

12/1/97-01447

**NAVAL BASE, NORFOLK
NORFOLK, VIRGINIA**

Close-out Report

**Site 17
Chemical Fire, Bldg. SDA-215**

December 1997



SITE NAME AND LOCATION

Site 17
Chemical Fire, Bldg. SDA-215
Naval Base, Norfolk
Norfolk, Virginia

STATEMENT OF BASIS

This No Further Response Action Plan (NFRAP) decision is based on the results of previous investigations the Initial Assessment Study (IAS) (NEESA, 1983), the Relative Risk Ranking Data Collection Sampling and Analysis Report (Baker, January 1996), the Relative Risk Ranking Data Collection Sampling and Analysis Report, Phase II (Baker, January 1996), and the Site Management Plan Naval Base, Norfolk (CH2MHill, March 1997).

DECLARATION

Based on the information and results provided, it has been determined that no significant risk or threat to public health or the environment exists. No further action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), as amended, is required.

In the event contamination posing an unacceptable risk to human health or the environment is discovered after execution of this site close-out document, the Partnership agrees that additional investigation to characterize this contamination will be undertaken and further agrees to remediate the contamination if deemed necessary.

We the undersigned hereby acknowledge our approval and acceptance of the above declaration on this 3rd day of December, 1997.

Harry Harbold
Melissa Teles
Kevin Hays
Linda M. Packer
Randy M. Jackson

DECISION SUMMARY

1.0 INTRODUCTION

This Close-out Report supports the No Further Response Action Plan (NFRAP) decision at the Chemical Fire, Bldg. SDA-215, Site 17. The purpose of this report is to summarize the existing information and data for the site and describe the Naval Base Partnering Team's rationale for determining this site as requiring no further action.

1.1 Site History.

The Department of the Navy (DON) initiated the Navy Assessment and Control of Installation Pollutants (NACIP) Program in 1981. The NACIP Program utilized a three-phased approach to site study and cleanup. The program encompassed an Initial Assessment Study (IAS), Confirmation and Characterization Studies and Remedial Measures. The 1983 IAS, was to identify and assess sites posing a potential threat to human health or the environment due to contamination from past hazardous materials operations. The Chemical Fire, Bldg. SDA-215 was one of the 18 possible areas of concern identified during this study.

1.2 Site Description.

Building SDA-215 is located in the South Annex area of the Naval Base, Figures 1 and 2. In August 1981, a chemical fire occurred in cell 6 of Building SDA-215 as a result of incompatible chemical storage, predominantly of calcium hypochlorite and acids. Considerable site contamination resulted from the fire and fire-fighting operation. However, the site was cleaned up by removing the remaining hazardous chemicals and residues, as well as the contaminated soil adjacent to Building SDA-215. The contaminated materials were disposed of in an off-site permitted hazardous waste disposal facility. Inspection of the chemical fire site during the 1983 IAS indicated that the site had been adequately decontaminated. The site was recommended no further action in the IAS.

2.0 FIELD INVESTIGATION ACTIVITIES

The Chemical Fire, Bldg. SDA-215 was investigated as part of the Relative Risk Ranking System Data Collection Sampling and Analysis Report (Baker, January 1996), and the Relative Risk Ranking System Data Collection Sampling and Analysis Report, Phase II (Baker, December 1996). These reports were conducted to determine the potential risk at Naval Base, Norfolk (NBN) sites and establish a ranking of these sites using the Naval Facilities Engineering Command, Atlantic Division (LANTDIV) Relative Risk Ranking (RRR) System. The objects of this field investigation were to:

- Gather contaminant, pathway and receptor information to be used in the Navy's RRR system.
- Collect samples for laboratory analysis where no data was available for use in the RRR system.

2.1 Sample Collection. Sample location and selection of analyte parameters were determined during site reconnaissance performed prior to the field sampling event. Site reconnaissance was performed by Baker Environmental, LANTDIV, and NBN personnel. Sample locations and depths were based on the history and information available for the site and best engineering judgment.

Five samples (4 subsurface soil and 1 groundwater) were collected for analysis as part of the initial RRR sampling. Two surface soil and two concrete samples were collected during the RRR Phase II to supplement the initial data. The locations of the nine total samples collected during the two RRR sampling rounds are depicted in Figure 2. The samples were analyzed for the parameters identified in Table 1.

