

NOTE:
SUPPLEMENTAL
STANDARDS

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

Radiological and Engineering Assessment

Vicinity Property No. SLC 053 Rev. 1

Remedial Actions
Contractor
for the
Uranium Mill Tailings
Remedial Actions
Project



MK-FERGUSON COMPANY
A MORRISON KNUDSEN COMPANY

URFU-9

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Vicinity Property No. SLC 053 Rev. 1

RADIOLOGICAL AND ENGINEERING ASSESSMENT

SL-053

AUGUST 26, 1986

PREPARED BY:

MK-FERGUSON COMPANY

FOR:

U.S. DEPARTMENT OF ENERGY

URANIUM MILL TAILINGS REMEDIAL ACTIONS PROJECT

ALBUQUERQUE, NEW MEXICO

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Radiological and Engineering Assessment: Property SL-053-S

1.0 OWNER/OWNER ADDRESS INFORMATION

ADDRESS: 3585 South 500 West OWNER'S NAME: A & R Sausage Company

Salt Lake City, Utah 84115 OWNER'S ADDRESS: (IF DIFFERENT)

Same

FACILITY NAME: A & R Meats

Same

TELEPHONE NUMBER (801) 262-2431
(if available)

TELEPHONE NUMBER _____
(if available)

2.0 PROPERTY DATA:

Structures and utilities are shown on Drawing SL-053-010.

Property Use: Single Residence _____; Commercial X; School _____
Multiple Residence _____; Vacant Lot _____; Church _____; Open Land _____

Age of structures: Less than 50 years old _____;
Greater than 50 years old _____ (attach form _____).

Adjacent included/spillover vicinity properties:

North - V.P. # N/A
South - V.P. # N/A
East - V.P. # N/A
West - V.P. # N/A

Interior Involvement: Yes X; No _____

Major Structural X; Minor Structural _____; Dislocation _____

3.0 RADIOLOGICAL DATA

3.1 Gamma Exposure Rate Survey

3.1.1 Survey Method

Outdoor and indoor gamma surveys were conducted in accordance with the RAC Procedure 019. These surveys were conducted in areas identified in the inclusion survey (Results of the Radiological Survey at Vicinity Property SL-053, ORNL), and in other areas as described in this document.

3.1.2 Survey Results

Surface gamma readings on the property range from 10 to 133 micro R/hr (Table 3.1). This may be compared with the background for the Salt Lake City site of 8 micro R/hr. Indoor surface gamma readings range from 9 to 150 micro R/hr. All readings taken inside are shown in Table 3.3.

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 Survey Results

Contamination was found in 14 of the 43 outdoor holes augered. The location and depth of the contamination is described in Table 3.2 and is shown on Drawing SL-053-015.

3.3 Radon/Radon Daughter Survey

A working level measurement was taken inside the smokehouse on 3/8/85. The sample indicated 0.003 WL.

3.4 Air Samples

A high volume air sample taken under the office area indicated activity almost four times the restricted MPC for Th-230 as stated in 10CFR20 (2×10^{-12} uCi/ml).

Air activity within 1 hour of drawing sample:

1.44×10^{-10} uCi/ml

Air activity 24 hours after drawing sample:

7.83×10^{-12} uCi/ml

3.5 Estimated Extent of Contamination

Four areas of contamination were identified in the survey.

Area A is two circles of contamination located in a 5-foot radius, as shown on Figure SL-053-015, and is contaminated to a depth of 18 inches.

Area B is divided for convenience into Areas B and B-1. These sub-areas are north and west of the building complex and include the freezer and corn dog buildings within the building complex. Areas B and B-1 are shown on Figure SL-053-015; the estimated depth of contamination for Area B is 60 inches and for Area B-1 is 36 inches.

Radiological and Engineering Assessment: Property SL-053-S

Area C is along the fence at the north property line, as shown on Figure SL-053-015. The estimated depth of contamination is 6 inches.

Area D is under the main office and is contaminated to a depth of 9 inches.

One area in the main process building, at the smokehouse, exceeds the limit for interior gamma radiation (20 micro R/hr above background). This area is in the west end of the building and is adjacent to the contaminated deposit identified as Area B. This contaminated material is as deep as 60 inches against the west side of Building 3 and may be contributing to the elevated readings inside the building. The floor of the building in question is constructed of brick. A portion of the elevated readings may be attributable to the naturally occurring radioactivity in the brick. The radon daughter concentration in air does not exceed the permissible levels; therefore, Supplemental Standards are recommended.

The estimated volume of the contaminated material is approximately 240 cubic yards. The concentration of Ra-226 in the soil is estimated to range from 15 to 150 pCi/g with an average of about 80 pCi/g. The gamma levels inside this portion of the smokehouse range from 17 to 40 micro R/hr on contact with the floor. (Background for the Salt Lake City site is 6 to 11 micro R/hr.)

The owner has stated on many occasions that he does not want us to excavate this area if at all possible. He does not want to have his business shut down for such repairs. He is very emphatic about wanting us to apply Supplemental Standards in this area.

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report
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Radiological and Engineering Assessment: Property SL-053-S

Table 3.1
OUTDOOR GAMMA SURVEY
Property SL-053

POINT	MICRO R/hr
C,+00	21
D,+00	14
F,+50	12
E,+50	16
D,+50	133
C,+40	60
B,+50	54
A,+50	18
B,+100	90
B+10,+100	60
B,+150	27
B+10,+150	52
C,+200	10
B,+200	13
A,+200	30
A,+250	21
B,+250	11
A,+300	10
A+25,+500	16
B+25,+475	12
B,+425	14

Radiological and Engineering Assessment: Property SL-053-S

Table 3.2
BOREHOLE SURVEY
Property SL-053

HOLE	LOCATION	CONTAMINATION DEPTH
1	(A+25,0+300)	0-18"
2	(B+10,0+350)	---
3	(B+5,0+400)	---
4	(B+15,0+450)	---
5	(A+15,0+475)	---
6	(A+12,0+500)	---
7	(A+13,0+525)	---
8	(A+12,0+550)	---
9	(A+10,0+570)	---
10	(A+0,0+600)	---
11	(A+10,0+625)	---
12	(A+12,0+650)	---
13	(A+10,0+670)	---
14	(A+10,0+700)	---
15	(B+0,0+450)	---
16	(C+20,0+350)	---
17	(D+25,0+525)	---
18	(D+20,0+385)	---
19	(F+0,0+525)	---
20	(G+5,0+390)	---

Table 3.2 - Cont'd.
BOREHOLE SURVEY
Property SL-053

HOLE	LOCATION	CONTAMINATION DEPTH
21	(F+20,0+390)	--
22	(F+20,0+465)	--
23	(F+20,0+550)	--
24	(E+0,0+560)	--
25	(C+20,0+575)	--
26	(B+30,0+270)	--
27	(C+0,0+165)	0-54"
28	(B+40,0+180)	0-42"
29	(A+30,0+150)	0-12"
30	(B+15,0+100)	0-42"+
31	(A+25,0+25)	0-60"+
32	(B+10,0+20)	0-54"
33	(C+05,0+15)	0-48"
34	(D+05,0+25)	0-54"
35	(E+40,0+25)	0-30"
36	(F+20,0+35)	12-36"
37	(F+40,0+40)	18-36"
38	(G+25,0+30)	--
39	(G+05,0+45)	--

Radiological and Engineering Assessment: Property SL-053-S

Table 3.2 - Cont'd.
BOREHOLE SURVEY
Property SL-053

HOLE	LOCATION	CONTAMINATION DEPTH
40	(G+05,0+100)	--
41	(F+00,0+120)	--
42	(E+15,0+95)	0-30"+
43	(D+20,0+75)	0-60"

Radiological and Engineering Assessment: Property SL-053-S

Table 3.3
INTERIOR GAMMA SCREENING
Property SL-053
Building #1 (Office)

POINT	MICRO R/hr
Room 1	20
	24
	25
	24
	20
	20
	19
	20
	18
	20
Room 2	21
	27
Room 3	23
	22
	23
	29
Room 4	27
	22
	20
	27
	20

Radiological and Engineering Assessment: Property SL-053-S

Table 3.3 - Cont'd.
INTERIOR GAMMA SCREENING
Property SL-053
Building #1 (Office)

POINT	MICRO R/hr
Room 5	20
	22
	20
Room 6	22
	22
Room 7	22
	23
Room 8	23
Room 9	20
	21
Room 10	21
	22
Room 11	20
Room 12	30
	22

Radiological and Engineering Assessment: Property SL-053-S

Table 3.3 - Cont'd.
INTERIOR GAMMA SCREENING
Property SL-053
Building #2 (North Process)

POINT	MICRO R/hr
Room 1 (Shipping)	17
	17
	16
	17
	23
	17
Room 2 (Packaging)	18
	18
	16
	17
	16
	16
	16
	16
	17
Room 3 (Office)	17
Room 4 (Freezer)	150
Room 5 (Corn Dog Area)	19
	28
	20
	16

Radiological and Engineering Assessment: Property SL-053-S

Table 3.3 - Cont'd.
INTERIOR GAMMA SCREENING
Property SL-053
Building #2 (North Process)

POINT	MICRO R/hr
Room 6 (Bacon Cooler)	9
	9
Room 7 (Storage Cooler)	100
	140
	35

Radiological and Engineering Assessment: Property SL-053-S

Table 3.3 - Cont'd.
INTERIOR GAMMA SCREENING
Property SL-053
Building #3 (Main Process)

POINT	MICRO R/hr
Room 1 (Smokehouse)	31
	24
	35
	25
	20
	22
	29
	40
	26
	22
	19
	22
	19
	20
Room 2	19
	20
	20
	18
	17
	20
	17
	17

Radiological and Engineering Assessment: Property SL-053-S

Table 3.3 - Cont'd.
INTERIOR GAMMA SCREENING
Property SL-053
Building #3 (Main Process)

POINT	MICRO R/hr
Room 3	18
	22
	19
Room 4	19
	19
	18
	20
	20
Room 5	17
	17
	17
Room 6	18
	19
	17
Room 8	17
Room 9	21
	20
	18
Room 10	19
	18
	18

Radiological and Engineering Assessment: Property SL-053-S

Table 3.3 - Cont'd.
INTERIOR GAMMA SCREENING
Property SL-053
Building #3 (Main Process)

POINT	MICRO R/hr
Room 18	18
	19
	18
	18
	18
	18
	18

Radiological and Engineering Assessment: Property SL-053-S

Table 3.3 - Cont'd.
INTERIOR GAMMA SCREENING
Property SL-053
Building #4 (South Process)

POINT	MICRO R/hr
Room 1	19
	19
	20
Room 2	19
	19
	18
	18
Room 3	16
	17
	16
	16
Room 4	9
	9
	9
Room 5	17
	18
	17
	17

4.0 ENGINEERING ASSESSMENT

Work to be performed under recommended Option 2 is shown on Drawings SL-053-020 through SL-053-023 inclusive. Estimated quantities are shown in Table 4.1.

Occupant relocation: Required _____; Not Required X if Supplemental Standards are applied.

4.1 Remedial Action Options (Complex Properties Only)

Three options were evaluated for property SL-053:

Option - 1. No action should be taken.

Option - 2. Partial decontamination of the property, including retrieval of the contaminated material, complete demolition of the storage cooler and corn dog building, construction of new corridor for existing rail system, compensation to owner for the storage cooler and corn dog building, compensation to owner for labor costs saved by not installing a new gas tank. Supplemental Standards to be applied inside the smokehouse area of the process building.

The following work will be required under this option:

- o Removal of landscaping in remedial action areas.
- o Removal of chain link fences and gates, concrete curbs and concrete sidewalks in remedial action areas.
- o Removal of gasoline tank and pump, horseshoe pit posts and volleyball poles, precast handhole.
- o Protect various utilities and structures within and adjacent to remedial action areas.
- o Replace clay sewer lines.
- o Demolish storage cooler and corn dog building.
- o Construct new corridor to house existing overhead meat rail system.
- o Compensate owner for building that owner is to rebuild at new location.
- o Construct new foundations and piers to support freezer on north side of building.
- o Remove existing and construct new crawl space access pit.

2

- o Underpin patio footer, remove existing and construct new concrete piers, remove and replace patio slab, remove and reinstall brick sidewalks.
- o Remove additional material from under the office building. △
2
- o Support flagpole and concrete base.
- o Excavate areas to depths required.
- o Backfill flower beds with compacted common fill, 12 inches of topsoil and top with 3 inches of white rock chips. Backfill grassed areas with compacted common fill, 6 inches of topsoil and sod. Backfill gravel areas with compacted common fill, 12 inches of aggregate base course and top with 3 inches of 3/4" diameter crushed stone. Backfill dirt area in crawl space under office building with compacted common fill. Backfill concrete sidewalk areas with compacted common fill, 6 inches of structural fill, and pour new 4 inch thick concrete sidewalk.
- o Compensate owner for labor costs saved by not installing a new gas tank.
- o Replace landscaping, chain link fence and gates.
- o Replace concrete curbs.
- o Reinstall horseshoe pit posts, volleyball poles and precast handhole.
- o Backfill office building slab with grout and concrete. △
2

Option - 3. Partial decontamination of the property, including retrieval of the contaminated material, complete demolition and restoration of the storage cooler and corn dog building and compensation to owner for labor costs saved by not installing a new gas tank. Supplemental Standards to be applied inside the smokehouse area of the process building.

- o The work to be performed for Option 3 is the same as that previously detailed for Option 2, except that the corridor construction is deleted, and complete reconstruction of the storage cooler and corn dog building is added in lieu of compensation to owner.

Remedial Action Costs

Estimated costs for the activities associated with Options 2 and 3 are detailed in Tables 4.1 and 4.2 respectively. Costs include labor, insurance, material, equipment, supplies, overhead, profit, and contingency. All costs are listed in 1986 dollars. It is anticipated that the time required for the subcontractor to complete the work will be 4 to 6 months.

4.2 Remedial Action Recommendations

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 \$301,000.00.



4.3 Application of Supplemental Standards

It is recommended that Supplemental Standards be applied for the area under the floor in the western one-third of Building 3 (smokehouse area). This recommendation is based on the premise that radon daughter concentrations are below the 0.01 WL guideline. RDC measurements indicated 0.003 and 0.006 WL in March of 1985.

Gamma levels range from 25 to 40 micro R/hr, which is above the 20 micro R/hr above background limit in some parts of the western one-third of Building 3. It is believed that this is due, at least in part, to the large quantities of tailings materials used adjacent to the building on the south and west walls. This point is illustrated by borehole #42 taken no deeper than 30 inches due to an obstruction, but the count rate was increasing with depth and indicated 225,450 cpm at 30 inches. Borehole #43 showed contamination in excess of the 15 pCi/g limit as deep as 60 inches, with a maximum count rate of 571,250 cpm at 30 inches.

At a total of 40 micro R/hr, less the Salt Lake City average background of 8 micro R/hr, a worker spending 40 hours per week in the smokehouse, 50 weeks per year, could receive an annual gamma exposure of 64 millirem. Even this very low exposure will be reduced by some presently unquantified amount due to the removal of the outside contamination directly west of the smokehouse area.

Because the RDC measurements are below the 0.01 WL guidelines and because the gamma readings inside the building will be reduced by the outside excavation, it is felt that Supplemental Standards should be applied. The building is used for commercial purposes and is constantly opened during the day, thus preventing a buildup of radon daughters in the air.

Complete removal of the contaminated material to remain under Supplemental Standards would require:

- o Owner to cease on-site operations.
- o Removal of all equipment in smokehouse, including three stainless steel smokers.

Radiological and Engineering Assessment: Property SL-053-2

- o Removal of glazed block partition walls.
- o Removal of brick floor.
- o Removal of 8 inch thick reinforced concrete floor and trench drains.
- o Excavation of 5'-0" of contaminated material.
- o Backfill with compacted common fill and 6 inches of structural fill.
- o Replacement of reinforced concrete floor slab and trench drains.
- o Replacement of brick floor.
- o Reconstruction of glazed block partition walls.
- o Replacement of equipment, including smokers.

Approximately 240 cubic yards of residual radioactive materials may remain in place under Supplemental Standards. The total estimated cost of excavating these materials, including equipment removal, dismantling the building area, rebuilding after excavation, and restoration, and including reimbursement to the owner for lost revenues during remedial action, is described in Table 4.3. The savings to be realized on this property by applying Supplemental Standards, as described in Table 4.3 is \$217,000.

Since the estimated cost of remedial action under the smokehouse is unreasonably high relative to the long-term benefits, and since any residual radioactive materials do not present a clear present or future hazard, Supplemental Standards shall apply, in compliance with the criteria established in 40 CFR 192.21(d). Section 3.5 of this report contains more information on the application of Supplemental Standards.

Table 4.1
Remedial Action Option Cost Estimates

OPTION 2 COSTS

Activity		Unit Price	Quantity	Estimated Cost	
No.	Activity				
1.1	Machine Excavation, Including Volleyball Pole Removal, Horseshoe Pit Pole Removal, and Removal of Trees and Bushes	3.60	5,290 cy	19,044.00	
1.2	Hand Excavation	26.98	110 cy	2,968.00	
1.3	Hand Excavation Under Office Building	176.26	100 cy	17,626.00	△ 2
1.4	Excavate Office Building Footers	171.82	22 cy	3,780.00	△ 2
2.1	Compacted Common Fill (Machine)	7.32	4,313 cy	31,571.00	
2.2	Compacted Common Fill (Hand)	64.96	108 cy	7,016.00	
2.3	Backfill Office Building with Concrete	80.84	400 cy	32,336.00	△ 2
2.4	Backfill Office Building with Grout	5.43	1,620 cf	8,796.00	△ 2
2.5	Core Drill Grout Holes	37.65	20 ea	753.00	△ 2
3.0	Structural Fill	12.96	49 cy	635.00	
4.0	Topsoil	13.37	375 cy	5,014.00	
5.0	Sod	1.73	2,058 sy	3,560.00	
7.0	Aggregate Base Course	14.77	432 cy	6,381.00	
8.1	3/4" Crushed Stone	14.25	110 cy	1,568.00	

Table 4.1 - Cont'd.
Remedial Action Option Cost Estimates

OPTION 2 COSTS

Activity No.	Activity	Unit Price	Quantity	Estimated Cost	
8.2	White Crushed Stone (Planted Areas)	41.25	8 cy	330.00	
10.1	Remove Concrete Sidewalk	1.93	1,158 sf	2,235.00	
10.2	Remove and Salvage Sidewalk Brick	2.39	597 sf	1,427.00	
10.3	Remove Concrete Curb	5.85	95 lf	556.00	
10.4	Remove Concrete Slab (Patio Floor)	1.95	528 sf	1,030.00	
10.5	Remove Exterior Office Building Supports	40.68	50 ea	2,034.00	△ 2
11.0	Remove Patio Piers and Footings	123.28	3 ea	370.00	
14.0	Remove and Salvage Chain Link Fence	5.34	117 lf	625.00	
15.1	Replace 4" Concrete Sidewalk	1.55	1,158 sf	1,795.00	
15.2	Reinstall Brick Sidewalk	4.34	597 sf	2,591.00	
15.3	Pour New Concrete Curb	4.94	95 lf	469.00	
15.4	Pour 4" Patio Slab	1.56	528 sf	824.00	
15.5	Place Precast Footers for Office Building	169.82	22 ea	3,736.00	△ 2
15.6	Install Beam Seats for Office Building	37.18	44 ea	1,636.00	△ 2
15.7	Install Beams and Posts in Office Building	381.32	22 ea	10,589.00	△ 2
15.8	Grout Beams in Office Building	27.59	22 ea	607.00	△ 2

Table 4.1 - Cont'd.
Remedial Action Option Cost Estimates

OPTION 2 COSTS

Activity		Unit Price	Quantity	Estimated Cost
No.	Activity			
16.1	Construct Concrete Piers (Patio)	1,540.00	3 ea	4,620.00
16.2	Underpin Patio Wall Footing	52.56	31 lf	1,629.00
19.1	Reinstall chain Link Fence	7.47	117 lf	847.00
20.1	Replace Trees	162.37	3 ea	487.00
21.1	Replace Bushes	93.09	15 ea	1,396.00
22.1	Replace Hedges	5.04	40 lf	202.00
24.1	Sawcut Existing Concrete Slab	4.48	34 lf	152.00
24.2	Install 6" Sanitary Sewer	3.51	250 lf	878.00
053.1	Remove Underground Fuel Tank	528.00	LS	528.00
053.2	Remove and Salvage Gas Pump	85.00	LS	85.00
053.3	Demolish Storage Cooler and Corn Dog Building	9,521.00	LS	9,521.00
053.4	Demolish Crawl Space Access Pit	338.00	LS	338.00
053.5	Remove and Salvage Handhole	227.00	LS	227.00
053.6	Construct Corridor	5,264.00	LS	5,264.00
053.7	Construct Crawl Space Access Pit	560.00	LS	560.00
053.8	Construct Freezer Footings and Piers	480.00	LS	480.00
053.9	Temporary Support Freezer	328.00	LS	328.00

Table 4.1 - Cont'd.
Remedial Action Option Cost Estimates

OPTION 2 COSTS

Activity		Unit Price	Quantity	Estimated Cost
No.	Activity			
053.10	Temporary Support Patio Roof	185.00	LS	185.00
053.11	Temporary Support Cast Iron Sewers	130.00	LS	130.00
053.12	Provide Support for Meat Rail System	453.00	LS	453.00
053.13	Provide Support for Flag Pole and Base	68.00	LS	68.00
053.14	Provide Protection for Wood Sheds, Pump House	328.00	LS	328.00
053.15	Reinstall Volleyball Poles, Horseshoe Pits	97.00	LS	97.00
053.16	Reinstall Handhole	97.00	LS	97.00

Subtotal	200,802.00
5% Subcontractor's Contingency	10,040.00
20% Overhead & Profit	<u>40,160.00</u>

Subtotal	251,002.00	
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Appraised value of storage cooler and corn dog building, compensation to owner	50,000.00	
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Total (Rounded)	301,000.00	
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Table 4.2
Remedial Action Option Cost Estimates

OPTION 3 COSTS

Activity No.	Activity	Unit Price	Quantity	Estimated Cost	
1.1	Machine Excavation, Including Volleyball Pole Removal, Horseshoe Pit Pole Removal, Removal of Trees and Bushes	3.60	5,290 cy	19,044.00	
1.2	Hand Excavation	26.98	110 cy	2,968.00	
1.3	Hand Excavation Under Office Building	176.26	100 cy	17,626.00	△ 2
1.4	Excavate Office Building Footers	171.82	22 cy	3,780.00	△ 2
2.1	Compacted Common Fill (Machine)	7.32	4,313 cy	31,571.00	
2.2	Compacted Common Fill (Hand)	64.96	108 cy	7,016.00	
2.3	Backfill Office Building with Concrete	80.84	400 cy	32,336.00	△ 2
2.4	Backfill Office Building with Grout	5.43	1,620 cf	8,796.00	△ 2
2.5	Core Drill Grout Holes	37.65	20 ea	753.00	△ 2
3.0	Structural Fill	12.96	73 cy	946.00	
4.0	Topsoil	13.37	375 cy	5,014.00	
5.0	Sod	1.73	2,058 sy	3,560.00	
7.0	Aggregate Base Course	14.77	384 cy	5,672.00	
8.1	3/4" Crushed Stone	14.25	98 cy	1,397.00	
8.2	White Crushed Stone (Planted Areas)	41.25	8 cy	330.00	

Table 4.2 - Cont'd.
Remedial Action Option Cost Estimates

OPTION 3 COSTS

Activity No.	Activity	Unit Price	Quantity	Estimated Cost	
10.1	Remove Concrete Sidewalk	1.93	1,158 sf	2,235.00	
10.2	Remove and Salvage Sidewalk Brick	2.39	597 sf	1,427.00	
10.3	Remove Concrete Curb	5.85	95 lf	556.00	
10.4	Remove Concrete Slab (Patio Floor)	1.95	528 sf	1,030.00	
10.5	Remove Exterior Office Building Supports	40.68	50 ea	2,034.00	△ 2
11.0	Remove Patio Piers and Footings	123.28	3 ea	370.00	
14.0	Remove and Salvage Chain Link Fence	5.34	117 lf	625.00	
15.1	Replace 4" Concrete Sidewalk	1.55	1,158 sf	1,795.00	
15.2	Reinstall Brick Sidewalk	4.34	597 sf	2,591.00	
15.3	Pour New Concrete Curb	4.94	95 lf	469.00	
15.4	Pour 4" Patio Slab	1.56	528 sf	824.00	
15.5	Place Precast Footers for Office Building	169.82	22 ea	3,736.00	△ 2
15.6	Install Beam Seats in Office Building	37.18	44 ea	1,636.00	△ 2
15.7	Install Beams and Posts in Office Building	481.32	22 ea	10,589.00	△ 2
15.8	Grout Beam Posts	27.59	22 ea	607.00	△ 2

Table 4.2 - Cont'd.
Remedial Action Option Cost Estimates

OPTION 3 COSTS

Activity No.	Activity	Unit Price	Quantity	Estimated Cost
16.1	Construct Concrete Piers (Patio)	1,540.00	3 ea	4,620.00
16.2	Underpin Patio Wall Footing	52.56	31 lf	1,629.00
19.1	Reinstall chain Link Fence	7.47	117 lf	847.00
20.1	Replace Trees	162.37	3 ea	487.00
21.1	Replace Eushes	93.09	15 ea	1,396.00
22.1	Replace Hedges	5.04	40 lf	202.00
24.1	Sawcut Existing Concrete Slab	4.48	34 lf	152.00
24.2	Install 6" Sanitary Sewer	3.51	250 lf	878.00
053.1	Remove Underground Fuel Tank	528.00	LS	528.00
053.2	Remove and Salvage Gas Pump	85.00	LS	85.00
053.3	Demolish Storage Cooler and Corn Dog Building	9,521.00	LS	9,521.00
053.4	Demolish Crawl Space Access Pit	338.00	LS	338.00
053.5	Remove and Salvage Handhole	227.00	LS	227.00
053.6	Construct Storage Cooler and Corn Dog Building	56,369.00	LS	56,369.00
053.7	Construct Crawl Space Access Pit	560.00	LS	560.00

2

Radiological and Engineering Assessment: Property SL-053-S

Table 4.2 - Cont'd.
Remedial Action Option Cost Estimates

OPTION 3 COSTS

Activity		Unit Price	Quantity	Estimated Cost
No.	Activity			
053.8	Construct Freezer Footings and Piers	480.00	LS	480.00
053.9	Temporary Support Freezer	328.00	LS	328.00
053.10	Temporary Support Patio Roof	185.00	LS	185.00
053.11	Temporary Support Cast Iron Sewers	130.00	LS	130.00
053.12	Provide Support for Flag Pole and Base	68.00	LS	68.00
053.13	Provide Protection for Wood Sheds, Pump House	328.00	LS	328.00
053.14	Reinstall Volleyball Poles, Horseshoe Pits	97.00	LS	97.00
053.15	Reinstall Handhole	97.00	LS	97.00

Subtotal	250,885.00
5% Subcontractor's Contingency	12,544.00
20% Overhead & Profit	<u>50,177.00</u>

Subtotal	<u>313,606.00</u>
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Labor for installing gas tank, compensation to owner	<u>1,551.00</u>
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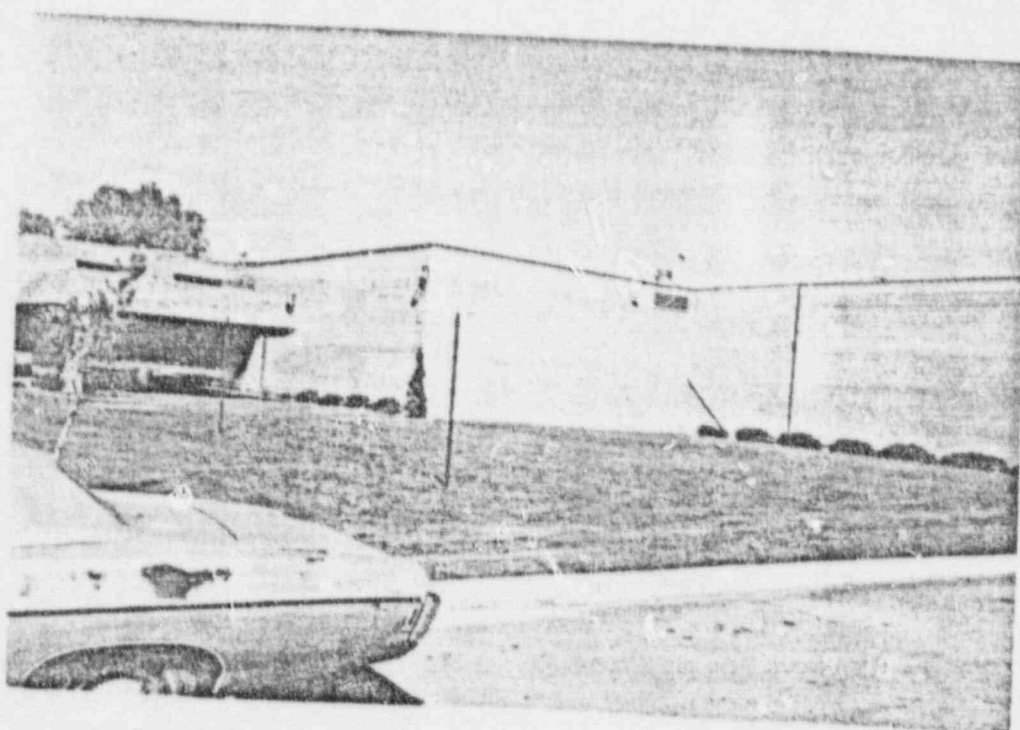
TOTAL (Rounded)	315,150.00
-----------------	------------

