

HOMESTAKE MINING COMPANY

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UPS NEXT DAY AIR TRACKING NO.: 0858 0873 750

April 10, 1997

U.S. Nuclear Regulatory Commission
Division of Waste Management, MST-7-J-9
Attn. Mr. Joseph J. Holonich, Chief
High Level Waste and Uranium
Recovery Projects Branch
11555 Rockville Pike
Rockville, MD 20850

Re: Docket No. 40-8903
License No. SUA-1471
Decommissioning Report for Mine Ion-Exchange Plant

Dear Mr. Holonich:

Homestake Mining Company of California (Homestake) respectfully submits the enclosed Decommissioning Report for the Mine Ion-Exchange Plant listed as the Auxiliary Ion Exchange Facility in License Condition No. 9 of License No. SUA-1471.

Homestake operated the small ion-exchange facility to remove uranium from water from two Homestake underground mines between the years 1957 and 1989. The IX plant was located in the Ambrosia Lake mining district on Section 25. Several mines, including two from Homestake, were located in the area.

The ion-exchange plant was shut down in late 1989. Decommissioning of the plant started in August 1991 and was completed in August of 1992. Decommissioning included dismantling of the plant building and equipment, removal of the foundations and contaminated soil, and covering the plant area with two feet of clean soil. In addition, gamma and soil surveys were performed during and following the decommissioning. A more detailed description of the reclamation activities is presented within the attached report document.

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PDR ADOCK 04008903
C PDR

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An Equal Opportunity Employer

This report should finalize the decommissioning of all licensed milling facilities at the Grants reclamation site and allow your staff to proceed with finalizing the mill decommissioning report. If you have any additional questions please contact me at the Grants project.

Sincerely,

HOMESTAKE MINING COMPANY OF CALIFORNIA

A handwritten signature in dark ink, appearing to read "Roy R. Cellan", is written over the company name.

Roy R. Cellan

Corporate Manager of Reclamation

xc: Mr. C. Cain, NRC w/enclosure
Harold F. Barnes SFO w/enclosure

Enclosures (2)

**Decommissioning Report for the Mine Ion-Exchange Plant
Homestake Mining Company of California**

**Docket No. 40-8903
License No. SUA-1471**

March 1997

**Homestake Mining Company of California
Grants Operation
P.O. Box 98
Grants, New Mexico 87020**

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PDR ADOCK 04008903
C PDR

Decommissioning Report for the Mine Ion-Exchange Plant

1.0 Introduction

Homestake Mining Company of California (HMC), operator of the Grants Uranium Mill near Grants, New Mexico, constructed an ion exchange (IX) facility adjacent to the HMC Section 25 Uranium Mine in McKinley County, New Mexico. The Mine IX Plant was used to extract uranium from water that was pumped from nearby uranium mines. The facility operated under the same license as the Uranium Mill. Decommissioning activities began in August 1991 and were completed in August 1992. The data submitted in this report were collected to demonstrate that the site has been decommissioned to meet the cleanup criteria in 10 CFR Part 40, Appendix A.

A small IX Plant was first constructed in 1961 and operated until 1964 at which time a larger new plant was brought on line. The IX facility consisted of one small building (20-ft by 50-ft) that housed the small IX Plant, a larger building (60-ft by 120-ft) that housed the new IX Plant, and a Settling Pond that was used to manage the water containing byproduct material. Pipes carrying the water between the IX Plants and the Settling Pond were above grade and were considered part of the facility. Barium chloride was added to the water in the Settling Pond to precipitate out the radium that was contained in the water. Water was discharged to a nearby ditch under an NPDES permit. A smaller tank on the property called the Surge Pond was used to manage the excess mine water prior to processing it in the IX Plant. This Surge Pond was not considered part of the NRC-licensed facility. Figure 1-1 is an aerial photograph taken in 1989 which shows these site features and facilities. The small features north of the Settling Pond were a Power Drop and Vent Hole associated with the mine.

Other facilities associated with the IX Plant but not licensed by the NRC included all piping and pumps that transported the source material from the mine to the IX Plant. The decommissioning of these facilities was done under the mine reclamation program.

2.0 Decommissioning

In August 1991, decommissioning activities began by removing the surface piping and settling pond liner and transporting it to HMC's mill for disposal. The IX Plants were dismantled. Components were either transferred to the Quivira Mill or hauled to the HMC Grants Uranium Mill for disposal. The structures, concrete slabs, and soil beneath the slabs were also disposed of at the HMC Grants Uranium Mill. Up to four feet of soil was removed from the IX Plant site.

The area including the Surge Pond was reclaimed as part of the mine reclamation. The pond was constructed with a natural clay lining which contained the raw water from the mines. The pond was decommissioned by pushing the embankments over the clay liner and recontouring the area to natural grade.

For a portion of the IX Plant's operational period, the ditch to the south of the IX Plant received the effluent from the settling pond under an NPDES Permit. This ditch also served as the point of confluence of mine water run off from the Section 22 and Section 24 uranium mines owned by Kerr McGee and Section 23 and Section 25 uranium mines owned by HMC. Mine water and surface water from those mines collected in the ditch. As a part of the mine reclamation, HMC removed sediment from the ditch on Section 25 and a portion of Section 30 until the gamma exposure rates were reduced to 70 $\mu\text{R/h}$. During February 1997, HMC took a sample from the highest contaminated soil/sediment layer on the ditch bank upstream of the IX Plant Site. This sample was split with the NRC and submitted to a vendor laboratory. The analysis showed that the Ra-226 and U-nat concentrations were 271 and 365 pCi/g, respectively. A similar sample was taken downstream of the IX Plant and split with the NRC. The reported Ra-226 and U-nat concentrations for this sample were 82 and 91, respectively. The sample taken downstream had been diluted during the dredging of the ditch and therefore the absolute values are not significant. However the U-nat ratios (1.3 vs. 1.1) indicate that the downstream material is similar to the upstream material, indicating essentially no impact from the IX Plant unless the effluent from the IX Plant had the same radionuclide mix, which is highly unlikely. Because of the common radionuclide mix, HMC contends that the ditch was not impacted by the IX Plant operations and was never considered part of the licensed facility.

The mine reclamation was done concurrently with the Mine IX Plant decommissioning. Approximately four feet of material was taken from the ditch. The IX Plant surface facilities and the contaminated soil were removed, and the area was vegetated with a mixture of native grasses. A 1992 aerial photograph of the area is shown in Figure 2-1 where the outlines of some of the original features are clearly visible.

3. Verification Data

The applicable cleanup criteria for decommissioning the IX Plant are in 10 CFR Part 40, Appendix A. The soil cleanup limits of 5 pCi/g and 15 pCi/g refer to concentrations at the surface six-inch layer and subsurface six-inch layers, respectively. License Condition 29 which may have applied to this site at the time of the cleanup, required a 10-meter grid to be established over the area and gamma exposure rate measurements made at each grid intersection point. Soil samples were required at 50-meter grid points.

A site grid system was established with the origin in the lower southeast corner of the IX Plant site. Each unit of measure equals 30 feet. For example 10N-6W is a point 300 feet north and 180 feet west of the origin. After all contaminated material had been removed and prior to the application of back fill, a gamma-ray survey was performed with exposure rates recorded on 30-foot centers, consistent with the License Condition. The measurement points are shown on Figure 3-1 where the first measurement in the southeast corner was made at the origin of the coordinate system. The color-coded values are shown on the figure. The actual values are given in Table 3-1. As can be seen in Figure 3-1, most of the IX-Plant area was cleaned to near background levels. The highly elevated gamma levels near the roads, ditch, and other nearby locations are considered due to ore spillage, mine water drainage, or other contamination from the mining operations. Since this entire region has surface ore outcrops and has been disturbed by mining, an exposure rate background level has not been established. From looking at the data, the background is probably within the 6-12 $\mu\text{R/h}$ range.

After it was thought that all removal work had been completed, 30 soil samples were taken from the excavated surface. These samples are reported in Table 3-2 with a sampling date of April 27. Additional removal of soils continued from beneath the buildings. A final round of sampling in these areas was completed on June 5, 1992. These data are also reported in Table 3-2 with the sampling locations shown in Figure 3-2. Back fill was then applied to the area and the area seeded with natural grasses.

It is not clear from the record exactly what work was done between the April 27, 1992 and June 5, 1992 sampling events. The record does indicate that additional work was done in the area of the building(s). Since the April 27 sampling results at 11N-9W were elevated, it is assumed that this drove the additional removal and that since a soil sample was collected at that location on June 5 having a much lower value, it is assumed that this represents the existing concentration at that point. Several other samples in that area were taken near or at the same place as had been sampled during the first sampling event.