RRR Site ID	Sample Type	Sample ID	Analytical Parameters			
			VOC	SVOC	Metals Cyanide	Pesticide PCB
NB06	Subsurface Soil	NB06D1	X	X	X	X
	Subsurface Soil	NB06D2	X	X	X	X
	Subsurface Soil	NB06D3	X	X	X	X
	Subsurface Soil	NB06D4	X	X	X	X
	Groundwater	NB06W3	X	X	X	X
	Concrete	NB06C1	X	X	X	X
	Concrete	NB06C2	X	X	X	X
	Surface Soil	NB06S5	X	X	X	X
	Surface Soil	NB06S6	X	X	X	X

2.2 Analytical Results.

The maximum concentration of the detected compounds in each media are summarized and compared to the EPA's Risk Based Concentrations (RBCs) in Table 2. Soil and concrete samples were compared to the industrial and residential soil ingestion RBCs, and the groundwater sample was compared to the tap water RBC. Table 3 contains all compounds detected in each media. The land use at the site, current and future, is designated as industrial/logistics to support, maintain, and supply the fleet; therefore, the industrial soil ingestion RBCs were utilized in assessing potential future actions.

No organic or inorganic compounds were detected in the surface soil, subsurface soil, or concrete samples at levels that exceeded the industrial soil ingestion RBCs. In addition, no compounds in the groundwater sample were detected at concentrations above the tap water RBCs.

3.0 RISK CHARACTERIZATION

3.1 Human Health Risk Assessment.

A qualitative assessment for human health indicates the site is not expected to pose an unacceptable risk to human health due to the low level of contamination and limited exposure pathways.

3.2 Ecological Risk Assessment.

A qualitative assessment for ecological risk indicates the site is not expected to pose an unacceptable ecological risk due to the low level of contamination and limited pathways by which receptors may be exposed. Birds and burrowing animals have the greatest potential to be impacted by surface soil contamination, but species likely to inhabit the area are very limited since the site is located in a high traffic industrialized area of the Naval Base.

4.0 CONCLUSION AND RECOMMENDATION

Based on this evaluation, no further action is recommended for this site.

Notes

1. Sample number designation: Base-RRR Site Number-Media-Sample Number

Base - NB (Naval Base)

Site Number - ## (i.e. 01, Inert Chemical Landfill)

Media -

S - Surface Soil

D - Subsurface Soil

H - Sediment

C - Concrete

W - Groundwater

2. Sample Analysis

VOC - Volatile organic compound, analyzed by Method SW846-8240.

SVOC - Semivolatile organic compound, analyzed by Method SW846-8270.

Metals analyzed by Method SW846-6010 (various) and 7471.

Cn - Cyanide, analyzed by Method SW846-9012.

PCB - Polychlorinated Biphenyl. PCBs and pesticide analyzed by Method SW846-8080.

Asbestos - Analyzed by 40 CFR, Part 73, Subpart F, Appendix A.