2

2

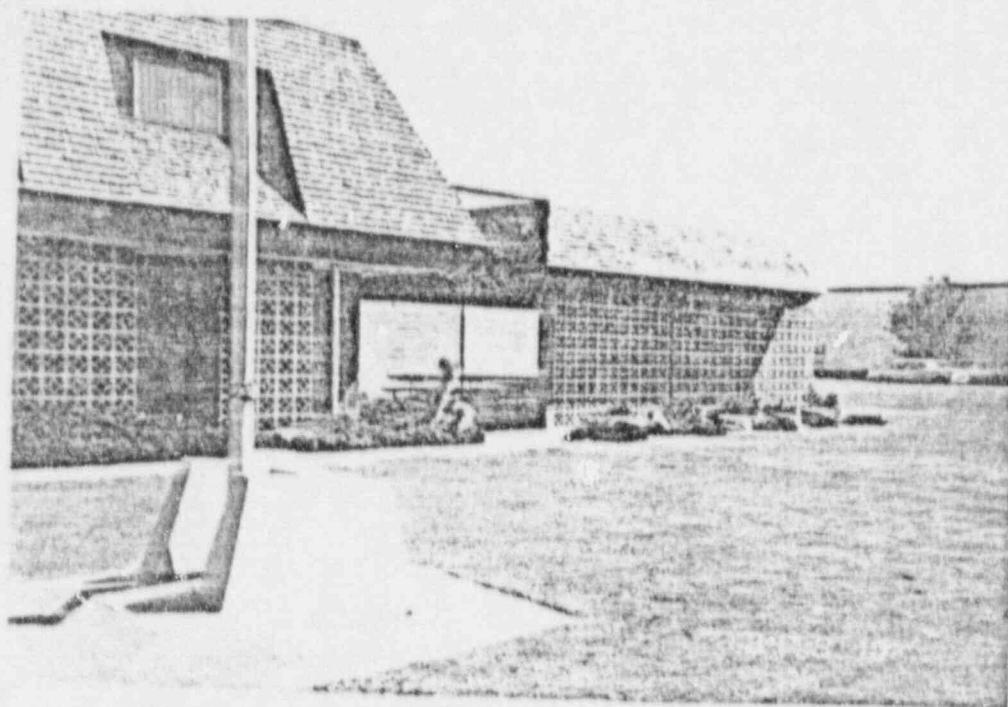


Front of Property Looking East

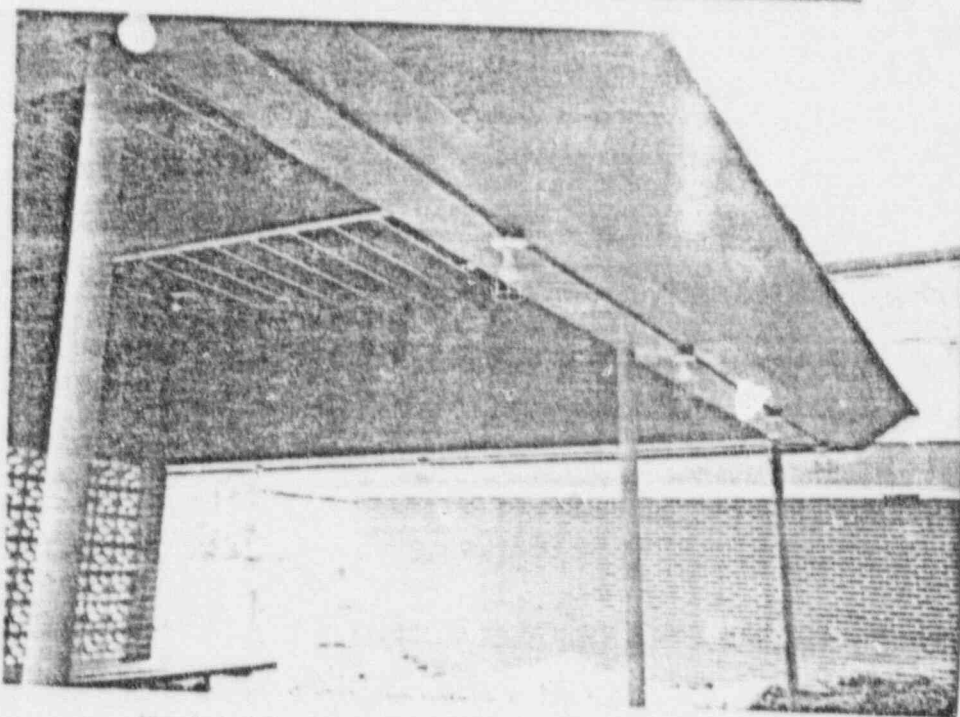


Areas "B-1" and "B-2" Looking Northeast

Figure 1 Property Photos



Patio, Flagpole, Area "B-2" Looking Southeast

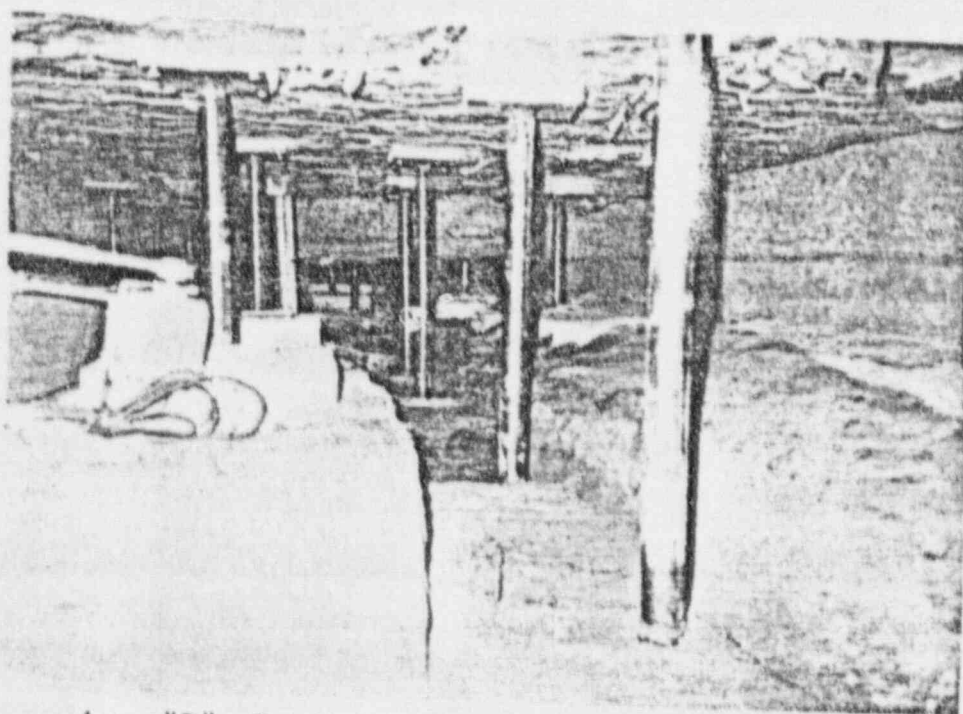


Underside of Patio Roof Looking Northwest

Figure 2 Property Photos



Freezer, Area "B" Looking Southeast

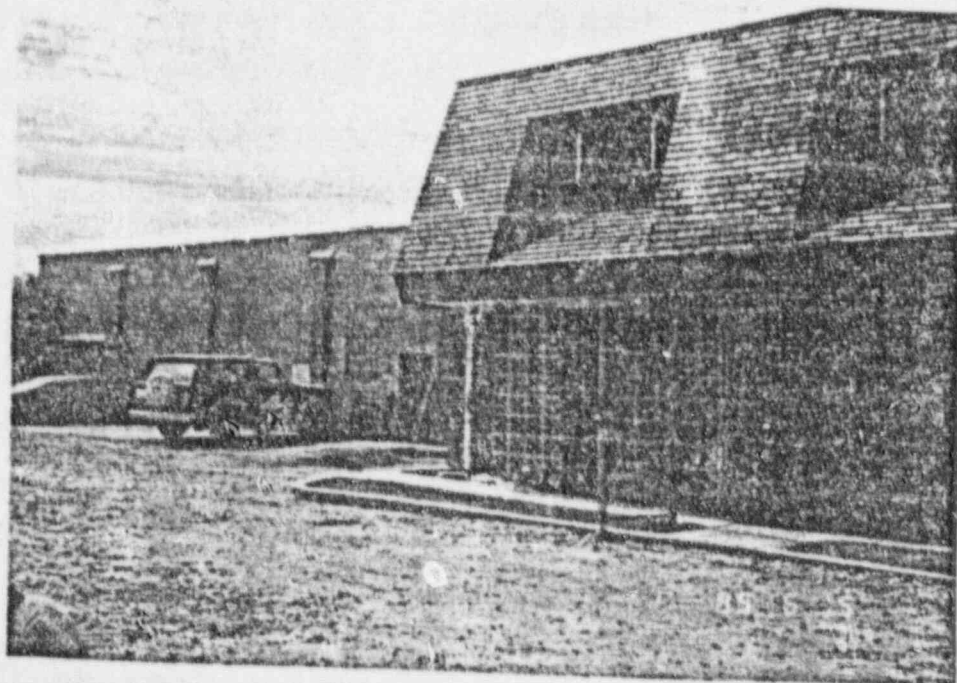


Area "D", Crawl Space Under Office Looking East

Figure 3 Property Photos

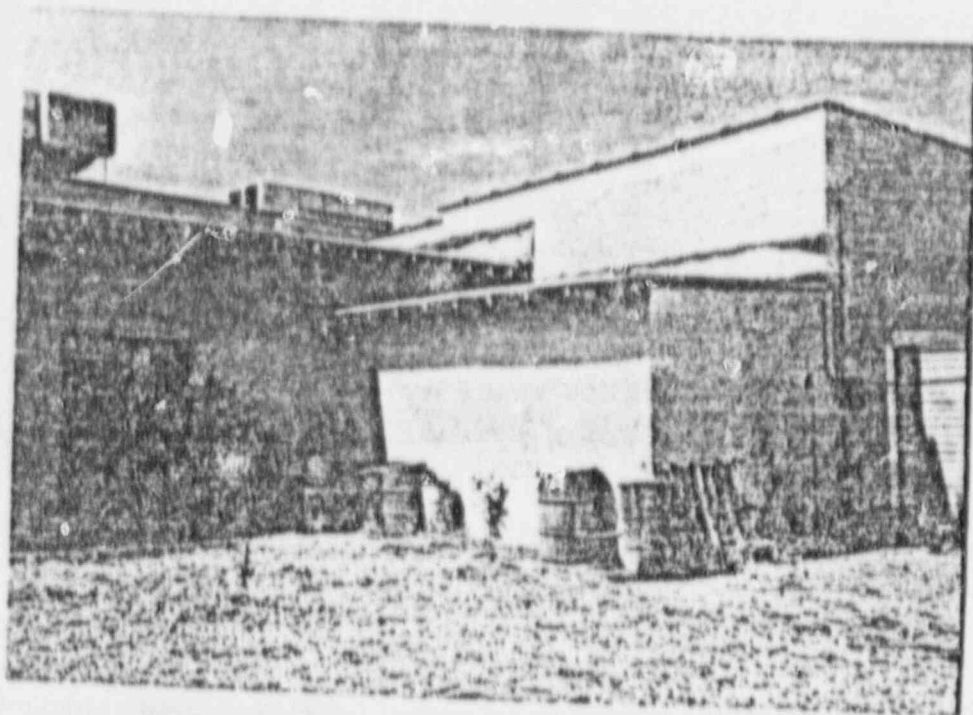


Crawl Space Access Pit Looking South

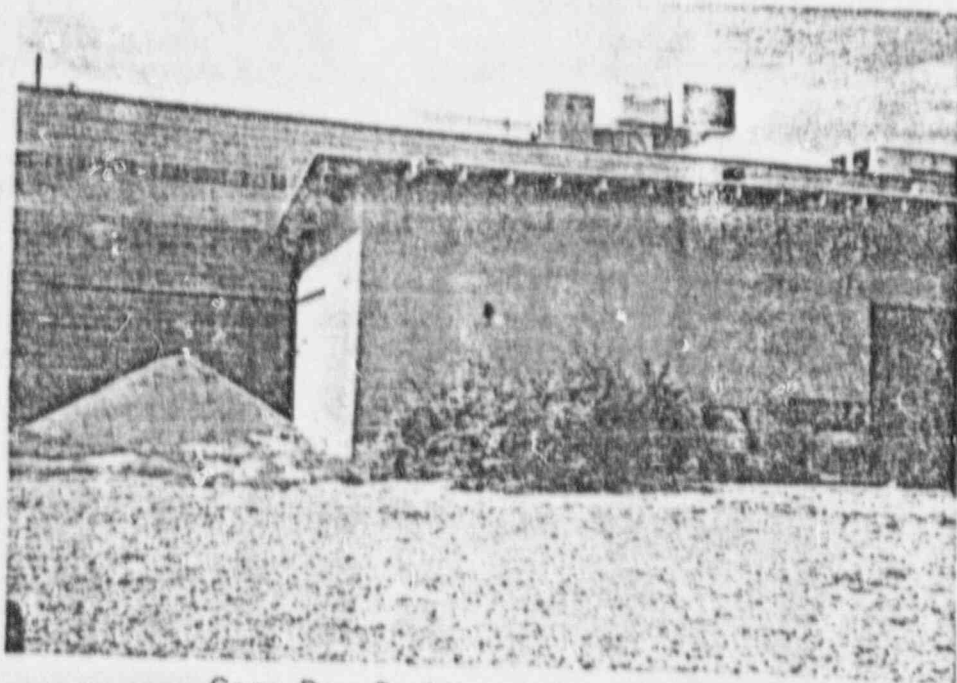


North Side of Buildings Looking Southeast

Figure 4 Property Photos

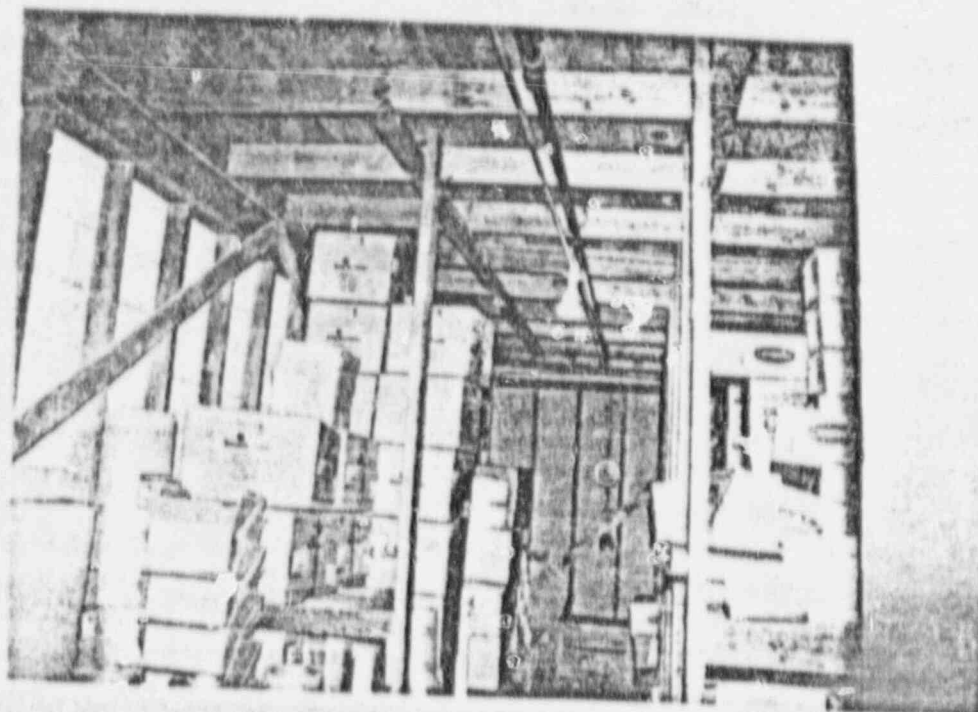


Storage Cooler Looking Southwest

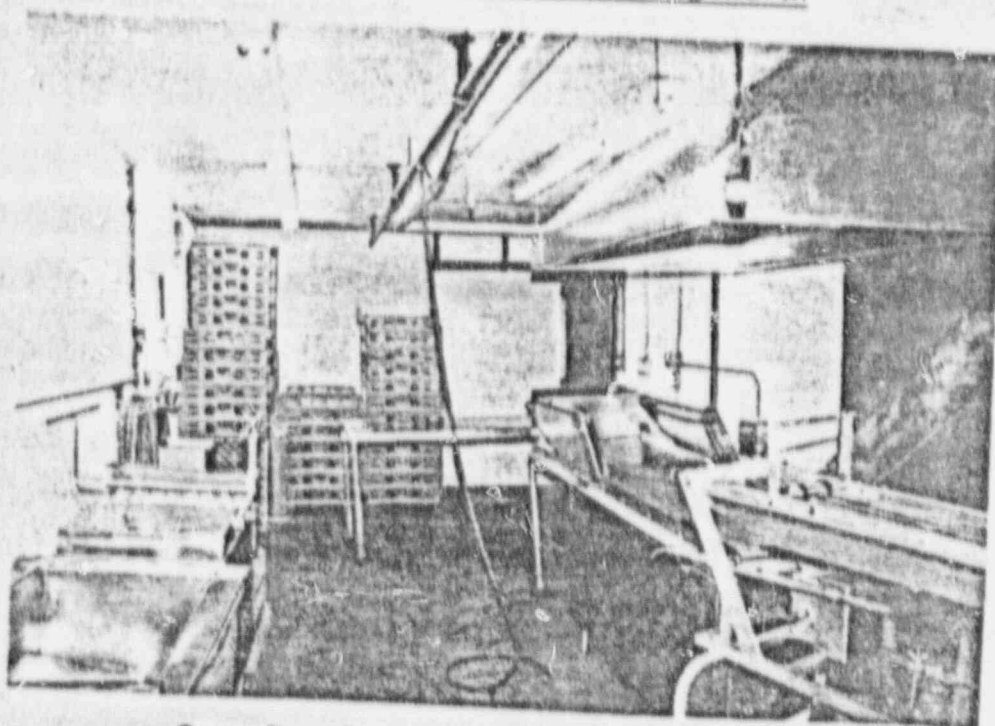


Corn Dog Building Looking South

Figure 5 Property Photos

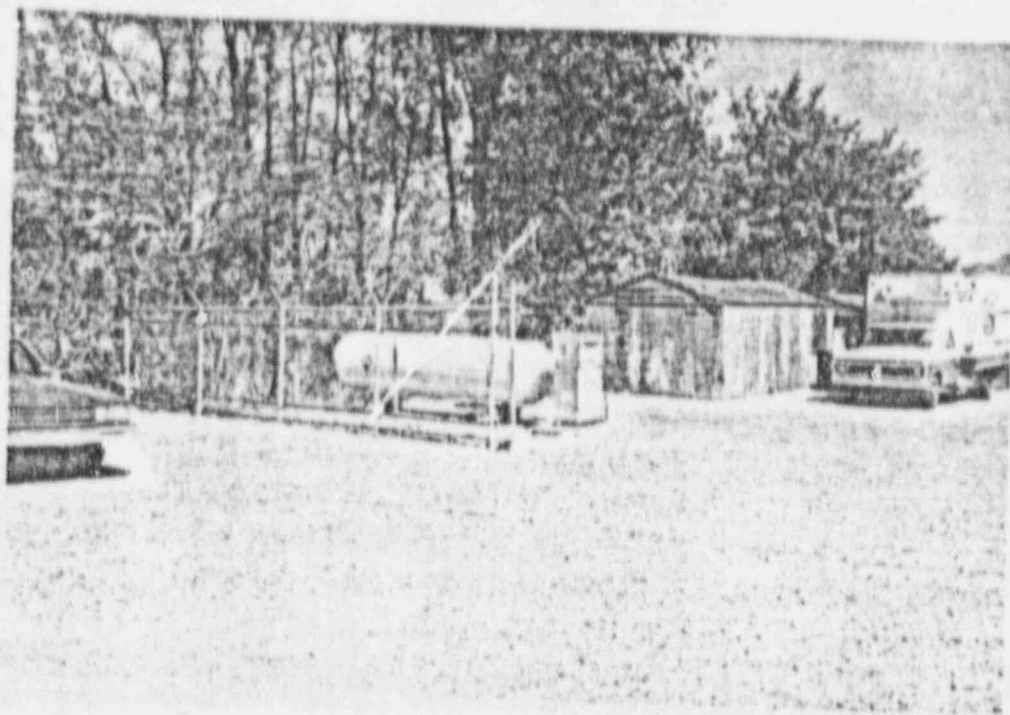


Interior of Storage Cooler Looking North

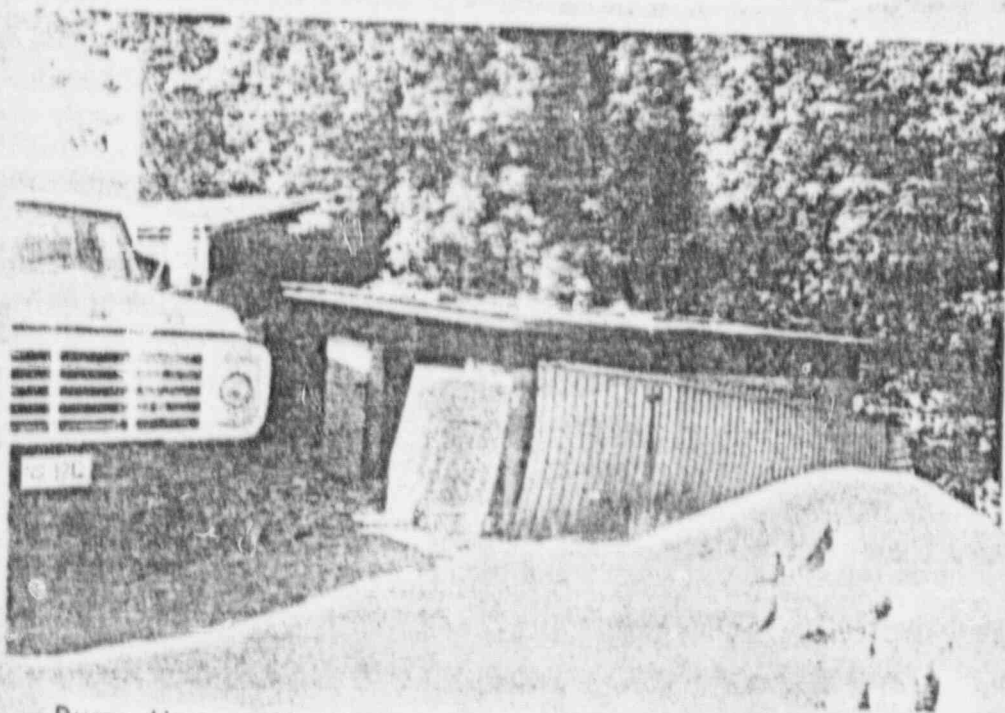


Corn Dog Production Room Looking East

Figure 6 Property Photos

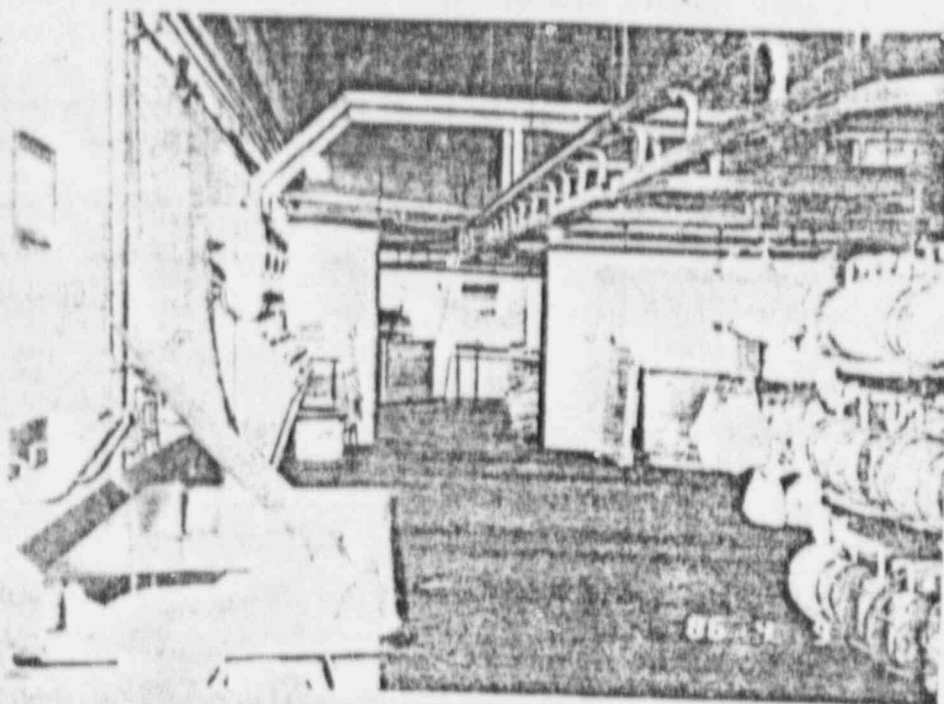


Gas Pump, Wood Sheds Looking Northeast

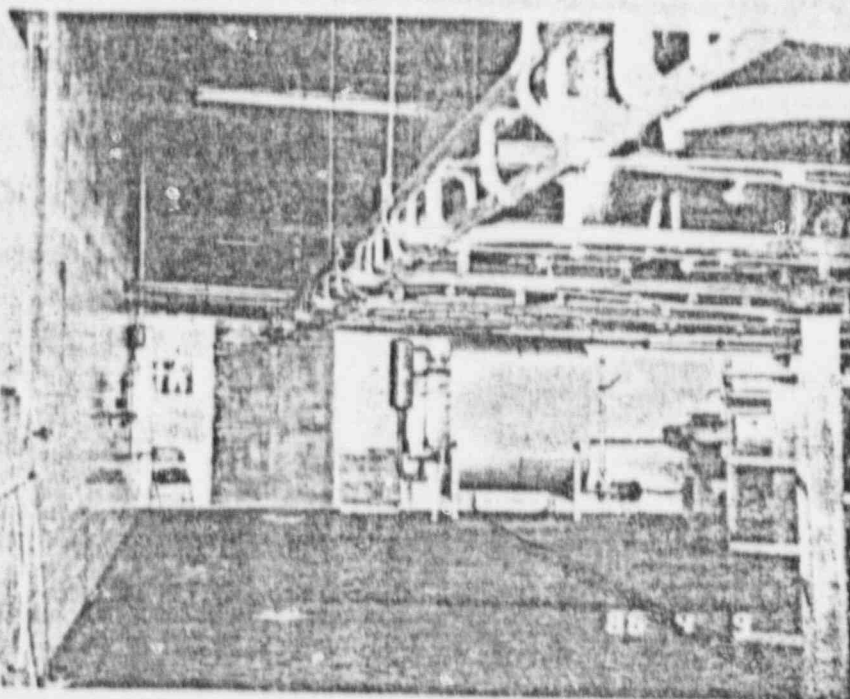


Pump House, North Side of Property Looking Northwest

Figure 7 Property Photos

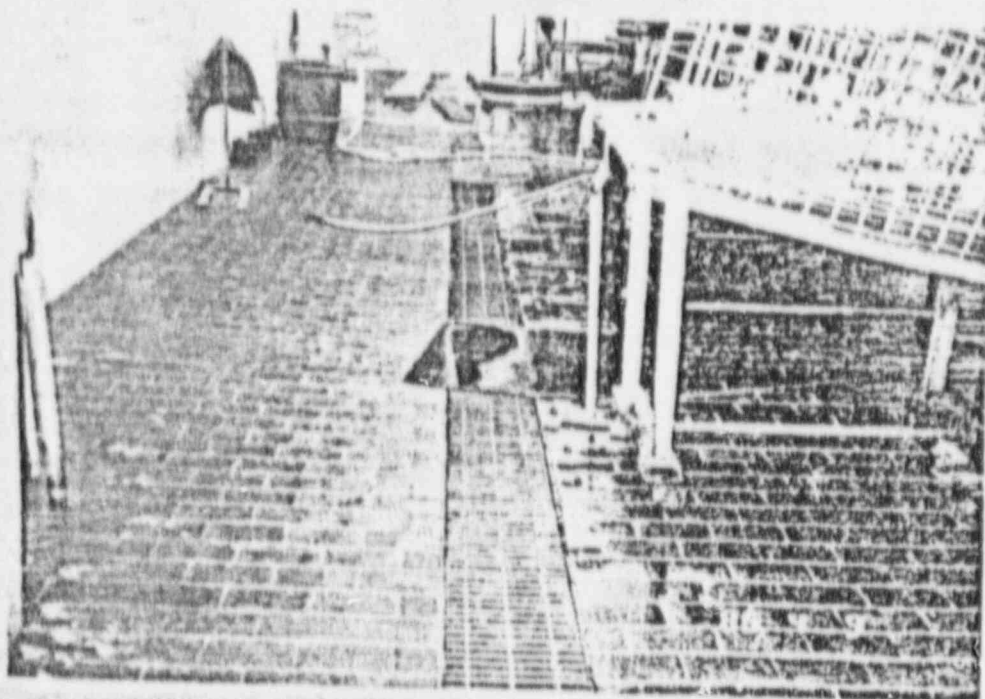


Smokehouse Interior Looking East Along North Wall

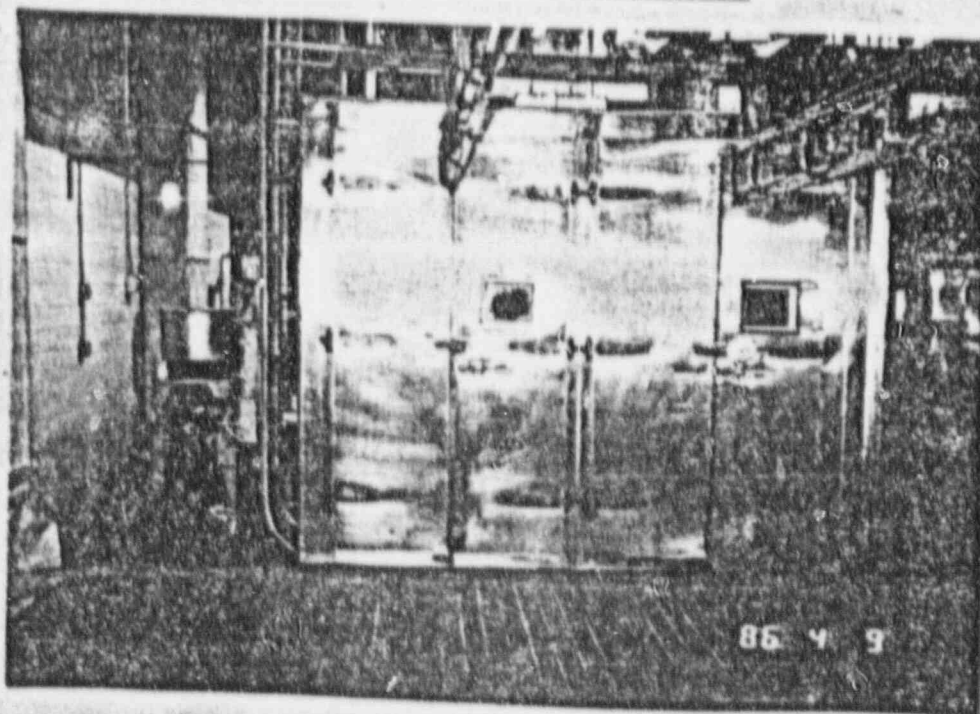


Smokehouse Interior Looking West Along South Wall

Figure 8 Property Photos



Smokehouse Floor Looking North



Smoke Chambers Looking South

Figure 9 Property Photos

UNITED DEPARTMENT

URANIUM MILL TAILINGS

VICINITY
3585 SO
SALT LAKE

NOTE:

THE LATEST REVISION OF THE FOLLOWING
TECHNICAL SPECIFICATIONS AND DRAWINGS APPLY
TO THE REMEDIAL ACTION WORK REQUIRED FOR
THIS PROPERTY.

DRAWING NO.

