PIPER MARBURY RUDNICK & WOLFE

203 North LaSalle Street
Suite 1800
Chicago, Illinois 60601-1293
www.piperrudnick.com

PHONE (312) 368-4000
FAX (312) 236-7516

WRITER'S INFORMATION

timothy.ramsey@piperrudnick.com
PHONE 312-368-4066
FAX 312-630-7350

May 31, 2000

EPA Region 5 Records Ctr.
227579

BY HAND DELIVERY

Mary L. Fulghum, Esq.
Associate Regional Counsel
U.S. Environmental Protection Agency
Region 5
77 West Jackson Boulevard
Chicago, Illinois 60604

Re: Vacant Site at Northwest Corner of Grand Avenue and McClurg Court, Chicago, Illinois

Dear Ms. Fulghum:

As you requested and as we discussed, enclosed herewith are two copies of the report entitled "Summary of Radiological Survey, Time-Life Property, Chicago, Illinois" dated May 2000 prepared by B. Koh & Associates, Inc. with respect to the vacant site located at the northwest corner of Grand Avenue and McClurg Court, Chicago, Illinois. As we mentioned, we represent the current owner of this site. This report was prepared by B. Koh & Associates for a prospective purchaser of this site in connection with the purchaser's environmental due diligence related to the prospective real estate sale transaction.

We look forward to discussing the information in the enclosed report with you and other representatives of the U.S. Environmental Protection Agency.

Very truly yours,

Tim Ramsey

Timothy Ramsey

JTR/tr

cc: Mr. Terry A. McKay
Steven L. Loren, Esq.
Christina King Loundy, Esq.

CHIDOCS/20051/765913.1 5/31/2000 12:40 PM

SUMMARY OF RADIOLOGICAL SURVEY

TIME-LIFE PROPERTY

CHICAGO, ILLINOIS

May 2000

By

— B. KOH & ASSOCIATES, INC. —

11 West Main Street
Springville, New York 14141

SUMMARY OF RADIOLOGICAL SURVEY
TIME-LIFE PROPERTY
CHICAGO, ILLINOIS

TABLE OF CONTENTS

1.0 GENERAL 1

2.0 REQUIRED SURVEY AND SAMPLING ACTIVITIES 1
2.1 Data Interpretation 1

3.0 PARKING LOT RADIOLOGICAL SURVEY 1
3.1 Grid System 2
3.2 Walkover Gamma Scans 2
3.3 Soil Sampling 2
3.4 Exposure/Dose Rate Measurements 2
3.5 Soil Sample Results 2

4.0 CONCLUSION 3

5.0 REFERENCES 3

LIST OF TABLES

Table No.	Title
Table 1	Instrumentation Specifications and Requirements for Radiological Surveys
Table 2	Walkover Gamma Scan and Exposure/Dose Rate Results
Table 3	Isotopic Thorium Results
Table 4	Soil Sample Results

LIST OF FIGURES

Figure No.	Title
Figure 1	Time-Life Property Site Plan
Figure 2	Time-Life Property Borehole Sample Locations

SUMMARY OF RADIOLOGICAL SURVEY
TIME-LIFE PROPERTY
CHICAGO, ILLINOIS

1.0 GENERAL

B. Koh & Associates, Inc. (BKA) performed radiological survey and sampling activities of the parking lot owned by Time-Life during April 17 - 19, 2000 (Figure 1). The Time-Life property is located in Chicago, Illinois.

The survey and sampling activities were performed by a qualified radiological control technician using calibrated equipment and approved procedures in accordance with the scope of work presented in the BKA proposal *(BKA, March 30, 2000)*. The following sections present a summary of the survey and sampling activities performed for the parking lot.

2.0 REQUIRED SURVEY AND SAMPLING ACTIVITIES

The following activities were included in the radiological survey and sampling activities for the parking lot:

1) Develop grid system
2) Perform walkover gamma scanning survey
3) Obtain soil samples
4) Obtain exposure/dose rate measurements
5) Perform soil analyses

The survey activities were performed in accordance with the following BKA field procedures.

1) FP-01 - Beta-Gamma Surveys
2) FP-14 - Low Level Radiation (Exposure Rate) Surveys

Soil analyses was performed by Outreach Laboratories, Broken Arrow, Oklahoma.

2.1 Data Interpretation

The survey and sampling data will be evaluated against the following criteria:

Soil Concentration Limit (USNRC, June 1981)	- 10 pCi/g total thorium (average concentration) - 30 pCi/g total thorium (maximum concentration)
Exposure/Dose Rate Limit (USNRC, April 1992)	- 10 μR/hr above background at 1 meter above ground surface (20 μR/hr maximum)

Although the instrument used for obtaining exposure rate measurements displays readings in μRem/hr, for x-rays and gamma rays μR/hr is considered equivalent to 1 μRem/hr.

3.0 PARKING LOT RADIOLOGICAL SURVEY

All survey and sampling activities for the parking lot were performed between April 17-19, 2000.

3.1 Grid System

A 10 meter x 10 meter grid system was established by Gaiatech personnel for performing the radiological survey and sampling activities of the parking lot (Figure 1).

3.2 Walkover Gamma Scans

Surface scans (100%) were performed for gamma radiation on all accessible portions of the parking lot using a calibrated Ludlum Model 2221 ratemeter/scaler coupled to a Ludlum Model 44-10 2" 2" Sodium Iodide (NaI) detector. Instrumentation used in performing the survey are presented in Table 1. The high and low readings (gross cpm) within each grid are presented in Table 2. Seven areas of elevated gamma radiation were identified (see Figure 1). The elevated readings range from 7,100 to 95,000 cpm. Background levels ranged from approximately 4,100 to 4,500 cpm.