Samples in Table 3-2 that exceed the cleanup criteria (5 or 15 pCi/g above background) include samples at locations 20N-0W, 30N-0W, 50N-0W, and 50N-20W. These sampling locations are along the road on the eastern most portion of the IX-Plant property and along the paved road on the northern boundary as shown in Figure 3-2. As also indicated by the gamma exposure rate map, these areas are ore spillage areas rather than areas affected from the IX Plant

operations.

On May 18, 1993, the NRC conducted an audit of the property. Four soil samples were taken from the area near the IX-Plant buildings. Samples were taken at depths up to 40 inches, indicating that the samples were taken beneath the back fill material. Samples "Surface" and "BGO" were taken just west of the Surge Pond as background samples. Most of the samples were split three ways and analyzed by Oak Ridge National Laboratory, Energy Laboratories, and Homestake Mining Company. The results are included in Table 3-2 and show fair agreement. Three samples were also taken from the bottom of the ditch but are not included in the table since the ditch was not affected by the IX-Plant Operations. The various analyses of the background samples ranged from 1.74 pCi/g to 13 pCi/g. Since all of the samples taken from the affected area are far below the 15 pCi/g plus background limit, an accurate assesement of background is not needed to demonstrate that the results are within the limits.

From the data presented above, it is HMC's belief that adequate data exist to demonstrate that the IX Plant site has been decontaminated to the levels specified in 10 CFR Part 40, Appendix A.



Figure 1-1 Mine IX-Plant Aerial Photograph Before Decommissioning

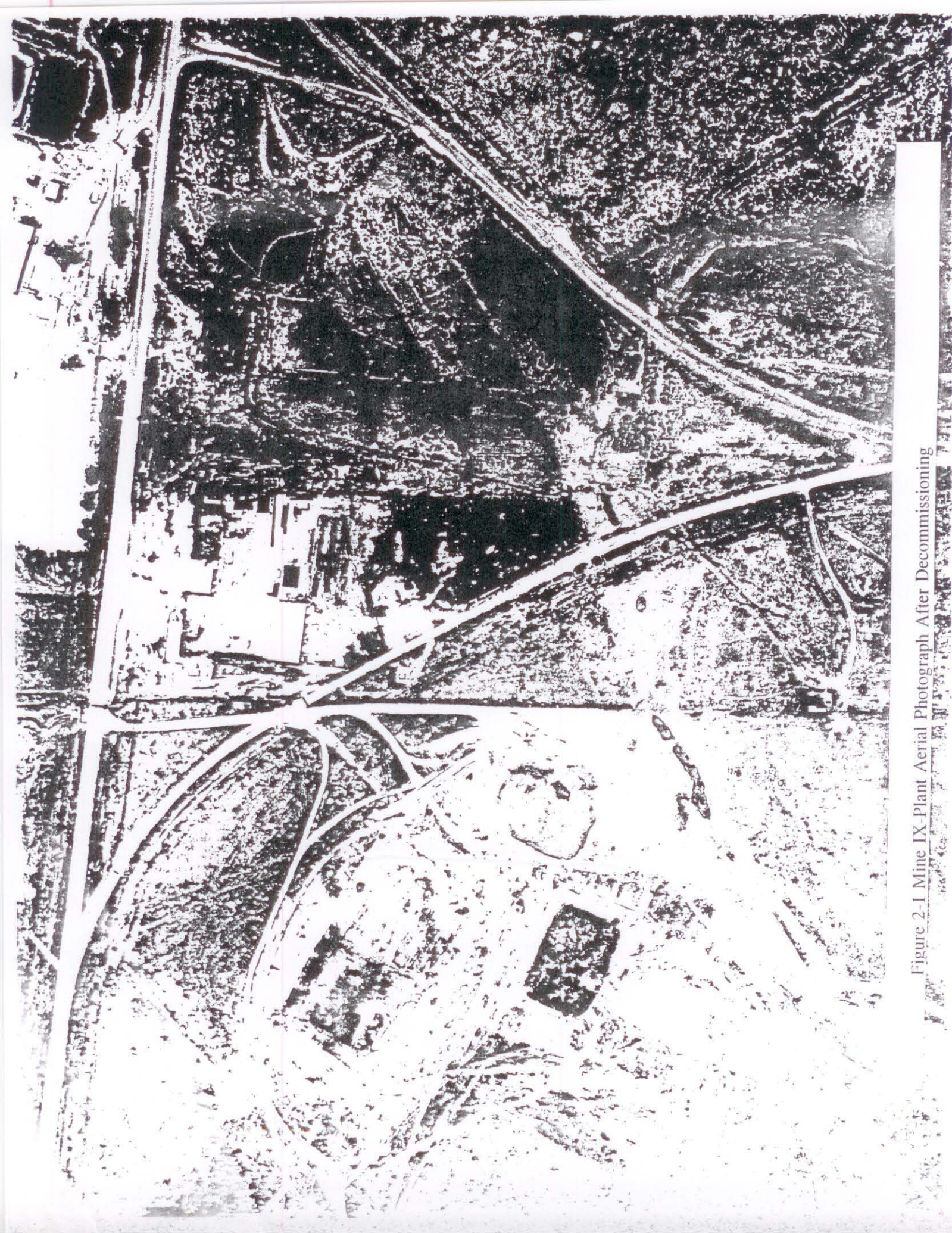
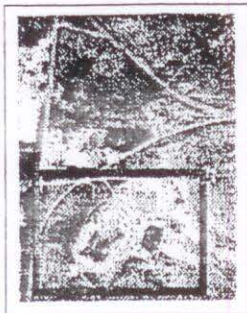
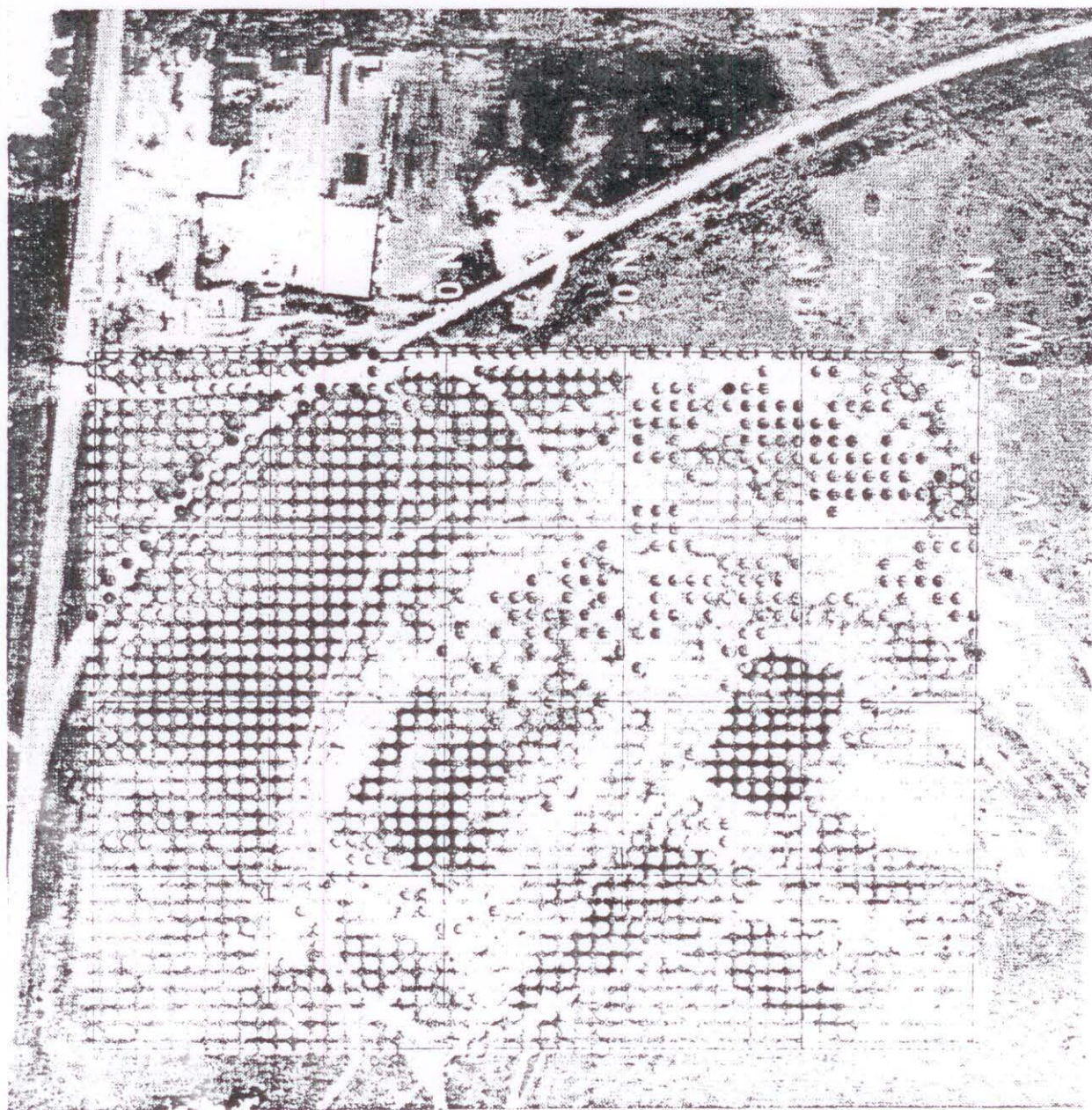