SL-053-001

SL-053-005

SL-053-010

SL-053-015

SL-053-020

SL-053-021

SL-053-022

SL-053-023

TITLE

TITLE SHEET

VICINITY MAP SL-053

SITE PLAN SL-053

RADIOLOGICAL SURVEY DATA SL-053

EXCAVATION AND RESTORATION PLAN SL-053

CONSTRUCTION NOTES SL-053

PARTIAL FLOOD PLAN AND DETAILS SL-053

CONSTRUCTION DETAILS SL-053

SPECIFICATIONS

02050

02110

02130

02150

02200

32400

02490

02700

03300

04100

04100

07100

07210

TITLE

DEMOLITION

CLEARING AND GRUBBING

CONTAMINATED MATERIAL

UNDERPINNING

EXCAVATION AND BACKFILL

LANDSCAPING

CHAIN LINE FENCE

UNDERGROUND PIPING

CAST-IN-PLACE CONCRETE

CONCRETE BLOCK

CARPENTRY AND MILL WORK

BITUMINOUS DAMPPROOFING

BATT INSULATION

UNITED STATES DEPARTMENT OF ENERGY

REMEDIAL ACTION PROJECT

PROPERTY SL- 053
SOUTH 500 WEST ST.
SALT LAKE COUNTY, UTAH

**ANSTEC
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07213	RIGID INSULATION
07400	FLASHING AND SHEET METAL
07570	CAULKING AND SEALING
09730	GYPSON DETWALL
09900	PAINTING (COMMERCIAL)
13000	PLUMBING
14030	BASIC ELECTRICAL MATERIALS AND METHODS

9707100118-01

U. S. DEPARTMENT OF ENERGY		ALBUQUERQUE, NEW MEXICO	
DESIGNED BY TJS TJS		TITLE SHEET	
DRAWN BY TJS		SALT LAKE COUNTY, UTAH	
CHECKED BY TJS		REMEDIAL ACTION PROJECT	
APPROVED BY TJS		PROJECT MANAGER DATE	
		PROJECT ENGINEER DATE	
		PROJECT NO.	
		DE-AC04-83AL18796	
		DRAWING NO.	
		SL-053-001	
		REV. A	

NO.	DATE	REVISIONS	TJS	CHS	CHS	VCO	JSS
1	12/18/83	FINAL REA SUBMITTAL					



MORRISON
KNUDSEN



2100 SOUTH FREEWAY

2100 SOUTH ST

BELT ROUTE 1-215

REDWOOD ROAD

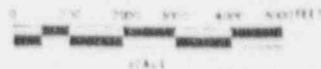
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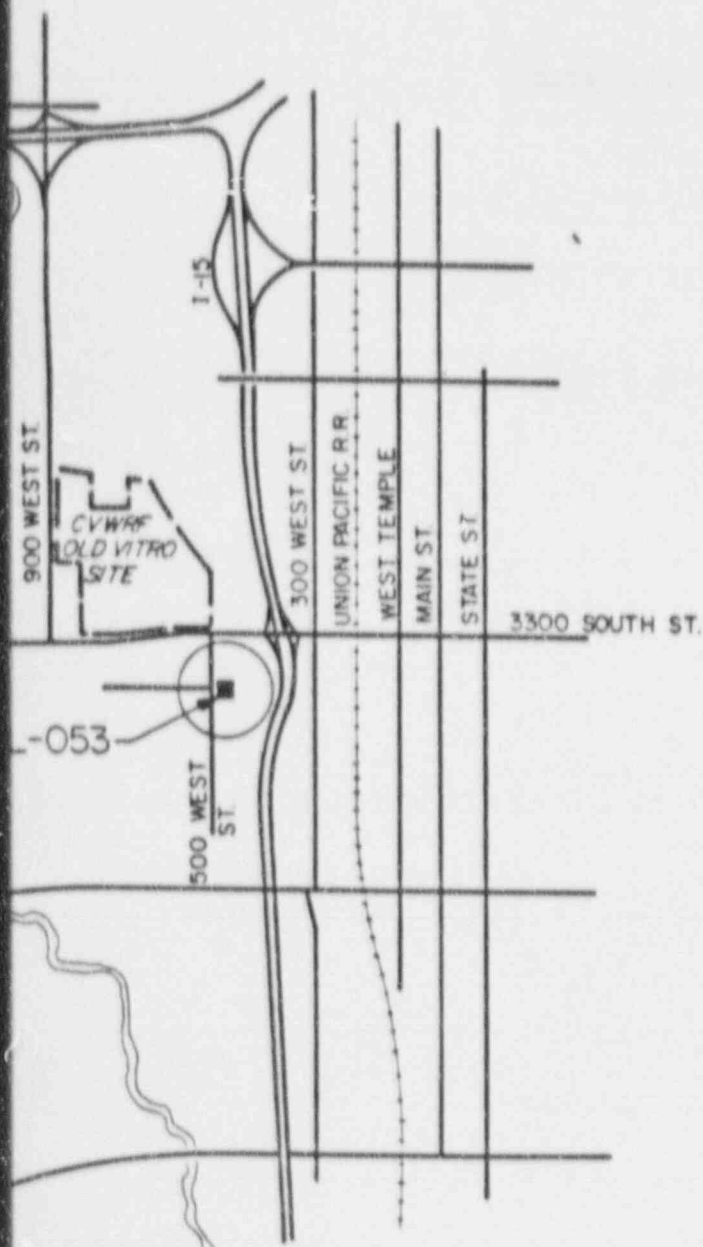
3100 SOUTH ST

3500 SOUTH ST

4100 SOUTH ST

4700 SOUTH ST





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APERTURE
CARD**

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Aperture Card**

NOTE

PROPERTY IS LOCATED IN
SALT LAKE CITY, UTAH

9707100118- 02

U. S. DEPARTMENT OF ENERGY
ALBUQUERQUE, NEW MEXICO

VICINITY MAP SL-053

SALT LAKE COUNTY, UTAH

URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT

DESIGNER: TJS
 NAME: *Clay Miller*
 DATE: *1965*
 ADDRESS: *John B. Shaw*
Richmond, VA
12101

第 1 号	第 2 号	第 3 号	第 4 号	第 5 号	第 6 号	第 7 号	第 8 号	第 9 号	第 10 号	第 11 号	第 12 号	第 13 号	第 14 号	第 15 号	第 16 号	第 17 号	第 18 号	第 19 号	第 20 号	第 21 号	第 22 号	第 23 号	第 24 号	第 25 号	第 26 号	第 27 号	第 28 号	第 29 号	第 30 号	第 31 号	第 32 号	第 33 号	第 34 号	第 35 号	第 36 号	第 37 号	第 38 号	第 39 号	第 40 号	第 41 号	第 42 号	第 43 号	第 44 号	第 45 号	第 46 号	第 47 号	第 48 号	第 49 号	第 50 号	第 51 号	第 52 号	第 53 号	第 54 号	第 55 号	第 56 号	第 57 号	第 58 号	第 59 号	第 60 号	第 61 号	第 62 号	第 63 号	第 64 号	第 65 号	第 66 号	第 67 号	第 68 号	第 69 号	第 70 号	第 71 号	第 72 号	第 73 号	第 74 号	第 75 号	第 76 号	第 77 号	第 78 号	第 79 号	第 80 号	第 81 号	第 82 号	第 83 号	第 84 号	第 85 号	第 86 号	第 87 号	第 88 号	第 89 号	第 90 号	第 91 号	第 92 号	第 93 号	第 94 号	第 95 号	第 96 号	第 97 号	第 98 号	第 99 号	第 100 号
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PROJECT NO.

DE-ACO4-83AL18796

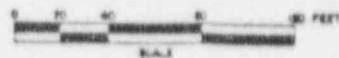
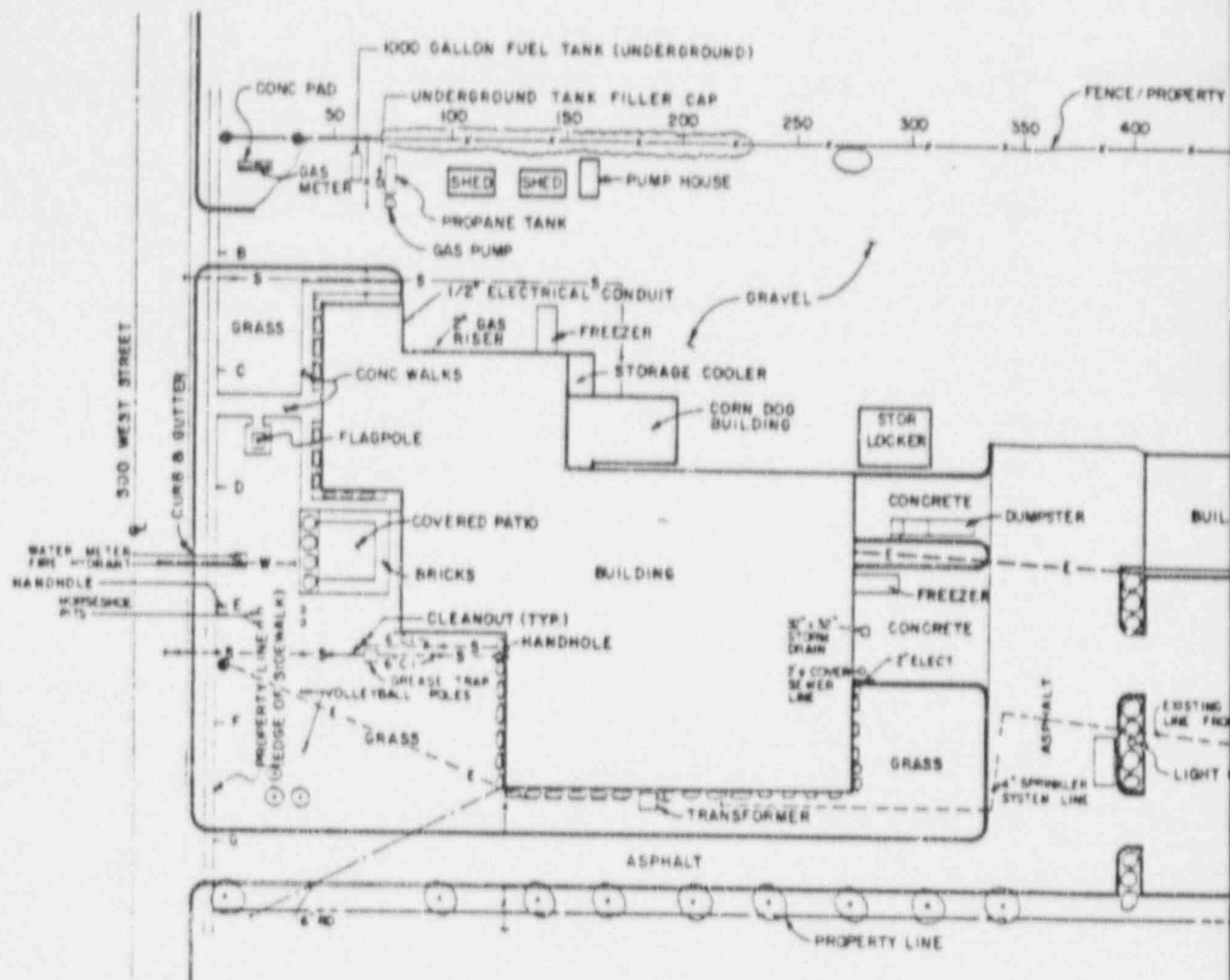
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SL-053-005

15



MORRISON
KNUDSEN

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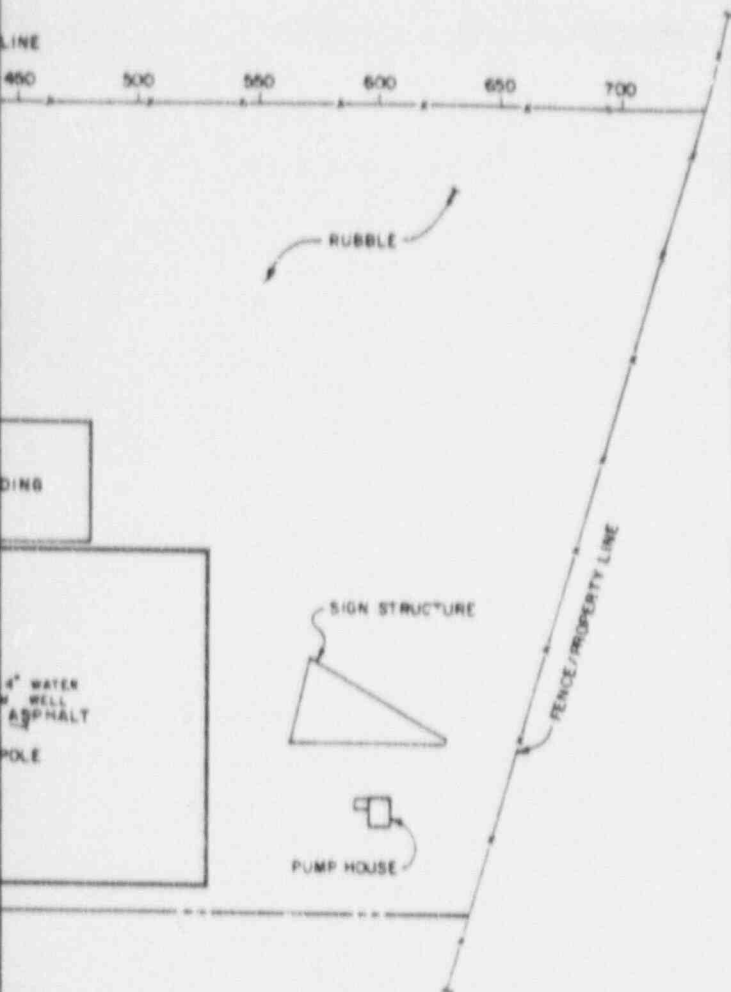


LEGEND

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
- - -	FENCE LINE
⊙	METER
⊗	VALVE
⊙	PROPERTY PIN
⊙	POWER POLE

NOTE:

OVERHEAD SERVICE DENOTED BY SOLID LINE
UNDERGROUND SERVICE DENOTED BY DASHED LINE



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Aperture Card

9707100118-03

U. S. DEPARTMENT OF ENERGY
ALBUQUERQUE, NEW MEXICO

SITE PLAN SL-053

SALT LAKE COUNTY, UTAH

RANUM MILL TAILINGS REMEDIAL ACTION PROJECT

DESIGNED BY TJS	CHECKED BY TJS

APPROVED

DATE: 10/1/89 BY: PROJECT MANAGER DATE: 10/1/89 BY: PROJECT ENGINEER DATE: 10/1/89



MORRISON
KNUDSEN

PROJECT NO

DE-AC04-83AL18796

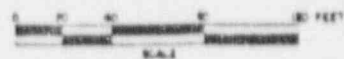
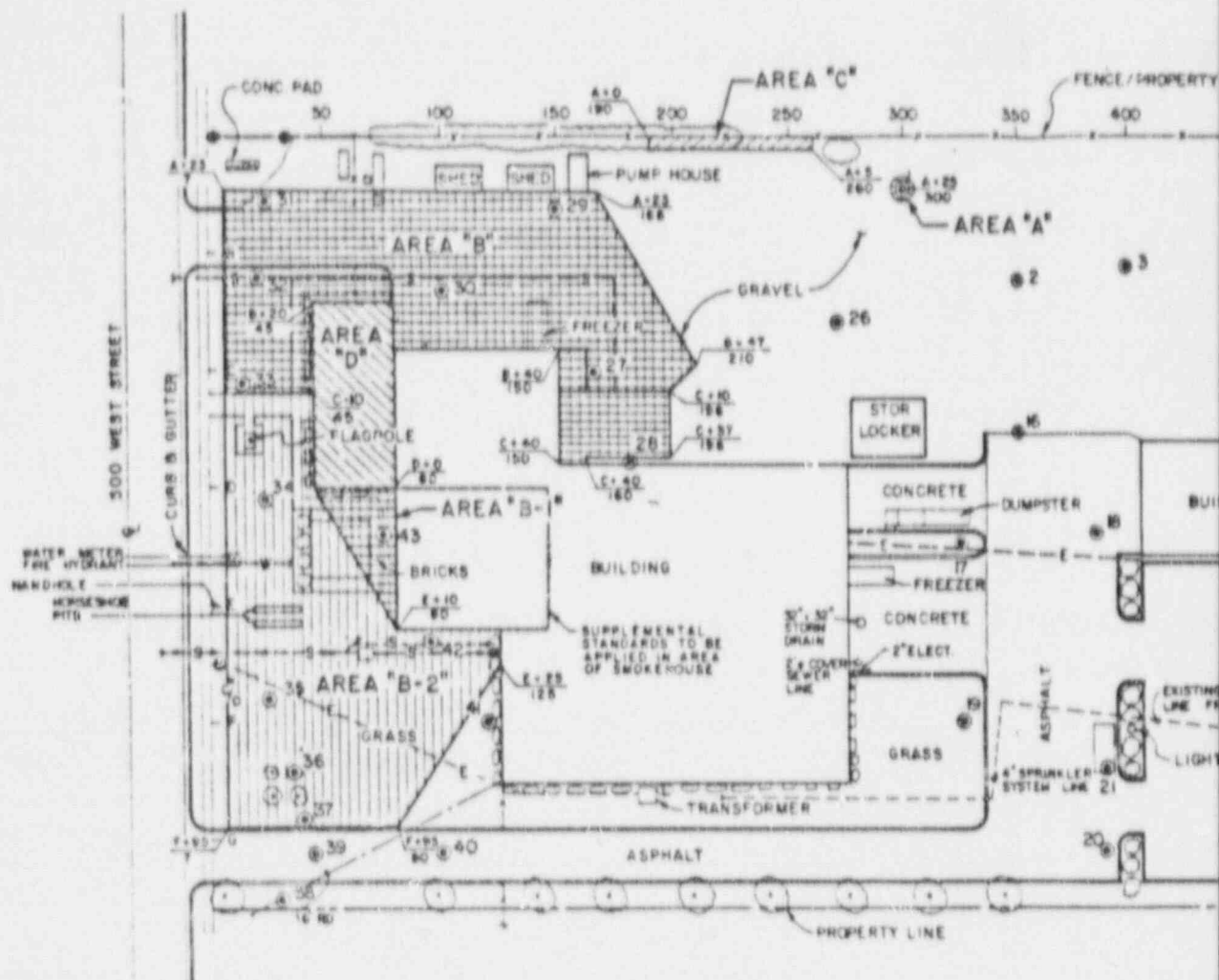
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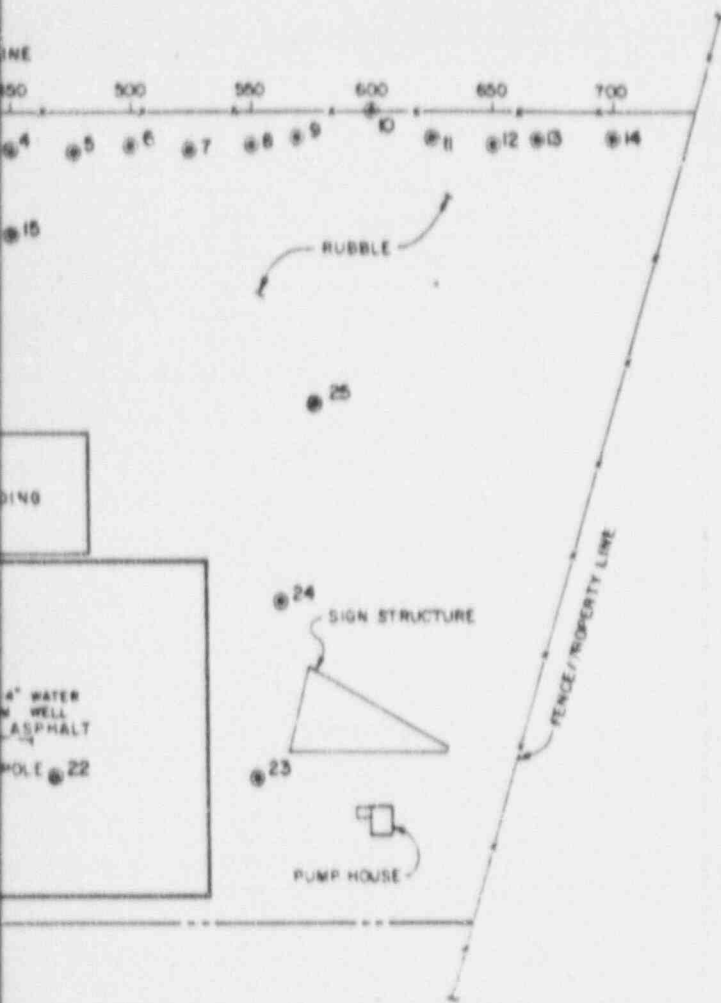
SL-053-010

REV

2

NO	DATE	REVISIONS	BY	CHKD	APP'D	DATE
1	10/1/89	FINAL RIA SUBMITTAL	TJS	OK	OK	10/1/89





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
- - -	FENCE LINE
⊙	METER
⊗	VALVE
●	PROPERTY PIN
●	POWER POLE

NOTE:

OVERHEAD SERVICE DENOTED BY SOLID LINE
UNDERGROUND SERVICE DENOTED BY DASHED LINE

A. AUGER HOLE DESIGNATION

ESTIMATED DEPTH OF CONTAMINATION

	6"
	9"
	18"
	36"
	60"

**ANSTEC
APERTURE
CARD**

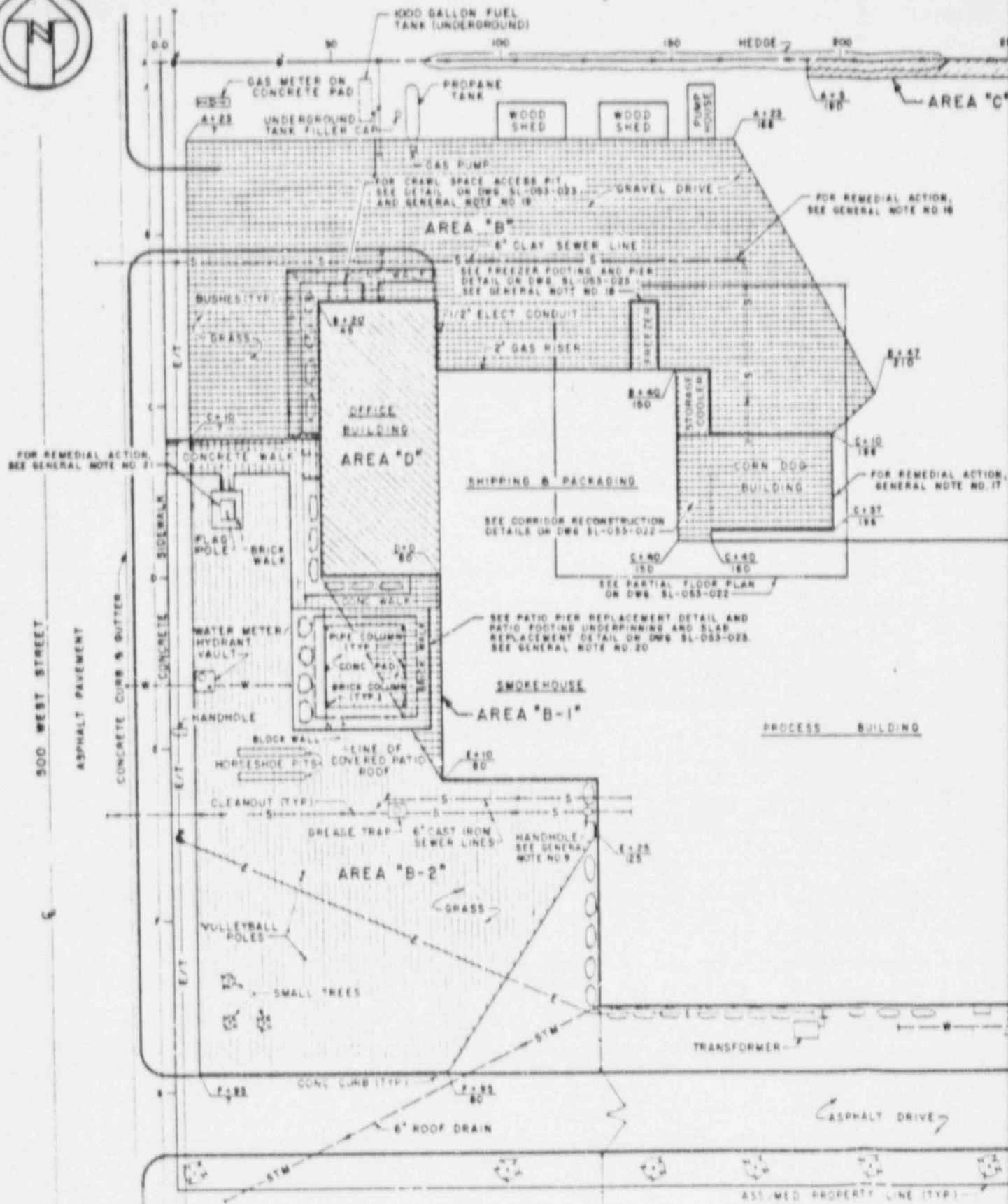
Also Available on
Aperture Card

9707100118-04

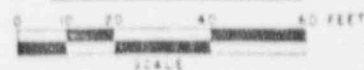
U. S. DEPARTMENT OF ENERGY
ALBUQUERQUE, NEW MEXICO

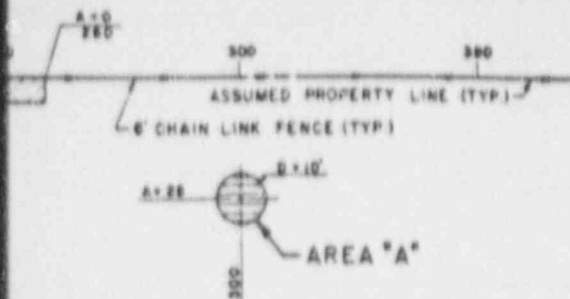
DESIGNED BY TJS	RADIOLOGICAL SURVEY DATA SL-053				
CHECKED					
REVIEWED					
RECOMMENDED					
APPROVED	DATE	BY PROJECT MANAGER	DATE	BY PROJECT ENGINEER	DATE
PROJECT NO. DE-AC04-B3AL18796		DRAWING NO. SL-053-015			
MORRISON KNUDSEN		REV A			

NO.	DATE	REV	DESCRIPTION	BY	CHKD	APPD
1			FINAL REA SUBMITTAL	TJS		



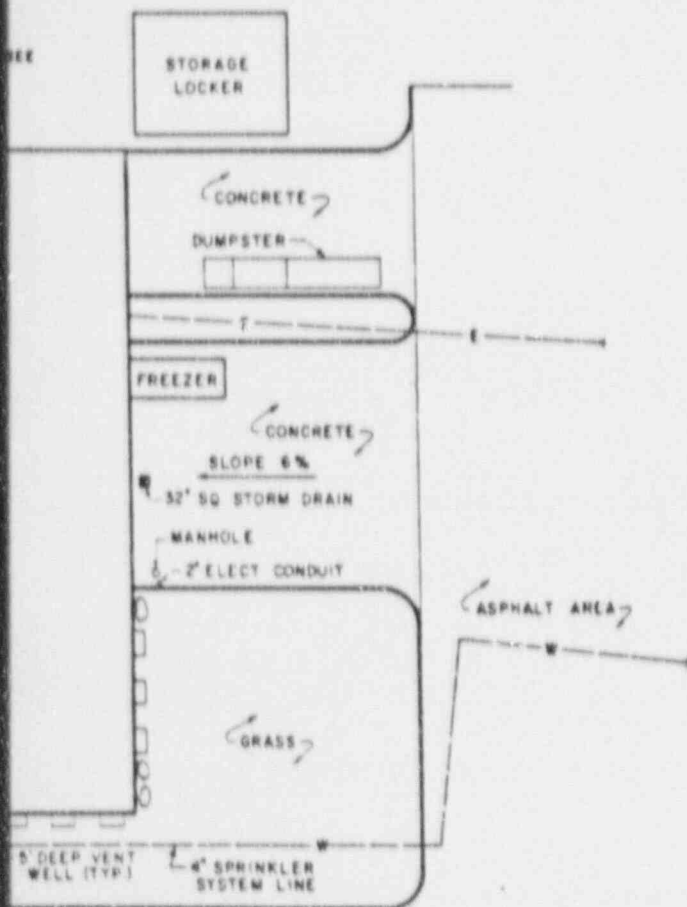
ENLARGED PLAN





GRAVEL AREA

SL-053



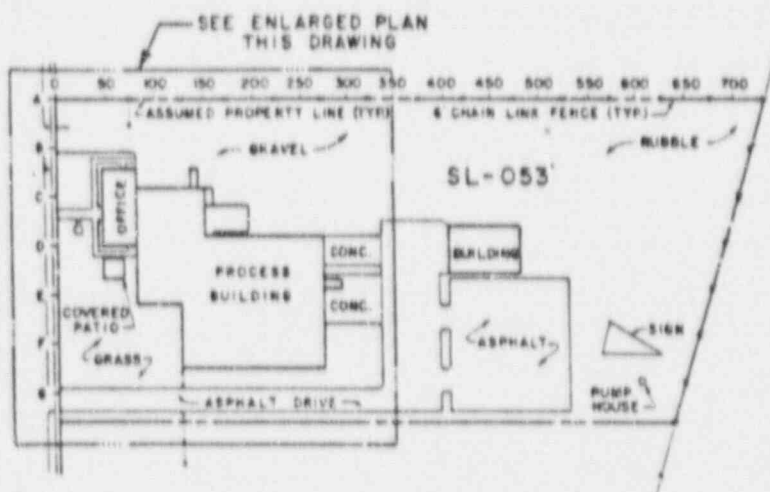
LEGEND

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
- - -	FENCE LINE
⊙	METER
⊗	VALVE
○	PROPERTY PIN
●	POWER POLE
⦿	TELEPHONE POLE

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NOTE: 1) OVERHEAD SERVICE DENOTED BY SOLID LINE.
UNDERGROUND SERVICE DENOTED BY DASHED LINE.
2) FOR GENERAL NOTES, SEE DWG. SL-053-021



OVERALL PLAN SL-053

0 50 100 200 300 400 500 600 700
SCALE

9707100118-05

U. S. DEPARTMENT OF ENERGY
ALBUQUERQUE, NEW MEXICO

OPTION 2
EXCAVATION & RESTORATION PLAN SL-053

SALT LAKE COUNTY, UTAH
URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT



PROJECT NO.
DE-AC04-83AL18796
DRAWING NO. SL-053-020 REV. A

NO.	DATE	REVISIONS	BY	CHK	APP'D	DATE
1	10/1/83	FINAL REA SUBMITTAL	TJS	OK	OK	10/1/83

NOTES:

1. UTILITY LOCATIONS ARE FOR REFERENCE ONLY. CONTRACTOR SHALL BE SOLELY RESPONSIBLE FOR THE ACTUAL LOCATIONS OF UTILITIES PRIOR TO START OF CONSTRUCTION.
2. THE EXCAVATION LIMITS AND DEPTHS ARE BASED ON A LIMITED NUMBER OF BENCHMARKS TAKEN DURING THE RADIOLOGICAL SURVEYS OF THIS PROPERTY. ADDITIONAL RADIOLOGICAL SURVEYS PERFORMED DURING REMEDIAL ACTION MAY REVEAL 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.
3. REMOVE BUSHES IN AREA "C", ON WEST AND SOUTH SIDES OF OFFICE BUILDING, ON WEST SIDE OF PROCESS BUILDING WITHIN CONTAMINATED AREA, AND ON WEST SIDE OF COVERED PATIO. REMOVE SMALL TREES IN SOUTHWEST CORNER OF AREA "B-2".
4. REMOVE AND SALVAGE LARGE ORNAMENTAL TREES IN PLANTED AREAS AND AROUND WATER METER/HYDRANT VAULT, AS NECESSARY TO PERFORM REMEDIAL ACTION.
5. SAWCUT AND REMOVE CONCRETE CURBS AND SIDEWALKS IN REMEDIAL ACTION AREAS. FOR CONCRETE SLAB REMOVAL IN COVERED PATIO AREA, SEE DETAIL OF DRAWING SL-033-023.
6. REMOVE AND SALVAGE CHAIN LINK FENCE AND GATE IN AREAS "A" AND "C".
7. SALVAGE AND DELIVER TO OWNER THE WAS PUMP NEAR THE NORTHWEST ENTRANCE TO THE PROPERTY. EXCAVATE AND REMOVE THE UNDERGROUND PUMP TANK IN THE SAME CORNER OF THE PROPERTY.
8. REMOVE AND SALVAGE HORSESHOE PIT POSTS AND VOLLEYBALL POLES LOCATED IN THE SOUTHWEST CORNER OF AREA "B-2".
9. REMOVE AND SALVAGE PRECAST HANDRAIL NEAR WEST WALL OF PROCESS BUILDING.
10. DURING THE REMEDIAL ACTION, PROTECT AND PROVIDE SHORING OR SUPPORT AS DIRECTED BY CONTRACTOR'S REPRESENTATIVE FOR THE FOLLOWING ITEMS:
 - A. THE PUMP HOUSE AND WOOD SHEDS ALONG THE NORTH EDGE OF AREA "B".
 - B. THE ABOVE GROUND PROPANE TANK ALONG THE NORTH EDGE OF AREA "B".
 - C. THE WATER METER/HYDRANT VAULT IN AREA "B-2".
 - D. THE GRASS TRAP IN AREA "B-2".
 - E. THE CAST IRON SEWER LINE WHICH RUNS FROM THE PROCESS BUILDING TO THE GRASS TRAP.
 - F. THE UNDERGROUND ELECTRICAL CONDUIT CROSSING THROUGH AREA "B-2".
 - G. THE EXISTING ASPHALT DRIVE AND COMPACTED CURB ALONG THE SOUTH EDGE OF AREA "B-2".
 - H. ALL BUILDING FOUNDATIONS AND OTHER STRUCTURES WHICH AFFECT REMEDIAL ACTION AREAS.

