CAFB 97

DEPARTMENT OF THE AIR FORCE

HEADQUARTERS 27th FIGHTER WING (ACC)
CANNON AIR FORCE BASE, NEW MEXICO

25 SEP 1997

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Lt Col Charles A. Hale
Deputy Commander, 27th Support Group
110 E Sextant Avenue Suite 1098
Cannon AFB NM 88103-5323

Rec'd 9/26/97

Mr. Benito J. Garcia, Chief
Hazardous and Radioactive Materials Bureau
New Mexico Environment Department
2044 Galisteo Street
P O Box 26110
Santa Fe NM 87502

ENTERED

Dear Mr. Garcia

As the 27th Support Group Deputy Commander, I am forwarding this correspondence on behalf of Lt Col James A. Thomas III, Support Group Commander. I am enclosing two volumes of the Final RCRA Facility Investigation Report for Landfill 1 (SWMU #74) on Cannon AFB. This report incorporates answers to all previous questions raised by the New Mexico Environment Department.

If you have any questions, please contact Mr. Sanford Hutsell of my environmental staff at (505) 784-6378.

Sincerely

Charles A. Hale

CHARLES A. HALE, Lt Col, USAF
Deputy Commander, 27th Support Group

Attachment:
Report (two volumes)

cc:
NMED w/o Atch (C. Will)
NMED GW Bureau (J. Jacobs)
EPA Region VI (D. Neleigh)
HQ ACC CES/ESVW w/o Atch (M. Patterson)

10/20/97

FINAL
VOLUME I

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PHASE I RCRA FACILITY INVESTIGATION REPORT FOR LANDFILL NO. 1 (SWMU NO. 74) CANNON AIR FORCE BASE CLOVIS, NEW MEXICO

Prepared for
Commander 27 FW
100 South D.L. Ingram Blvd.
Suite 100
Cannon AFB, NM 88103-5214

September 1997

FINAL
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Prepared for
U.S. Department of the Army
Corps of Engineers, Omaha District
Omaha, Nebraska
September 1997

Woodward-Clyde

Woodward-Clyde Consultants
101 S. 108th Avenue
Omaha, NE 68154

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LIST OF ACRONYMS

ACC	Air Combat Command
AFB	Air Force Base
B.P.	Before Present
bgs	below ground surface
CEC	cation exchange capacity
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CL	inorganic clays
cm/sec	centimeters per second
CME	Central Mine Equipment
CMI	Corrective Measures Implementation
CMS	Corrective Measures Study
COC	Chain-of-Custody
COI	chemical of interest
CUZ	Compatible Use Zone
DQCR	daily quality control report
EM	electromagnetic
EPA	U.S. Environmental Protection Agency
FD	Field Duplicate
FS	Feasibility Study
FSP	Field Sampling Plan
FSPS	Field Sampling Plan Supplement
GC	clayey gravels
gpm	gallons per minute
HHRS	human health risk screen
HI	Hazard Index
HQ	Hazard Quotient
IRP	Installation Restoration Program
m^2/g	square meters per gram
MCPP	2-(2-methyl-4-chlorophenoxy) propionic acid
meq/100 g	milliequivalents per 100 grams

MFH	military family housing
mg/l	milligrams per liter
mph	miles per hour
MRD	Missouri River Division
MS/MSD	matrix spike/matrix spike duplicate
msl	mean sea level
mv	millivolts
NAPL	non-aqueous phase liquid
NCP	National Oil and Hazardous Substance Pollution Contingency Plan
NMED	New Mexico Environment Department
NWR	National Wildlife Refuge
PA	Preliminary Assessment
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCP	pentachlorophenol
PID	photoionization detector
ppm	parts per million
PRG	preliminary remediation goal
PVC	polyvinyl chloride
QAPP	Quality Assurance Project Plan
RAS	Relevant and Appropriate Standard
RBC	risk-based concentration
RCRA	Resource Conservation and Recovery Act
RD/RA	Remedial Design/Remedial Action
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
ROD	Record of Decision
SC	clayey sand
SI	Site Investigation
SM	silty sand
SOP	standard operating procedure
SOS	Statement of Services
SP	poorly graded sands

SSL	soil screening levels
SVOC	semivolatile organic compound
SWMU	Solid Waste Management Unit
TAL	target analyte list
TCL	Target Compound List
TFW	Tactical Fighter Wing
TIC	tentatively identified compound
TOC	total organic carbon
TRPH	total recoverable petroleum hydrocarbons
UCL	upper confidence limit
USAF	United States Air Force
USCS	Unified Soil Classification System
USDA-SCS	United States Department of Agriculture - Soil Conservation Service Comprehensive Soil Classification System
USFWS	U.S. Fish and Wildlife Service
UTL	upper tolerance limit
VOC	volatile organic compound
W-C	Woodward-Clyde
WCFS	Woodward-Clyde Federal Services

APPENDIX A
SURVEYOR NOTES

ROBERT L. LYDICK
ROBERT CHAD LYDICK
Professional Engineer and Land Surveyor

Lydick
ENGINEERS AND SURVEYORS, INC.
205 E. SECOND STREET - P.O. BOX 1386
CLOVIS, NEW MEXICO 88102-1386
505 762-3771 - FAX 505 762-9093

Registered
New Mexico
Texas - Oklahoma
Colorado

May 29, 1996

Ms. Karen Phillips
Woodward - Clyde
4582 South Ulster Street
Denver, CO 80237

Dear Ms. Phillips:

Horizontal Control for all survey work performed by Lydick Engineers and Surveyors on the Landfill #1 Site at Cannon Air Force Base; Clovis, New Mexico was established using a "base line" of USC & GS triangulation stations "Portair" and "Portair Azimuth". Control points traversed from this initial base line were adjusted for closure and reduced to New Mexico State Plane (East Zone) Coordinates. A secondary base line using two traverse points along the northwest line of the survey grid was then used for the project grid layout and the subsequent boring location work. Coordinates shown for this grid reflect actual ground distances and were not reduced.

Vertical control for this project was established by a closed level loop using USC & GS station "V-160", NVD'29 as a benchmark.

Enclosed please find the field notes for this initial traverse showing the measurements taken as well as the closure and reduction calculations. Also included are the notes for the vertical control level loop.

Very truly yours,

Brad C. Rose

Brad Rose

Woodward - Clyde

Landfill #1 - Control Traverse

(Unadjusted Field Data)

Sta.	Field Horiz. Dist.	Grid Dist. (* .9998)	Field Angle
Portair			
			183° 54' 15" Rt.
Portair Az.			
	2217.11	2216.69	178° 45' 10" Rt.
CP1			
	1122.69	1122.48	71° 23' 35" Rt.
Grid 1			
	979.97	979.78	69° 39' 35" Rt.
Grid 2			
	1482.31	1482.03	220° 31' 05" Rt.
CP2			
	1874.51	1874.15	0° 19' 20" Lt.
Portair Az			
		7675.13	540° 00' 05"

Note: Sea Level Factor = .99979

Scale Factor = 1.0000191

Combined Factor = .9998

Base line = Portair Az. To Portair

Base Line Bearing = N 89° 07' 59" E

Adj Angle	Grid Bearing
178° 45' 09"	N 86° 57' 46" W
71° 23' 34"	N 88° 12' 37" W
69° 39' 34"	S 16° 49' 03" E
220° 31' 04"	N 52° 50' 31" E
0° 19' 19" Lt	S 86° 38' 26" E
540° 00' 00"	

Field Closing Line ⇒ N 24° 56' 28" W - 0.10'

Precision = 1: 76,765.9

Angle Correction = -1" per Angle

cont Next Page

Cont. State Plane Coordinate Reduction

Sta.	Cos Brng * Grid Dist. Unads Lat.	Sine Brng. * Grid Dist. Unads. Dept.	Adj Lat.	Adj. Dep.	(Y) Northing	(X) Easting
Portair Az.					1239942.24	806413.87
CP1	117.45	-2213.58	117.46	-2213.59	1240059.70	804200.28
Grid 1	35.06	-1121.93	35.06	-1121.93	1240094.76	803078.35
Grid 2	-937.88	283.47	-937.87	283.47	1239156.89	803361.82
CP2	895.17	1181.14	895.18	1181.13	1240052.07	804542.95
Portair Az.	-109.83	1870.93	-109.83	1870.92	1239942.24	806413.87
	-.03	+.03	0	0		

	ADJ. Grid Bearing	ADJ Grid Dist.	ADJ Ground Dist.
Portair Az			
	N 86° 57' 45" W	2216.70	2217.14
CP1			
	N 88° 12' 36" W	1122.48	1122.70
Grid 1			
	S 16° 49' 03" E	979.77	979.97
CP2			
	N 52° 50' 29" E	1482.03	1482.33
Grid 2			
	S 86° 38' 25" E	1874.14	1874.51
Portair Az.			

Vertical Control
Level Loop

Benchmark = 4320.53
USC & GS Brass Cap
V-160

B.m.	S+	Hi	S-	Elev	
4320.53	4.96	4325.49			
			7.60	4317.89	TP
4317.89	1.92	4319.81			
			8.91	4310.90	TP
4310.90	0.47	4311.37			
			11.35	4300.02	TP
4300.02	3.11	4303.13			
			5.23	4297.90	TP
4297.90	7.02	4304.92			
			6.14	4298.78	B.m. Rebar
4298.78	6.91	4305.82			
			8.28	4297.54	TP
4297.54	8.70	4306.24			
			0.68	4305.56	TP
4305.56	7.30	4312.86			
			2.03	4310.83	TP

B.m.	S+	Hi	S-	Elev	
4310.83	12.78	4323.61			
			3.07	4320.54	V-160

APPENDIX B
GEOPHYSICAL SURVEY TECHNICAL REPORT

GEOPHYSICAL SURVEY TECHNICAL REPORT

RCRA FACILITY INVESTIGATION
LANDFILL NO. 1
SWMU NO. 74/IRP NO. LF1

OCTOBER 1995

Prepared For

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9C114LL1 (2B)

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FIGURE 6 EM-61 ELECTROMAGNETICS CONTOUR MAP CHANNEL 2
FIGURE 7 EM-61 ELECTROMAGNETIC CONTOUR MAP CHANNEL 4

1.0
INTRODUCTION

1.1 PURPOSE AND SCOPE

This report summarizes field data collection activities and results from the geophysical investigations of the suspected Landfill No. 1 site at Cannon Air Force Base in Clovis, New Mexico. The suspected Landfill No. 1 site is located on the base golf course in the area designated as the 14th and 15th holes. Waste materials primarily consisting of light construction debris (i.e., wire and pieces of brick) and burned paper were reportedly uncovered in trenches excavated along the 14th fairway during construction of the golf course irrigation system. The purpose of the geophysical investigation was to help locate areas where buried landfill materials might exist. The objectives of the geophysical investigations included delineating the edges of the landfill; locating waste-filled pits, trenches or cells within the landfill, if present; and identifying potential areas of contamination including buried metallic objects such as drums. The electromagnetic (EM) method using two different types of EM instruments was selected to accomplish these objectives. The following sections provide brief descriptions of the two types of electromagnetic surveying used, a discussion of the field program, and an interpretation of results.

The geophysical investigations at the suspected Landfill No. 1 site were performed in accordance with Work Plan documents (i.e., Work Plan, Field Sampling Plan and Quality Assurance Project Plan) approved by USEPA Region VI (August, 1995). Additionally, the investigation activities conformed with Standard Operating Procedure No. 2, "Surficial Geophysical Surveys," contained in the Work Plan.

2.1 ELECTROMAGNETIC METHOD USING THE GEONICS EM-31

The Geonics EM-31 instrument was used to perform one of the EM surveys for the geophysical investigation of suspected Landfill No. 1. The EM method using the Geonics EM-31 provides a rapid means of measuring the electrical conductivity of subsurface materials including soil and rock. EM data can aid the characterization of:

- lateral extent of landfill and/or trench materials;
- buried metallic objects;
- depth and thickness of subsurface units;
- soil and rock units, and lateral variations within the units; and
- lateral extent of paleochannels.

The EM method using the EM-31 involves the induction of an electrical current into the earth. A small alternating current is generated by a transmitter coil that transmits a primary, time-varying magnetic field into the ground. Through inductive coupling, the primary magnetic field produces small eddy currents in the subsurface, which in turn, create their own secondary magnetic field. A receiver coil measures both the primary and secondary fields. Changes in magnitude and phase of the individual currents are output as voltages and are related to the subsurface electrical conductivity.

The depth of investigation of the EM-31 is dependent on the mode of operation of the instrument. The EM-31 can be operated in the horizontal and vertical dipole modes which provide maximum depths of investigation of approximately 9 and 18 feet, respectively.

The EM-31 measures both the quadrature phase component and the inphase component of the induced magnetic field. The quadrature phase is linearly related to the ground conductivity and therefore directly responsive to geologic variations. The inphase component reading is the ratio of the induced magnetic field to the primary field, and as a result is more responsive to the presence of metallic objects than the quadrature phase. It should be noted that variations in both the

quadrature and inphase readings from some background level are more diagnostic than the absolute values.

Conductivity values for each component of the EM response can be plotted and contoured to evaluate the conductivity variations across the site. Variations in the subsurface conductivity resulting from buried metallic objects are generally manifested by relatively large (greater than 30 milliSiemens per meter) anomalies. However, these anomalies, as well as smaller ones, can be masked by the interfering effects of surface debris, buried utilities, overhead utilities, communications equipment, or any large metal structures in close proximity to the survey area.

2.2 ELECTROMAGNETIC METHOD USING THE GEONICS EM-61

The other type of EM survey for the geophysical investigation of Landfill No. 1 was conducted using the Geonics EM-61. The EM-61 is a time domain EM instrument that is specifically designed to detect buried metal objects. The instrument generates rapid EM pulses through a transmitter coil. These pulses induce secondary EM fields in the near subsurface. The secondary EM fields induced from moderately conductive subsurface materials (i.e. soil and rock) are of relatively short duration. However, the secondary EM fields induced from buried metallic objects are of relatively long duration. The EM-61 measures this prolonged response from metallic objects after the EM response from conductive earth materials dissipates. The depth of investigation of the instrument is relatively unaffected by site specific subsurface conditions. Design of the EM-61 generally provides high resolution of metallic objects. The instrument is reportedly capable of detecting a single 55 gallon drum to a depth of 10 feet.

The EM-61 measures the EM response in millivolts (mV). Similar to the case with EM-31 data, the variations in EM response readings from some background level are more diagnostic than the absolute values. EM response values can be plotted and contoured to evaluate the variations across the site. Variations in the EM response resulting from buried metallic objects, such as landfill materials or buried drums are generally manifested by relatively large (greater than about 50 mV) anomalies. However, although the EM-61 data are generally less susceptible to surface interference than the EM-31 data, EM-61 anomalies can be masked by the interfering effects from utility lines or other metallic objects.

The response amplitude for a given anomaly is primarily a function of the anomaly depth, although anomaly size has some effect as well. It is thus useful to have some means of interpreting the depth of a given anomaly. The EM-61 has a two-receiver coil system that facilitates the recognition of near-surface objects from deeper targets. The EM-61 can output the response of either (or both) coils, and can output a differential between the two. By comparing the output from both coils, near-surface anomalies can be identified.

3.0
FIELD PROGRAM

3.1 SURVEY DESIGN

Design of the geophysical investigation of suspected Landfill No. 1 considered site conditions. Historical records indicate that a variety of materials could have been disposed of in the landfill including metal cans and drums, waste oils and solvents, and construction debris. Further, the results of previous geophysical investigations conducted in the vicinity of the golf course indicated that the irrigation network can produce significant EM and magnetics anomalies. Based on these factors, the geophysical investigation consisted of two different types of EM surveys. One of the EM surveys was conducted using the Geonics EM-31, and the other EM survey was conducted using the Geonics EM-61. The EM-31 survey was intended to provided broad surveying capabilities and allow for delineation of possible disturbed areas. The EM-61 survey was intended to provided focused mapping of buried metallic objects.

3.2 GRID LAYOUT

The geophysical field work was conducted from September 19 to September 27, 1995. A base survey grid was established at the site by Lydick Associates of Clovis, New Mexico prior to conducting the geophysical surveys. This base grid consisted of wooden survey stakes placed at 20 foot centers along the western, northern, and southern boundaries of the area of interest. The eastern base line was established between the 14th and 15th fairways to minimize disruption of golfing activities. Lydick established additional survey points using pin flags on 80 foot centers in the interior of the area of interest. The base survey grid was established using a total station surveying instrument. Figure 1 shows the survey grid established by Lydick and cultural/physical features associated with the area investigated using geophysical EM methods. Prior to data collection, W-C marked the remainder of the grid points using taped distance measurements between the baselines established by Lydick. Data station points were marked by W-C at 20 foot centers.

3.3 DATA COLLECTION AND PROCESSING

The EM-31 survey was conducted using a uniform 10 foot station spacing. Quadrature phase and inphase measurements were collected using both the horizontal and vertical dipole modes for maximum investigation depths of approximately 9 and 18 feet, respectively. EM-31 readings were recorded using a data logger that allows the operator to store and record station coordinate information and EM data simultaneously.

The EM-61 survey was conducted using a nominal station spacing of 1 foot and line spacing of 5 feet. The EM-61 was operated using the wheel trigger mode. Prior to conducting the survey several test lines were conducted to calibrate the wheel trigger to the site specific conditions. During data collection, fiducial data markers were recorded at 100 feet increments using the EM-61's manual trigger. Processing of the EM-61 data included correcting the data station values using the survey line start and end point and fiducial marker information. In general the wheel mode trigger provided accurate data stationing and the data processing resulted in only minor stationing adjustments.

Upon completion of the EM surveys the data were downloaded to a personal computer. The data were than formatted for input to a contouring program. Data plotting and contouring was accomplished using the computer software GEOSOFT. Inputs to the contouring program include the station coordinates and values, a selected spacing for gridding the raw data and a contour interval.

4.0
SURVEY RESULTS

Results of the EM-31 horizontal and vertical dipole modes for the quadrature response and inphase response data are shown in Figures 2, 3, 4 and 5, respectively. These contour maps are dominated by anomalies associated with various known cultural features. These features include utility lines associated with the irrigation system for the golf course. The lines are readily apparent as long narrow linear anomalies that generally trend northwest-southeast across the maps. Other features apparent on the EM-31 contour maps include the pump house, road and basketball court. Areas apparently associated with moisture variations in the site soils are also apparent on the maps in the vicinity of the irrigated 14th green and the low area adjacent to the pond in the east portion of the survey area. A description of significant geophysical anomalies is included in Table 4-1 and locations are shown on Figure 4. No anomalies that appear to be indicative of landfill or waste disposal activities are apparent on the figures.

Results of the EM-61 data are shown in Figures 6 and 7. Output from Channel 2, the coil closest to the ground, is shown in Figure 6, and the differential between the two channels (Channel 4) is shown in Figure 7. The EM-61 results show indication of the cultural features seen on the EM-31 plots. Additionally, most of the EM-61 anomalies are likely stormwater drop inlets and/or sprinkler heads on the golf course, as many of the anomalies observed in the Channel 2 results are subdued or disappear in the Channel 4 output. These results support the conclusion from the EM-31 results that there appears to be no clear indications of buried metal indicative of landfill or waste disposal activities in the area investigated including the area where trash was observed by Cannon AFB personnel during trenching for installation of the golf course irrigation system. Approximate coordinates for the area reportedly containing trash are: N960, E580; N1160, E580; N1180 E680; and N1020, E720.

More detailed inspection of the EM-61 data indicates that the utility lines are detected as very low amplitude responses. However, the effects of the extremely focused zone of investigation provided by the EM-61, the narrow nature of the utility lines and the inherent smoothing of contouring algorithms have combined to make these features indistinct on the contour maps.

It is important to note that the EM-31 and EM-61 data have been contoured at relatively fine contour intervals. The anomalies that are apparent on the plots represent subtle features that have in effect been amplified to aid data interpretation. Furthermore, based on experience from geophysical investigations conducted at other sites, including Landfill No. 5 at Cannon Air Force Base, landfills and waste disposal areas with properties similar to those described for suspected Landfill No. 1, are generally revealed as anomalies with amplitudes up to several orders of magnitude greater than any detected by this investigation.

TABLE - 4.1

DESCRIPTION OF EM ANOMALIES

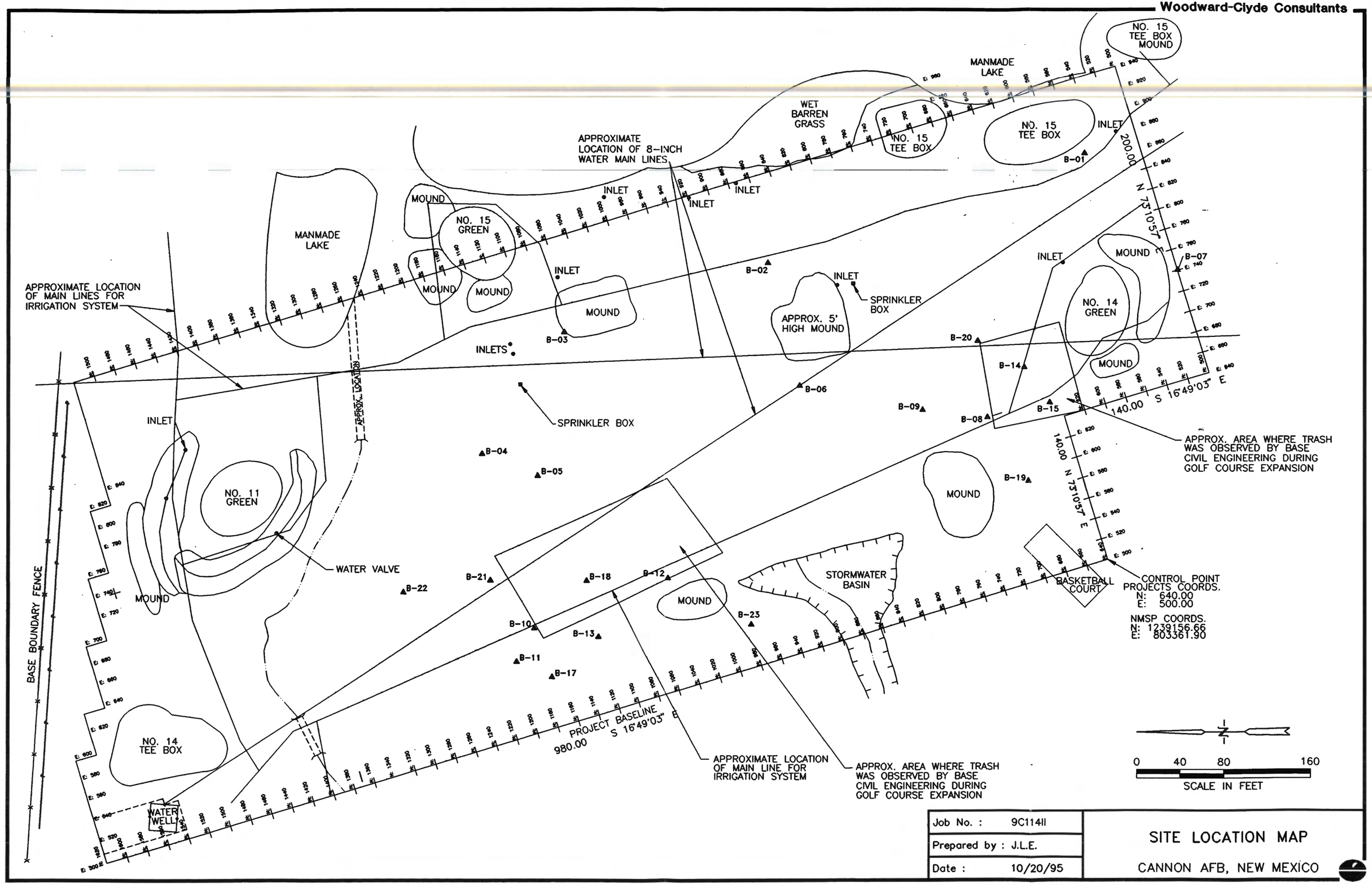
ANOMALY DESIGNATION	DESCRIPTION
A	Well pump house
B	Water line associated with golf course irrigation system
C	Water line associated with golf course irrigation system
D	Water line associated with golf course irrigation system
E	Basketball court
F	11, 14th and 15th hole greens
G	Wet area adjacent to pond
H	Road
I	Suspected to be related to golf course irrigation system

5.0
SUMMARY

Geophysical investigations were conducted at the suspected location of Landfill No. 1 at Cannon Air Force Base in New Mexico. Electromagnetic surveys using the Geonics EM-31 and EM-61 were conducted in an attempt to delineate the edges of the landfill, locate waste-filled pits, trenches or cells within the landfill, and identify potential areas of contamination including buried metallic objects such as drums. The geophysical results do not indicate the presence of landfill or significant waste disposal activity within the investigation area. The anomalies detected by the geophysical investigation appear to be the result of known cultural features.

5.1 LIMITATIONS

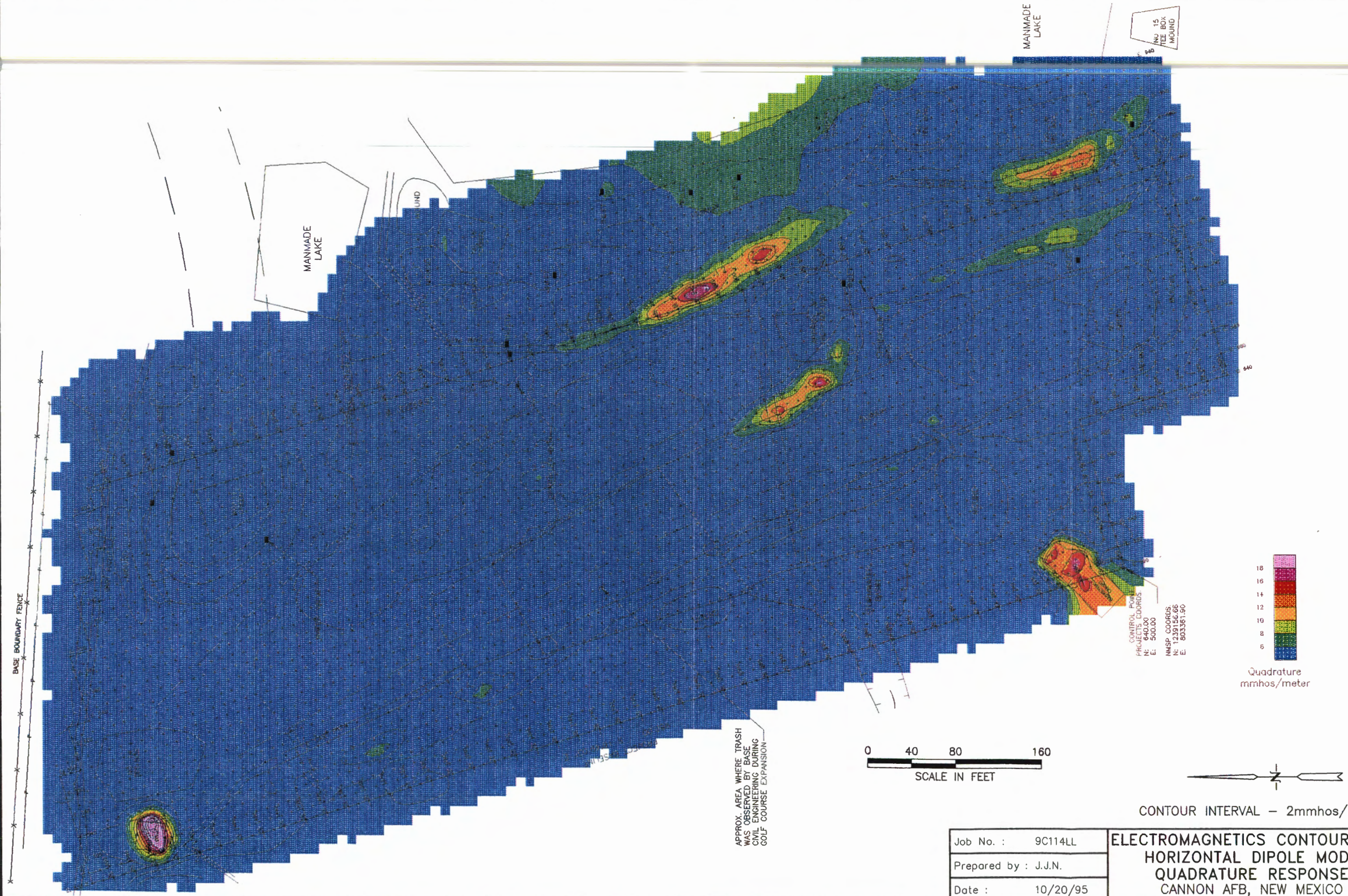
This work was conducted in accordance with reasonable and accepted engineering geophysics practices, and the interpretations and conclusions are rendered in a manner consistent with other consultants in our profession. However, all geophysical techniques have some level of uncertainty and limitations. No other representations to the client is expressed or implied, and no warranty or guarantee is included or intended.



Job No. : 9C114II	SITE LOCATION MAP
Prepared by : J.L.E.	CANNON AFB, NEW MEXICO
Date : 10/20/95	

FIG. 1

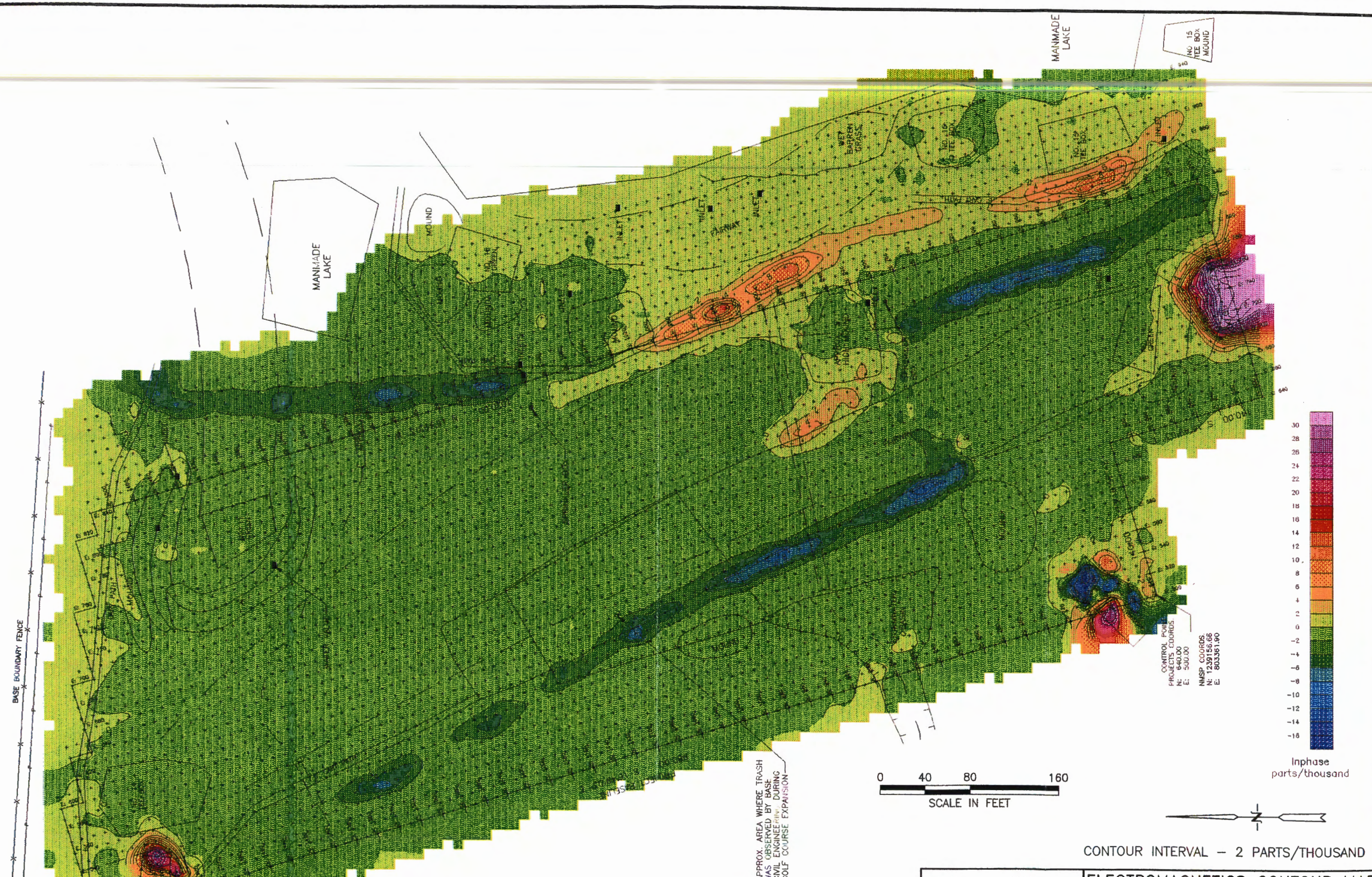
CAN7



Job No. : 9C114LL	ELECTROMAGNETICS CONTOUR MAP HORIZONTAL DIPOLE MODE QUADRATURE RESPONSE CANNON AFB, NEW MEXICO
Prepared by : J.J.N.	
Date : 10/20/95	

FIG. 2

CAN1

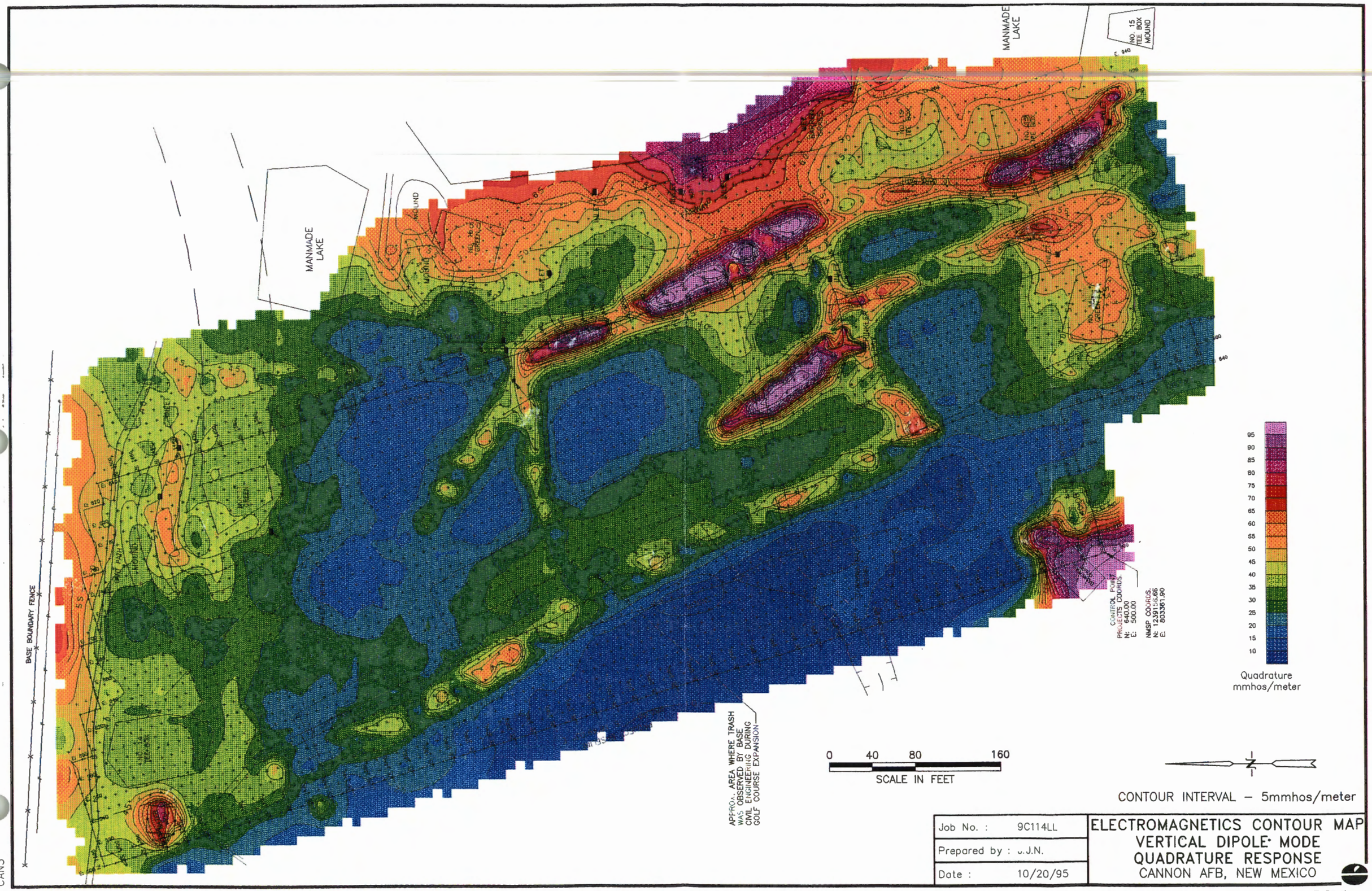


CONTOUR INTERVAL – 2 PARTS/THOUSAND

Job No. : 9C114LL	ELECTROMAGNETICS CONTOUR MAP HORIZONTAL DIPOLE MODE INPHASE RESPONSE CANNON AFB, NEW MEXICO
Prepared by : J.J.N.	
Date : 10/20/95	

CAN2

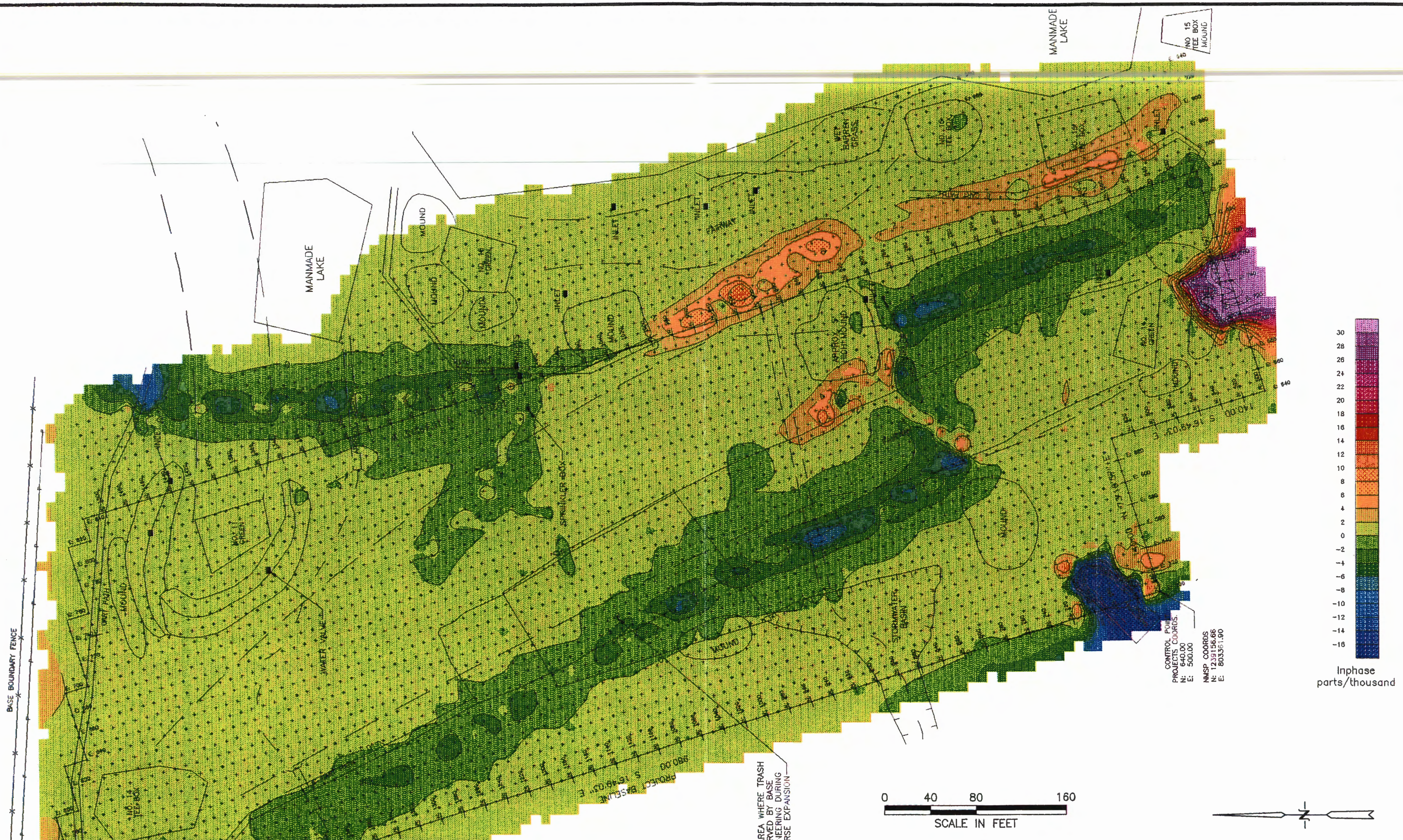
FIG. 3



Job No. : 9C114LL	ELECTROMAGNETICS CONTOUR MAP VERTICAL DIPOLE MODE QUADRATURE RESPONSE CANNON AFB, NEW MEXICO
Prepared by : J.J.N.	
Date : 10/20/95	