Figure 2-1 Mine IX-Plant Aerial Photograph After Decommissioning



1mx1m Exposure Survey Data

- < 10 microR/hr
- 10 - 20 microR/hr
- 20 - 50 microR/hr
- > 50 microR/hr



Figure 3-1 Post - Reclamation IX Plant Gamma Survey Data Locations

North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)	North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)	North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)
0	0	19	15	0	1	20	15	0	2	35	55
1	0	21	19	1	1	40	41	1	2	30	29
2	0	65	55	2	1	39	39	2	2	31	55
3	0	45	51	3	1	31	31	3	2	19	15
4	0	18	19	4	1	18	15	4	2	15	15
5	0	12	12	5	1	25	39	5	2	20	15
6	0	15	11	6	1	11	15	6	2	18	11
7	0	13	11	7	1	10	10	7	2	9	9
8	0	11	11	8	1	11	10	8	2	10	10
9	0	19	19	9	1	11	10	9	2	10	10
10	0	15	15	10	1	10	10	10	2	10	10
11	0	19	15	11	1	10	10	11	2	10	11
12	0	22	12	12	1	15	11	12	2	15	12
13	0	20	20	13	1	21	21	13	2	20	18
14	0	18	20	14	1	25	20	14	2	59	60
15	0	20	21	15	1	25	20	15	2	21	19
16	0	21	21	16	1	29	29	16	2	15	12
17	0	21	21	17	1	29	35	17	2	11	11
18	0	20	21	18	1	29	20	18	2	15	10
19	0	20	22	19	1	29	29	19	2	25	25
20	0	21	21	20	1	30	20	20	2	15	15
21	0	20	21	21	1	30	30	21	2	11	11
22	0	20	23	22	1	30	39	22	2	10	11
23	0	20	21	23	1	29	25	23	2	12	12
24	0	21	21	24	1	25	39	24	2	11	11
25	0	20	20	25	1	29	20	25	2	12	12
26	0	20	21	26	1	20	20	26	2	11	11
27	0	19	19	27	1	20	19	27	2	10	15
28	0	20	19	28	1	19	15	28	2	12	11
29	0	22	24	29	1	21	21	29	2	10	11
30	0	21	22	30	1	28	25	30	2	15	15
31	0	24	23	31	1	29	25	31	2	15	15
32	0	30	32	32	1	20	20	32	2	15	12
33	0	30	20	33	1	39	49	33	2	15	15
34	0	75	90	34	1	15	15	34	2	20	18
35	0	65	65	35	1	50	59	35	2	60	115
36	0	31	34	36	1	31	40	36	2	19	10
37	0	40	29	37	1	25	21	37	2	110	140
38	0	31	20	38	1	19	20	38	2	20	40
39	0	40	25	39	1	20	19	39	2	31	35
40	0	35	29	40	1	20	25	40	2	25	30
41	0	40	30	41	1	20	21	41	2	19	19
42	0	39	30	42	1	20	19	42	2	15	11
43	0	39	38	43	1	19	21	43	2	15	15
44	0	40	30	44	1	19	19	44	2	15	11
45	0	70	75	45	1	19	19	45	2	10	10
46	0	140	155	46	1	20	20	46	2	12	11
47	0	85	85	47	1	19	19	47	2	18	15
48	0	28	20	48	1	14	19	48	2	12	12
49	0	20	19	49	1	19	19	49	2	10	10
50	0	20	25	50	1	18	15	50	2	12	12

Table 3-1 HMC - IX Plant Gamma Survey Data

North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)	North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)	North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)
0	3	22	35	0	4	28	25	0	5	22	22
1	3	29	25	1	4	21	19	1	5	25	21
2	3	15	15	2	4	20	22	2	5	22	11
3	3	25	22	3	4	35	41	3	5	22	22
4	3	22	21	4	4	20	15	4	5	45	95
5	3	15	15	5	4	10	11	5	5	20	18
6	3	12	11	6	4	10	9	6	5	21	22
7	3	11	11	7	4	31	42	7	5	18	12
8	3	12	9	8	4	18	15	8	5	12	12
9	3	10	11	9	4	15	18	9	5	12	15
10	3	12	12	10	4	15	12	10	5	11	11
11	3	12	11	11	4	11	15	11	5	11	11
12	3	18	20	12	4	15	10	12	5	11	11
13	3	15	15	13	4	11	11	13	5	12	12
14	3	11	15	14	4	10	12	14	5	11	11
15	3	11	11	15	4	9	9	15	5	8	8
16	3	12	15	16	4	15	15	16	5	10	10
17	3	11	11	17	4	15	15	17	5	12	12
18	3	11	11	18	4	12	12	18	5	10	10
19	3	11	11	19	4	12	11	19	5	11	11
20	3	9	9	20	4	10	8	20	5	10	10
21	3	10	9	21	4	10	11	21	5	11	8
22	3	11	11	22	4	9	8	22	5	8	8
23	3	11	10	23	4	9	11	23	5	9	9
24	3	9	12	24	4	10	9	24	5	10	8
25	3	11	9	25	4	10	9	25	5	10	8
26	3	11	11	26	4	10	9	26	5	11	8
27	3	12	11	27	4	10	8	27	5	11	9
28	3	11	11	28	4	10	10	28	5	10	11
29	3	9	9	29	4	12	11	29	5	11	11
30	3	11	11	30	4	10	11	30	5	9	11
31	3	11	11	31	4	10	11	31	5	10	9
32	3	11	10	32	4	10	8	32	5	9	8
33	3	11	11	33	4	11	12	33	5	11	11
34	3	10	10	34	4	12	9	34	5	10	9
35	3	15	15	35	4	10	11	35	5	11	12
36	3	12	9	36	4	10	10	36	5	10	8
37	3	20	18	37	4	18	45	37	5	12	9
38	3	62	90	38	4	12	12	38	5	12	12
39	3	15	11	39	4	25	21	39	5	12	11
40	3	110	150	40	4	21	18	40	5	42	65
41	3	30	21	41	4	21	12	41	5	15	11
42	3	25	21	42	4	75	89	42	5	90	130
43	3	25	21	43	4	25	21	43	5	45	32
44	3	18	21	44	4	25	21	44	5	32	32
45	3	17	15	45	4	18	12	45	5	21	15
46	3	15	15	46	4	18	15	46	5	19	15
47	3	17	12	47	4	18	15	47	5	15	12
48	3	15	12	48	4	15	12	48	5	12	15
49	3	20	15	49	4	15	20	49	5	20	20
50	3	19	21	50	4	18	18	50	5	15	18