11. EXCAVATE AREA "A", TO THE LIMITS INDICATED ON DRAWING SL-033-022, TO A DEPTH OF 1'-0".
12. EXCAVATE AREA "C", TO THE LIMITS INDICATED ON DRAWING SL-033-020, TO A DEPTH OF 4 INCHES.
13. EXCAVATE AREA "B" AND "B-1", TO THE LIMITS INDICATED ON DRAWING SL-033-020, TO A DEPTH OF 5'-0".
14. EXCAVATE AREA "B-2", TO THE LIMITS INDICATED ON DRAWING SL-033-020, TO A DEPTH OF 3'-0".
15. EXCAVATE AREA "B", WHICH IS IN THE TRAIL SPACE UNDER THE OFFICE BUILDING, TO A DEPTH OF 8 INCHES.

16. THE FOLLOWING REMEDIAL ACTION WORK SHALL BE PERFORMED IN AREA "B" WITH REGARD TO THE VITRIFIED CLAY PIPE SANITARY SEWER LINE WHICH EXTENDS PARALLEL TO AND APPROXIMATELY 40 FEET SOUTH OF THE NORTH PROPERTY LINE OF SL-033:

- A. VERIFY LOCATIONS OF CLAY SEWER LINES WHICH PASS THROUGH AREA "B". ROUTE A NEW SEWER LINE AS DIRECTED BY CONTRACTOR'S REPRESENTATIVE.
- B. EXCAVATE, BACKFILL, ETD AND INSTALL NEW SEWER IN ACCORDANCE WITH PROJECT SPECIFICATIONS.
- C. MAKE ALL CORRECTIONS NECESSARY TO PROVIDE THE SAME SERVICE AS IS CURRENTLY PROVIDED BY THE VITRIFIED CLAY PIPE SEWER.
- D. UPON COMPLETION OF THE NEW SEWER LINE, REMOVE THE EXISTING CLAY SEWER LINE. THIS MAY BE PERFORMED ALONG WITH THE REQUIRED EXCAVATION OF AREA "B".
- E. BACKFILL ALIGNMENT OF NEW SEWER WITH COMPACTED COMMON FILL, 12 INCHES OF A 1/2" GRADE BASE COURSE AND TOP WITH 3 INCHES OF 3/4" DIAMETER CRUSHED STONE.

17. THE FOLLOWING REMEDIAL ACTION WORK SHALL BE PERFORMED IN THE AREA OF THE STORAGE COOLER AND CORN DOG BUILDING:

- A. LOCATE THE SOURCES OF ELECTRICAL, NATURAL GAS, WATER, SEWER, AND OTHER UTILITIES WHICH SERVE THE COOLER AND CORN DOG BUILDINGS. DISCONNECT AND REMOVE ELECTRICAL SERVICE WIRING IN ACCORDANCE WITH ALL APPLICABLE CODES. CAP OR PLUG GAS, WATER AND SEWER SERVICES AS APPROPRIATE. SERVICES WHICH ORIGINATE IN THE PROCESS BUILDING SHALL BE TERMINATED IN THE PROCESS BUILDING. SERVICES WHICH ORIGINATE UNDER THE FLOORS OF THE STORAGE COOLER AND CORN DOG BUILDING SHALL BE TERMINATED UNDERGROUND.
- B. PROVIDE TEMPORARY SUPPORT FOR THE RAIL SYSTEM IN THE EXISTING CORRIDOR, AS LOCATED PER PARTIAL FLOOR PLAN ON DRAWING SL-033-022.
- C. SEAL OPENING IN WALL BETWEEN PACKAGING AREA AND CORN DOG BUILDING. WALL SHALL BE SEALED WITH MATERIAL WHICH MATCHES THAT OF THE EXISTING WALL. PROVIDE TEMPORARY WALLS FOR WALL OPENINGS WHERE SHOWN ON DRAWING SL-033-022. ALL OPENINGS INTO AREA OF BUILDING DEMOLITION SHALL BE SEALED PRIOR TO DEMOLITION OF STORAGE COOLER AND CORN DOG BUILDING, TO PREVENT FURTHER CONTAMINATION FROM ENTERING THE PROCESS BUILDING.

8. DEMOLISH AND COVER
9. EXCAVATE AND REPAIR
10. BACKFILL AND REPAIR
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100. EXCAVATE AND REPAIR

AND REMOVE STORAGE COOLER
FROM BUILDING.

OF BUILDING AREA TO THE DEPTH
OF 6'.

1. AREA WITH STRUCTURAL FILL
ORBITAL WILL BE REPAIRED, SEE
SL-053-021. BACKFILL AREA
WITH CORROSION WITH COMPACTED
FILL, 12 INCHES OF AGGREGATE
BASE AND TOP WITH 3 INCHES
DIAMETER CRUSHED STONE.

FOR NEW CORRIDOR PER PLAN AND
ON DRAWING SL-053-022.
PERMANENT SUPPORTS FOR RAIL
WITHIN CORRIDOR AND REMOVE
TEMPORARY SUPPORTS.

AND PAINT EXTERIOR SIDE OF
WALL SEAL TO PROVIDE A
PROVE COMPLETE INSTALLATION.

TEMPORARY WALL SEALS.

NO REMEDIAL ACTION WORK
IS IN THE AREA OF THE
CH IS LOCATED OUTSIDE THE
OF THE PROCESS BUILDING.

TEMPORARY SUPPORT FOR

UNDER FREEZERS TO THE DEPTH
OF 6'.

CT REINFORCE CONCRETE
JOBS AND PILES PER DETAIL ON
SL-053-023.

1. AREA UNDER FREEZER WITH
ED COMMON FILL. BACKFILL
AREA AROUND PERIMETER OF
WITH COMPACTED COMMON FILL,
ES OF AGGREGATE BASE COURSE
WITH 3 INCHES OF 3/4"
CAUSHED STONE.

ALL TEMPORARY SUPPORTS.

NO REMEDIAL ACTION WORK
EXPONED IN THE AREA OF THE
ACCESS PIT ON THE OUTSIDE
WALL OF THE OFFICE

AND SALVAGE STEEL PLATE LID
EXISTING CRANL SPACE ACCESS

AND REMOVE EXISTING 4 INCH
CONCRETE WALLS.

1. PIT AREA TO THE DEPTH
OF 6'.

1. PIT AREA WITH STRUCTURAL
CONSTRUCT THE REPLACEMENT
FACE ACCESS PIT AS SHOWN IN
ON DRAWING SL-053-023.

ALL STEEL PLATE LID SALVAGED
ORIGINAL PIT.

NO REMEDIAL ACTION WORK
EXPONED IN THE AREA OF THE
PIT.

AND SALVAGE PAVING BRICKS
AS.

AND REMOVE PATIO SLAB AS
ON DETAIL ON DRAWING
SL-053-023.

TEMPORARY SUPPORT FOR PATIO
REMOVAL REMEDIAL ACTION. CON-
STRUCTION OF THE CURB, REMOVE ALL
TEMP SUPPORTS.

2. REMOVE EXISTING CONCRETE PILES AND
FOUNDATIONS WHICH SUPPORT PIPE
COLUMNS ON EAST SIDE OF COVERED
PATIO.

3. CONSTRUCT NEW CONCRETE PILES AND
FOUNDATIONS FOR PIPE COLUMNS PER
DETAIL ON DRAWING SL-053-023.

4. UNDERPIN FOUNDATION WHICH SUPPORTS
BRICK PILES AND ORNAMENTAL BLOCK
SCREEN WALL ON WEST SIDE OF COVERED
PATIO. PER DETAIL ON DRAWING
SL-053-023.

5. EXCAVATE ENTIRE PATIO AREA TO THE
DEPTH REQUIRED.

6. BACKFILL CONCRETE SLAB AREA WITH
COMPACTED COMMON FILL, 6 INCHES OF
STRUCTURAL FILL AND FOUR NEW 4 INCH
THICK CONCRETE SLAB, AS PER DETAIL
ON DRAWING SL-053-023, TO THE SAME
DIMENSIONS AND ELEVATIONS AS THAT
REMOVED.

7. BACKFILL BRICK SIDEWALK AREA WITH
COMPACTED COMMON FILL, 6 INCHES OF
STRUCTURAL FILL, AND REPLACE PAVING
BRICKS TO THE DIMENSIONS AND
ELEVATIONS OF THAT REMOVED.

21. THE FOLLOWING REMEDIAL ACTION WORK
SHALL BE PERFORMED IN THE AREA OF THE
EXISTING FLAG POLE IN AREA "B-1".

1. PROVIDE TEMPORARY SUPPORT FOR POLE
AND CONCRETE BASE.

2. REMOVE AND SALVAGE PAVING BRICK
SIDEWALK.

3. EXCAVATE AROUND POLE BASE TO THE
DEPTH REQUIRED.

4. BACKFILL GRASED AREA WITH
COMPACTED COMMON FILL, 6 INCHES OF
TOPSOIL AND SOB. BACKFILL CONCRETE
SIDEWALK AREA WITH COMPACTED COMMON
FILL, 6 INCHES OF STRUCTURAL FILL
AND FOUR NEW 4 INCH THICK CONCRETE
SIDEWALK TO THE SAME DIMENSIONS AND
ELEVATIONS AS THAT REMOVED.
BACKFILL BRICK SIDEWALK AREA WITH
COMPACTED COMMON FILL, 6 INCHES OF
STRUCTURAL FILL, AND REPLACE
SALVAGED PAVING BRICKS TO THE
DIMENSIONS AND ELEVATIONS OF THAT
REMOVED.

5. REMOVE ALL TEMPORARY SUPPORTS.

22. BACKFILL FLOWERS BEDS WITH COMPACTED
COMMON FILL, 12 INCHES OF TOPSOIL AND
TOP WITH 3 INCHES OF WHITE GRASS GRIPS
AS DIRECTED BY CONTRACTOR'S
REPRESENTATIVE. BACKFILL GRASED AREAS
WITH COMPACTED COMMON FILL, 6 INCHES OF
TOPSOIL AND SOB. BACKFILL GRAVEL AREAS
WITH COMPACTED COMMON FILL, 12 INCHES
OF AGGREGATE BASE COURSE AND TOP WITH 3
INCHES OF 3/4" DIAMETER CAUSHED STONE.
BACKFILL DIST AREA IN CRANL SPACE UNDER
OFFICE BUILDING WITH COMPACTED COMMON
FILL. BACKFILL CONCRETE SIDEWALK AREAS
WITH COMPACTED COMMON FILL, 6 INCHES OF
STRUCTURAL FILL, AND FOUR NEW 4 INCH
THICK CONCRETE SIDEWALK TO THE
DIMENSIONS AND ELEVATION OF THAT
REMOVED. RESTORE ALL AREAS TO ORIGINAL
ELEVATIONS.

23. REPLACE BUSHES, TREES AND FLOWERS IN
ORIGINAL LOCATIONS WITH CURRENT STOCK
OF THE SAME TYPE AS THOSE REMOVED. THE
SIZE AND TYPE OF THE REPLACEMENT STOCK
SHALL BE DETERMINED BY THE CONTRACTOR'S
REPRESENTATIVE.

24. REMOVE SALVAGED ORNAMENTAL BRICKS TO
ORIGINAL LOCATIONS.

25. CONSTRUCT NEW CONCRETE CURBS TO THE
DIMENSIONS AND ELEVATIONS OF THOSE
REMOVED.

26. REINSTALL CHAIN LINK FENCE AND GATE TO
ORIGINAL LOCATION AND CONDITION.

27. REINSTALL BARNHEDGE PIT POSTS AND
VOLLEYBALL POLES TO ORIGINAL LOCATIONS.

28. REINSTALL HANDHOLE GROUND WEST WALL OF
PROCESS BUILDING.

ANSTEC
APERTURE
CARD

Also Available on
Aperture Card

9707100118 - 06

U. S. DEPARTMENT OF ENERGY
ALBUQUERQUE, NEW MEXICO

DESIGNED BY
TJS TJS
CHECKED BY
TJS TJS
REVIEWED BY
TJS TJS
RECOMMENDED BY
TJS TJS
APPROVED BY
TJS TJS

OPTION 2

CONSTRUCTION NOTES SL-053

SALT LAKE COUNTY, UTAH
URANUM MILL TAILINGS REMEDIAL ACTION PROJECT

DATE OF PROJECT MANAGER DATE OF PROJECT ENGINEER DATE

PROJECT NO

DE-AC04-83AL18796

DRAWING NO

SL-053-021

REV

A

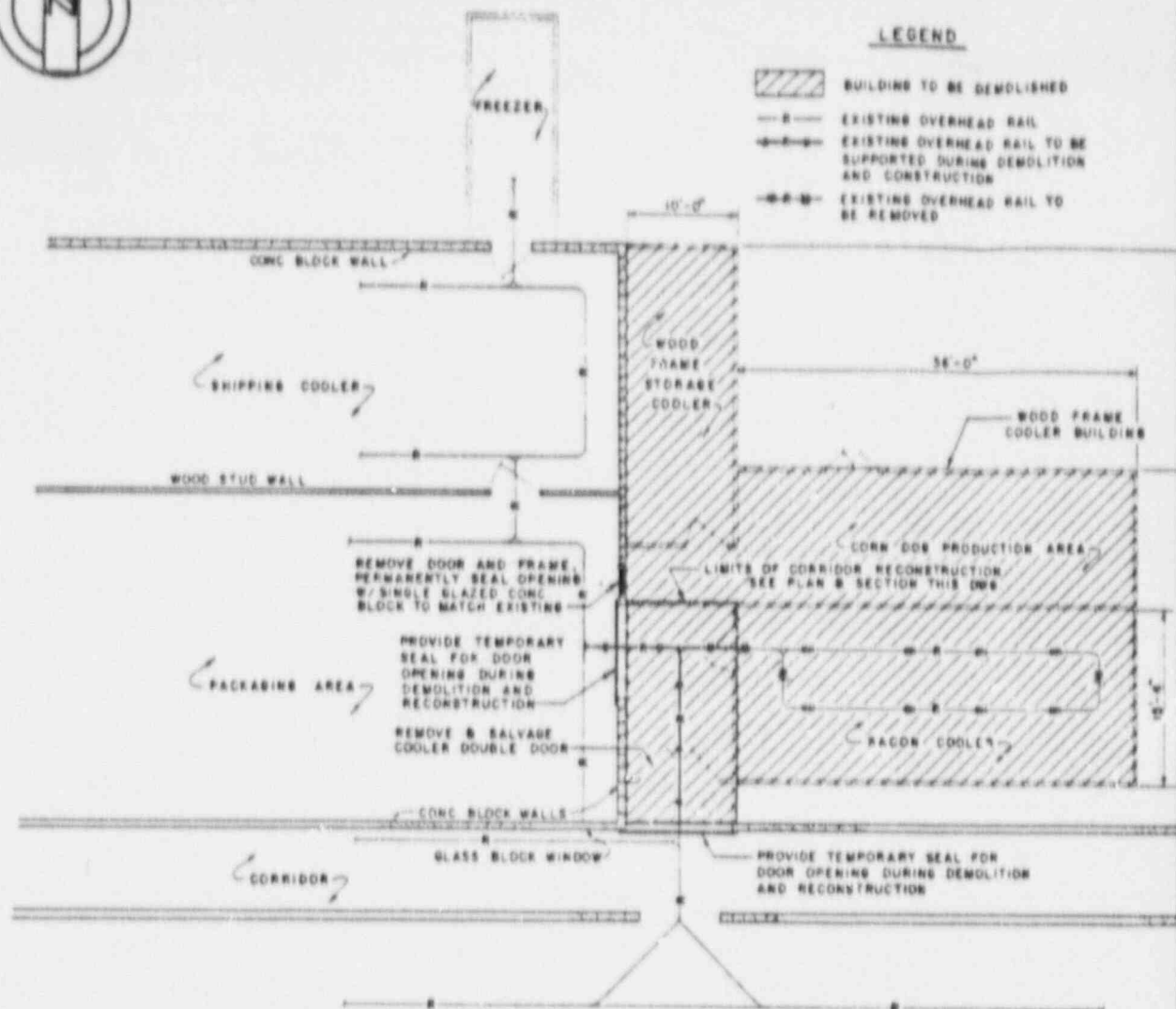
MORRISON
KNUDSEN

NO	DATE	REVISIONS	BY	CHK	APP	DATE
1	10/1/83	FINAL RES SUBMITTAL	TJS	TJS	TJS	10/1/83



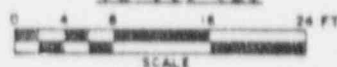
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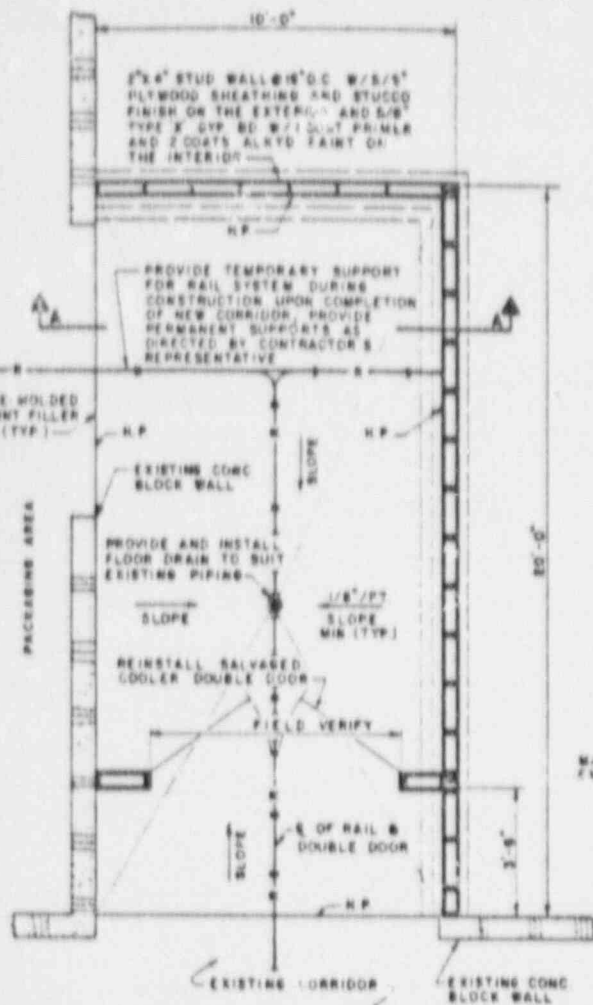
- BUILDING TO BE DEMOLISHED
- EXISTING OVERHEAD RAIL
- EXISTING OVERHEAD RAIL TO BE SUPPORTED DURING DEMOLITION AND CONSTRUCTION
- EXISTING OVERHEAD RAIL TO BE REMOVED



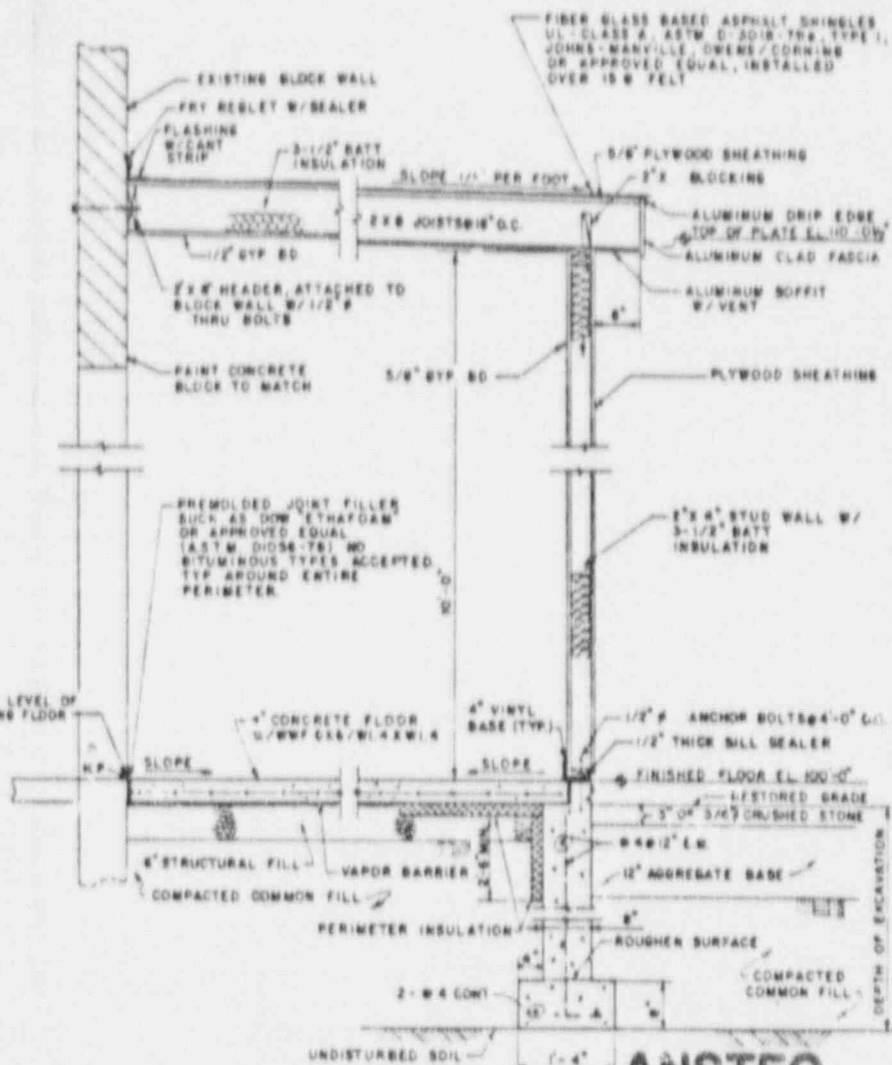
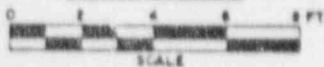
PARTIAL FLOOR PLAN

SL-053-020

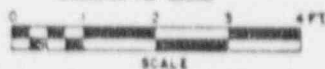




CORRIDOR RECONSTRUCTION
PLAN VIEW



SECTION A



**ANSTEC
APERTURE
CARD**

Also Available on
Aperture Card

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U. S. DEPARTMENT OF ENERGY
ALBUQUERQUE, NEW MEXICO

OPTION 2

PARTIAL FLOOR PLAN & DETAILS SL-053

SALT LAKE COUNTY, UTAH
URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT

DATE: _____ BY: PROJECT MANAGER DATE: _____ BY: PROJECT ENGINEER DATE: _____

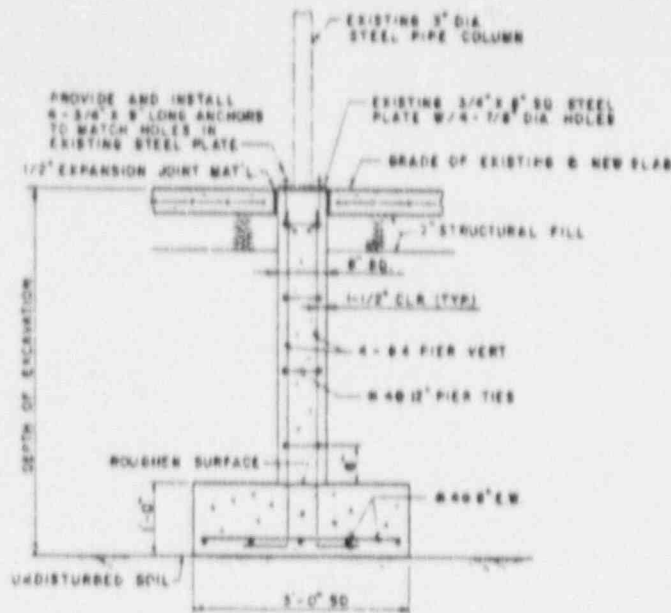
**MORRISON
KNUDSEN**

PROJECT NO.
DE-AC04-83AL18796

DRAWING NO. SL-053-022

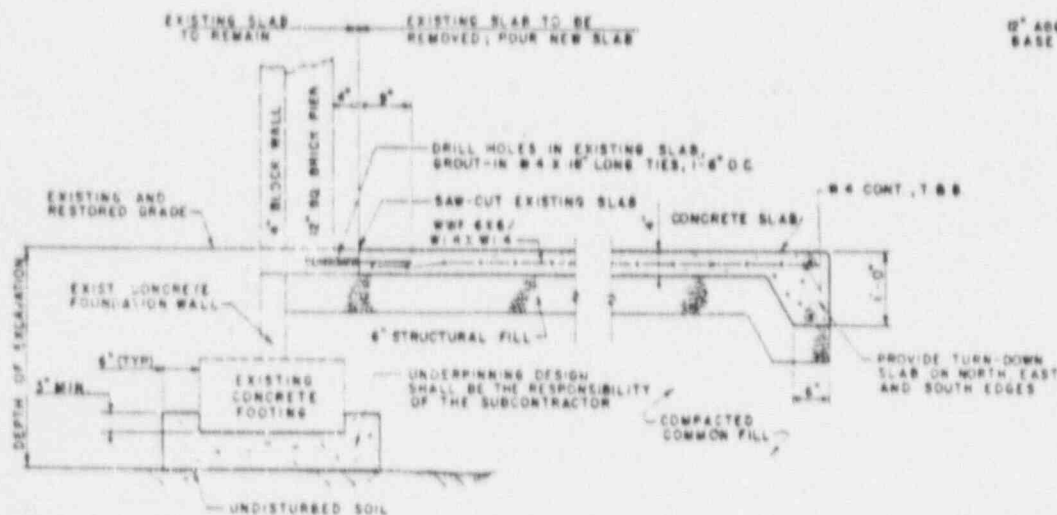
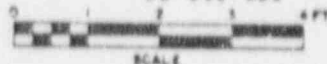
REV
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NO.	DATE	REVISIONS	BY	CHKD	APP'D	DATE
1	12/16/83	FINAL FOR SUBMITTAL	TJS	WJ	JJA	12/16/83
2						
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9						
10						



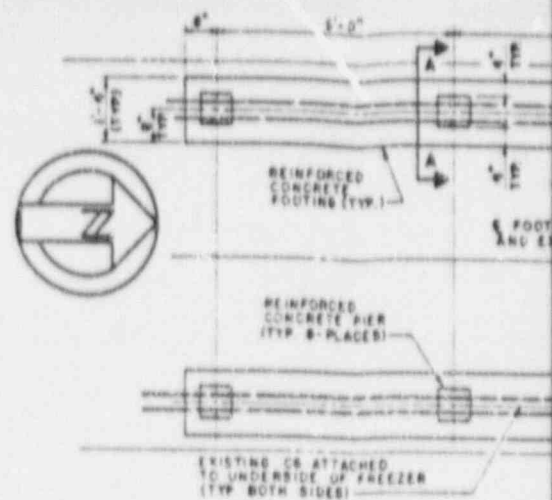
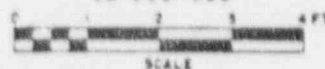
PATIO PIER REPLACEMENT DETAIL

SL-053-020



PATIO FOOTING UNDERPINNING AND SLAB REPLACEMENT DETAIL

SL-053-020



FREEZER FOOTING DETAIL

PL

SL

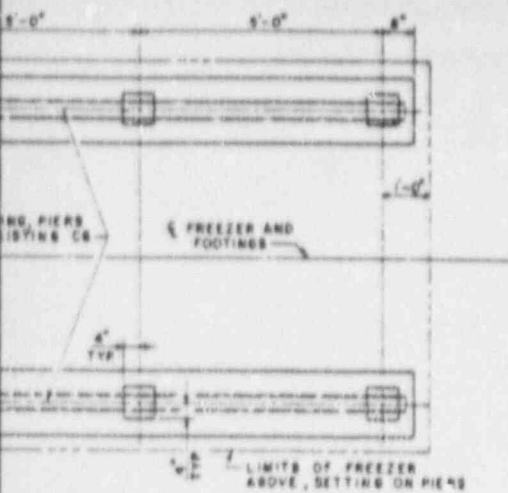
0 1 2 3 4 FT



FREEZER FOOTING DETAIL

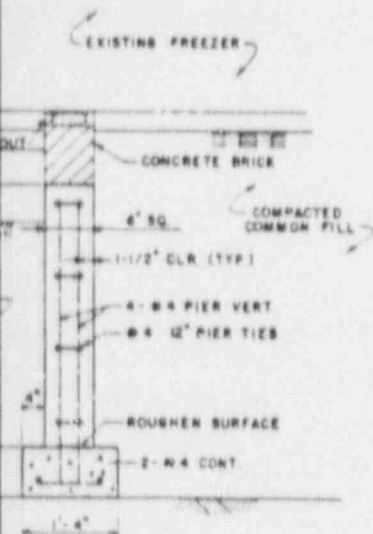
SE

0 1 2 3 4 FT



NG AND PIER DETAIL
AN VIEW
-053-020

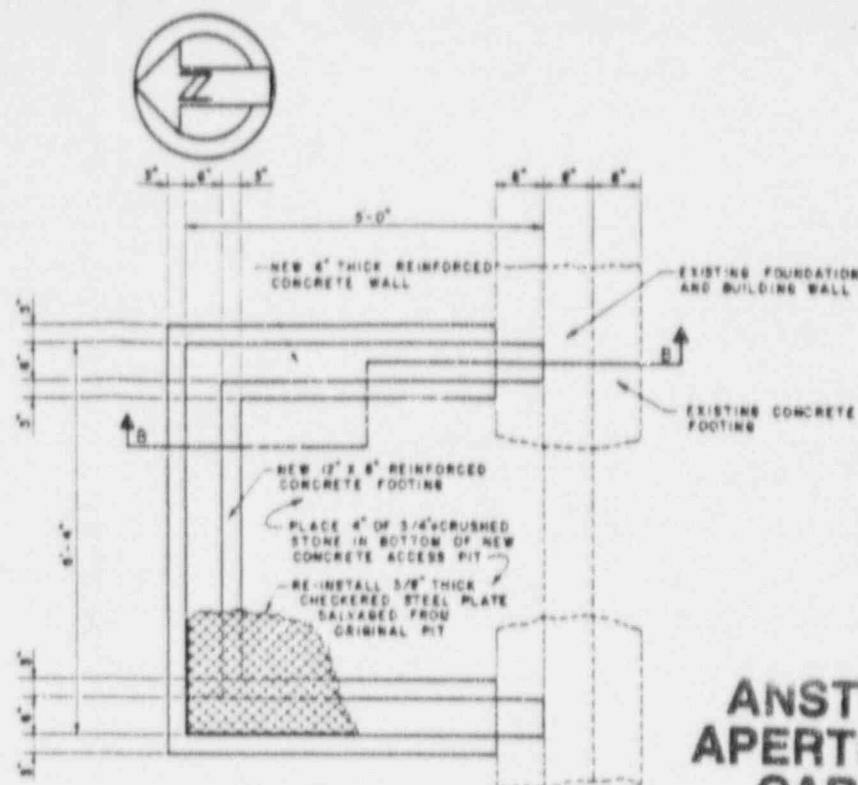
SCALE 4 FT



NG AND PIER DETAIL
SECTION A

SCALE 4 FT

NOTE
FOR GENERAL NOTES, SEE
DRAWING SL-053-021

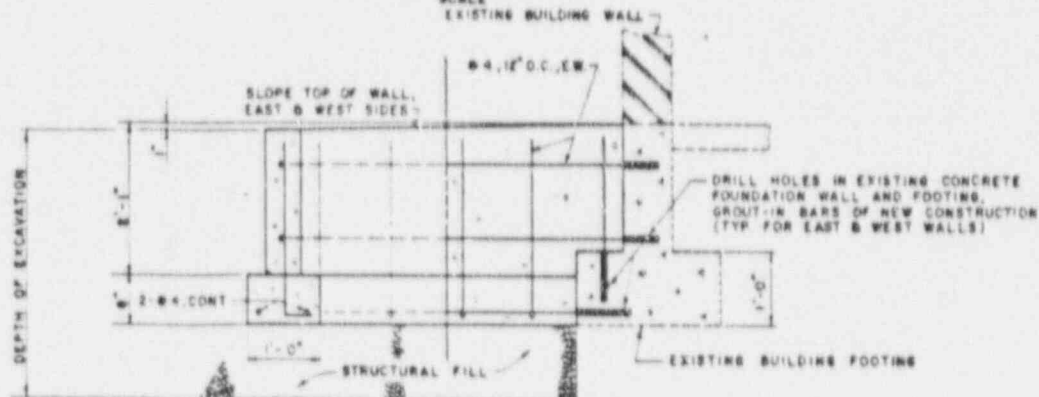


CRAWL SPACE ACCESS PIT

PLAN VIEW

SL-053-020

SCALE 4 FT



CRAWL SPACE ACCESS PIT

SECTION B

SCALE 4 FT

9707100118-08

U. S. DEPARTMENT OF ENERGY
ALBUQUERQUE, NEW MEXICO

DESIGNED BY
TJS
CHECKED BY
TJS
REVIEWED BY
TJS
APPROVED BY
TJS

OPTION 2

CONSTRUCTION DETAILS SL-053

SALT LAKE COUNTY, UTAH
URANIUM MILL TAILINGS REMEDIAL ACTION PROJECT

DATE DOE PROJECT MANAGER DATE DOE PROJECT ENGINEER DATE

PROJECT NO.