3. Qualifiers

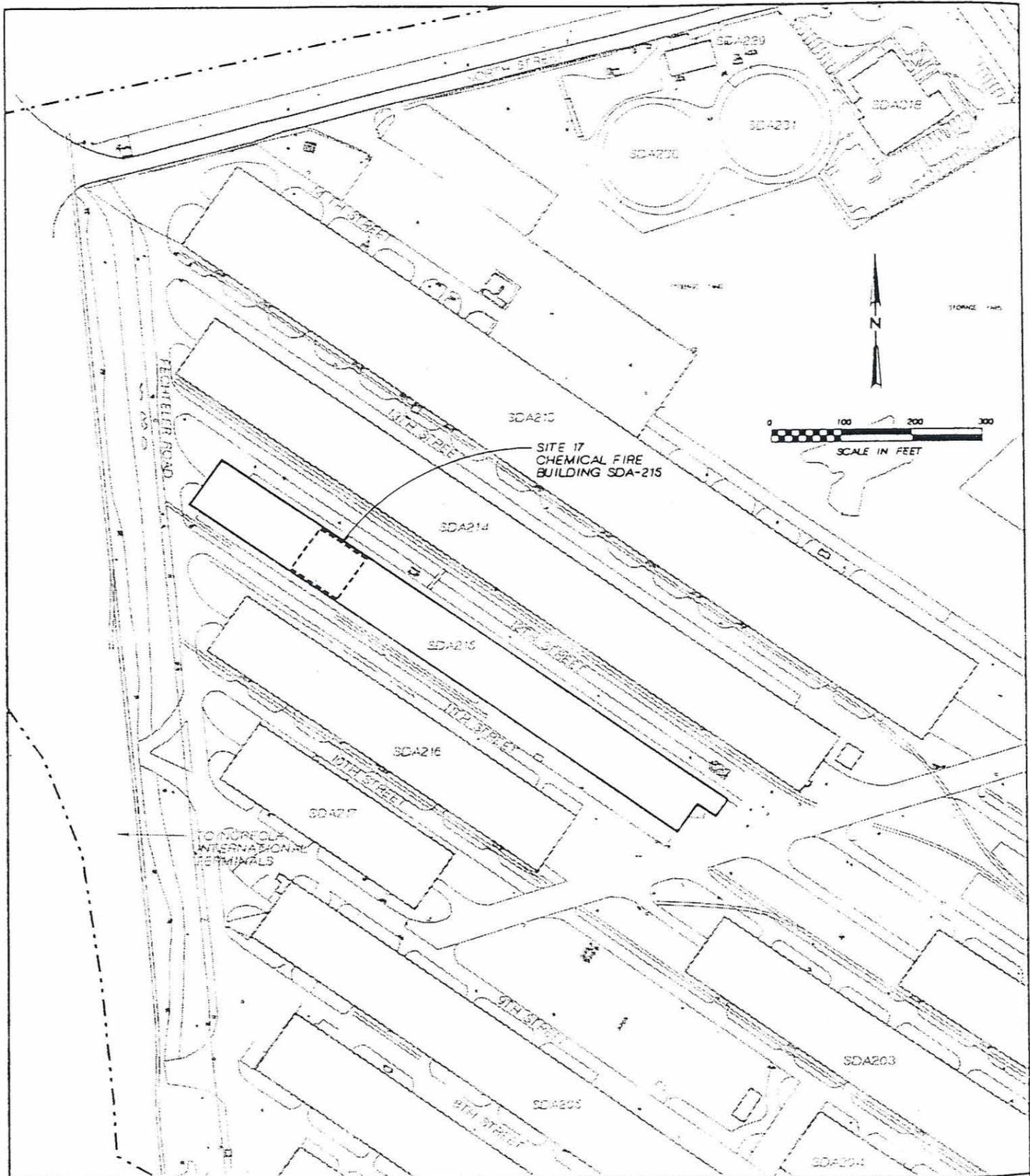
B - Detected in Blank

J - Estimated Value

4. RBC Basis

C - carcinogenic effects

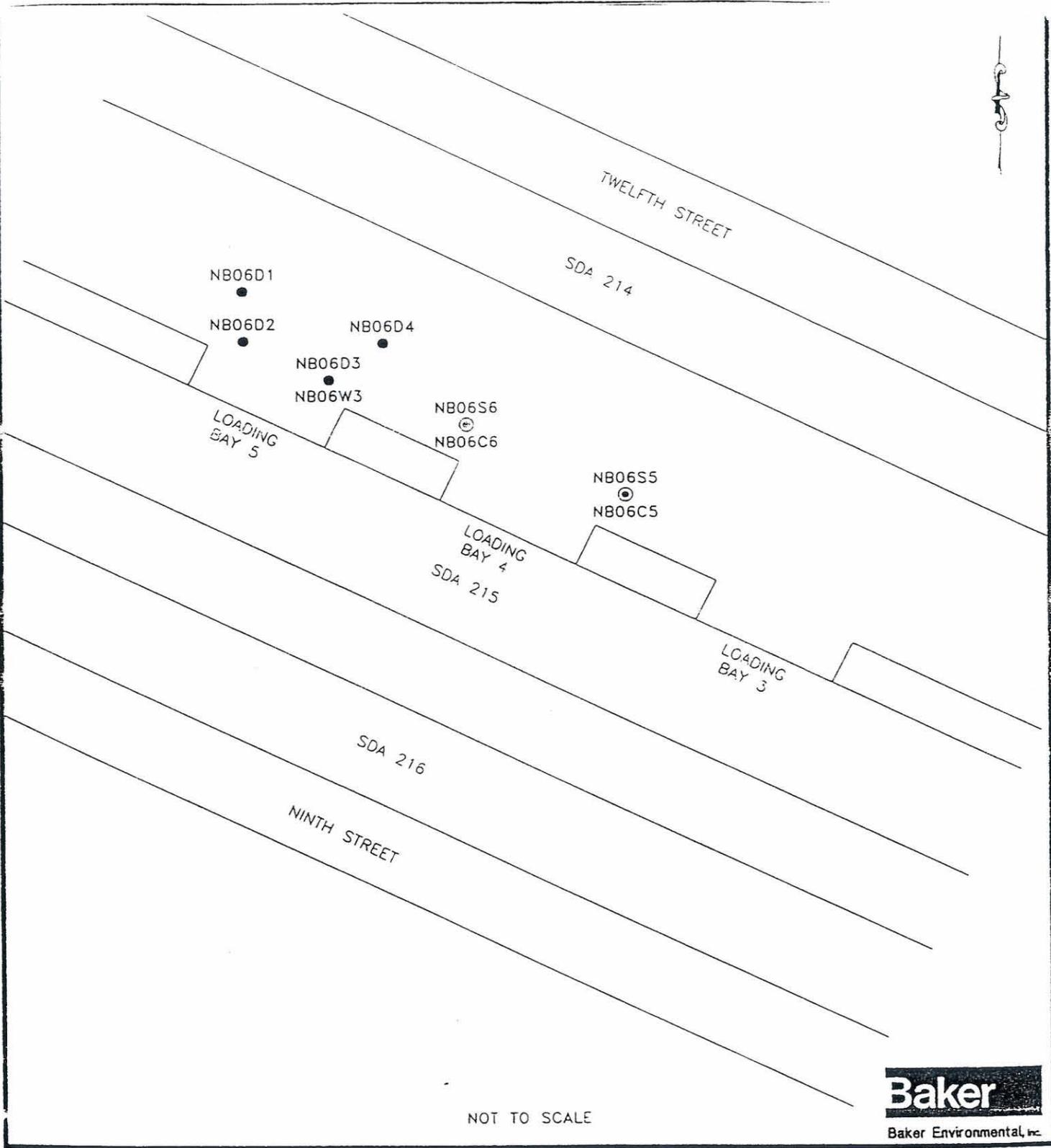
N - noncarcinogenic effects



LEGEND

----- PROPERTY BOUNDARY - NORFOLK NAVAL BASE

FIGURE 1: SITE 17, CHEMICAL FIRE, BLDG. SDA-215



NOT TO SCALE



LEGEND

- NB06D3 - SUBSURFACE SOIL SAMPLING POINT
●
OCTOBER, 1995
- NB06W3 - GROUNDWATER SAMPLING POINT
●
OCTOBER, 1995
- NB06S6 - SUBSURFACE SOIL SAMPLING POINT
⊙
SEPTEMBER, 1996
- NB06C6 - CONCRETE SAMPLING POINT
⊙
SEPTEMBER, 1996

SOURCE: LANTDIV, 1994.

FIGURE 2: CHEMICAL FIRE, BLDG. SDA-215
SAMPLING LOCATIONS

NAVAL BASE NORFOLK
NORFOLK, VIRGINIA

TABLE 2: Maximum Concentration of Detected Compounds, Site 17 - Building SDA-215
SURFACE SOILS