CAN3

FIG. 4



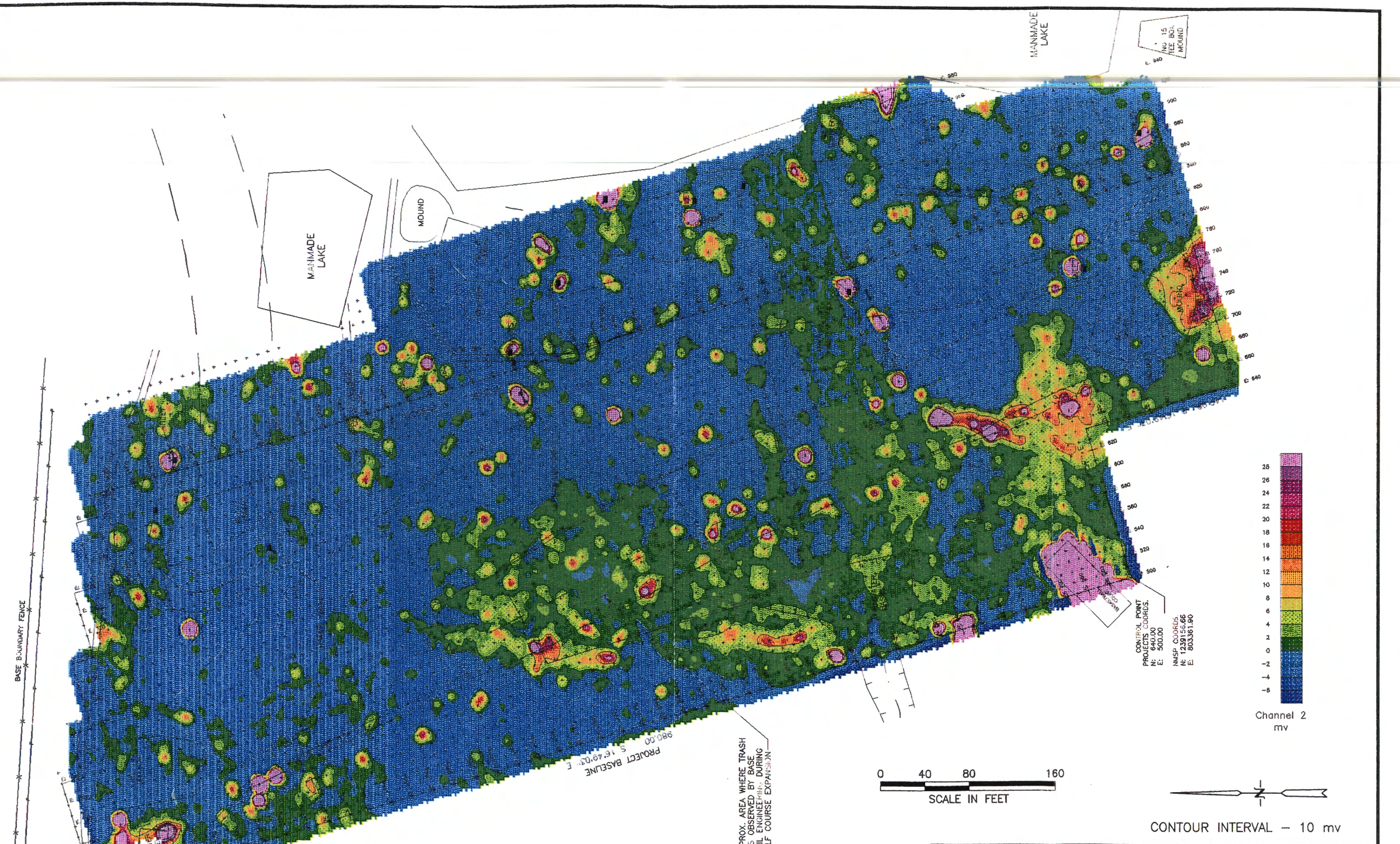
CONTOUR INTERVAL – 2 PARTS/THOUSAND

Job No. :	9C114LL
Prepared by :	J.J.N.
Date :	10/20/95

ELECTROMAGNETICS CONTOUR MAP
VERTICAL DIPOLE MODE
INPHASE RESPONSE
CANNON AFB, NEW MEXICO

FIG 5

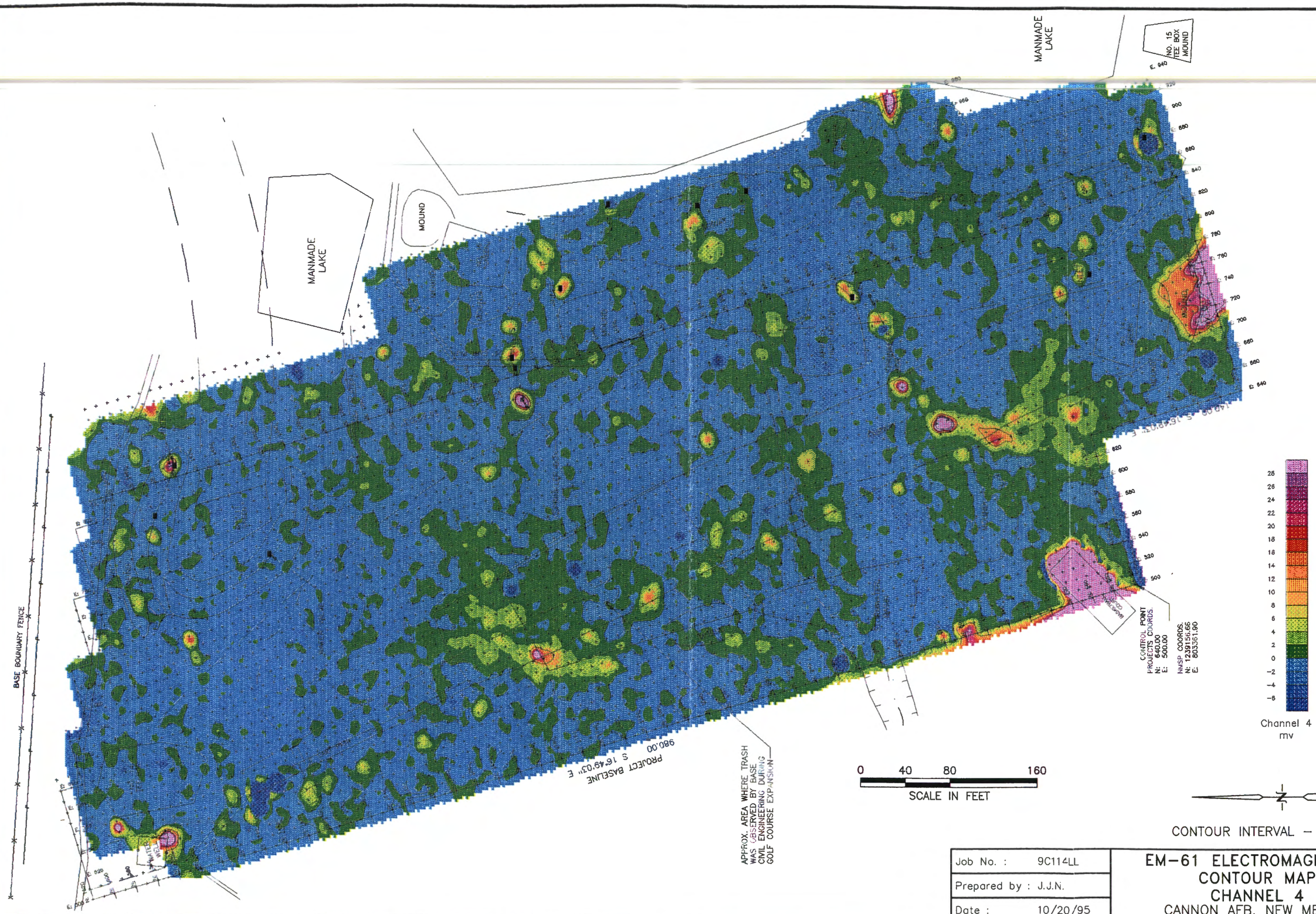
CAN4



Job No. : 9C114LL	EM-61 ELECTROMAGNETICS CONTOUR MAP CHANNEL 2 CANNON AFB, NEW MEXICO
Prepared by : J.J.N.	
Date : 10/20/95	

CAN5

FIG. 6



Job No. : 9C114LL	EM–61 ELECTROMAGNETICS CONTOUR MAP CHANNEL 4 CANNON AFB, NEW MEXICO
Prepared by : J.J.N.	
Date : 10/20/95	

FIG. 7

APPENDIX C
LITHOLOGIC BORING LOGS AND GRADATIONAL ANALYSIS

HTW DRILLING LOG

HOLE NO.	74-01
SHEET 1 OF 3 SHEETS	
1. COMPANY NAME	Woodward-Clyde Federal Services
2. DRILLING SUBCONTRACTOR	Layne Environmental Services
3. PROJECT	Landfill No. 1 Phase 1 RFI
4. LOCATION	CANNON AFB, New Mexico
5. NAME OF DRILLER	Dallas Werner
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75 HT
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	CME-75, 3 3/4" I.D. HSA; 5' CME Core Barrel (3 1/2" O.D.) 2 1/2" I.D.; Stainless Steel Split Spoons
8. HOLE LOCATION	N 550, E 870
9. SURFACE ELEVATION	4296.7
10. DATE STARTED	02/25/96
11. DATE COMPLETED	02/25/96
12. OVERBURDEN THICKNESS	20.0'
13. DEPTH DRILLED INTO ROCK	N/A
14. TOTAL DEPTH OF HOLE	20.0'
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	N/A
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
1	X	N/A	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	SVOC	PCB/PEST	TPH	DIOX/FURAN	TOC	HERB	21. TOTAL CORE REC.
2	2	2	2	2	2	N/A	2	2	%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
abandoned	grouted			Karen Phillips

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4296	1	(CL) - Silty Clay, moist, dark brown, rootlets, caliche patches					1020-Began drilling Core run 1, 0'-4' Rec=2.9'/4.0' Time: 1023
4295	2	(ML) - Clayey Sandy Silt, dark red, brown, very fine grained					
4294	3						
4293	4	(CL) - Clay, moist, dark brown, dark rounded grains scattered throughout					Core run 2, 4'-9' Rec=5.0'/5.0' Time: 1030
4292	5						

/CORPS-B/05-17-96

PROJECT: 9C114LL1 Landfill No. 1 Phase 1 RFI

HOLE NO.: 74-01

HTW DRILLING LOG

PROJECT	INSPECTOR	HOLE NO.
Landfill No. 1 Phase 1 RFI	Karen Phillips	74-01
		SHEET 2 OF 3 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		Same as above					
4291	6	(SM) - Silty Sand, moist, brownish yellow, red staining, quartz grains, very fine grained, subrounded					
4290	7						
4289	8	(SM) - Silty Sand, moist, light brownish white, very fine grained, quartz, highly calcareous around grains			CAN074-7401-4008		Time: 1034
4288	9	(SM) - Silty Sand, moist, light tan, very fine grained, white-orange-red staining, calcareous patches, trace of black grains					
4287	10	(SM) - Silty Sand, medium dense, moist, red-brown, calcareous nodules throughout (<1/4" in diameter)	PID=3.7 ppm			6	N=18 Rec=2.0'/2.0' Time: 1044
4286	11					8	
						10	
4285	12					13	
		(SM) - Silty Sand, (trace of clay), dense, dry, whitish yellow, very fine grained, highly calcareous, large hard irregular nodules	PID=4.1 ppm			12	N=54 Rec=2.0'/2.0' Time:
4284	13					30	
						24	
4283	14					22	

HTW DRILLING LOG

HOLE NO. 74-01

PROJECT: Landfill No. 1 Phase 1 RFI

INSPECTOR: Karen Phillips

SHEET 3 OF 3 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4282	15	Same as above, white-red-orange staining spots, yellowish white, medium dense, chalky in appearance	PID = 2.9 ppm			11 12 9 11	N = 21 Rec = 2.0'/2.0' Time: 1054
4281	16	Caliche - medium dense, dry to moist, whitish tan, highly cemented, chalky	PID = 3.6 ppm			11 13 13 12	N = 26 Rec = 2.0'/2.0' Time: 1058
4280	17						
4279	18	(SM) - Silty Sand, Sandy Silt, medium dense, moist, light orange-tan, very fine grained, little calcareous patches, quartz grains	PID = 4.0 ppm		CAN074-7401-1018	9	N = 124 Rec = 1.25'/1.3' Time: 1107 Analyzed for (VOCs, List A, TOC)
4278	19	Same as above, very dense, some black minerals present, (caliche, irregular highly cemented nodules), pinkish in color			(MRD) CAN074-7401-1403	24 100/4"	
4277	20	TD = 20'					
4276	21						
4275	22						
4274	23						

HTW DRILLING LOG

HOLE NO.	74-02
SHEET 1 OF 3 SHEETS	
1. COMPANY NAME	Woodward-Clyde Federal Services
2. DRILLING SUBCONTRACTOR	Layne Environmental Services
3. PROJECT	Landfill No. 1 Phase 1 RFI
4. LOCATION	CANNON AFB, New Mexico
5. NAME OF DRILLER	Dallas Werner
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75 HT
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	CME-75, 3 3/4" I.D. HSA; 5' CME Core Barrel (3 1/2" O.D.) 2 1/2" I.D. Stainless Steel Split Spoons
8. HOLE LOCATION	N 865.37, E 857.82
9. SURFACE ELEVATION	4296.2
10. DATE STARTED	02/26/96
11. DATE COMPLETED	02/26/96
12. OVERBURDEN THICKNESS	20.0'
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	20.0'
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
1	X	N/A	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	SVOC	PCB/PEST	TPH	DIOX/FURAN	TOC	HERB	21. TOTAL CORE REC.
1	1	1	1	1	1	N/A	N/A	1	%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
abandoned	grouted			Karen Phillips

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4296		(CL) - Clay, stiff dark brown, rootlets					Core run 1, 0'-4' Rec=3.5'/4.0' Time: 1330
4295	1	(ML) - Clayey Sandy Silt, moist, reddish brown					No trash observed
4294	2	(CL) - Clay, with hard caliche nodules throughout					
4293	3	(CL) - Clay, stiff, dry, dark brown					
4292	4						Core run 2, 4'-9' Rec=5.0'/5.0' Time: 1340
	5						

HTW DRILLING LOG

PROJECT	INSPECTOR	HOLE NO.
Landfill No. 1 Phase 1 RFI	Karen Phillips	74-02
		SHEET 2 OF 3 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4291							
	6						
4290							
	7						
4289							
	8						
4288		(CL) - Sandy Silty Clay, dry, brown					
	9						
4287							
	10						
4286		Caliche - very stiff, light brown to yellowish brown, caliche nodules, (small to >1"), silt matrix, very calcareous, fine grained	PID = 1.7 ppm	CAN074-7402-4010		5	N=24 Rec=2.0'/2.0' Time: 1352
	11					12	
4285						12	
						15	
	12	Caliche - very stiff, dry, yellowish to white, very calcareous, very fine grained, irregular nodules, highly cemented, crumbly	PID = 0.4 ppm			4	N=28 Rec=1.41'/2.0' Time: 1400
4284						12	
	13					16	
4283						20	
	14						

HTW DRILLING LOG

HOLE NO. 74-02

PROJECT: Landfill No. 1 Phase 1 RFI

INSPECTOR: Karen Phillips

SHEET 3 OF 3 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4282		Same as above	PID = 0.8 ppm			18	N = 30 Rec = 2.0'/2.0' Time: 1404
	15					13	
4281						17	
						22	
	16		PID = 0.8 ppm			15	N = 39 Rec = 2.0'/2.0' Time: 1408
4280		(SM) - Silty Sand, medium dense, moist, light red, white and reddish areas, white areas highly calcareous				19	
	17	(SM) - Silty Sand, medium dense, moist, reddish orange, fine grained, some red and orange grains, quartz				20	
4279						22	
	18		PID = 1.2 ppm		CAN074-7402-1018	18	N = 61 Rec = 2.0'/2.0' Time: 1415 Analyzed for (VOCs, List A)
4278		Caliche - dense, white, calcareous, crumbly in areas and highly cemented in others				25	
	19					36	
4277						40	
	20	T.D. = 20'					
4276							
	21						
4275							
	22						
4274							
	23						

/CORPS-B/05-17-96

PROJECT: 9C114LL1 Landfill No. 1 Phase 1 RFI

HOLE NO.: 74-02

HTW DRILLING LOG

HOLE NO.	74-03
SHEET 1 OF 3 SHEETS	

1. COMPANY NAME	Woodward-Clyde Federal Services
2. DRILLING SUBCONTRACTOR	Layne Environmental Services
3. PROJECT	Landfill No. 1 Phase 1 RFI
4. LOCATION	CANNON AFB, New Mexico
5. NAME OF DRILLER	Dallas Werner
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75 HT
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	CME-75, 3 3/4" I.D. HSA; 5' CME Core Barrel (3 1/2" O.D.) 2 1/2" I.D. Stainless Steel Split Spoons
8. HOLE LOCATION	N 1068.76, E 852.24
9. SURFACE ELEVATION	4299.1
10. DATE STARTED	02/26/96
11. DATE COMPLETED	02/26/96
12. OVERBURDEN THICKNESS	20.0'
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	20.0'
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
1	X	N/A	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	SVOC	PCB/PEST	TPH	DIOX/FURAN	TOC	HERB	21. TOTAL CORE REC.
1	1	1	1	1	1	N/A	N/A	1	%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
abandoned	grouted			Karen Phillips

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		(CL) - Clay, moist to wet, dark brown					
4298	1						Core run 1, 1'-4' Rec=5.0'/5.0'
4297	2						No trash observed in core
4296	3	(SM) - Silty Sand, reddish brown, fine grained					
4295	4						
	5						

/CORPS-B/05-17-96

PROJECT: 9C114LL1 Landfill No. 1 Phase 1 RFI

HOLE NO.: 74-03

HTW DRILLING LOG

PROJECT	INSPECTOR	HOLE NO.
Landfill No. 1 Phase 1 RFI	Karen Phillips	74-03
		SHEET 2 OF 3 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		Same as above					
4293	6	(CL) - Silty Clay, moist, dark brown, with dark black areas					
4292	7	Caliche layer, dense, white, highly recrystallized, (SM) - Silty Sand, slightly Clayey, medium dense, brown, calcareous nodules, (white)	PID=0.5 ppm			15	N=38 Rec=1.3'/2.0' Time: 1121
4291	8					24	
						14	
4290	9					11	
4289	10	Same as above	PID=3.4 ppm	CAN074-7403-4010		7	N=33 Rec=2.0'/2.0' Time: 1130
4288	11	(SM) - Silty Sand, medium dense, moist, buff, white, calcareous, calcareous nodules				11	
						22	
						31	
4287	12	Caliche - dense, dry to moist, buff, white to light orange, highly cemented, highly calcareous, possibly in a sandy silty matrix, crumbly	PID=0.5 ppm			7	N=65 Rec=2.0'/2.0' Time: 1140
4286	13					25	
						40	
	14					41	

HTW DRILLING LOG

HOLE NO. 74-03

PROJECT: Landfill No. 1 Phase 1 RFI

INSPECTOR: Karen Phillips

SHEET 3 OF 3 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		Same as above, very dense	PID=3.7 ppm			20 37 50 100/4"	N=87 Rec=2.0'/2.0' Time: 1147
4284	15						
4283	16	Caliche - very hard, dry, chalky, fine grained, highly cemented, quartz grains	PID=3.8 ppm			31 100/3"	N=>100 Rec=.75'/.75' Time: 1156
4282	17						
4281	18	Caliche - hard, chalky, fine grained, calcareous around the grains, however, not highly cemented as above	PID=0.8 ppm		CAN074-7403-1018	9 32 44 100/5.5"	N=76 Rec=.97'/.97' Time: 1205 Analyzed for (VOCs, List A)
4280	19	(SM) - Silty Sand, fine grained, quartz, subrounded					
4279	20	T.D.=20'					
4278	21						
4277	22						
	23						

/CORPS-B/05-17-96

PROJECT: 9C114LL1 Landfill No. 1 Phase 1 RFI

HOLE NO.: 74-03

HTW DRILLING LOG

HOLE NO.	74-04
SHEET 1 OF 3 SHEETS	

1. COMPANY NAME	Woodward-Clyde Federal Services
2. DRILLING SUBCONTRACTOR	Layne Environmental Services
3. PROJECT	Landfill No. 1 Phase 1 RFI
4. LOCATION	CANNON AFB, New Mexico
5. NAME OF DRILLER	Dallas Werner
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75 HT
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	CME-75, 3 3/4" I.D. HSA; 5' CME Core Barrel (3 1/2" O.D.) 2 1/2" I.D.; Stainless Steel Split Spoons
8. HOLE LOCATION	N 1174.51, E 765.42
9. SURFACE ELEVATION	4300.5
10. DATE STARTED	02/23/96
11. DATE COMPLETED	02/23/96
12. OVERBURDEN THICKNESS	20.0'
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	20.0'
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0	X	N/A	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	SVOC	PCB/PEST	TPH	DIOX/FURAN	TOC	HERB	21. TOTAL CORE REC.
1	1	1	1	1	1	N/A	N/A	1	%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
abandoned	grouted			Karen Phillips

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4300	1	(CL) - Clay, slightly Silty, dark brown, rootlets, few caliche nodules					Core run 1, 0'-4' Rec=3.8'/4.0' Time: 1545
4299	2						No trash observed in core
4298	3	(ML) - Clayey, Sandy Silt, reddish brown, rootlets, caliche nodules					
4297	4	Same as above					Core run 2, 4'-9' Rec=3.5'/4.0' Time: 1555
296	5						

HTW DRILLING LOG

PROJECT	INSPECTOR	HOLE NO.
Landfill No. 1 Phase 1 RFI	Karen Phillips	74-04
		SHEET 2 OF 3 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4295	6						No trash observed in core
4294	7						
4293		(CL) - Clay, stiff, dry, calcareous stringers, small nodules					
4292	8						
4291	9						
4290	10	(CL) - Clay, slightly Silty, hard, dark brown, with caliche nodules throughout	PID=6.9 ppm			7	N=64 Rec=1.58'/2.0' Time: 1602
4289	11	Caliche, dry, pinkish white to white, weathered				14 50 35	
4288	12	(SM) - Silty Sand, trace of Clay, medium dense, dry, whitish to light orange, friable, fissile, very calcareous, mottled, very fine grained, trace of black grains	PID=6.6 ppm			11	N=34 Rec=2.0'/2.0' Time: 1611
287	13					17 17	
	14					19	

HTW DRILLING LOG

HOLE NO. 74-04

PROJECT: Landfill No. 1 Phase 1 RFI

INSPECTOR: Karen Phillips

SHEET 3 OF 3 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		Same as above	PID = 6.3 ppm			12, 17, 14, 10	N = 31 Rec = 1.67' Time: 1617
4286	15						
4285							
	16	(SM) - Silty Sand, slightly Clayey, medium dense, dry, white and red-orange, mottled, very fine to fine grained, trace of calcareous streaks, calcareous	PID = 6.6 ppm			4, 10, 14, 15	N = 24 Rec = 2.0'/2.0' Time: 1622
4284							
	17						
4283							
	18		PID = 6.9 ppm		CAN074-7404-1018	11, 18, 20, 30	N = 38 Rec = 2.0'/2.0' Time: 1630 Analyzed for (VOCs, List A)
4282		(SM) - Silty Sand, medium dense, dry, buff white, very fine to fine grained, caliche nodules, (<1/2 in diameter)					
	19						
4281							
	20	T.D. = 20'					
4280							
	21						
4279							
	22						
278							
	23						

HTW DRILLING LOG

HOLE NO.	74-05
SHEET 1 OF 3 SHEETS	

1. COMPANY NAME	Woodward-Clyde Federal Services
2. DRILLING SUBCONTRACTOR	Layne Environmental Services
3. PROJECT	Landfill No. 1 Phase 1 RFI
4. LOCATION	CANNON AFB, New Mexico
5. NAME OF DRILLER	Dallas Werner
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75 HT
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	CME-75, 3 3/4" I.D. HSA; 5' CME Core Barrel (3 1/2" O.D.) 2 1/2" I.D.; Stainless Steel Split Spoons
8. HOLE LOCATION	N 1130, E 730
9. SURFACE ELEVATION	4301.4
10. DATE STARTED	02/23/96
11. DATE COMPLETED	02/23/96
12. OVERBURDEN THICKNESS	20.0'
13. DEPTH DRILLED INTO ROCK	N/A
14. TOTAL DEPTH OF HOLE	20.0'
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	N/A
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0	X	N/A	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	SVOC	PCB/PEST	TPH	DIOX/FURAN	TOC	HERB	21. TOTAL CORE REC.
2	2	2	2	2	2	N/A	2	2	%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
abandoned	grouted			Karen Phillips

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
301		(CL) - Sandy Silty Clay, stiff, dry, dark brown, rootlets, few caliche nodules, medium quartz grains, small piece of wood					Core run 1, 0'-4' Rec=3.5'/4.0' Time: 1425
	1						
4300							
	2						
4299							
	3						Driller noted change in drilling at 3 feet bgs
4298							
	4	(ML) - Sandy Clayey Silt, dry, light brown					Core run 2, 4'-9' Rec=4.5'/5.0' Time: 1430
297							
	5						

HTW DRILLING LOG

HOLE NO. 74-05

PROJECT: Landfill No. 1 Phase 1 RFI

INSPECTOR: Karen Phillips

SHEET 2 OF 3 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4296							
	6						No trash observed in upper 9' of boring
4295							
	7	Numerous caliche nodules scattered throughout					
4294							
	8						
4293							
	9	Caliche - dense, white, buff (SM) - Silty Sand, very fine grained					
4292							
	10	(SM) - Silty Sand, hard, dry, whitish, buff, highly cemented, calcareous	PID=6.4 ppm			12	N=57 Rec=2.0'/2.0' Time: 1446
4291						27	
	11					30	
4290						35	
	12	Same as above, whitish buff, reddish orange, mottled, hard	PID=7.3 ppm			20	N=80 Rec=1.75'/2.0' Time: 1455
4289						40	
	13					40	
4288						21	
	14						

/CORPS-B/05-30-96

PROJECT: 9C114LL1 Landfill No. 1 Phase 1 RFI

HOLE NO.: 74-05

HTW DRILLING LOG

HOLE NO. 74-05

PROJECT: Landfill No. 1 Phase 1 RFI

INSPECTOR: Karen Phillips

SHEET 3 OF 3 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4287		(SM) - Silty Sand, dense, dry, orange-white, very fine grained, some medium grained quartz, subrounded, highly calcareous	PID = 6.8 ppm			16 28 26 35	N = 54 Rec = 1.5'/2.0' Time: 1503
4286	15						
4285	16	Same as above, sand more highly coated with calcite	PID = 6.4 ppm			26 33 43 40	N = 76 Rec = 2.0'/2.0' Time: 1508
4284	17						
283	18	(SM) - Silty Sand, slightly clayey, medium dense, moist, reddish brown, with white patches, very fine to fine grained	PID = 7.2 ppm		CAN074-7405-1018 CAN074-7405-1483	9 16 12 14	N = 28 Rec = 1.75'/2.0' Time: 1515 Analyzed for (VOCs, List A, TOC)
4282	19						
4281	20	T.D. = 20'					
4280	21						
4279	22						
	23						

HTW DRILLING LOG

HOLE NO.	74-06
SHEET 1 OF 3 SHEETS	

1. COMPANY NAME	Woodward-Clyde Federal Services
2. DRILLING SUBCONTRACTOR	Layne Environmental Services
3. PROJECT	Landfill No. 1 Phase 1 RFI
4. LOCATION	CANNON AFB, New Mexico
5. NAME OF DRILLER	Dallas Werner
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75 HT
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	CME-75, 3 3/4" I.D. HSA; 5' CME Core Barrel (3 1/2" O.D.) 2 1/2" I.D. Stainless Steel Split Spoons
8. HOLE LOCATION	N 870, E 740
9. SURFACE ELEVATION	4299.0
10. DATE STARTED	02/24/96
11. DATE COMPLETED	02/24/96
12. OVERBURDEN THICKNESS	20.0'
13. DEPTH DRILLED INTO ROCK	N/A
14. TOTAL DEPTH OF HOLE	20.0'
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	N/A
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
1	X	N/A	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	SVOC	PCB/PEST	TPH	DIOX/FURAN	TOC	HERB	21. TOTAL CORE REC.
1	1	1	1	1	1	N/A	N/A	1	%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
abandoned	grouted			Karen Phillips

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		(CL) - Silty Clay, dry, calcareous, caliche nodules					Core run 1, 0'-4' Rec=3.3'/4.0' Time: 1525
4298	1						
		(CL) - Clay, stiff, dry, dark brown, rootlets					No trash observed in core
4297	2						
4296	3	(SM) - Silty Sand, dry, reddish brown, caliche nodules					
4295	4	Same as above, not calcareous					Core run 2, 4'-9' Rec=3.3'/5.0' Time: 1528
4294	5						

HTW DRILLING LOG

HOLE NO. 74-06

PROJECT: Landfill No. 1 Phase 1 RFI

INSPECTOR: Karen Phillips

SHEET 2 OF 3 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4293	6						
4292	7						
4291	8	(CL) - Clay, stiff, dark brown, caliche nodules, white, (<1/2" in diameter)					
4290	9	Caliche - white, friable, weathered, very calcareous					
4289	10	Caliche - very stiff, dry to slightly moist, light orange, with white caliche nodules throughout, some orange and red grains, calcite around grains, highly calcareous, trace of black grains	PID=7.8 ppm			8	N=31 Rec=1.67'/2.0' Time: 1549
						13	
4288	11					18	
						20	
4287	12	Caliche - very hard, dry, white, buff, light orange, friable, fissile, highly calcareous, calcium around grains, crumbly, some medium grained quartz, trace of black grains	PID=7.2 ppm			20	N=>140 Rec=1.08'/1.41' Time: 1557
4286	13					40	
						100/5"	
4285	14						

HTW DRILLING LOG

HOLE NO. 74-06

PROJECT: Landfill No. 1 Phase 1 RFI

INSPECTOR: Karen Phillips

SHEET 3 OF 3 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		Same as above, a few reddish brown patches, near base of this sample interval, thinly bedded	PID=7.5 ppm			29 40 100/5"	N=>140 Rec=1.25'/1.41' Time: 1606
4284	15						
4283	16						
		Caliche - same as above, numerous small white and reddish areas throughout, reddish areas not calcareous, white areas highly calcareous, light orange areas moderately calcareous	PID=6.9 ppm	CAN074-7406-4016		20 25 30 26	N=55 Rec=2.0'/2.0' Time: 1620
4282	17						
4281	18						
		(SM) - Silty Sand, dense, dry, buff white\light orange, caliche nodules present throughout, (1/2"-2" diameter), possible hard caliche layer, 3" thick at 18.25' bgs	PID=7.0 ppm		CAN074-7406-1018	13 35 40 46	N=75 Rec=2.0'/2.0' Time: 1625 Analyzed for (VOCs, List A)
4280	19						
4279	20	T.D.=20'					
4278	21						
4277	22						
4276	23						

HTW DRILLING LOG

HOLE NO.	74-07
SHEET 1 OF 3 SHEETS	

1. COMPANY NAME	Woodward-Clyde Federal Services
2. DRILLING SUBCONTRACTOR	Layne Environmental Services
3. PROJECT	Landfill No. 1 Phase 1 RFI
4. LOCATION	CANNON AFB, New Mexico
5. NAME OF DRILLER	Dallas Werner
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75 HT
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	CME-75, 3 3/4" I.D. HSA; 5' CME Core Barrel (3 1/2" O.D.) 2 1/2" I.D. Stainless Steel Split Spoons
8. HOLE LOCATION	N 500, E 740
9. SURFACE ELEVATION	4298.9
10. DATE STARTED	02/25/96
11. DATE COMPLETED	02/25/96
12. OVERBURDEN THICKNESS	20.0'
13. DEPTH DRILLED INTO ROCK	N/A
14. TOTAL DEPTH OF HOLE	20.0'
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	N/A
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
1	X	N/A	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	SVOC	PCB/PEST	TPH	DIOX/FURAN	TOC	HERB	21. TOTAL CORE REC.
1	1	1	1	1	1	N/A	1	1	%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
abandoned	grouted			Karen Phillips

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4298	1	(CL) - Clay, stiff, moist, dark brown, rootlets, caliche nodules					Core run 1, 0'-4' Rec=3.0'/4.0' Time: 840
4297	2	(ML) - Sandy Clayey Silt, moist, dark reddish brown					No trash observed in core
4296	3	(CL) - Silty Clay, moist, dark reddish brown					
4295	4	(CL) - Sandy Silty Clay, with some gravel, moist, brown and white, caliche nodules					Core run 2, 4'-9' Rec=3.0'/5.0' Time: 855
4294	5	Caliche - moist, buff, gray, weathered caliche, crumbly, trace of red staining, highly					

HTW DRILLING LOG

HOLE NO. 74-07

PROJECT: Landfill No. 1 Phase 1 RFI

INSPECTOR: Karen Phillips

SHEET 2 OF 3 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		staining, highly calcareous, trace black grains, very fine grained					No trash observed
4293	6						
4292	7						
4291	8						
4290	9	(SM) - Silty Sand, moist, reddish brown, white, small caliche nodules, (<1/16" in diameter), numerous, very fine grained, calcareous streaks, trace red-orange staining					
4289	10	(SM) - Silty Sand, dry to moist, medium dense, light orange-red, very fine grained, subrounded	PID=5.8 ppm	CAN074-7407-4010		5	N=29 Rec=1.5'/2.0' Time: 910
4288	11	Caliche - medium dense, white buff, recrystallized, highly cemented, interbedded with silty sand, (very fine grained)				15	
						14	
4287	12	Same as above, caliche nodules, (some >1"), intermixed in a silty sand unit, very fine grained nodules, medium grained quartz, highly cemented	PID=4.4 ppm			13	
						6	N=29 Rec=1.67'/2.0' Time: 917
4286	13					9	
						20	
4285	14					18	

/CORPS-B/05-30-96

PROJECT: 9C114LL1 Landfill No. 1 Phase 1 RFI

HOLE NO.: 74-07

HTW DRILLING LOG

HOLE NO. 74-07

PROJECT: Landfill No. 1 Phase 1 RFI

INSPECTOR: Karen Phillips

SHEET 3 OF 3 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4284	15	Same as above, trace of black grains, nodules, reddish medium grained quartz, highly calcareous, friable	PID=3.7 ppm			6 4 9 9	N=13 Rec=2.0'/2.0' Time: 922
4283	16	Same as above	PID=2.3 ppm			7 10 10 8	N=20 Rec=2.0'/2.0' Time: 930
4282	17						
4281	18	(SM) - Silty Sand, loose, moist, white buff, reddish orange, mottled, calcite around sand grains, highly calcareous, orange and red grains, trace of black grains, a few hard nodules, very fine grained, subrounded	PID=1.8 ppm		CAN074-7407-1018 MS/MSD	5 6 11 20	N=17 Rec=1.5'/2.0' Time: 932 Analyzed for (VOCs, List A, TOC)
4280	19						
4279	20	T.D.=20'					
4278	21						
4277	22						
4276	23						

HTW DRILLING LOG

HOLE NO.	74-08
1. COMPANY NAME	Woodward-Clyde Federal Services
2. DRILLING SUBCONTRACTOR	Layne Environmental Services
SHEET 1 OF 6 SHEETS	
3. PROJECT	Landfill No. 1 Phase 1 RFI
4. LOCATION	CANNON AFB, New Mexico
5. NAME OF DRILLER	Dallas Werner
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75 HT
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	CME-75, 3 3/4" I.D. HSA; 5' CME Core Barrel (3 1/2" O.D.) 2 1/2" I.D. Stainless Steel Split Spoons
8. HOLE LOCATION	N 710, E 660
9. SURFACE ELEVATION	4299.5
10. DATE STARTED	02/22/96
11. DATE COMPLETED	02/23/96
12. OVERBURDEN THICKNESS	46.0'
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	46.0'
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0	X	N/A	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	SVOC	PCB/PEST	TPH	DIOX/FURAN	TOC	HERB	21. TOTAL CORE REC.
7	9	9	9	9	9	N/A	N/A	9	%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
abandoned	grouted			Karen Phillips

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4299	1	TOP SOIL (CL) - Sandy Clay, dry, dark brown	PID = 8.2 ppm				Core run 1, 1'-4' Rec = 1.5'/3.0' Time: 1430
4298	2	FILL (SM) - Silty Clayey Sand, dry, dark brown, nails, large pieces of brick, wrappers, sheet rock, large rocks, burned wood and unburned wood, roofing material					
4297	3						Augered without core barrel to 5' bgs due to large material being encountered in the hole
4296	4						
295	5						

HTW DRILLING LOG

HOLE NO. 74-08

PROJECT: Landfill No. 1 Phase 1 RFI

INSPECTOR: Karen Phillips

SHEET 2 OF 6 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4294		(SC) - Clayey Sand, very stiff, dark brown, rootlets	PID=8.2 ppm		CAN074-7408-1006 CAN074-7408-1482	14 16	N=24 Rec=2.0'/2.0' Time: 1529 Analyzed for (VOCs, List A)
	6	(CL) - Silty Clay, buff to white				8	Base of landfill cell 6'
4293		(SM) - Silty Sand, dry, light buff, very fine to fine grained, calcareous				5	
	7						
4292							
	8	Caliche - very stiff, dry, white caliche nodules, intermixed, trace of black grains	PID=7.8 ppm			6 14	N=29 Rec=1.41'/1.41' Time: 1542
4291							
	9					15	
4290						15	
	10	Caliche - very stiff, dry, large white caliche nodules, (up to 1" throughout), very calcareous	PID=7.9 ppm		CAN074-7408-1010	10 16	N=39 Rec=1.3'/2.0' Time: 1551 Analyzed for (VOCs, List A)
4289							
	11					23	
4288						25	
	12	Same as above	PID=7.8 ppm			10 15	N=33 Rec=1.41'/2.0' Time: 1556
4287							
	13	(SM) - Clayey Silty Sand, medium dense, dry to moist, white and reddish orange, very fine to fine grained, clayey in areas, (especially where white)				18 12	
?86							
	14						

/CORPS-B/05-30-96

PROJECT: 9C114LL1 Landfill No. 1 Phase 1 RFI

HOLE NO.: 74-08

HTW DRILLING LOG

PROJECT	INSPECTOR	HOLE NO.
Landfill No. 1 Phase 1 RFI	Karen Phillips	74-08
		SHEET 3 OF 6 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4285	15	(SM) - Silty Sand, dense, dry, white, buff, very fine to fine grained, very calcareous, very calcareous, some medium grains, hard caliche layers or nodules throughout, crystallized	PID=9.0 ppm		CAN074-7408-1014 CAN074-7408-1402	8 21 24 30	N=45 Rec=1.58'/2.0' Time: 1605 Analyzed for (VOCs, List A)
4284							
4283	16	Caliche, dense, dry, white, buff, recrystallized, very calcareous, caliche nodules or layers, medium grains noted	PID=8.0 ppm			10 42 60 70	N=102 Rec=2.0'/2.0' Time: 1618
4282	17						
4281	18	Same as above	PID=8.0 ppm			26 80 100/4"	N=180+ Rec=1.31'/1.3' Time: 1627
4280	19	(SM) - Silty Sand, dense, moist, reddish orange, very fine to fine grained					
4279	20	Caliche - very dense, dry, white buff, recrystallized, interbedded with silty sand (SM), very buff, orange, white quartz, some red and orange grains, highly cemented with calcite	PID=8.0 ppm			20 100/5"	N=>100 Rec=.91'/.91' Time: 1642
4278	21						
277	22	(SM) - Silty Sand, dense, orange white, very fine to fine grained, calcite cement, quartz grains, some red and orange grains	PID=8.3 ppm		CAN074-7408-1022	23 100/3"	Lost spoon N=>100 Rec=.75'/.75' Time: 1707 Analyzed for (VOCs, List A)
	23						

HTW DRILLING LOG

PROJECT	INSPECTOR	HOLE NO.
Landfill No. 1 Phase 1 RFI	Karen Phillips	74-08
		SHEET 4 OF 6 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4276							
4275	24	(SM) - Sand, slightly Silty, very dense, dry, light reddish orange, some white, calcareous, very fine to fine grained, subrounded	PID=7.0 ppm		CAN074-7408-1024	23 62 100/5"	N=>162 Rec=1.3'/1.41' Time: 736 Analyzed for VOCs, List A)
4274	25						
4273	26	(SM) - Silty Sand, dense, dry to moist, light reddish orange, very fine to fine grained, caliche layers interbedded, calcite cement around grains, calcareous	PID=6.6 ppm			13 59 100/2"	N=>159 Rec=1.16'/1.16' Time: 0750
4272	27						
4271	28	(SP) - Sand, slightly Silty, very dense, moist, light reddish orange, very fine to fine grained, quartz, some red and orange grains, little black grains, slightly calcareous, subrounded	PID=6.4 ppm			28 58 65 70	N=123 Rec=2.0'/2.0' Time: 803
4270	29						
4269	30	(SP) - Same as above, medium dense	PID=6.3 ppm			8 15 24 30	N=39 Rec=1.5'/2.0' Time: 816
4268	31						
	32						