DE-AC04-83AL18796

DRAWING NO. SL-053-023

REV A



NAL RFA SUBMITTAL

TJS 12/98 100 337

DATE SCALE APPROVAL DATE SCALE

REVISIONS

NO DATE

APPENDIX A
SURVEY DATA LOGS

OUTDOOR GAMMA SCREENING SURVEY DATA SHEET

LOGGING CREW: Mike Griffin
Joe Wortheis

SHEET 1 OF 3 PAGE 1

DATE: 9-28-84

PROPERTY ID: SL053

INSTRUMENT ID NO.: #26279 probe #015811

BACKGROUND CALCULATION:

#1 640 + #2 610 + #3 608 = 1858 + 3 = 619.3 COUNTS/1MIN *

				AREA:				AREA:			
	surface reading	delta reading		Point ID	meter reading	surface reading	delta reading	Point ID	meter reading	surface reading	delta reading
A+00	2229	1515		B+00	2870	2491		SPL+00	1185	1015	
C+00	1951	1699		A+200	7706	5005		SPL+200	1072	1054	
C+00	3286	3632		A+250	3178	3625		G+200	1168	1175	
D+00	2540	2542		B+250	2201	2073		S WALL +200	1384	1214	
E+00	1199	1227		C+250	861	1389		S WALL +150	1655	1349	
F+00	1254	1253		(S+H WALL) +250	915	964		G+150	1102	1189	
G+00	1081	1171		A+300	1953	2012		SPL+150	1187	1137	
SPL+00	962	1004		B+300	2151	1985					
SPL+50	1204	1087		C+300	1285	1233					
G+50	1093	1197		D+300	806	779					
F+50	2218	2351		E+300	757	784					
E+50				F+300	1236	1268					
L+50	1195	1247		G+300	1120	1159					
S+H WALL +50	6114	9493		SPL+300	1158	888					
+50	8221	8647		SPL+350	1084	933					
A+50	3735	3233		G+350	1130	1143					
A+100	2159	1921		F+350	1049	1087					
B+100	900	13966		E+350	1058	1072					
(S+H WALL) +100	7581	9489		H+350	1066	1092					
A+150	1768	1815		C+350	1402	1202					
B+150	4963	4515		B+350	1300	1309					
(S+H WALL) +150	6943	8412		A+350	1984	1912					
C+200	2593	2012		S WALL +250	1090	1194					
(S+H WALL) +200	1212	1547		G+250	1168	1163					

REMARKS: * ALL READINGS ARE IN COUNTS/0.1 MIN.

ju? Surface readings made with a one-half inch lead collimator

Notes: readings made with a one-half inch 10" X 10" lead plate on the surface below the collimated detector

VPOAA Readings in the North East corner of the property were limited due to fill that had been hauled in about 3' high.

OUTDOOR GAMMA SCREENING SURVEY DATA SHEET

LOGGING CREW: Jeff Mansfield
Ray Nelson
Joe Worthen

SHEET 2 OF 3 PAGE 2
 DATE: 10-4-84
 PROPERTY ID: 56053

INSTRUMENT ID NO: #26279 probe # 615811

BACKGROUND CALCULATION:

#1 652 + #2 621 + #3 658 = 1931 - 3 = 643.3 COUNTS/1MIN *

AREA:				AREA:				AREA:			
Point ID	imeter reading	surface reading	delta reading	Point ID	imeter reading	surface reading	delta reading	Point ID	imeter reading	surface reading	delta reading
JW A+450				A+500	2499	2864		SP+450	915	981	
A+375	1278	1360		B+500	2394	1798		G+450	917	933	
A+400	1248	1338		C+500	1743	2245		F+450	707	777	
A+425	1254	1221		B+475	2225	1668		E+450	662	720	
A+430	1214	1196		(A+25) +475	1932	1675		SP ALBU +450	739	1018	
A+475	1225	1221		(A+25) +450	1203	1202		SP ALBU +475	692	978	
A+500	1435	1332		B+450	1852	1750		E+500	900	915	
A+525	1270	1265		(B+25) +450	1562	1501		F+500	947	965	
A+550	1216	1224		C+450	1202	1306		G+500	815	911	
A+575	1153	1254		USC NR 114	1008	1140		SP +500	933	945	
A+600	1280	1339		ALBU +425	939	960		SP +550	1054	1223	
A+625	1151	1202		ALBU +450	962	942		G+550	885	967	
A+650	1474	1137		C+25 +425	1285	1197		F+550	944	1090	
A+675	1256	1216		C+425	988	1082		E+550	1049	1092	
A+700	1218	1183		(B+25) +425	1088	1209		D+550	1275	1258	
A+EPL	1243	1212		B+425	1711	2642		C+550	1178	1357	
(A+25) +EPL	1250	1329		(A+25) +425	94	1288		C+600	1265	1244	
(A+25) +700	1276	1367		A+100 +425	1344	1298		C+650	1253	1289	
A+25 +675	1247	1233		C+375	2043	1937		C+EPL	1245	1365	
(A+25) +650	1372	1319		D+400	873	902		D+EPL	1242	1519	
(A+100) +650	1195	1410		E+400	967	990		D+650	1193	1243	
(A+25) +575	1268	1283		F+400	957	1009		D+600	1229	1266	
(A+25) +550	1377	1298		G+400	1030	1104		E+600	1192	1146	
(A+25) +525	1377	1256		SP+400	1092	1049		E+650	1167	1338	

REMARKS: * ALL READINGS ARE IN COUNTS/ 0.1 MIN.

Surface readings made with a one-half inch lead collimator

Delta readings made with a one-half inch 10" X 10" lead plate on the surface below the collimated detector



OUTDOOR GAMMA SCREENING
SURVEY DATA SHEET

LOGGING CREW: JEFF MANSHIP
RAY ALBSON
JOE WORTHEN

SHEET 3 OF 3 PAGE 3

DATE: 10-11-84

PROPERTY ID: 56053

INSTRUMENT ID NO.: #26279 PROBE # Q15811

BACKGROUND CALCULATION:

$$\#1 \underline{652} + \#2 \underline{621} + \#3 \underline{658} = \underline{1931} \div 3 = \underline{643.3} \text{ COUNTS/1MIN}$$
[illegible]

REMARKS: * ALL READINGS ARE IN COUNTS/ 0.1 MIN.

Surface readings made with a one-half inch lead collimator

~~Delta readings made with a one-half inch 10" X 10" lead plate on the surface below the collimated detector~~



BOREHOLE LOG

LOGGING CREW: Ray Nelson
Jeff Manchip
Joe Warthen
INSTRUMENT ID NO. #26511 probe #015812

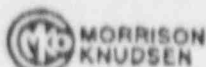
SHEET 1 OF 11 PAGE 5
DATE: 10-5-84
PROPERTY ID: SL053
AREA: _____

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>SL-053-15</u>		HOLE ID: <u>SL-053-4</u>		HOLE ID: <u>SL-053-5</u>		HOLE ID: <u>SL-053-6</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"	1325	0"	1242	0"	1686	0"	1378
6"	1543	6"	1495	6"	2424	6"	1727
12"	1705	12"	1672	12"	2380	12"	1811
18"	1810	18"	1779	18"	2048	18"	2120
24"	1934	24"	1852	24"	2030	24"	2091
30"	2091	30"	1980	30"	2102	30"	1978
36"	2088	36"	2056	36"	2086	36"	1901
42" 39"	1885	42"	2148	42" 39"	1950	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:

MANY OF THE HOLES WERE NOT DEEPER BECAUSE THERE
WERE UNDERGROUND POWER LINES, SEWER LINES, AND WATER LINES
ALL THROUGHOUT THE PROPERTY.



BOREHOLE LOG

LOGGING CREW: Ray Nelson
Jeff Manship
Tee Worthen
INSTRUMENT ID NO. 26511 probe# 015412

SHEET 2 OF 11 PAGE 6
DATE: 10-5-84
PROPERTY ID: 52053
AREA: _____

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: SL-053-7

TIME DRILLED: _____

TIME LOGGED: _____

SOIL TYPE: _____

HOLE ID: SL-053-8

TIME DRILLED: _____

TIME LOGGED: _____

SOIL TYPE: _____

HOLE ID: SL-053-9

TIME DRILLED: _____

TIME LOGGED: _____

SOIL TYPE: _____

HOLE ID: SL-053-10

TIME DRILLED: _____

TIME LOGGED: _____

SOIL TYPE: _____

DEPTH

COUNTS/1MIN

DEPTH

COUNTS/1MIN

DEPTH

COUNTS/1MIN

DEPTH

COUNTS/1MIN

SURFACE		SURFACE		SURFACE		SURFACE	
0"	1669	0"	1313	0"	1302	0"	1287
6"	1865	6"	1522	6"	1475	6"	1419
12"	1829	12"	1691	12"	1673	12"	1627
18"	2018	18"	1937	18"	1970	18"	2000
24"	2099	24"	2072	24"	1915	24"	2076
30"	2217	30"	1986	30"	1924	30"	1848
36"	2048	36"	1869	36"	1836	36"	1636
42"		42"	1840	42"	1636	42" 38"	1584
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: _____

BOREHOLE LOG

LOGGING CREW: Ray Nelson

SHEET 4 OF 11 PAGE 8

Jeff Menship

DATE: 10-9-84

Lee Warthen

PROPERTY ID: SL053

INSTRUMENT ID NO. #26511 probe #015812

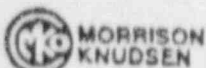
AREA: _____

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>SL-053-3</u>	HOLE ID: <u>SL-053-2</u>	HOLE ID: <u>SL-053-1</u>	HOLE ID: <u>SL-053-16</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"	1516	0"	1655	0"	3803	0"	1048
6"	2099	6"	2760	6"	6065	6"	1395
12"	2992	12"	2854	12"	6378	12"	1845
18"	4103	18"	2275	18"	3520	18"	2220
24"	3976	24"	2064	24"	2745	24"	2144
30"	2773	30"	2106	30"	2500	30"	
36"	2468	36"	2040	36"	2361	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: _____



BOREHOLE LOG

LOGGING CREW: Ray Nelson
Jeff Hunsbys
Joe Wroblewski
INSTRUMENT ID NO. 26511 probe 015812

SHEET 5 OF 11 PAGE 7
DATE: 10.5.84
PROPERTY ID: SL053
AREA: _____

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>SL-053-17</u>		HOLE ID: <u>SL-053-18</u>		HOLE ID: <u>SL-053-20</u>		HOLE ID: <u>SL-053-21</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>1112</u>	0"	<u>1142</u>	0"	<u>1191</u>	0"	<u>948</u>
6"	<u>1299</u>	6"	<u>1481</u>	6"	<u>1399</u>	6"	<u>1029</u>
12"	<u>1522</u>	12"	<u>2041</u>	12"	<u>1675</u>	12"	<u>1212</u>
18"	<u>1727</u>	18"	<u>2185</u>	18"	<u>1798</u>	18"	<u>1366</u>
24"	<u>1779</u>	24"	<u>1992</u>	24"	<u>1781</u>	24"	<u>1545</u>
30"		30"	<u>2033</u>	30"	<u>1705</u>	30"	<u>1448</u>
36"		36"		36"	<u>1835</u>	36"	<u>1537</u>
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: _____



BOREHOLE LOG

LOGGING CREW: Ray Nelson
Jeff Manship
Joe Worthen

SHEET 7 OF 11 PAGE 11
DATE: 10-5-84
PROPERTY ID: SL053
AREA: _____

INSTRUMENT ID NO. #26511 probe# 015812

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>SL-053-19</u>	HOLE ID: <u>SL-053-26</u>	HOLE ID: <u>SL-053-27</u>	HOLE ID: <u>SL-053-28</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>843</u>	0"	<u>1831</u>	0"	<u>34361</u>	0"	<u>52838</u>
6"	<u>1120</u>	6"	<u>2203</u>	6"	<u>57776</u>	6"	<u>96749</u>
12"	<u>1229</u>	12"	<u>2062</u>	12"	<u>103630</u>	12"	<u>123063</u>
18"	<u>1382</u>	18"	<u>1928</u>	18"	<u>125201</u>	18"	<u>127653</u>
24"	<u>1393</u>	24"	<u>1942</u>	24"	<u>132063</u>	24"	<u>124790</u>
30"	<u>1297</u>	30"		30"	<u>134741</u>	30"	<u>113093</u>
36"		36"		36"	<u>130448</u>	36"	<u>74585</u>
42"		42"		42"	<u>107086</u>	42"	<u>34910</u>
48"		48"		48"	<u>42408</u>	48"	<u>25326</u>
54"		54"		54"	<u>15336</u>	54"	<u>19020</u>
60"		60"		60"	<u>15837</u>	60"	<u>18035</u>
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: _____

BOREHOLE LOG

LOGGING CREW: Ray Nelson
Jeff Manship
Joe Worthen
INSTRUMENT ID NO. #26511 probe #015812

SHEET 8 OF 11 PAGE 12
DATE: 10-5-84
PROPERTY ID: 52053
AREA: _____

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>52-053-29</u>		HOLE ID: <u>52-053-30</u>		HOLE ID: <u>52-053-31</u>		HOLE ID: <u>52-053-32</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"	2834	0"	16005	0"	7037	0"	8943
6"	4806	6"	35124	6"	11423	6"	52246
12"	3750	12"	54444	12"	18926	12"	78241
18"	3566	18"	68893	18"	27458	18"	82501
24"	3891	24"	79101	24"	34714	24"	74515
30"	4056	30"	84308	30"	38118	30"	6. 90
36"	3992	36"	83588	36"	39206	36"	30.12
42"	3897	42"	48529	42"	58833	42"	11033
48"	3820	48"		48"	68652	48"	5282
54"	3360	54"		54"	63233	54"	3257
60"	3157	60"		60"	61543	60"	2610
66"		66"		66"		66"	2742
72"		72"		72"		72"	
78"		78"		78"		78"	
84"		84"		84"		84"	
90"		90"		90"		90"	
96"		96"		96"		96"	

REMARKS: _____

BOREHOLE LOG

LOGGING CREW: Ray Nelson
Teff Manship
Tee Worthen
INSTRUMENT ID NO. #26511 probe # 015812SHEET 11 OF 11 PAGE 15
DATE: 10 5 84
PROPERTY ID: 56053
AREA: _____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.

REMARKS SECTION:

HOLE ID: <u>5L-053-11</u>	HOLE ID: <u>5L-053-12</u>	HOLE ID: <u>5L-053-13</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"	1800	0"	2504	0"	12668	0"	
6"	1986	6"	6174	6"	25997	6"	
12"	2285	12"	11582	12"	35397	12"	
18"	2600	18"	16857	18"	46741	18"	
24"	3045	24"	22324	24"	54538	24"	
30"	3562	30"	22545	30"	57125	30"	
36"	3210	36"		36"	50051	36"	
42"	2624	42"		42"	34935	42"	
48"	2221	48"		48"	17549	48"	
54"	2070	54"		54"	6959	54"	
60"		60"		60"	3480	60"	
66"		66"		66"	3478	66"	
72"		72"		72"		72"	
78"		78"		78"		78"	
84"		84"		84"		84"	
90"		90"		90"		90"	
96"		96"		96"		96"	

REMARKS: _____

BOREHOLE LOG

 LOGGING CREW: Von Black
Joe Worthen

 SHEET 3 OF 3 PAGE 3

 DATE: 11-1-84

 INSTRUMENT ID NO. 26511/015812

 PROPERTY ID: 5L-053

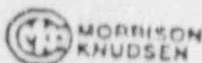
AREA: _____

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>5L-053-48</u>	HOLE ID: _____	HOLE ID: _____	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	<u>1339</u>	SURFACE		SURFACE		SURFACE	
0"	<u>"</u>	0"		0"		0"	
6"	<u>1885</u>	6"		6"		6"	
12"	<u>2050</u>	12"		12"		12"	
18"	<u>2146</u>	18"		18"		18"	
24"	<u>2028</u>	24"		24"		24"	
30"	<u>1980</u>	30"		30"		30"	
36"	<u>2008</u>	36"		36"		36"	
42"	<u>1923</u>	42"		42"		42"	
48"	<u>1761</u>	48"		48"		48"	
54"	<u>1887</u>	54"		54"		54"	
60"	<u>1813</u>	60"		60"		60"	
66"	<u>1904</u>	66"		66"		66"	
72"	<u>1926</u>	72"		72"		72"	
78"	<u>1914</u>	78"		78"		78"	
84"		84"		84"		84"	
90"		90"		90"		90"	
96"		96"		96"		96"	

 REMARKS: _____



INTERIOR
OUTDOOR GAMMA SCREENING
SURVEY DATA SHEET

LOGGING CREW: Von Black
Joe Warthen

SHEET 1 OF 48 PAGE 1

DATE: Oct 8, 1984

PROPERTY ID: SL053

INSTRUMENT ID NO: #34778 probe # 019584

BACKGROUND CALCULATION:

#1 598 + #2 607 + #3 598 = 1803 + 3 = 601 COUNTS/1MIN

AREA: Building 1				AREA:				AREA:			
Point ID	1 meter reading	surface reading	delta reading	Point ID	1 meter reading	surface reading	42/hr surface	Point ID	1 meter reading	surface reading	42/hr surface
Room 1	2070	1858	20	Room 4	2878	2264	22	Room 11	2239	1936	20
	3740	2676	24		2177	1960	30				
	2733	2811	25		2846	3176	27	Room 12	3886	3688	20
	2261	2631	24		2073	1877	20		2363	2272	22
	1858	1861	20								
	1806	1875	20	Room 5	2362	1891	20				
	1805	1746	19		1941	2332	22				
	2393	1960	20		1861	1852	20				
	1366	1657	19								
	2031	1935	20	Room 6	2535	2209	22				
	2112	2060	20		2798	2210	22				
	2463	2163	21		2009	2312	22				
Room 2	3708	3113	27	Room 7	2687	2221	22				
	2360	2400	23		2467	2379	23				
Room 3	2947	2317	22	Room 8	2627	2435	23				
	2686	2364	22								
	3210	3453	27	Room 9	1742	1851	20				
	2894	3059	27		2076	2156	21				
				Room 10	2018	2122	21				
					2214	2266	22				

REMARKS: * ALL READINGS ARE IN COUNTS/ 0.1 MIN.

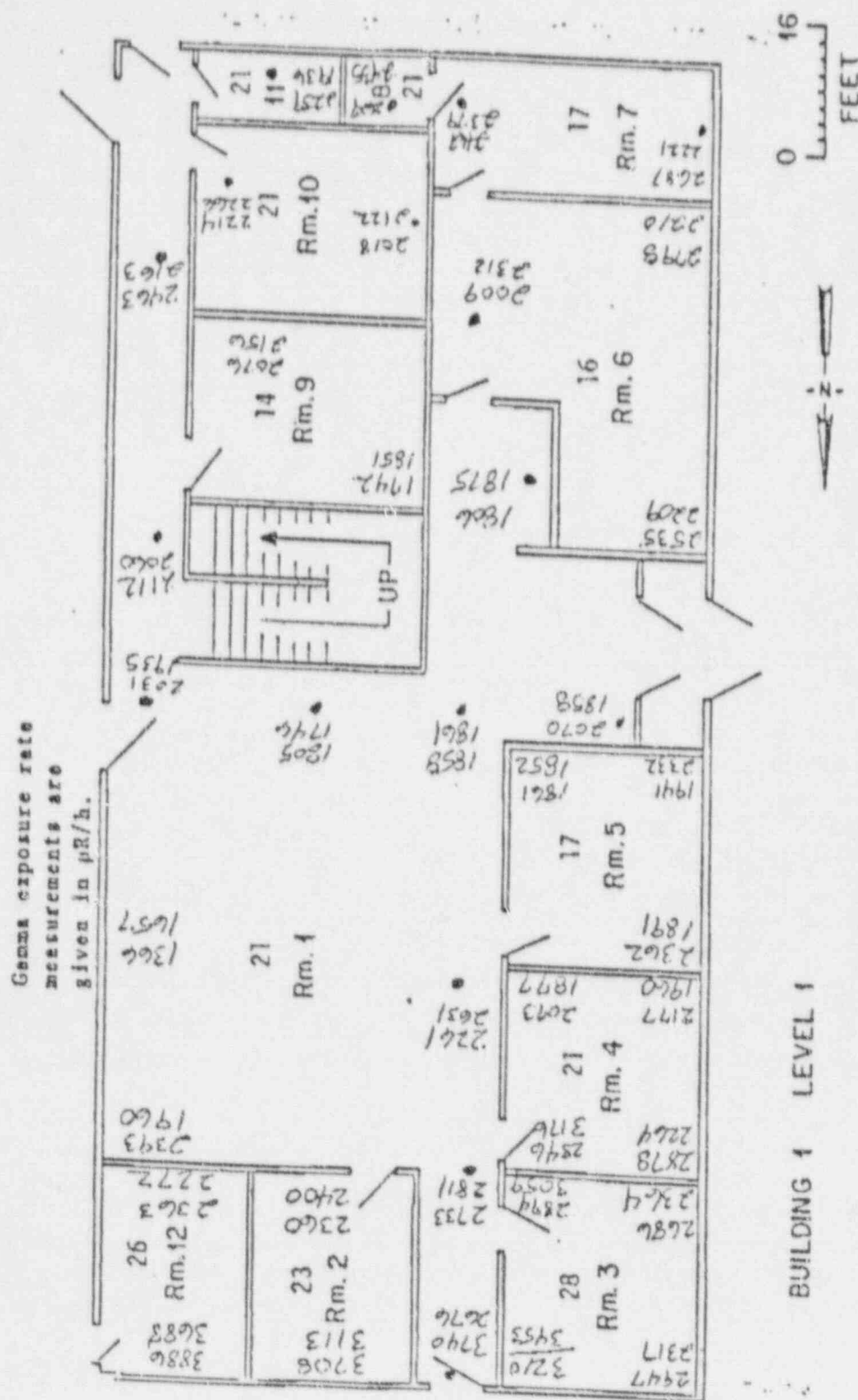
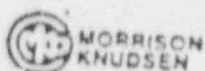


Fig. 4. Floor plan and gamma exposure rates at 1 m above floor surfaces in Building 1, level 1, at property SL053.



OUTDOOR GAMMA SCREENING SURVEY DATA SHEET

LOGGING CREW: Von Black
Joe Wrothen

SHEET 73 OF 73

DATE: Oct 8, 1984

PROPERTY ID: 56053

INSTRUMENT ID NO: #34778 pick # 019584

BACKGROUND CALCULATION:

#1 598 + #2 607 + #3 598 = 1803 + 3 = 601 COUNTS/1MIN *

AREA: <u>Building 2</u>				AREA:				AREA:			
Point ID	1 meter reading	surface reading	4 ft/hr surface	Point ID	1 meter reading	surface reading	4 ft/hr surface	Point ID	1 meter reading	surface reading	4 ft/hr surface
Room 1	1703	1507	17	Room 6	924	991	9				
	1356	1366	17		1006	1085	9				
	1216	1265	110								
	1280	1473	17	Room 7	10234	15005	100				
	3804	2357	23		12201	21701	140				
	1395	1390	17		3245	4380	35				
Room 2	1483	1557	17								
	1487	1515	17								
	1231	1330	110								
	1367	1424	17								
	1103	1227	110								
	1095	1310	110								
	1284	1326	110								
	1409	1313	110								
Room 3	1374	1477	17								
Room 4	15493	23729	150								
Room 5	1895	1740	19								
	2648	3214	27								
	1653	1950	20								
	1366	1284	110								

REMARKS: * ALL READINGS ARE IN COUNTS/ 0.1 MIN.

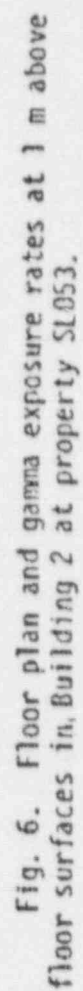


Fig. 6. Floor plan and gamma exposure rates at 1 m above floor surfaces in Building 2 at property SL053.

OUTDOOR GAMMA SCREENING
SURVEY DATA SHEET

LOGGING CREW: Von Block
Joe Warthen

SHEET 35 OF 4 PAGE 5

DATE: Oct 8, 1984

PROPERTY ID: SL053

INSTRUMENT ID NO.: #34778 probe # 019584

BACKGROUND CALCULATION:

#1 598 + #2 607 + #3 598 = 1803 $\div$ 3 = 601 COUNTS/1MIN *

AREA: <u>Building 3</u>				AREA:				AREA:			
Point ID	imeter reading	surface reading	uR/hr surface	Point ID	imeter reading	surface reading	uR/hr surface	Point ID	imeter reading	surface reading	uR/hr surface
Room 1	2821	3728	21	Room 3	1388	1557	17	Room 9	1969	2034	21
	2018	2638	21		1671	2310	22		1825	2004	20
	2694	4497	25		1488	1741	19		1253	1604	18
	2095	2736	25								
	1565	1843	20	Room 4	1757	1731	19	Room 10	1148	1803	19
	1563	2192	22		1687	1708	19		1302	1561	17
	2623	3398	20		1554	1669	17		994	1538	18
	3524	5361	40		1917	1993	20				
	2526	2927	21		1928	1902	20	Room 11	1438	1651	17
	1821	2217	19						1537	1788	19
	1914	1715	17	Room 5	1182	1447	17		1468	1620	17
	1956	2235	22		1425	1467	17		1456	1557	18
	1905	1839	17		1193	1334	17		1439	1557	17
	1661	2030	20						1425	1502	17
	1493	1770	19	Room 6	1351	1369	17		1408	1557	17
Room 2	1631	1898	20		1619	1691	19				
	1724	1878	20		1321	1398	17				
	1513	1632	17	Room 7	No Readings						
	1463	1448	17	Room 8	1303	1338	17				
	1243	1378	20								
	1336	1499	17								
	1260	1340	11								

REMARKS: * ALL READINGS ARE IN COUNTS/ 0.1 MIN.

Room #7 is on stilts and area under Room #7 was surveyed during outside Gamma Screening

OUTDOOR GAMMA SCREENING
SURVEY DATA SHEET

LOGGING CREW: Van Block
Joe Worthen

SHEET 47 OF 8 PAGE 7

DATE: Oct 8, 1984

PROPERTY ID: SL05

INSTRUMENT ID NO.: #34778 preb# 019584

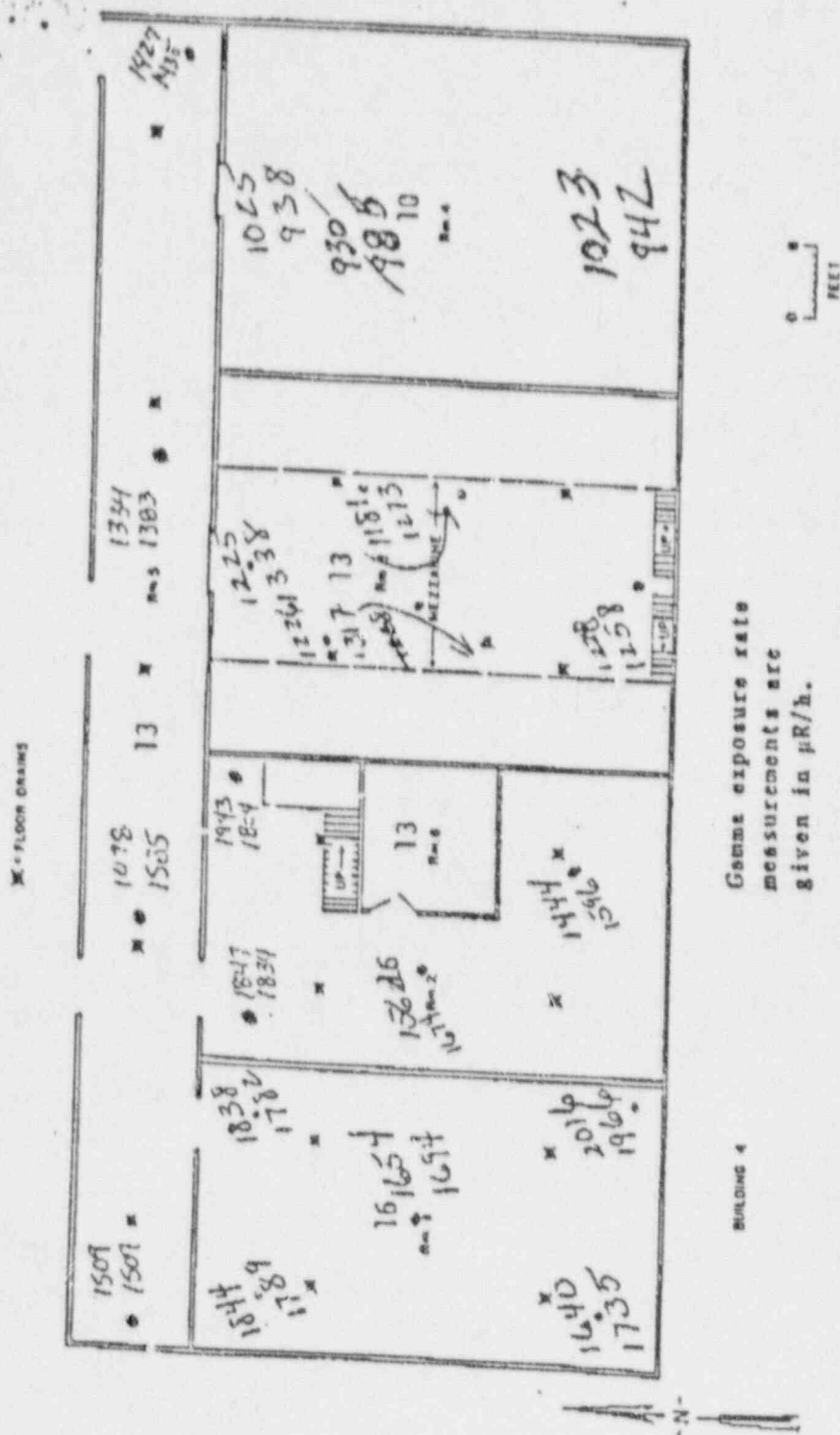
BACKGROUND CALCULATION:

$$\#1 \underline{598} + \#2 \underline{607} + \#3 \underline{598} = \underline{1803} - 3 = \underline{601} \text{ COUNTS/1MIN}$$

AREA: Building #				AREA:				AREA:			
Point ID	meter reading	surface reading	ΔH	Point ID	meter reading	surface reading	ΔH	Point ID	meter reading	surface reading	ΔH
Room 1	1844	1729	11	Room 5	1509	1507	12				
	1646	1735	14		1478	1585	17				
	1654	1694	14		1334	1383	17				
	1838	1782	14		1427	1438	17				
	2016	1966	20								
Room 2	1847	1834	14	Room 6	No Reading						
	1562	1674	14								
	1444	1596	18								
	1943	1585	17								
Room 3	1226 ^{JW}										
	1226	1317	10								
	1225	1338	11								
	1228	1258	10								
	1181	1273	10								
Room 4	1025	938	1								
	930	985	1								
	1023	942	1								

REMARKS: * ALL READINGS ARE IN COUNTS/1MIN

REMARKS: * ALL READINGS ARE IN COUNTS/ 0.1 MIN





SHEET 1 OF 1 PAGE

DATE: 3/8/85

PROPERTY ID: SL-053

SURVEY CREW: A & R MEATS

C. Leichtweis

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Journal compilation © 2006 Blackwell Publishing Ltd

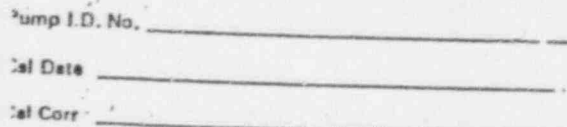
CALIBRATION SOURCE: Th²³⁰ # 1166

HP-Q11A

Location: SL-053
Date: 3/8/85
Surveyor: C. Leichtweis

[illegible]

☐ SPECIAL (If special, indicate reason for initiation of survey below).