SAMPLE_NO	CONTAMINANT	RESULT (mg/kg)	QUALIFIER	Frequency	Industrial		Exceed Industrial RBC	Residential		Exceed Residential RBC
					RBC (mg/kg)	Basis		RBC (mg/kg)	Basis	
NB06S5	Acetone	1.70E-02		1/2	2.00E+05	N	NO	7.80E+03	N	NO
NB06S6	Aluminum	1.49E+04		2/2	1.00E+06	N	NO	7.80E+04	N	NO
NB06S6	Arsenic	7.70E-01		2/2	3.80E+00	C	NO	4.30E-01	C	YES
NB06S6	Barium	5.51E+01		2/2	1.40E+05	N	NO	5.50E+03	N	NO
NB06S6	Beryllium	2.50E-01		2/2	1.30E+00	C	NO	1.50E-01	C	YES
NB06S5	Calcium	1.78E+03		2/2	#N/A	#N/A	Human Nutrient	#N/A	#N/A	Human Nutrient
NB06S6	Chromium	1.41E+01		2/2	1.00E+04	N	NO	3.90E+02	N	NO
NB06S6	Cobalt	2.50E+00		2/2	1.20E+05	N	NO	4.70E+03	N	NO
NB06S5	Copper	3.50E+00		2/2	8.20E+04	N	NO	3.10E+03	N	NO
NB06S6	Iron	6.07E+03		2/2	6.10E+05	N	NO	2.30E+04	N	NO
NB06S5	Lead	1.77E+01		2/2	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
NB06S6	Magnesium	7.29E+02		2/2	#N/A	#N/A	Human Nutrient	#N/A	#N/A	Human Nutrient
NB06S6	Manganese	2.14E+01		2/2	4.70E+04	N	NO	1.80E+03	N	NO
NB06S6	Nickel	4.70E+00		2/2	4.10E+04	N	NO	1.60E+03	N	NO
NB06S6	Potassium	6.70E+02		2/2	#N/A	#N/A	Human Nutrient	#N/A	#N/A	Human Nutrient
NB06S5	Sodium	4.98E+01		2/2	#N/A	#N/A	Human Nutrient	#N/A	#N/A	Human Nutrient
NB06S6	Vanadium	2.22E+01		2/2	1.40E+04	N	NO	5.50E+02	N	NO
NB06S6	Zinc	9.00E+00		2/2	6.10E+05	N	NO	2.30E+04	N	NO

TABLE 2: Maximum Concentration of Detected Compounds, Site 17 - Building SDA-215
SUBSURFACE SOILS

SAMPLE_NO	CONTAMINANT	RESULT (mg/kg)	QUALIFIER	Frequency	Industrial		Exceed	Residential		Exceed
					RBC (mg/kg)	Basis	Industrial RBC	RBC (mg/kg)	Basis	Residential RBC
NB06D4	Aluminum	4.69E+03		4/4	1.00E+06	N	NO	7.80E+04	N	NO
NB06D1	Arsenic	3.00E+00		1/4	3.80E+00	C	NO	4.30E-01	C	YES
NB06D4	Calcium	8.58E+02		1/4	#N/A	#N/A	Human Nutrient	#N/A	#N/A	Human Nutrient
NB06D1	Chromium	1.00E+01		4/4	1.00E+04	N	NO	3.90E+02	N	NO
NB06D4	Iron	3.17E+03		4/4	6.10E+05	N	NO	2.30E+04	N	NO
NB06D4	Lead	5.00E+00		4/4	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
NB06D3	Manganese	5.00E+00		4/4	4.70E+04	N	NO	1.80E+03	N	NO
NB06D4	Potassium	7.97E+02		1/4	#N/A	#N/A	Human Nutrient	#N/A	#N/A	Human Nutrient
NB06D4	Vanadium	1.10E+01		3/4	1.40E+04	N	NO	5.50E+02	N	NO
NB06D4	Zinc	7.00E+00		4/4	6.10E+05	N	NO	2.30E+04	N	NO

TABLE 2: Maximum Concentration of Detected Compounds, Site 17 - Building SDA-215
CONCRETE