Table 3-1 HMC - IX Plant Gamma Survey Data

North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)	North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)	North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)
0	6	15	8	0	7	12	20	0	8	12	11
1	6	45	40	1	7	32	29	1	8	35	42
2	6	31	22	2	7	65	65	2	8	15	8
3	6	19	19	3	7	22	21	3	8	12	25
4	6	18	15	4	7	15	15	4	8	12	9
5	6	15	11	5	7	11	9	5	8	12	11
6	6	15	12	6	7	11	11	6	8	12	10
7	6	15	11	7	7	11	15	7	8	18	18
8	6	12	10	8	7	11	15	8	8	12	11
9	6	15	9	9	7	11	11	9	8	12	18
10	6	18	18	10	7	10	10	10	8	10	11
11	6	18	15	11	7	12	11	11	8	12	10
12	6	15	15	12	7	10	9	12	8	11	11
13	6	18	18	13	7	10	11	13	8	10	9
14	6	11	11	14	7	10	15	14	8	10	9
15	6	12	12	15	7	10	10	15	8	10	10
16	6	10	10	16	7	11	8	16	8	10	11
17	6	12	11	17	7	10	10	17	8	10	10
18	6	11	9	18	7	10	10	18	8	10	9
19	6	11	9	19	7	9	9	19	8	9	10
20	6	9	9	20	7	9	9	20	8	8	10
21	6	9	9	21	7	10	8	21	8	9	9
22	6	9	8	22	7	10	8	22	8	9	9
23	6	10	9	23	7	11	11	23	8	9	9
24	6	10	9	24	7	10	10	24	8	10	9
25	6	10	9	25	7	10	10	25	8	8	10
26	6	10	9	26	7	10	9	26	8	8	9
27	6	9	8	27	7	10	9	27	8	9	10
28	6	9	9	28	7	9	9	28	8	9	8
29	6	10	8	29	7	9	8	29	8	9	10
30	6	10	9	30	7	9	9	30	8	10	11
31	6	10	9	31	7	10	9	31	8	8	8
32	6	10	9	32	7	10	8	32	8	9	11
33	6	10	10	33	7	11	8	33	8	10	10
34	6	11	9	34	7	10	9	34	8	9	10
35	6	10	11	35	7	10	9	35	8	10	9
36	6	10	9	36	7	10	9	36	8	10	9
37	6	12	11	37	7	10	10	37	8	9	10
38	6	11	10	38	7	10	11	38	8	9	9
39	6	12	11	39	7	10	10	39	8	9	9
40	6	11	11	40	7	15	15	40	8	10	10
41	6	12	12	41	7	11	11	41	8	10	12
42	6	25	29	42	7	25	21	42	8	10	10
43	6	12	6	43	7	15	10	43	8	20	18
44	6	165	185	44	7	110	140	44	8	15	12
45	6	45	35	45	7	51	51	45	8	100	130
46	6	22	20	46	7	30	25	46	8	50	50
47	6	18	11	47	7	20	19	47	8	30	25
48	6	18	18	48	7	18	19	48	8	20	15
49	6	18	19	49	7	18	18	49	8	18	21
50	6	19	19	50	7	18	18	50	8	12	12

Table 3-1 HMC - IX Plant Gamma Survey Data

North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)	North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)	North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)
0	9	10	10	0	10	11	11	0	11	15	20
1	9	20	25	1	10	22	20	1	11	15	15
2	9	12	15	2	10	45	50	2	11	15	15
3	9	10	9	3	10	9	10	3	11	15	20
4	9	9	11	4	10	10	15	4	11	10	10
5	9	8	9	5	10	10	10	5	11	10	10
6	9	10	11	6	10	9	9	6	11	6	10
7	9	9	10	7	10	10	12	7	11	10	10
8	9	20	12	8	10	10	9	8	11	9	9
9	9	10	11	9	10	10	12	9	11	10	10
10	9	9	10	10	10	9	10	10	11	10	10
11	9	10	11	11	10	10	12	11	11	10	10
12	9	10	9	12	10	12	15	12	11	10	9
13	9	9	10	13	10	8	8	13	11	10	10
14	9	5	9	14	10	9	9	14	11	9	10
15	9	9	8	15	10	10	10	15	11	10	12
16	9	10	9	16	10	10	11	16	11	12	12
17	9	11	12	17	10	11	11	17	11	12	12
18	9	12	12	18	10	15	12	18	11	12	10
19	9	11	10	19	10	11	15	19	11	10	10
20	9	8	9	20	10	9	11	20	11	10	10
21	9	9	9	21	10	8	11	21	11	11	11
22	9	8	10	22	10	9	9	22	11	8	8
23	9	5	8	23	10	9	5	23	11	9	9
24	9	5	8	24	10	8	10	24	11	5	9
25	9	8	8	25	10	8	10	25	11	5	5
26	9	9	8	26	10	9	9	26	11	9	9
27	9	6	8	27	10	9	9	27	11	9	10
28	9	5	5	28	10	9	9	28	11	5	8
29	9	5	9	29	10	9	9	29	11	5	5
30	9	5	8	30	10	9	9	30	11	5	9
31	9	8	9	31	10	9	10	31	11	10	10
32	9	10	9	32	10	8	9	32	11	8	5
33	9	5	9	33	10	8	9	33	11	5	9
34	9	9	5	34	10	9	10	34	11	5	5
35	9	8	8	35	10	9	11	35	11	5	9
36	9	8	9	36	10	10	10	36	11	8	10
37	9	9	9	37	10	9	9	37	11	10	11
38	9	8	9	38	10	9	9	38	11	5	10
39	9	8	10	39	10	10	10	39	11	8	9
40	9	10	11	40	10	10	10	40	11	9	9
41	9	10	10	41	10	9	10	41	11	10	10
42	9	10	9	42	10	9	10	42	11	10	9
43	9	22	22	43	10	10	11	43	11	11	12
44	9	15	10	44	10	10	10	44	11	10	10
45	9	90	110	45	10	40	45	45	11	45	45
46	9	40	40	46	10	15	11	46	11	12	10
47	9	30	32	47	10	110	150	47	11	120	145
48	9	25	31	48	10	60	55	48	11	20	20
49	9	11	15	49	10	40	40	49	11	20	22
50	9	12	11	50	10	11	11	50	11	11	12

Table 3-1 HMC - IX Plant Gamma Survey Data

North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)	North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)	North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)
0	12	29	50	0	13	25	20	0	14	35	45
1	12	30	35	1	13	30	18	1	14	15	9
2	12	29	20	2	13	15	29	2	14	11	11
3	12	18	15	3	13	19	18	3	14	10	11
4	12	10	15	4	13	15	10	4	14	11	15
5	12	12	8	5	13	12	11	5	14	10	10
6	12	10	11	6	13	10	9	6	14	10	9
7	12	9	9	7	13	10	11	7	14	11	8
8	12	10	9	8	13	9	10	8	14	11	19
9	12	9	9	9	13	10	10	9	14	10	9
10	12	15	12	10	13	10	15	10	14	11	10
11	12	9	8	11	13	20	25	11	14	13	11
12	12	11	12	12	13	15	10	12	14	11	9
13	12	12	12	13	13	12	12	13	14	12	10
14	12	11	11	14	13	15	19	14	14	15	19
15	12	9	9	15	13	15	20	15	14	13	10
16	12	10	9	16	13	18	15	16	14	18	12
17	12	9	12	17	13	20	18	17	14	9	11
18	12	10	10	18	13	11	10	18	14	14	10
19	12	9	10	19	13	10	8	19	14	10	11
20	12	8	9	20	13	9	9	20	14	10	8
21	12	11	11	21	13	12	11	21	14	19	9
22	12	12	10	22	13	12	9	22	14	45	99
23	12	15	11	23	13	11	11	23	14	15	10
24	12	9	9	24	13	10	9	24	14	26	22
25	12	8	8	25	13	11	11	25	14	12	15
26	12	10	11	26	13	10	8	26	14	11	9
27	12	10	10	27	13	9	8	27	14	11	7
28	12	9	8	28	13	9	8	28	14	10	11
29	12	9	9	29	13	10	10	29	14	11	9
30	12	10	10	30	13	8	8	30	14	10	8
31	12	8	9	31	13	8	8	31	14	10	10
32	12	9	9	32	13	10	12	32	14	10	9
33	12	9	9	33	13	10	10	33	14	10	9
34	12	9	9	34	13	9	9	34	14	10	10
35	12	9	9	35	13	9	9	35	14	10	10
36	12	10	8	36	13	8	8	36	14	10	9
37	12	9	9	37	13	10	10	37	14	10	10
38	12	10	10	38	13	9	9	38	14	10	10
39	12	10	8	39	13	9	9	39	14	10	10
40	12	9	9	40	13	10	9	40	14	10	10
41	12	10	10	41	13	10	10	41	14	10	9
42	12	10	9	42	13	12	10	42	14	11	12
43	12	11	10	43	13	10	10	43	14	11	10
44	12	10	11	44	13	11	9	44	14	12	11
45	12	20	21	45	13	18	25	45	14	12	10
46	12	21	11	46	13	22	15	46	14	11	12
47	12	22	15	47	13	70	110	47	14	35	32
48	12	125	165	48	13	40	15	48	14	18	10
49	12	35	31	49	13	105	130	49	14	70	82
50	12	15	12	50	13	18	11	50	14	25	22