☐ CORRECTIVE ACTION TAKEN

$$W.L. = \frac{\left(\frac{C_{s+b}}{T_{s+b}} - \frac{C_b}{T_b} \right)}{\left\{ \text{Eff.} \frac{\text{CPM}}{\text{DPM}} \right\} \left\{ \text{Vol., liters} \right\} \left\{ \text{Table Factor} \right\}}$$

C_{s+b} = Counts, Sample + Background
 T_{s+b} = Time, Sample + Background
 C_s = Counts, Sample
 T_b = Time, Background

1. Air sample collection exactly five minutes through 45μ membrane filter at a flow rate of 2-10 LPM.
2. Analysis minimum of 40 minutes after collection. Count for one minute.

3. Calibration Check

Thorium 230
Standard I.D. No. Th²³⁰ #11714

Thorium Standard DPM 6340

Gross Counts, CPM _____

$$\frac{\text{CPM}}{\text{DPM}} = \text{Efficiency} \quad \underline{.54}$$

BOREHOLE LOG

LOGGING CREW: GARY STONE
RAUL BARRERAS

SHEET 1 OF 2 PAGE 1

DATE: 3-25-86

INSTRUMENT ID NO. 31983

PROPERTY ID: SL-053 AIR MEATS

AREA: Corn Dog/Cooler Bldg

- 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: 44

TIME DRILLED:

TIME LOGGED:

SOIL TYPE:

HOLE ID: 45

TIME DRILLED:

TIME LOGGED:

SOIL TYPE:

HOLE ID: 46

TIME DRILLED:

TIME LOGGED:

SOIL TYPE:

HOLE ID:

TIME DRILLED:

TIME LOGGED:

SOIL TYPE:

DEPTH	COUNTS/1MIN	DEPTH	COUNTS/1MIN	DEPTH	COUNTS/1MIN	DEPTH	COUNTS/1MIN
SURFACE	3838	SURFACE	1426	SURFACE	2247	SURFACE	
0"	8690	0"	1348	0"	3013	0"	
6"	10514	6"	1417	6"	5670	6"	
12"	15268	12"	1540	12"	12658	12"	
18"	29522	18"	1698	18"	36341	18"	
24"	71575	24"	1849	24"		24"	
30"	109867	30"	1793	30"		30"	
36"	113027	36"		36"		36"	
42"	62641	42"		42"		42"	
48"	16582	48"		48"		48"	
54"	8934	54"		54"		54"	
60"	7974	60"		60"		60"	
66"	WATER-	66"		66"		66"	
72"		72"		72"		72"	
78"		78"		78"		78"	
84"		84"		84"		84"	
90"		90"		90"		90"	
96"		96"		96"		96"	

REMARKS:

Borehole #44 → North side of Bldg - Center Area

#45 → East side of Bldg - Center Area

#46 → South side of Bldg - Center Area - Unable to drill because of angle of borehole

Unable to drill straight vertically because of concrete overhang from south adjoining Bldg

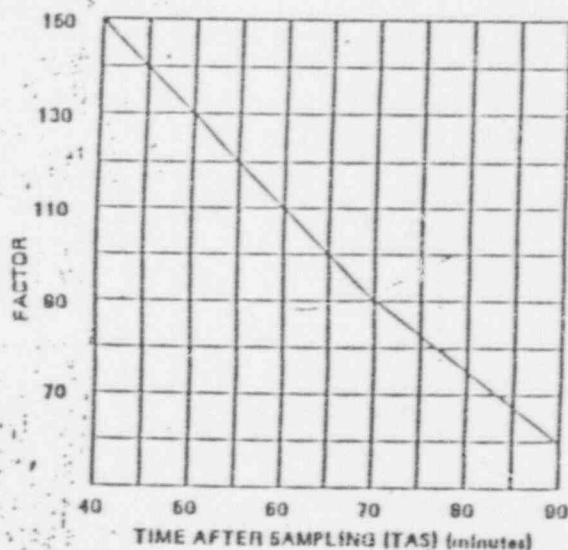
Location: SL-053
Date: 3/8/85
Surveyor: C. Reichert

[illegible]

☒ SPECIAL (If special, indicate reason for initiation of survey below).

☐ CORRECTIVE ACTION TAKEN

Provided to help suggest remedial action is unnecessary @ this location as per M-K direction.
* From NWS SLC Airport



Pump I.D. No. C579 Dupont

Cal Date 3-8-85

Cal Corr: 2 lpm

$$W.L. = \frac{\left(\frac{C_{s+b} \cdot C_b}{I_{s+b} \cdot I_b} \right)}{\left\{ \text{Eff.} \cdot \frac{CPM}{DPM} \right\} (\text{Vol, liters}) \{ \text{Table Factor} \}}$$

C_{s+b} = Counts, Sample + Background
 T_{s+b} = Time, Sample + Background
 C_s = Counts, Sample
 T_b = Time, Background

1. Air sample collection exactly five minutes through .45 μ membrane filter at a flow rate of 2 - 10 LPM.
2. Analysis minimum of 40 minutes after collection. Count for one minute.

3. Calibration Check
Thorium 230
Standard I.D. No. Th 230 #1171

Thorium Standard DPM 6340

Gross Counts, CPM 3724

$$\frac{\text{CPM}}{\text{DPM}} = \text{Efficiency} \quad \underline{.54}$$

Location: SL-50-75
Date: 5/8/81
Surveyor: C. C. C.

Location: SL-053

Date: 5/8/85

Surveyor: C. Gschlweiss

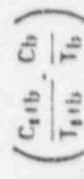
☐ — CONNECTIVE ACTION TAKEN

on for initiation of survey below).

SPECIAL III special

☐ ROUTINE

*From NWS. 5LC AIRPORT



w1

 $(\text{ENL} \cdot \text{CPM}) / (\text{Vol. Hires}) \text{ (Table Factor)}$

1. Air sample collection exactly five minutes through .45 μ m membrane filter at a flow rate of 2 - 10 LPM.
2. Analyze minimum of 40 minutes after collection. Count for one minute.

3. Calibration Check

Thorium 230

Standard I.D. No.

Thorium Standard DPM 6340

Gross Counts, CPM 5424

CPM 54

$$C_{\text{eth}} = \text{Counts, Sample + Background}$$

Time, Sample + Background

 $C_1 = \text{Counts, Sample}$ **Yb = Time, Background**

Pump I.D. No. C-579 Dupont

3-8-85

Cal Date

PROPERTY SURVEY SKETCH

Sheet 1 of 2

SITE LOCATION A & R MEATS (UNDER BUILDING #1)

ADDRESS _____

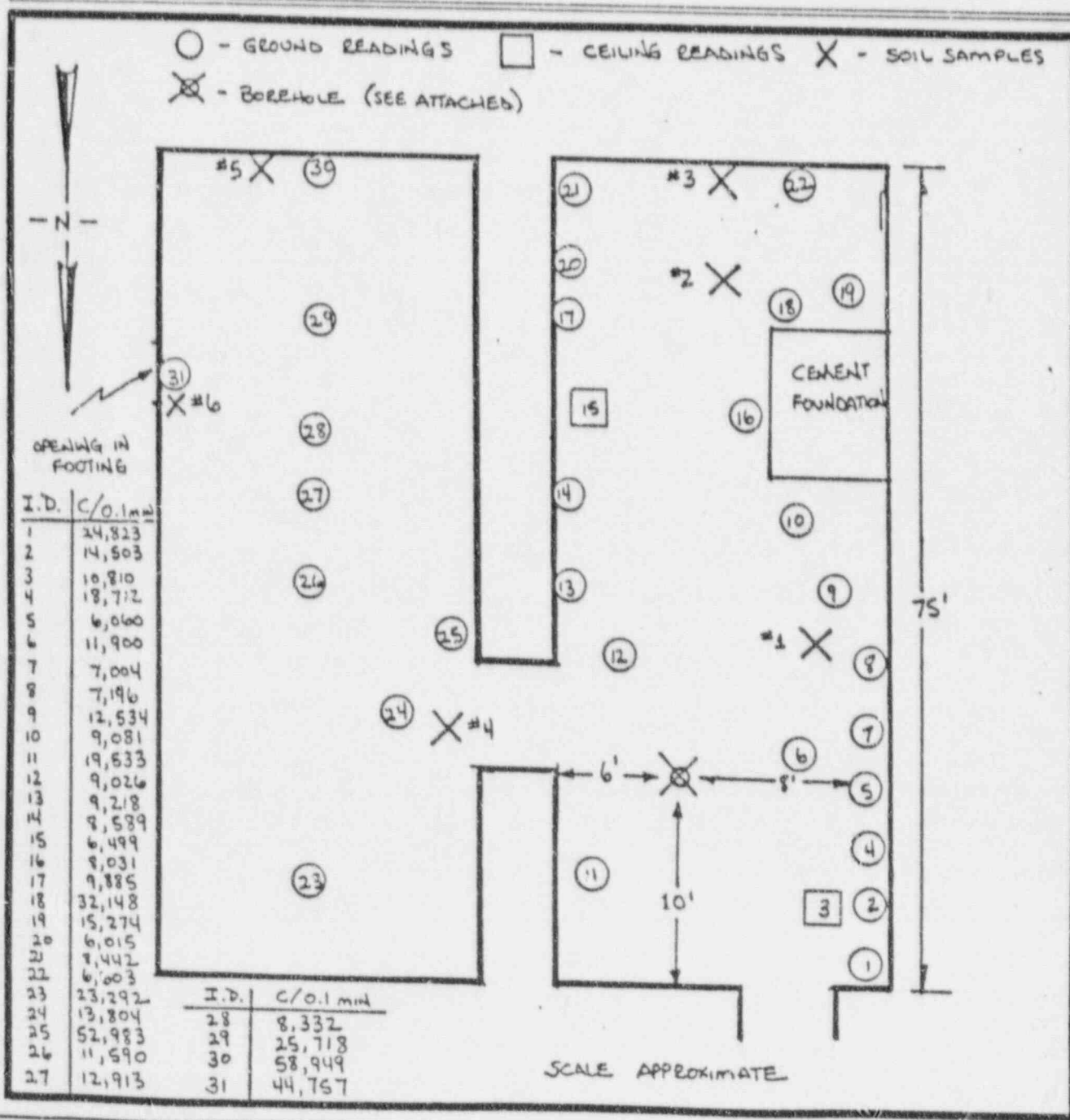
PROPERTY TYPE SL-053

LOT NO. _____

OWNER _____

SKETCH COMPLETED BY M. GRIFFIN

DATE JANUARY 8, 1985



BOREHOLE LOG

LOGGING CREW: M. GRIFFIN
J. MANSHIP
J. WORTHEN
 INSTRUMENT ID NO. 31987

SHEET 2 OF 2 PAGE 2
 DATE: JANUARY 4, 1985
 PROPERTY ID: SL-053
 AREA: UNDER BLDG. #1

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>#1</u>	HOLE ID: _____	HOLE ID: _____	HOLE ID: _____
TIME DRILLED: <u>1355</u>	TIME DRILLED: _____	TIME DRILLED: _____	TIME DRILLED: _____
TIME LOGGED: <u>1355</u>	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"	28,851	0"		0"		0"	
6"	12,948	6"		6"		6"	
12"	5,425	12"		12"		12"	
18"	3,590	18"		18"		18"	
24"	2,238	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: ALL READINGS IN COUNTS / 0.1 min ; SURFACE READING IS
3 FT. 8 IN. BELOW CEILING

AIR FILTER CALCULATION SHEET

(Note: staple sample (in envelope) to this sheet after counting)

Sample Id: SL-HV-0000-11/1/84-DW Location A-A MEATS HI-Vol
 Date/time sampling started 11/1/84 082 Date/time sampling ended 11/1/84 0813
 Date Counted 11/1/84 Time Counted 1212
 Calculated by C.R. J. J. Counting Instrument L-2200 FC-2
 Instrument ID 12239/245 Efficiency .35
 Background total counts 2 in 20 minutes
 Background count rate .1 cpm.

1) Air sample activity calculation:

Sample total counts 4224 in 20 minutes
 Sample count rate 211.2 cpm - Bkg count rate .1

Activity:

(211.2 net cpm) x Fr

$E_c \times E_f \times C_s \times V \times 2.22 \times 10^6$

= 1.44E-10 uCi/ml.

Where:

V = air sample volume (ml) (ft³ x ml.)

E_c = instrument counting efficiency .35

E_f = filter collection efficiency .645

C_s = filter self-absorption correction factor (if any) 1

Fr = filter ratio (to be used if only a fraction of the filter is being counted):

2) Second count and activity calculation (if required):

Date counted 11/2/84 Time counted 0

Calculated/counted by Von Black

Counting instrument L-2200 I.D. 122

Efficiency .34

Background total counts 2 in 20 min

Background count rate .1 cpm

Sample total counts 337 in 20 min

Sample count rate 16.85 cpm - Bkg count rate .1

Activity:

(net cpm) x Fr

$E_c \times E_f \times C_s \times V \times 2.22 \times 10^6$

= 7.83E-12 uCi/ml.

DATE(MO/DY/YR)=11/1/84
TIME CTD=1212.

SAMPLE ID=APRA20

CTR RKG=A.10CPM

CTR EFF =A.35

SMPI CNTD FOR 20.MIN

NET CTS =211.6CPM

SMPI RHN TIME = 20.MIN

SMPI FLOW RATE = 5.0CFM

ACTIVITY = 1.446838148E-10UCI/MI

REVIEWED BY C.R. J. J.

DATE(MO/DY/YR)=11/2/84
TIME CTD=AAA.

SAMPLE ID=HV0002A

CTR RKG=A.10CPM

CTR EFF =A.34

SMPI CNTD FOR 20.MIN

NET CTS =16.75CPM

SMPI RHN TIME = 20.MIN

SMPI FLOW RATE = 5.0CFM

ACTIVITY = 7.835914179E-12UCI/MI

REVIEWED BY Von Black

01/23/84

5439A

REV. NO. 0

PAGE NO. 006b-7

APPENDIX B
APPRAISAL REPORT

APPRAISAL REPORT

of
Two Industrial Buildings
to be removed from the
A & R MEATS COMPANY COMPLEX

located at
3585 South 500 West
Salt Lake County, Utah

prepared for
MORRISON KNUDSEN COMPANY, INC.

WESTRA APPRAISAL COMPANY



EDWARD P. WESTRA, MAI

October 24, 1985

Morrison-Knudsen Company, Inc.
P O Box 9136
Albuquerque, New Mexico 87119

Attention: Larry J. Dresser

Re: Appraisal - Two buildings to be removed from A & R Meats
Company Complex located at 3585 South 500 West, Salt Lake
County, Utah.

Pursuant to Purchase Order #3050-521-9281, I have personally inspected the above-referenced property and furnish the following appraisal report relative to the value contribution of the above referenced buildings to the total fair market value of the total complex. The subject buildings, which are a small part of the overall complex, are residing on radioactive tailings which are to be removed and in order to do so the subject buildings must first be removed. The presence of the tailings is not considered in the valuation. The function of the report is to provide a measure of just compensation for the subject buildings.

The definition of market value as would apply to the total property is the amount of cash, or in terms reasonably equivalent to cash, for which in all probability the property would be sold by a knowledgeable owner willing but not obligated to sell to a knowledgeable purchaser who desires but is not obligated to buy.

After careful consideration and analysis as contained in the report, I am of the opinion the market value contribution of the subject buildings, as of October 24, 1985, is:

TWENTY FIVE THOUSAND DOLLARS
(\$25,000)

The value estimate is subject to the assumptions and limiting conditions contained in the report. I trust the report is completed in sufficient detail to accomplish its intended function. Please call if I can be of further assistance.

Sincerely,

Edward P. Westra
Edward P. Westra, MAI

WESTRA APPRAISAL COMPANY



EDWARD P. WESTRA, MAI

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PROPERTY IDENTIFICATION

Kind: Two buildings among others located in an industrial meat processing complex.

Location: 3585 South 500 West
Salt Lake County, Utah

Owner: A & R Meats Company

Land Area: N/A

Improvements:

1. Freezer and specialty meats processing building containing 1,330 square feet.
2. Storage building containing 199 square feet.

PURPOSE OF APPRAISAL

The appraisal is made pursuant to Purchase Order #3050-521-9281 which requests a fair market value estimate and also a replacement value estimate of the afore-identified buildings to be removed from the property. The subject buildings, which are only a small part of the overall complex, are residing on radioactive tailings which are to be removed. In order to do so, the buildings must first be removed. The function of the report is to assist in providing a measure of compensation for said buildings.

DEFINITION OF MARKET VALUE

The standard definition of market value as would apply to the total property also applies to the value contribution of the subject buildings to be removed. This is "the most probable price in terms of money which a property should bring in a competitive and open market under all conditions requisite to a fair sale, the buyer and seller each acting prudently and knowledgeably, and assuming the price is not affected by undue stimulus."

VALUATION DATE

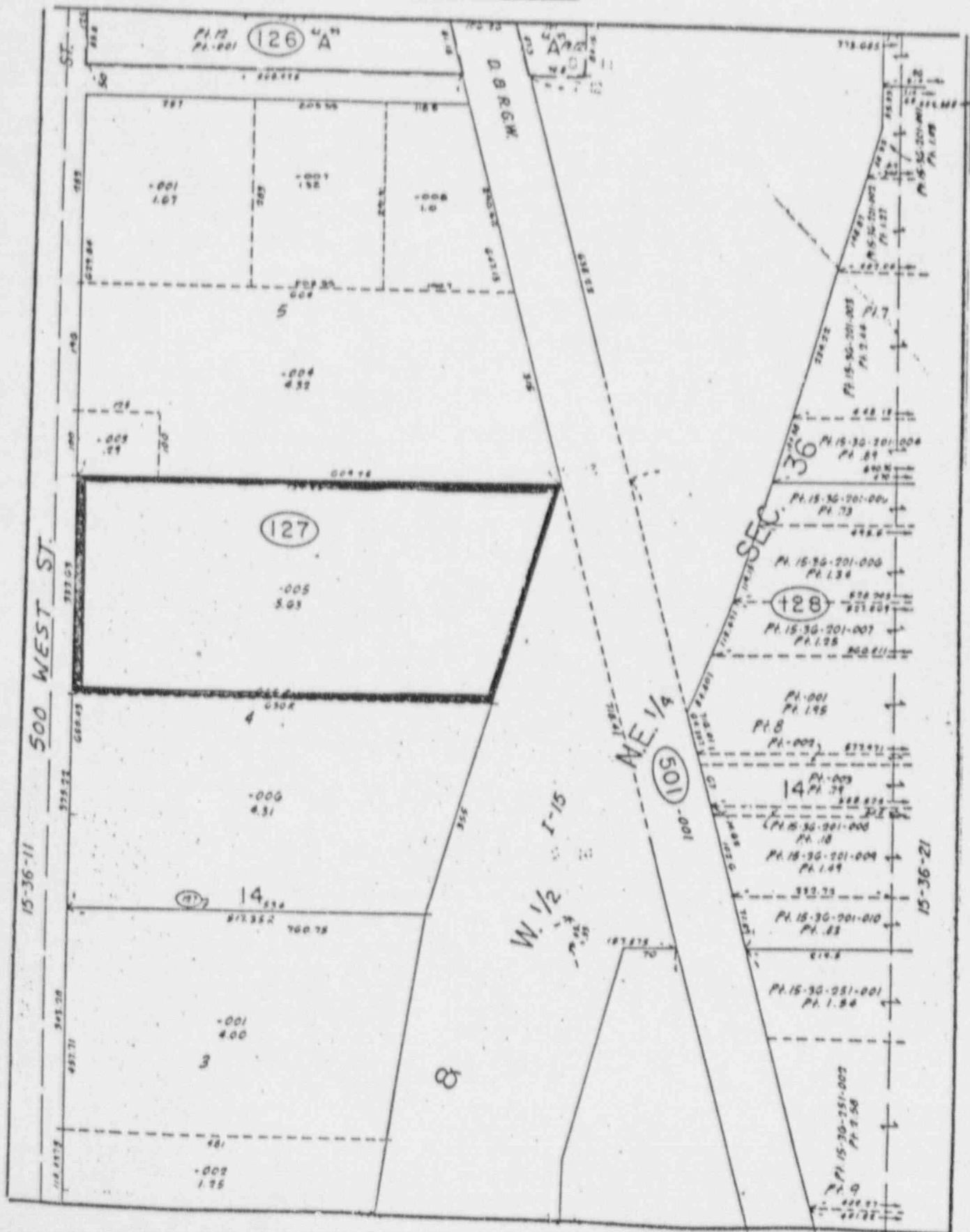
The effective date of the value estimate is the date of personal inspection of the property by your appraiser, which was on October 24, 1985.

LOCATION AND NEIGHBORHOOD

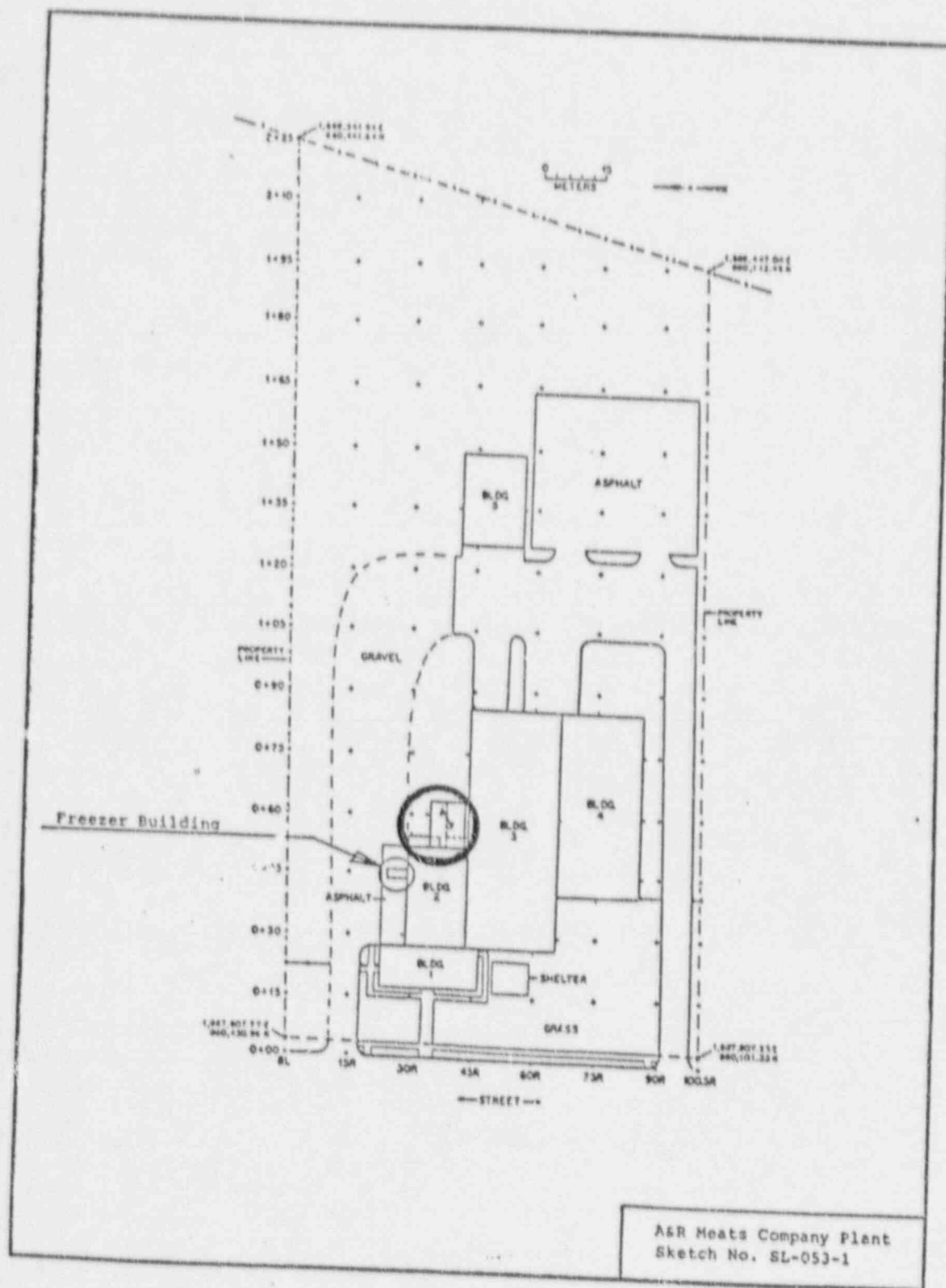
The location and neighborhood is not significant to the valuation problem and is therefore only briefly stated.

The subject property is located in an industrial area of metropolitan Salt Lake City just west of Interstate I-15. The subject is in an unincorporated area of Salt Lake County.

PROPERTY PLAT



SITE PLAN



PROPERTY DESCRIPTION

Please see the Property Plat and Site Plan on the two preceding pages showing the overall land size and shape together with the location of various buildings on the site. Also see the photographs of the subject property, both exterior and interior, which are contained in the addendum section of the report.

The land is not involved in this appraisal and the property plat is shown only for information purposes.

The Site Plan was provided with the purchase order for the appraisal. The subject buildings to be removed have been circled in red on the Site Plan by your appraiser. The small freezer building, which is also circled on the Site Plan, was mistakenly circled as the property to be appraised. The small freezer is portable, being an all metal commercial freezer that is set on block and wood piers. There is radioactive fill under this building, however, it can be removed without removing the building. The correct buildings to be appraised were identified to your appraiser prior to submitting a fee estimate for the appraisal.

Building #1

This building, which is the larger of the two, was constructed in about 1960. The dimensions are 47' x 28.3' for a building area of 1,330 square feet. It has concrete footings, foundation and floor. The exterior walls are frame and stucco. Interior walls are lath and plaster with insulation between the exterior and interior surfaces. The building height is about 12' and it has a flat roof with 2" x 8" wood joists, wood sheathing and built-up tar and gravel cover. A ceiling has been furred down to about the 8' level. There is an attic crawl space between the ceiling and the roof. The furred down ceiling is also finished with lath and plaster.

PROPERTY DESCRIPTION, Cont'd

Building #1 is partitioned lengthwise into two not quite equal parts with the right 16 feet, except for the front 10 feet thereof, presently utilized as a cold storage area for bacon sides and is equipped with refrigeration equipment. The partitioning has been inscribed on the Site Plan by your appraiser for visual reference. The cold storage area is equipped with overhead rails for moving the meat and also has an overhead fire sprinkling system which runs through the entire complex. The electrical installation comprises moisture protected incandescent fixtures and also electrical outlets. The entrance to the freezer area is by a 4' heavy insulated metal door. The overhead track for the movement of meat extends through the door and into other areas of the complex. In front of the freezer area, there is an approximate 10' x 16' space that is sort of a corridor for movement of materials either to the building to the south or the building to the west.

The left part of the building, which is about 12 feet wide, comprises a specialty meat processing area. As with the right part, it has a concrete floor with drain which is readily washed down as required by food processing codes. This area also has a lowered ceiling. Wall and ceiling finishes are a sand plaster, painted. The plaster exhibits numerous cracks indicating some deterioration. Lighting in this area comprises a strip of ceiling mounted fluorescent fixtures that extend the entire length of the room plus several others. A large stainless steel hood with vent to the roof is installed in the ceiling above a large piece of food processing equipment. The equipment is a food cooker or processor of some type that is gas fired and has a chimney pipe that also extends up through the roof. This area is also sprinklered and has hot and cold water plumbing pipes to a small stainless steel sink and hose bib. Entrance to this area is by a single wide service door.

PROPERTY DESCRIPTION, Cont'd

Building #2

This is a frame building with exterior stucco finish which leans to a concrete block building to the west. It measures 10.4' x 19.1' for a building area of 199 square feet. It extends about 8' into the left front side of Building #1 and occupies an area of about 80 sq.ft. therein. The roof of Building #1 extends over this area, however, and this is in addition to the 199 sq.ft. outside of Building #1.

This building has a plywood floor. Exterior walls on three sides are 2" x 4" studs, 24" o.c. The roof is flat with a slight pitch and comprises 2" x 8" rafters, 1" x 8" sheathing and built-up tar and gravel roof cover. Lighting is by incandescent fixtures. There is no heat or plumbing. The interior contains built-in shelving for storage.

ZONING AND HIGHEST AND BEST USE

These sections normally found in an appraisal report are of no significance in this appraisal. Briefly stated, the subject improvements are a conforming use under M-2 zoning of Salt Lake County and the highest and best use of the land is a continuation of present use.

VALUATION APPROACHES

In general, there are three primary valuation approaches by which real property is appraised. These are the cost, income and market approaches to value. The use of each approach depends upon the type of property and the availability of the market data upon which the approach is predicated.

Inasmuch as this appraisal is for two building out of a much larger complex, and since the value of the land is not a consideration, it would be extremely difficult to employ the income and market approaches in this appraisal. This leaves the cost approach, however, this is a reliable approach in the subject valuation inasmuch as the subject buildings are being fully utilized and are not subject to abnormal functional obsolescence, or any economic depreciation at all.

COST APPROACH TO VALUE

This approach normally takes into consideration the replacement cost of the land, plus the reproduction cost of the buildings and other improvements, less an estimate of accrued depreciation from physical, functional and economic causes. In the subject appraisal the land value is not to be considered and the first step is therefore to consider the reproduction cost of the two buildings being appraised.

Building Reproduction Cost

The reproduction cost of the subject buildings has been estimated using the Marshall Valuation Service as a guide. This is a national cost publication with local adjustment factors and price trend indicators which is a reliable comparable construction guide cost for this area and does not take into account Davis-Bacon requirements or any other special wage determinations.