3.3 Soil Sampling

Soil samples were obtained from 33 locations. The soil samples were obtained using geoprobe sampling equipment mounted to a truck. The samples were obtained initially to depths of 4 feet and extended to depths of 8 feet, depending on field scanning results and soil characteristics (i.e., clay or fill material). All sample locations in which at least one borehole sample was obtained are identified on (Figure 2).

The soil cores were field scanned for gamma radiation by moving a calibrated Ludlum Model 2221 ratemeter/scaler coupled to a lead collimated Ludlum Model 44-10 2" x 2" NaI detector along the length of the core sample. The elevated measurements ranged from approximately 4,000 cpm to 320,000 cpm. Background measurements were approximately 3,000 cpm. Core sample scan results are provided on the bore logs (Attachment 1).

3.4 Exposure/Dose Rate Measurements

Exposure/dose rate measurements were obtained at 1 meter above the ground surface from four locations (equidistant from the center and each corner) within each 10 m x 10 m grid location using a calibrated Bicron μRem meter. Exposure/dose rate measurements ranged from 3 μRem/hr to 18 μRem/hr and are presented in Table 2. The background established for the exposure/dose rate instrument was approximately 3 to 4 μRem/hr.

Elevated exposure/dose rate readings were obtained at grid locations B9 (18 μRem/hr), C2 (11 μRem/hr), C5 (9 μRem/hr), F2 (16 μRem/hr) and F3 (15 μRem/hr). All of the exposure/dose rate readings were below the 20 μR/hr maximum limit.

3.5 Soil Sample Results

As a result of field screening the core samples, elevated gamma radiation levels were detected in soils at borehole locations BH-3, BH-4, BH-5, BH-7, BH-10, BH-16 and BH-30 (see Figure 2).

Core samples from the elevated locations were split into 2 foot intervals for analyses. The samples were sent to Outreach Laboratories, Broken Arrow, Oklahoma and were analyzed for Ac-228 via gamma spectroscopy. Ac-228 is the gamma emitting radionuclide (daughter) associated with Th-232 and is used along with the alpha spectroscopy results (Table 3) in determining the total thorium concentrations. Results are presented on a dry weight basis.

In addition, soil samples from boreholes BH-1, BH-6, BH-11, BH-12, BH-15, BH-19, BH-20, BH-24 and BH-30 were analyzed to confirm that the soil is below the 10 pCi/g release criteria. In order to determine the isotopic ratio of Th-232 and Th-228, three samples were analyzed via alpha spectroscopy. The isotopic ratio is used for converting the gamma spectroscopy results into total thorium (i.e., Th-232 and Th-228) results.

Based on the alpha spectroscopy results shown in Table 3, the Th-232 and Th-228 are in secular equilibrium. Thus, the Ac-228 concentrations presented in Table 4 can be multiplied by 2 to obtain the total thorium concentrations.

Total thorium concentrations from sample locations shown on Figure 2 and results presented in Table 4 indicate several locations (BH-3, BH-4, BH-5, BH-10, BH-12, BH-16 and BH-22) where the thorium concentrations exceed the NRC release limit. Based on the distribution of the elevated concentrations, there does not appear to be a clear correlation between location of thorium contamination and site features (i.e., drainage areas, foundations).

4.0 CONCLUSION

As a result of the radiological survey and sampling activities for the Time-Life property, areas of elevated gamma radiation was discovered (see Figure 1). In addition, soil samples from within the elevated areas were discovered to contain elevated levels of thorium contamination well above the NRC release criteria.

In order to develop a more comprehensive understanding of the horizontal and vertical extent (i.e., volume of contaminated soil/fill material) of the contamination, a more detailed subsurface sampling and analysis plan should be developed. Information obtained from the detailed plan can then be used to develop more accurate volumes of contaminated soil/fill and more complete remediation cost estimates.

5.0 REFERENCES

B. Koh & Associates, Inc. March 30, 2000. Proposal for Radiological Survey and Sampling of Parking Lot, Chicago, Illinois.

U.S. Nuclear Regulatory Commission. October 1981. Disposal or Onsite Storage of Residual Thorium or Uranium Waste from Past Operations. SECY-81-576.

U.S. Nuclear Regulatory Commission. April 1992. Action Plan to Ensure Timely Remediation of Sites Listed in the Site Decommissioning Management Plan. SECY-92-106.

U.S. Nuclear Regulatory Commission. June 1992. Manual for Conducting Radiological Surveys in Support of License Termination. NUREG/CR-5849.

TABLE 1

TIME-LIFE PROPERTY
INSTRUMENTATION SPECIFICATIONS AND REQUIREMENTS FOR RADIOLOGICAL SURVEYS

Type of Measurement	Meter		Description	Detector		Description	BKG	EFF	Detector Sensitivity	Mode of Operation
	Make	Model		Make	Model					
Exposure/dose rate measurements	Bicron		Exposure/dose rate analog display in units of μRem/hr	Bicron	N/A	Internally mounted tissue equivalent scintillator	7 μRem/hr	N/A	2 μRem/hr	Analog display of exposure/dose rate
Low level gamma scans, correlation with exposure rates or activity concentration	Ludlum	2221	LCD digital scaler/ratemeter with analog scaler	Ludlum	44-10	2" x 2" NaI scintillation	4500 cpm	About 900 cpm per μR/hr	2 μR/hr	Digital and analog display of count rate