Table 3-1 HMC - IX Plant Gamma Survey Data

North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)	North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)	North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)
0	15	15	10	0	16	12	10	0	17		
1	15	12	12	1	16	10	9	1	17	10	8
2	15	10	5	2	16	10	9	2	17	9	9
3	15	10	8	3	16	10	8	3	17	7	9
4	15	10	9	4	16	11	8	4	17	9	7
5	15	11	11	5	16	10	8	5	17	10	8
6	15	11	8	6	16	10	8	6	17	9	9
7	15	9	9	7	16	10	9	7	17	9	8
8	15	11	9	8	16	10	9	8	17	10	7
9	15	9	5	9	16	10	9	9	17	10	9
10	15	11	9	10	16	10	4	10	17	9	7
11	15	11	9	11	16	10	11	11	17	10	5
12	15	12	12	12	16	11	11	12	17	10	9
13	15	22	30	13	16	15	9	13	17	12	11
14	15	35	68	14	16	38	45	14	17	11	9
15	15	11	10	15	16	9	8	15	17	10	8
16	15	9	9	16	16	10	10	16	17	9	8
17	15	11	10	17	16	10	9	17	17	9	9
18	15	11	9	18	16	11	9	18	17	9	9
19	15	25	32	19	16	19	20	19	17	10	9
20	15	11	8	20	16	12	10	20	17	12	11
21	15	10	10	21	16	12	15	21	17	10	9
22	15	12	12	22	16	19	20	22	17	10	10
23	15	12	10	23	16	10	11	23	17	20	22
24	15	13	15	24	16	11	11	24	17	10	11
25	15	12	9	25	16	11	10	25	17	11	10
26	15	11	7	26	16	10	8	26	17	10	9
27	15	9	5	27	16	11	5	27	17	9	7
28	15	10	10	28	16	10	5	28	17	9	9
29	15	10	6	29	16	11	11	29	17	10	8
30	15	10	8	30	16	9	8	30	17	11	10
31	15	10	9	31	16	9	9	31	17	10	9
32	15	11	9	32	16	10	8	32	17	10	8
33	15	10	8	33	16	10	9	33	17	9	9
34	15	10	10	34	16	10	9	34	17	11	9
35	15	9	10	35	16	9	9	35	17	10	9
36	15	10	10	36	16	10	9	36	17	9	10
37	15	10	9	37	16	11	10	37	17	11	10
38	15	10	10	38	16	9	10	38	17	10	9
39	15	10	10	39	16	10	8	39	17	9	8
40	15	10	9	40	16	10	9	40	17	10	9
41	15	10	10	41	16	10	10	41	17	10	10
42	15	10	9	42	16	10	8	42	17	10	9
43	15	10	11	43	16	11	11	43	17	11	9
44	15	9	10	44	16	10	9	44	17	11	10
45	15	11	9	45	16	10	8	45	17	10	10
46	15	20	19	46	16	10	7	46	17	11	10
47	15	19	15	47	16	16	12	47	17	12	10
48	15	19	11	48	16	10	10	48	17	20	30
49	15	15	15	49	16	29	21	49	17	40	48
50	15	60	60	50	16	30	25	50	17	25	21

Table 3-1 HMC - IX Plant Gamma Survey Data

North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)	North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)	North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)
0	18	11	10	0	19	8	8	0	20	9	10
1	18	9	9	1	19	10	10	1	20	9	5
2	18	9	8	2	19	9	9	2	20	8	5
3	18	10	10	3	19	9	9	3	20	5	5
4	18	9	8	4	19	9	9	4	20	5	5
5	18	9	4	5	19	9	10	5	20	9	9
6	18	9	5	6	19	10	9	6	20	11	10
7	18	10	7	7	19	10	11	7	20	8	8
8	18	11	9	8	19	10	8	8	20	10	11
9	18	10	9	9	19	10	9	9	20	8	8
10	18	11	9	10	19	11	10	10	20	8	8
11	18	9	8	11	19	9	10	11	20	10	10
12	18	11	7	12	19	9	9	12	20	10	10
13	18	12	11	13	19	10	10	13	20	8	8
14	18	9	7	14	19	12	11	14	20	9	9
15	18	10	8	15	19	10	9	15	20	9	9
16	18	9	8	16	19	9	8	16	20	8	8
17	18	8	5	17	19	9	8	17	20	9	8
18	18	10	8	18	19	10	9	18	20	8	8
19	18	11	8	19	19	10	10	19	20	8	8
20	18	10	10	20	19	10	8	20	20	8	7
21	18	9	5	21	19	10	10	21	20	11	9
22	18	9	9	22	19	13	12	22	20	9	9
23	18	15	12	23	19	11	11	23	20	10	8
24	18	10	10	24	19	14	11	24	20	18	18
25	18	9	8	25	19	10	10	25	20	10	9
26	18	9	5	26	19	11	10	26	20	11	10
27	18	11	10	27	19	9	8	27	20	8	11
28	18	18	20	28	19	9	9	28	20	10	10
29	18	9	8	29	19	10	9	29	20	9	8
30	18	10	8	30	19	9	8	30	20	10	8
31	18	10	9	31	19	9	5	31	20	8	8
32	18	8	5	32	19	9	8	32	20	8	8
33	18	9	8	33	19	9	10	33	20	5	5
34	18	9	9	34	19	10	9	34	20	8	8
35	18	9	5	35	19	10	10	35	20	8	10
36	18	9	9	36	19	9	9	36	20	8	9
37	18	10	7	37	19	10	9	37	20	9	9
38	18	10	9	38	19	11	11	38	20	10	10
39	18	10	9	39	19	11	11	39	20	10	10
40	18	10	10	40	19	10	10	40	20	10	10
41	18	10	11	41	19	11	11	41	20	10	9
42	18	12	12	42	19	19	19	42	20	10	10
43	18	20	22	43	19	22	20	43	20	12	12
44	18	20	20	44	19	20	20	44	20	18	22
45	18	18	15	45	19	18	20	45	20	18	23
46	18	11	12	46	19	20	20	46	20	19	20
47	18	9	9	47	19	11	12	47	20	22	21
48	18	12	10	48	19	13	10	48	20	22	21
49	18	12	11	49	19	27	39	49	20	18	18
50	18	40	40	50	19	28	28	50	20	21	18

Table 3-1 HMC - IX Plant Gamma Survey Data

North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)	North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)	North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)
0	21	8	8	0	22	8	7	0	23	8	8
1	21	8	8	1	22	9	8	1	23	8	9
2	21	8	8	2	22	8	9	2	23	5	8
3	21	8	8	3	22	8	5	3	23	9	8
4	21	9	9	4	22	8	5	4	23	9	8
5	21	9	9	5	22	9	8	5	23	8	8
6	21	8	9	6	22	11	9	6	23	9	9
7	21	10	8	7	22	11	9	7	23	9	7
8	21	9	10	8	22	18	15	8	23	9	7
9	21	10	10	9	22	9	10	9	23	8	8
10	21	9	9	10	22	8	9	10	23	9	10
11	21	12	12	11	22	9	8	11	23	9	8
12	21	9	10	12	22	8	8	12	23	9	10
13	21	10	10	13	22	8	8	13	23	8	8
14	21	10	9	14	22	9	9	14	23	10	11
15	21	10	11	15	22	9	10	15	23	10	9
16	21	8	10	16	22	10	10	16	23	11	19
17	21	8	10	17	22	9	9	17	23	8	8
18	21	9	9	18	22	9	9	18	23	10	9
19	21	8	8	19	22	10	8	19	23	9	9
20	21	10	15	20	22	5	8	20	23	8	5
21	21	10	11	21	22	8	5	21	23	7	5
22	21	10	10	22	22	9	11	22	23	10	10
23	21	11	9	23	22	10	9	23	23	10	9
24	21	18	19	24	22	10	8	24	23	9	11
25	21	12	11	25	22	11	11	25	23	9	8
26	21	9	8	26	22	9	10	26	23	10	11
27	21	11	11	27	22	9	9	27	23	8	8
28	21	10	10	28	22	9	10	28	23	9	8
29	21	10	10	29	22	8	5	29	23	8	8
30	21	8	8	30	22	10	9	30	23	7	12
31	21	9	9	31	22	9	9	31	23	8	8
32	21	9	9	32	22	8	8	32	23	8	8
33	21	9	9	33	22	8	7	33	23	8	8
34	21	9	9	34	22	8	8	34	23	9	8
35	21	10	10	35	22	8	8	35	23	8	8
36	21	10	11	36	22	9	8	36	23	10	10
37	21	10	10	37	22	8	9	37	23	9	9
38	21	10	10	38	22	8	8	38	23	8	9
39	21	8	8	39	22	8	8	39	23	8	8
40	21	9	8	40	22	8	8	40	23	8	8
41	21	9	9	41	22	9	9	41	23	8	8
42	21	8	8	42	22	8	8	42	23	8	8
43	21	12	15	43	22	8	8	43	23	8	8
44	21	17	20	44	22	10	8	44	23	10	9
45	21	18	20	45	22	15	15	45	23	8	8
46	21	18	19	46	22	15	15	46	23	10	9
47	21	21	18	47	22	13	12	47	23	11	10
48	21	30	30	48	22	18	21	48	23	11	11
49	21	22	25	49	22	15	15	49	23	15	18
50	21	15	12	50	22	18	21	50	23	11	11