HTW DRILLING LOG

HOLE NO. 74-08

PROJECT: Landfill No. 1 Phase 1 RFI

INSPECTOR: Karen Phillips

SHEET 5 OF 6 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4267	33	(SP) - Same as above, medium dense, slightly coarse grained, fine grained with some medium grained	PID=7.0 ppm			10, 18, 20, 22	N=38 Rec=1.7'2.0' Time: 828
4266	34	(SP) - Sand, medium dense, moist, fine to medium grained, quartz, some red and orange grains, black grains, slightly calcareous	PID=7.0 ppm		CAN074-7408-1034	10, 15, 16, 26	N=31 Rec=2.0'/2.0' Time: 838 Analyzed for (VOCs, List A)
4265	35						
4264	36	(SP) - Sand, same as above	PID=7.5 ppm			5, 8, 16, 17	N=24 Rec=2.0'/2.0' Time: 852
4263	37						
4262	38	(SP) - Sand, same as above	PID=7.7 ppm			23, 28, 30, 30	N=58 Rec=2.0'/2.0' Time: 905
4261	39						
4260	40	(SP) - Sand, same as above	PID=7.4 ppm			8, 14	N=29 Rec=2.0'/2.0' Time: 913
259	41						

HTW DRILLING LOG

HOLE NO. 74-08

PROJECT: Landfill No. 1 Phase 1 RFI

INSPECTOR: Karen Phillips

SHEET 6 OF 6 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4258						15 21	
	42	Same as above	PID = 7.1 ppm			18 22 28 35	N = 50 Rec = 2.0'/2.0' Time: 926
4257 4256	43						
	44	Same as above	PID = 7.3 ppm		CAN074-7408-1044	40 30 31 36	N = 51 Rec = 2.0'/2.0' Time: 0940 Analyzed for (VOCs, List A)
4255 4254	45						
	46	T.D. = 46'					
4253 4252 4251 250	47 48 49 50						

HTW DRILLING LOG

HOLE NO.	74-09
SHEET 1 OF 6 SHEETS	

1. COMPANY NAME	Woodward-Clyde Federal Services
2. DRILLING SUBCONTRACTOR	Layne Environmental Services
3. PROJECT	Landfill No. 1 Phase 1 RFI
4. LOCATION	CANNON AFB, New Mexico
5. NAME OF DRILLER	Dallas Werner
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75 HT
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	CME-75, 3 3/4" I.D. HSA; 5' CME Core Barrel (3 1/2" O.D.) 2 1/2" I.D. Stainless Steel Split Spoons
8. HOLE LOCATION	N 765, E 685
9. SURFACE ELEVATION	4299.7
10. DATE STARTED	02/21/96
11. DATE COMPLETED	02/22/96
12. OVERBURDEN THICKNESS	46.0'
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	46.0'
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
1	X	N/A	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	SVOC	PCB/PEST	TPH	DIOX/FURAN	TOC	HERB	21. TOTAL CORE REC.
8	8	8	8	8	8	N/A	1	8	%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
abandoned	grouted			Karen Phillips

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		(CL) - Clay, dry, dark brown					Core run 1, 0'-4' Rec=3.0'/4.0' Time: 1450
4299							
	1	(SM) - burned wood, (25"), Silty Sand, roots, rocks, reddish brown, dry					
4298							
	2						
4297							
	3	(SM) - Silty Sand, caliche nodules, pieces of wood mixed in, white/pink, trace of burned material intermixed in caliche uni					
4296							
	4						Core run 2, 4'-9' Rec=3.0'/4.0'
4295							
	5						

HTW DRILLING LOG

PROJECT	INSPECTOR	HOLE NO.
Landfill No. 1 Phase 1 RFI	Karen Phillips	74-09
		SHEET 2 OF 6 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4294	6	(SM) - Silty Sand, dry, whitish pink, calcareous, no trash observed, well cemented from 8'-9' bgs, caliche	PID = 8.6 ppm		CAN074-7409-1006		Base of landfill cell 6' Collected first sample from 6'-8' bgs from core barrel Time: 1516 Analyzed for (VOCs, List A)
4293	7						
4292	8						
4291	9						No sample collected from 9'-10'
4290	10	(SM) - Silty Sand, loose, dry, reddish orange, with white hard cemented caliche nodules (>1"), very fine to fine grained, trace of medium grains, subrounded	PID = 8.5 ppm		CAN074-7409-1010	6	N = 13 Rec = 1.25'/2.0' Time: 1529 Analyzed for (VOCs. List A, TOC)
4289	11					6	
						7	
4288	12					10	
4287		(SM) - Silty Sand, medium dense, dry, reddish orange, very fine to fine grained	PID = 7.8 ppm			7	N = 21 Rec = 1.25'/2.0' Time: 1540
	13	Caliche - highly cemented, white nodules in red and white sand, very calcareous, calcite around grains				9	
286						12	
	14					11	

HTW DRILLING LOG

HOLE NO. 74-09

PROJECT: Landfill No. 1 Phase 1 RFI

INSPECTOR: Karen Phillips

SHEET 3 OF 6 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4285	15	(SM) - Silty Sand, medium dense, dry, white caliche nodules throughout, (>1"), reddish white, white grains, cemented highly calcareous, fine grained	PID=8.2 ppm		CAN074-7409-1014	7 11 12 13	N=23 Rec=1.58'/2.0' Time: 1546 Analyzed for (VOCs, List A)
4284	16	(SM) - Silty Sand, medium dense, dry to moist, reddish orange with large white caliche nodules up to 2", very fine to fine grained, white areas highly cemented, quartz grains, red orange, calcareous, trace of black grains	PID=8.0 ppm	CAN074-7409-4016		4 7 12 15	N=19 Rec=1.41'/2.0' Time: 1554
4283	17						
4282	18	(SM) - Silty Sand, very dense, dry to moist, reddish orange, with small calcareous nodules (white) mixed throughout, very fine to fine grained, highly calcareous	PID=8.2 ppm			14 100/4"	N=>100 Rec=.83'/.83' Time: 1611
4281	19						
4280	20						Rig down (maintenance) Hammer broken
4279	21	Caliche - very dense, dry, whitish buff, highly cemented grains, coated grains with calcite, red and orange grains, chalky in appearance Same as above	PID=8.4 ppm		CAN074-7409-1020	100 100/0" 100/2"	N=>100 Rec=.5'/.5' Time:814 Drove another split spoon sample N=>100 Rec=.16'/.16' Analyzed for (VOCs, List A)
4278	22	Same as above	PID=7.7 ppm			100/4"	N=>100 Rec=.33'/.33' Time: 0841
4277	23						

HTW DRILLING LOG

PROJECT	INSPECTOR	HOLE NO.
Landfill No. 1 Phase 1 RFI	Karen Phillips	74-09
		SHEET 4 OF 6 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4276							
	24	Same as above, caliche, very dense, grains coated with calcium	PID=7.6 ppm		CAN074-7409-1024	40	N=>100 Rec=.66'/.66' Time: 0855 Analyzed for (VOCs, List A)
4275						100/2"	
	25						
4274							
	26	(SM) - Silty Sand, very dense, dry, reddish buff, orange, very fine to fine grained, little orange and red grains, trace of black grains, subrounded grains	PID=7.6 ppm			15	N=>100 Rec=.91'/.91' Time: 909
4273						100/5"	
	27						
4272							
	28	(SM) - Silty Sand, very dense, dry, reddish/buff/orange, very fine to fine grained, little orange and red grains, trace of black grains, calcareous, small (<1/4") calcareous nodules and calcite cement around grains	PID=7.6 ppm			24	N=>100 Rec=1.25'/1.25' Time: 921
4271						60	
	29					100/3"	
4270							
	30	Same as above	PID=7.2 ppm			40	N=>100 Rec=/.75' Time: 931
4269						100/3"	
	31						
268							
	32						

HTW DRILLING LOG

HOLE NO. 74-09

PROJECT: Landfill No. 1 Phase 1 RFI

INSPECTOR: Karen Phillips

SHEET 5 OF 6 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4267	33	(SP) - Sand, trace of Silt, medium dense, dry to moist, reddish orange, fine graind, trace of medium grains, orange red and white grains, quartz grains, subrounded grains, slightly calcareous in spots	PID=7.6 ppm			4, 10, 11, 11	N=21 Rec=2.0'/2.0' Time: 941
4266	34	Same as above	PID=8.6 ppm		CAN074-7409-1034 MS/MSD	9, 14, 17, 17	N=31 Rec=2.0'/2.0' Time: 0949 Analyzed for (VOCs, List A)
4265	35						
4264	36	(SP) - Sand, medium dense, moist, reddish orange, fine to medium grained (coarse than above), quartz grains, white, red and orange grains, trace of black, clacareous	PID=8.4 ppm			4, 12, 15, 17	N=27 Rec=2.0'/2.0' Time: 1005
4263	37						
4262	38	(SP) - Sand, same as above	PID=8.4 ppm			15, 28, 22, 15	N=50 Rec=2.0'/2.0' Time: 1013
4261	39						
4260	40	(SP) - Sand, medium dense, same as above	PID=8.6 ppm			12, 17	N=34 Rec=2.0'/2.0' Time: 1022
259	41						

HTW DRILLING LOG

PROJECT	INSPECTOR	HOLE NO.
Landfill No. 1 Phase 1 RFI	Karen Phillips	74-09
		SHEET 6 OF 6 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4258	42	(SP) - Same as above				17 18	
4257 4256	43 44		PID=8.2 ppm			8 15 16 20	N=32 Rec=2.0'/2.0' Time: 1034
4255 4254	45 46	(SP) - Same as above	PID=7.7 ppm		CAN074-7409-1044 CAN074-7409-1401	12 18 18 22	N=36 Rec=2.0'/2.0' Time: 1050 Analyzed for (VOCs, List A)
4253 4252 4251 250	47 48 49 50	T.D.=46'					

/CORPS-B/05-20-96

PROJECT: 9C114LL1 Landfill No. 1 Phase 1 RFI

HOLE NO.: 74-09

HTW DRILLING LOG

HOLE NO.	74-10
SHEET	1 OF 6 SHEETS
1. COMPANY NAME	Woodward-Clyde Federal Services
2. DRILLING SUBCONTRACTOR	Layne Environmental Services
3. PROJECT	Landfill No. 1 Phase 1 RFI
4. LOCATION	CANNON AFB, New Mexico
5. NAME OF DRILLER	Dallas Werner
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75 HT
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	CME-75, 3 3/4" I.D. HSA; 5' CME Core Barrel (3 1/2" O.D.) 2 1/2" I.D. Stainless Steel Split Spoons
8. HOLE LOCATION	N 1175, E 595
9. SURFACE ELEVATION	4304.6
10. DATE STARTED	02/20/96
11. DATE COMPLETED	02/21/96
12. OVERBURDEN THICKNESS	50.0'
13. DEPTH DRILLED INTO ROCK	N/A
14. TOTAL DEPTH OF HOLE	50.0'
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	N/A
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
1	X	N/A	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	SVOC	PCB/PEST	TPH	DIOX/FURAN	TOC	HERB	21. TOTAL CORE REC.
8	8	8	8	8	8	N/A	2	8	%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
abandoned	grouted			Karen Phillips

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4304	1	(SM) - Silty Sand, dry, reddish brown (SM) - Silty Sand, dry, pinkish white, fine grained, caliche nodules					Core run 1, 0'-4' Rec=3.16'/4.0' Time : 1420
4303	2	(CL) - Silty Clay, dry, dark brown					
4302	3	(SP) - Sand, dry, reddish brown, fine grained to medium grained, subrounded to rounded					
4301	4	(SP) - Sand, dry, reddish brown, fine grained, nail, burned material, burned wood, ashes, insulation, ceramic tile, sheet rock					Core run 2, 4'-9' Rec=2.67'/5.0' Time: 1430
300	5						

HTW DRILLING LOG

PROJECT	INSPECTOR	HOLE NO.
Landfill No. 1 Phase 1 RFI	Karen Phillips	74-10
		SHEET 2 OF 6 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4299	6						
4298	7						
4297	8	(SM) - Silty Sand, dry, white, buff, appears mottled, possible fill					
4296	9						
4295	10	(SM) - Silty Sand, medium dense, dry, white, caliche nodules, (1"), reddish brown, fine grained, trace of mafic minerals	PID=25 ppm		CAN074-7410-1010	6	N=32 Rec=2.0'/2.0' Time: 1458 Analyzed for (VOCs, List A)
4294	11					12	
4293						20	
						30	
4292	12	(SM) - Silty Sand, dense, dry, reddish brown and white	PID=22 ppm			12	N=73 Rec=2.0'/2.0' Time: 1507
						23	
291	13	(SM) -Silty Sand, dense, dry, white with red, mottling				50	
						70	
	14						

HTW DRILLING LOG

HOLE NO. 74-10

PROJECT: Landfill No. 1 Phase 1 RFI

INSPECTOR: Karen Phillips

SHEET 3 OF 6 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		(SM) - Silty Sand, dense, dry, white, reddish brown, mottled, fine grained	PID=5.5 ppm			12 32 32 30	N=64 Rec=1.67'/2.0' Time: 1515
4290 4289	15						
	16	Same as above, very dense	PID=8.1 ppm		CAN074-7410-1016	20 100/5"	N=>100 Rec=.91'/.91' Time: 1533 Analyzed for (VOCs, List A)
4288 4287	17						
	18	Caliche - dry, very dense, white, trace of vugular porosity				75 100/4"	N=>100 Rec=.83'/.83' Time: 1545
4286 4285	19						
	20	Same as above	PID=6.0 ppm		CAN074-7410-1020	50 100/5"	N=>100 Rec=.91'/.91' Time: 1553 Refusal at .91' Drove another split spoon
4284	21	Caliche - dry, medium dense, white				30 35	N=65 Rec=1.0'/1.0' Time: Analyzed for (VOCs, List A)
4283	22	Caliche - dry, dense, white to buff, fine to medium grained, caliche	PID=5.0 ppm			16 30	N=65 Rec=2.0'/2.0' Time: 1617
282	23						

HTW DRILLING LOG

HOLE NO. 74-10

PROJECT: Landfill No. 1 Phase 1 RFI

INSPECTOR: Karen Phillips

SHEET 4 OF 6 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4281						35 48	
	24	Same as above, very dense	PID = 6.5 ppm		CAN074-7410-1024	100/5" 100/3" 100/3"	N = >100 Rec = .41'/.41' Time: 1624 VOC sample collected from top of interval Sampled again with split spoon No recovery in second drive Augered to 25' bgs to attemp another split spoon drive
4280	25						
4279							
	26	Caliche - very dense, dry, white, pink, calcareous				50 100/5"	Composited soil for remainder of analysis Analyzed for (VOCs, List A) N = 100 Rec = .54'/.54'
4278							
	27						
4277							
	28	Caliche - very dense, dry, whitish buff, calcareous, very well cemented near 29 feet bgs	PID = 6.7 ppm			34 100+	N = >100 Rec = 1.0'/1.0' Time: 1716
4276							
	29						
4275							
	30	(SP) - Sand, very dense, dry to moist, buff, calcite around grains, fine grained, trace medium grains	PID = 7.8 ppm			30 55 100/5"	N = >155 Rec = 1.4'/1.4' Time: 0753
4274							
	31						
273							
	32						

HTW DRILLING LOG

HOLE NO. 74-10

PROJECT: Landfill No. 1 Phase 1 RFI

INSPECTOR: Karen Phillips

SHEET 5 OF 6 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4272	33	(SP) - Sand, very dense, dry to moist, reddish buff, fine grained, little medium grains, trace of black grains, quartz grains	PID=9.0 ppm		CAN074-7410-1032	17 40 50 55	N=90 Rec=2.0'/2.0' Time: 808 Analyzed for (VOCs, List A)
4271	34	(SP) - Sand, dense, dry to moist, reddish, fine grained, some medium grains, trace of black grains, quartz, little red and orange grains, subrounded to rounded grains	PID=9.0 ppm			30 40 45 50	N=85 Rec=1.75'/2.0' Time: 821
4270	35						
4269	36	(SM) - Silty Sand, dense, moist, reddish and white in areas, very fine to fine grained, trace of black, orange and red grains, quartz, calcareous, subrounded grains	PID=8.6 ppm			7 25 36 50	N=61 Rec=2.0'/2.0' Time: 836
4268	37						
4267	38	Same as above	PID=8.8 ppm		CAN074-7410-1038 CAN074-7410-1461	19 24 29 30	N=53 Rec=2.0'/2.0' Time: 848 Analyzed for (VOCs, List A, TOC)
4266	39						
4265	40	(SM) - Silty Sand, same as above, reddish	PID=8.7 ppm			12 23	N=50 Rec=1.67'/2.0' Time: 902
264	41						

HTW DRILLING LOG

HOLE NO. 74-10

PROJECT: Landfill No. 1 Phase 1 RFI

INSPECTOR: Karen Phillips

SHEET 6 OF 6 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4263						27	
						30	
	42	Same as above	PID=8.4 ppm			19	N=>144 Rec=1.41'/1.41' Time: 0942
4262						44	
	43					100/5"	
4261							
	44	(SM) - Silty Sand, dense, dry to slightly moist, reddish buff, very fine to fine grained, little medium grained sand, white, quartz, little red and orange grains, trace of black grains, calcareous	PID=8.6 ppm			14	N=69 Rec=2.0'/2.0' Time: 0950
4260						24	
	45					45	
4259						50	
	46	Same as above	PID=8.8 ppm			9	N=58 Rec=2.0'/2.0' Time: 1009
4258						25	
	47					33	
4257						49	
	48	(SM-SP) - Slightly Silty Sand, dense, dry to slightly moist, reddish buff, fine grained with some medium grained sand, (slightly coarser than above), quartz, little red orange and black grains, subrounded	PID=8.8 ppm	CAN074-7410-4048	CAN074-7410-1048	16	N=64 Rec=64 Time: 1023 Analyzed for (VOCs, List A)
4256						26	
	49					38	
255						45	
	50	T.D.=50'					

/CORPS-B/05-30-96

PROJECT: 9C114LL1 Landfill No. 1 Phase 1 RFI

HOLE NO.: 74-10

HTW DRILLING LOG

HOLE NO.	74-11
1. COMPANY NAME	Woodward-Clyde Federal Services
2. DRILLING SUBCONTRACTOR	Layne Environmental Services
SHEET 1 OF 2 SHEETS	
3. PROJECT	Landfill No. 1 Phase 1 RFI
4. LOCATION	CANNON AFB, New Mexico
5. NAME OF DRILLER	Dallas Werner
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75 HT
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	CME-75, 3 3/4" I.D. HSA; 5' CME Core Barrel (3 1/2" O.D.) 2 1/2" I.D. Stainless Steel Split Spoons
8. HOLE LOCATION	N 1200, E 570
9. SURFACE ELEVATION	4304.0
10. DATE STARTED	02/27/96
11. DATE COMPLETED	02/27/96
12. OVERBURDEN THICKNESS	14.0'
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	14.0'
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0	X	N/A	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	SVOC	PCB/PEST	TPH	DIOX/FURAN	TOC	HERB	21. TOTAL CORE REC.
2	2	2	2	2	2	N/A	N/A	2	%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
abandoned	grouted			Karen Phillips

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		(CL) - Silty Clay, dry, dark brown					Core run 1, 0'-4' Rec=3.6'/4.0' Time: 950
4303	1						
4302	2	(SM) - Silty Sand, dry to moist, reddish brown, very fine grained, rootlets, some large quartz grains, little red staining					No trash observed in core, native soil
4301	3	(SM) - Silty Sand, dry to moist, brown, fine grained, rootlets, calcareous streaks					
4300	4	(SM) - Silty Sand, light brown, fine grained					Core run 2, 4'-9' Rec=3.6'/4.0' Time: 955
4299	5						

HTW DRILLING LOG

PROJECT	INSPECTOR	HOLE NO.
Landfill No. 1 Phase 1 RFI	Karen Phillips	74-11
		SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4298	6	(SM) - Silty Sand, slightly Clayey, whitish, very calcareous, crumbly, fine grained					No trash observed
4297	7						
4296	8						
4295	9	Caliche - dry to moist, light orange, brown/ white, fine grained, calcareous patches, nodules throughout Caliche, dry, very hard, highly cemented, recrystallized					Core run 3, 9'-14' Rec=1.75'/5.0' Time: 1000
4294	10						
4293	11						
4292	12						Time: 1000
4291	13	(SM) - Silty Sand, white/red-orange, dense caliche/nodules layers					
4290	14	T.D.=14'					

HTW DRILLING LOG

HOLE NO.	74-12
SHEET 1 OF 3 SHEETS	
1. COMPANY NAME	Woodward-Clyde Federal Services
2. DRILLING SUBCONTRACTOR	Layne Environmental Services
3. PROJECT	Landfill No. 1 Phase 1 RFI
4. LOCATION	CANNON AFB, New Mexico
5. NAME OF DRILLER	Dallas Werner
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75 HT
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	CME-75, 3 3/4" I.D. HSA; 5' CME Core Barrel (3 1/2" O.D.) 2 1/2" I.D. Stainless Steel Split Spoons
8. HOLE LOCATION	N 1038.90, E 602.56
9. SURFACE ELEVATION	4304.3
10. DATE STARTED	02/27/96
11. DATE COMPLETED	02/27/96
12. OVERBURDEN THICKNESS	15.0'
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	15.0'
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0	X	N/A	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	SVOC	PCB/PEST	TPH	DIOX/FURAN	TOC	HERB	21. TOTAL CORE REC.
2	2	2	2	2	2	N/A	N/A	2	%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
abandoned	grouted			Karen Phillips

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
304		(SM) - Silty Sand, dry, light tan, tiny calcareous specks throughout					Core run 1, 0'-4' Rec=4.0'/4.0' Time: 1050
	1						
4303							
		(SM) - Silty Sand, dry to moist, loose, reddish brown, very fine grained, red-orange, and brown grains					No trash observed in core
	2						
4302							
	3						
4301							
	4						Core run 2, 4'-9' Rec=3.8'/5.0' Time: 1100
4300							
	5						

HTW DRILLING LOG

PROJECT	INSPECTOR	HOLE NO.
Landfill No. 1 Phase 1 RFI	Karen Phillips	74-12
		SHEET 2 OF 3 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4299		(SM) - Silty Sand, dry, to moist, loose, brown-gray, very fine grained					
4298	6						
4297	7	(SM) - Silty Sand, dry to moist, loose, reddish brown, very fine grained					
		Caliche - dense, white, with reddish pink areas, caliche layers or nodules, silty, sand matrix					
4296	8						
295	9	Caliche - dry, white/light orange, hard caliche layers or irregular nodules, (highly cemented) in a silty orange, red, tan matrix, chalky, calcite around individual grains					Core run 3, 9'-13' Rec=3.6'/4.0' Time: 1105
4294	10						
4293	11						
4292	12						
4291	13	Same as above, very dense				44	N=>200 Rec=1.41'/1.41' Time: 1110
	14					100	

HTW DRILLING LOG

HOLE NO. 74-12

PROJECT: Landfill No. 1 Phase 1 RFI

INSPECTOR: Karen Phillips

SHEET 3 OF 3 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4290						100/5"	
	15	T.D. = 15′					
4289							
	16						
4288							
	17						
4287							
	18						
286							
	19						
4285							
	20						
4284							
	21						
4283							
	22						
4282							
	23						

/CORPS-B/05-21-96

PROJECT: 9C114LL1 Landfill No. 1 Phase 1 RFI

HOLE NO.: 74-12

HTW DRILLING LOG

HOLE NO.	74-13
SHEET 1 OF 2 SHEETS	

1. COMPANY NAME	Woodward-Clyde Federal Services
2. DRILLING SUBCONTRACTOR	Layne Environmental Services
3. PROJECT	Landfill No. 1 Phase 1 RFI
4. LOCATION	CANNON AFB, New Mexico
5. NAME OF DRILLER	Dallas Werner
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75 HT
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	CME-75, 3 3/4" I.D. HSA; 5' CME Core Barrel (3 1/2" O.D.) 2 1/2" I.D.; Stainless Steel Split Spoons
8. HOLE LOCATION	N 1119.98, E 569.74
9. SURFACE ELEVATION	4304.5
10. DATE STARTED	02/27/96
11. DATE COMPLETED	02/27/96
12. OVERBURDEN THICKNESS	14.0'
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	14.0'
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0	X	N/A	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	SVOC	PCB/PEST	TPH	DIOX/FURAN	TOC	HERB	21. TOTAL CORE REC.
4	4	4	4	4	4	N/A	N/A	4	%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
abandoned	grouted			Nicholson/Phillips

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4304		(SM) - Silty Sand, fine grained, calcareous, with caliche nodules, tan	PID=0.0 ppm				Rec=2.3'/4.0'
	1						
4303							
	2						
4302							
	3	Burned wood, charcoal, layer ~6" thick					
4301		Sand, fine grained, tan, brown, occasional black specks					
	4	(SM) - Silty Sand, fine grained, light reddish brown, slightly calcareous	PID=0.0 ppm		CAN074-7413-1004 CAN074-7413-1464	6 9	Base of landfill at 4' Began split spoon N=20 Rec=2.0'/2.0' Time: 1427 Analyzed for (VOCs,
300							
	5						

HTW DRILLING LOG

HOLE NO. 74-13

PROJECT: Landfill No. 1 Phase 1 RFI

INSPECTOR: Nicholson/Phillips

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4299						11	List A)
						10	
	6	Same as above	PID=3.3 ppm			6	N=24 Rec=2.0'/2.0' Time: 1440
4298						10	
	7					14	
4297						17	
	8	Same as above	PID=1.4 ppm		CAN074-7413-1008	9	N=34 Rec=2.0'/2.0' Time: 1446 Analyzed for (VOCs, List A)
4296						15	
	9	Caliche - medium dense, caliche, dry, white-tan, crumbly, chalky, very calcareous				19	
4295						16	
	10		PID=1.0 ppm			9	N=34 Rec=1.3'/2.0' Time: 1452
4294						12	
	11	(SM) - Silty Sand, dry, reddish brown, slightly calcareous, some white calcareous nodules				25	
4293		Caliche and Silty Sand, dry, white, light tan, crumbly, chalky, with hard cemented areas, very calcareous				26	
	12	(SM) - Silty Sand, very dense, reddish brown, calcareous, white areas, very fine grained, quartz grains, orange and red grains	PID=1.0 ppm		CAN074-7413-1012	17	N=>149 Rec=1.41'/1.41' Time: 1459 Analyzed for (VOCs, List A)
4292						49	
	13					100/5"	
291							
	14	T.D.=14.0'					

HTW DRILLING LOG

HOLE NO.	74-14
SHEET 1 OF 3 SHEETS	
1. COMPANY NAME	Woodward-Clyde Federal Services
2. DRILLING SUBCONTRACTOR	Layne Environmental Services
3. PROJECT	Landfill No. 1 Phase 1 RFI
4. LOCATION	CANNON AFB, New Mexico
5. NAME OF DRILLER	Dallas Werner
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75 HT
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	CME-75, 3 3/4" I.D. HSA; 5' CME Core Barrel (3 1/2" O.D.) 2 1/2" I.D. Stainless Steel Split Spoons
8. HOLE LOCATION	N 661.96, E 695.68
9. SURFACE ELEVATION	4298.7
10. DATE STARTED	02/27/96
11. DATE COMPLETED	02/27/96
12. OVERBURDEN THICKNESS	16.0'
13. DEPTH DRILLED INTO ROCK	N/A
14. TOTAL DEPTH OF HOLE	16.0'
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	N/A
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0	X	N/A	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	SVOC	PCB/PEST	TPH	DIOX/FURAN	TOC	HERB	21. TOTAL CORE REC.
4	4	4	4	4	4	N/A	N/A	4	%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
abandoned	grouted			Karen Phillips

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		(CL) - Clay, dark gray					Core run 1, 0'-4' Rec=3.25'/4.0' Time: 1555
4298	1	(SM) - Silty Sand, dry to moist, reddish brown, fine grained					
4297	2						
		(CL) - Silty Sandy Clay, burned wood, glass, small pieces of brick, small charcoal cinders, some gravels					
4296	3						
4295	4	Same as above, with charcoal cinders				2	N=7 Rec=2.0'/2.0' Time: 0846
4294	5					2	

HTW DRILLING LOG

HOLE NO. 74-14

PROJECT: Landfill No. 1 Phase 1 RFI

INSPECTOR: Karen Phillips

SHEET 2 OF 3 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		(SM) - Silty Sand, limonite, caliche nodules				5	Base of landfill at 5.5'
4293		Caliche, loose, dry, white, crumbly, chalky				12	
	6	Caliche - loose, dry, white, crumbly, very calcareous, not cemented, few caliche nodules (1/2") in matrix	PID=0.1 ppm		CAN074-7414-1006 CAN074-7414-1404	5	N=36 Rec=2.0'/2.0' Time: 1610 Analyzed for (VOCs, List A)
4292						15	
	7					21	
4291						24	
	8	Caliche - medium dense, dry to moist, white, chalky, some highly cemented areas/layers throughout, some clay, very fine grained, thinly bedded	PID=0.0 ppm			17	N=82 Rec=2.0'/2.0' Time: 1616
4290						35	
	9					47	
4289						46	
	10	Same as above	PID=1.2 ppm		CAN074-7414-1010	19	N=96 Rec=1.8'/2.0' Time: 1624
4288						46	
	11					50	
4287						50	
	12	Caliche - medium dense, dry to moist, white, light orange, pink, chalky, little areas of red, not well cemented	PID=0.0 ppm			21	N=45 Rec=1.5'/2.0' Time: 1631
4286						22	
	13					23	
4285						16	
	14						

HTW DRILLING LOG

PROJECT	INSPECTOR	HOLE NO.
Landfill No. 1 Phase 1 RFI	Karen Phillips	74-14
		SHEET 3 OF 3 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4284	15	(SM) - Silty Sand, dense, dry to moist, pink, white, very calcareous, highly cemented nodules or layers, medium grained quartz, little red grains, quartz, calcite cement surrounding grains	PID = 0.0 ppm		CAN074-7414-1014	19 33 39 41	N = 72 Rec = 2.0'/2.0' Time: 1640
4283	16	T.D. = 16'					
4282	17						
4281	18						
4280	19						
4279	20						
4278	21						
4277	22						
276	23						

HTW DRILLING LOG

HOLE NO.	74-15
1. COMPANY NAME	Woodward-Clyde Federal Services
2. DRILLING SUBCONTRACTOR	Layne Environmental Services
SHEET 1 OF 2 SHEETS	
3. PROJECT	Landfill No. 1 Phase 1 RFI
4. LOCATION	CANNON AFB, New Mexico
5. NAME OF DRILLER	Dallas Werner
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75 HT
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	CME-75, 3 3/4" I.D. HSA; 5' CME Core Barrel (3 1/2" O.D.) 2 1/2" I.D.; Stainless Steel Split Spoons
8. HOLE LOCATION	N 648.64, E 657.41
9. SURFACE ELEVATION	4299.2
10. DATE STARTED	02/28/96
11. DATE COMPLETED	02/28/96
12. OVERBURDEN THICKNESS	14.0'
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	14.0'
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0	X	N/A	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	SVOC	PCB/PEST	TPH	DIOX/FURAN	TOC	HERB	21. TOTAL CORE REC.
3	3	3	3	3	3	N/A	N/A	3	%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
abandoned	grouted			Karen Phillips

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
299		FILL - Sandy Silty Clay, loose, dark brown, mixed with charcoal cinders, little burned wood					Core run 1, 0'-4' Rec=3.0'/4.0' Time: 830
4298	1						
4297	2						
4296	3						
	4	(CL) - Sandy Silty Clay, reddish brown					
4295		(CL) - Silty Clay, stiff, moist, brown, slightly calcareous	PID=0.0 ppm			2 5	N=12 Rec=2.0'/2.0' Time: 846 Analyzed for (VOCs, List A)
	5						

/CORPS-B/07-30-96

PROJECT: 9C114LL1 Landfill No. 1 Phase 1 RFI

HOLE NO.: 74-15

HTW DRILLING LOG

HOLE NO.	74-15
SHEET 2 OF 2 SHEETS	

PROJECT: Landfill No. 1 Phase 1 RFI

INSPECTOR: Karen Phillips

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4294		(CL) - Silty Clay, stiff, dry to moist, white/light orange, very fine grained			CAN074-7415-1004	7 11	
4293	6	Caliche - very stiff, dry to moist, light orange, white, calcareous patches, calcareous	PID=0.0 ppm			6 12	N=28 Rec=1.0'/2.0' Time: 0855
4292	7					14 15	
4291	8	Same as above	PID=0.0 ppm		CAN074-7415-1008	7 12	N=24 Rec=2.0'/2.0' Time: 0905 Analyzed for (VOCs, List A)
4290	9					12 12	
4289	10	Same as above	PID=1.0 ppm			10 12	N=18 Rec=1.58'/2.0' Time: 910
4288	11	(SM) - Silty Sand, medium dense, moist, reddish brown, small numerous calcareous nodules throughout				6 6	
4287	12	Caliche - dense, dry to moist, light orange, white, thinly bedded, chalky, calcareous, not highly cemented, crumbly	PID=0.8 ppm		CAN074-7415-1012	18 52	N=102 Rec=1.67'/2.0' Time: 915 Analyzed for (VOCs, List A)
4286	13					50 60	
	14	T.D.=14'					

HTW DRILLING LOG

HOLE NO.	74-17
1. COMPANY NAME	Woodward-Clyde Federal Services
2. DRILLING SUBCONTRACTOR	Layne Environmental Services
SHEET 1 OF 2 SHEETS	
3. PROJECT	Landfill No. 1 Phase 1 RFI
4. LOCATION	CANNON AFB, New Mexico
5. NAME OF DRILLER	Dallas Werner
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75 HT
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	CME-75, 3 3/4" I.D. HSA; 5' CME Core Barrel (3 1/2" O.D.) 2 1/2" I.D. Stainless Steel Split Spoons
8. HOLE LOCATION	N 1172.51, E 545.94
9. SURFACE ELEVATION	4304.2
10. DATE STARTED	02/28/96
11. DATE COMPLETED	02/28/96
12. OVERBURDEN THICKNESS	14.0'
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	14.0'
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0	X	N/A	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	SVOC	PCB/PEST	TPH	DIOX/FURAN	TOC	HERB	21. TOTAL CORE REC.
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
abandoned	grouted			Karen Phillips

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
304		(SM) - Silty Sand, dry, dark brown rootlets, calcareous, caliche nodules					Core run 1, 0'-4' Rec=2.8'/4.0' Time: 1630
		(CL) - Silty Sandy Clay, stiff, dry, dark brown					
	1						1
4303							
	2						2
4302							
		(SP) - Sand, dry, reddish brown to light brown, very fine grained					
	3						3
4301							
	4						4
4300		(SM) - Silty Sand, dry, light brown, very fine grained					Core run 2, 4'-9' Rec=3.0'/4.0' Time: 1635
	5						5

HTW DRILLING LOG

HOLE NO.	74-17
PROJECT	Landfill No. 1 Phase 1 RFI
INSPECTOR	Karen Phillips
SHEET	2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4299							
	6						
4298		Caliche - dry, white, very calcareous, calcium carbonate cement, reddish near 8'-8 1/2'					
	7						
4297							
	8						
4296							
		Caliche - dense, white, highly cemented					
	9	(SM) - Silty Sand, slightly Clayey, dry, tan-pink and white, caliche nodules (<1/2"), very calcareous					Core run 3, 9'-14' Rec=4.0'/5.0' Time: 1640
295							
	10						
4294							
	11						
4293							
	12						
4292							
	13						
4291							
	14	T.D. = 14'					

/CORPS-B/05-30-96

PROJECT: 9C114LL1 Landfill No. 1 Phase 1 RFI

HOLE NO.: 74-17

HTW DRILLING LOG

HOLE NO.	74-18
1. COMPANY NAME	Woodward-Clyde Federal Services
2. DRILLING SUBCONTRACTOR	Layne Environmental Services
SHEET 1 OF 3 SHEETS	
3. PROJECT	Landfill No. 1 Phase 1 RFI
4. LOCATION	CANNON AFB, New Mexico
5. NAME OF DRILLER	Dallas Werner
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75 HT
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	CME-75, 3 3/4" I.D. HSA; 5' CME Core Barrel (3 1/2" O.D.) 2 1/2" I.D. Stainless Steel Split Spoons
8. HOLE LOCATION	N 1115.97, E 623.71
9. SURFACE ELEVATION	4305.4
10. DATE STARTED	02/29/96
11. DATE COMPLETED	02/29/96
12. OVERBURDEN THICKNESS	17.0'
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	17.0'
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0	X	N/A	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	SVOC	PCB/PEST	TPH	DIOX/FURAN	TOC	HERB	21. TOTAL CORE REC.
5	5	5	5	5	5	N/A	N/A	5	%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
abandoned	grouted			Nicholson/Phillips

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
+305		FILL - Silty Sand, fine grained, dry, tan, white, caliche nodules up to 1/4", calcareous, slightly gravelly, with roots in upper 6"	PID=0.2 ppm				Core run 1, 0'-4' Rec=4.0'/4.0' Time: 0900
	1						
4304							
	2						
4303							
	3	FILL - Sand, fine grained, orange-brown, calcareous, dry, with occasional black spots					
4302							
	4	A little burned wood and roofing material, 6" thick	PID=4.0 ppm				Core run 2, 4'-9' Rec-N.A.
4301		(SP) - Sand, dry, red-brown, fine grained, calcareous, with occasional white stringers	PID=0.0 ppm				
	5						

HTW DRILLING LOG

PROJECT	INSPECTOR	HOLE NO.
Landfill No. 1 Phase 1 RFI	Nicholson/Phillips	74-18
		SHEET 2 OF 3 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4300			PID=5.3 ppm		CAN074-7418-1005		Sample collected from core barrel Analyzed for (VOCs, List A) Time: 910
4299	6						
4298	7						
4297	8						
296	9	(SM) - Silty Sand, very dense, dry, tan/pinkish white, very fine grained, very calcareous, caliche nodules, (<1/2")	PID=5.0 ppm		CAN074-7418-1009	40 80 64 36	Began split-spoon sampling N=144 Rec=2.0'/2.0' Time: 918
4295	10						
4294	11	(SM) - Silty Sand, medium dense, dry, tan/pinkish white, very fine grained, calcareous, caliche nodules, various sizes up to 1")	PID=4.4 ppm			6 24 22 19	N=46 Rec=2.0'/2.0' Time: 0930
4293	12						
4292	13	(SP) - Sand, medium dense, moist, reddish brown, fine grained Caliche - medium dense, whitish pink, very fine grained, chalky, very calcareous	PID=4.1 ppm			9 16	N=46 Rec=2.0'/2.0' Time: 0940
	14						

HTW DRILLING LOG

HOLE NO. 74-18

PROJECT: Landfill No. 1 Phase 1 RFI

INSPECTOR: Nicholson/Phillips

SHEET 3 OF 3 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4291					CAN074-7418-1015 CAN074-7418-1485 CAN074-7818-1405	30	
	15	Same as above	PID = 4.1 ppm			58	
4290						50	N = >100 Rec = 1.16'/1.16' Time: 940 Drove another split-spoon
	16					100/4"	
4289						100/4"	
	17	T.D. = 17'					
4288							
	18						
4287							
	19						
4286							
	20						
4285							
	21						
4284							
	22						
4283							
	23						

HTW DRILLING LOG

HOLE NO.	74-19
1. COMPANY NAME	Woodward-Clyde Federal Services
2. DRILLING SUBCONTRACTOR	Layne Environmental Services
SHEET 1 OF 2 SHEETS	
3. PROJECT	Landfill No. 1 Phase 1 RFI
4. LOCATION	CANNON AFB, New Mexico
5. NAME OF DRILLER	Dallas Werner
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75 HT
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	CME-75, 3 3/4" I.D. HSA; 5' CME Core Barrel (3 1/2" O.D.) 2 1/2" I.D.; Stainless Steel Split Spoons
8. HOLE LOCATION	N 689.49, E 592.12
9. SURFACE ELEVATION	4301.4
10. DATE STARTED	02/29/96
11. DATE COMPLETED	02/29/96
12. OVERBURDEN THICKNESS	14.0'
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	14.0'
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0	X	N/A	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	SVOC	PCB/PEST	TPH	DIOX/FURAN	TOC	HERB	21. TOTAL CORE REC.
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
abandoned	grouted			Karen Phillips

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
301		(SM) - Silty Sand, dry, reddish brown, rootlets					Core run 1, 0'-4' Rec=2.5'/4.0' Time: 1030
	1						
4300							No trash observed
	2						
4299							
	3						
4298		Same as above, slightly calcareous					
	4						Core run 2, 4'-9' Rec=4.0'/5.0' Time: 1040
4297		(SM) - Silty Sand, dry, dark brown, calcareous in small patches throughout					
	5						