SAMPLE_NO	CONTAMINANT	RESULT (mg/kg)	QUALIFIER	Frequency	Industrial		Exceed		Residential		Exceed	
					RBC (mg/kg)	Basis	Industrial RBC	RBC (mg/kg)	Basis	RBC		
NB06C6	Bis(2-ethylhexyl)phthalate (DEHP)	4.50E-02 J		1/2	4.10E+02	C	NO	4.60E+01	C	NO		
NB06C6	DDE	3.80E-03		1/2	1.70E+01	C	NO	1.90E+00	C	NO		
NB06C6	DDT	2.10E-03 J		1/2	1.70E+01	C	NO	1.90E+00	C	NO		
NB06C5	Aluminum	9.11E+03		2/2	1.00E+06	N	NO	7.80E+04	N	NO		
NB06C5	Arsenic	8.40E-01		2/2	3.80E+00	C	NO	4.30E-01	C	YES		
NB06C6	Barium	9.12E+01		2/2	1.40E+05	N	NO	5.50E+03	N	NO		
NB06C5	Beryllium	4.90E-01		2/2	1.30E+00	C	NO	1.50E-01	C	YES		
NB06C6	Calcium	1.12E+05		2/2	#N/A	#N/A	Human Nutrient	#N/A	#N/A	Human Nutrient		
NB06C6	Chromium	3.08E+01		2/2	1.00E+04	N	NO	3.90E+02	N	NO		
NB06C5	Cobalt	1.03E+01		2/2	1.20E+05	N	NO	4.70E+03	N	NO		
NB06C6	Copper	9.70E+00		2/2	8.20E+04	N	NO	3.10E+03	N	NO		
NB06C5	Iron	6.18E+03		2/2	6.10E+05	N	NO	2.30E+04	N	NO		
NB06C6	Lead	5.03E+01		2/2	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A		
NB06C5	Magnesium	3.53E+03		2/2	#N/A	#N/A	Human Nutrient	#N/A	#N/A	Human Nutrient		
NB06C5	Manganese	2.69E+02		2/2	4.70E+04	N	NO	1.80E+03	N	NO		
NB06C5	Nickel	5.60E+00		2/2	4.10E+04	N	NO	1.60E+03	N	NO		
NB06C6	Potassium	1.60E+03		2/2	#N/A	#N/A	Human Nutrient	#N/A	#N/A	Human Nutrient		
NB06C6	Sodium	2.62E+02		2/2	#N/A	#N/A	Human Nutrient	#N/A	#N/A	Human Nutrient		
NB06C5	Vanadium	1.17E+01		2/2	1.40E+04	N	NO	5.50E+02	N	NO		
NB06C6	Zinc	2.67E+01		2/2	6.10E+05	N	NO	2.30E+04	N	NO		

TABLE 2: Maximum Concentration of Detected Compounds, Site 17 - Building SDA-215
GROUNDWATER

SAMPLE_NO	CONTAMINANT	RESULT (ug/L)	QUALIFIER	Frequency	Tap Water RBC (ug/L)	Basis	Exceed Tap Water RBC
NB06W1	Dibutyl phthalate	2.00E+00	J	1/1	3.70E+03	N	NO
NB06W1	Aluminum	2.43E+03		1/1	3.70E+04	N	NO
NB06W1	Calcium	8.36E+03		1/1	#N/A	#N/A	Human Nutrient
NB06W1	Cyanide	0.00E+00		1/1	7.30E+02	N	NO
NB06W1	Iron	2.76E+03		1/1	1.10E+04	N	NO
NB06W1	Manganese	1.12E+02		1/1	8.40E+02	N	NO
NB06W1	Sodium	7.85E+03		1/1	#N/A	#N/A	Human Nutrient
NB06W1	Zinc	3.20E+01		1/1	1.10E+04	N	NO

TABLE 3: Detected Compounds, Site 17 - Building SDA-215
SURFACE SOILS

SAMPLE_NO	CONTAMINANT	RESULT (mg/kg)	QUALIFIER
NB06S5	Acetone	1.70E-02	
NB06S6	Aluminum	1.49E+04	
NB06S5	Aluminum	1.45E+04	
NB06S6	Arsenic	7.70E-01	
NB06S5	Arsenic	5.80E-01	
NB06S6	Barium	5.51E+01	
NB06S5	Barium	4.61E+01	
NB06S6	Beryllium	2.50E-01	
NB06S5	Beryllium	1.50E-01	
NB06S5	Calcium	1.78E+03	
NB06S6	Calcium	9.16E+02	
NB06S6	Chromium	1.41E+01	
NB06S5	Chromium	1.40E+01	
NB06S6	Cobalt	2.50E+00	
NB06S5	Cobalt	1.90E+00	
NB06S5	Copper	3.50E+00	
NB06S6	Copper	3.00E+00	
NB06S6	Iron	6.07E+03	
NB06S5	Iron	5.43E+03	
NB06S5	Lead	1.77E+01	
NB06S6	Lead	7.40E+00	
NB06S6	Magnesium	7.29E+02	
NB06S5	Magnesium	6.71E+02	
NB06S6	Manganese	2.14E+01	
NB06S5	Manganese	1.34E+01	
NB06S6	Nickel	4.70E+00	
NB06S5	Nickel	4.40E+00	
NB06S6	Potassium	6.70E+02	
NB06S5	Potassium	4.60E+02	
NB06S5	Sodium	4.98E+01	
NB06S6	Sodium	4.80E+01	
NB06S6	Vanadium	2.22E+01	
NB06S5	Vanadium	1.94E+01	
NB06S6	Zinc	9.00E+00	
NB06S5	Zinc	7.70E+00	