Subject Building #1 is basically a low cost shell in which the cold storage insulation and equipment has been added in one part and the food processing finishes and equipment in the other. The basic shell is most similarly compared to Class "D" average or low cost manufacturing space as described in the Marshall publication. The reference page from this publication is contained in the addendum. The indicated base cost range for the subject building is from \$14.56 to \$19.17 per square foot. The \$19.17 factor includes office space and requires downward adjustment. The \$14.56 factor is for unfinished space which needs to be adjusted up. The base cost for the subject building is concluded at \$17.40 per square foot.

The base cost must be adjusted up for the cold storage insulation and equipment in the one side, including some special electrical installation, and the built-in exhaust hood and other extras installed in the food processing area. The building is also fire sprinklered which is not included in the base cost. The

COST APPROACH TO VALUE, Cont'd

Marshall Valuation Service reference page for the cold storage additions is reproduced in the addendum.

The cost of the exhaust hood in the food processing area was estimated from the Restaurant Equipment section of the Marshall publication at \$2,100. Other extras in this area are estimated as shown in the valuation summary at the end of this section.

The reproduction cost for Building #2 has likewise been researched via Marshall. This building is rated as a Class "D" low cost storage building with a base cost of \$11.79 per square foot. The reference page from the publication is included in the addendum. The indicated base cost must be adjusted down for plumbing and space heaters which the subject does not have.

Reproduction Cost Summary

Item	Building No. 1	Building No. 2
Base cost factor	\$17.40	\$11.79
Adjustments:		
Height	.960	.885
Area (est.)	1.250	1.250
Time	1.020	1.020
Local	.950	.950
Cumulative Adj.	1.163	1.072
	20.24	12.63
Sprinkling	2.25	
Cold storage insul.	4.74	
Refrigeration equip.	2.90	
Cold Storage Doors (2)	2.42	
Meat track, overhead	.28	
Electrical extras	.75	
Exhaust hood	1.58	
Sink and extra plumbing	.34	
Office		- .51
Plumbing		- .65
Shelving		2.51
Total	\$35.50	\$13.98

COST APPROACH TO VALUE, Cont'd

Depreciation

The subject buildings were indicated by Mr. Carlson, president of A. & R. Meats, Inc., to be about 25 years old. Proper maintenance has been provided over the years. The only deferred maintenance noted is that the exposed rafters that protrude from the buildings on the exterior, together with the eaves in connection therewith are in need of painting. This condition has not caused any significant deterioration of the wood to this point.

Depreciation of the subject buildings has been considered both on an age/life basis and on an individual cause basis with respect to the physical, functional and economic aspects. From an age/life standpoint, the actual age versus a typical economic life of 40 years would indicate the subject buildings to be 62.5% depreciated. On the other hand, it might reasonably be considered that the effective age of the subject buildings in conjunction with the overall complex, which is newer and in better condition than the subject buildings, would more appropriately be estimated at about 15 years. On this basis, total age/life depreciation would be 37.5%. Total depreciation on an age/life basis is concluded between these two indications at 50%.

From a standpoint of general physical depreciation, the various structural, finish and mechanical components have varying rates of deterioration ranging from less than 1% per year for most of the structural components to 10% per year for an item such as the cold storage equipment. The cold storage equipment comprises only 8% of the total reproduction cost and is estimated to be 50% depreciated. The roof cover, plaster finishes in the food processing area, paint finishes and some of the mechanical installations have lives ranging from five to thirty years with an average of about 25. These components comprise about 17% of the total and are estimated to be 33% depreciated from a physical

COST APPROACH TO VALUE, Cont'd

standpoint. The balance of the components are structural or components with a long life estimated to have an average deterioration rate of 1% per year, or a total of 25%. Total physical depreciation on the basis of this analysis is calculated as follows:

Structural -	.75	x	.25	=	.1875
Finish & Mechanical -	.17	x	.33	=	.0561
Equipment -	.08	x	.50	=	.0400
Total physical depreciation					.2836 (28.36%)

Functionally, the subject buildings are presently fully utilized and on this basis would not appear to be suffering significant functional depreciation. On the other hand, if these buildings were built new today, and to the specific needs of the present operation, there would undoubtedly be substantial changes. Buildings do not generally wear out but become obsolete by reason of size or inefficiencies with respect to growing operations. This would appear to be the case with respect to the subject buildings. Functional obsolescence is subjectively estimated on the basis of this reasoning at 30%.

Economic depreciation refers to losses in value from influences outside of the subject property. In this regard there are no detrimental neighborhood influences and there does not appear to be any conditions within the general economy either locally or nationally that would cause a loss in value to the subject property. No economic depreciation or obsolescence is therefore assessed.

Total depreciation on the basis of individual causes, calculated on a cumulative basis, is 49.85%, say 50%. Both the age/life and individual cause analyses support a depreciation estimate of 50% which is the factor used in the following summary calculations.

COST APPROACH TO VALUE, Cont'd

Cost Approach Summary

Buildings Reproduction Cost

Building #1 - 1,330 square feet x \$35.50 = \$47,215

Building #2 - 199 square feet x 13.98 = 2,782

Total Reproduction Cost \$49,997

Depreciation - 50% -24,998

Depreciated Cost Approach Value Estimate \$24,999

Rounded to: \$25,000

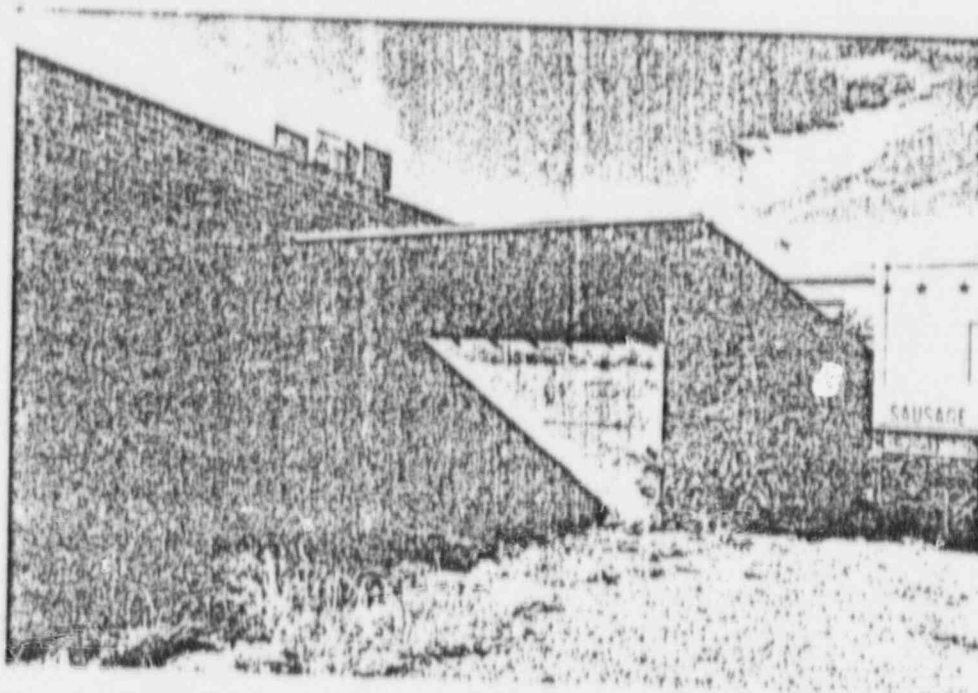
FINAL VALUE ESTIMATE

After careful consideration and analysis, I am of the opinion the market value contribution of the subject buildings to the total complex, as of October 24, 1985, is;

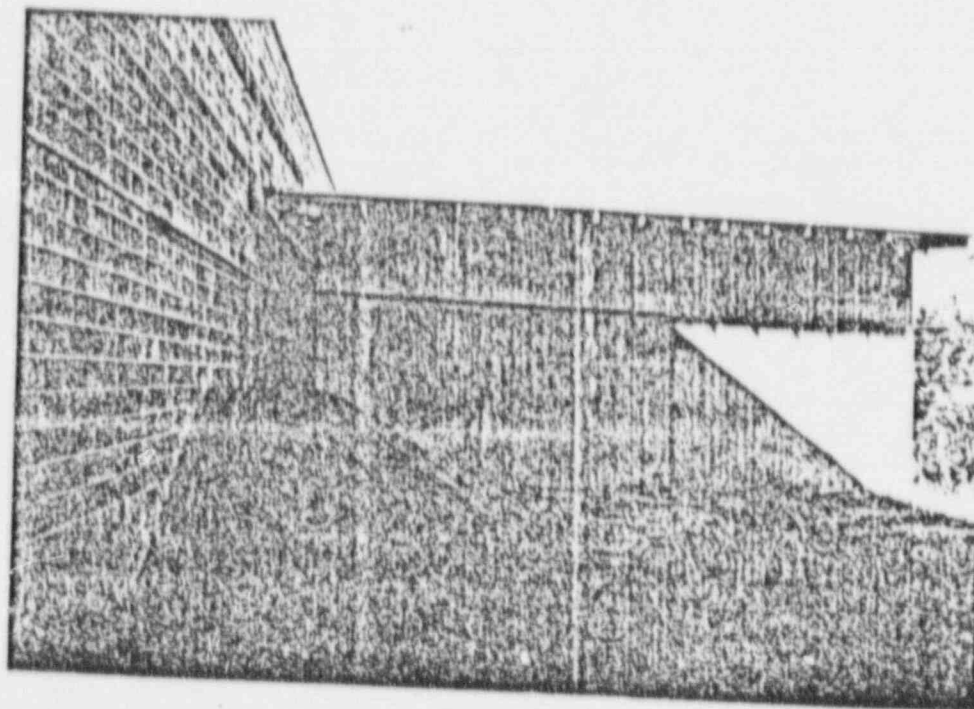
TWENTY FIVE THOUSAND DOLLARS
(\$25,000)

Note: The removal of the subject buildings will require blocking up of three entrances and revamping of electrical and overhead tracks for moving meat in the adjacent complex. The cost in this regard is nominally estimated at \$2,000.

PHOTOGRAPHS

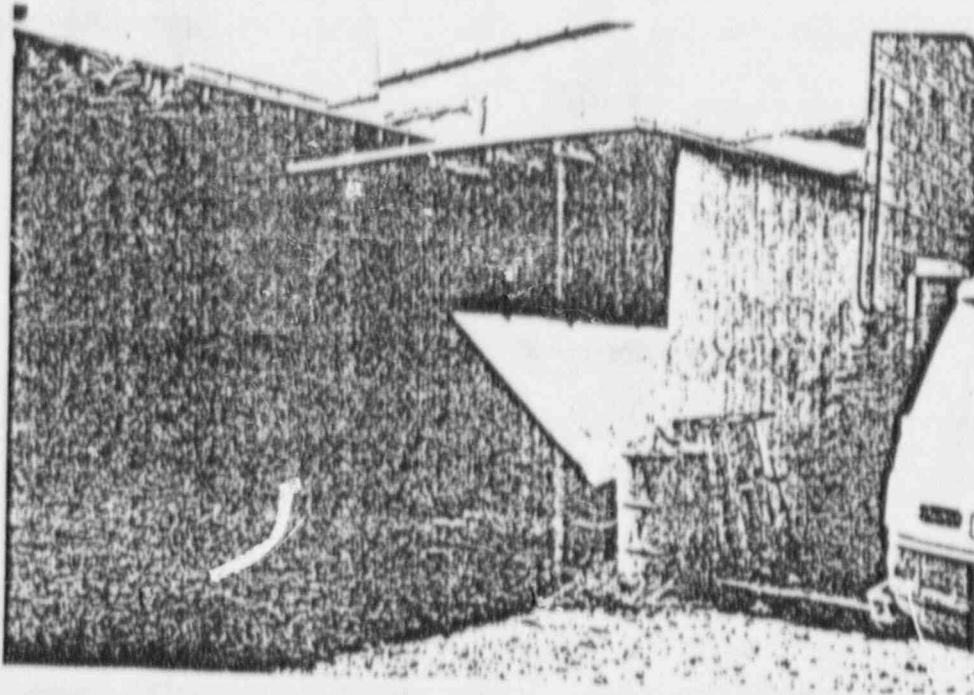


View SW'ly of Subject Building #1 from rear

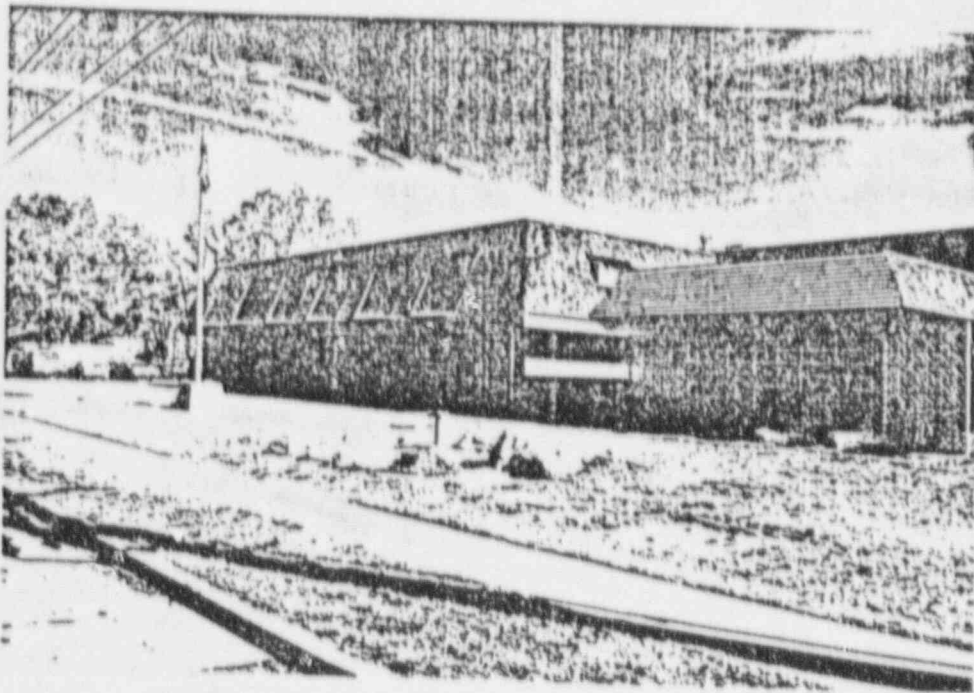


Rear View West of Subject Building #1

PHOTOGRAPHS, Cont'd

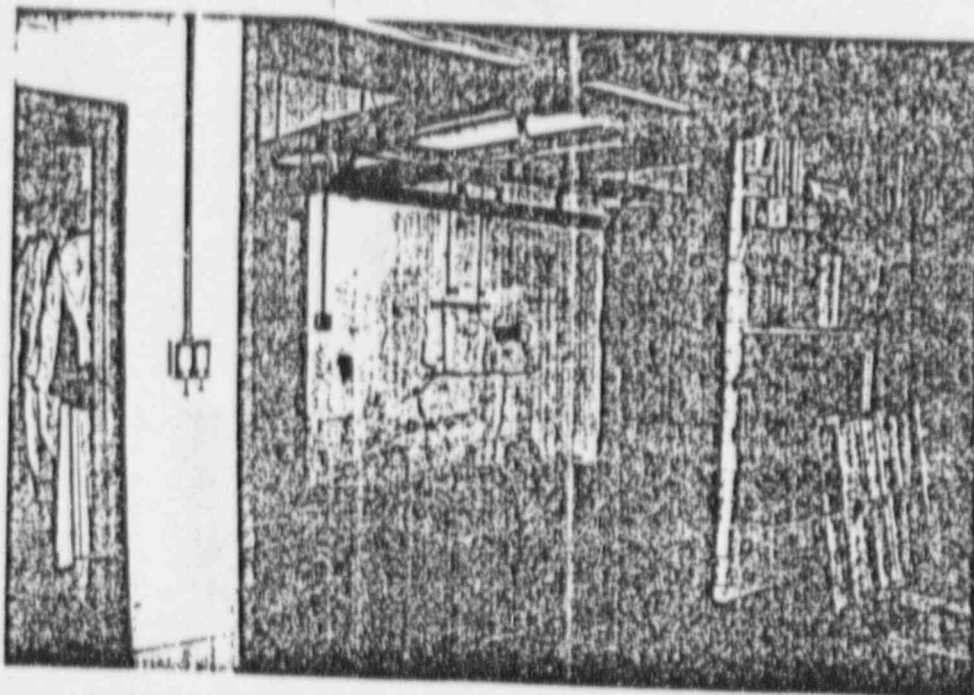


View Southwest of Subject Building #2

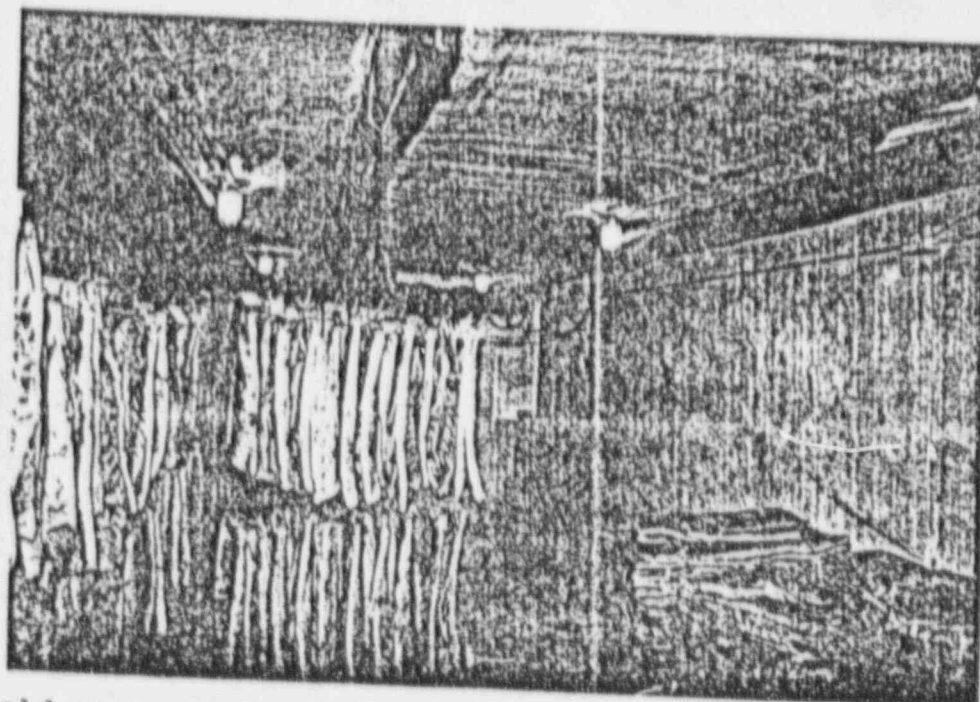


View Northeast of front of overall complex

PHOTOGRAPHS, Cont'd

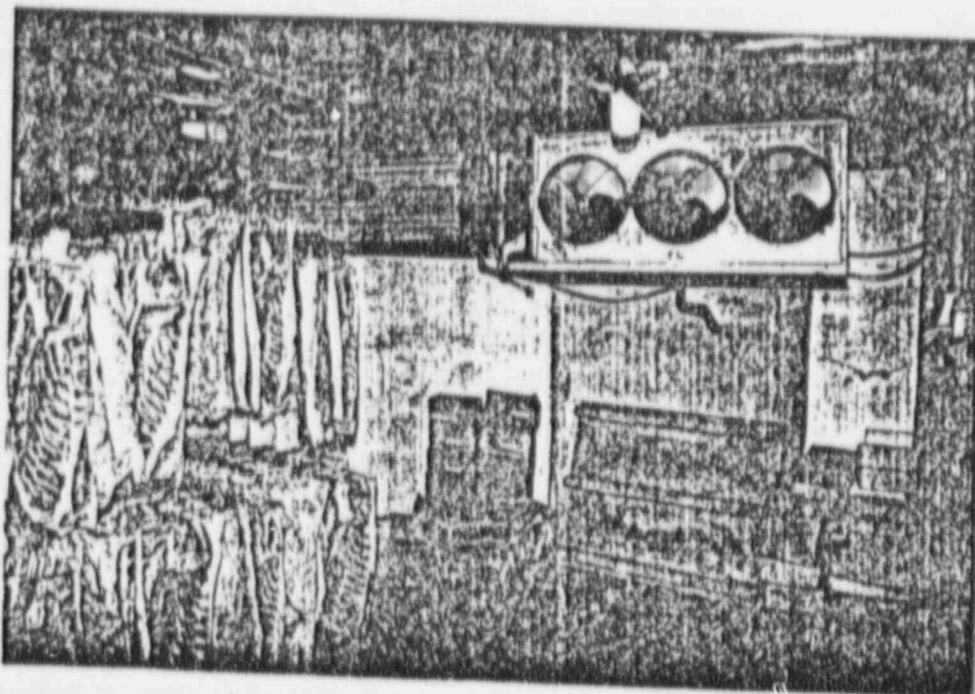


View of right front corridor in Subject Building #1

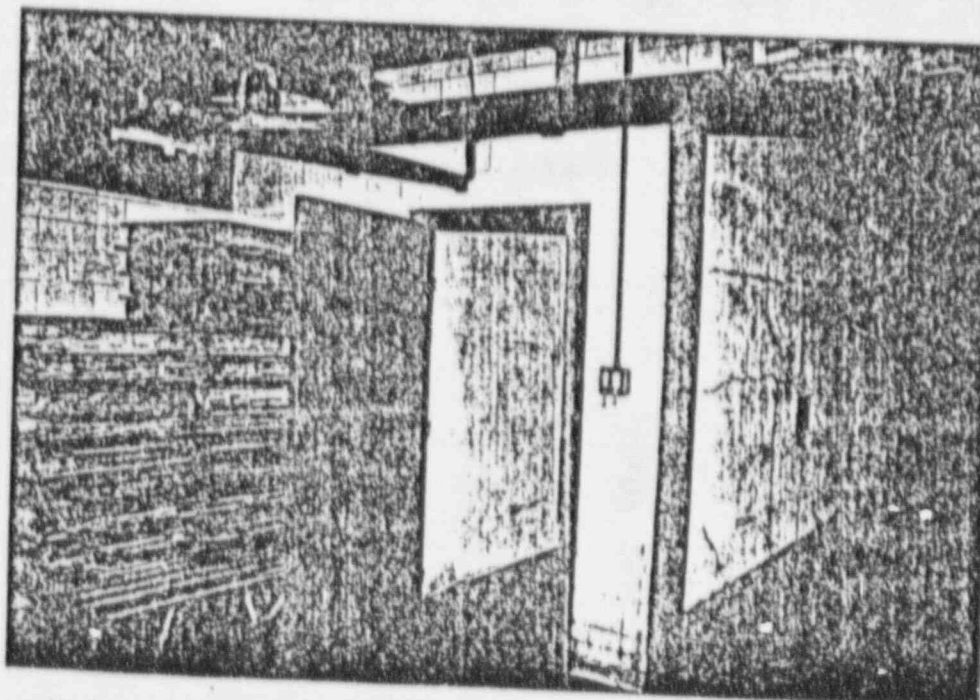


Cold storage area in right side of Subject Building #1

PHOTOGRAPHS, Cont'd

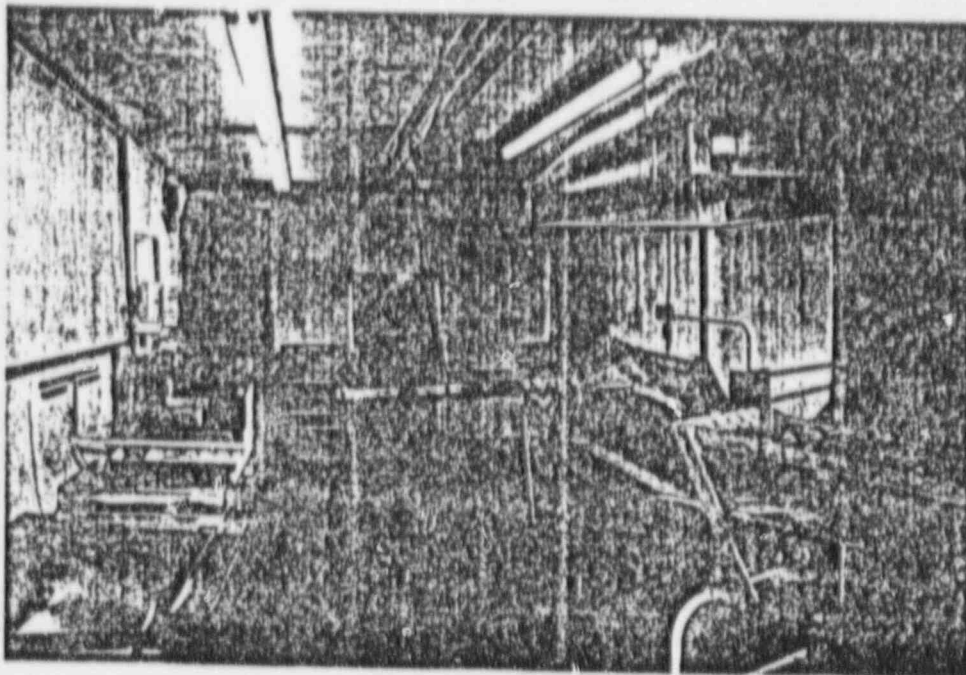


Rear of cold storage area in Subject Building #1
showing refrigeration equipment

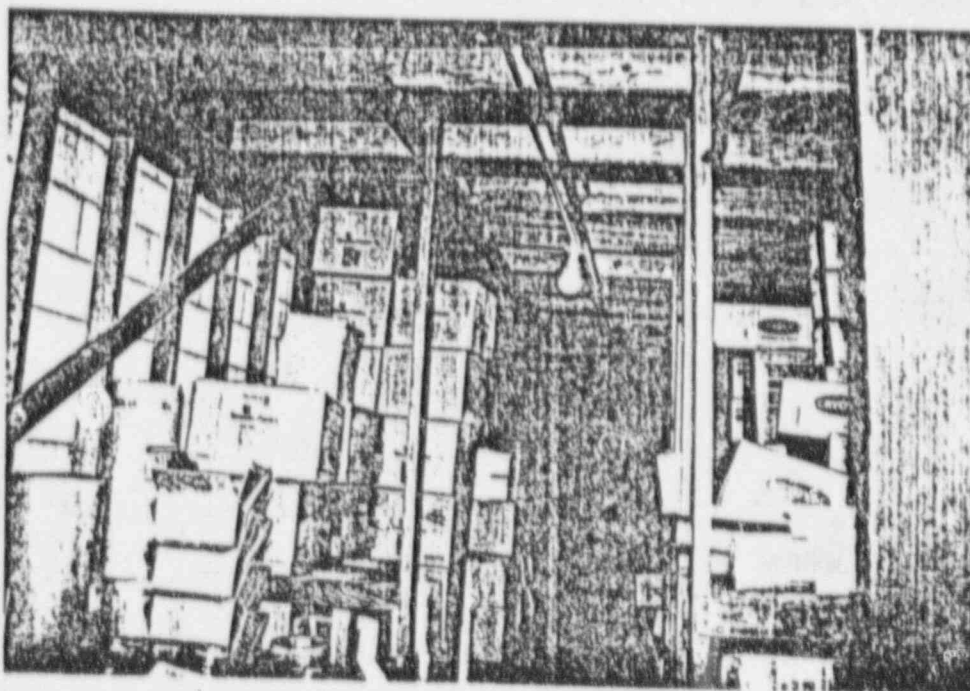


Entrance to left side of Subject Building #1

PHOTOGRAPHS. Cont'd



Interior of food processing area in Subject Building #1



Interior of Subject Building #2

MARSHALL VALUATION REFERENCE PAGE

INDUSTRIAL BUILDINGS (CALCULATOR METHOD)

SECTION 14 PAGE 16
May 1981

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING, PLUMBING AND MECHANICAL	HEAT	COST		
						Sq. M.	Cu. Ft.	Sq. Ft.
C	Excellent Manufacturing	Heavy steel or concrete frame good masonry walls	Finished walls and ceilings, some finished floors	Excellent lighting and plumbing	Warm & cool air (zoned)	\$444.77	\$2.95	\$41.32
	Good Manufacturing	Wall bearing or frame, brick, concrete panels	Some finished walls, finished floors and ceilings in offices	Good fluorescent lighting and plumbing	Hot water	328.62	2.18	30.53
	Average Manufacturing	Light frame or bearing walls, brick, block, or tilt-up	Tinted walls and exposed frame, small finished offices	Exposed conduit, fluorescent lighting, adequate plumbing	Space heaters	229.60	1.52	21.32
	Low cost Manufacturing	Very plain, brick, block or tilt-up, few openings	Small office area, unfinished floors and ceiling	Minimum lighting and plumbing	Space heaters	173.84	1.15	16.15
	Excellent Eng. & Research	Steel frame, good metal and glass, stone and brick veneer	Plaster or gypsum, acoustic ceilings, carpet and resilient tile	Office type lighting, many outlets, good plumbing	Warm & cool air (zoned)	508.06	3.37	47.20
D	Good Eng. & Research	Steel frame, web joists, good metal glass, stucco, brick veneer	Plaster or gypsum, acoustic ceilings, good office areas	Good fluorescent lighting, good plumbing	Warm & cool air (zoned)	390.84	2.59	36.31
	Average Eng. & Research	Wood studs or light frame, stucco, wood, brick veneer	Dry wall, walls and ceiling, resilient tile	Adequate lighting and plumbing	Package A.C.	291.92	1.94	27.12
	Average Manufacturing	Wood studs, stucco, wood siding and sheathing	Dry wall, small office area, exposed ceiling or trusses	Adequate lighting and plumbing	Space heaters	206.35	1.37	19.17
	Average Manufacturing	Light frame, metal siding, fully lined and insulated	Finished office area, slab, some floor finish	Adequate lighting and plumbing	Space heaters	160.17	1.06	14.88
	Low cost Manufacturing	Wood studs or frame, cheap stucco or siding	Unfinished, low cost slab, utility type, minimum code	Minimum lighting and plumbing	Space heaters	156.72	1.04	14.56
	Low cost Manufacturing	Light frame, metal siding, insulated, few windows	Low cost slab, few partitions, utility type	Minimum code	Space heaters	113.02	.75	10.50
	Excellent Eng. & Research	Steel frame, best sandwich panels, ornamentation	Plaster or gypsum, acoustic ceilings, carpet and resilient tile	Office type lighting, many outlets, good plumbing	Warm & cool air (zoned)	530.23	3.52	49.26
	Good Eng. & Research	Steel frame, good metal and glass	Plaster or gypsum, acoustic ceilings, good office areas	Good fluorescent lighting, good plumbing	Warm & cool air (zoned)	403.33	2.68	37.47
	Average Eng. & Research	Steel frame and light panels with steel trusses or joists	Enameled walls and exposed trusses, finished floors	Exposed conduit, fluorescent lighting, adequate plumbing	Package A.C.	238.21	1.98	27.11
	Good Manufacturing	Heavy steel frame, transite or heavy metal siding	Heavy slab floors, finished office area	Good lighting, exposed conduit, adequate plumbing	Space heaters	278.79	1.85	25.90
S	Average Manufacturing	Steel frame, steel or aluminum siding	Finished office area, slab, some floor finish	Adequate lighting and plumbing	Space heaters	206.68	1.37	19.22
	Low cost Manufacturing	Light steel frame, steel or aluminum siding	Low cost slab, unfinished interior, utility type	Minimum code	Space heaters	154.36	1.02	14.34
	Average Basement	Reinforced concrete, unfinished interior	Unfinished storage area	Minimum lighting and drains	None	142.62	.95	13.25
	Good storage Mezzanine	In building cost	Metal grating on good steel structure	Minimum lighting, no plumbing	Included in building costs	221.74	—	20.60
	Storage Mezzanine	In building cost	Heavy plywood or plank on wood or light steel structure	Minimum lighting, no plumbing	Included in building costs	65.69	—	6.80

†For fire-resistant Type I basements, with concrete slab separation under Class C, D or S units, add \$2.95 per square foot (\$31.75 per square meter).