HTW DRILLING LOG

HOLE NO.	74-19
PROJECT	Landfill No. 1 Phase 1 RFI
INSPECTOR	Karen Phillips
SHEET	2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4296							
	6						No trash observed
4295		(SM) - Silty Sand, slightly Clayey, dry, whitish tan, very calcareous, fine grained					
	7						
4294							
	8						
4293							
	9	(SM) - Silty Sand, dry, reddish brown, white, calcareous streaks, fine grained					Core run 3, 9'-14' Rec=3.5'/5.0' Time: 1045
4292		(SM) - Silty Sand, dry, whitish tan, very calcareous, fine grained					
	10						
4291							
	11						
4290							
	12						
4289							
	13						
4288							
	14	T.D. = 14'					

/CORPS-B/05-22-96

PROJECT: 9C114LL1 Landfill No. 1 Phase 1 RFI

HOLE NO.: 74-19

HTW DRILLING LOG

HOLE NO.	74-20
SHEET 1 OF 2 SHEETS	

1. COMPANY NAME	Woodward-Clyde Federal Services
2. DRILLING SUBCONTRACTOR	Layne Environmental Services
3. PROJECT	Landfill No. 1 Phase 1 RFI
4. LOCATION	CANNON AFB, New Mexico
5. NAME OF DRILLER	Dallas Werner
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75 HT
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	CME-75, 3 3/4" I.D. HSA; 5' CME Core Barrel (3 1/2" O.D.) 2 1/2" I.D. Stainless Steel Split Spoons
8. HOLE LOCATION	N 697.13, E 730.83
9. SURFACE ELEVATION	4298.5
10. DATE STARTED	02/29/96
11. DATE COMPLETED	02/29/96
12. OVERBURDEN THICKNESS	14.0'
13. DEPTH DRILLED INTO ROCK	N/A
14. TOTAL DEPTH OF HOLE	14.0'
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	N/A
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0	X	N/A	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	SVOC	PCB/PEST	TPH	DIOX/FURAN	TOC	HERB	21. TOTAL CORE REC.
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
abandoned	grouted			Karen Phillips

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4298		(CL) - Silty Sandy Clay, stiff, dry, dark brown to tan, many roots, slightly calcareous					Core run 1, 0'-4' Rec=3.5'/4.0' Time: 1130
	1						
4297		(CL) - Silty Clay, stiff, dry, dark brown, few calcareous nodules, small roots					
	2						
4296		(SP) - Sand, dry to moist, reddish brown, few calcareous nodules, (<1/2"), few roots					
	3						
4295							
	4						Core run 2, 4'-9' Rec=4.0'/5.0' Time: 1135
294							
	5						

HTW DRILLING LOG

HOLE NO. 74-20

PROJECT: Landfill No. 1 Phase 1 RFI

INSPECTOR: Karen Phillips

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
		Same as above					
4293							
	6	(SM) - Silty Sand, brown, dry, slightly calcareous, few caliche nodules, very fine grained					
4292		(SM) - Silty Sand, whitish/tan and brown, very calcareous, fine grained, calcite around grains					
	7						
4291		(SM) - Silty Sand, slightly Clayey, dry, brown, many small calcareous nodules throughout, speckled					
	8						
4290							
	9	(SM) - Silty Sand, dry to moist, whitish tan to brown, very calcareous in white areas, small calcareous nodules throughout					Core run 3, 9'-14' Rec=5.0'/5.0' Time: 1140
4289							
	10						
4288							
	11	(SM) (SC) - Silty Clayey sand, dry to moist, dark brown to red-tan, calcareous specs, very fine grained					
4287							
	12	(SM) - Silty Sand, dry to moist, pink to tan and white, calcareous areas or pods throughout, calcite around grains, few highly cemented caliche nodules near base					
4286							
	13						
285							
	14	T.D.=14'					

HTW DRILLING LOG

HOLE NO.	74-21
1. COMPANY NAME	Woodward-Clyde Federal Services
2. DRILLING SUBCONTRACTOR	Layne Environmental Services
SHEET 1 OF 2 SHEETS	
3. PROJECT	Landfill No. 1 Phase 1 RFI
4. LOCATION	CANNON AFB, New Mexico
5. NAME OF DRILLER	Dallas Werner
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75 HT
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	CME-75, 3 3/4" I.D. HSA; 5' CME Core Barrel (3 1/2" O.D.) 2 1/2" I.D. Stainless Steel Split Spoons
8. HOLE LOCATION	N 1200.96, E 649.59
9. SURFACE ELEVATION	4304.2
10. DATE STARTED	02/29/96
11. DATE COMPLETED	02/29/96
12. OVERBURDEN THICKNESS	14.0'
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	14.0'
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0	X	N/A	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	SVOC	PCB/PEST	TPH	DIOX/FURAN	TOC	HERB	21. TOTAL CORE REC.
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
abandoned	grouted			Karen Phillips

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4304		(SC) - Silty Clayey Sand, roots, dry, calcareous spots throughout, fine grained, subrounded					Core Run 1, 0'-4' Rec=3.0'/4.0' Time: 1355
	1						
4303							No trash observed
	2						
4302							
	3	(CL) - Stiff, dry, dark brown					
4301							
	4	(SM) - Silty Sand, slightly Clayey, dry to moist, brown					
4300		(SM) - Silty Sand, dry to moist, reddish brown, fine grained					Core run 2, 4'-9' Rec=3.5'/5.0' Time: 1400
	5						

HTW DRILLING LOG

HOLE NO. 74-21

PROJECT: Landfill No. 1 Phase 1 RFI

INSPECTOR: Karen Phillips

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4299							
	6						
4298							No trash, native soil
	7						
4297							
	8						
4296							
	9	Same as above					Core run 3, 9'-14' Rec=5.0'/5.0' Time: 1410
4295							
	10						
4294							
	11						
4293							
	12						
4292							
	13	(SM) - Silty Sand, dry to moist, light orange, pinkish white, very calcareous, some orange and red grains, trace of black grains, soft					
4291							
	14	T.D. = 14'					

/CORPS-B/05-22-96

PROJECT: 9C114LL1 Landfill No. 1 Phase 1 RFI

HOLE NO.: 74-21

HTW DRILLING LOG

HOLE NO.	74-22
SHEET 1 OF 2 SHEETS	
1. COMPANY NAME	Woodward-Clyde Federal Services
2. DRILLING SUBCONTRACTOR	Layne Environmental Services
3. PROJECT	Landfill No. 1 Phase 1 RFI
4. LOCATION	CANNON AFB, New Mexico
5. NAME OF DRILLER	Dallas Werner
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75 HT
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	CME-75, 3 3/4" I.D. HSA; 5' CME Core Barrel (3 1/2" O.D.) 2 1/2" I.D. Stainless Steel Split Spoons
8. HOLE LOCATION	N 1282.13, E 662.33
9. SURFACE ELEVATION	4302.9
10. DATE STARTED	02/29/96
11. DATE COMPLETED	02/29/96
12. OVERBURDEN THICKNESS	10.0'
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	10.0'
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0	X	N/A	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	SVOC	PCB/PEST	TPH	DIOX/FURAN	TOC	HERB	21. TOTAL CORE REC.
N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	N/A	%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
abandoned	grouted			Karen Phillips

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4302	1	(CL) - Silty Clay, stiff, brown, rootlets, calcareous nodules throughout, dark brown spots, mottled					Core run 1, 0'-4' Rec=3.8'/4.0' Time: 1435
4301	2	(SM) - Silty Sand, reddish brown, dry, fine grained					No trash encountered
4300	3						
4299	4	(SC) - Silty Clayey Sand, dense, dark reddish brown, fine grained					Core run 2, 4'-9' Rec=5.0'/5.0' Time: 1445
4298	5						

HTW DRILLING LOG

HOLE NO. 74-22

PROJECT: Landfill No. 1 Phase 1 RFI

INSPECTOR: Karen Phillips

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4297	6	Same as above, with numerous calcareous stringers					
4296	7						
4295	8	(SC) - Clayey Silt Sand, dark brown, very dense, calcareous stringers					
4294	9						Core run 3, 9'-10 Rec=1.0'/1.0' Time: 1455
4293	10	Caliche, dense, white, highly cemented T.D.=10'					Hit something hard, decided not to drill further
4292	11						
4291	12						
4290	13						
4289	14						

/CORPS-B/05-30-96

PROJECT: 9C114LL1 Landfill No. 1 Phase 1 RFI

HOLE NO.: 74-22

HTW DRILLING LOG

HOLE NO.	74-23
SHEET 1 OF 2 SHEETS	
1. COMPANY NAME	Woodward-Clyde Federal Services
2. DRILLING SUBCONTRACTOR	Layne Environmental Services
3. PROJECT	Landfill No. 1 Phase 1 RFI
4. LOCATION	CANNON AFB, New Mexico
5. NAME OF DRILLER	Dallas Werner
6. MANUFACTURER'S DESIGNATION OF DRILL	CME-75 HT
7. SIZES AND TYPES OF DRILLING AND SAMPLING EQUIPMENT	CME-75, 3 3/4" I.D. HSA; 5' CME Core Barrel (3 1/2" O.D.) 2 1/2" I.D. Stainless Steel Split Spoons
8. HOLE LOCATION	N 976.67, E 539.05
9. SURFACE ELEVATION	4303.6
10. DATE STARTED	02/29/96
11. DATE COMPLETED	02/29/96
12. OVERBURDEN THICKNESS	14.0'
15. DEPTH GROUNDWATER ENCOUNTERED	N/A
13. DEPTH DRILLED INTO ROCK	N/A
16. DEPTH TO WATER AND ELAPSED TIME AFTER DRILLING COMPLETED	N/A
14. TOTAL DEPTH OF HOLE	14.0'
17. OTHER WATER LEVEL MEASUREMENTS (SPECIFY)	N/A

18. GEOTECHNICAL SAMPLES	DISTURBED	UNDISTURBED	19. TOTAL NUMBER OF CORE BOXES
0	X	N/A	N/A

20. SAMPLES FOR CHEMICAL ANALYSIS	VOC	METALS	SVOC	PCB/PEST	TPH	DIOX/FURAN	TOC	HERB	21. TOTAL CORE REC.
1	1	1	1	1	1	N/A	N/A	1	%

22. DISPOSITION OF HOLE	BACKFILLED	MONITORING WELL	OTHER (SPECIFY)	23. SIGNATURE OF INSPECTOR
abandoned	grouted			Karen Phillips

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4303	1	(SM) - Silty Sand, dry, dark brown, very fine grained, little pieces of burned wood intermixed, rootlets, trace of small calcareous nodules, gravels					Core run 1, 0'-4' Rec=2.5'/4.0' Time: 1715
4302	2						
4301	3						
4300	4	(SP) - Sand, dry, reddish brown, fine grained					
299	5	Caliche - medium dense, whitish and red, very fine grained, very calcareous, calcareous nodules, pods throughout	PID=6.0 ppm		CAN074-7423-1004	7 10	N=23 Rec=2.0'/2.0' Time: 1720 Analyzed for (VOCs, List A)

HTW DRILLING LOG

HOLE NO. 74-23

PROJECT: Landfill No. 1 Phase 1 RFI

INSPECTOR: Karen Phillips

SHEET 2 OF 2 SHEETS

ELEV. a	DEPTH b	DESCRIPTION OF MATERIALS c	FIELD SCREENING RESULTS d	GEOTECH SAMPLE OR CORE BOX NO. e	ANALYTICAL SAMPLE NO. f	BLOW COUNTS g	REMARKS h
4298	6		PID=5.5 ppm			13 10 100/3"	N=>100 Rec=.25'/.25' Time: 1735
4297 4296	7						
4295	8 9	Caliche - medium dense, white, highly cemented	PID=16 ppm		CAN074-7423-1008	15 35 30 17	N=65 Rec=1.41'/2.0' Time: 1749 Analyzed for (VOCs, List A)
4294 4293	10 11	(SM) - Silty Sand, medium dense, dry to moist, white, pink, tan, very fine grained, very calcareous, thinly bedded, some red areas	PID=1.0 ppm			12 20 27 12	N=47 Rec=1.5'/2.0' Time: 1755
4292 4291	12 13	Same as above, calcareous nodules or layers throughout	PID=1.2 ppm		CAN074-7423-1012	18 21 24 42	N=45 Rec=2.0'/2.0' Time: 1800 Analyzed for (VOCs, List A)
290	14	T.D.=14'					

Project : 91C114LL1-2C File: INDX1.XLS

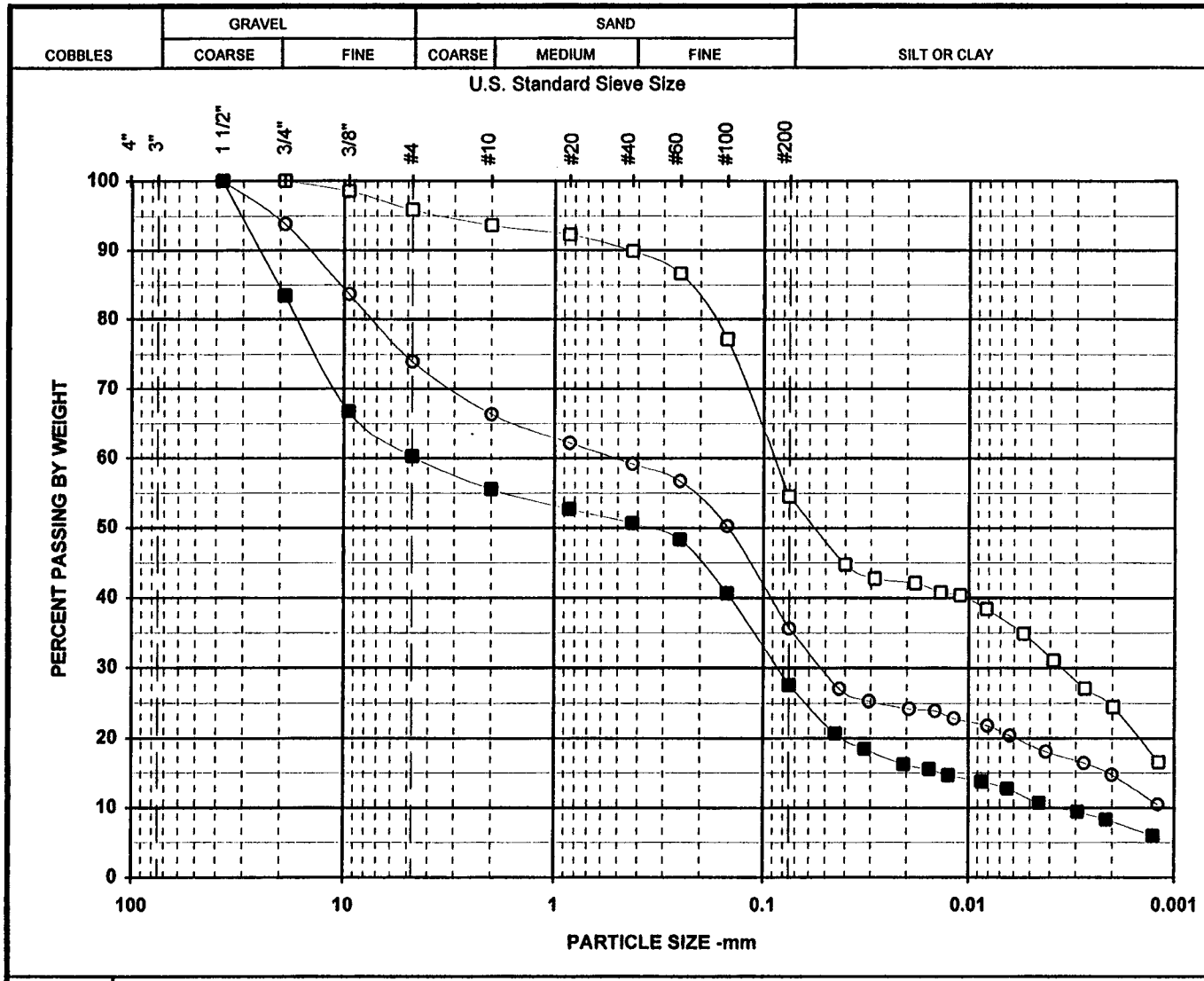
TABLE _____

LABORATORY TESTING ASSIGNMENT AND DATA SUMMARY

SAMPLE	DATE	TIME	IDENTIFICATION TESTS											REMARKS
			WATER CONTENT (%)	LIQUID LIMIT	PLASTIC LIMIT	PLAS. IND.	USCS SYMB. (1)	SIEVE MINUS NO. 200 (%)	HYDROMETER % MINUS 2 µm (%)	pH	ORGANIC CONTENT (440 °C) (%)	TOTAL UNIT WEIGHT (pcf)	SPECIFIC GRAVITY	
CAN074-7409-4016	2/21/96	1600	10.9	27	18	9	GC	14.5	4					
CAN074-7410-4048	2/21/96	1020	2.5		np		SP-SM	7.9	3					
CAN074-7406-4018	2/24/96	1620	11.9	40	22	18	SC	37.3	8					
CAN074-7401-4008	2/25/96	1034	6.5	24	12	12	CL	54.6	25					
CAN074-7407-4010	2/25/96	910	11.8	38	22	16	SC	27.5	8					
CAN074-7403-4010	2/26/96	1130	11.3	28	15	13	SC	35.7	15					
CAN074-7402-4010	2/26/96	1354	11.7	22	12	10	SC	47.3	17					

Note: (1) Plasticity of fines for USCS symbol based on visual observation unless Atterberg limits reported.

Prepared by: CMJ Reviewed by: 91 Date: 3/7/96



SYMBOL	DESCRIPTION AND REMARKS
□	light brown slightly plastic f. sandy silty CLAY, trace f. gravel to m. sand.
■	light brown c-f sandy GRAVEL, some silty clay.
○	light brown silty clayey c-f SAND, trace gravel.

Symbol	□	■	○
Boring	CAN074	CAN074	CAN074
Sample	7401	7407	7403
Spec	4008	4010	4010
Date	2/25/96	2/21/96	2/26/95
% +3"			
% Gravel	4.2	39.7	26.0
% SAND	41.3	32.7	38.3
% FINES	54.6	27.5	35.7
% -2μ	25	8	15
Cc			
Cu			
LL	24	38	28
PL	12	22	15
PI	12	16	13
USCS	CL	SC	SC
w (%)	6.5	11.8	11.3

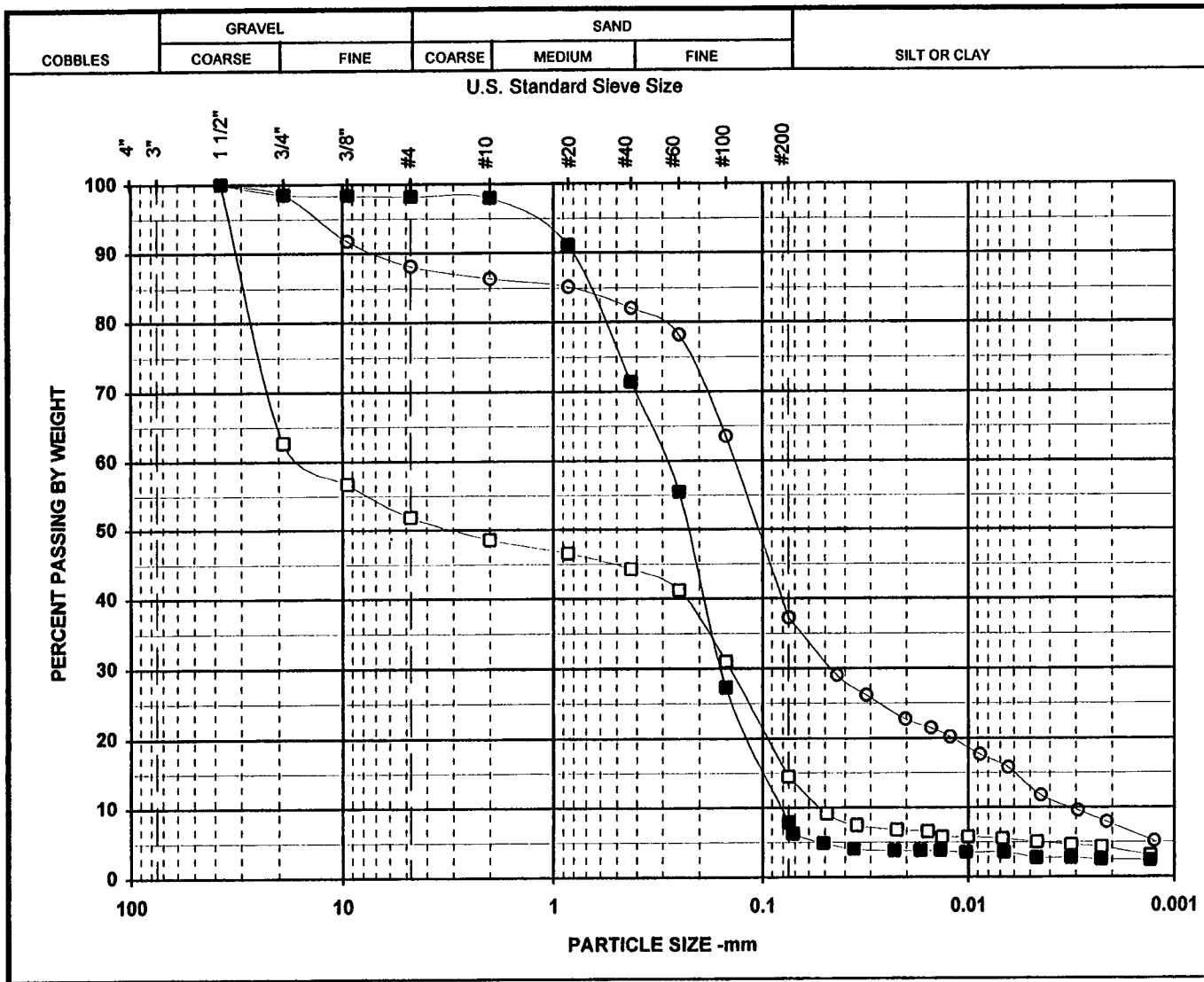
Particle Size	PERCENT FINER		
(Sieve #)	□	■	○
4"			
3"			
1 1/2"		100.0	100.0
3/4"	100.0	83.4	93.8
3/8"	98.5	66.7	83.7
4	95.8	60.3	74.0
10	93.6	55.6	66.4
20	92.3	52.7	62.2
40	89.9	50.7	59.2
60	86.6	48.3	56.8
100	77.2	40.7	50.3
200	54.6	27.5	35.7

PARTICLE SIZE DISTRIBUTION
Canon AFB

Project No.		
91C114LL1-2	March 1996	Figure

Woodward-Clyde

SIEV1B.XLS 3/7/96



SYMBOL	DESCRIPTION AND REMARKS
□	brown c-f sandy GRAVEL, some silty clay.
■	brown m-f SAND, trace gravel to c. sand and silt.
○	light brown silty clayey f. SAND, trace gravel and c-m sand.

Symbol	□	■	○
Boring	CAN074	CAN074	CAN074
Sample	7409	7410	7406
Spec	4016	4048	4018
Date	2/21/96	2/21/96	2/24/95
% +3"			
% Gravel	48.1	1.8	11.9
% SAND	37.4	90.3	50.9
% FINES	14.5	7.9	37.3
% -2μ	4	2	8
Cc		1.0	
Cu		3.6	
LL	27		40
PL	18	np	22
PI	9	np	18
USCS	GC	SP-SM	SC
w (%)	10.9	2.5	11.9

Particle Size	PERCENT FINER		
(Sieve #)	□	■	○
4"			
3"			
1 1/2"	100.0	100.0	100.0
3/4"	62.6	98.5	98.5
3/8"	56.7	98.4	91.8
4	51.9	98.2	88.1
10	48.6	97.9	86.3
20	46.6	91.1	85.1
40	44.3	71.4	82.1
60	41.2	55.5	78.2
100	31.0	27.3	63.5
200	14.5	7.9	37.3

PARTICLE SIZE DISTRIBUTION

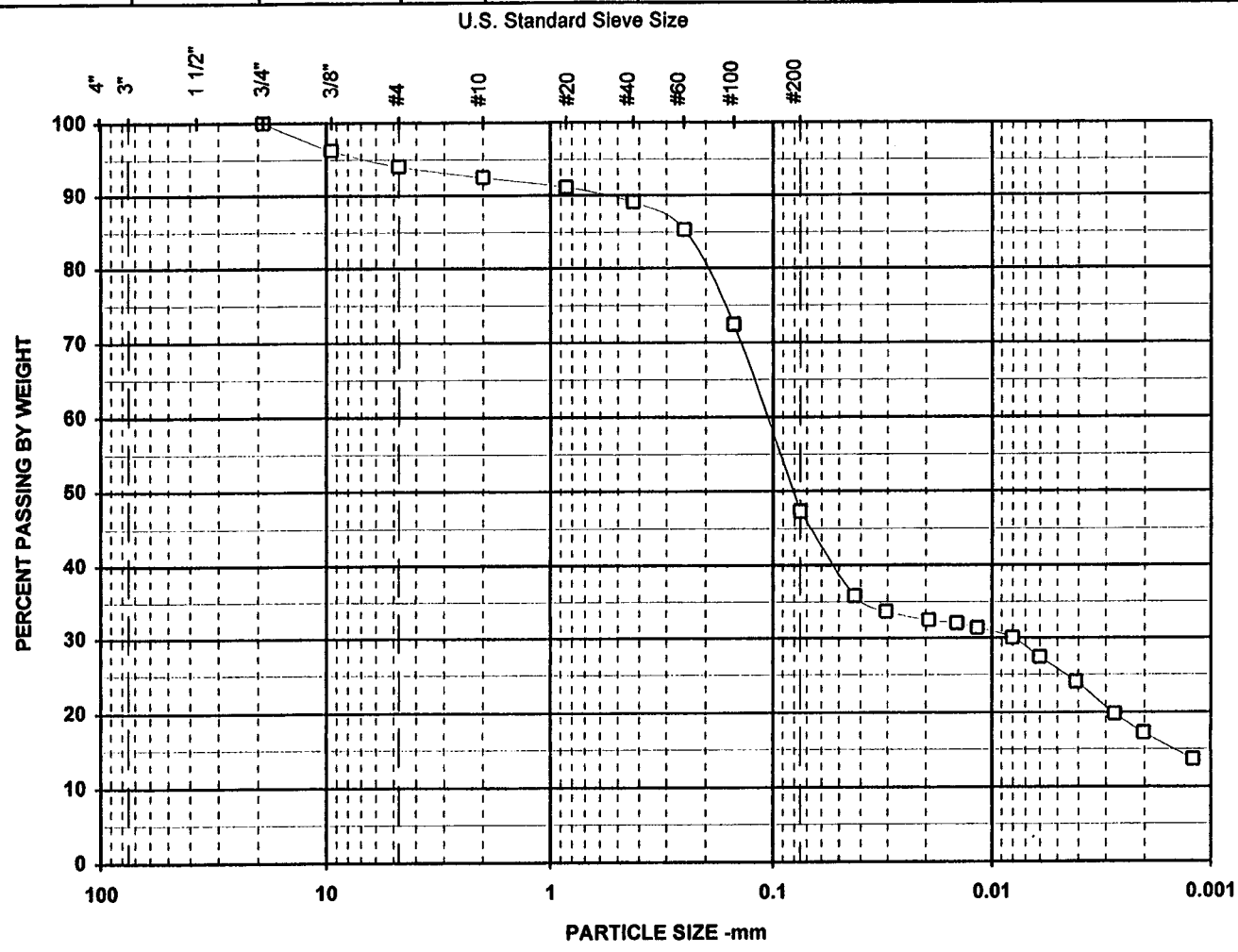
Canon AFB

Project No.		Figure
91C114LL1-2	March 1996	

Woodward-Clyde

SIEV1A.XLS 3/14/96

COBBLES	GRAVEL		SAND			SILT OR CLAY
	COARSE	FINE	COARSE	MEDIUM	FINE	



SYMBOL	DESCRIPTION AND REMARKS
□	light brown silty clayey f. SAND, trace f. gravel to c. sand.
■	
○	

Symbol	□	■	○
Boring	CAN074		
Sample	7402		
Spec	4010		
Date	2/26/96		
% +3"			
% Gravel	6.0		
% SAND	46.7		
% FINES	47.3		
% -2μ	17		
Cc			
Cu			
LL	22		
PL	12		
PI	10		
USCS	SC		
w (%)	11.7		

Particle Size	PERCENT FINER		
(Sieve #)	□	■	○
4"			
3"			
1 1/2"			
3/4"	100.0		
3/8"	96.2		
4	94.0		
10	92.5		
20	91.1		
40	89.0		
60	85.3		
100	72.4		
200	47.3		

PARTICLE SIZE DISTRIBUTION

Canon AFB

Project No.		Figure
91C114LL1-2	March 1996	

Woodward-Clyde

SIEV1C.XLS 3/6/96

APPENDIX D
VALIDATED ANALYTICAL RESULTS

PREFACE TO APPENDIX D

This appendix contains the validated analytical data and the chain-of-custody forms (COCs) for the field samples collected from Landfill No. 1, Cannon Air Force Base, Clovis, New Mexico. The data are presented in the table by chemical group as follows:

- Herb = Chlorinated herbicides
- Met = Metals
- Pest/PCB = Pesticide/PCBs
- SVOC = Semivolatile Organics
- VOC = Volatile Organics
- Wetchem = Cyanide, Total Organic Carbon, Total Petroleum Hydrocarbons

Within each chemical group, sample results are listed by soil boring followed by depth (feet below ground surface).

As part of the data validation process, the following validation qualifiers were used:

U Non-detect - The analyte was analyzed for, but was not detected above the reported sample quantitation limit.

J Estimated value - The analyte was positively identified; but the associated numerical value is the approximate concentration of the analyte in the sample.

NJ The analysis indicates the presence of an analyte that has been "tentatively identified" and the associated numerical value represents its approximate concentration.

UJ Estimated non-detect - The analyte was not detected above the reported sample quantitation limit. However, the reported quantitation limit is approximate and may or may not represent the actual limit of quantitation necessary to accurately and precisely measure the analyte in the sample.

R The sample results are rejected. Due to significant QA/QC problems the analysis is invalid and provides no information as to whether the analyte is present or not.

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
HERBICIDE	CAN074-7401-1018	0474710014SA	18-20	2,4,5-T		U	ug/kg	4.6
				2,4,5-TP (Silvex)		U	ug/kg	3.9
				2,4-D		U	ug/kg	28
				2,4-DB		U	ug/kg	120
				Dalapon		U	ug/kg	120
				Dicamba		U	ug/kg	12
				Dichlorprop		U	ug/kg	23
				Dinoseb		U	ug/kg	23
				MCPA		U	ug/kg	5800
				MCPP		U	ug/kg	5800
	CAN074-7402-1018	0475450002SA		2,4,5-T		U	ug/kg	4.5
				2,4,5-TP (Silvex)		U	ug/kg	3.9
				2,4-D		U	ug/kg	27
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	23
				Dinoseb		U	ug/kg	23
				MCPA		U	ug/kg	5700
				MCPP		U	ug/kg	5700
	CAN074-7403-1018	0475450001SA		2,4,5-T		U	ug/kg	4.4
				2,4,5-TP (Silvex)		U	ug/kg	3.7
				2,4-D		U	ug/kg	26
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	22
				Dinoseb		U	ug/kg	22
				MCPA		U	ug/kg	5500
				MCPP		U	ug/kg	5500
	CAN074-7404-1018	0474710011SA		2,4,5-T		U	ug/kg	4.3
				2,4,5-TP (Silvex)		U	ug/kg	3.7
				2,4-D		U	ug/kg	26
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	22
				Dinoseb		U	ug/kg	22
				MCPA		U	ug/kg	5400
				MCPP		U	ug/kg	5400
	CAN074-7405-1018	0474710009SA		2,4,5-T		U	ug/kg	4.5
				2,4,5-TP (Silvex)		U	ug/kg	3.8
				2,4-D		U	ug/kg	27
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	22
				Dinoseb		U	ug/kg	22
				MCPA		U	ug/kg	5600
				MCPP		U	ug/kg	5600
	CAN074-7405-1463	0474710010SA		2,4,5-T		U	ug/kg	4.4
				2,4,5-TP (Silvex)		U	ug/kg	3.8
				2,4-D		U	ug/kg	27
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
HERBICIDE	CAN074-7405-1463	0474710010SA	18-20	Dichlorprop		U	ug/kg	22
				Dinoseb		U	ug/kg	22
				MCPA		U	ug/kg	5600
				MCPP		U	ug/kg	5600
	CAN074-7406-1018	0474710012SA		2,4,5-T		U	ug/kg	4.3
				2,4,5-TP (Silvex)		U	ug/kg	3.7
				2,4-D		U	ug/kg	26
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	22
				Dinoseb		U	ug/kg	22
				MCPA		U	ug/kg	5400
				MCPP		U	ug/kg	5400
	CAN074-7407-1018	0474710013SA		2,4,5-T		U	ug/kg	4.5
				2,4,5-TP (Silvex)		U	ug/kg	3.8
				2,4-D		U	ug/kg	27
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	23
				Dinoseb		U	ug/kg	23
				MCPA		U	ug/kg	5600
				MCPP		U	ug/kg	5600
	CAN074-7408-1006	0474710001SA	6-8	2,4,5-T		U	ug/kg	4.4
				2,4,5-TP (Silvex)		U	ug/kg	3.7
				2,4-D		U	ug/kg	26
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	22
				Dinoseb		U	ug/kg	22
				MCPA		U	ug/kg	5500
				MCPP		U	ug/kg	5500
	CAN074-7408-1010	0474710003SA	10-12	2,4,5-T		U	ug/kg	4.4
				2,4,5-TP (Silvex)		U	ug/kg	3.8
				2,4-D		U	ug/kg	27
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	22
				Dinoseb		U	ug/kg	22
				MCPA		U	ug/kg	5500
				MCPP		U	ug/kg	5500
	CAN074-7408-1014	0474710004SA	14-16	2,4,5-T		U	ug/kg	4.6
				2,4,5-TP (Silvex)		U	ug/kg	3.9
				2,4-D		U	ug/kg	27
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	23
				Dinoseb		U	ug/kg	23
				MCPA		U	ug/kg	5700
				MCPP		U	ug/kg	5700
	CAN074-7408-1022	0474710005SA	22-22.75	2,4,5-T		U	ug/kg	4.7
				2,4,5-TP (Silvex)		U	ug/kg	4

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
HERBICIDE	CAN074-7408-1022	0474710005SA	22-22.75	2,4-D		U	ug/kg	28
				2,4-DB		U	ug/kg	120
				Dalapon		U	ug/kg	120
				Dicamba		U	ug/kg	12
				Dichlorprop		U	ug/kg	24
				Dinoseb		U	ug/kg	24
				MCPA		U	ug/kg	5900
				MCPP		U	ug/kg	5900
	CAN074-7408-1024	0474710006SA	24-25.4	2,4,5-T		U	ug/kg	4.4
				2,4,5-TP (Silvex)		U	ug/kg	3.8
				2,4-D		U	ug/kg	27
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	22
				Dinoseb		U	ug/kg	22
				MCPA		U	ug/kg	5600
				MCPP		U	ug/kg	5600
	CAN074-7408-1034	0474710007SA	34-36	2,4,5-T		U	ug/kg	4.1
				2,4,5-TP (Silvex)		U	ug/kg	3.5
				2,4-D		U	ug/kg	25
				2,4-DB		U	ug/kg	100
				Dalapon		U	ug/kg	100
				Dicamba		U	ug/kg	10
				Dichlorprop		U	ug/kg	21
				Dinoseb		U	ug/kg	21
				MCPA		U	ug/kg	5100
				MCPP		U	ug/kg	5100
	CAN074-7408-1044	0474710008SA	44-46	2,4,5-T		U	ug/kg	4.1
				2,4,5-TP (Silvex)		U	ug/kg	3.5
				2,4-D		U	ug/kg	25
				2,4-DB		U	ug/kg	100
				Dalapon		U	ug/kg	100
				Dicamba		U	ug/kg	10
				Dichlorprop		U	ug/kg	21
				Dinoseb		U	ug/kg	21
				MCPA		U	ug/kg	5100
				MCPP		U	ug/kg	5100
	CAN074-7408-1462	0474710002SA	6-8	2,4,5-T		U	ug/kg	4.4
				2,4,5-TP (Silvex)		U	ug/kg	3.7
				2,4-D		U	ug/kg	26
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	22
				Dinoseb		U	ug/kg	22
				MCPA		U	ug/kg	5500
				MCPP		U	ug/kg	5500
	CAN074-7409-1006	0474380009SA		2,4,5-T		U	ug/kg	4.4
				2,4,5-TP (Silvex)		U	ug/kg	3.8
				2,4-D		U	ug/kg	27
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	22
				Dinoseb		U	ug/kg	22

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
HERBICIDE	CAN074-7409-1006	0474380009SA	6-8	MCPA		U	ug/kg	5500
				MCPP		U	ug/kg	5500
	CAN074-7409-1010	0474380010SA	10-12	2,4,5-T		U	ug/kg	4.4
				2,4,5-TP (Silvex)		U	ug/kg	3.7
				2,4-D		U	ug/kg	26
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	22
				Dinoseb		U	ug/kg	22
				MCPA		U	ug/kg	5500
				MCPP		U	ug/kg	5500
	CAN074-7409-1014	0474380011SA	14-16	2,4,5-T		U	ug/kg	4.6
				2,4,5-TP (Silvex)		U	ug/kg	3.9
				2,4-D		U	ug/kg	28
				2,4-DB		U	ug/kg	120
				Dalapon		U	ug/kg	120
				Dicamba		U	ug/kg	12
				Dichlorprop		U	ug/kg	23
				Dinoseb		U	ug/kg	23
				MCPA		U	ug/kg	5800
				MCPP		U	ug/kg	5800
	CAN074-7409-1020	0474380012SA	20-20.5	2,4,5-T		U	ug/kg	4.5
				2,4,5-TP (Silvex)		U	ug/kg	3.8
				2,4-D		U	ug/kg	27
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	22
				Dinoseb		U	ug/kg	22
				MCPA		U	ug/kg	5600
				MCPP		U	ug/kg	5600
	CAN074-7409-1024	0474380013SA	24-24.75	2,4,5-T		U	ug/kg	4.6
				2,4,5-TP (Silvex)		U	ug/kg	3.9
				2,4-D		U	ug/kg	28
				2,4-DB		U	ug/kg	120
				Dalapon		U	ug/kg	120
				Dicamba		U	ug/kg	12
				Dichlorprop		U	ug/kg	23
				Dinoseb		U	ug/kg	23
				MCPA		U	ug/kg	5800
				MCPP		U	ug/kg	5800
	CAN074-7409-1034	0474380014SA	34-36	2,4,5-T		U	ug/kg	4.3
				2,4,5-TP (Silvex)		U	ug/kg	3.6
				2,4-D		U	ug/kg	26
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	21
				Dinoseb		U	ug/kg	21
				MCPA		U	ug/kg	5300
				MCPP		U	ug/kg	5300
	CAN074-7409-1044	0474380015SA	44-46	2,4,5-T		U	ug/kg	4.1
				2,4,5-TP (Silvex)		U	ug/kg	3.5
				2,4-D		U	ug/kg	25
				2,4-DB		U	ug/kg	100

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
HERBICIDE	CAN074-7409-1044	0474380015SA	44-46	Dalapon		U	ug/kg	100
				Dicamba		U	ug/kg	10
				Dichlorprop		U	ug/kg	21
				Dinoseb		U	ug/kg	21
				MCPA		U	ug/kg	5100
				MCPP		U	ug/kg	5100
	CAN074-7410-1010	0474380001SA	10-12	2,4,5-T		U	ug/kg	4.5
				2,4,5-TP (Silvex)		U	ug/kg	3.9
				2,4-D		U	ug/kg	27
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	23
				Dinoseb		U	ug/kg	23
				MCPA		U	ug/kg	5700
				MCPP		U	ug/kg	5700
	CAN074-7410-1016	0474380002SA	16-16.9	2,4,5-T		U	ug/kg	4.3
				2,4,5-TP (Silvex)		U	ug/kg	3.7
				2,4-D		U	ug/kg	26
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	22
				Dinoseb		U	ug/kg	22
				MCPA		U	ug/kg	5400
				MCPP		U	ug/kg	5400
	CAN074-7410-1020	0474380003SA	20-20.9	2,4,5-T		U	ug/kg	4.3
				2,4,5-TP (Silvex)		U	ug/kg	3.7
				2,4-D		U	ug/kg	26
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	21
				Dinoseb		U	ug/kg	21
				MCPA		U	ug/kg	5400
				MCPP		U	ug/kg	5400
	CAN074-7410-1024	0474380004SA	24-26	2,4,5-T		U	ug/kg	4.4
				2,4,5-TP (Silvex)		U	ug/kg	3.8
				2,4-D		U	ug/kg	27
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	22
				Dinoseb		U	ug/kg	22
				MCPA		U	ug/kg	5500
				MCPP		U	ug/kg	5500
	CAN074-7410-1032	0474380005SA	32-34	2,4,5-T		U	ug/kg	4.2
				2,4,5-TP (Silvex)		U	ug/kg	3.6
				2,4-D		U	ug/kg	25
				2,4-DB		U	ug/kg	100
				Dalapon		U	ug/kg	100
				Dicamba		U	ug/kg	10
				Dichlorprop		U	ug/kg	21
				Dinoseb		U	ug/kg	21
				MCPA		U	ug/kg	5200
				MCPP		U	ug/kg	5200