BKA00031.TLP

TABLE 2
WALKOVER GAMMA SCAN AND EXPOSURE/DOSE RATE RESULTS
TIME-LIFE PROPERTY
Chicago, Illinois

			1[1]	2[1]	3[1]	4[1]
GRID LOCATION	**High (cpm)**	**Low (cpm)**	**Dose Rate μRem/hr**			
A1	5,200	4,800	3	4	4	3
A2	5,300	4,600	4	4	5	4
A3	5,200	4,700	3	4	3	3
A4	7,000	4,600	4	3	4	4
A5	5,400	4,600	5	4	3	3
A6	5,800	5,100	3	4	3	3
A7	5,600	5,100	4	3	4	4
A8	5,700	5,000	3	3	3	3
A9	5,800	5,200	4	3	3	5
A10	5,800	5,100	4	3	3	4
A11	5,900	4,900	3	3	3	4
A12	5,700	4,900	4	4	3	4
A13	5,700	4,900	3	4	3	4
A14 (2 meters)	5,200	4,800	4	NA	3	NA
B1 (2 meters)	5,200	4,600	3	4	3	3
B2	5,400	4,800	4	3	4	4
B3	4,200	5,100	3	3	3	3
B4	5,200	4,500	4	4	3	3
B5	10,900	4,800	4	4	4	4
B6	5,900	4,800	5	4	4	4
B7	5,600	5,100	3	4	3	4

[1] Exposure/dose rate measurement location within grid (see Figure 1).

TABLE 2
WALKOVER GAMMA SCAN AND EXPOSURE/DOSE RATE RESULTS
TIME-LIFE PROPERTY
Chicago, Illinois

			1[1]	2[1]	3[1]	4[1]
GRID LOCATION	**High (cpm)**	**Low (cpm)**	**Dose Rate μRem/hr**			
B8	5,600	5,000	4	3	3	4
B9	69,000	5,100	4	3	3	18
B10	6,400	5,100	4	3	4	3
B11	7,000	[illegible],200	3	3	3	4
B12	5,900	5,100	3	3	4	3
B13	5,400	4,800	3	3	4	3
B14 (2 meters)	5,100	4,800	3	NA	3	NA
C1	9,600	4,800	4	3	3	4
C2	56,000	5,000	4	4	11	4
C3	5,400	4,500	4	4	6	5
C4	5,300	4,500	4	4	4	5
C5	12,000	5,000	4	9	4	4
C6	6,500	5,000	6	3	4	3
C7	5,600	5,000	4	4	4	3
C8	5,600	5,000	4	3	4	4
C9	6,400	4,800	5	4	3	4
C10	6,700	5,400	3	3	3	4
C11	6,200	5,200	5	4	4	4
C12	6,000	5,000	3	4	3	3
C13	5,700	5,000	3	4	3	4
C14 (2 meters)	4,400	4,700	3	NA	4	NA
D1	8,000	4,800	5	4	5	5

[1] Exposure/dose rate measurement location within grid (see Figure 1).

TABLE 2
WALKOVER GAMMA SCAN AND EXPOSURE/DOSE RATE RESULTS
TIME-LIFE PROPERTY
Chicago, Illinois

			1[1]	2[1]	3[1]	4[1]
GRID LOCATION	High (cpm)	Low (cpm)	Dose Rate μRem/hr			
D2	13,500	4,900	3	3	8	6
D3	17,500	5,400	4	3	5	4
D4	6,900	5,400	4	3	4	3
D5	6,600	5,400	4	4	4	3
D6	5,800	5,000	4	3	4	4
D7	5,400	4,800	3	4	5	4
D8	5,400	4,700	4	4	5	4
D9	5,200	4,400	4	3	3	4
D10	6,000	4,500	4	3	3	4
D11	5,700	4,200	4	4	4	3
D12	5,700	4,500	3	4	3	4
D13	5,500	4,800	4	4	3	4
D14 (2 meters)	4,900	4,700	4	NA	3	NA
E1	6,600	4,600	4	4	3	4
E2	28,000	4,900	4	4	4	4
E3	33,000	5,100	4	4	5	4
E4	6,100	4,800	4	4	6	6
E5	7,100	4,800	4	3	5	6
E6	5,700	5,000	4	4	3	4
E7	5,400	5,000	4	5	4	4
E8	7,100	4,800	4	5	4	4
E9	5,200	4,600	3	4	3	4

[1] Exposure/dose rate measurement location within grid (see Figure 1).

TABLE 2
WALKOVER GAMMA SCAN AND EXPOSURE/DOSE RATE RESULTS
TIME-LIFE PROPERTY
Chicago, Illinois

			1[1]	2[1]	3[1]	4[1]
GRID LOCATION	High (cpm)	Low (cpm)	Dose Rate μRem/hr			
E10	7,600	4,200	4	3	4	3
E11	5,200	4,300	4	4	4	3
E12	5,400	4,400	3	3	3	4
E13	5,400	4,800	4	3	4	3
E14 (2 meters)	5,000	4,400	4	NA	4	NA
F1	6,300	4,600	5	4	5	4
F2	95,000	4,800	15	5	5	5
F3	89,000	5,000	5	4	15	6
F4	5,600	5,000	4	4	4	3
F5	6,100	4,900	5	4	4	4
F6	5,300	4,900	4	4	3	4
F7	5,800	4,700	3	4	4	3
F8	8,100	4,800	4	3	3	4
F9	5,100	4,500	3	4	3	3
F10	5,100	4,400	4	4	4	3
F11	4,900	4,300	3	4	4	4
F12	5,300	4,300	4	3	3	3
F13	4,900	4,400	3	3	4	3
F14 (2 meters)	4,900	4,400	5	NA	4	NA
G1	4,500	4,300	3	4	NA	NA
G2	5,600	4,600	4	3	NA	NA
G3	12,000	5,100	5	3	NA	NA

[1] Exposure/dose rate measurement location within grid (see Figure 1).