MEZZANINES

Do not use story height or area-perimeter multipliers with mezzanine costs.

DOCK HEIGHT FLOORS

Add \$1.05 per square foot (11.20 per square meter) to base cost of first floor.

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MULTISTORY BUILDINGS

Add .5% for each story over three, above ground, to all base costs, excluding mezzanines.

SPRINKLERS

Add for sprinklers from Section 44.

ELEVATORS

Add for elevators from Section 58.

MARSHALL VALUATION REFERENCE PAGE

SECTION 14 PAISE 17
May 1981

WAREHOUSES (CALCULATOR METHOD)

CLASS	TYPE	EXTERIOR WALLS	INTERIOR FINISH	LIGHTING, PLUMBING AND MECHANICAL	HEAT	Sq. M.	Cu. Ft.	Sq. Ft.
D	Good Distribution	Good wood frame with stucco or siding, some ornamentation	Some good offices and distribution areas	Reading level lighting, adequate plumbing	Forced air	\$ 242.51	\$1.61	\$22.53
	Average Distribution	Stucco or siding on wood, good fenestration	Small office, partitions and distribution areas	Good lighting, adequate plumbing	Space heaters	177.07	1.18	16.45
	Good Storage	Heavy wood frame, wood or stucco siding	Heavy slab or mill type floors	Good lighting, adequate plumbing	Space heaters	228.52	1.52	21.23
	Average Storage	Stucco on wood frame, wood trusses	Small office, average slab	Adequate lighting, low cost plumbing fixtures	Space heaters	169.66	1.13	15.78
	Average Storage	Pole frame, good metal siding, insulated	Small office, some finish, slab	Adequate lighting, little plumbing	Space heaters	128.31	.85	11.92
	Low cost Storage	Stucco or siding on wood	Unfinished, slab, utility type	Minimum lighting and plumbing	Space heaters	126.91	.84	11.79
	Low cost Storage	Pole frame, metal siding	Unfinished utility type, light slab	Minimum code	Space heaters	79.98	.53	7.43
	Average Transit	Wood frame, siding or stucco	Finished office & drivers' area	Adequate lighting/plumbing	Space heaters	272.76	1.81	25.34
	Excellent Distribution	Heavy steel frame, sandwich panels, good ornamentation	Completely finished, drugs, food, or bonded storage, large offices	High level lighting and good plumbing	Package A.C.	403.11	2.68	37.45
	Good Distribution	Good steel frame, siding and fenestration	Some good offices and interior finish, distribution areas	Reading level lighting, adequate plumbing	Forced air	269.42	1.79	25.03
S	Avg. Distribution	Rigid steel frame and siding	Distribution areas, small offices	Adequate lighting/plumbing	Space heaters	181.70	1.21	16.88
	Excellent Storage	Heavy steel frame, insulated panels, good facade	Plaster or drywall, partitioned, ceilings in most areas	Good lighting and plumbing	Package A.C.	361.35	2.40	33.57
	Good Storage	Good steel frame, siding and fenestration	Some good office, interior finish and floor	Good lighting, adequate plumbing	Space heaters	259.28	1.59	22.23
	Average Storage	Rigid steel frame, siding	Small office, average slab	Adequate lighting/plumbing	Space heaters	172.65	1.15	16.04
	Low cost Storage	Pie-engineered frame, metal siding	Unfinished utility type, light slab	Minimum lighting and plumbing	Space heaters	125.40	.83	11.65
	Average Transit	Heavy steel frame and siding	Finished office and drivers' area	Adequate lighting/plumbing	Space heaters	276.10	1.83	25.65
	Good	Brick, block or tilt-up, many doors	Subdivided cubicles, good security partitions, slab	Electrical outlets and lighting in each space, minimum plumbing	None	\$ 206.99	\$1.37	\$19.23
	Average	Block, tilt-up, light construction	Subdivided into cubicles, unfinished slab	Adequate electrical service per space, minimum water	None	170.07	1.13	15.80
	Good	Stucco or siding, many doors	Subdivided cubicles, good security partitions, slab	Electrical outlets and lighting in each space, minimum plumbing	None	188.15	1.25	17.48
	Good	Pole frame, metal siding, many doors	Subdivided cubicles, good security partitions, slab	Electrical outlets and lighting in each space, minimum plumbing	None	150.16	1.00	13.95
D	Average	Wood frame and stucco or wood	Subdivided into cubicles, unfinished slab	Adequate electrical service per space, minimum water	None	146.82	.97	13.64
	Average	Pole frame and truss, metal siding	Subdivided into cubicles, light slab	Adequate electrical service per space, minimum water	None	118.62	.79	11.02
	Good	Pie-engineered frame, insulated, many doors	Subdivided cubicles, good security partitions, slab	Electrical outlets and lighting in each space, minimum plumbing	None	200.10	1.33	18.59
S	Average	Light steel frame and metal siding	Subdivided into cubicles, light slab	Adequate electrical service per space, minimum water	None	148.67	.99	13.83

MINI-WAREHOUSES

C	Good	Brick, block or tilt-up, many doors	Subdivided cubicles, good security partitions, slab	Electrical outlets and lighting in each space, minimum plumbing	None	\$ 206.99	\$1.37	\$19.23
	Average	Block, tilt-up, light construction	Subdivided into cubicles, unfinished slab	Adequate electrical service per space, minimum water	None	170.07	1.13	15.80
D	Good	Stucco or siding, many doors	Subdivided cubicles, good security partitions, slab	Electrical outlets and lighting in each space, minimum plumbing	None	188.15	1.25	17.48
	Good	Pole frame, metal siding, many doors	Subdivided cubicles, good security partitions, slab	Electrical outlets and lighting in each space, minimum plumbing	None	150.16	1.00	13.95
	Average	Wood frame and stucco or wood	Subdivided into cubicles, unfinished slab	Adequate electrical service per space, minimum water	None	146.82	.97	13.64
S	Average	Pole frame and truss, metal siding	Subdivided into cubicles, light slab	Adequate electrical service per space, minimum water	None	118.62	.79	11.02
	Good	Pie-engineered frame, insulated, many doors	Subdivided cubicles, good security partitions, slab	Electrical outlets and lighting in each space, minimum plumbing	None	200.10	1.33	18.59
	Average	Light steel frame and metal siding	Subdivided into cubicles, light slab	Adequate electrical service per space, minimum water	None	148.67	.99	13.83

Note - Use average area and perimeter of entire mini-warehouse group to enter the floor area-perimeter table.

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MARSHALL VALUATION REFERENCE PAGE

SECTION 14 PAGE 24
May 1984

INDUSTRIALS, GARAGES, LOFTS AND WAREHOUSES FLOOR AREA — PERIMETER MULTIPLIERS

FLOOR AREA — PERIMETER MULTIPLIERS																								
AVERAGE FLOOR AREA			AVERAGE PERIMETER																AVERAGE FLOOR AREA					
Sq. M.	Sq. Ft.	M.	30	38	46	53	61	76	91	107	122	137	152	183	213	244	274	305	M.	Sq. Ft.	Sq. M.			
		FT.	100-	125	150	175	200.	250	300	350	400	450	500	600	700	800	900	1000	FT.					
83	1,000		1.252	1.360	1.468	1.576														1,000	83			
139	1,500		1.112	1.182	1.252	1.323	1.395													1,500	139			
186	2,000			1.095	1.147	1.199	1.252	1.360												2,000	186			
232	2,500				1.083	1.125	1.168	1.252	1.340	1.430										2,500	232			
279	3,000					1.077	1.112	1.182	1.252	1.323	1.395									3,000	279			
372	4,000					1.013	1.040	1.094	1.147	1.199	1.252	1.306								4,000	372			
465	5,000						.996	1.040	1.083	1.125	1.168	1.210	1.252							5,000	465			
557	6,000							1.004	1.040	1.077	1.112	1.147	1.182	1.252						6,000	557			
650	7,000								1.008	1.040	1.071	1.102	1.132	1.192	1.252					7,000	650			
743	8,000								.984	1.013	1.040	1.068	1.094	1.147	1.199	1.252				8,000	743			
929	10,000									.972	.996	1.019	1.040	1.083	1.125	1.168	1.210			10,000	929			
1,115	12,000										.965	.984	1.003	1.040	1.077	1.112	1.147	1.182		12,000	1,115			
1,301	14,000											.945	.961	.977	1.008	1.040	1.071	1.102	1.132	14,000	1,301			
1,486	16,000												.943	.957	.984	1.013	1.040	1.068	1.094	16,000	1,486			
1,672	18,000												.929	.942	.967	.991	1.016	1.040	1.065	18,000	1,672			
1,858	20,000													.926	.949	.972	.996	1.019	1.040	20,000	1,858			
2,323	25,000														.907	.924	.942	.959	.977	.996	25,000	2,323		
2,787	30,000															.907	.921	.935	.949	.965	30,000	2,787		
3,252	35,000																.896	.907	.919	.932	.945	35,000	3,252	
3,716	40,000																	.899	.907	.916	.926	40,000	3,716	
4,181	45,000																		.898	.907	.916	45,000	4,181	
4,645	50,000																			.891	.898	.907	50,000	4,645

FLOOR AREA — PERIMETER MULTIPLIERS																					
AVERAGE FLOOR AREA			AVERAGE PERIMETER																AVERAGE FLOOR AREA		
Sq. M.	Sq. Ft.	M.	274	305	335	366	396	427	457	488	518	549	579	610	671	731	792	914	M.	Sq. Ft.	Sq. M.
		FT.	900	1000	1100	1200	1300	1400	1500	1600	1700	1800	1900	2000	2200	2400	2600	3000	FT.		
1,858	20,000		1.019	1.040	1.062	1.083														20,000	1,858
2,323	25,000		.977	.996	1.015	1.032	1.049	1.066												25,000	2,323
2,787	30,000		.949	.965	.980	.995	1.010	1.025	1.040											30,000	2,787
3,252	35,000		.932	.945	.957	.969	.982	.995	1.008	1.021										35,000	3,252
3,716	40,000		.916	.926	.937	.949	.961	.972	.984	.995	1.007	1.019								40,000	3,716
4,181	45,000		.907	.916	.926	.935	.945	.955	.965	.975	.985	.995	1.005	1.015						45,000	4,181
4,645	50,000		.898	.907	.916	.924	.933	.942	.950	.959	.968	.977	.986	.996	1.015					50,000	4,645
5,574	60,000		.889	.895	.901	.907	.914	.921	.928	.935	.942	.949	.957	.965	.980	.995				60,000	5,574
6,503	70,000			.884	.890	.896	.902	.907	.913	.919	.925	.932	.939	.945	.957	.969	.982			70,000	6,503
7,432	80,000				.875	.881	.887	.893	.898	.903	.907	.911	.916	.921	.926	.937	.949	.961	.984	80,000	7,432
9,290	100,000					.868	.872	.877	.882	.887	.891	.895	.899	.903	.907	.916	.924	.933	.950	100,000	9,290
11,148	120,000						.863	.867	.871	.875	.879	.883	.887	.891	.895	.901	.907	.914	.928	120,000	11,148
13,006	140,000							.860	.863	.867	.871	.874	.877	.880	.884	.890	.896	.902	.913	140,000	13,006
14,864	160,000								.858	.860	.863	.866	.869	.872	.875	.881	.887	.893	.903	160,000	14,864
16,722	180,000									.856	.858	.860	.863	.866	.869	.874	.879	.884	.895	180,000	16,722
18,580	200,000										.855	.857	.859	.861	.863	.868	.873	.877	.887	200,000	18,580
20,903	225,000											.854	.855	.856	.858	.863	.867	.871	.880	225,000	20,903
23,226	250,000												.851	.852	.854	.858	.862	.866	.874	250,000	23,226
25,548	275,000													.849	.851	.855	.857	.862	.869	275,000	25,548
27,871	300,000														.848	.852	.855	.859	.866	300,000	27,871
32,516	350,000															.847	.851	.854	.861	350,000	32,516
37,161	400,000																.847	.850	.856	400,000	37,161

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MARSHALL VALUATION REFERENCE PAGE

INDUSTRIALS, GARAGES, LOFTS AND WAREHOUSES (CALCULATOR METHOD)

SECTION 14 PAGE 23

May 1964

REFINEMENTS

On this page and the next are means of making major adjustments to the base costs given in this section. The component parts which are not defined, such as the roof or foundation, are considered to be commensurate with the general quality of the building. If further refinements are required or the construction is unusual, either price entirely or adjust the base costs by the Segregated Cost System, Section 44, or special items which should be added to the total cost may be added from the Unit-in-Place cost sections.

HEATING AND COOLING

These costs are averages of the total installed cost of the entire heating or cooling installation including its prorated share of contractor's overhead and profit and architect's fees. If the heating found in the building being appraised is different from that indicated for the base being used, take the difference between the costs of the two and add to or subtract from the base square foot cost. If a cubic foot cost is used, use one-fourteenth the difference shown to adjust the base cubic foot cost. All of the heating costs included in the base costs are those listed under "Moderate Climate". For specific system costs not found below, see Section 44 or 53.

HEATING ONLY

TYPE	SQUARE METER COSTS			SQUARE FOOT COSTS		
	Mild Climate	Moderate Climate	Extreme Climate	Mild Climate	Moderate Climate	Extreme Climate
Electric, cable or baseboard	\$13.46	\$18.30	\$24.76	\$1.25	\$1.70	\$2.30
Electric wall heaters	5.92	7.53	9.69	.55	.70	.90
Forced air furnace	12.39	18.30	27.45	1.15	1.70	2.55
Hot water	21.53	33.37	52.21	2.00	3.10	4.85
Space heaters, with fan or radiant	5.38	9.15	15.70	.50	.85	1.45
Steam heat (with boiler)	20.99	29.06	40.37	1.95	2.70	3.75
(without boiler)	16.68	23.68	33.91	1.55	2.20	3.15
Ventilation (blowers and ducts)	4.31	5.70	7.53	.40	.53	.70

HEATING AND COOLING

Package A.C. (short duct work)	\$25.83	\$37.14	\$52.74	\$2.40	\$3.45	\$4.90
Warm and cool air (toned)	33.37	48.98	72.12	3.10	4.55	6.70
Hot and chilled water (toned)	53.82	76.96	110.33	5.00	7.15	10.25
Heat pump system	29.60	41.44	58.66	2.75	3.85	5.45
Small industrial heat pumps cost \$700 to \$875 per ton of rated capacity.						

COOLING ONLY

Cooling costs in industrial buildings are dependent on the summer heat load, types of walls and roof, type of manufacturing, number of partitions, and traffic in and out. In general, the following figures will serve as a guide for picking the proper cost of separate cooling. For cold storage refrigeration, see Section 58.

Central refrigeration	\$1.70 to \$4.15 per sq. ft.
Central evaporative	\$1.15 to \$1.85 per sq. ft.
Package refrigeration	\$775 to \$925 per ton of rated capacity
Evaporative coolers	\$90 to \$130 per MCFM of rated capacity

TYPICAL BUILDING LIVES

Typical life expectancies, in years, of buildings included in Section 14 by type of occupancy and class of construction. Based on studies of actual mortality, condition of survivors, and ages at which major reconstruction or change of occupancy has taken place.

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OCCUPANCY

CLASS	A	B	C	D	S
Good and excellent eng. and research industrial	55	55	50	45	45
Average eng. and research and good manufacturing	50	50	45	40	40
Average manufacturing industrial	50	50	40	35	35
Low cost manufacturing industrial	45	45	40	35	35
Excellent storage warehouses and mfg. industrial	55	55	50	45	45
Good and excellent distribution warehouse	55	55	50	45	45
Average distribution and good storage warehouse	50	50	45	40	40
Average storage warehouse	50	50	45	40	40
Low cost storage warehouse	45	45	40	35	35
Average transit warehouse	—	—	45	40	45
Good mini-warehouses	—	—	45	45	45
Average mini-warehouses	—	—	40	35	40
Good armories	—	—	55	—	—
Average armories	—	—	50	40	40
Excellent lofts	60	60	—	—	—
Average and good lofts	55	55	50	40	40
Low cost and cheap lofts	50	50	40	35	35
Good and excellent service garages	45	45	40	35	35
Low cost and average service garages	40	40	35	30	30
Average storage garages	45	45	40	35	35
Average and good automotive centers	—	—	45	40	40
Good parking garages or parkades	45	45	—	—	—
Low cost and average parking garages	40	40	—	—	35
Average and good showrooms	—	—	40	35	35
Low cost showrooms	—	—	35	30	30
Good and excellent post offices	60	60	55	—	—
Low cost and average post offices	55	55	50	45	45
Excellent maintenance hangars	—	—	45	—	40
Good maintenance and excellent storage hangar	—	—	40	—	40
Average maintenance and good storage hangar	—	—	40	35	35
Low cost maintenance and average storage hangar	—	—	35	30	30
Low cost storage and T-hangers	—	—	30	30	30
Shipping docks	—	—	—	35	35

STORY HEIGHT MULTIPLIERS

Multiply base cost by following multipliers for any variation in average story height.

Average Wall HL (M.)	Square Feet or Square Meter Multiplier	Cubic Feet Multiplier	Average Wall HL (M.)	Square Feet or Square Meter Multiplier	Cubic Feet Multiplier
2.44	.885	1.567	9.14	1.382	.645
3.05	.921	1.289	10.67	1.515	.606
3.66	.960	1.120	12.19	1.650	.577
4.27	1.000 (base)	1.000	13.72	1.788	.556
4.88	1.041	.911	15.24	1.930	.540
5.49	1.086	.844	16.76	2.075	.528
6.10	1.133	.794	18.29	2.230	.519
6.71	1.181	.752	21.33	2.530	.506
7.31	1.231	.718	24.38	2.845	.498
7.92	1.280	.689	27.43	3.175	.494
8.53	1.331	.665	30.48	3.520	.493

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SECTION 68 PAGE 1

March 1983

COLD-STORAGE

INSTRUCTIONS

To estimate the total cost of a cold storage plant, determine the cost of the basic building from Sections 14 or 44, then add the cost of insulation, equipment, and doors as indicated on this page. Since these components represent a large proportion of the total cost, it is advisable to determine accurately the temperatures maintained, and thickness and type of insulation. The table below is a guide to the determination of insulation thickness for maintaining various temperatures under moderate climates.

TYPICAL INSULATION REQUIREMENTS

These typical thicknesses are often varied to suit the requirements of a specific installation. Some of the items which may affect the amount of insulation and refrigeration used, are the types of commodity being stored, the frequency of removal and replacement of goods being refrigerated, and local climatic conditions.

The table is based upon corkboard, styrofoam, foampias, and fiberglass board. For mineral wool batts, increase thickness by 40%. For polyurethane insulation, decrease thickness by 40%.

ROOM TYPE	RATED TEMPERATURE	INSULATION THICKNESS
Sharp freeze	-45° to -25°	10"
	-25° to -15°	9"
Freezer	-15° to -5°	8"
	-5° to 5°	7"
Chiller	5° to 20°	6"
	20° to 35°	5"
Cooler	35° to 45°	4"
	45° to 60°	3"

WALK-IN BOXES

Large walk-in boxes containing from 50 to 500 square feet by 7 1/2 feet high, with floors. Costs are for pre-fabricated, metal clad units including refrigeration equipment.

COST RANGE

Temperature 50 Sq. Ft.	100	150	200	300	400	500
32 to 60° F	\$ 4,500	\$ 6,400	\$ 7,800	\$ 9,000	\$11,000	\$12,750
5 to 31° F	\$ 5,360	7,600	9,300	10,800	13,300	15,300
-15 to 5° F	6,300	9,000	10,900	12,600	15,500	17,900

For wood exterior and interior, deduct 10%. Without floor but with screeds, deduct 6%. Where walls of the building form exterior wall of the box, deduct \$28 per linear foot.

Small display type commercial boxes or boxes with reach in glass fronts should not be priced from this section.

INSULATION

(cost per square foot)

Costs should be applied to the actual insulated surface area: walls, floors, and ceilings. Costs are for installation including vapor barriers, hot asphalt, skewers, furring, sealing, etc., as appropriate for each type of insulation.

Insulation Thickness	Cork Board	Styrene Board	Fiberglass Board	Foampias Board	Mineral wool batts	Urethane (spray-on)	Urethane (board)
1"	\$1.50	\$1.30	\$1.20	\$1.35	\$.80	\$1.40	\$1.30
2"	2.50	1.95	1.75	2.30	1.30	2.45	2.20
4"	4.20	3.00	2.60	3.95	2.15	4.20	3.70
6"	5.65	3.80	3.25	5.35	2.90	5.80	5.00
8"	7.00	4.50	3.80	6.70	3.55		

PLUS COLD STORAGE DOORS

(cost per square foot)

Cold storage doors are priced by the outside surface area of each door. Costs are based on completely installed, hinged infilling doors, including hardware and gaskets. For other doors use the surface area with the adjustments given below.

Thickness	To 16 Square Feet	16 - 25 Square Feet	26 - 40 Square Feet	Over 40 Square Feet
4"	\$65.00	\$60.50	\$53.75	\$46.00
6"	70.50	66.50	60.25	53.00
8"	77.50	73.75	67.75	60.50

DOOR COST ADJUSTMENTS

Stainless steel: add 60%
Vestibule doors: add 60%
Track doors: add 10%
Wood-clad doors: deduct 10% per side
Anti-freeze heating cables: add \$17.25 per linear foot of cable
Electric door operator, sliding doors: single doors: add \$3,000 double doors: add \$3,500
Sliding doors, single: add 25% double: add 40% to 50%
Pneumatic door operator, swinging doors, treadle-activated: single doors: add \$1,400 - \$1,750 each double doors: add \$2,000 - \$2,500 pair electric eye activation: add 10% - 12% sliding doors: add 30% - 50% to operator cost.

PLUS REFRIGERATION

(cost per cubic foot)

Refrigeration equipment costs are based on the interior volume of the rooms which are cooled. Costs are for complete normal installation including wiring, switch panels, starters, piping, and ancillary items necessary to maintain proper temperature levels based on typical insulation. Rooms with much in and out traffic will be higher.

Room Size	Sharp Freezer	Freezer	Chiller	Cooler
5,000 cu. ft.	\$1.32	\$1.10	\$.92	\$.77
25,000	1.16	.96	.79	.66
50,000	1.10	.90	.74	.61
100,000	1.04	.85	.70	.57
200,000	.98	.80	.65	.54
300,000		.77	.63	.52
500,000		.74	.60	.49

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EQUIPMENT COSTS

SECTION 65 PAGE 5
June 1984

MOTELS

	LOW COST	AVERAGE	GOOD
Total furniture cost, per room excluding linen	\$1,150	\$2,100	\$3,800
Beds, standard double or twin, complete	150	220	325
Beds, oversize, complete	175	280	450
Chair, upholstered arm or lounge	90	155	275
Chair, desk	50	65	80
Chest, 4 drawer	115	185	300
Double dresser	175	250	350
Desk	125	175	250
Desk spanner	110	125	150
Drapes, per room	115	185	300
Lamps	25	40	60
Luggage holder	25	40	60
Mirror, wall	35	60	100
Pictures	30	55	100
Tables, game	55	90	150
night stand	40	70	125
TV sets, black and white	225	290	475
color	350	475	650
Wardrobe closet	200	250	325
Housekeeping, linen, blankets, etc., per room	150	210	300
maid's cart and equipment, ea.	200	300	450
vacuum cleaner	150	245	400
baggage carts	75	160	350
room service carts	150	195	250
roll-away beds	90	110	140
portable cribs	55	60	70
portable bars	325	500	775
Lobby and reception area furniture and equipment			
Lobby counter, per linear foot	55	125	180
add for motel back counter, per lin. ft.	55	115	200
Lounge chairs, upholstered	200	425	950
Sofa	300	700	1,500
Tables, cocktail or lamp	125	300	750
check writing desk	600	900	2,000
patio with umbrella	95	200	425
Chair lounge	80	140	250
Coat rack	30	65	150
Ice cube machine	1,000	1,675	2,500
Key cutting machine	350	385	425
Magazine racks	20	40	80
Waste receptacles	25	55	125
Telephone systems			
key system - base cost			
(individual access, intercom)	1,500	2,500	4,000
add per phone	325	600	750
PBX system - base cost			
(central operator for coin, code dialing)	20,000	50,000	125,000
add per phone	125	200	300

RESTAURANTS AND SODA FOUNTAINS

	LOW COST	AVERAGE	GOOD
Booth, upholstered, straight seats, each	\$ 350	\$ 525	\$ 800
1/2 circle, each	500	775	1,200
Bench seating, plastic, each	275	375	500
wood, each	225	425	600
Chairs	35	70	150
Dining tables	75	150	350
Counter, formica top, per linear foot	40	70	125
bar counter, per linear foot	70	125	230
bar sink and bottle set-up, per lin. ft.	125	185	275
back bar, per linear foot	60	80	125
caterer's counter, stainless steel, per lin. ft.	500	625	800
food preparation, per lin. ft.	125	175	250
sink and drain, stainless steel, per lin. ft.	90	140	225
soda fountain, complete unit, per lin. ft.	800	925	1,075
stool, counter	70	105	160
Beverage coolers, per lin. ft.	400	475	575
Broiler	2,100	4,600	10,000
Condiment stand	600	750	925
Dishwasher, rack type	5,000	9,000	16,000
Dispenser, coffee	625	1,150	2,500
hot chocolate	300	450	650
multiple, carbonated	1,550	1,925	2,400
Disposal	650	1,500	3,500
Food display cart	350	500	725
Fryer	700	1,325	2,500
Griddle	825	1,400	2,400
Heat lamps, each	200	245	300
Hot food wells	275	310	350
Ice cream cabinets	775	1,175	1,750
Ice machine, 110" to 450" per day	1,400	2,450	4,250
Mixers	1,000	2,250	5,000
Microwave oven	600	975	1,600
Ovens	1,000	2,500	6,500
Range	950	1,550	2,500
Range hood, complete, per lin. ft.	200	350	600
Refrigerator, residential type	500	825	1,350
commercial, 2 door, 17" - 38 cu. ft.	2,000	3,000	4,500
Roll warmers, per drawer	250	400	475
Salad bar	2,000	3,200	5,000
Scales	500	625	750
Shake-soft ice cream machine	4,800	5,500	6,200
Sandwich table, refrigerated	1,000	1,400	2,000
Shelving, metal, per lin. ft.	20	30	50
Slicers	850	1,450	2,500
Steam table, complete, per lin. ft.	175	265	400
Toaster, commercial, 4 to 8 slice	200	275	400
Waffle baker, 2 unit	150	200	275
Water station, complete	1,800	3,400	6,500

ASSUMPTIONS AND LIMITING CONDITIONS

1. The legal description in this appraisal report was received from the client or abstracted from public records and is assumed to be correct, but your appraiser takes no responsibility as to its correctness.
2. No title opinion is rendered herewith and the property is appraised as though free and clear of all liens and encumbrances, and on the basis of a marketable title, with all rights of ownership in fee simple, unless otherwise noted.
3. The improvements, if any, are assumed to be within the legally described property and built in accordance with the requirements of zoning and building ordinances in effect at the time of construction, but no representation is made in regard thereto, unless noted.
4. The appraiser shall not be required to give testimony or appear in court as an expert witness in connection with this appraisal, unless prior arrangements are made.
5. The value estimate is based on the market and monetary conditions prevailing as of the valuation date and cannot be applied to other dates in the past or future.
6. All market data and other information contained in this appraisal report has been gathered and reasonably investigated by your appraiser to the extent that it is believed to be correct, but is not guaranteed. No market data or information has been withheld which would tend to distort the final estimate of value.
7. The presence of radioactive tailings on the site has not been considered in the valuation.
8. The inventory located within the premises appraised is not included in the valuation.

RESTRICTIONS UPON DISCLOSURE AND USE

Disclosure of the contents of this appraisal report is governed by the By-Laws and Regulations of the American Institute of Real Estate Appraisers of the National Association of Realtors.

Neither all nor any part of the contents of this report (especially any conclusions as to value, the identity of the appraiser or any reference to the American Institute of Real Estate Appraisers or the M.A.I. designation) shall be disseminated to the public through advertising media, public relations media, news media, sales media, or any other public means of communication without the prior written consent and approval of the undersigned.

CERTIFICATION

RE: Appraisal - Two buildings within the A. & R. Meats Company property located at 3585 South 500 West, Salt Lake County, Utah

The undersigned hereby certify that except as otherwise noted:

1. I/we have personally inspected the subject property;
2. I/we have no present or contemplated future interest in the property appraised and have no personal interest or bias with respect to the subject matter or the parties involved in the appraisal;
3. My/our employment and the compensation for rendering this appraisal report are not contingent upon the value found;
4. To the best of my/our knowledge and belief the factual data contained in this appraisal report, upon which the analyses, opinions and conclusions expressed herein are based, is true and correct;
5. This appraisal report sets forth all of the limiting conditions (imposed by the terms of the assignment or by the undersigned) affecting the analyses, opinions and conclusions contained in this report;
6. This report has been made in conformity with and is subject to the requirements of the Code of Professional Ethics and Standards of Professional Conduct of the American Institute of Real Estate Appraisers of the National Association of Realtors;
7. No one other than the undersigned prepared the analyses, conclusions and opinions concerning real estate that are set forth in this appraisal report.

Date Signed

Appraiser Signature

October 24, 1985

Edward P. Westra

Edward P. Westra, MAI

QUALIFICATIONS

Name: Edward P. Westra, MAI, CPM

Address: 4444 S. 700 East, Suite 204, Salt Lake City, Utah

Telephone: Business (801) 263-0054, Home (801) 943-5358

Education: Graduated from LDS Business College, accounting major. Completed courses through University of Utah's Extension Division in Banking and Finance, Commercial Law, Trust Administration, Public Speaking, and Taxation.

Real Estate Background: From 1954 through 1964, received broad experience in brokerage and management of all types of real property held in trusts, estates and property owned by Zions First National Bank. Affiliated with Zions from 1943 through 1964; held position of Assistant Trust Officer at time of resignation. Responsibilities included obtaining and reviewing real estate appraisals and performing basic appraisal functions. This experience provided the economic background to understand market trends and underlying principles in real estate valuation and management.

Specialized Training: Completed courses and examinations prepared and sponsored by the American Institute of Real Estate Appraisers as follows:

- Course I - Basic Principles, 1961, University of Utah
- Course II - Basic Application, 1962, Univ. of So. Cal.
- Course III - Rural Properties, 1966, Chico State Col.
- Course IV - Condemnation, 1965, Univ. of So. Calif.
- Course V - Ranch Properties, 1968, Utah State Univ.
- Course VI - Capitalization, 1967, U.C.-Berkeley

Professional Designations: MAI - Admitted to membership in American Institute of Real Estate Appraisers 11/10/69 and awarded MAI designation. Qualifications for designation include 5 years appraisal experience, pass 3 required and 5 elective exams, submission and approval of one residential and 2 income property demonstration reports, attend Institute courses indicated above, receive credit for collateral real estate experience in property management.

CPM - Received Certified Property Manager designation 1/1/61 after completing required courses, exams, and experience requirements of Institute of Real Estate Management.

Experience: Appraising on a fee basis since 1963. Appraisals have covered nearly all types of improved and unimproved properties throughout the Intermountain Area. Condemnation appraisals have been made and court testimony given for both the property owner and the condemning authority. Since January 1965, nearly 100% of my time has been devoted to appraisal of real property.