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL	UNITS	DL
HERBICIDE	CAN074-7410-1038	0474380006SA	38-40	2,4,5-T		U	ug/kg	4.1
				2,4,5-TP (Silvex)		U	ug/kg	3.5
				2,4-D		U	ug/kg	25
				2,4-DB		U	ug/kg	100
				Dalapon		U	ug/kg	100
				Dicamba		U	ug/kg	10
				Dichlorprop		U	ug/kg	21
				Dinoseb		U	ug/kg	21
				MCPA		U	ug/kg	5200
				MCPP		U	ug/kg	5200
	CAN074-7410-1048	0474380008SA	48-50	2,4,5-T		U	ug/kg	4.5
				2,4,5-TP (Silvex)		U	ug/kg	3.8
				2,4-D		U	ug/kg	27
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	22
				Dinoseb		U	ug/kg	22
				MCPA		U	ug/kg	5600
				MCPP		U	ug/kg	5600
	CAN074-7410-1461	0474380007SA	38-40	2,4,5-T		U	ug/kg	4.1
				2,4,5-TP (Silvex)		U	ug/kg	3.5
				2,4-D		U	ug/kg	25
				2,4-DB		U	ug/kg	100
				Dalapon		U	ug/kg	100
				Dicamba		U	ug/kg	10
				Dichlorprop		U	ug/kg	21
				Dinoseb		U	ug/kg	21
				MCPA		U	ug/kg	5200
				MCPP		U	ug/kg	5200
	CAN074-7413-1004	0475450003SA	4-6	2,4,5-T		U	ug/kg	4.3
				2,4,5-TP (Silvex)		U	ug/kg	3.6
				2,4-D		U	ug/kg	26
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	21
				Dinoseb		U	ug/kg	21
				MCPA		U	ug/kg	5300
				MCPP		U	ug/kg	5300
	CAN074-7413-1008	0475450004SA	8-10	2,4,5-T		U	ug/kg	4.2
				2,4,5-TP (Silvex)		U	ug/kg	3.6
				2,4-D		U	ug/kg	25
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	21
				Dinoseb		U	ug/kg	21
				MCPA		U	ug/kg	5300
				MCPP		U	ug/kg	5300
	CAN074-7413-1012	0475450006SA	12-13.4	2,4,5-T		U	ug/kg	4.3
				2,4,5-TP (Silvex)		U	ug/kg	3.7
				2,4-D		U	ug/kg	26
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
HERBICIDE	CAN074-7413-1012	0475450006SA	12-13.4	Dichlorprop		U	ug/kg	22
				Dinoseb		U	ug/kg	22
				MCPA		U	ug/kg	5400
				MCPP		U	ug/kg	5400
	CAN074-7413-1464	0475450005SA	4-6	2,4,5-T		U	ug/kg	4.3
				2,4,5-TP (Silvex)		U	ug/kg	3.6
				2,4-D		U	ug/kg	26
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	21
				Dinoseb		U	ug/kg	21
				MCPA		U	ug/kg	5300
				MCPP		U	ug/kg	5300
	CAN074-7414-1006	0475450008SA	6-8	2,4,5-T		U	ug/kg	4.5
				2,4,5-TP (Silvex)		U	ug/kg	3.8
				2,4-D		U	ug/kg	27
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	22
				Dinoseb		U	ug/kg	22
				MCPA		U	ug/kg	5600
				MCPP		U	ug/kg	5600
	CAN074-7414-1010	0475450007SA	10-12	2,4,5-T		U	ug/kg	4.5
				2,4,5-TP (Silvex)		U	ug/kg	3.8
				2,4-D		U	ug/kg	27
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	23
				Dinoseb		U	ug/kg	23
				MCPA		U	ug/kg	5600
				MCPP		U	ug/kg	5600
	CAN074-7414-1014	0475450009SA	14-16	2,4,5-T		U	ug/kg	4.5
				2,4,5-TP (Silvex)		U	ug/kg	3.8
				2,4-D		U	ug/kg	27
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	23
				Dinoseb		U	ug/kg	23
				MCPA		U	ug/kg	5600
				MCPP		U	ug/kg	5600
	CAN074-7415-1004	0475450010SA	4-6	2,4,5-T		U	ug/kg	4.6
				2,4,5-TP (Silvex)		U	ug/kg	3.9
				2,4-D		U	ug/kg	27
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	23
				Dinoseb		U	ug/kg	23
				MCPA		U	ug/kg	5700
				MCPP		U	ug/kg	5700
	CAN074-7415-1008	0475450011SA	8-10	2,4,5-T		U	ug/kg	4.4
				2,4,5-TP (Silvex)		U	ug/kg	3.8

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL	UNITS	DL
HERBICIDE	CAN074-7415-1008	0475450011SA	8-10	2,4-D		U	ug/kg	27
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	22
				Dinoseb		U	ug/kg	22
				MCPA		U	ug/kg	5500
				MCPP		U	ug/kg	5500
	CAN074-7415-1012	0475450012SA	12-14	2,4,5-T		U	ug/kg	4.4
				2,4,5-TP (Silvex)		U	ug/kg	3.7
				2,4-D		U	ug/kg	26
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	22
				Dinoseb		U	ug/kg	22
				MCPA		U	ug/kg	5500
				MCPP		U	ug/kg	5500
	CAN074-7418-1005	0475450013SA	5-7	2,4,5-T		U	ug/kg	4.2
				2,4,5-TP (Silvex)		U	ug/kg	3.6
				2,4-D		U	ug/kg	25
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	21
				Dinoseb		U	ug/kg	21
				MCPA		U	ug/kg	5300
				MCPP	12000		ug/kg	5300
	CAN074-7418-1009	0475450014SA	9-11	2,4,5-T		U	ug/kg	4.2
				2,4,5-TP (Silvex)		U	ug/kg	3.6
				2,4-D		U	ug/kg	25
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	21
				Dinoseb		U	ug/kg	21
				MCPA		U	ug/kg	5300
				MCPP		U	ug/kg	5300
	CAN074-7418-1015	0475450015SA	15-17.2	2,4,5-T		U	ug/kg	4.2
				2,4,5-TP (Silvex)		U	ug/kg	3.6
				2,4-D		U	ug/kg	25
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	21
				Dinoseb		U	ug/kg	21
				MCPA		U	ug/kg	5300
				MCPP		U	ug/kg	5300
	CAN074-7418-1465	0475450016SA		2,4,5-T		U	ug/kg	4.2
				2,4,5-TP (Silvex)		U	ug/kg	3.6
				2,4-D		U	ug/kg	25
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	21
				Dinoseb		U	ug/kg	21

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
HERBICIDE	CAN074-7418-1465	0475450016SA	15-17.2	MCPA		U	ug/kg	5300
				MCPP		U	ug/kg	5300
	CAN074-7423-1004	0476170001SA	4-6	2,4,5-T		U	ug/kg	4.2
				2,4,5-TP (Silvex)		U	ug/kg	3.6
				2,4-D		U	ug/kg	25
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	21
				Dinoseb		U	ug/kg	21
				MCPA		U	ug/kg	5300
				MCPP		U	ug/kg	5300
	CAN074-7423-1008	0476170002SA	8-10	2,4,5-T		U	ug/kg	4.2
				2,4,5-TP (Silvex)		U	ug/kg	3.6
				2,4-D		U	ug/kg	25
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	21
				Dinoseb		U	ug/kg	21
				MCPA		U	ug/kg	5300
				MCPP		U	ug/kg	5300
	CAN074-7423-1012	0476170003SA	12-14	2,4,5-T		U	ug/kg	4.2
				2,4,5-TP (Silvex)		U	ug/kg	3.6
				2,4-D		U	ug/kg	25
				2,4-DB		U	ug/kg	110
				Dalapon		U	ug/kg	110
				Dicamba		U	ug/kg	11
				Dichlorprop		U	ug/kg	21
				Dinoseb		U	ug/kg	21
				MCPA		U	ug/kg	5300
				MCPP		U	ug/kg	5300
METALS	CAN074-7401-1018	0474710014SA	18-20	Aluminum	3010		mg/kg	11.5
				Antimony		UJ	mg/kg	6.9
				Barium	49.4	J	mg/kg	1.2
				Beryllium		U	mg/kg	0.23
				Cadmium		U	mg/kg	0.58
				Calcium	87200	J	mg/kg	23
				Chromium	2.9		mg/kg	1.2
				Cobalt	4.5		mg/kg	1.2
				Copper	3.3		mg/kg	2.3
				Iron	4200		mg/kg	11.5
				Magnesium	8720		mg/kg	23
				Manganese	127		mg/kg	1.2
				Nickel	5.7		mg/kg	4.6
				Potassium	541	J	mg/kg	575
				Silver		U	mg/kg	1.2
				Sodium		U	mg/kg	575
				Vanadium	25.7		mg/kg	1.2
				Zinc	4.8		mg/kg	2.3
				Arsenic	0.82		mg/kg	0.58
				Lead	1.7		mg/kg	1.2
				Mercury		U	mg/kg	0.12
				Selenium		U	mg/kg	1.2
				Thallium	0.12	J	mg/kg	1.2

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
METALS	CAN074-7402-1018	0475450002SA	18-20	Aluminum	4500		mg/kg	11.4
				Antimony		UJ	mg/kg	6.8
				Barium	27.4	J	mg/kg	1.1
				Beryllium	0.31		mg/kg	0.23
				Cadmium		U	mg/kg	0.57
				Calcium	75300	J	mg/kg	22.7
				Chromium	4.8		mg/kg	1.1
				Cobalt	1.6		mg/kg	1.1
				Copper	3.2		mg/kg	2.3
				Iron	3290		mg/kg	11.4
				Magnesium	4430		mg/kg	22.7
				Manganese	24.3		mg/kg	1.1
				Nickel	5.9		mg/kg	4.5
				Potassium	851		mg/kg	568
				Silver		U	mg/kg	1.1
				Sodium		U	mg/kg	568
				Vanadium	13		mg/kg	1.1
				Zinc	5.6		mg/kg	2.3
				Arsenic	0.75		mg/kg	0.57
				Lead	2.2		mg/kg	0.57
				Mercury		U	mg/kg	0.11
				Selenium		U	mg/kg	1.1
				Thallium		U	mg/kg	1.1
	CAN074-7403-1018	0475450001SA		Aluminum	2200		mg/kg	22
				Antimony		UJ	mg/kg	13.2
				Barium	88.9	J	mg/kg	2.2
				Beryllium		U	mg/kg	0.44
				Cadmium		U	mg/kg	1.1
				Calcium	193000	J	mg/kg	44.1
				Chromium	1.7	J	mg/kg	2.2
				Cobalt	0.68	J	mg/kg	2.2
				Copper	2.6	J	mg/kg	4.4
				Iron	1640		mg/kg	22
				Magnesium	4210		mg/kg	44.1
				Manganese	12.7		mg/kg	2.2
				Nickel	3.9	J	mg/kg	8.8
				Potassium	351	J	mg/kg	1100
				Silver		U	mg/kg	2.2
				Sodium		U	mg/kg	1100
				Vanadium	11.1		mg/kg	2.2
				Zinc	4	J	mg/kg	4.4
				Arsenic	1.4		mg/kg	0.55
				Lead	0.98		mg/kg	0.55
				Mercury		U	mg/kg	0.11
				Selenium		U	mg/kg	1.1
				Thallium	0.015	J	mg/kg	1.1
	CAN074-7404-1018	0474710011SA		Aluminum	2970		mg/kg	10.8
				Antimony		UJ	mg/kg	6.5
				Barium	33.9	J	mg/kg	1.1
				Beryllium		U	mg/kg	0.22
				Cadmium		U	mg/kg	0.54
				Calcium	74200	J	mg/kg	21.6
				Chromium	2.3		mg/kg	1.1
				Cobalt	1.7		mg/kg	1.1
				Copper		U	mg/kg	2.2
				Iron	2740		mg/kg	10.8

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
METALS	CAN074-7404-1018	0474710011SA	18-20	Magnesium	2650		mg/kg	21.6
				Manganese	24.5		mg/kg	1.1
				Nickel	3.8	J	mg/kg	4.3
				Potassium	484	J	mg/kg	540
				Silver		U	mg/kg	1.1
				Sodium	29.1	J	mg/kg	540
				Vanadium	12.6		mg/kg	1.1
				Zinc	4.8		mg/kg	2.2
				Arsenic	0.76		mg/kg	0.54
				Lead	1.6		mg/kg	1.1
				Mercury		U	mg/kg	0.11
				Selenium		U	mg/kg	1.1
				Thallium		U	mg/kg	1.1
	CAN074-7405-1018	0474710009SA		Aluminum	6790		mg/kg	11.2
				Antimony		UJ	mg/kg	6.7
				Barium	85	J	mg/kg	1.1
				Beryllium	0.42		mg/kg	0.22
				Cadmium		U	mg/kg	0.56
				Calcium	84500	J	mg/kg	22.3
				Chromium	5.3		mg/kg	1.1
				Cobalt	2.2		mg/kg	1.1
				Copper	2.8		mg/kg	2.2
				Iron	5090		mg/kg	11.2
				Magnesium	4910		mg/kg	22.3
				Manganese	50.4		mg/kg	1.1
				Nickel	6.2		mg/kg	4.5
				Potassium	1370		mg/kg	558
				Silver		U	mg/kg	1.1
				Sodium	102	J	mg/kg	558
				Vanadium	22.8		mg/kg	1.1
				Zinc	10.5		mg/kg	2.2
				Arsenic	1.9		mg/kg	0.56
				Lead	3.2		mg/kg	2.8
				Mercury		U	mg/kg	0.11
				Selenium		U	mg/kg	1.1
				Thallium		U	mg/kg	1.1
	CAN074-7405-1463	0474710010SA		Aluminum	5820		mg/kg	11.1
				Antimony		UJ	mg/kg	6.7
				Barium	131	J	mg/kg	1.1
				Beryllium	0.39		mg/kg	0.22
				Cadmium		U	mg/kg	0.56
				Calcium	78400	J	mg/kg	22.2
				Chromium	4.5		mg/kg	1.1
				Cobalt	3		mg/kg	1.1
				Copper	2.6		mg/kg	2.2
				Iron	4520		mg/kg	11.1
				Magnesium	4490		mg/kg	22.2
				Manganese	101		mg/kg	1.1
				Nickel	7.1		mg/kg	4.4
				Potassium	1260		mg/kg	556
				Silver		U	mg/kg	1.1
				Sodium		U	mg/kg	556
				Vanadium	21.4		mg/kg	1.1
				Zinc	9.3		mg/kg	2.2
				Arsenic	2		mg/kg	0.56
				Lead	3.8		mg/kg	0.56

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
METALS	CAN074-7405-1463	0474710010SA	18-20	Mercury		U	mg/kg	0.11
				Selenium		U	mg/kg	1.1
				Thallium		U	mg/kg	1.1
	CAN074-7406-1018	0474710012SA		Aluminum	2280		mg/kg	21.6
				Antimony		UJ	mg/kg	12.9
				Barium	44.3	J	mg/kg	2.2
				Beryllium		U	mg/kg	0.43
				Cadmium		U	mg/kg	1.1
				Calcium	146000	J	mg/kg	43.2
				Chromium		U	mg/kg	2.2
				Cobalt	1.8	J	mg/kg	2.2
				Copper		U	mg/kg	4.3
				Iron	2130		mg/kg	21.6
				Magnesium	3260		mg/kg	43.2
				Manganese	28.2		mg/kg	2.2
				Nickel	2.6	J	mg/kg	8.6
				Potassium	425	J	mg/kg	1080
				Silver		U	mg/kg	2.2
				Sodium		U	mg/kg	1080
				Vanadium	8.8		mg/kg	2.2
				Zinc	4.3		mg/kg	4.3
				Arsenic	1.2		mg/kg	0.54
				Lead	1.7		mg/kg	0.54
				Mercury		U	mg/kg	0.11
				Selenium		U	mg/kg	1.1
				Thallium		U	mg/kg	1.1
	CAN074-7407-1018	0474710013SA		Aluminum	6110		mg/kg	11.3
				Antimony		UJ	mg/kg	6.8
				Barium	478	J	mg/kg	1.1
				Beryllium	0.37		mg/kg	0.23
				Cadmium		U	mg/kg	0.56
				Calcium	13400	J	mg/kg	22.6
				Chromium	5.3		mg/kg	1.1
				Cobalt	2.4		mg/kg	1.1
				Copper	4		mg/kg	2.3
				Iron	5090		mg/kg	11.3
				Magnesium	11100		mg/kg	22.6
				Manganese	37.8		mg/kg	1.1
				Nickel	6.2		mg/kg	4.5
				Potassium	1230		mg/kg	565
				Silver		U	mg/kg	1.1
				Sodium		U	mg/kg	565
				Vanadium	18.2		mg/kg	1.1
				Zinc	8.5		mg/kg	2.3
				Arsenic	0.54	J	mg/kg	1.1
				Lead	3.3		mg/kg	1.1
				Mercury		U	mg/kg	0.11
				Selenium		U	mg/kg	0.56
				Thallium		U	mg/kg	1.1
	CAN074-7408-1006	0474710001SA	6-8	Aluminum	7250	J	mg/kg	22
				Antimony		UJ	mg/kg	13.2
				Barium	197		mg/kg	2.2
				Beryllium		U	mg/kg	0.44
				Cadmium		U	mg/kg	1.1
				Calcium	143000		mg/kg	43.9
				Chromium	5.2		mg/kg	2.2

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
METALS	CAN074-7408-1006	0474710001SA	6-8	Cobalt	4		mg/kg	2.2
				Copper	3	J	mg/kg	4.4
				Iron	5990		mg/kg	22
				Magnesium	2670		mg/kg	43.9
				Manganese	67.8		mg/kg	2.2
				Nickel	6.7	J	mg/kg	8.8
				Potassium	1500		mg/kg	1100
				Silver		U	mg/kg	2.2
				Sodium		U	mg/kg	1100
				Vanadium	14.1		mg/kg	2.2
				Zinc	14.2		mg/kg	4.4
				Arsenic	0.85		mg/kg	0.55
				Lead	3.6		mg/kg	1.1
				Mercury		U	mg/kg	0.11
				Selenium		UJ	mg/kg	1.1
				Thallium		U	mg/kg	1.1
	CAN074-7408-1010	0474710003SA	10-12	Aluminum	3760	U	mg/kg	55.4
				Antimony		UJ	mg/kg	33.2
				Barium	123		mg/kg	5.5
				Beryllium		U	mg/kg	1.1
				Cadmium		U	mg/kg	2.8
				Calcium	258000		mg/kg	111
				Chromium		U	mg/kg	5.5
				Cobalt	3.5	J	mg/kg	5.5
				Copper		U	mg/kg	11.1
				Iron	2360		mg/kg	55.4
				Magnesium	5640		mg/kg	111
				Manganese	25.8		mg/kg	5.5
				Nickel	3.9	J	mg/kg	22.2
				Potassium	617	J	mg/kg	2770
				Silver		U	mg/kg	5.5
				Sodium		U	mg/kg	2770
				Vanadium	16.5		mg/kg	5.5
				Zinc	6.1	J	mg/kg	11.1
				Arsenic	1.4		mg/kg	0.55
				Lead	1.7		mg/kg	1.1
				Mercury		U	mg/kg	0.11
				Selenium		UJ	mg/kg	1.1
				Thallium		U	mg/kg	2.2
	CAN074-7408-1014	0474710004SA	14-16	Aluminum	3470	J	mg/kg	22.9
				Antimony		UJ	mg/kg	13.7
				Barium	228		mg/kg	2.3
				Beryllium		U	mg/kg	0.46
				Cadmium		U	mg/kg	1.1
				Calcium	186000		mg/kg	45.7
				Chromium	2	J	mg/kg	2.3
				Cobalt	3.8		mg/kg	2.3
				Copper	2.8	J	mg/kg	4.6
				Iron	2310		mg/kg	22.9
				Magnesium	10700		mg/kg	45.7
				Manganese	60.2		mg/kg	2.3
				Nickel	4.7	J	mg/kg	9.1
				Potassium	560	J	mg/kg	1140
				Silver		U	mg/kg	2.3
				Sodium	196	J	mg/kg	1140
				Vanadium	16		mg/kg	2.3

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
METALS	CAN074-7408-1014	0474710004SA	14-16	Zinc	5		mg/kg	4.6
				Arsenic	1.6		mg/kg	0.57
				Lead	2.1	J	mg/kg	2.9
				Mercury		U	mg/kg	0.11
				Selenium		UJ	mg/kg	1.1
				Thallium		U	mg/kg	1.1
	CAN074-7408-1022	0474710005SA	22-22.75	Aluminum	4320	J	mg/kg	23.5
				Antimony		UJ	mg/kg	14.1
				Barium	133		mg/kg	2.4
				Beryllium		U	mg/kg	0.47
				Cadmium		U	mg/kg	1.2
				Calcium	121000		mg/kg	47
				Chromium	4.8		mg/kg	2.4
				Cobalt	2.1	J	mg/kg	2.4
				Copper	3.8	J	mg/kg	4.7
				Iron	3200		mg/kg	23.5
				Magnesium	19100		mg/kg	47
				Manganese	73.6		mg/kg	2.4
				Nickel	4.4	J	mg/kg	9.4
				Potassium	705	J	mg/kg	1180
				Silver		U	mg/kg	2.4
				Sodium	243	J	mg/kg	1180
				Vanadium	18.8		mg/kg	2.4
				Zinc	5.6		mg/kg	4.7
				Arsenic	1.1		mg/kg	0.59
				Lead	2.5		mg/kg	1.2
				Mercury		U	mg/kg	0.12
				Selenium		U	mg/kg	1.2
				Thallium		U	mg/kg	1.2
	CAN074-7408-1024	0474710006SA	24-25.4	Aluminum	3650		mg/kg	11.1
				Antimony		UJ	mg/kg	6.7
				Barium	23	J	mg/kg	1.1
				Beryllium		U	mg/kg	0.22
				Cadmium		U	mg/kg	0.56
				Calcium	21100	J	mg/kg	22.2
				Chromium	4.4		mg/kg	1.1
				Cobalt	2.2		mg/kg	1.1
				Copper	1.9	J	mg/kg	2.2
				Iron	3590		mg/kg	11.1
				Magnesium	5960		mg/kg	22.2
				Manganese	56.4		mg/kg	1.1
				Nickel	4	J	mg/kg	4.4
				Potassium	656		mg/kg	556
				Silver		U	mg/kg	1.1
				Sodium	109	J	mg/kg	556
				Vanadium	12.3		mg/kg	1.1
				Zinc	6.7		mg/kg	2.2
				Arsenic	0.71		mg/kg	0.56
				Lead	1.8		mg/kg	0.56
				Mercury		U	mg/kg	0.11
				Selenium		U	mg/kg	0.56
				Thallium		U	mg/kg	1.1
	CAN074-7408-1034	0474710007SA	34-36	Aluminum	879		mg/kg	10.3
				Antimony		UJ	mg/kg	6.2
				Barium	4.1	J	mg/kg	1
				Beryllium		U	mg/kg	0.21

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL	UNITS	DL
METALS	CAN074-7408-1034	0474710007SA	34-36	Cadmium		U	mg/kg	0.51
				Calcium	8110	J	mg/kg	20.6
				Chromium	0.93	J	mg/kg	1
				Cobalt	0.6	J	mg/kg	1
				Copper	0.36	J	mg/kg	2.1
				Iron	1380		mg/kg	10.3
				Magnesium	684		mg/kg	20.6
				Manganese	16		mg/kg	1
				Nickel	1.3	J	mg/kg	4.1
				Potassium	191	J	mg/kg	514
				Silver		U	mg/kg	1
				Sodium		U	mg/kg	514
				Vanadium	3.9		mg/kg	1
				Zinc	2.7		mg/kg	2.1
				Arsenic	0.6		mg/kg	0.51
				Lead	1.2		mg/kg	0.51
				Mercury		U	mg/kg	0.1
				Selenium		U	mg/kg	0.51
				Thallium		U	mg/kg	0.51
	CAN074-7408-1044	0474710008SA	44-46	Aluminum	1360		mg/kg	10.3
				Antimony		UJ	mg/kg	6.2
				Barium	8.1	J	mg/kg	1
				Beryllium		U	mg/kg	0.21
				Cadmium		U	mg/kg	0.51
				Calcium	6550	J	mg/kg	20.5
				Chromium	1.6	J	mg/kg	1
				Cobalt	0.73	J	mg/kg	1
				Copper	0.87	J	mg/kg	2.1
				Iron	2460		mg/kg	10.3
				Magnesium	828		mg/kg	20.5
				Manganese	25.2		mg/kg	1
				Nickel	1.9	J	mg/kg	4.1
				Potassium	283	J	mg/kg	514
				Silver		U	mg/kg	1
				Sodium		U	mg/kg	514
				Vanadium	6.2		mg/kg	1
				Zinc	3.8		mg/kg	2.1
				Arsenic	0.58		mg/kg	0.51
				Lead	1		mg/kg	1
				Mercury		U	mg/kg	0.1
				Selenium		U	mg/kg	0.51
				Thallium		U	mg/kg	0.51
	CAN074-7408-1462	0474710002SA	6-8	Aluminum	8750	J	mg/kg	22
				Antimony		UJ	mg/kg	13.2
				Barium	190		mg/kg	2.2
				Beryllium	0.67		mg/kg	0.44
				Cadmium		U	mg/kg	1.1
				Calcium	155000		mg/kg	44.1
				Chromium	5.9		mg/kg	2.2
				Cobalt	4.1		mg/kg	2.2
				Copper	2.5	J	mg/kg	4.4
				Iron	6670		mg/kg	22
				Magnesium	3230		mg/kg	44.1
				Manganese	61.3		mg/kg	2.2
				Nickel	7.6	J	mg/kg	8.8
				Potassium	1760		mg/kg	1100

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
METALS	CAN074-7408-1462	0474710002SA	6-8	Silver		U	mg/kg	2.2
				Sodium		U	mg/kg	1100
				Vanadium	15.2		mg/kg	2.2
				Zinc	15.6		mg/kg	4.4
				Arsenic	1.2		mg/kg	0.55
				Lead	2.5	J	mg/kg	5.5
				Mercury		U	mg/kg	0.11
				Selenium		UJ	mg/kg	1.1
				Thallium	0.17	J	mg/kg	1.1
	CAN074-7409-1006	0474380009SA		Aluminum	1640	J	mg/kg	55.3
				Antimony		UJ	mg/kg	33.2
				Barium	171		mg/kg	5.5
				Beryllium		U	mg/kg	1.1
				Cadmium		U	mg/kg	2.8
				Calcium	309000		mg/kg	111
				Chromium		U	mg/kg	5.5
				Cobalt	3.1	J	mg/kg	5.5
				Copper		U	mg/kg	11.1
				Iron	1070		mg/kg	55.3
				Magnesium	4200		mg/kg	111
				Manganese	14.6		mg/kg	5.5
				Nickel		U	mg/kg	22.1
				Potassium	406	J	mg/kg	2770
				Silver		U	mg/kg	5.5
				Sodium		U	mg/kg	2770
				Vanadium	5.5		mg/kg	5.5
				Zinc	1.7	J	mg/kg	11.1
				Arsenic	1.5		mg/kg	0.55
				Lead	1.6		mg/kg	0.55
				Mercury	0.16		mg/kg	0.11
				Selenium		UJ	mg/kg	1.1
				Thallium		UJ	mg/kg	2.2
	CAN074-7409-1010	0474380010SA	10-12	Aluminum	2620	J	mg/kg	11
				Antimony		UJ	mg/kg	6.6
				Barium	51.9		mg/kg	1.1
				Beryllium	0.26		mg/kg	0.22
				Cadmium		U	mg/kg	0.55
				Calcium	38900		mg/kg	22
				Chromium	2.1		mg/kg	1.1
				Cobalt	1.2		mg/kg	1.1
				Copper	1.7	J	mg/kg	2.2
				Iron	2170		mg/kg	11
				Magnesium	2640		mg/kg	22
				Manganese	17		mg/kg	1.1
				Nickel	3.1	J	mg/kg	4.4
				Potassium	647		mg/kg	549
				Silver		U	mg/kg	1.1
				Sodium		U	mg/kg	549
				Vanadium	13.9		mg/kg	1.1
				Zinc	3.9		mg/kg	2.2
				Arsenic	1.6		mg/kg	0.55
				Lead	3.2		mg/kg	0.55
				Mercury		U	mg/kg	0.11
				Selenium		UJ	mg/kg	2.2
				Thallium	0.15	J	mg/kg	1.1
	CAN074-7409-1014	0474380011SA	14-16	Aluminum	2720	J	mg/kg	11.6

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL	UNITS	DL
METALS	CAN074-7409-1014	0474380011SA	14-16	Antimony		UJ	mg/kg	6.9
				Barium	277		mg/kg	1.2
				Beryllium	0.28		mg/kg	0.23
				Cadmium		U	mg/kg	0.58
				Calcium	75900		mg/kg	23.1
				Chromium	2.1		mg/kg	1.2
				Cobalt	1.3		mg/kg	1.2
				Copper	1.7	J	mg/kg	2.3
				Iron	1840		mg/kg	11.6
				Magnesium	4180		mg/kg	23.1
				Manganese	20.3		mg/kg	1.2
				Nickel	3.7	J	mg/kg	4.6
				Potassium	667		mg/kg	578
				Silver		U	mg/kg	1.2
				Sodium	135	J	mg/kg	578
				Vanadium	11		mg/kg	1.2
				Zinc	3.8		mg/kg	2.3
				Arsenic	1.3		mg/kg	0.58
				Lead	3.2		mg/kg	0.58
				Mercury		U	mg/kg	0.12
				Selenium		UJ	mg/kg	1.2
				Thallium	0.13	J	mg/kg	1.2
	CAN074-7409-1020	0474380012SA	20-20.5	Aluminum	1840	J	mg/kg	22.5
				Antimony		UJ	mg/kg	13.5
				Barium	194		mg/kg	2.2
				Beryllium		U	mg/kg	0.45
				Cadmium		U	mg/kg	1.1
				Calcium	143000		mg/kg	44.9
				Chromium	2.4		mg/kg	2.2
				Cobalt	1.6	J	mg/kg	2.2
				Copper	2.3	J	mg/kg	4.5
				Iron	1160		mg/kg	22.5
				Magnesium	17400		mg/kg	44.9
				Manganese	24.3		mg/kg	2.2
				Nickel	3.1	J	mg/kg	9
				Potassium	311	J	mg/kg	1120
				Silver		U	mg/kg	2.2
				Sodium		U	mg/kg	1120
				Vanadium	13.1		mg/kg	2.2
				Zinc	2.4	J	mg/kg	4.5
				Arsenic	1.3		mg/kg	0.56
				Lead	7.9		mg/kg	2.8
				Mercury		U	mg/kg	0.11
				Selenium		UJ	mg/kg	2.2
				Thallium		UJ	mg/kg	2.2
	CAN074-7409-1024	0474380013SA	24-24.75	Aluminum	2080	J	mg/kg	11.5
				Antimony		UJ	mg/kg	6.9
				Barium	97.2		mg/kg	1.2
				Beryllium		U	mg/kg	0.23
				Cadmium		U	mg/kg	0.58
				Calcium	60900		mg/kg	23
				Chromium	2.2		mg/kg	1.2
				Cobalt	1.3		mg/kg	1.2
				Copper	1.6	J	mg/kg	2.3
				Iron	1320		mg/kg	11.5
				Magnesium	15500		mg/kg	23

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
METALS	CAN074-7409-1024	0474380013SA	24-24.75	Manganese	30.8		mg/kg	1.2
				Nickel	1.8	J	mg/kg	4.6
				Potassium	307	J	mg/kg	576
				Silver		U	mg/kg	1.2
				Sodium	103	J	mg/kg	576
				Vanadium	12.3		mg/kg	1.2
				Zinc	2.4		mg/kg	2.3
				Arsenic	1		mg/kg	0.58
				Lead	3.8		mg/kg	0.58
				Mercury		U	mg/kg	0.12
				Selenium		UJ	mg/kg	2.3
				Thallium		UJ	mg/kg	2.3
	CAN074-7409-1034	0474380014SA	34-36	Aluminum	728	J	mg/kg	10.7
				Antimony		UJ	mg/kg	6.4
				Barium	14		mg/kg	1.1
				Beryllium		U	mg/kg	0.21
				Cadmium		U	mg/kg	0.53
				Calcium	5610		mg/kg	21.4
				Chromium	1.8		mg/kg	1.1
				Cobalt	0.48	J	mg/kg	1.1
				Copper	0.45	J	mg/kg	2.1
				Iron	650		mg/kg	10.7
				Magnesium	900		mg/kg	21.4
				Manganese	10.3		mg/kg	1.1
				Nickel	0.91	J	mg/kg	4.3
				Potassium	153	J	mg/kg	534
				Silver		U	mg/kg	1.1
				Sodium		U	mg/kg	534
				Vanadium	3.3		mg/kg	1.1
				Zinc	1.3	J	mg/kg	2.1
				Arsenic	0.69		mg/kg	0.53
				Lead	1.3		mg/kg	0.53
				Mercury		U	mg/kg	0.11
				Selenium		UJ	mg/kg	1.1
				Thallium		U	mg/kg	0.53
	CAN074-7409-1044	0474380015SA	44-46	Aluminum	501	J	mg/kg	10.3
				Antimony		UJ	mg/kg	6.2
				Barium	4.4		mg/kg	1
				Beryllium		U	mg/kg	0.21
				Cadmium		U	mg/kg	0.51
				Calcium	322		mg/kg	20.5
				Chromium	0.99	J	mg/kg	1
				Cobalt	0.5	J	mg/kg	1
				Copper		U	mg/kg	2.1
				Iron	562		mg/kg	10.3
				Magnesium	416		mg/kg	20.5
				Manganese	13		mg/kg	1
				Nickel		U	mg/kg	4.1
				Potassium	121	J	mg/kg	513
				Silver		U	mg/kg	1
				Sodium		U	mg/kg	513
				Vanadium	2.9		mg/kg	1
				Zinc	1	J	mg/kg	2.1
				Arsenic	0.72		mg/kg	0.51
				Lead	2		mg/kg	0.51
				Mercury		U	mg/kg	0.1

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL	UNITS	DL
METALS	CAN074-7409-1044	0474380015SA	44-46	Selenium		UJ	mg/kg	1
				Thallium		U	mg/kg	0.51
	CAN074-7410-1010	0474380001SA	10-12	Aluminum	2340	J	mg/kg	11.4
				Antimony		UJ	mg/kg	6.8
				Barium	105		mg/kg	1.1
				Beryllium	0.31		mg/kg	0.23
				Cadmium		U	mg/kg	0.57
				Calcium	77000		mg/kg	22.7
				Chromium	2.9		mg/kg	1.1
				Cobalt	2.1		mg/kg	1.1
				Copper	1.9	J	mg/kg	2.3
				Iron	1990		mg/kg	11.4
				Magnesium	1900		mg/kg	22.7
				Manganese	62		mg/kg	1.1
				Nickel	2.8	J	mg/kg	4.5
				Potassium	606		mg/kg	568
				Silver		U	mg/kg	1.1
				Sodium	174	J	mg/kg	568
				Vanadium	13.2		mg/kg	1.1
				Zinc	5.7		mg/kg	2.3
				Arsenic	3		mg/kg	0.57
				Lead	5.3		mg/kg	0.57
				Mercury		U	mg/kg	0.11
				Selenium		UJ	mg/kg	2.3
				Thallium		UJ	mg/kg	1.1
	CAN074-7410-1016	0474380002SA	16-16.9	Aluminum	2580	J	mg/kg	21.6
				Antimony		UJ	mg/kg	13
				Barium	214		mg/kg	2.2
				Beryllium		U	mg/kg	0.43
				Cadmium		U	mg/kg	1.1
				Calcium	179000		mg/kg	43.2
				Chromium	3.3		mg/kg	2.2
				Cobalt	2.8		mg/kg	2.2
				Copper	1.5	J	mg/kg	4.3
				Iron	2010		mg/kg	21.6
				Magnesium	3770		mg/kg	43.2
				Manganese	40.9		mg/kg	2.2
				Nickel	3	J	mg/kg	8.6
				Potassium	629	J	mg/kg	1080
				Silver		U	mg/kg	2.2
				Sodium	267	J	mg/kg	1080
				Vanadium	18.2		mg/kg	2.2
				Zinc	3.7	J	mg/kg	4.3
				Arsenic	2.4		mg/kg	1.1
				Lead	7		mg/kg	1.1
				Mercury		U	mg/kg	0.11
				Selenium		UJ	mg/kg	2.2
				Thallium		UJ	mg/kg	2.2
	CAN074-7410-1020	0474380003SA	20-20.9	Aluminum	1560	J	mg/kg	53.7
				Antimony		UJ	mg/kg	32.2
				Barium	297		mg/kg	5.4
				Beryllium		U	mg/kg	1.1
				Cadmium		U	mg/kg	2.7
				Calcium	236000		mg/kg	107
				Chromium		U	mg/kg	5.4
				Cobalt	2.4	J	mg/kg	5.4

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
METALS	CAN074-7410-1020	0474380003SA	20-20.9	Copper		U	mg/kg	10.7
				Iron	1020		mg/kg	53.7
				Magnesium	5910		mg/kg	107
				Manganese	19.6		mg/kg	5.4
				Nickel		U	mg/kg	21.5
				Potassium	241	J	mg/kg	2690
				Silver		U	mg/kg	5.4
				Sodium		U	mg/kg	2690
				Vanadium	12.9		mg/kg	5.4
				Zinc	1.2	J	mg/kg	10.7
				Arsenic	2.3		mg/kg	0.54
				Lead	1.3		mg/kg	1.1
				Mercury		U	mg/kg	0.11
				Selenium		UJ	mg/kg	1.1
				Thallium		UJ	mg/kg	2.1
	CAN074-7410-1024	0474380004SA	24-26	Aluminum	1930	J	mg/kg	22.1
				Antimony		UJ	mg/kg	13.3
				Barium	342		mg/kg	2.2
				Beryllium		U	mg/kg	0.44
				Cadmium		U	mg/kg	1.1
				Calcium	169000		mg/kg	44.3
				Chromium	4.5		mg/kg	2.2
				Cobalt	1.9	J	mg/kg	2.2
				Copper	2.5	J	mg/kg	4.4
				Iron	1610		mg/kg	22.1
				Magnesium	10700		mg/kg	44.3
				Manganese	21.7		mg/kg	2.2
				Nickel	3.3	J	mg/kg	8.9
				Potassium	273	J	mg/kg	1110
				Silver		U	mg/kg	2.2
				Sodium		U	mg/kg	1110
				Vanadium	14		mg/kg	2.2
				Zinc	2.2	J	mg/kg	4.4
				Arsenic	1.5		mg/kg	0.55
				Lead	1.8		mg/kg	0.55
				Mercury		U	mg/kg	0.11
				Selenium		UJ	mg/kg	1.1
				Thallium		UJ	mg/kg	2.2
	CAN074-7410-1032	0474380005SA	32-34	Aluminum	944	J	mg/kg	10.5
				Antimony		UJ	mg/kg	6.3
				Barium	27.9		mg/kg	1
				Beryllium		U	mg/kg	0.21
				Cadmium		U	mg/kg	0.52
				Calcium	27500		mg/kg	20.9
				Chromium	0.98	J	mg/kg	1
				Cobalt	0.87	J	mg/kg	1
				Copper	0.36	J	mg/kg	2.1
				Iron	731		mg/kg	10.5
				Magnesium	1470		mg/kg	20.9
				Manganese	16.1		mg/kg	1
				Nickel	1	J	mg/kg	4.2
				Potassium	151	J	mg/kg	523
				Silver		U	mg/kg	1
				Sodium		U	mg/kg	523
				Vanadium	6.8		mg/kg	1
				Zinc	0.99	J	mg/kg	2.1

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
METALS	CAN074-7410-1032	0474380005SA	32-34	Arsenic	0.96		mg/kg	0.52
				Lead	1.2		mg/kg	0.52
				Mercury		U	mg/kg	0.1
				Selenium		UJ	mg/kg	1
				Thallium		UJ	mg/kg	1
	CAN074-7410-1038	0474380006SA	38-40	Aluminum	844	J	mg/kg	10.3
				Antimony		UJ	mg/kg	6.2
				Barium	14.9		mg/kg	1
				Beryllium		U	mg/kg	0.21
				Cadmium		U	mg/kg	0.52
				Calcium	1380		mg/kg	20.7
				Chromium	1.6		mg/kg	1
				Cobalt	0.9	J	mg/kg	1
				Copper	0.49	J	mg/kg	2.1
				Iron	820		mg/kg	10.3
				Magnesium	704		mg/kg	20.7
				Manganese	33.5		mg/kg	1
				Nickel	1	J	mg/kg	4.1
				Potassium	211	J	mg/kg	517
				Silver		U	mg/kg	1
				Sodium		U	mg/kg	517
				Vanadium	5.6		mg/kg	1
				Zinc	1.6	J	mg/kg	2.1
				Arsenic	1.3		mg/kg	0.52
				Lead	2.5		mg/kg	0.52
				Mercury		U	mg/kg	0.1
				Selenium		UJ	mg/kg	1
				Thallium		U	mg/kg	0.52
	CAN074-7410-1048	0474380008SA	48-50	Aluminum	623	J	mg/kg	11.1
				Antimony		UJ	mg/kg	6.7
				Barium	12.5		mg/kg	1.1
				Beryllium		U	mg/kg	0.22
				Cadmium		U	mg/kg	0.56
				Calcium	8740		mg/kg	22.3
				Chromium	1.7		mg/kg	1.1
				Cobalt	0.54	J	mg/kg	1.1
				Copper	0.41	J	mg/kg	2.2
				Iron	621		mg/kg	11.1
				Magnesium	525		mg/kg	22.3
				Manganese	20.6		mg/kg	1.1
				Nickel	0.85	J	mg/kg	4.5
				Potassium	146	J	mg/kg	557
				Silver		U	mg/kg	1.1
				Sodium		U	mg/kg	557
				Vanadium	3.3		mg/kg	1.1
				Zinc	1.4	J	mg/kg	2.2
				Arsenic	1.2		mg/kg	0.56
				Lead	1.4		mg/kg	0.56
				Mercury		U	mg/kg	0.11
				Selenium		UJ	mg/kg	1.1
				Thallium	0.18	J	mg/kg	0.56
	CAN074-7410-1461	0474380007SA	38-40	Aluminum	894	J	mg/kg	10.3
				Antimony		UJ	mg/kg	6.2
				Barium	13.8		mg/kg	1
				Beryllium		U	mg/kg	0.21
				Cadmium		U	mg/kg	0.52