TABLE 2
WALKOVER GAMMA SCAN AND EXPOSURE/DOSE RATE RESULTS
TIME-LIFE PROPERTY
Chicago, Illinois

			1[1]	2[1]	3[1]	4[1]
GRID LOCATION	**High (cpm)**	**Low (cpm)**	**Dose Rate μRem/hr**			
G4	6,100	4,800	4	5	NA	NA
G5	6,100	4,700	4	3	NA	NA
G6	5,500	4,500	4	4	NA	NA
G7	5,600	4,800	3	4	NA	NA
G8	6,100	5,100	4	4	NA	NA
G9	5,300	4,300	3	4	NA	NA
G10	4,900	4,200	5	4	NA	NA
G11	4,800	4,100	5	4	NA	NA
G12	5,400	4,200	4	4	NA	NA
G13	5,300	4,400	4	3	NA	NA
G14 (2 meters)	4,800	4,300	4	NA	NA	NA

[1] Exposure/dose rate measurement location within grid (see Figure 1).

TABLE 3

TLME-LIL PROPERTY
ISOTOPIC THORIUM RESULTS

Sample ID	Th-232 (pCi/g)	Th-228 (pCi/g)	Total Thorium (pCi/g)
TL-BH3, 2-4'	3020 ± 85.6	2880 ± 83.7	5900 ± 169.3
TL-BH4, 0-2'	307 ± 29.6	280 ± 28.3	587 ± 57.9
TL-BH16, 0-2'	514 ± 34.3	493 ± 33.6	1007 ± 67.9

TABLE 4

TIME-LIFE PROPERTY
SOIL SAMPLE RESULTS

Borehole Number	Grid	Depth (ft)	Sample ID	Ac-228 (pCi/g)	Total Thorium (pCi/g)
1	A1	0-2'	TL-BH1, 0-2'	<1.2	<2.4
3	C2	0-2'	TL-BH3, 0-2'	2.4 ± 0.2	4.8 ± 0.4
		2-4'	TL-BH3, 2-4'	2110 ± 37.8	4,220 ± 75.6
		4-6'	TL-BH3, 4-6'	370 ± 7.6	740 ± 15.2
		6-8'	TL-BH3, 4-6'	<0.7	<1.4
4	D2	0-2'	TL-BH4, 0-2'	152 ± 3.9	304 ± 7.8
		2-4'	TL-BH4, 2-4'	3.5 ± 0.4	7.0 ± 0.8
		4-6'	TL-BH4, 4-6'	29.6 ± 1.1	59.2 ± 2.2
5	F2	0-2'	TL-BH5, 0-2'	3.2 ± 0.2	6.4 ± 0.4
		2-4'	TL-BH5, 2-4'	27.7 ± 1.0	55.4 ± 2.0
		4-6'	TL-BH5, 4-6'	14.7 ± 0.8	29.4 ± 0.8
6	F1	0-2'	TL-BH6, 0-2'	<0.6	<1.2
7	F3	0-2'	TL-BH7, 0-2'	5.2 ± 0.4	10.4 ± 0.8
		2-4'	TL-BH7, 2-4'	2.9 ± 0.2	5.8 ± 0.4
10	D3	0-2'	TL-BH10, 0-2'	6.8 ± 0.6	13.6 ± 1.2
		2-4'	TL-BH10, 0-2'	4.3 ± 0.4	8.6 ± 0.8
11	E6	0-2'	TL-BH11, 0-2'	3.0 ± 0.2	6.0 ± 0.4
12	F8	0-2'	TL-BH12, 0-2'	5.8 ± 0.5	11.6 ± 1.0
15	A5	0-2'	TL-BH15, 0-2'	<1.5	<3.0
16	B5	0-2'	TL-BH16, 0-2'	170 ± 4.2	340 ± 8.4
		2-4'	TL-BH16, 2-4'	216 ± 4.7	332 ± 9.4
		4-6'	TL-BH16, 4-6'	226 ± 4.7	452 ± 9.4