Table 3-1 HMC - IX Plant Gamma Survey Data

North	West	Exposure at Waist		Exposure at Ground		North	West	Exposure at Waist		Exposure at Ground		North	West	Exposure at Waist		Exposure at Ground	
		(microR/hr)	(microR/hr)	(microR/hr)	(microR/hr)			(microR/hr)	(microR/hr)	(microR/hr)	(microR/hr)			(microR/hr)	(microR/hr)		
0	24	9	8	25	8	0	25	8	9	0	26	7	5				
1	24	8	7	25	7	1	25	8	7	1	26	5	5				
2	24	8	7	25	7	2	25	7	5	2	26	9	8				
3	24	7	9	25	9	3	25	7	4	3	26	7	8				
4	24	8	7	25	7	4	25	5	5	4	26	7	8				
5	24	8	8	25	8	5	25	8	7	5	26	7	4				
6	24	8	8	25	8	6	25	5	5	6	26	5	5				
7	24	8	8	25	8	7	25	8	7	7	26	9	9				
8	24	8	7	25	7	8	25	8	8	8	26	9	9				
9	24	8	8	25	8	9	25	9	8	9	26	12	12				
10	24	11	9	25	11	10	25	11	11	10	26	9	9				
11	24	9	9	25	12	11	25	12	11	11	26	8	7				
12	24	9	9	25	8	12	25	8	10	12	26	8	8				
13	24	8	8	25	8	13	25	8	8	13	26	10	10				
14	24	8	7	25	8	14	25	8	8	14	26	5	5				
15	24	10	10	25	9	15	25	9	8	15	26	7	8				
16	24	9	10	25	8	16	25	8	5	16	26	9	9				
17	24	9	9	25	9	17	25	9	9	17	26	9	8				
18	24	8	7	25	11	18	25	11	9	18	26	8	9				
19	24	10	10	25	8	19	25	8	5	19	26	9	9				
20	24	9	5	25	9	20	25	9	5	20	26	9	8				
21	24	8	7	25	10	21	25	10	9	21	26	8	7				
22	24	9	9	25	8	22	25	8	8	22	26	9	8				
23	24	8	8	25	9	23	25	9	8	23	26	8	7				
24	24	8	8	25	8	24	25	8	8	24	26	11	9				
25	24	8	8	25	8	25	25	9	9	25	26	8	9				
26	24	11	11	25	10	26	25	10	10	26	26	9	9				
27	24	11	11	25	10	27	25	10	9	27	26	9	8				
28	24	8	8	25	9	28	25	9	9	28	26	9	8				
29	24	11	11	25	10	29	25	10	9	29	26	9	9				
30	24	10	11	25	9	30	25	9	10	30	26	10	9				
31	24	8	8	25	8	31	25	8	9	31	26	8	9				
32	24	8	9	25	8	32	25	8	9	32	26	9	8				
33	24	9	10	25	8	33	25	8	10	33	26	10	15				
34	24	9	8	25	9	34	25	9	9	34	26	10	9				
35	24	8	8	25	11	35	25	11	5	35	26	8	8				
36	24	10	10	25	7	36	25	7	7	36	26	8	7				
37	24	10	7	25	8	37	25	8	4	37	26	8	8				
38	24	10	9	25	8	38	25	8	9	38	26	8	8				
39	24	8	8	25	5	39	25	5	8	39	26	8	8				
40	24	8	9	25	8	40	25	8	7	40	26	8	8				
41	24	8	8	25	9	41	25	9	7	41	26	8	9				
42	24	9	8	25	11	42	25	11	8	42	26	9	9				
43	24	9	9	25	10	43	25	10	8	43	26	10	11				
44	24	9	9	25	9	44	25	9	9	44	26	8	8				
45	24	8	8	25	10	45	25	10	8	45	26	9	11				
46	24	8	8	25	9	46	25	9	9	46	26	12	12				
47	24	8	5	25	8	47	25	8	8	47	26	12	10				
48	24	8	8	25	9	48	25	9	9	48	26	10	8				
49	24	10	11	25	10	49	25	10	9	49	26	8	8				
50	24	12	11	25	12	50	25	12	9	50	26	9	12				

Table 3-1 HMC - IX Plant Gamma Survey Data

North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)	North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)	North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)
0	27	5	5	0	28	8	8	0	29	5	7
1	27	7	7	1	28	8	8	1	29	5	5
2	27	5	5	2	28	8	8	2	29	5	5
3	27	5	4	3	28	8	9	3	29	8	7
4	27	5	4	4	28	8	5	4	29	5	7
5	27	8	4	5	28	8	8	5	29	7	8
6	27	8	8	6	28	8	8	6	29	7	7
7	27	8	8	7	28	7	5	7	29	7	7
8	27	8	8	8	28	8	5	8	29	5	5
9	27	10	10	9	28	10	10	9	29	7	8
10	27	8	9	10	28	8	8	10	29	5	7
11	27	10	7	11	28	8	8	11	29	8	8
12	27	7	7	12	28	7	8	12	29	8	11
13	27	7	5	13	28	7	8	13	29	8	9
14	27	11	11	14	28	12	9	14	29	7	8
15	27	18	11	15	28	9	5	15	29	5	4
16	27	11	10	16	28	11	9	16	29	10	8
17	27	11	9	17	28	20	25	17	29	10	10
18	27	11	10	18	28	15	18	18	29	8	10
19	27	10	11	19	28	11	11	19	29	7	8
20	27	9	8	20	28	9	9	20	29	12	9
21	27	8	8	21	28	9	10	21	29	8	9
22	27	7	5	22	28	7	8	22	29	8	7
23	27	8	8	23	28	7	8	23	29	8	5
24	27	8	8	24	28	9	8	24	29	7	8
25	27	8	8	25	28	8	8	25	29	9	7
26	27	8	8	26	28	10	8	26	29	9	9
27	27	9	9	27	28	8	8	27	29	10	10
28	27	11	8	28	28	9	10	28	29	9	12
29	27	9	10	29	28	11	11	29	29	11	11
30	27	10	10	30	28	12	9	30	29	8	12
31	27	11	11	31	28	12	10	31	29	8	8
32	27	10	10	32	28	11	10	32	29	8	8
33	27	11	11	33	28	11	9	33	29	11	9
34	27	10	8	34	28	12	12	34	29	12	11
35	27	10	10	35	28	11	9	35	29	20	22
36	27	8	10	36	28	12	10	36	29	25	25
37	27	10	9	37	28	8	9	37	29	5	8
38	27	9	9	38	28	8	8	38	29	8	8
39	27	9	9	39	28	9	8	39	29	8	8
40	27	8	10	40	28	10	10	40	29	8	8
41	27	9	9	41	28	10	10	41	29	8	8
42	27	9	9	42	28	9	9	42	29	8	10
43	27	10	10	43	28	11	10	43	29	10	10
44	27	11	10	44	28	10	10	44	29	10	11
45	27	11	11	45	28	11	12	45	29	10	10
46	27	12	10	46	28	10	11	46	29	8	8
47	27	11	11	47	28	11	11	47	29	10	10
48	27	9	8	48	28	11	11	48	29	8	10
49	27	8	9	49	28	11	10	49	29	8	8
50	27	9	8	50	28	8	8	50	29	8	8

Table 3-1 HMC - IX Plant Gamma Survey Data

North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)	North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)	North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)
0	30	5	8	0	31	8	8	0	32	7	7
1	30	5	5	1	31	7	7	1	32	5	7
2	30	5	6	2	31	5	5	2	32	7	6
3	30	8	8	3	31	8	8	3	32	4	5
4	30	8	8	4	31	8	8	4	32	7	7
5	30	8	8	5	31	7	7	5	32	6	6
6	30	8	7	6	31	8	9	6	32	5	5
7	30	8	8	7	31	8	8	7	32	7	7
8	30	8	7	8	31	8	8	8	32	6	7
9	30	7	5	9	31	5	8	9	32	8	8
10	30	8	8	10	31	8	8	10	32	4	8
11	30	7	7	11	31	8	8	11	32	8	8
12	30	7	8	12	31	9	7	12	32	6	7
13	30	8	8	13	31	8	9	13	32	7	7
14	30	9	8	14	31	5	5	14	32	7	8
15	30	9	8	15	31	7	8	15	32	5	8
16	30	10	9	16	31	7	7	16	32	7	5
17	30	8	8	17	31	9	8	17	32	5	7
18	30	10	8	18	31	5	8	18	32	7	8
19	30	9	9	19	31	9	8	19	32	8	8
20	30	9	8	20	31	9	9	20	32	8	8
21	30	10	9	21	31	11	9	21	32	9	9
22	30	12	15	22	31	11	11	22	32	9	8
23	30	9	7	23	31	9	10	23	32	9	12
24	30	10	10	24	31	9	11	24	32	8	9
25	30	8	8	25	31	9	8	25	32	8	9
26	30	9	9	26	31	9	10	26	32	8	8
27	30	9	12	27	31	9	8	27	32	11	8
28	30	10	9	28	31	9	11	28	32	8	8
29	30	10	11	29	31	10	9	29	32	7	7
30	30	10	10	30	31	9	9	30	32	5	8
31	30	10	10	31	31	12	12	31	32	12	32
32	30	10	9	32	31	11	12	32	32	9	9
33	30	10	11	33	31	10	10	33	32	8	8
34	30	30	55	34	31	10	10	34	32	5	7
35	30	15	11	35	31	9	8	35	32	5	7
36	30	11	11	36	31	10	8	36	32	8	8
37	30	9	7	37	31	10	9	37	32	32	52
38	30	8	9	38	31	10	9	38	32	18	12
39	30	10	9	39	31	10	10	39	32	9	9
40	30	9	9	40	31	11	12	40	32	8	8
41	30	10	8	41	31	9	11	41	32	8	10
42	30	9	10	42	31	9	8	42	32	10	11
43	30	8	10	43	31	10	10	43	32	10	11
44	30	9	8	44	31	9	9	44	32	9	9
45	30	10	10	45	31	9	9	45	32	9	11
46	30	10	11	46	31	9	9	46	32	8	8
47	30	8	8	47	31	11	9	47	32	9	7
48	30	10	10	48	31	8	12	48	32	9	8
49	30	9	10	49	31	10	11	49	32	10	9
50	30	10	9	50	31	8	9	50	32	7	6