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
METALS	CAN074-7410-1461	0474380007SA	38-40	Calcium	1030		mg/kg	20.6
				Chromium	1.4		mg/kg	1
				Cobalt	1.3		mg/kg	1
				Copper	0.52	J	mg/kg	2.1
				Iron	896		mg/kg	10.3
				Magnesium	748		mg/kg	20.6
				Manganese	45.7		mg/kg	1
				Nickel	1.4	J	mg/kg	4.1
				Potassium	221	J	mg/kg	516
				Silver		U	mg/kg	1
				Sodium		U	mg/kg	516
				Vanadium	5.8		mg/kg	1
				Zinc	1.8	J	mg/kg	2.1
				Arsenic	1.2		mg/kg	0.52
				Lead	2.3		mg/kg	0.52
				Mercury		U	mg/kg	0.1
				Selenium		UJ	mg/kg	1
				Thallium		U	mg/kg	0.52
	CAN074-7413-1004	0475450003SA	4-6	Aluminum	5500		mg/kg	10.6
				Antimony		UJ	mg/kg	6.4
				Barium	131	J	mg/kg	1.1
				Beryllium	0.3		mg/kg	0.21
				Cadmium		U	mg/kg	0.53
				Calcium	89100	J	mg/kg	21.3
				Chromium	5.1		mg/kg	1.1
				Cobalt	2.7		mg/kg	1.1
				Copper	4.4		mg/kg	2.1
				Iron	5280		mg/kg	10.6
				Magnesium	1720		mg/kg	21.3
				Manganese	82.9		mg/kg	1.1
				Nickel	5.9		mg/kg	4.3
				Potassium	995		mg/kg	532
				Silver		U	mg/kg	1.1
				Sodium		U	mg/kg	532
				Vanadium	16.6		mg/kg	1.1
				Zinc	11.8		mg/kg	2.1
				Arsenic	2.8		mg/kg	0.53
				Lead	4.4		mg/kg	0.53
				Mercury		U	mg/kg	0.11
				Selenium		U	mg/kg	1.1
				Thallium		U	mg/kg	1.1
	CAN074-7413-1008	0475450004SA	8-10	Aluminum	3910		mg/kg	21.2
				Antimony		UJ	mg/kg	12.7
				Barium	293	J	mg/kg	2.1
				Beryllium		U	mg/kg	0.42
				Cadmium		U	mg/kg	1.1
				Calcium	147000	J	mg/kg	42.4
				Chromium	3.2		mg/kg	2.1
				Cobalt	2.2		mg/kg	2.1
				Copper	1.7	J	mg/kg	4.2
				Iron	3750		mg/kg	21.2
				Magnesium	2650		mg/kg	42.4
				Manganese	50		mg/kg	2.1
				Nickel	4.4	J	mg/kg	8.5
				Potassium	812	J	mg/kg	1060
				Silver		U	mg/kg	2.1

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
METALS	CAN074-7413-1008	0475450004SA	8-10	Sodium		U	mg/kg	1060
				Vanadium	13.7		mg/kg	2.1
				Zinc	8.7		mg/kg	4.2
				Arsenic	2.5		mg/kg	0.53
				Lead	3.2		mg/kg	1.1
				Mercury		U	mg/kg	0.11
				Selenium		U	mg/kg	1.1
				Thallium	0.22	J	mg/kg	1.1
	CAN074-7413-1012	0475450006SA	12-13.4	Aluminum	5250		mg/kg	10.8
				Antimony		UJ	mg/kg	6.5
				Barium	843	J	mg/kg	1.1
				Beryllium	0.26		mg/kg	0.22
				Cadmium		U	mg/kg	0.54
				Calcium	84300	J	mg/kg	21.5
				Chromium	5.2		mg/kg	1.1
				Cobalt	2.4		mg/kg	1.1
				Copper	2.4		mg/kg	2.2
				Iron	4570		mg/kg	10.8
				Magnesium	3620		mg/kg	21.5
				Manganese	67.9		mg/kg	1.1
				Nickel	5.6		mg/kg	4.3
				Potassium	1380		mg/kg	538
				Silver		U	mg/kg	1.1
				Sodium	169	J	mg/kg	538
				Vanadium	19.4		mg/kg	1.1
				Zinc	8.9		mg/kg	2.2
				Arsenic	2.2		mg/kg	0.54
				Lead	3.7		mg/kg	1.1
				Mercury		U	mg/kg	0.11
				Selenium		U	mg/kg	1.1
				Thallium		U	mg/kg	1.1
	CAN074-7413-1464	0475450005SA	4-6	Aluminum	6150		mg/kg	10.6
				Antimony		UJ	mg/kg	6.4
				Barium	132	J	mg/kg	1.1
				Beryllium	0.4		mg/kg	0.21
				Cadmium		U	mg/kg	0.53
				Calcium	94100	J	mg/kg	21.3
				Chromium	5.2		mg/kg	1.1
				Cobalt	3		mg/kg	1.1
				Copper	4.9		mg/kg	2.1
				Iron	5760		mg/kg	10.6
				Magnesium	1810		mg/kg	21.3
				Manganese	91.4		mg/kg	1.1
				Nickel	6.6		mg/kg	4.3
				Potassium	1090		mg/kg	531
				Silver		U	mg/kg	1.1
				Sodium		U	mg/kg	531
				Vanadium	17.9		mg/kg	1.1
				Zinc	12.5		mg/kg	2.1
				Arsenic	2.8		mg/kg	0.53
				Lead	5		mg/kg	1.1
				Mercury		U	mg/kg	0.11
				Selenium		U	mg/kg	1.1
				Thallium		U	mg/kg	1.1
	CAN074-7414-1006	0475450008SA	6-8	Aluminum	2730		mg/kg	56
				Antimony		UJ	mg/kg	33.6

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
METALS	CAN074-7414-1006	0475450008SA	6-8	Barium	226	J	mg/kg	5.6
				Beryllium		U	mg/kg	1.1
				Cadmium		U	mg/kg	2.8
				Calcium	284000	J	mg/kg	112
				Chromium		U	mg/kg	5.6
				Cobalt	1.8	J	mg/kg	5.6
				Copper		U	mg/kg	11.2
				Iron	1820		mg/kg	56
				Magnesium	4200		mg/kg	112
				Manganese	39.1		mg/kg	5.6
				Nickel		U	mg/kg	22.4
				Potassium	432	J	mg/kg	2800
				Silver		U	mg/kg	5.6
				Sodium		U	mg/kg	2800
				Vanadium	6.8		mg/kg	5.6
				Zinc	4.2	J	mg/kg	11.2
				Arsenic	1.3		mg/kg	0.56
				Lead	0.65	J	mg/kg	1.1
				Mercury		U	mg/kg	0.11
				Selenium		U	mg/kg	1.1
				Thallium		U	mg/kg	1.1
	CAN074-7414-1010	0475450007SA	10-12	Aluminum	2290		mg/kg	56.4
				Antimony		UJ	mg/kg	33.8
				Barium	1180	J	mg/kg	5.6
				Beryllium		U	mg/kg	1.1
				Cadmium		U	mg/kg	2.8
				Calcium	299000	J	mg/kg	113
				Chromium		U	mg/kg	5.6
				Cobalt		U	mg/kg	5.6
				Copper		U	mg/kg	11.3
				Iron	1430		mg/kg	56.4
				Magnesium	9040		mg/kg	113
				Manganese	31.8		mg/kg	5.6
				Nickel	5.2	J	mg/kg	22.6
				Potassium	264	J	mg/kg	2820
				Silver		U	mg/kg	5.6
				Sodium		U	mg/kg	2820
				Vanadium	19.6		mg/kg	5.6
				Zinc	2.4	J	mg/kg	11.3
				Arsenic	1.4		mg/kg	0.56
				Lead	0.65		mg/kg	0.56
				Mercury		U	mg/kg	0.11
				Selenium		U	mg/kg	1.1
				Thallium		U	mg/kg	1.1
	CAN074-7414-1014	0475450009SA	14-16	Aluminum	2620		mg/kg	56.4
				Antimony		UJ	mg/kg	33.8
				Barium	625	J	mg/kg	5.6
				Beryllium		U	mg/kg	1.1
				Cadmium		U	mg/kg	2.8
				Calcium	264000	J	mg/kg	113
				Chromium		U	mg/kg	5.6
				Cobalt		U	mg/kg	5.6
				Copper		U	mg/kg	11.3
				Iron	1810		mg/kg	56.4
				Magnesium	9160		mg/kg	113
				Manganese	22.4		mg/kg	5.6

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
METALS	CAN074-7414-1014	0475450009SA	14-16	Nickel	5.2	J	mg/kg	22.6
				Potassium	361	J	mg/kg	2820
				Silver		U	mg/kg	5.6
				Sodium		U	mg/kg	2820
				Vanadium	22		mg/kg	5.6
				Zinc	4.2	J	mg/kg	11.3
				Arsenic	0.99		mg/kg	0.56
				Lead	0.68		mg/kg	0.56
				Mercury		U	mg/kg	0.11
				Selenium		U	mg/kg	1.1
				Thallium		U	mg/kg	1.1
	CAN074-7415-1004	0475450010SA	4-6	Aluminum	5010		mg/kg	11.4
				Antimony		UJ	mg/kg	6.9
				Barium	118	J	mg/kg	1.1
				Beryllium		U	mg/kg	0.23
				Cadmium		U	mg/kg	0.57
				Calcium	102000	J	mg/kg	22.9
				Chromium	4.6		mg/kg	1.1
				Cobalt	2.5		mg/kg	1.1
				Copper	3.8		mg/kg	2.3
				Iron	4680		mg/kg	11.4
				Magnesium	1600		mg/kg	22.9
				Manganese	86.4		mg/kg	1.1
				Nickel	5.4		mg/kg	4.6
				Potassium	958		mg/kg	572
				Silver		U	mg/kg	1.1
				Sodium	94.5	J	mg/kg	572
				Vanadium	10.6		mg/kg	1.1
				Zinc	11		mg/kg	2.3
				Arsenic	1.7		mg/kg	0.57
				Lead	3.9		mg/kg	0.57
				Mercury		U	mg/kg	0.11
				Selenium		U	mg/kg	0.57
				Thallium	0.13	J	mg/kg	1.1
	CAN074-7415-1008	0475450011SA	8-10	Aluminum	3130		mg/kg	55.4
				Antimony		UJ	mg/kg	33.2
				Barium	135	J	mg/kg	5.5
				Beryllium		U	mg/kg	1.1
				Cadmium		U	mg/kg	2.8
				Calcium	290000	J	mg/kg	111
				Chromium		U	mg/kg	5.5
				Cobalt	2	J	mg/kg	5.5
				Copper		U	mg/kg	11.1
				Iron	2350		mg/kg	55.4
				Magnesium	5840		mg/kg	111
				Manganese	41.8		mg/kg	5.5
				Nickel		U	mg/kg	22.1
				Potassium	437	J	mg/kg	2770
				Silver		U	mg/kg	5.5
				Sodium		U	mg/kg	2770
				Vanadium	15.2		mg/kg	5.5
				Zinc	4.7	J	mg/kg	11.1
				Arsenic	1		mg/kg	0.55
				Lead	1.1		mg/kg	0.55
				Mercury		U	mg/kg	0.11
				Selenium		U	mg/kg	0.55

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
METALS	CAN074-7415-1008	0475450011SA	8-10	Thallium		U	mg/kg	1.1
	CAN074-7415-1012	0475450012SA	12-14	Aluminum	4580		mg/kg	22
				Antimony		U	mg/kg	13.2
				Barium	316	J	mg/kg	2.2
				Beryllium		U	mg/kg	0.44
				Cadmium		U	mg/kg	1.1
				Calcium	167000		mg/kg	44
				Chromium	3.3	J	mg/kg	2.2
				Cobalt	1.4	J	mg/kg	2.2
				Copper	0.74	J	mg/kg	4.4
				Iron	3260		mg/kg	22
				Magnesium	5070		mg/kg	44
				Manganese	38.5		mg/kg	2.2
				Nickel	2.5	J	mg/kg	8.8
				Potassium	752	J	mg/kg	1100
				Silver		U	mg/kg	2.2
				Sodium		U	mg/kg	1100
				Vanadium	15.8		mg/kg	2.2
				Zinc	6.9		mg/kg	4.4
				Arsenic	0.98		mg/kg	0.55
				Lead	1.8		mg/kg	0.55
				Mercury		U	mg/kg	0.11
				Selenium		UJ	mg/kg	0.55
				Thallium		UJ	mg/kg	1.1
	CAN074-7418-1005	0475450013SA	5-7	Aluminum	5960		mg/kg	10.5
				Antimony		U	mg/kg	6.3
				Barium	64.2	J	mg/kg	1.1
				Beryllium	0.33		mg/kg	0.21
				Cadmium		U	mg/kg	0.53
				Calcium	4720		mg/kg	21
				Chromium	7.5	J	mg/kg	1.1
				Cobalt	3.2		mg/kg	1.1
				Copper	5.2		mg/kg	2.1
				Iron	7150		mg/kg	10.5
				Magnesium	1220		mg/kg	21
				Manganese	144		mg/kg	1.1
				Nickel	7		mg/kg	4.2
				Potassium	1240		mg/kg	525
				Silver		U	mg/kg	1.1
				Sodium		U	mg/kg	525
				Vanadium	15.9		mg/kg	1.1
				Zinc	14.4		mg/kg	2.1
				Arsenic	2.1		mg/kg	0.53
				Lead	4.3		mg/kg	0.53
				Mercury		U	mg/kg	0.11
				Selenium		UJ	mg/kg	0.53
				Thallium		UJ	mg/kg	0.53
	CAN074-7418-1009	0475450014SA	9-11	Aluminum	3930		mg/kg	52.7
				Antimony		U	mg/kg	31.6
				Barium	559	J	mg/kg	5.3
				Beryllium		U	mg/kg	1.1
				Cadmium		U	mg/kg	2.6
				Calcium	261000		mg/kg	105
				Chromium		UJ	mg/kg	5.3
				Cobalt	3.8	J	mg/kg	5.3
				Copper		U	mg/kg	10.5

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
METALS	CAN074-7418-1009	0475450014SA	9-11	Iron	3440		mg/kg	52.7
				Magnesium	3070		mg/kg	105
				Manganese	80.1		mg/kg	5.3
				Nickel	5.3	J	mg/kg	21.1
				Potassium	724	J	mg/kg	2630
				Silver		U	mg/kg	5.3
				Sodium		U	mg/kg	2630
				Vanadium	12.5		mg/kg	5.3
				Zinc	7.4	J	mg/kg	10.5
				Arsenic	2.2		mg/kg	0.53
				Lead	2.3		mg/kg	0.53
				Mercury		U	mg/kg	0.11
				Selenium		UJ	mg/kg	1.1
				Thallium		UJ	mg/kg	1.1
	CAN074-7418-1015	0475450015SA	15-17.2	Aluminum	3320		mg/kg	52.8
				Antimony		U	mg/kg	31.7
				Barium	189	J	mg/kg	5.3
				Beryllium		U	mg/kg	1.1
				Cadmium		U	mg/kg	2.6
				Calcium	225000		mg/kg	106
				Chromium	11.9	J	mg/kg	5.3
				Cobalt		U	mg/kg	5.3
				Copper		U	mg/kg	10.6
				Iron	2580		mg/kg	52.8
				Magnesium	4510		mg/kg	106
				Manganese	26.3		mg/kg	5.3
				Nickel		U	mg/kg	21.1
				Potassium	543	J	mg/kg	2640
				Silver		U	mg/kg	5.3
				Sodium		U	mg/kg	2640
				Vanadium	14.1		mg/kg	5.3
				Zinc	5	J	mg/kg	10.6
				Arsenic	2.2		mg/kg	0.53
				Lead	2		mg/kg	0.53
				Mercury		U	mg/kg	0.11
				Selenium		UJ	mg/kg	1.1
				Thallium		UJ	mg/kg	1.1
	CAN074-7418-1465	0475450016SA		Aluminum	4660		mg/kg	52.9
				Antimony		U	mg/kg	31.7
				Barium	668	J	mg/kg	5.3
				Beryllium		U	mg/kg	1.1
				Cadmium		U	mg/kg	2.6
				Calcium	244000		mg/kg	106
				Chromium	3.7	J	mg/kg	5.3
				Cobalt	2.8	J	mg/kg	5.3
				Copper		U	mg/kg	10.6
				Iron	3440		mg/kg	52.9
				Magnesium	4990		mg/kg	106
				Manganese	39.7		mg/kg	5.3
				Nickel	6.2	J	mg/kg	21.2
				Potassium	778	J	mg/kg	2650
				Silver		U	mg/kg	5.3
				Sodium		U	mg/kg	2650
				Vanadium	18.3		mg/kg	5.3
				Zinc	6.8	J	mg/kg	10.6
				Arsenic	2.3		mg/kg	0.53

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
METALS	CAN074-7418-1465	0475450016SA	15-17.2	Lead	2.1		mg/kg	0.53
				Mercury		U	mg/kg	0.11
				Selenium		UJ	mg/kg	1.1
				Thallium		UJ	mg/kg	1.1
	CAN074-7423-1004	0476170001SA	4-6	Aluminum	9520		mg/kg	21.2
				Antimony		U	mg/kg	12.7
				Barium	125	J	mg/kg	2.1
				Beryllium	0.67		mg/kg	0.42
				Cadmium		U	mg/kg	1.1
				Calcium	121000		mg/kg	42.4
				Chromium	7.7	J	mg/kg	2.1
				Cobalt	4.4		mg/kg	2.1
				Copper	4.6		mg/kg	4.2
				Iron	8420		mg/kg	21.2
				Magnesium	2710		mg/kg	42.4
				Manganese	188		mg/kg	2.1
				Nickel	7.1	J	mg/kg	8.5
				Potassium	1710		mg/kg	1060
				Silver		U	mg/kg	2.1
				Sodium		U	mg/kg	1060
				Vanadium	24.4		mg/kg	2.1
				Zinc	18.8		mg/kg	4.2
				Arsenic	2.3		mg/kg	0.53
				Lead	4.9	J	mg/kg	10.6
				Mercury		U	mg/kg	0.11
				Selenium		UJ	mg/kg	1.1
				Thallium		UJ	mg/kg	1.1
	CAN074-7423-1008	0476170002SA	8-10	Aluminum	5410		mg/kg	52.8
				Antimony		U	mg/kg	31.7
				Barium	796	J	mg/kg	5.3
				Beryllium		U	mg/kg	1.1
				Cadmium		U	mg/kg	2.6
				Calcium	274000		mg/kg	106
				Chromium		UJ	mg/kg	5.3
				Cobalt	2.8	J	mg/kg	5.3
				Copper	2.1	J	mg/kg	10.6
				Iron	3690		mg/kg	52.8
				Magnesium	4400		mg/kg	106
				Manganese	37.3		mg/kg	5.3
				Nickel	7.2	J	mg/kg	21.1
				Potassium	1150	J	mg/kg	2640
				Silver		U	mg/kg	5.3
				Sodium		U	mg/kg	2640
				Vanadium	12.3		mg/kg	5.3
				Zinc	9.8	J	mg/kg	10.6
				Arsenic	2.3		mg/kg	0.53
				Lead	2.3		mg/kg	1.1
				Mercury		U	mg/kg	0.11
				Selenium		UJ	mg/kg	1.1
				Thallium		UJ	mg/kg	1.1
	CAN074-7423-1012	0476170003SA	12-14	Aluminum	5080		mg/kg	52.8
				Antimony		U	mg/kg	31.7
				Barium	307	J	mg/kg	5.3
				Beryllium		U	mg/kg	1.1
				Cadmium		U	mg/kg	2.6
				Calcium	269000		mg/kg	106

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
METALS	CAN074-7423-1012	0476170003SA	12-14	Chromium		UJ	mg/kg	5.3
				Cobalt	2.7	J	mg/kg	5.3
				Copper		U	mg/kg	10.6
				Iron	3660		mg/kg	52.8
				Magnesium	5060		mg/kg	106
				Manganese	32.7		mg/kg	5.3
				Nickel	6.8	J	mg/kg	21.1
				Potassium	1010	J	mg/kg	2640
				Silver		U	mg/kg	5.3
				Sodium		U	mg/kg	2640
				Vanadium	11.2		mg/kg	5.3
				Zinc	8.4	J	mg/kg	10.6
				Arsenic	1.7		mg/kg	0.53
				Lead	1.8		mg/kg	0.53
				Mercury		U	mg/kg	0.11
				Selenium		UJ	mg/kg	1.1
				Thallium		UJ	mg/kg	1.1
PEST/PCB	CAN074-7401-1018	0474710014SA	18-20	4,4'-DDD		U	ug/kg	3.8
				4,4'-DDE		U	ug/kg	3.8
				4,4'-DDT		U	ug/kg	3.8
				Aldrin		U	ug/kg	2
				alpha-BHC		U	ug/kg	2
				alpha-Chlordane		U	ug/kg	2
				Aroclor 1016		U	ug/kg	38
				Aroclor 1221		U	ug/kg	38
				Aroclor 1232		U	ug/kg	38
				Aroclor 1242		U	ug/kg	38
				Aroclor 1248		U	ug/kg	38
				Aroclor 1254		U	ug/kg	38
				Aroclor 1260		U	ug/kg	38
				beta-BHC		U	ug/kg	2
				delta-BHC		U	ug/kg	2
				Dieldrin		U	ug/kg	3.8
				Endosulfan I		U	ug/kg	2
				Endosulfan II		U	ug/kg	3.8
				Endosulfan sulfate		U	ug/kg	3.8
				Endrin		U	ug/kg	3.8
				Endrin ketone		U	ug/kg	3.8
				gamma-BHC (Lindane)		U	ug/kg	2
				gamma-Chlordane		U	ug/kg	2
				Heptachlor		U	ug/kg	2
				Heptachlor epoxide		U	ug/kg	2
				Methoxychlor		U	ug/kg	20
				Toxaphene		U	ug/kg	200
	CAN074-7402-1018	0475450002SA		4,4'-DDD		U	ug/kg	3.7
				4,4'-DDE		U	ug/kg	3.7
				4,4'-DDT		U	ug/kg	3.7
				Aldrin		U	ug/kg	1.9
				alpha-BHC		U	ug/kg	1.9
				alpha-Chlordane		U	ug/kg	1.9
				Aroclor 1016		U	ug/kg	37
				Aroclor 1221		U	ug/kg	37
				Aroclor 1232		U	ug/kg	37
				Aroclor 1242		U	ug/kg	37
				Aroclor 1248		U	ug/kg	37

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
PEST/PCB	CAN074-7402-1018	0475450002SA	18-20	Aroclor 1254		U	ug/kg	37
				Aroclor 1260		U	ug/kg	37
				beta-BHC		U	ug/kg	1.9
				delta-BHC		U	ug/kg	1.9
				Dieldrin		U	ug/kg	3.7
				Endosulfan I		U	ug/kg	1.9
				Endosulfan II		U	ug/kg	3.7
				Endosulfan sulfate		U	ug/kg	3.7
				Endrin		U	ug/kg	3.7
				Endrin ketone		U	ug/kg	3.7
				gamma-BHC (Lindane)		U	ug/kg	1.9
				gamma-Chlordane		U	ug/kg	1.9
				Heptachlor		U	ug/kg	1.9
				Heptachlor epoxide		U	ug/kg	1.9
				Methoxychlor		U	ug/kg	19
				Toxaphene		U	ug/kg	190
	CAN074-7403-1018	0475450001SA		4,4'-DDD		U	ug/kg	3.6
				4,4'-DDE		U	ug/kg	3.6
				4,4'-DDT		U	ug/kg	3.6
				Aldrin		U	ug/kg	1.9
				alpha-BHC		U	ug/kg	1.9
				alpha-Chlordane		U	ug/kg	1.9
				Aroclor 1016		U	ug/kg	36
				Aroclor 1221		U	ug/kg	36
				Aroclor 1232		U	ug/kg	36
				Aroclor 1242		U	ug/kg	36
				Aroclor 1248		U	ug/kg	36
				Aroclor 1254		U	ug/kg	36
				Aroclor 1260		U	ug/kg	36
				beta-BHC		U	ug/kg	1.9
				delta-BHC		U	ug/kg	1.9
				Dieldrin		U	ug/kg	3.6
				Endosulfan I		U	ug/kg	1.9
				Endosulfan II		U	ug/kg	3.6
				Endosulfan sulfate		U	ug/kg	3.6
				Endrin		U	ug/kg	3.6
				Endrin ketone		U	ug/kg	3.6
				gamma-BHC (Lindane)		U	ug/kg	1.9
				gamma-Chlordane		U	ug/kg	1.9
				Heptachlor		U	ug/kg	1.9
				Heptachlor epoxide		U	ug/kg	1.9
				Methoxychlor		U	ug/kg	19
				Toxaphene		U	ug/kg	190
	CAN074-7404-1018	0474710011SA		4,4'-DDD		U	ug/kg	3.6
				4,4'-DDE		U	ug/kg	3.6
				4,4'-DDT		U	ug/kg	3.6
				Aldrin		U	ug/kg	1.8
				alpha-BHC		U	ug/kg	1.8
				alpha-Chlordane		U	ug/kg	1.8
				Aroclor 1016		U	ug/kg	36
				Aroclor 1221		U	ug/kg	36
				Aroclor 1232		U	ug/kg	36
				Aroclor 1242		U	ug/kg	36
				Aroclor 1248		U	ug/kg	36
				Aroclor 1254		U	ug/kg	36
				Aroclor 1260		U	ug/kg	36

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
PEST/PCB	CAN074-7404-1018	0474710011SA	18-20	beta-BHC		U	ug/kg	1.8
				delta-BHC		U	ug/kg	1.8
				Dieldrin		U	ug/kg	3.6
				Endosulfan I		U	ug/kg	1.8
				Endosulfan II		U	ug/kg	3.6
				Endosulfan sulfate		U	ug/kg	3.6
				Endrin		U	ug/kg	3.6
				Endrin ketone		U	ug/kg	3.6
				gamma-BHC (Lindane)		U	ug/kg	1.8
				gamma-Chlordane		U	ug/kg	1.8
				Heptachlor		U	ug/kg	1.8
				Heptachlor epoxide		U	ug/kg	1.8
				Methoxychlor		U	ug/kg	18
				Toxaphene		U	ug/kg	180
	CAN074-7405-1018	0474710009SA		4,4'-DDD		U	ug/kg	3.7
				4,4'-DDE		U	ug/kg	3.7
				4,4'-DDT		U	ug/kg	3.7
				Aldrin		U	ug/kg	1.9
				alpha-BHC		U	ug/kg	1.9
				alpha-Chlordane		U	ug/kg	1.9
				Aroclor 1016		U	ug/kg	37
				Aroclor 1221		U	ug/kg	37
				Aroclor 1232		U	ug/kg	37
				Aroclor 1242		U	ug/kg	37
				Aroclor 1248		U	ug/kg	37
				Aroclor 1254		U	ug/kg	37
				Aroclor 1260		U	ug/kg	37
				beta-BHC		U	ug/kg	1.9
				delta-BHC		U	ug/kg	1.9
				Dieldrin		U	ug/kg	3.7
				Endosulfan I		U	ug/kg	1.9
				Endosulfan II		U	ug/kg	3.7
				Endosulfan sulfate		U	ug/kg	3.7
				Endrin		U	ug/kg	3.7
				Endrin ketone		U	ug/kg	3.7
				gamma-BHC (Lindane)		U	ug/kg	1.9
				gamma-Chlordane		U	ug/kg	1.9
				Heptachlor		U	ug/kg	1.9
				Heptachlor epoxide		U	ug/kg	1.9
				Methoxychlor		U	ug/kg	19
				Toxaphene		U	ug/kg	190
	CAN074-7405-1463	0474710010SA		4,4'-DDD		U	ug/kg	3.7
				4,4'-DDE		U	ug/kg	3.7
				4,4'-DDT		U	ug/kg	3.7
				Aldrin		U	ug/kg	1.9
				alpha-BHC		U	ug/kg	1.9
				alpha-Chlordane		U	ug/kg	1.9
				Aroclor 1016		U	ug/kg	37
				Aroclor 1221		U	ug/kg	37
				Aroclor 1232		U	ug/kg	37
				Aroclor 1242		U	ug/kg	37
				Aroclor 1248		U	ug/kg	37
				Aroclor 1254		U	ug/kg	37
				Aroclor 1260		U	ug/kg	37
				beta-BHC		U	ug/kg	1.9
				delta-BHC		U	ug/kg	1.9

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
PEST/PCB	CAN074-7405-1463	0474710010SA	18-20	Dieldrin		U	ug/kg	3.7
				Endosulfan I		U	ug/kg	1.9
				Endosulfan II		U	ug/kg	3.7
				Endosulfan sulfate		U	ug/kg	3.7
				Endrin		U	ug/kg	3.7
				Endrin ketone		U	ug/kg	3.7
				gamma-BHC (Lindane)		U	ug/kg	1.9
				gamma-Chlordane		U	ug/kg	1.9
				Heptachlor		U	ug/kg	1.9
				Heptachlor epoxide		U	ug/kg	1.9
				Methoxychlor		U	ug/kg	19
				Toxaphene		U	ug/kg	190
	CAN074-7406-1018	0474710012SA		4,4'-DDD		U	ug/kg	3.6
				4,4'-DDE		U	ug/kg	3.6
				4,4'-DDT		U	ug/kg	3.6
				Aldrin		U	ug/kg	1.8
				alpha-BHC		U	ug/kg	1.8
				alpha-Chlordane		U	ug/kg	1.8
				Aroclor 1016		U	ug/kg	36
				Aroclor 1221		U	ug/kg	36
				Aroclor 1232		U	ug/kg	36
				Aroclor 1242		U	ug/kg	36
				Aroclor 1248		U	ug/kg	36
				Aroclor 1254		U	ug/kg	36
				Aroclor 1260		U	ug/kg	36
				beta-BHC		U	ug/kg	1.8
				delta-BHC		U	ug/kg	1.8
				Dieldrin		U	ug/kg	3.6
				Endosulfan I		U	ug/kg	1.8
				Endosulfan II		U	ug/kg	3.6
				Endosulfan sulfate		U	ug/kg	3.6
				Endrin		U	ug/kg	3.6
				Endrin ketone		U	ug/kg	3.6
				gamma-BHC (Lindane)		U	ug/kg	1.8
				gamma-Chlordane		U	ug/kg	1.8
				Heptachlor		U	ug/kg	1.8
				Heptachlor epoxide		U	ug/kg	1.8
				Methoxychlor		U	ug/kg	18
				Toxaphene		U	ug/kg	180
	CAN074-7407-1018	0474710013SA		4,4'-DDD		U	ug/kg	3.7
				4,4'-DDE		U	ug/kg	3.7
				4,4'-DDT		U	ug/kg	3.7
				Aldrin		U	ug/kg	1.9
				alpha-BHC		U	ug/kg	1.9
				alpha-Chlordane		U	ug/kg	1.9
				Aroclor 1016		U	ug/kg	37
				Aroclor 1221		U	ug/kg	37
				Aroclor 1232		U	ug/kg	37
				Aroclor 1242		U	ug/kg	37
				Aroclor 1248		U	ug/kg	37
				Aroclor 1254		U	ug/kg	37
				Aroclor 1260		U	ug/kg	37
				beta-BHC		U	ug/kg	1.9
				delta-BHC		U	ug/kg	1.9
				Dieldrin		U	ug/kg	3.7
				Endosulfan I		U	ug/kg	1.9

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
PEST/PCB	CAN074-7407-1018	0474710013SA	18-20	Endosulfan II		U	ug/kg	3.7
				Endosulfan sulfate		U	ug/kg	3.7
				Endrin		U	ug/kg	3.7
				Endrin ketone		U	ug/kg	3.7
				gamma-BHC (Lindane)		U	ug/kg	1.9
				gamma-Chlordane		U	ug/kg	1.9
				Heptachlor		U	ug/kg	1.9
				Heptachlor epoxide		U	ug/kg	1.9
				Methoxychlor		U	ug/kg	19
				Toxaphene		U	ug/kg	190
	CAN074-7408-1006	0474710001SA	6-8	4,4'-DDD		U	ug/kg	3.6
				4,4'-DDE		U	ug/kg	3.6
				4,4'-DDT		U	ug/kg	3.6
				Aldrin		U	ug/kg	1.9
				alpha-BHC		U	ug/kg	1.9
				alpha-Chlordane		U	ug/kg	1.9
				Aroclor 1016		U	ug/kg	36
				Aroclor 1221		U	ug/kg	36
				Aroclor 1232		U	ug/kg	36
				Aroclor 1242		U	ug/kg	36
				Aroclor 1248		U	ug/kg	36
				Aroclor 1254		U	ug/kg	36
				Aroclor 1260		U	ug/kg	36
				beta-BHC		U	ug/kg	1.9
				delta-BHC		U	ug/kg	1.9
				Dieldrin		U	ug/kg	3.6
				Endosulfan I		U	ug/kg	1.9
				Endosulfan II		U	ug/kg	3.6
				Endosulfan sulfate		U	ug/kg	3.6
				Endrin		U	ug/kg	3.6
				Endrin ketone		U	ug/kg	3.6
				gamma-BHC (Lindane)		U	ug/kg	1.9
				gamma-Chlordane		U	ug/kg	1.9
				Heptachlor		U	ug/kg	1.9
				Heptachlor epoxide		U	ug/kg	1.9
				Methoxychlor		U	ug/kg	19
				Toxaphene		U	ug/kg	190
	CAN074-7408-1010	0474710003SA	10-12	4,4'-DDD		U	ug/kg	3.7
				4,4'-DDE		U	ug/kg	3.7
				4,4'-DDT		U	ug/kg	3.7
				Aldrin		U	ug/kg	1.9
				alpha-BHC		U	ug/kg	1.9
				alpha-Chlordane		U	ug/kg	1.9
				Aroclor 1016		U	ug/kg	37
				Aroclor 1221		U	ug/kg	37
				Aroclor 1232		U	ug/kg	37
				Aroclor 1242		U	ug/kg	37
				Aroclor 1248		U	ug/kg	37
				Aroclor 1254		U	ug/kg	37
				Aroclor 1260		U	ug/kg	37
				beta-BHC		U	ug/kg	1.9
				delta-BHC		U	ug/kg	1.9
				Dieldrin		U	ug/kg	3.7
				Endosulfan I		U	ug/kg	1.9
				Endosulfan II		U	ug/kg	3.7
				Endosulfan sulfate		U	ug/kg	3.7

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
PEST/PCB	CAN074-7408-1010	0474710003SA	10-12	Endrin		U	ug/kg	3.7
				Endrin ketone		U	ug/kg	3.7
				gamma-BHC (Lindane)		U	ug/kg	1.9
				gamma-Chlordane		U	ug/kg	1.9
				Heptachlor		U	ug/kg	1.9
				Heptachlor epoxide		U	ug/kg	1.9
				Methoxychlor		U	ug/kg	19
				Toxaphene		U	ug/kg	190
	CAN074-7408-1014	0474710004SA	14-16	4,4'-DDD		U	ug/kg	3.8
				4,4'-DDE		U	ug/kg	3.8
				4,4'-DDT		U	ug/kg	3.8
				Aldrin		U	ug/kg	1.9
				alpha-BHC		U	ug/kg	1.9
				alpha-Chlordane		U	ug/kg	1.9
				Aroclor 1016		U	ug/kg	38
				Aroclor 1221		U	ug/kg	38
				Aroclor 1232		U	ug/kg	38
				Aroclor 1242		U	ug/kg	38
				Aroclor 1248		U	ug/kg	38
				Aroclor 1254		U	ug/kg	38
				Aroclor 1260		U	ug/kg	38
				beta-BHC		U	ug/kg	1.9
				delta-BHC		U	ug/kg	1.9
				Dieldrin		U	ug/kg	3.8
				Endosulfan I		U	ug/kg	1.9
				Endosulfan II		U	ug/kg	3.8
				Endosulfan sulfate		U	ug/kg	3.8
				Endrin		U	ug/kg	3.8
				Endrin ketone		U	ug/kg	3.8
				gamma-BHC (Lindane)		U	ug/kg	1.9
				gamma-Chlordane		U	ug/kg	1.9
				Heptachlor		U	ug/kg	1.9
				Heptachlor epoxide		U	ug/kg	1.9
				Methoxychlor		U	ug/kg	19
				Toxaphene		U	ug/kg	190
	CAN074-7408-1022	0474710005SA	22-22.75	4,4'-DDD		U	ug/kg	3.9
				4,4'-DDE		U	ug/kg	3.9
				4,4'-DDT		U	ug/kg	3.9
				Aldrin		U	ug/kg	2
				alpha-BHC		U	ug/kg	2
				alpha-Chlordane		U	ug/kg	2
				Aroclor 1016		U	ug/kg	39
				Aroclor 1221		U	ug/kg	39
				Aroclor 1232		U	ug/kg	39
				Aroclor 1242		U	ug/kg	39
				Aroclor 1248		U	ug/kg	39
				Aroclor 1254		U	ug/kg	39
				Aroclor 1260		U	ug/kg	39
				beta-BHC		U	ug/kg	2
				delta-BHC		U	ug/kg	2
				Dieldrin		U	ug/kg	3.9
				Endosulfan I		U	ug/kg	2
				Endosulfan II		U	ug/kg	3.9
				Endosulfan sulfate		U	ug/kg	3.9
				Endrin		U	ug/kg	3.9
				Endrin ketone		U	ug/kg	3.9

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
PEST/PCB	CAN074-7408-1022	0474710005SA	22-22.75	gamma-BHC (Lindane)		U	ug/kg	2
				gamma-Chlordane		U	ug/kg	2
				Heptachlor		U	ug/kg	2
				Heptachlor epoxide		U	ug/kg	2
				Methoxychlor		U	ug/kg	20
				Toxaphene		U	ug/kg	200
	CAN074-7408-1024	0474710006SA	24-25.4	4,4'-DDD		U	ug/kg	3.7
				4,4'-DDE		U	ug/kg	3.7
				4,4'-DDT		U	ug/kg	3.7
				Aldrin		U	ug/kg	1.9
				alpha-BHC		U	ug/kg	1.9
				alpha-Chlordane		U	ug/kg	1.9
				Aroclor 1016		U	ug/kg	37
				Aroclor 1221		U	ug/kg	37
				Aroclor 1232		U	ug/kg	37
				Aroclor 1242		U	ug/kg	37
				Aroclor 1248		U	ug/kg	37
				Aroclor 1254		U	ug/kg	37
				Aroclor 1260		U	ug/kg	37
				beta-BHC		U	ug/kg	1.9
				delta-BHC		U	ug/kg	1.9
				Dieldrin		U	ug/kg	3.7
				Endosulfan I		U	ug/kg	1.9
				Endosulfan II		U	ug/kg	3.7
				Endosulfan sulfate		U	ug/kg	3.7
				Endrin		U	ug/kg	3.7
				Endrin ketone		U	ug/kg	3.7
				gamma-BHC (Lindane)		U	ug/kg	1.9
				gamma-Chlordane		U	ug/kg	1.9
				Heptachlor		U	ug/kg	1.9
				Heptachlor epoxide		U	ug/kg	1.9
				Methoxychlor		U	ug/kg	19
				Toxaphene		U	ug/kg	190
	CAN074-7408-1034	0474710007SA	34-36	4,4'-DDD		U	ug/kg	3.4
				4,4'-DDE		U	ug/kg	3.4
				4,4'-DDT		U	ug/kg	3.4
				Aldrin		U	ug/kg	1.7
				alpha-BHC		U	ug/kg	1.7
				alpha-Chlordane		U	ug/kg	1.7
				Aroclor 1016		U	ug/kg	34
				Aroclor 1221		U	ug/kg	34
				Aroclor 1232		U	ug/kg	34
				Aroclor 1242		U	ug/kg	34
				Aroclor 1248		U	ug/kg	34
				Aroclor 1254		U	ug/kg	34
				Aroclor 1260		U	ug/kg	34
				beta-BHC		U	ug/kg	1.7
				delta-BHC		U	ug/kg	1.7
				Dieldrin		U	ug/kg	3.4
				Endosulfan I		U	ug/kg	1.7
				Endosulfan II		U	ug/kg	3.4
				Endosulfan sulfate		U	ug/kg	3.4
				Endrin		U	ug/kg	3.4
				Endrin ketone		U	ug/kg	3.4
				gamma-BHC (Lindane)		U	ug/kg	1.7
				gamma-Chlordane		U	ug/kg	1.7