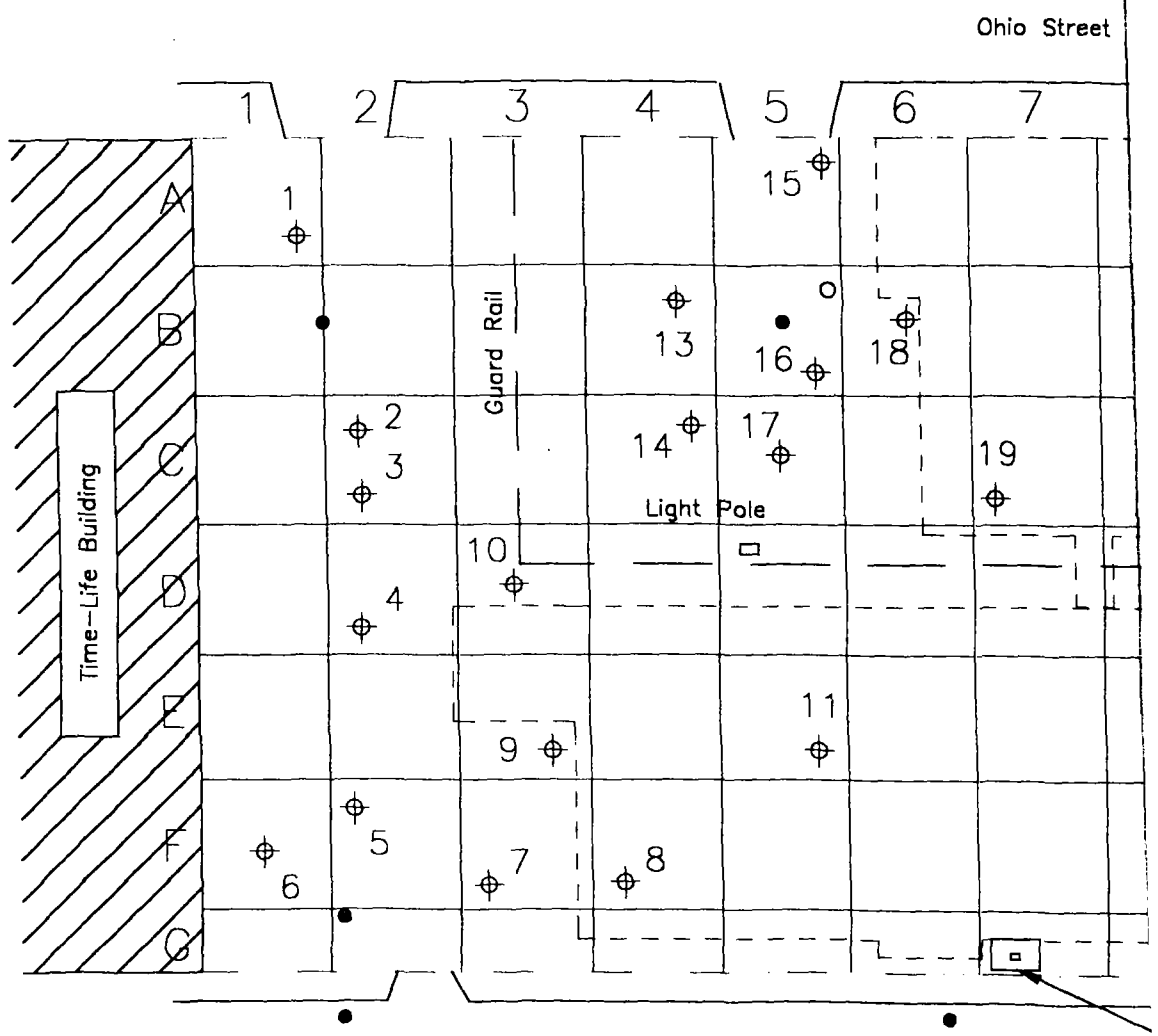
* Ratio of Total Thorium to Ac-228 is assumed to be approximately 2 to 1, therefore, Ac-228 values were multiplied by 2.0 to obtain Total Thorium values.

TABLE 4

TIME-LIFE PROPERTY
SOIL SAMPLE RESULTS

Borehole Number	Grid	Depth (ft)	Sample ID	Ac-228 (pCi/g)	Total Thorium (pCi/g)
19	C7	0-2'	TL-BH19, 0-2'	<0.6	<1.2
20	B8	0-2'	TL-BH20, 0-2'	<1.3	<2.6
22	B9	0-2'	TL-BH22, 0-2'	63.2 ± 1.6	126.4 ± 3.2
			TL-BH22,2-4'	6.2 ± 0.4	12.4 ± 0.8
			TL-BH22,4-6'	9.3 ± 0.8	18.6 ± 1.
24	B10	0-2'	TL-BH24, 0-2'	<0.9	<1.8
30	E10	0-2'	TL-BH30, 0-2'	<0.8	<1.6
BKG-1	F14	0-2'	TL-BKG 1, 0-2'	<1.1	<2.2
BKG-2	C14	0-2'	TL-BKG-2, 0-2'	<1.8	<3.6
BKG-3	B14	0-2'	TL-BKG-3, 0-2'	<0.8	<1.6

* Ratio of Total Thorium to Ac-228 is assumed to be approximately 2 to 1, therefore, Ac-228 values were multiplied by 2.0 to obtain Total Thorium values.