TABLE 3: Detected Compounds, Site 17 - Building SDA-215
SUBSURFACE SOILS

SAMPLE_NO	CONTAMINANT	RESULT (mg/kg)	QUALIFIER
NB06D4	Aluminum	4.69E+03	
NB06D2	Aluminum	4.36E+03	
NB06D3	Aluminum	3.68E+03	
NB06D1	Aluminum	2.94E+03	
NB06D1	Arsenic	3.00E+00	
NB06D4	Calcium	8.58E+02	
NB06D1	Chromium	1.00E+01	
NB06D4	Chromium	8.00E+00	
NB06D2	Chromium	5.00E+00	
NB06D3	Chromium	5.00E+00	
NB06D4	Iron	3.17E+03	
NB06D2	Iron	2.07E+03	
NB06D3	Iron	1.95E+03	
NB06D1	Iron	1.72E+03	
NB06D4	Lead	5.00E+00	
NB06D1	Lead	3.00E+00	
NB06D2	Lead	3.00E+00	
NB06D3	Lead	3.00E+00	
NB06D3	Manganese	5.00E+00	
NB06D4	Manganese	4.00E+00	
NB06D2	Manganese	3.00E+00	
NB06D1	Manganese	2.00E+00	
NB06D4	Potassium	7.97E+02	
NB06D4	Vanadium	1.10E+01	
NB06D2	Vanadium	7.00E+00	
NB06D3	Vanadium	7.00E+00	
NB06D4	Zinc	7.00E+00	
NB06D3	Zinc	5.00E+00	
NB06D2	Zinc	4.00E+00	
NB06D1	Zinc	3.00E+00	

TABLE 3: Detected Compounds, Site 17 - Building SDA-215
CONCRETE

SAMPLE_NO	CONTAMINANT	RESULT (mg/kg)	QUALIFIER
NB06C6	Bis(2-ethylhexyl)phthalate (DEHP)	4.50E-02	J
NB06C6	DDE	3.80E-03	
NB06C6	DDT	2.10E-03	J
NB06C5	Aluminum	9.11E+03	
NB06C6	Aluminum	8.54E+03	
NB06C5	Arsenic	8.40E-01	
NB06C6	Arsenic	8.30E-01	
NB06C6	Barium	9.12E+01	
NB06C5	Barium	8.19E+01	
NB06C5	Beryllium	4.90E-01	
NB06C6	Beryllium	4.40E-01	
NB06C6	Calcium	1.12E+05	
NB06C5	Calcium	1.02E+05	
NB06C6	Chromium	3.08E+01	
NB06C5	Chromium	2.08E+01	
NB06C5	Cobalt	1.03E+01	
NB06C6	Cobalt	4.00E+00	
NB06C6	Copper	9.70E+00	
NB06C5	Copper	8.20E+00	
NB06C5	Iron	6.18E+03	
NB06C6	Iron	5.64E+03	
NB06C6	Lead	5.03E+01	
NB06C5	Lead	9.70E+00	
NB06C5	Magnesium	3.53E+03	
NB06C6	Magnesium	3.39E+03	
NB06C5	Manganese	2.69E+02	
NB06C6	Manganese	2.27E+02	
NB06C5	Nickel	5.60E+00	
NB06C6	Nickel	4.10E+00	
NB06C6	Potassium	1.60E+03	
NB06C5	Potassium	1.07E+03	
NB06C6	Sodium	2.62E+02	
NB06C5	Sodium	1.30E+02	
NB06C5	Vanadium	1.17E+01	
NB06C6	Vanadium	1.16E+01	
NB06C6	Zinc	2.67E+01	
NB06C5	Zinc	1.96E+01	

TABLE 3: Detected Compounds, Site 17 - Building SDA-215
GROUNDWATER

SAMPLE_NO	CONTAMINANT	RESULT (ug/L)	QUALIFIER
NB06W1	Dibutyl phthalate	2.00E+00	J
NB06W1	Aluminum	2.43E+03	
NB06W1	Calcium	8.36E+03	
NB06W1	Cyanide	0.00E+00	
NB06W1	Iron	2.76E+03	
NB06W1	Manganese	1.12E+02	
NB06W1	Sodium	7.85E+03	
NB06W1	Zinc	3.20E+01	