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
PEST/PCB	CAN074-7408-1034	0474710007SA	34-36	Heptachlor		U	ug/kg	1.7
				Heptachlor epoxide		U	ug/kg	1.7
				Methoxychlor		U	ug/kg	17
				Toxaphene		U	ug/kg	170
	CAN074-7408-1044	0474710008SA	44-46	4,4'-DDD		U	ug/kg	3.4
				4,4'-DDE		U	ug/kg	3.4
				4,4'-DDT		U	ug/kg	3.4
				Aldrin		U	ug/kg	1.7
				alpha-BHC		U	ug/kg	1.7
				alpha-Chlordane		U	ug/kg	1.7
				Aroclor 1016		U	ug/kg	34
				Aroclor 1221		U	ug/kg	34
				Aroclor 1232		U	ug/kg	34
				Aroclor 1242		U	ug/kg	34
				Aroclor 1248		U	ug/kg	34
				Aroclor 1254		U	ug/kg	34
				Aroclor 1260		U	ug/kg	34
				beta-BHC		U	ug/kg	1.7
				delta-BHC		U	ug/kg	1.7
				Dieldrin		U	ug/kg	3.4
				Endosulfan I		U	ug/kg	1.7
				Endosulfan II		U	ug/kg	3.4
				Endosulfan sulfate		U	ug/kg	3.4
				Endrin		U	ug/kg	3.4
				Endrin ketone		U	ug/kg	3.4
				gamma-BHC (Lindane)		U	ug/kg	1.7
				gamma-Chlordane		U	ug/kg	1.7
				Heptachlor		U	ug/kg	1.7
				Heptachlor epoxide		U	ug/kg	1.7
				Methoxychlor		U	ug/kg	17
				Toxaphene		U	ug/kg	170
	CAN074-7408-1462	0474710002SA	6-8	4,4'-DDD		U	ug/kg	3.6
				4,4'-DDE		U	ug/kg	3.6
				4,4'-DDT		U	ug/kg	3.6
				Aldrin		U	ug/kg	1.9
				alpha-BHC		U	ug/kg	1.9
				alpha-Chlordane		U	ug/kg	1.9
				Aroclor 1016		U	ug/kg	36
				Aroclor 1221		U	ug/kg	36
				Aroclor 1232		U	ug/kg	36
				Aroclor 1242		U	ug/kg	36
				Aroclor 1248		U	ug/kg	36
				Aroclor 1254		U	ug/kg	36
				Aroclor 1260		U	ug/kg	36
				beta-BHC		U	ug/kg	1.9
				delta-BHC		U	ug/kg	1.9
				Dieldrin		U	ug/kg	3.6
				Endosulfan I		U	ug/kg	1.9
				Endosulfan II		U	ug/kg	3.6
				Endosulfan sulfate		U	ug/kg	3.6
				Endrin		U	ug/kg	3.6
				Endrin ketone		U	ug/kg	3.6
				gamma-BHC (Lindane)		U	ug/kg	1.9
				gamma-Chlordane		U	ug/kg	1.9
				Heptachlor		U	ug/kg	1.9
				Heptachlor epoxide		U	ug/kg	1.9

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
PEST/PCB	CAN074-7408-1462	0474710002SA	6-8	Methoxychlor		U	ug/kg	19
				Toxaphene		U	ug/kg	190
	CAN074-7409-1006	0474380009SA		4,4'-DDD		U	ug/kg	3.7
				4,4'-DDE		U	ug/kg	3.7
				4,4'-DDT		U	ug/kg	3.7
				Aldrin		U	ug/kg	1.9
				alpha-BHC		U	ug/kg	1.9
				alpha-Chlordane		U	ug/kg	1.9
				Aroclor 1016		U	ug/kg	37
				Aroclor 1221		U	ug/kg	37
				Aroclor 1232		U	ug/kg	37
				Aroclor 1242		U	ug/kg	37
				Aroclor 1248		U	ug/kg	37
				Aroclor 1254		U	ug/kg	37
				Aroclor 1260		U	ug/kg	37
				beta-BHC		U	ug/kg	1.9
				delta-BHC		U	ug/kg	1.9
				Dieldrin		U	ug/kg	3.7
				Endosulfan I		U	ug/kg	1.9
				Endosulfan II		U	ug/kg	3.7
				Endosulfan sulfate		U	ug/kg	3.7
				Endrin		U	ug/kg	3.7
				Endrin ketone		U	ug/kg	3.7
				gamma-BHC (Lindane)		U	ug/kg	1.9
				gamma-Chlordane		U	ug/kg	1.9
				Heptachlor		U	ug/kg	1.9
				Heptachlor epoxide		U	ug/kg	1.9
				Methoxychlor		U	ug/kg	19
				Toxaphene		U	ug/kg	190
	CAN074-7409-1010	0474380010SA	10-12	4,4'-DDD		U	ug/kg	3.6
				4,4'-DDE		U	ug/kg	3.6
				4,4'-DDT		U	ug/kg	3.6
				Aldrin		U	ug/kg	1.9
				alpha-BHC		U	ug/kg	1.9
				alpha-Chlordane		U	ug/kg	1.9
				Aroclor 1016		U	ug/kg	36
				Aroclor 1221		U	ug/kg	36
				Aroclor 1232		U	ug/kg	36
				Aroclor 1242		U	ug/kg	36
				Aroclor 1248		U	ug/kg	36
				Aroclor 1254		U	ug/kg	36
				Aroclor 1260		U	ug/kg	36
				beta-BHC		U	ug/kg	1.9
				delta-BHC		U	ug/kg	1.9
				Dieldrin		U	ug/kg	3.6
				Endosulfan I		U	ug/kg	1.9
				Endosulfan II		U	ug/kg	3.6
				Endosulfan sulfate		U	ug/kg	3.6
				Endrin		U	ug/kg	3.6
				Endrin ketone		U	ug/kg	3.6
				gamma-BHC (Lindane)		U	ug/kg	1.9
				gamma-Chlordane		U	ug/kg	1.9
				Heptachlor		U	ug/kg	1.9
				Heptachlor epoxide		U	ug/kg	1.9
				Methoxychlor		U	ug/kg	19
				Toxaphene		U	ug/kg	190

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
PEST/PCB	CAN074-7409-1014	0474380011SA	14-16	4,4'-DDD		U	ug/kg	3.8
				4,4'-DDE		U	ug/kg	3.8
				4,4'-DDT		U	ug/kg	3.8
				Aldrin		U	ug/kg	2
				alpha-BHC		U	ug/kg	2
				alpha-Chlordane		U	ug/kg	2
				Aroclor 1016		U	ug/kg	38
				Aroclor 1221		U	ug/kg	38
				Aroclor 1232		U	ug/kg	38
				Aroclor 1242		U	ug/kg	38
				Aroclor 1248		U	ug/kg	38
				Aroclor 1254		U	ug/kg	38
				Aroclor 1260		U	ug/kg	38
				beta-BHC		U	ug/kg	2
				delta-BHC		U	ug/kg	2
				Dieldrin		U	ug/kg	3.8
				Endosulfan I		U	ug/kg	2
				Endosulfan II		U	ug/kg	3.8
				Endosulfan sulfate		U	ug/kg	3.8
				Endrin		U	ug/kg	3.8
				Endrin ketone		U	ug/kg	3.8
				gamma-BHC (Lindane)		U	ug/kg	2
				gamma-Chlordane		U	ug/kg	2
				Heptachlor		U	ug/kg	2
				Heptachlor epoxide		U	ug/kg	2
				Methoxychlor		U	ug/kg	20
				Toxaphene		U	ug/kg	200
	CAN074-7409-1020	0474380012SA	20-20.5	4,4'-DDD		U	ug/kg	3.7
				4,4'-DDE		U	ug/kg	3.7
				4,4'-DDT		U	ug/kg	3.7
				Aldrin		U	ug/kg	1.9
				alpha-BHC		U	ug/kg	1.9
				alpha-Chlordane		U	ug/kg	1.9
				Aroclor 1016		U	ug/kg	37
				Aroclor 1221		U	ug/kg	37
				Aroclor 1232		U	ug/kg	37
				Aroclor 1242		U	ug/kg	37
				Aroclor 1248		U	ug/kg	37
				Aroclor 1254		U	ug/kg	37
				Aroclor 1260		U	ug/kg	37
				beta-BHC		U	ug/kg	1.9
				delta-BHC		U	ug/kg	1.9
				Dieldrin		U	ug/kg	3.7
				Endosulfan I		U	ug/kg	1.9
				Endosulfan II		U	ug/kg	3.7
				Endosulfan sulfate		U	ug/kg	3.7
				Endrin		U	ug/kg	3.7
				Endrin ketone		U	ug/kg	3.7
				gamma-BHC (Lindane)		U	ug/kg	1.9
				gamma-Chlordane		U	ug/kg	1.9
				Heptachlor		U	ug/kg	1.9
				Heptachlor epoxide		U	ug/kg	1.9
				Methoxychlor		U	ug/kg	19
				Toxaphene		U	ug/kg	190
	CAN074-7409-1024	0474380013SA	24-24.75	4,4'-DDD		U	ug/kg	3.8
				4,4'-DDE		U	ug/kg	3.8

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
PEST/PCB	CAN074-7409-1024	0474380013SA	24-24.75	4,4'-DDT		U	ug/kg	3.8
				Aldrin		U	ug/kg	2
				alpha-BHC		U	ug/kg	2
				alpha-Chlordane		U	ug/kg	2
				Aroclor 1016		U	ug/kg	38
				Aroclor 1221		U	ug/kg	38
				Aroclor 1232		U	ug/kg	38
				Aroclor 1242		U	ug/kg	38
				Aroclor 1248		U	ug/kg	38
				Aroclor 1254		U	ug/kg	38
				Aroclor 1260		U	ug/kg	38
				beta-BHC		U	ug/kg	2
				delta-BHC		U	ug/kg	2
				Dieldrin		U	ug/kg	3.8
				Endosulfan I		U	ug/kg	2
				Endosulfan II		U	ug/kg	3.8
				Endosulfan sulfate		U	ug/kg	3.8
				Endrin		U	ug/kg	3.8
				Endrin ketone		U	ug/kg	3.8
				gamma-BHC (Lindane)		U	ug/kg	2
				gamma-Chlordane		U	ug/kg	2
				Heptachlor		U	ug/kg	2
				Heptachlor epoxide		U	ug/kg	2
				Methoxychlor		U	ug/kg	20
				Toxaphene		U	ug/kg	200
	CAN074-7409-1034	0474380014SA	34-36	4,4'-DDD		U	ug/kg	3.5
				4,4'-DDE		U	ug/kg	3.5
				4,4'-DDT		U	ug/kg	3.5
				Aldrin		U	ug/kg	1.8
				alpha-BHC		U	ug/kg	1.8
				alpha-Chlordane		U	ug/kg	1.8
				Aroclor 1016		U	ug/kg	35
				Aroclor 1221		U	ug/kg	35
				Aroclor 1232		U	ug/kg	35
				Aroclor 1242		U	ug/kg	35
				Aroclor 1248		U	ug/kg	35
				Aroclor 1254		U	ug/kg	35
				Aroclor 1260		U	ug/kg	35
				beta-BHC		U	ug/kg	1.8
				delta-BHC		U	ug/kg	1.8
				Dieldrin		U	ug/kg	3.5
				Endosulfan I		U	ug/kg	1.8
				Endosulfan II		U	ug/kg	3.5
				Endosulfan sulfate		U	ug/kg	3.5
				Endrin		U	ug/kg	3.5
				Endrin ketone		U	ug/kg	3.5
				gamma-BHC (Lindane)		U	ug/kg	1.8
				gamma-Chlordane		U	ug/kg	1.8
				Heptachlor		U	ug/kg	1.8
				Heptachlor epoxide		U	ug/kg	1.8
				Methoxychlor		U	ug/kg	18
				Toxaphene		U	ug/kg	180
	CAN074-7409-1044	0474380015SA	44-46	4,4'-DDD		U	ug/kg	3.4
				4,4'-DDE		U	ug/kg	3.4
				4,4'-DDT		U	ug/kg	3.4
				Aldrin		U	ug/kg	1.7

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
PEST/PCB	CAN074-7409-1044	0474380015SA	44-46	alpha-BHC		U	ug/kg	1.7
				alpha-Chlordane		U	ug/kg	1.7
				Aroclor 1016		U	ug/kg	34
				Aroclor 1221		U	ug/kg	34
				Aroclor 1232		U	ug/kg	34
				Aroclor 1242		U	ug/kg	34
				Aroclor 1248		U	ug/kg	34
				Aroclor 1254		U	ug/kg	34
				Aroclor 1260		U	ug/kg	34
				beta-BHC		U	ug/kg	1.7
				delta-BHC		U	ug/kg	1.7
				Dieldrin		U	ug/kg	3.4
				Endosulfan I		U	ug/kg	1.7
				Endosulfan II		U	ug/kg	3.4
				Endosulfan sulfate		U	ug/kg	3.4
				Endrin		U	ug/kg	3.4
				Endrin ketone		U	ug/kg	3.4
				gamma-BHC (Lindane)		U	ug/kg	1.7
				gamma-Chlordane		U	ug/kg	1.7
				Heptachlor		U	ug/kg	1.7
				Heptachlor epoxide		U	ug/kg	1.7
				Methoxychlor		U	ug/kg	17
				Toxaphene		U	ug/kg	170
	CAN074-7410-1010	0474380001SA	10-12	4,4'-DDD		U	ug/kg	3.8
				4,4'-DDE		U	ug/kg	3.8
				4,4'-DDT	3.2	J	ug/kg	3.8
				Aldrin		U	ug/kg	1.9
				alpha-BHC		U	ug/kg	1.9
				alpha-Chlordane		U	ug/kg	1.9
				Aroclor 1016		U	ug/kg	38
				Aroclor 1221		U	ug/kg	38
				Aroclor 1232		U	ug/kg	38
				Aroclor 1242		U	ug/kg	38
				Aroclor 1248		U	ug/kg	38
				Aroclor 1254		U	ug/kg	38
				Aroclor 1260		U	ug/kg	38
				beta-BHC		U	ug/kg	1.9
				delta-BHC		U	ug/kg	1.9
				Dieldrin		U	ug/kg	3.8
				Endosulfan I		U	ug/kg	1.9
				Endosulfan II		U	ug/kg	3.8
				Endosulfan sulfate		U	ug/kg	3.8
				Endrin		U	ug/kg	3.8
				Endrin ketone		U	ug/kg	3.8
				gamma-BHC (Lindane)		U	ug/kg	1.9
				gamma-Chlordane		U	ug/kg	1.9
				Heptachlor		U	ug/kg	1.9
				Heptachlor epoxide		U	ug/kg	1.9
				Methoxychlor		U	ug/kg	19
				Toxaphene		U	ug/kg	190
	CAN074-7410-1016	0474380002SA	16-16.9	4,4'-DDD		U	ug/kg	3.6
				4,4'-DDE		U	ug/kg	3.6
				4,4'-DDT		U	ug/kg	3.6
				Aldrin		U	ug/kg	1.8
				alpha-BHC		U	ug/kg	1.8
				alpha-Chlordane		U	ug/kg	1.8

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
PEST/PCB	CAN074-7410-1016	0474380002SA	16-16.9	Aroclor 1016		U	ug/kg	36
				Aroclor 1221		U	ug/kg	36
				Aroclor 1232		U	ug/kg	36
				Aroclor 1242		U	ug/kg	36
				Aroclor 1248		U	ug/kg	36
				Aroclor 1254		U	ug/kg	36
				Aroclor 1260		U	ug/kg	36
				beta-BHC		U	ug/kg	1.8
				delta-BHC		U	ug/kg	1.8
				Dieldrin		U	ug/kg	3.6
				Endosulfan I		U	ug/kg	1.8
				Endosulfan II		U	ug/kg	3.6
				Endosulfan sulfate		U	ug/kg	3.6
				Endrin		U	ug/kg	3.6
				Endrin ketone		U	ug/kg	3.6
				gamma-BHC (Lindane)		U	ug/kg	1.8
				gamma-Chlordane		U	ug/kg	1.8
				Heptachlor		U	ug/kg	1.8
				Heptachlor epoxide		U	ug/kg	1.8
				Methoxychlor		U	ug/kg	18
				Toxaphene		U	ug/kg	180
	CAN074-7410-1020	0474380003SA	20-20.9	4,4'-DDD		U	ug/kg	3.5
				4,4'-DDE		U	ug/kg	3.5
				4,4'-DDT		U	ug/kg	3.5
				Aldrin		U	ug/kg	1.8
				alpha-BHC		U	ug/kg	1.8
				alpha-Chlordane		U	ug/kg	1.8
				Aroclor 1016		U	ug/kg	35
				Aroclor 1221		U	ug/kg	35
				Aroclor 1232		U	ug/kg	35
				Aroclor 1242		U	ug/kg	35
				Aroclor 1248		U	ug/kg	35
				Aroclor 1254		U	ug/kg	35
				Aroclor 1260		U	ug/kg	35
				beta-BHC		U	ug/kg	1.8
				delta-BHC		U	ug/kg	1.8
				Dieldrin		U	ug/kg	3.5
				Endosulfan I		U	ug/kg	1.8
				Endosulfan II		U	ug/kg	3.5
				Endosulfan sulfate		U	ug/kg	3.5
				Endrin		U	ug/kg	3.5
				Endrin ketone		U	ug/kg	3.5
				gamma-BHC (Lindane)		U	ug/kg	1.8
				gamma-Chlordane		U	ug/kg	1.8
				Heptachlor		U	ug/kg	1.8
				Heptachlor epoxide		U	ug/kg	1.8
				Methoxychlor		U	ug/kg	18
				Toxaphene		U	ug/kg	180
	CAN074-7410-1024	0474380004SA	24-26	4,4'-DDD		U	ug/kg	3.7
				4,4'-DDE		U	ug/kg	3.7
				4,4'-DDT		U	ug/kg	3.7
				Aldrin		U	ug/kg	1.9
				alpha-BHC		U	ug/kg	1.9
				alpha-Chlordane		U	ug/kg	1.9
				Aroclor 1016		U	ug/kg	37
				Aroclor 1221		U	ug/kg	37

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL	UNITS	DL
PEST/PCB	CAN074-7410-1024	0474380004SA	24-26	Aroclor 1232		U	ug/kg	37
				Aroclor 1242		U	ug/kg	37
				Aroclor 1248		U	ug/kg	37
				Aroclor 1254		U	ug/kg	37
				Aroclor 1260		U	ug/kg	37
				beta-BHC		U	ug/kg	1.9
				delta-BHC		U	ug/kg	1.9
				Dieldrin		U	ug/kg	3.7
				Endosulfan I		U	ug/kg	1.9
				Endosulfan II		U	ug/kg	3.7
				Endosulfan sulfate		U	ug/kg	3.7
				Endrin		U	ug/kg	3.7
				Endrin ketone		U	ug/kg	3.7
				gamma-BHC (Lindane)		U	ug/kg	1.9
				gamma-Chlordane		U	ug/kg	1.9
				Heptachlor		U	ug/kg	1.9
				Heptachlor epoxide		U	ug/kg	1.9
				Methoxychlor		U	ug/kg	19
				Toxaphene		U	ug/kg	190
	CAN074-7410-1032	0474380005SA	32-34	4,4'-DDD		U	ug/kg	3.5
				4,4'-DDE		U	ug/kg	3.5
				4,4'-DDT		U	ug/kg	3.5
				Aldrin		U	ug/kg	1.8
				alpha-BHC		U	ug/kg	1.8
				alpha-Chlordane		U	ug/kg	1.8
				Aroclor 1016		U	ug/kg	35
				Aroclor 1221		U	ug/kg	35
				Aroclor 1232		U	ug/kg	35
				Aroclor 1242		U	ug/kg	35
				Aroclor 1248		U	ug/kg	35
				Aroclor 1254		U	ug/kg	35
				Aroclor 1260		U	ug/kg	35
				beta-BHC		U	ug/kg	1.8
				delta-BHC		U	ug/kg	1.8
				Dieldrin		U	ug/kg	3.5
				Endosulfan I		U	ug/kg	1.8
				Endosulfan II		U	ug/kg	3.5
				Endosulfan sulfate		U	ug/kg	3.5
				Endrin		U	ug/kg	3.5
				Endrin ketone		U	ug/kg	3.5
				gamma-BHC (Lindane)		U	ug/kg	1.8
				gamma-Chlordane		U	ug/kg	1.8
				Heptachlor		U	ug/kg	1.8
				Heptachlor epoxide		U	ug/kg	1.8
				Methoxychlor		U	ug/kg	18
				Toxaphene		U	ug/kg	180
	CAN074-7410-1038	0474380006SA	38-40	4,4'-DDD		U	ug/kg	3.4
				4,4'-DDE		U	ug/kg	3.4
				4,4'-DDT		U	ug/kg	3.4
				Aldrin		U	ug/kg	1.8
				alpha-BHC		U	ug/kg	1.8
				alpha-Chlordane		U	ug/kg	1.8
				Aroclor 1016		U	ug/kg	34
				Aroclor 1221		U	ug/kg	34
				Aroclor 1232		U	ug/kg	34
				Aroclor 1242		U	ug/kg	34

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
PEST/PCB	CAN074-7410-1038	0474380006SA	38-40	Aroclor 1248		U	ug/kg	34
				Aroclor 1254		U	ug/kg	34
				Aroclor 1260		U	ug/kg	34
				beta-BHC		U	ug/kg	1.8
				delta-BHC		U	ug/kg	1.8
				Dieldrin		U	ug/kg	3.4
				Endosulfan I		U	ug/kg	1.8
				Endosulfan II		U	ug/kg	3.4
				Endosulfan sulfate		U	ug/kg	3.4
				Endrin		U	ug/kg	3.4
				Endrin ketone		U	ug/kg	3.4
				gamma-BHC (Lindane)		U	ug/kg	1.8
				gamma-Chlordane		U	ug/kg	1.8
				Heptachlor		U	ug/kg	1.8
				Heptachlor epoxide		U	ug/kg	1.8
				Methoxychlor		U	ug/kg	18
				Toxaphene		U	ug/kg	180
	CAN074-7410-1048	0474380008SA	48-50	4,4'-DDD		U	ug/kg	3.7
				4,4'-DDE		U	ug/kg	3.7
				4,4'-DDT		U	ug/kg	3.7
				Aldrin		U	ug/kg	1.9
				alpha-BHC		U	ug/kg	1.9
				alpha-Chlordane		U	ug/kg	1.9
				Aroclor 1016		U	ug/kg	37
				Aroclor 1221		U	ug/kg	37
				Aroclor 1232		U	ug/kg	37
				Aroclor 1242		U	ug/kg	37
				Aroclor 1248		U	ug/kg	37
				Aroclor 1254		U	ug/kg	37
				Aroclor 1260		U	ug/kg	37
				beta-BHC		U	ug/kg	1.9
				delta-BHC		U	ug/kg	1.9
				Dieldrin		U	ug/kg	3.7
				Endosulfan I		U	ug/kg	1.9
				Endosulfan II		U	ug/kg	3.7
				Endosulfan sulfate		U	ug/kg	3.7
				Endrin		U	ug/kg	3.7
				Endrin ketone		U	ug/kg	3.7
				gamma-BHC (Lindane)		U	ug/kg	1.9
				gamma-Chlordane		U	ug/kg	1.9
				Heptachlor		U	ug/kg	1.9
				Heptachlor epoxide		U	ug/kg	1.9
				Methoxychlor		U	ug/kg	19
				Toxaphene		U	ug/kg	190
	CAN074-7410-1461	0474380007SA	38-40	4,4'-DDD		U	ug/kg	3.4
				4,4'-DDE		U	ug/kg	3.4
				4,4'-DDT		U	ug/kg	3.4
				Aldrin		U	ug/kg	1.8
				alpha-BHC		U	ug/kg	1.8
				alpha-Chlordane		U	ug/kg	1.8
				Aroclor 1016		U	ug/kg	34
				Aroclor 1221		U	ug/kg	34
				Aroclor 1232		U	ug/kg	34
				Aroclor 1242		U	ug/kg	34
				Aroclor 1248		U	ug/kg	34
				Aroclor 1254		U	ug/kg	34

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
PEST/PCB	CAN074-7410-1461	0474380007SA	38-40	Aroclor 1260		U	ug/kg	34
				beta-BHC		U	ug/kg	1.8
				delta-BHC		U	ug/kg	1.8
				Dieldrin		U	ug/kg	3.4
				Endosulfan I		U	ug/kg	1.8
				Endosulfan II		U	ug/kg	3.4
				Endosulfan sulfate		U	ug/kg	3.4
				Endrin		U	ug/kg	3.4
				Endrin ketone		U	ug/kg	3.4
				gamma-BHC (Lindane)		U	ug/kg	1.8
				gamma-Chlordane		U	ug/kg	1.8
				Heptachlor		U	ug/kg	1.8
				Heptachlor epoxide		U	ug/kg	1.8
				Methoxychlor		U	ug/kg	18
				Toxaphene		U	ug/kg	180
	CAN074-7413-1004	0475450003SA	4-6	4,4'-DDD		U	ug/kg	3.5
				4,4'-DDE		U	ug/kg	3.5
				4,4'-DDT		U	ug/kg	3.5
				Aldrin		U	ug/kg	1.8
				alpha-BHC		U	ug/kg	1.8
				alpha-Chlordane		U	ug/kg	1.8
				Aroclor 1016		U	ug/kg	35
				Aroclor 1221		U	ug/kg	35
				Aroclor 1232		U	ug/kg	35
				Aroclor 1242		U	ug/kg	35
				Aroclor 1248		U	ug/kg	35
				Aroclor 1254		U	ug/kg	35
				Aroclor 1260		U	ug/kg	35
				beta-BHC		U	ug/kg	1.8
				delta-BHC		U	ug/kg	1.8
				Dieldrin		U	ug/kg	3.5
				Endosulfan I		U	ug/kg	1.8
				Endosulfan II		U	ug/kg	3.5
				Endosulfan sulfate		U	ug/kg	3.5
				Endrin		U	ug/kg	3.5
				Endrin ketone		U	ug/kg	3.5
				gamma-BHC (Lindane)		U	ug/kg	1.8
				gamma-Chlordane		U	ug/kg	1.8
				Heptachlor		U	ug/kg	1.8
				Heptachlor epoxide		U	ug/kg	1.8
				Methoxychlor		U	ug/kg	18
				Toxaphene		U	ug/kg	180
	CAN074-7413-1008	0475450004SA	8-10	4,4'-DDD		U	ug/kg	3.5
				4,4'-DDE		U	ug/kg	3.5
				4,4'-DDT		U	ug/kg	3.5
				Aldrin		U	ug/kg	1.8
				alpha-BHC		U	ug/kg	1.8
				alpha-Chlordane		U	ug/kg	1.8
				Aroclor 1016		U	ug/kg	35
				Aroclor 1221		U	ug/kg	35
				Aroclor 1232		U	ug/kg	35
				Aroclor 1242		U	ug/kg	35
				Aroclor 1248		U	ug/kg	35
				Aroclor 1254		U	ug/kg	35
				Aroclor 1260		U	ug/kg	35
				beta-BHC		U	ug/kg	1.8

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
PEST/PCB	CAN074-7413-1008	0475450004SA	8-10	delta-BHC		U	ug/kg	1.8
				Dieldrin		U	ug/kg	3.5
				Endosulfan I		U	ug/kg	1.8
				Endosulfan II		U	ug/kg	3.5
				Endosulfan sulfate		U	ug/kg	3.5
				Endrin		U	ug/kg	3.5
				Endrin ketone		U	ug/kg	3.5
				gamma-BHC (Lindane)		U	ug/kg	1.8
				gamma-Chlordane		U	ug/kg	1.8
				Heptachlor		U	ug/kg	1.8
				Heptachlor epoxide		U	ug/kg	1.8
				Methoxychlor		U	ug/kg	18
				Toxaphene		U	ug/kg	180
	CAN074-7413-1012	0475450006SA	12-13.4	4,4'-DDD		U	ug/kg	3.6
				4,4'-DDE		U	ug/kg	3.6
				4,4'-DDT		U	ug/kg	3.6
				Aldrin		U	ug/kg	1.8
				alpha-BHC		U	ug/kg	1.8
				alpha-Chlordane		U	ug/kg	1.8
				Aroclor 1016		U	ug/kg	36
				Aroclor 1221		U	ug/kg	36
				Aroclor 1232		U	ug/kg	36
				Aroclor 1242		U	ug/kg	36
				Aroclor 1248		U	ug/kg	36
				Aroclor 1254		U	ug/kg	36
				Aroclor 1260		U	ug/kg	36
				beta-BHC		U	ug/kg	1.8
				delta-BHC		U	ug/kg	1.8
				Dieldrin		U	ug/kg	3.6
				Endosulfan I		U	ug/kg	1.8
				Endosulfan II		U	ug/kg	3.6
				Endosulfan sulfate		U	ug/kg	3.6
				Endrin		U	ug/kg	3.6
				Endrin ketone		U	ug/kg	3.6
				gamma-BHC (Lindane)		U	ug/kg	1.8
				gamma-Chlordane		U	ug/kg	1.8
				Heptachlor		U	ug/kg	1.8
				Heptachlor epoxide		U	ug/kg	1.8
				Methoxychlor		U	ug/kg	18
				Toxaphene		U	ug/kg	180
	CAN074-7413-1464	0475450005SA	4-6	4,4'-DDD		U	ug/kg	3.5
				4,4'-DDE		U	ug/kg	3.5
				4,4'-DDT		U	ug/kg	3.5
				Aldrin		U	ug/kg	1.8
				alpha-BHC		U	ug/kg	1.8
				alpha-Chlordane		U	ug/kg	1.8
				Aroclor 1016		U	ug/kg	35
				Aroclor 1221		U	ug/kg	35
				Aroclor 1232		U	ug/kg	35
				Aroclor 1242		U	ug/kg	35
				Aroclor 1248		U	ug/kg	35
				Aroclor 1254		U	ug/kg	35
				Aroclor 1260		U	ug/kg	35
				beta-BHC		U	ug/kg	1.8
				delta-BHC		U	ug/kg	1.8
				Dieldrin		U	ug/kg	3.5

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
PEST/PCB	CAN074-7413-1464	0475450005SA	4-6	Endosulfan I		U	ug/kg	1.8
				Endosulfan II		U	ug/kg	3.5
				Endosulfan sulfate		U	ug/kg	3.5
				Endrin		U	ug/kg	3.5
				Endrin ketone		U	ug/kg	3.5
				gamma-BHC (Lindane)		U	ug/kg	1.8
				gamma-Chlordane		U	ug/kg	1.8
				Heptachlor		U	ug/kg	1.8
				Heptachlor epoxide		U	ug/kg	1.8
				Methoxychlor		U	ug/kg	18
				Toxaphene		U	ug/kg	180
	CAN074-7414-1006	0475450008SA	6-8	4,4'-DDD		U	ug/kg	3.7
				4,4'-DDE		U	ug/kg	3.7
				4,4'-DDT		U	ug/kg	3.7
				Aldrin		U	ug/kg	1.9
				alpha-BHC		U	ug/kg	1.9
				alpha-Chlordane		U	ug/kg	1.9
				Aroclor 1016		U	ug/kg	37
				Aroclor 1221		U	ug/kg	37
				Aroclor 1232		U	ug/kg	37
				Aroclor 1242		U	ug/kg	37
				Aroclor 1248		U	ug/kg	37
				Aroclor 1254		U	ug/kg	37
				Aroclor 1260		U	ug/kg	37
				beta-BHC		U	ug/kg	1.9
				delta-BHC		U	ug/kg	1.9
				Dieldrin		U	ug/kg	3.7
				Endosulfan I		U	ug/kg	1.9
				Endosulfan II		U	ug/kg	3.7
				Endosulfan sulfate		U	ug/kg	3.7
				Endrin		U	ug/kg	3.7
				Endrin ketone		U	ug/kg	3.7
				gamma-BHC (Lindane)		U	ug/kg	1.9
				gamma-Chlordane		U	ug/kg	1.9
				Heptachlor		U	ug/kg	1.9
				Heptachlor epoxide		U	ug/kg	1.9
				Methoxychlor		U	ug/kg	19
				Toxaphene		U	ug/kg	190
	CAN074-7414-1010	0475450007SA	10-12	4,4'-DDD		U	ug/kg	3.7
				4,4'-DDE		U	ug/kg	3.7
				4,4'-DDT		U	ug/kg	3.7
				Aldrin		U	ug/kg	1.9
				alpha-BHC		U	ug/kg	1.9
				alpha-Chlordane		U	ug/kg	1.9
				Aroclor 1016		U	ug/kg	37
				Aroclor 1221		U	ug/kg	37
				Aroclor 1232		U	ug/kg	37
				Aroclor 1242		U	ug/kg	37
				Aroclor 1248		U	ug/kg	37
				Aroclor 1254		U	ug/kg	37
				Aroclor 1260		U	ug/kg	37
				beta-BHC		U	ug/kg	1.9
				delta-BHC		U	ug/kg	1.9
				Dieldrin		U	ug/kg	3.7
				Endosulfan I		U	ug/kg	1.9
				Endosulfan II		U	ug/kg	3.7

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
PEST/PCB	CAN074-7414-1010	0475450007SA	10-12	Endosulfan sulfate		U	ug/kg	3.7
				Endrin		U	ug/kg	3.7
				Endrin ketone		U	ug/kg	3.7
				gamma-BHC (Lindane)		U	ug/kg	1.9
				gamma-Chlordane		U	ug/kg	1.9
				Heptachlor		U	ug/kg	1.9
				Heptachlor epoxide		U	ug/kg	1.9
				Methoxychlor		U	ug/kg	19
				Toxaphene		U	ug/kg	190
	CAN074-7414-1014	0475450009SA	14-16	4,4'-DDD		U	ug/kg	3.7
				4,4'-DDE		U	ug/kg	3.7
				4,4'-DDT		U	ug/kg	3.7
				Aldrin		U	ug/kg	1.9
				alpha-BHC		U	ug/kg	1.9
				alpha-Chlordane		U	ug/kg	1.9
				Aroclor 1016		U	ug/kg	37
				Aroclor 1221		U	ug/kg	37
				Aroclor 1232		U	ug/kg	37
				Aroclor 1242		U	ug/kg	37
				Aroclor 1248		U	ug/kg	37
				Aroclor 1254		U	ug/kg	37
				Aroclor 1260		U	ug/kg	37
				beta-BHC		U	ug/kg	1.9
				delta-BHC		U	ug/kg	1.9
				Dieldrin		U	ug/kg	3.7
				Endosulfan I		U	ug/kg	1.9
				Endosulfan II		U	ug/kg	3.7
				Endosulfan sulfate		U	ug/kg	3.7
				Endrin		U	ug/kg	3.7
				Endrin ketone		U	ug/kg	3.7
				gamma-BHC (Lindane)		U	ug/kg	1.9
				gamma-Chlordane		U	ug/kg	1.9
				Heptachlor		U	ug/kg	1.9
				Heptachlor epoxide		U	ug/kg	1.9
				Methoxychlor		U	ug/kg	19
				Toxaphene		U	ug/kg	190
	CAN074-7415-1004	0475450010SA	4-6	4,4'-DDD		U	ug/kg	3.8
				4,4'-DDE		U	ug/kg	3.8
				4,4'-DDT		U	ug/kg	3.8
				Aldrin		U	ug/kg	1.9
				alpha-BHC		U	ug/kg	1.9
				alpha-Chlordane		U	ug/kg	1.9
				Aroclor 1016		U	ug/kg	38
				Aroclor 1221		U	ug/kg	38
				Aroclor 1232		U	ug/kg	38
				Aroclor 1242		U	ug/kg	38
				Aroclor 1248		U	ug/kg	38
				Aroclor 1254		U	ug/kg	38
				Aroclor 1260		U	ug/kg	38
				beta-BHC		U	ug/kg	1.9
				delta-BHC		U	ug/kg	1.9
				Dieldrin		U	ug/kg	3.8
				Endosulfan I		U	ug/kg	1.9
				Endosulfan II		U	ug/kg	3.8
				Endosulfan sulfate		U	ug/kg	3.8
				Endrin		U	ug/kg	3.8

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
PEST/PCB	CAN074-7415-1004	0475450010SA	4-6	Endrin ketone		U	ug/kg	3.8
				gamma-BHC (Lindane)		U	ug/kg	1.9
				gamma-Chlordane		U	ug/kg	1.9
				Heptachlor		U	ug/kg	1.9
				Heptachlor epoxide		U	ug/kg	1.9
				Methoxychlor		U	ug/kg	19
				Toxaphene		U	ug/kg	190
	CAN074-7415-1008	0475450011SA	8-10	4,4'-DDD		U	ug/kg	3.7
				4,4'-DDE		U	ug/kg	3.7
				4,4'-DDT		U	ug/kg	3.7
				Aldrin		U	ug/kg	1.9
				alpha-BHC		U	ug/kg	1.9
				alpha-Chlordane		U	ug/kg	1.9
				Aroclor 1016		U	ug/kg	37
				Aroclor 1221		U	ug/kg	37
				Aroclor 1232		U	ug/kg	37
				Aroclor 1242		U	ug/kg	37
				Aroclor 1248		U	ug/kg	37
				Aroclor 1254		U	ug/kg	37
				Aroclor 1260		U	ug/kg	37
				beta-BHC		U	ug/kg	1.9
				delta-BHC		U	ug/kg	1.9
				Dieldrin		U	ug/kg	3.7
				Endosulfan I		U	ug/kg	1.9
				Endosulfan II		U	ug/kg	3.7
				Endosulfan sulfate		U	ug/kg	3.7
				Endrin		U	ug/kg	3.7
				Endrin ketone		U	ug/kg	3.7
				gamma-BHC (Lindane)		U	ug/kg	1.9
				gamma-Chlordane		U	ug/kg	1.9
				Heptachlor		U	ug/kg	1.9
				Heptachlor epoxide		U	ug/kg	1.9
				Methoxychlor		U	ug/kg	19
				Toxaphene		U	ug/kg	190
	CAN074-7415-1012	0475450012SA	12-14	4,4'-DDD		U	ug/kg	3.6
				4,4'-DDE		U	ug/kg	3.6
				4,4'-DDT		U	ug/kg	3.6
				Aldrin		U	ug/kg	1.9
				alpha-BHC		U	ug/kg	1.9
				alpha-Chlordane		U	ug/kg	1.9
				Aroclor 1016		U	ug/kg	36
				Aroclor 1221		U	ug/kg	36
				Aroclor 1232		U	ug/kg	36
				Aroclor 1242		U	ug/kg	36
				Aroclor 1248		U	ug/kg	36
				Aroclor 1254		U	ug/kg	36
				Aroclor 1260		U	ug/kg	36
				beta-BHC		U	ug/kg	1.9
				delta-BHC		U	ug/kg	1.9
				Dieldrin		U	ug/kg	3.6
				Endosulfan I		U	ug/kg	1.9
				Endosulfan II		U	ug/kg	3.6
				Endosulfan sulfate		U	ug/kg	3.6
				Endrin		U	ug/kg	3.6
				Endrin ketone		U	ug/kg	3.6
				gamma-BHC (Lindane)		U	ug/kg	1.9