LEGEND

Boring Locations

Background Boring/Sample Locations

Approximate Property Boundary

Approximate Location of Former Buildings

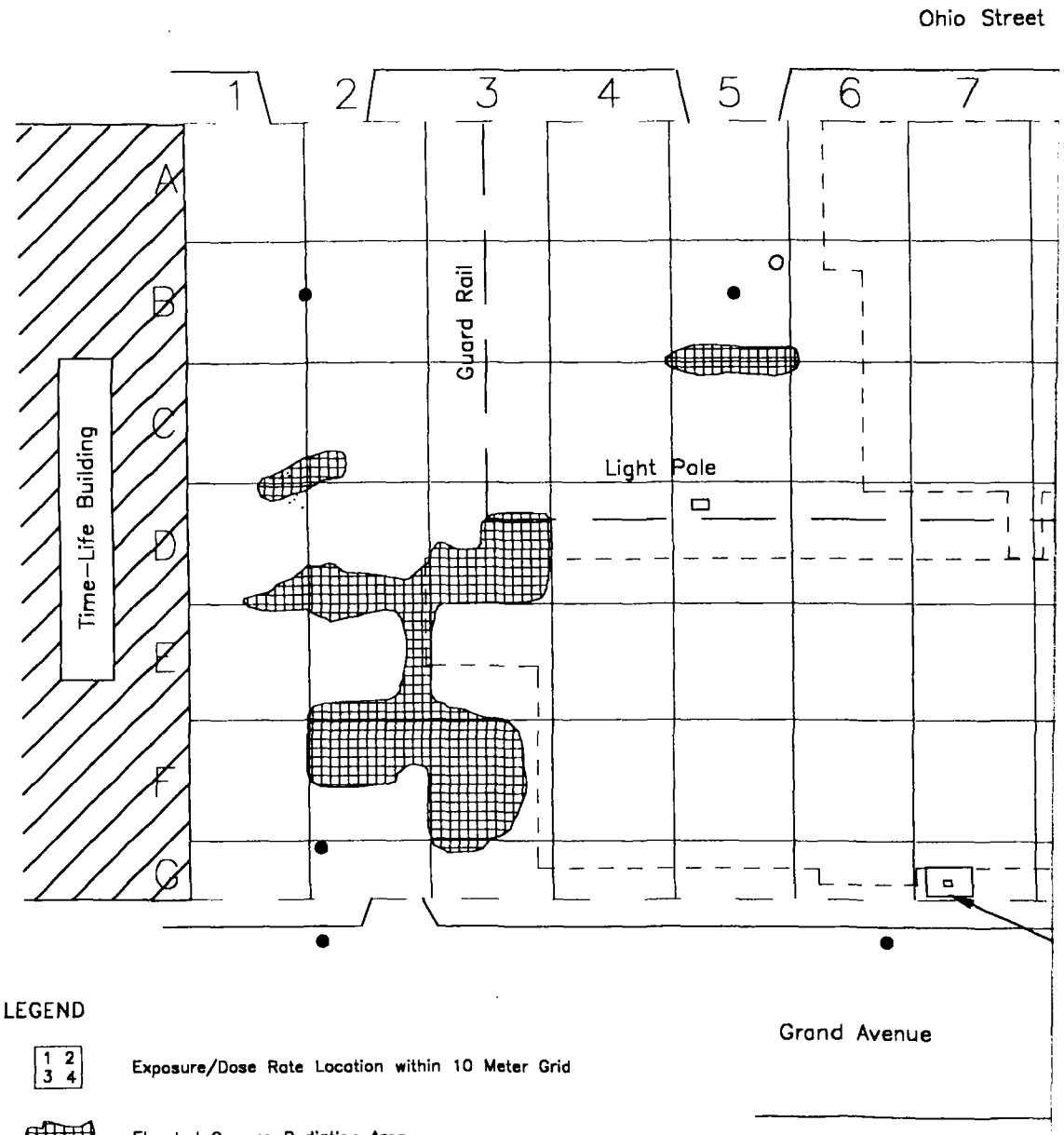
Catch Basin

10 Meter Radiological Sur rid

Grand Avenue

0 40 8

Scale: 1" = 40'



LEGEND

1 2
3 4 Exposure/Dose Rate Location within 10 Meter Grid

Elevated Gamma Radiation Area

Approximate Property Boundary

Approximate Location of Former Buildings

Catch Basin

10 Meter Radiological Survey Grid

ATTACHMENT 1

TIME-LIFE PROPERTY
RADIOLOGICAL SURVEY
BOREHOLE LOG RESULTS

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BH-1
DESCRIPTION: Geo Probe Samples

DEPTH: 8'
SCAN RESULTS: See log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/ NaI s/N 118978

BKG. ≃ 3000 cpm with lead shield

	Max Gross CPM	Sample Number
0'	BKG	
1'		
2'		TL-BH1-0-2'
3'		
4'		
4'		
5'		
6'		
7'		
8'		End of Boring
8'		
9'		
10'		
11'		
12'		

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BH-2
DESCRIPTION: Geo Probe Samples

DEPTH: 8'
SCAN RESULTS: See log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/NaI s/N 118978

BKG. ≃ 3000 cpm with lead shield

	Max. Gross CPM	Sample Number
0'	BKG	
1'		
2'		
3'		
4'		
4'		
5'		
6'		
7'		
8'		End of Boring
8'		
9'		
10'		
11'		
12'		

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BH-3
DESCRIPTION: Geo Probe Samples

DEPTH: 8'
SCAN RESULTS: see log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/NaI s/N 118978

BKG. ≃ 3000 cpm with lead shield

	Max Gross CPM	Sample Number
0'	BKG	
1'	5100	
2'	30K	TL-BH3- 0-2'
3'	320K	
4'	40K	TL-BH3- 2-4'
4'	40K	
5'	5K	
6'	BKG	TL-BH3- 4-6'
7'		
8'		TL-BH3-6-8' End of Boring
8'		
9'		
10'		
11'		
12'		

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BH-4
DESCRIPTION: Geo Probe Samples

DEPTH: 8'
SCAN RESULTS: see log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/NaI s/N 118978

BKG. ≃ 3000 cpm with lead shield

Depth	Max Gross CPM	Sample Number
0'		
1'	4K	
2'	80K	TL-BH4-0-2'
3'	5K	
4'	5K	TL-BH4-2-4'
4'		
5'	5K BKG	
6'		TL-BH4-4-6'
7'		
8'		End of Boring
8'		
9'		
10'		
11'		
12'		

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BH-5
DESCRIPTION: Geo Probe Samples

DEPTH: 8'
SCAN RESULTS: see log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/NaI s/N 118978

BKG. ≃ 3000 cpm with lead shield

	Max Gross CPM	Sample Number
0'	4K	
1'	16K	
2'	30K	TL-BH5-0-2'
3'	13K	
4'	4K	TL-BH5-2-4'
4'	13K	
5'	BKG	
6'		TL-BH5-4-6'
7'		
8'		End of Boring
8'		
9'		
10'		
11'		
12'		

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BH-6
DESCRIPTION: Geo Probe Samples

DEPTH: 8'
SCAN RESULTS: see log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/NaI s/N 118978

BKG. ≃ 3000 cpm with lead shield

	Max. Gross CPM	Sample Number
0'	BKG	
1'		
2'		TL-BH6- 0-2'
3'		
4'		
4'		
5'		
6'		
7'		
8'		End of Boring
8'		
9'		
10'		
11'		
12'		

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BH-7
DESCRIPTION: Geo Probe Samples

DEPTH: 8'
SCAN RESULTS: see log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/NaI s/N 118978

BKG. ≃ 3000 cpm with lead shield

	Max. Gross CPM	Sample Number
0'		
1'	4K	
2'	4K	TL-BH7- 0-2'
3'	BKG	
4'		TL-BH7 2-4'
4'		
5'		
6'		
7'		
8'		End of Boring
8'		
9'		
10'		
11'		
12'		