Table 3-1 HMC - IX Plant Gamma Survey Data

North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)	North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)	North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)
0	33	5	5	0	34	6	8	0	35	8	8
1	33	6	6	1	34	6	7	1	35	8	8
2	33	4	4	2	34	5	7	2	35	7	7
3	33	7	5	3	34	5	7	3	35	8	8
4	33	7	6	4	34	5	7	4	35	8	8
5	33	6	7	5	34	4	6	5	35	7	7
6	33	7	7	6	34	6	7	6	35	8	8
7	33	6	8	7	34	7	7	7	35	8	8
8	33	7	8	8	34	5	6	8	35	8	8
9	33	5	8	9	34	5	7	9	35	8	8
10	33	7	8	10	34	5	7	10	35	8	8
11	33	7	9	11	34	5	8	11	35	9	10
12	33	4	7	12	34	5	5	12	35	9	8
13	33	6	7	13	34	6	7	13	35	8	8
14	33	7	5	14	34	6	8	14	35	8	8
15	33	8	5	15	34	7	6	15	35	8	8
16	33	8	8	16	34	6	8	16	35	9	9
17	33	6	8	17	34	8	8	17	35	8	9
18	33	7	8	18	34	7	6	18	35	9	9
19	33	5	8	19	34	7	8	19	35	9	8
20	33	7	8	20	34	7	7	20	35	9	8
21	33	6	8	21	34	7	8	21	35	8	8
22	33	10	10	22	34	8	8	22	35	8	5
23	33	8	5	23	34	8	7	23	35	10	10
24	33	9	8	24	34	8	7	24	35	8	8
25	33	8	7	25	34	7	7	25	35	8	8
26	33	8	7	26	34	8	7	26	35	8	8
27	33	9	9	27	34	8	8	27	35	8	8
28	33	9	8	28	34	8	7	28	35	8	8
29	33	11	9	29	34	8	8	29	35	9	9
30	33	12	12	30	34	10	11	30	35	12	11
31	33	9	9	31	34	10	10	31	35	18	15
32	33	8	8	32	34	10	8	32	35	20	25
33	33	8	9	33	34	9	7	33	35	8	8
34	33	7	5	34	34	10	9	34	35	8	8
35	33	7	11	35	34	8	8	35	35	9	9
36	33	9	5	36	34	10	10	36	35	9	8
37	33	12	10	37	34	11	11	37	35	18	12
38	33	22	25	38	34	29	25	38	35	32	45
39	33	10	12	39	34	9	8	39	35	12	11
40	33	9	11	40	34	9	9	40	35	7	9
41	33	8	9	41	34	8	9	41	35	9	9
42	33	8	8	42	34	9	8	42	35	8	11
43	33	9	7	43	34	8	9	43	35	8	8
44	33	8	8	44	34	9	8	44	35	8	8
45	33	10	11	45	34	9	10	45	35	8	8
46	33	10	10	46	34	7	8	46	35	9	9
47	33	8	12	47	34	9	9	47	35	9	11
48	33	9	9	48	34	8	8	48	35	11	9
49	33	8	9	49	34	8	8	49	35	8	9
50	33	9	10	50	34	8	8	50	35	9	9

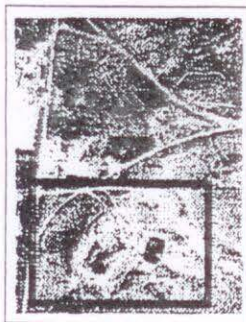
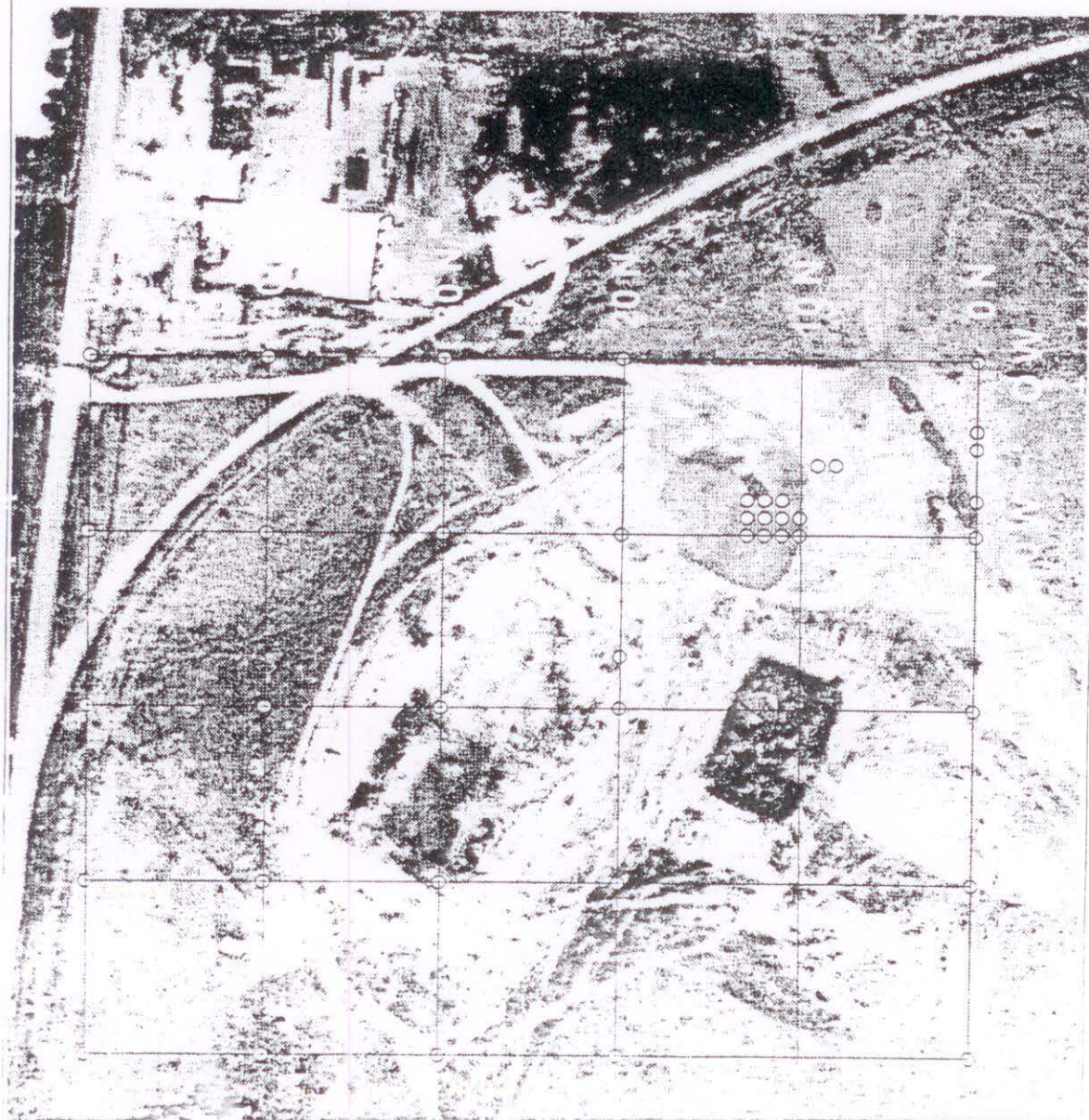
Table 3-1 HMC - IX Plant Gamma Survey Data

