"		42"		42"		42"	
48"		48"		48"		48"	
54"		54"		54"		54"	
60"		60"		60"		60"	
66"		66"		66"		66"	
72"		72"		72"		72"	
78"		78"		78"		78"	
84"		84"		84"		84"	
90"		90"		90"		90"	
96"		96"		96"		96"	

REMARKS:

Shovel holes between bldgs.  
background is 23000 cpm, all counts in  
CPM.



**MORRISON-KNUDSEN COMPANY, INC.**

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