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BH-8
DESCRIPTION: Geo Probe Samples

DEPTH: 8'
SCAN RESULTS: see log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/ NaI s/N 118978

BKG. ≃ 3000 cpm with lead shield

	Max. Gross CPM	Sample Number
0'	BKG	
1'		
2'		
3'		
4'		
4'		
5'		
6'		
7'		
8'		End of Boring
8'		
9'		
10'		
11'		
12'		

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BH9
DESCRIPTION: Geo Probe Samples

DEPTH: 8'
SCAN RESULTS: see log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/NaI s/N 118978

BKG. ≃ 3000 cpm with lead shield

	Max. Gross CPM	Sample Number
0'	BKG	
1'		
2'		
3'		
4'		
4'		
5'		
6'		
7'		
8'		End of Boring
8'		
9'		
10'		
11'		
12'		

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BH-10
DESCRIPTION: Geo Probe Samples

DEPTH: 8'
SCAN RESULTS: See log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/NaI s/N 118978

BKG. ≃ 3000 cpm with lead shield

	Max Gross CPM	Sample Number
0'	BKG	
1'		
2'	HK	TL- BH10- 0-2'
3'	BKG	
4'		TL- BH10- 2-4'
4'		
5'		
6'		
7'		
8'		End of Boring
8'		
9'		
10'		
11'		
12'		

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BH-11
DESCRIPTION: Geo Probe Samples

DEPTH: 4'
SCAN RESULTS: See log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/NaI s/N 118978

BKG. ≃ 3000 cpm with lead shield

	Max. Gross CPM	Sample Number
0'	BKG	
1'		
2'		TL- BH11- 0-2'
3'		
4'		End of Boring
4'		
5'		
6'		
7'		
8'		
8'		
9'		
10'		
11'		
12'		

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BH-12
DESCRIPTION: Geo Probe Samples

DEPTH: 4'
SCAN RESULTS: See log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/NaI s/N 118978

BKG. ≃ 3000 cpm with lead shield

	Max Gross CPM	Sample Number
0'	BKG	
1'		
2'		TL-BH12-0-2'
3'		
4'		End of Boring
4'		
5'		
6'		
7'		
8'		
8'		
9'		
10'		
11'		
12'		

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BH-13
DESCRIPTION: Geo Probe Samples

DEPTH: 4'
SCAN RESULTS: see log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/NaI s/N 118978

BKG. ≃ 3000 cpm with lead shield

	Max Gross CPM	Sample Number
0'	BKG	
1'		
2'		
3'		
4'		End of Boring
4'		
5'		
6'		
7'		
8'		
8'		
9'		
10'		
11'		
12'		

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BH-14
DESCRIPTION: Geo Probe Samples

DEPTH: 4'
SCAN RESULTS: see log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/NaI s/N 118978

BKG. ≈ 3000 cpm with lead shield

	Max. Gross CPM	Sample Number
0'	BKG	
1'		
2'		
3'		
4'		End of Boring
4'		
5'		
6'		
7'		
8'		
8'		
9'		
10'		
11'		
12'		

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BH-15
DESCRIPTION: Geo Probe Samples

DEPTH: 4'
SCAN RESULTS: See log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/NaI s/N 118978

BKG. ≃ 3000 cpm with lead shield

	Max Gross CPM	Sample Number
0'	BKG.	
1'		
2'		TL-BH15-0-2'
3'		
4'		End of Boring
4'		
5'		
6'		
7'		
8'		
8'		
9'		
10'		
11'		
12'		

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BH-16
DESCRIPTION: Geo Probe Samples

DEPTH: 8'
SCAN RESULTS: See log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/NaI s/N 118978

BKG. ≃ 3000 cpm with lead shield

	Max Gross CPM	Sample Number
0'	BKG	
1'	7K	
2'	73K	TL-BH16-0-2'
3'	20K	
4'	11K	TL-BH16-2-4'
4'	26K BKG.	
5'		
6'		TL-BH16-4-6'
7		
8'		End of Boring
8'		
9'		
10'		
11'		
12'		

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BH17
DESCRIPTION: Geo Probe Samples

DEPTH: 4'
SCAN RESULTS: see log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/ NaI s/N 118978

BKG. ≃ 3000 cpm with lead shield

	Max. Gross CPM	Sample Number
0'	BKG	
1'		
2'		
3'		
4'		End of Boring
4'		
5'		
6'		
7'		
8'		
8'		
9'		
10'		
11'		
12'		

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BH-18
DESCRIPTION: Geo Probe Samples

DEPTH: 4'
SCAN RESULTS: See log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/NaI s/N 118978

BKG. ≃ 3000 cpm with lead shield

	Max. Gross CPM	Sample Number
0'		
1'	BKG.	
2'		
3'		
4'		End of Boring
4'		
5'		
6'		
7'		
8'		
8'		
9'		
10'		
11'		
12'		

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BH-19
DESCRIPTION: Geo Probe Samples

DEPTH: 4'
SCAN RESULTS: See log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/NaI s/N 118978

BKG. ≃ 3000 cpm with lead shield

	Max. Gross CPM	Sample Number
0'	BKG	
1'		
2'		TL-BH19-0-2'
3'		
4'		End of Boring
4'		
5'		
6'		
7'		
8'		
8'		
9'		
10'		
11'		
12'		

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BH-20
DESCRIPTION: Geo Probe Samples

DEPTH: 4'
SCAN RESULTS: see log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/NaI s/N 118978