North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)	North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)	North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)
0	36	7	5	0	37	8	8	0	38	8	5
1	36	8	7	1	37	8	9	1	38	7	7
2	36	5	8	2	37	6	9	2	38	6	8
3	36	8	8	3	37	8	7	3	38	7	7
4	36	8	8	4	37	8	8	4	38	8	8
5	36	8	8	5	37	10	9	5	38	5	5
6	36	8	8	6	37	9	9	6	38	5	8
7	36	8	8	7	37	10	10	7	38	5	8
8	36	5	8	8	37	8	8	8	38	7	8
9	36	5	8	9	37	8	8	9	38	4	5
10	36	5	7	10	37	8	8	10	38	6	6
11	36	8	8	11	37	8	8	11	38	6	7
12	36	8	10	12	37	8	8	12	38	8	9
13	36	8	8	13	37	8	8	13	38	5	5
14	36	8	7	14	37	8	8	14	38	6	8
15	36	8	8	15	37	8	9	15	38	5	8
16	36	7	8	16	37	8	8	16	38	6	8
17	36	8	9	17	37	8	8	17	38	8	8
18	36	9	8	18	37	8	9	18	38	9	8
19	36	8	8	19	37	8	9	19	38	7	8
20	36	8	8	20	37	8	11	20	38	8	9
21	36	9	8	21	37	9	9	21	38	11	12
22	36	9	8	22	37	11	10	22	38	15	22
23	36	8	8	23	37	8	10	23	38	9	9
24	36	8	8	24	37	9	8	24	38	8	8
25	36	8	6	25	37	8	8	25	38	8	8
26	36	5	5	26	37	8	8	26	38	9	8
27	36	4	5	27	37	8	8	27	38	9	9
28	36	8	7	28	37	15	18	28	38	7	7
29	36	8	8	29	37	12	15	29	38	8	8
30	36	11	10	30	37	12	11	30	38	7	9
31	36	12	12	31	37	28	25	31	38	11	11
32	36	20	25	32	37	22	21	32	38	28	42
33	36	12	9	33	37	8	8	33	38	10	10
34	36	9	10	34	37	8	8	34	38	8	8
35	36	9	10	35	37	10	11	35	38	9	10
36	36	9	9	36	37	8	9	36	38	8	9
37	36	21	35	37	37	9	8	37	38	8	8
38	36	18	25	38	37	9	9	38	38	5	8
39	36	11	10	39	37	10	9	39	38	7	8
40	36	7	8	40	37	11	25	40	38	8	8
41	36	8	8	41	37	8	7	41	38	8	11
42	36	10	9	42	37	8	9	42	38	6	10
43	36	8	8	43	37	8	8	43	38	8	8
44	36	8	8	44	37	10	10	44	38	6	8
45	36	10	10	45	37	10	9	45	38	7	9
46	36	9	11	46	37	8	8	46	38	7	7
47	36	11	8	47	37	8	9	47	38	7	7
48	36	8	10	48	37	8	8	48	38	10	10
49	36	8	8	49	37	8	9	49	38	9	9
50	36	8	8	50	37	8	7	50	38	11	10

Table 3-1 HMC - IX Plant Gamma Survey Data

North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)	North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)	North	West	Exposure at Waist (microR/hr)	Exposure at Ground (microR/hr)
0	39	8	8	0	40	8	5				
1	39	5	6	1	40	6	6				
2	39	7	8	2	40	8	8				
3	39	8	10	3	40	7	7				
4	39	5	8	4	40	5	8				
5	39	9	8	5	40	8	8				
6	39	7	8	6	40	8	8				
7	39	8	8	7	40	7	7				
8	39	8	8	8	40	8	9				
9	39	8	9	9	40	5	9				
10	39	5	8	10	40	7	8				
11	39	5	5	11	40	5	8				
12	39	6	8	12	40	7	8				
13	39	8	8	13	40	8	8				
14	39	9	10	14	40	8	8				
15	39	5	7	15	40	8	8				
16	39	8	8	16	40	8	8				
17	39	8	8	17	40	8	9				
18	39	8	9	18	40	8	8				
19	39	9	9	19	40	8	8				
20	39	10	11	20	40	8	10				
21	39	15	15	21	40	8	11				
22	39	21	30	22	40	8	9				
23	39	18	20	23	40	8	8				
24	39	9	15	24	40	11	11				
25	39	7	9	25	40	9	10				
26	39	9	10	26	40	8	11				
27	39	9	8	27	40	10	10				
28	39	9	9	28	40	10	10				
29	39	8	9	29	40	9	8				
30	39	8	10	30	40	10	9				
31	39	9	9	31	40	21	21				
32	39	20	18	32	40	21	21				
33	39	20	20	33	40	10	11				
34	39	9	10	34	40	8	8				
35	39	8	9	35	40	10	10				
36	39	5	8	36	40	9	11				
37	39	5	9	37	40	9	8				
38	39	5	10	38	40	8	11				
39	39	9	10	39	40	9	10				
40	39	9	10	40	40	8	10				
41	39	8	9	41	40	8	10				
42	39	8	8	42	40	8	9				
43	39	7	9	43	40	9	8				
44	39	7	10	44	40	8	10				
45	39	10	10	45	40	8	8				
46	39	8	5	46	40	8	9				
47	39	9	10	47	40	8	8				
48	39	8	10	48	40	9	8				
49	39	11	10	49	40	8	9				
50	39	18	20	50	40	10	8				

Table 3-1 HMC - IX Plant Gamma Survey Data



○ Soil Sample Locations

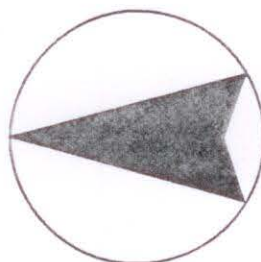


Figure 3-2 HMC - IX Plant Soil Sample Locations

Table 3-2 HMC - IX Plant Soil Verification Survey Data

North	West	Date	HMC Exposure (μ R/hr)	NRC Exposure (μ R/hr)	HMC Ra-226 (pCi/g)	ELI Ra-226 (pCi/g)	ORNL Ra-226 (pCi/g)	ELI U-nat (pCi/g)	ORNL U-nat (pCi/g)	Comments
0	0	4/27/92	15		2.51					
0	10	4/27/92	11		6.36					
0	20	4/27/92	10		2.08					
0	30	4/27/92	8		2.09					
0	40	4/27/92	5		3.14					
8	6	4/27/92	10		5.59	1.9		10.7		
8	6	6/5/92	25		-2.39					
8	6	5/18/93	12	24	6.15	0.38	0.43	3.6	5.1	29" Deep
9	6	4/27/92	9		5.54					
9	6	6/5/92	11		3.34	3.8		20.9		
10	10	6/5/92	18		3.53	4.1		7.3		
10	10	5/18/93	24	50	12.17	6.25	9.5	59.7	56.7	36" Deep
10	9	6/5/92			4.41					
11	8	6/5/92	9		4.67					
11	9	4/27/92	11		27.09					
11	9	6/5/92	8		-0.29	1.3		30.1		
11	10	6/5/92			0.46					
12	8	6/5/92			-0.42	1		3.5		
12	9	4/27/92	9		3.01					
12	9	6/5/92	15		-0.15					
12	9	5/18/93	12	24	6.14	0.47	0.78	1	1.9	40" Deep
12	10	6/5/92	11		3.45					
13	8	4/27/92	9		4.46					
13	8	6/5/92	10		1.68					
13	9	6/5/92	5		-0.54	0.5		5.6		
13	10	6/5/92	5		3.21					
20	0	4/27/92	21		15.15					
20	10	4/27/92	11		4.96					
20	20	4/27/92	7		3.26					
20	30	4/27/92	8		5.73					
20	40	4/27/92	10		3.73					
20	17	5/18/93	13	21	7.65	0.67	0.95	13.9	2	21" Deep
30	0	4/27/92	22		11.42					
30	10	4/27/92	9		3.19					
30	20	4/27/92	8		3.15					
30	30	4/27/92	11		4.5					
30	40	4/27/92	9		4.22					
40	0	4/27/92	29		5.31					
40	10	4/27/92	10		5.53					
40	20	4/27/92	10		2.83					
40	30	4/27/92	9		3.58					
40	40	4/27/92	10		3.66					
50	0	4/27/92	25		16.56					
50	10	4/27/92	11		5.6					
50	20	4/27/92	18		29.09					
50	30	4/27/92	9		3.64					
50	40	4/27/92	8		2.49					
Surface		5/18/93			11.68	4.73	7.3	4	3.2	0" Deep
BGO		5/18/93			7.29	1.74		4.2		0" Deep