BKG. ≃ 3000 cpm with lead shield

	Max Gross CPM	Sample Number
0'	BKG.	
1'		
2'		TL- BH20- 0-2'
3'		
4'		End of Boring
4'		
5'		
6'		
7'		
8'		
8'		
9'		
10'		
11'		
12'		

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BH-21
DESCRIPTION: Geo Probe Samples

DEPTH: 4'
SCAN RESULTS: see log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/NaI s/N 118978

BKG. ≃ 3000 cpm with lead shield

	Max Gross CPM	Sample Number
0'	BKG.	
1'		
2'		
3'		
4'		End of Boring
4'		
5'		
6'		
7'		
8'		
8'		
9'		
10'		
11'		
12'		

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BH-22
DESCRIPTION: Geo Probe Samples

DEPTH: 8'
SCAN RESULTS: See log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/NaI s/N 118978

BKG. ≃ 3000 cpm with lead shield

	Max Gross CPM	Sample Number
0'	BKG.	
1'	13K	
2'	100K	TL-BH22-0-2'
3'	5K	
4'	BKG.	TL-BH22-2-4'
4'	6K	
5'	BKG.	
6'		TL-BH22-4-6'
7'		
8'		End of Boring
8'		
9'		
10'		
11'		
12'		

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BH-23
DESCRIPTION: Geo Probe Samples

DEPTH: 4'
SCAN RESULTS: See log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/NaI s/N 118978

BKG. ≃ 3000 cpm with lead shield

	Max Gross CPM	Sample Number
0'	BKG.	
1'		
2'		
3'		
4'		End of Boring
4'		
5'		
6'		
7'		
8'		
8'		
9'		
10'		
11'		
12'		

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BH-24
DESCRIPTION: Geo Probe Samples

DEPTH: 4'
SCAN RESULTS: see log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/ NaI s/N 118978

BKG. ≃ 3000 cpm with lead shield

	Max. Gross CPM	Sample Number
0'	BKG.	
1'		
2'		TL-BH24-0-2'
3'		
4'		End of Boring
4'		
5'		
6'		
7'		
8'		
8'		
9'		
10'		
11'		
12'		

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BH-25
DESCRIPTION: Geo Probe Samples

DEPTH: 4'
SCAN RESULTS: See log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/NaI s/N 118978

BKG. ≃ 3000 cpm with lead shield

	Max Gross CPM	Sample Number
0'	BKG.	
1'		
2'		
3'		
4'		End of Boring
4'		
5'		
6'		
7'		
8'		
8'		
9'		
10'		
11'		
12'		

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BH-2b
DESCRIPTION: Geo Probe Samples

DEPTH: 4'
SCAN RESULTS: See log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/NaI s/N 118978

BKG. ≃ 3000 cpm with lead shield

	Max. Gross CPM	Sample Number
0'	BKG.	
1'		
2'		
3'		
4'		End of Boring
4'		
5'		
6'		
7'		
8'		
8'		
9'		
10'		
11'		
12'		

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BH-27
DESCRIPTION: Geo Probe Samples

DEPTH: 4'
SCAN RESULTS: See log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/ NaI s/N 118978

BKG. ≃ 3000 cpm with lead shield

	Max. Gross CPM	Sample Number
0'	BKG.	
1'		
2'		
3'		
4'		End of Boring
4'		
5'		
6'		
7'		
8'		
8'		
9'		
10'		
11'		
12'		

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BH-28
DESCRIPTION: Geo Probe Samples

DEPTH: 4'
SCAN RESULTS: see log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/NaI s/N 118978

BKG. ≃ 3000 cpm with lead shield

	Max Gross CPM	Sample Number
0'	BKG.	
1'		
2'		
3'		
4'		End of Boring
4'		
5'		
6'		
7'		
8'		
8'		
9'		
10'		
11'		
12'		

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BH-29
DESCRIPTION: Geo Probe Samples

DEPTH: 4'
SCAN RESULTS: see log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/NaI s/N 118978

BKG. ≃ 3000 cpm with lead shield

	Max Gross CPM	Sample Number
0'	BKG.	
1'		
2'		
3'		
4'		End of Boring
4'		
5'		
6'		
7'		
8'		
8'		
9'		
10'		
11'		
12'		

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BH-30
DESCRIPTION: Geo Probe Samples

DEPTH: 4'
SCAN RESULTS: See log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/NaI s/N 118978

BKG. ≃ 3000 cpm with lead shield

	Max Gross CPM	Sample Number
0'	BKG.	
1'		
2'		TL-BH30-0-2'
3'		
4'		End of Boring
4'		
5'		
6'		
7'		
8'		
8'		
9'		
10'		
11'		
12'		

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BKG-1
DESCRIPTION: Geo Probe Samples

DEPTH: 4'
SCAN RESULTS: see log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/NaI s/N 118978

BKG. ≃ 3000 cpm with lead shield

	Max Gross CPM	Sample Number
0'	BKG.	
1'		
2'		TL-BKG-1-0-2'
3'		
4'		End of Boring
4'		
5'		
6'		
7'		
8'		
8'		
9'		
10'		
11'		
12'		

B. KOH & ASSOCIATES, INC. BORELOG

BOREHOLE: BKG-3
DESCRIPTION: Geo Probe Samples

DEPTH: 4'
SCAN RESULTS: See log to the Right
SAMPLER: D. Raffel
DATE / TIME: 4-19-00
INST: L2221 s/N 108880 CAL DUE: 9-3-00
w/NaI s/N 118978

BKG. ≃ 3000 cpm with lead shield

	Max Gross CPM	Sample Number
0'	BKG.	
1'		
2'		TL- BKG3 - 0-2'
3'		
4'		End of Boring
4'		
5'		
6'		
7'		
8'		
8'		
9'		
10'		
11'		
12'		