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
PEST/PCB	CAN074-7415-1012	0475450012SA	12-14	gamma-Chlordane		U	ug/kg	1.9
				Heptachlor		U	ug/kg	1.9
				Heptachlor epoxide		U	ug/kg	1.9
				Methoxychlor		U	ug/kg	19
				Toxaphene		U	ug/kg	190
	CAN074-7418-1005	0475450013SA	5-7	4,4'-DDD		U	ug/kg	3.5
				4,4'-DDE		U	ug/kg	3.5
				4,4'-DDT		U	ug/kg	3.5
				Aldrin		U	ug/kg	1.8
				alpha-BHC		U	ug/kg	1.8
				alpha-Chlordane		U	ug/kg	1.8
				Aroclor 1016		U	ug/kg	35
				Aroclor 1221		U	ug/kg	35
				Aroclor 1232		U	ug/kg	35
				Aroclor 1242		U	ug/kg	35
				Aroclor 1248		U	ug/kg	35
				Aroclor 1254		U	ug/kg	35
				Aroclor 1260		U	ug/kg	35
				beta-BHC		U	ug/kg	1.8
				delta-BHC		U	ug/kg	1.8
				Dieldrin		U	ug/kg	3.5
				Endosulfan I		U	ug/kg	1.8
				Endosulfan II		U	ug/kg	3.5
				Endosulfan sulfate		U	ug/kg	3.5
				Endrin		U	ug/kg	3.5
				Endrin ketone		U	ug/kg	3.5
				gamma-BHC (Lindane)		U	ug/kg	1.8
				gamma-Chlordane		U	ug/kg	1.8
				Heptachlor		U	ug/kg	1.8
				Heptachlor epoxide		U	ug/kg	1.8
				Methoxychlor		U	ug/kg	18
				Toxaphene		U	ug/kg	180
	CAN074-7418-1009	0475450014SA	9-11	4,4'-DDD		U	ug/kg	3.5
				4,4'-DDE		U	ug/kg	3.5
				4,4'-DDT		U	ug/kg	3.5
				Aldrin		U	ug/kg	1.8
				alpha-BHC		U	ug/kg	1.8
				alpha-Chlordane		U	ug/kg	1.8
				Aroclor 1016		U	ug/kg	35
				Aroclor 1221		U	ug/kg	35
				Aroclor 1232		U	ug/kg	35
				Aroclor 1242		U	ug/kg	35
				Aroclor 1248		U	ug/kg	35
				Aroclor 1254		U	ug/kg	35
				Aroclor 1260		U	ug/kg	35
				beta-BHC		U	ug/kg	1.8
				delta-BHC		U	ug/kg	1.8
				Dieldrin		U	ug/kg	3.5
				Endosulfan I		U	ug/kg	1.8
				Endosulfan II		U	ug/kg	3.5
				Endosulfan sulfate		U	ug/kg	3.5
				Endrin		U	ug/kg	3.5
				Endrin ketone		U	ug/kg	3.5
				gamma-BHC (Lindane)		U	ug/kg	1.8
				gamma-Chlordane		U	ug/kg	1.8
				Heptachlor		U	ug/kg	1.8

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
PEST/PCB	CAN074-7418-1009	0475450014SA	9-11	Heptachlor epoxide		U	ug/kg	1.8
				Methoxychlor		U	ug/kg	18
				Toxaphene		U	ug/kg	180
	CAN074-7418-1015	0475450015SA	15-17.2	4,4'-DDD		U	ug/kg	3.5
				4,4'-DDE		U	ug/kg	3.5
				4,4'-DDT		U	ug/kg	3.5
				Aldrin		U	ug/kg	1.8
				alpha-BHC		U	ug/kg	1.8
				alpha-Chlordane		U	ug/kg	1.8
				Aroclor 1016		U	ug/kg	35
				Aroclor 1221		U	ug/kg	35
				Aroclor 1232		U	ug/kg	35
				Aroclor 1242		U	ug/kg	35
				Aroclor 1248		U	ug/kg	35
				Aroclor 1254		U	ug/kg	35
				Aroclor 1260		U	ug/kg	35
				beta-BHC		U	ug/kg	1.8
				delta-BHC		U	ug/kg	1.8
				Dieldrin		U	ug/kg	3.5
				Endosulfan I		U	ug/kg	1.8
				Endosulfan II		U	ug/kg	3.5
				Endosulfan sulfate		U	ug/kg	3.5
				Endrin		U	ug/kg	3.5
				Endrin ketone		U	ug/kg	3.5
				gamma-BHC (Lindane)		U	ug/kg	1.8
				gamma-Chlordane		U	ug/kg	1.8
				Heptachlor		U	ug/kg	1.8
				Heptachlor epoxide		U	ug/kg	1.8
				Methoxychlor		U	ug/kg	18
				Toxaphene		U	ug/kg	180
	CAN074-7418-1465	0475450016SA		4,4'-DDD		U	ug/kg	3.5
				4,4'-DDE		U	ug/kg	3.5
				4,4'-DDT		U	ug/kg	3.5
				Aldrin		U	ug/kg	1.8
				alpha-BHC		U	ug/kg	1.8
				alpha-Chlordane		U	ug/kg	1.8
				Aroclor 1016		U	ug/kg	35
				Aroclor 1221		U	ug/kg	35
				Aroclor 1232		U	ug/kg	35
				Aroclor 1242		U	ug/kg	35
				Aroclor 1248		U	ug/kg	35
				Aroclor 1254		U	ug/kg	35
				Aroclor 1260		U	ug/kg	35
				beta-BHC		U	ug/kg	1.8
				delta-BHC		U	ug/kg	1.8
				Dieldrin		U	ug/kg	3.5
				Endosulfan I		U	ug/kg	1.8
				Endosulfan II		U	ug/kg	3.5
				Endosulfan sulfate		U	ug/kg	3.5
				Endrin		U	ug/kg	3.5
				Endrin ketone		U	ug/kg	3.5
				gamma-BHC (Lindane)		U	ug/kg	1.8
				gamma-Chlordane		U	ug/kg	1.8
				Heptachlor		U	ug/kg	1.8
				Heptachlor epoxide		U	ug/kg	1.8
				Methoxychlor		U	ug/kg	18

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
PEST/PCB	CAN074-7418-1465	0475450016SA	15-17.2	Toxaphene		U	ug/kg	180
	CAN074-7423-1004	0476170001SA	4-6	4,4'-DDD		U	ug/kg	3.5
				4,4'-DDE		U	ug/kg	3.5
				4,4'-DDT		U	ug/kg	3.5
				Aldrin		U	ug/kg	1.8
				alpha-BHC		U	ug/kg	1.8
				alpha-Chlordane		U	ug/kg	1.8
				Aroclor 1016		U	ug/kg	35
				Aroclor 1221		U	ug/kg	35
				Aroclor 1232		U	ug/kg	35
				Aroclor 1242		U	ug/kg	35
				Aroclor 1248		U	ug/kg	35
				Aroclor 1254		U	ug/kg	35
				Aroclor 1260		U	ug/kg	35
				beta-BHC		U	ug/kg	1.8
				delta-BHC		U	ug/kg	1.8
				Dieldrin		U	ug/kg	3.5
				Endosulfan I		U	ug/kg	1.8
				Endosulfan II		U	ug/kg	3.5
				Endosulfan sulfate		U	ug/kg	3.5
				Endrin		U	ug/kg	3.5
				Endrin ketone		U	ug/kg	3.5
				gamma-BHC (Lindane)		U	ug/kg	1.8
				gamma-Chlordane		U	ug/kg	1.8
				Heptachlor		U	ug/kg	1.8
				Heptachlor epoxide		U	ug/kg	1.8
				Methoxychlor		U	ug/kg	18
				Toxaphene		U	ug/kg	180
	CAN074-7423-1008	0476170002SA	8-10	4,4'-DDD		U	ug/kg	3.5
				4,4'-DDE		U	ug/kg	3.5
				4,4'-DDT		U	ug/kg	3.5
				Aldrin		U	ug/kg	1.8
				alpha-BHC		U	ug/kg	1.8
				alpha-Chlordane		U	ug/kg	1.8
				Aroclor 1016		U	ug/kg	35
				Aroclor 1221		U	ug/kg	35
				Aroclor 1232		U	ug/kg	35
				Aroclor 1242		U	ug/kg	35
				Aroclor 1248		U	ug/kg	35
				Aroclor 1254		U	ug/kg	35
				Aroclor 1260		U	ug/kg	35
				beta-BHC		U	ug/kg	1.8
				delta-BHC		U	ug/kg	1.8
				Dieldrin		U	ug/kg	3.5
				Endosulfan I		U	ug/kg	1.8
				Endosulfan II		U	ug/kg	3.5
				Endosulfan sulfate		U	ug/kg	3.5
				Endrin		U	ug/kg	3.5
				Endrin ketone		U	ug/kg	3.5
				gamma-BHC (Lindane)		U	ug/kg	1.8
				gamma-Chlordane		U	ug/kg	1.8
				Heptachlor		U	ug/kg	1.8
				Heptachlor epoxide		U	ug/kg	1.8
				Methoxychlor		U	ug/kg	18
				Toxaphene		U	ug/kg	180
	CAN074-7423-1012	0476170003SA	12-14	4,4'-DDD		U	ug/kg	3.5

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
PEST/PCB	CAN074-7423-1012	0476170003SA	12-14	4,4'-DDE		U	ug/kg	3.5
				4,4'-DDT		U	ug/kg	3.5
				Aldrin		U	ug/kg	1.8
				alpha-BHC		U	ug/kg	1.8
				alpha-Chlordane		U	ug/kg	1.8
				Aroclor 1016		U	ug/kg	35
				Aroclor 1221		U	ug/kg	35
				Aroclor 1232		U	ug/kg	35
				Aroclor 1242		U	ug/kg	35
				Aroclor 1248		U	ug/kg	35
				Aroclor 1254		U	ug/kg	35
				Aroclor 1260		U	ug/kg	35
				beta-BHC		U	ug/kg	1.8
				delta-BHC		U	ug/kg	1.8
				Dieldrin		U	ug/kg	3.5
				Endosulfan I		U	ug/kg	1.8
				Endosulfan II		U	ug/kg	3.5
				Endosulfan sulfate		U	ug/kg	3.5
				Endrin		U	ug/kg	3.5
				Endrin ketone		U	ug/kg	3.5
				gamma-BHC (Lindane)		U	ug/kg	1.8
				gamma-Chlordane		U	ug/kg	1.8
				Heptachlor		U	ug/kg	1.8
				Heptachlor epoxide		U	ug/kg	1.8
				Methoxychlor		U	ug/kg	18
				Toxaphene		U	ug/kg	180
SVOC	CAN074-7401-1018	0474710014SA	18-20	1,2,4-Trichlorobenzene		U	ug/kg	380
				1,2-Dichlorobenzene		U	ug/kg	380
				1,3-Dichlorobenzene		U	ug/kg	380
				1,4-Dichlorobenzene		U	ug/kg	380
				2,4,5-Trichlorophenol		U	ug/kg	1800
				2,4,6-Trichlorophenol		U	ug/kg	380
				2,4-Dichlorophenol		U	ug/kg	380
				2,4-Dimethylphenol		U	ug/kg	380
				2,4-Dinitrophenol		U	ug/kg	1800
				2,4-Dinitrotoluene		U	ug/kg	380
				2,6-Dinitrotoluene		U	ug/kg	380
				2-Chloronaphthalene		U	ug/kg	380
				2-Chlorophenol		U	ug/kg	380
				2-Methylnaphthalene		U	ug/kg	380
				2-Methylphenol		U	ug/kg	380
				2-Nitroaniline		U	ug/kg	1800
				2-Nitrophenol		U	ug/kg	380
				3,3'-Dichlorobenzidine		U	ug/kg	760
				3-Nitroaniline		U	ug/kg	1800
				4,6-Dinitro-2-methylphenol		U	ug/kg	1800
				4-Bromophenyl phenyl ether		U	ug/kg	380
				4-Chloro-3-methylphenol		U	ug/kg	380
				4-Chloroaniline		U	ug/kg	380
				4-Chlorophenyl phenyl ether		U	ug/kg	380
				4-Methylphenol		U	ug/kg	380
				4-Nitroaniline		U	ug/kg	1800
				4-Nitrophenol		U	ug/kg	1800
				Acenaphthene		U	ug/kg	380
				Acenaphthylene		U	ug/kg	380

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7401-1018	0474710014SA	18-20	Anthracene		U	ug/kg	380
				Benzo(a)anthracene		U	ug/kg	380
				Benzo(a)pyrene		U	ug/kg	380
				Benzo(b)fluoranthene		U	ug/kg	380
				Benzo(g,h,i)perylene		U	ug/kg	380
				Benzo(k)fluoranthene		U	ug/kg	380
				bis(2-Chloroethyl) ether		U	ug/kg	380
				bis(2-Chloroisopropyl)ether		U	ug/kg	380
				bis(2-Ethylhexyl)phthalate		U	ug/kg	380
				Butyl benzyl phthalate		U	ug/kg	380
				Carbazole		U	ug/kg	380
				Chrysene		U	ug/kg	380
				Di-n-butyl phthalate		U	ug/kg	380
				Di-n-octyl phthalate		U	ug/kg	380
				Dibenz(a,h)anthracene		U	ug/kg	380
				Dibenzofuran		U	ug/kg	380
				Diethyl phthalate		U	ug/kg	380
				Dimethyl phthalate		U	ug/kg	380
				Fluoranthene		U	ug/kg	380
				Fluorene		U	ug/kg	380
				Hexachlorobenzene		U	ug/kg	380
				Hexachlorobutadiene		U	ug/kg	380
				Hexachlorocyclopentadiene		U	ug/kg	380
				Hexachloroethane		U	ug/kg	380
				Indeno(1,2,3-cd)pyrene		U	ug/kg	380
				Isophorone		U	ug/kg	380
				N-Nitroso-di-n-propylamine		U	ug/kg	380
				N-Nitrosodiphenylamine		U	ug/kg	380
				Naphthalene		U	ug/kg	380
				Nitrobenzene		U	ug/kg	380
				Pentachlorophenol		U	ug/kg	1800
				Phenanthrene		U	ug/kg	380
				Phenol		U	ug/kg	380
				Pyrene		U	ug/kg	380
	CAN074-7402-1018	0475450002SA		1,2,4-Trichlorobenzene		U	ug/kg	370
				1,2-Dichlorobenzene		U	ug/kg	370
				1,3-Dichlorobenzene		U	ug/kg	370
				1,4-Dichlorobenzene		U	ug/kg	370
				2,4,5-Trichlorophenol		U	ug/kg	1800
				2,4,6-Trichlorophenol		U	ug/kg	370
				2,4-Dichlorophenol		U	ug/kg	370
				2,4-Dimethylphenol		U	ug/kg	370
				2,4-Dinitrophenol		U	ug/kg	1800
				2,4-Dinitrotoluene		U	ug/kg	370
				2,6-Dinitrotoluene		U	ug/kg	370
				2-Chloronaphthalene		U	ug/kg	370
				2-Chlorophenol		U	ug/kg	370
				2-Methylnaphthalene		U	ug/kg	370
				2-Methylphenol		U	ug/kg	370
				2-Nitroaniline		U	ug/kg	1800
				2-Nitrophenol		U	ug/kg	370
				3,3'-Dichlorobenzidine		U	ug/kg	750
				3-Nitroaniline		U	ug/kg	1800
				4,6-Dinitro-2-methylphenol		U	ug/kg	1800
				4-Bromophenyl phenyl ether		U	ug/kg	370
				4-Chloro-3-methylphenol		U	ug/kg	370

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7402-1018	0475450002SA	18-20	4-Chloroaniline		U	ug/kg	370
				4-Chlorophenyl phenyl ether		U	ug/kg	370
				4-Methylphenol		U	ug/kg	370
				4-Nitroaniline		U	ug/kg	1800
				4-Nitrophenol		U	ug/kg	1800
				Acenaphthene		U	ug/kg	370
				Acenaphthylene		U	ug/kg	370
				Anthracene		U	ug/kg	370
				Benzo(a)anthracene		U	ug/kg	370
				Benzo(a)pyrene		U	ug/kg	370
				Benzo(b)fluoranthene		U	ug/kg	370
				Benzo(g,h,i)perylene		U	ug/kg	370
				Benzo(k)fluoranthene		U	ug/kg	370
				bis(2-Chloroethyl) ether		U	ug/kg	370
				bis(2-Chloroisopropyl)ether		U	ug/kg	370
				bis(2-Ethylhexyl)phthalate		U	ug/kg	370
				Butyl benzyl phthalate		U	ug/kg	370
				Carbazole		U	ug/kg	370
				Chrysene		U	ug/kg	370
				Di-n-butyl phthalate		U	ug/kg	370
				Di-n-octyl phthalate		U	ug/kg	370
				Dibenz(a,h)anthracene		U	ug/kg	370
				Dibenzofuran		U	ug/kg	370
				Diethyl phthalate		U	ug/kg	370
				Dimethyl phthalate		U	ug/kg	370
				Fluoranthene		U	ug/kg	370
				Fluorene		U	ug/kg	370
				Hexachlorobenzene		U	ug/kg	370
				Hexachlorobutadiene		U	ug/kg	370
				Hexachlorocyclopentadiene		U	ug/kg	370
				Hexachloroethane		U	ug/kg	370
				Indeno(1,2,3-cd)pyrene		U	ug/kg	370
				Isophorone		U	ug/kg	370
				N-Nitroso-di-n-propylamine		U	ug/kg	370
				N-Nitrosodiphenylamine		U	ug/kg	370
				Naphthalene		U	ug/kg	370
				Nitrobenzene		U	ug/kg	370
				Pentachlorophenol		U	ug/kg	1800
				Phenanthrene		U	ug/kg	370
				Phenol		U	ug/kg	370
				Pyrene		U	ug/kg	370
	CAN074-7403-1018	0475450001SA		1,2,4-Trichlorobenzene		U	ug/kg	360
				1,2-Dichlorobenzene		U	ug/kg	360
				1,3-Dichlorobenzene		U	ug/kg	360
				1,4-Dichlorobenzene		U	ug/kg	360
				2,4,5-Trichlorophenol		U	ug/kg	1800
				2,4,6-Trichlorophenol		U	ug/kg	360
				2,4-Dichlorophenol		U	ug/kg	360
				2,4-Dimethylphenol		U	ug/kg	360
				2,4-Dinitrophenol		U	ug/kg	1800
				2,4-Dinitrotoluene		U	ug/kg	360
				2,6-Dinitrotoluene		U	ug/kg	360
				2-Chloronaphthalene		U	ug/kg	360
				2-Chlorophenol		U	ug/kg	360
				2-Methylnaphthalene		U	ug/kg	360
				2-Methylphenol		U	ug/kg	360

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7403-1018	0475450001SA	18-20	2-Nitroaniline		U	ug/kg	1800
				2-Nitrophenol		U	ug/kg	360
				3,3'-Dichlorobenzidine		U	ug/kg	730
				3-Nitroaniline		U	ug/kg	1800
				4,6-Dinitro-2-methylphenol		U	ug/kg	1800
				4-Bromophenyl phenyl ether		U	ug/kg	360
				4-Chloro-3-methylphenol		U	ug/kg	360
				4-Chloroaniline		U	ug/kg	360
				4-Chlorophenyl phenyl ether		U	ug/kg	360
				4-Methylphenol		U	ug/kg	360
				4-Nitroaniline		U	ug/kg	1800
				4-Nitrophenol		U	ug/kg	1800
				Acenaphthene		U	ug/kg	360
				Acenaphthylene		U	ug/kg	360
				Anthracene		U	ug/kg	360
				Benzo(a)anthracene		U	ug/kg	360
				Benzo(a)pyrene		U	ug/kg	360
				Benzo(b)fluoranthene		U	ug/kg	360
				Benzo(g,h,i)perylene		U	ug/kg	360
				Benzo(k)fluoranthene		U	ug/kg	360
				bis(2-Chloroethyl) ether		U	ug/kg	360
				bis(2-Chloroisopropyl)ether		U	ug/kg	360
				bis(2-Ethylhexyl)phthalate		U	ug/kg	360
				Butyl benzyl phthalate		U	ug/kg	360
				Carbazole		U	ug/kg	360
				Chrysene		U	ug/kg	360
				Di-n-butyl phthalate		U	ug/kg	360
				Di-n-octyl phthalate		U	ug/kg	360
				Dibenz(a,h)anthracene		U	ug/kg	360
				Dibenzofuran		U	ug/kg	360
				Diethyl phthalate		U	ug/kg	360
				Dimethyl phthalate		U	ug/kg	360
				Fluoranthene		U	ug/kg	360
				Fluorene		U	ug/kg	360
				Hexachlorobenzene		U	ug/kg	360
				Hexachlorobutadiene		U	ug/kg	360
				Hexachlorocyclopentadiene		U	ug/kg	360
				Hexachloroethane		U	ug/kg	360
				Indeno(1,2,3-cd)pyrene		U	ug/kg	360
				Isophorone		U	ug/kg	360
				N-Nitroso-di-n-propylamine		U	ug/kg	360
				N-Nitrosodiphenylamine		U	ug/kg	360
				Naphthalene		U	ug/kg	360
				Nitrobenzene		U	ug/kg	360
				Pentachlorophenol		U	ug/kg	1800
				Phenanthrene		U	ug/kg	360
				Phenol		U	ug/kg	360
				Pyrene		U	ug/kg	360
	CAN074-7404-1018	0474710011SA		1,2,4-Trichlorobenzene		U	ug/kg	360
				1,2-Dichlorobenzene		U	ug/kg	360
				1,3-Dichlorobenzene		U	ug/kg	360
				1,4-Dichlorobenzene		U	ug/kg	360
				2,4,5-Trichlorophenol		U	ug/kg	1700
				2,4,6-Trichlorophenol		U	ug/kg	360
				2,4-Dichlorophenol		U	ug/kg	360
				2,4-Dimethylphenol		U	ug/kg	360

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7404-1018	0474710011SA	18-20	2,4-Dinitrophenol		U	ug/kg	1700
				2,4-Dinitrotoluene		U	ug/kg	360
				2,6-Dinitrotoluene		U	ug/kg	360
				2-Chloronaphthalene		U	ug/kg	360
				2-Chlorophenol		U	ug/kg	360
				2-Methylnaphthalene		U	ug/kg	360
				2-Methylphenol		U	ug/kg	360
				2-Nitroaniline		U	ug/kg	1700
				2-Nitrophenol		U	ug/kg	360
				3,3'-Dichlorobenzidine		U	ug/kg	710
				3-Nitroaniline		U	ug/kg	1700
				4,6-Dinitro-2-methylphenol		U	ug/kg	1700
				4-Bromophenyl phenyl ether		U	ug/kg	360
				4-Chloro-3-methylphenol		U	ug/kg	360
				4-Chloroaniline		U	ug/kg	360
				4-Chlorophenyl phenyl ether		U	ug/kg	360
				4-Methylphenol		U	ug/kg	360
				4-Nitroaniline		U	ug/kg	1700
				4-Nitrophenol		U	ug/kg	1700
				Acenaphthene		U	ug/kg	360
				Acenaphthylene		U	ug/kg	360
				Anthracene		U	ug/kg	360
				Benzo(a)anthracene		U	ug/kg	360
				Benzo(a)pyrene		U	ug/kg	360
				Benzo(b)fluoranthene		U	ug/kg	360
				Benzo(g,h,i)perylene		U	ug/kg	360
				Benzo(k)fluoranthene		U	ug/kg	360
				bis(2-Chloroethyl) ether		U	ug/kg	360
				bis(2-Chloroisopropyl)ether		U	ug/kg	360
				bis(2-Ethylhexyl)phthalate		U	ug/kg	360
				Butyl benzyl phthalate		U	ug/kg	360
				Carbazole		U	ug/kg	360
				Chrysene		U	ug/kg	360
				Di-n-butyl phthalate		U	ug/kg	360
				Di-n-octyl phthalate		U	ug/kg	360
				Dibenz(a,h)anthracene		U	ug/kg	360
				Dibenzofuran		U	ug/kg	360
				Diethyl phthalate		U	ug/kg	360
				Dimethyl phthalate		U	ug/kg	360
				Fluoranthene		U	ug/kg	360
				Fluorene		U	ug/kg	360
				Hexachlorobenzene		U	ug/kg	360
				Hexachlorobutadiene		U	ug/kg	360
				Hexachlorocyclopentadiene		U	ug/kg	360
				Hexachloroethane		U	ug/kg	360
				Indeno(1,2,3-cd)pyrene		U	ug/kg	360
				Isophorone		U	ug/kg	360
				N-Nitroso-di-n-propylamine		U	ug/kg	360
				N-Nitrosodiphenylamine		U	ug/kg	360
				Naphthalene		U	ug/kg	360
				Nitrobenzene		U	ug/kg	360
				Pentachlorophenol		U	ug/kg	1700
				Phenanthrene		U	ug/kg	360
				Phenol		U	ug/kg	360
				Pyrene		U	ug/kg	360
	CAN074-7405-1018	0474710009SA		1,2,4-Trichlorobenzene		U	ug/kg	370

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7405-1018	0474710009SA	18-20	1,2-Dichlorobenzene		U	ug/kg	370
				1,3-Dichlorobenzene		U	ug/kg	370
				1,4-Dichlorobenzene		U	ug/kg	370
				2,4,5-Trichlorophenol		U	ug/kg	1800
				2,4,6-Trichlorophenol		U	ug/kg	370
				2,4-Dichlorophenol		U	ug/kg	370
				2,4-Dimethylphenol		U	ug/kg	370
				2,4-Dinitrophenol		U	ug/kg	1800
				2,4-Dinitrotoluene		U	ug/kg	370
				2,6-Dinitrotoluene		U	ug/kg	370
				2-Chloronaphthalene		U	ug/kg	370
				2-Chlorophenol		U	ug/kg	370
				2-Methylnaphthalene		U	ug/kg	370
				2-Methylphenol		U	ug/kg	370
				2-Nitroaniline		U	ug/kg	1800
				2-Nitrophenol		U	ug/kg	370
				3,3'-Dichlorobenzidine		U	ug/kg	740
				3-Nitroaniline		U	ug/kg	1800
				4,6-Dinitro-2-methylphenol		U	ug/kg	1800
				4-Bromophenyl phenyl ether		U	ug/kg	370
				4-Chloro-3-methylphenol		U	ug/kg	370
				4-Chloroaniline		U	ug/kg	370
				4-Chlorophenyl phenyl ether		U	ug/kg	370
				4-Methylphenol		U	ug/kg	370
				4-Nitroaniline		U	ug/kg	1800
				4-Nitrophenol		U	ug/kg	1800
				Acenaphthene		U	ug/kg	370
				Acenaphthylene		U	ug/kg	370
				Anthracene		U	ug/kg	370
				Benzo(a)anthracene		U	ug/kg	370
				Benzo(a)pyrene		U	ug/kg	370
				Benzo(b)fluoranthene		U	ug/kg	370
				Benzo(g,h,i)perylene		U	ug/kg	370
				Benzo(k)fluoranthene		U	ug/kg	370
				bis(2-Chloroethyl) ether		U	ug/kg	370
				bis(2-Chloroisopropyl)ether		U	ug/kg	370
				bis(2-Ethylhexyl)phthalate		U	ug/kg	370
				Butyl benzyl phthalate		U	ug/kg	370
				Carbazole		U	ug/kg	370
				Chrysene		U	ug/kg	370
				Di-n-butyl phthalate		U	ug/kg	370
				Di-n-octyl phthalate		U	ug/kg	370
				Dibenz(a,h)anthracene		U	ug/kg	370
				Dibenzofuran		U	ug/kg	370
				Diethyl phthalate		U	ug/kg	370
				Dimethyl phthalate		U	ug/kg	370
				Fluoranthene		U	ug/kg	370
				Fluorene		U	ug/kg	370
				Hexachlorobenzene		U	ug/kg	370
				Hexachlorobutadiene		U	ug/kg	370
				Hexachlorocyclopentadiene		U	ug/kg	370
				Hexachloroethane		U	ug/kg	370
				Indeno(1,2,3-cd)pyrene		U	ug/kg	370
				Isophorone		U	ug/kg	370
				N-Nitroso-di-n-propylamine		U	ug/kg	370
				N-Nitrosodiphenylamine		U	ug/kg	370

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7405-1018	0474710009SA	18-20	Naphthalene		U	ug/kg	370
				Nitrobenzene		U	ug/kg	370
				Pentachlorophenol		U	ug/kg	1800
				Phenanthrene		U	ug/kg	370
				Phenol		U	ug/kg	370
				Pyrene		U	ug/kg	370
	CAN074-7405-1463	0474710010SA		1,2,4-Trichlorobenzene		U	ug/kg	370
				1,2-Dichlorobenzene		U	ug/kg	370
				1,3-Dichlorobenzene		U	ug/kg	370
				1,4-Dichlorobenzene		U	ug/kg	370
				2,4,5-Trichlorophenol		U	ug/kg	1800
				2,4,6-Trichlorophenol		U	ug/kg	370
				2,4-Dichlorophenol		U	ug/kg	370
				2,4-Dimethylphenol		U	ug/kg	370
				2,4-Dinitrophenol		U	ug/kg	1800
				2,4-Dinitrotoluene		U	ug/kg	370
				2,6-Dinitrotoluene		U	ug/kg	370
				2-Chloronaphthalene		U	ug/kg	370
				2-Chlorophenol		U	ug/kg	370
				2-Methylnaphthalene		U	ug/kg	370
				2-Methylphenol		U	ug/kg	370
				2-Nitroaniline		U	ug/kg	1800
				2-Nitrophenol		U	ug/kg	370
				3,3'-Dichlorobenzidine		U	ug/kg	730
				3-Nitroaniline		U	ug/kg	1800
				4,6-Dinitro-2-methylphenol		U	ug/kg	1800
				4-Bromophenyl phenyl ether		U	ug/kg	370
				4-Chloro-3-methylphenol		U	ug/kg	370
				4-Chloroaniline		U	ug/kg	370
				4-Chlorophenyl phenyl ether		U	ug/kg	370
				4-Methylphenol		U	ug/kg	370
				4-Nitroaniline		U	ug/kg	1800
				4-Nitrophenol		U	ug/kg	1800
				Acenaphthene		U	ug/kg	370
				Acenaphthylene		U	ug/kg	370
				Anthracene		U	ug/kg	370
				Benzo(a)anthracene		U	ug/kg	370
				Benzo(a)pyrene		U	ug/kg	370
				Benzo(b)fluoranthene		U	ug/kg	370
				Benzo(g,h,i)perylene		U	ug/kg	370
				Benzo(k)fluoranthene		U	ug/kg	370
				bis(2-Chloroethyl) ether		U	ug/kg	370
				bis(2-Chloroisopropyl)ether		U	ug/kg	370
				bis(2-Ethylhexyl)phthalate		U	ug/kg	370
				Butyl benzyl phthalate		U	ug/kg	370
				Carbazole		U	ug/kg	370
				Chrysene		U	ug/kg	370
				Di-n-butyl phthalate		U	ug/kg	370
				Di-n-octyl phthalate		U	ug/kg	370
				Dibenz(a,h)anthracene		U	ug/kg	370
				Dibenzofuran		U	ug/kg	370
				Diethyl phthalate		U	ug/kg	370
				Dimethyl phthalate		U	ug/kg	370
				Fluoranthene		U	ug/kg	370
				Fluorene		U	ug/kg	370
				Hexachlorobenzene		U	ug/kg	370

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7405-1463	0474710010SA	18-20	Hexachlorobutadiene		U	ug/kg	370
				Hexachlorocyclopentadiene		U	ug/kg	370
				Hexachloroethane		U	ug/kg	370
				Indeno(1,2,3-cd)pyrene		U	ug/kg	370
				Isophorone		U	ug/kg	370
				N-Nitroso-di-n-propylamine		U	ug/kg	370
				N-Nitrosodiphenylamine		U	ug/kg	370
				Naphthalene		U	ug/kg	370
				Nitrobenzene		U	ug/kg	370
				Pentachlorophenol		U	ug/kg	1800
				Phenanthrene		U	ug/kg	370
				Phenol		U	ug/kg	370
				Pyrene		U	ug/kg	370
	CAN074-7406-1018	0474710012SA		1,2,4-Trichlorobenzene		U	ug/kg	360
				1,2-Dichlorobenzene		U	ug/kg	360
				1,3-Dichlorobenzene		U	ug/kg	360
				1,4-Dichlorobenzene		U	ug/kg	360
				2,4,5-Trichlorophenol		U	ug/kg	1700
				2,4,6-Trichlorophenol		U	ug/kg	360
				2,4-Dichlorophenol		U	ug/kg	360
				2,4-Dimethylphenol		U	ug/kg	360
				2,4-Dinitrophenol		U	ug/kg	1700
				2,4-Dinitrotoluene		U	ug/kg	360
				2,6-Dinitrotoluene		U	ug/kg	360
				2-Chloronaphthalene		U	ug/kg	360
				2-Chlorophenol		U	ug/kg	360
				2-Methylnaphthalene		U	ug/kg	360
				2-Methylphenol		U	ug/kg	360
				2-Nitroaniline		U	ug/kg	1700
				2-Nitrophenol		U	ug/kg	360
				3,3'-Dichlorobenzidine		U	ug/kg	710
				3-Nitroaniline		U	ug/kg	1700
				4,6-Dinitro-2-methylphenol		U	ug/kg	1700
				4-Bromophenyl phenyl ether		U	ug/kg	360
				4-Chloro-3-methylphenol		U	ug/kg	360
				4-Chloroaniline		U	ug/kg	360
				4-Chlorophenyl phenyl ether		U	ug/kg	360
				4-Methylphenol		U	ug/kg	360
				4-Nitroaniline		U	ug/kg	1700
				4-Nitrophenol		U	ug/kg	1700
				Acenaphthene		U	ug/kg	360
				Acenaphthylene		U	ug/kg	360
				Anthracene		U	ug/kg	360
				Benzo(a)anthracene		U	ug/kg	360
				Benzo(a)pyrene		U	ug/kg	360
				Benzo(b)fluoranthene		U	ug/kg	360
				Benzo(g,h,i)perylene		U	ug/kg	360
				Benzo(k)fluoranthene		U	ug/kg	360
				bis(2-Chloroethyl) ether		U	ug/kg	360
				bis(2-Chloroisopropyl)ether		U	ug/kg	360
				bis(2-Ethylhexyl)phthalate		U	ug/kg	360
				Butyl benzyl phthalate		U	ug/kg	360
				Carbazole		U	ug/kg	360
				Chrysene		U	ug/kg	360
				Di-n-butyl phthalate		U	ug/kg	360
				Di-n-octyl phthalate		U	ug/kg	360

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL	UNITS	DL
SVOC	CAN074-7406-1018	0474710012SA	18-20	Dibenz(a,h)anthracene		U	ug/kg	360
				Dibenzofuran		U	ug/kg	360
				Diethyl phthalate		U	ug/kg	360
				Dimethyl phthalate		U	ug/kg	360
				Fluoranthene		U	ug/kg	360
				Fluorene		U	ug/kg	360
				Hexachlorobenzene		U	ug/kg	360
				Hexachlorobutadiene		U	ug/kg	360
				Hexachlorocyclopentadiene		U	ug/kg	360
				Hexachloroethane		U	ug/kg	360
				Indeno(1,2,3-cd)pyrene		U	ug/kg	360
				Isophorone		U	ug/kg	360
				N-Nitroso-di-n-propylamine		U	ug/kg	360
				N-Nitrosodiphenylamine		U	ug/kg	360
				Naphthalene		U	ug/kg	360
				Nitrobenzene		U	ug/kg	360
				Pentachlorophenol		U	ug/kg	1700
				Phenanthrene		U	ug/kg	360
				Phenol		U	ug/kg	360
				Pyrene		U	ug/kg	360
	CAN074-7407-1018	0474710013SA		1,2,4-Trichlorobenzene		U	ug/kg	370
				1,2-Dichlorobenzene		U	ug/kg	370
				1,3-Dichlorobenzene		U	ug/kg	370
				1,4-Dichlorobenzene		U	ug/kg	370
				2,4,5-Trichlorophenol		U	ug/kg	1800
				2,4,6-Trichlorophenol		U	ug/kg	370
				2,4-Dichlorophenol		U	ug/kg	370
				2,4-Dimethylphenol		U	ug/kg	370
				2,4-Dinitrophenol		U	ug/kg	1800
				2,4-Dinitrotoluene		U	ug/kg	370
				2,6-Dinitrotoluene		U	ug/kg	370
				2-Chloronaphthalene		U	ug/kg	370
				2-Chlorophenol		U	ug/kg	370
				2-Methylnaphthalene		U	ug/kg	370
				2-Methylphenol		U	ug/kg	370
				2-Nitroaniline		U	ug/kg	1800
				2-Nitrophenol		U	ug/kg	370
				3,3'-Dichlorobenzidine		U	ug/kg	750
				3-Nitroaniline		U	ug/kg	1800
				4,6-Dinitro-2-methylphenol		U	ug/kg	1800
				4-Bromophenyl phenyl ether		U	ug/kg	370
				4-Chloro-3-methylphenol		U	ug/kg	370
				4-Chloroaniline		U	ug/kg	370
				4-Chlorophenyl phenyl ether		U	ug/kg	370
				4-Methylphenol		U	ug/kg	370
				4-Nitroaniline		U	ug/kg	1800
				4-Nitrophenol		U	ug/kg	1800
				Acenaphthene		U	ug/kg	370
				Acenaphthylene		U	ug/kg	370
				Anthracene		U	ug/kg	370
				Benzo(a)anthracene		U	ug/kg	370
				Benzo(a)pyrene		U	ug/kg	370
				Benzo(b)fluoranthene		U	ug/kg	370
				Benzo(g,h,i)perylene		U	ug/kg	370
				Benzo(k)fluoranthene		U	ug/kg	370
				bis(2-Chloroethyl) ether		U	ug/kg	370

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7407-1018	0474710013SA	18-20	bis(2-Chloroisopropyl)ether		U	ug/kg	370
				bis(2-Ethylhexyl)phthalate		U	ug/kg	370
				Butyl benzyl phthalate		U	ug/kg	370
				Carbazole		U	ug/kg	370
				Chrysene		U	ug/kg	370
				Di-n-butyl phthalate		U	ug/kg	370
				Di-n-octyl phthalate		U	ug/kg	370
				Dibenz(a,h)anthracene		U	ug/kg	370
				Dibenzofuran		U	ug/kg	370
				Diethyl phthalate		U	ug/kg	370
				Dimethyl phthalate		U	ug/kg	370
				Fluoranthene		U	ug/kg	370
				Fluorene		U	ug/kg	370
				Hexachlorobenzene		U	ug/kg	370
				Hexachlorobutadiene		U	ug/kg	370
				Hexachlorocyclopentadiene		U	ug/kg	370
				Hexachloroethane		U	ug/kg	370
				Indeno(1,2,3-cd)pyrene		U	ug/kg	370
				Isophorone		U	ug/kg	370
				N-Nitroso-di-n-propylamine		U	ug/kg	370
				N-Nitrosodiphenylamine		U	ug/kg	370
				Naphthalene		U	ug/kg	370
				Nitrobenzene		U	ug/kg	370
				Pentachlorophenol		U	ug/kg	1800
				Phenanthrene		U	ug/kg	370
				Phenol		U	ug/kg	370
				Pyrene		U	ug/kg	370
	CAN074-7408-1006	0474710001SA	6-8	1,2,4-Trichlorobenzene		U	ug/kg	360
				1,2-Dichlorobenzene		U	ug/kg	360
				1,3-Dichlorobenzene		U	ug/kg	360
				1,4-Dichlorobenzene		U	ug/kg	360
				2,4,5-Trichlorophenol		U	ug/kg	1800
				2,4,6-Trichlorophenol		U	ug/kg	360
				2,4-Dichlorophenol		U	ug/kg	360
				2,4-Dimethylphenol		U	ug/kg	360
				2,4-Dinitrophenol		U	ug/kg	1800
				2,4-Dinitrotoluene		U	ug/kg	360
				2,6-Dinitrotoluene		U	ug/kg	360
				2-Chloronaphthalene		U	ug/kg	360
				2-Chlorophenol		U	ug/kg	360
				2-Methylnaphthalene		U	ug/kg	360
				2-Methylphenol		U	ug/kg	360
				2-Nitroaniline		U	ug/kg	1800
				2-Nitrophenol		U	ug/kg	360
				3,3'-Dichlorobenzidine		U	ug/kg	720
				3-Nitroaniline		U	ug/kg	1800
				4,6-Dinitro-2-methylphenol		U	ug/kg	1800
				4-Bromophenyl phenyl ether		U	ug/kg	360
				4-Chloro-3-methylphenol		U	ug/kg	360
				4-Chloroaniline		U	ug/kg	360
				4-Chlorophenyl phenyl ether		U	ug/kg	360
				4-Methylphenol		U	ug/kg	360
				4-Nitroaniline		U	ug/kg	1800
				4-Nitrophenol		U	ug/kg	1800
				Acenaphthene		U	ug/kg	360
				Acenaphthylene		U	ug/kg	360

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7408-1006	0474710001SA	6-8	Anthracene		U	ug/kg	360
				Benzo(a)anthracene		U	ug/kg	360
				Benzo(a)pyrene		U	ug/kg	360
				Benzo(b)fluoranthene		U	ug/kg	360
				Benzo(g,h,i)perylene		U	ug/kg	360
				Benzo(k)fluoranthene		U	ug/kg	360
				bis(2-Chloroethyl) ether		U	ug/kg	360
				bis(2-Chloroisopropyl)ether		U	ug/kg	360
				bis(2-Ethylhexyl)phthalate		U	ug/kg	360
				Butyl benzyl phthalate		U	ug/kg	360
				Carbazole		U	ug/kg	360
				Chrysene		U	ug/kg	360
				Di-n-butyl phthalate		U	ug/kg	360
				Di-n-octyl phthalate		U	ug/kg	360
				Dibenz(a,h)anthracene		U	ug/kg	360
				Dibenzofuran		U	ug/kg	360
				Diethyl phthalate		U	ug/kg	360
				Dimethyl phthalate		U	ug/kg	360
				Fluoranthene		U	ug/kg	360
				Fluorene		U	ug/kg	360
				Hexachlorobenzene		U	ug/kg	360
				Hexachlorobutadiene		U	ug/kg	360
				Hexachlorocyclopentadiene		U	ug/kg	360
				Hexachloroethane		U	ug/kg	360
				Indeno(1,2,3-cd)pyrene		U	ug/kg	360
				Isophorone		U	ug/kg	360
				N-Nitroso-di-n-propylamine		U	ug/kg	360
				N-Nitrosodiphenylamine		U	ug/kg	360
				Naphthalene		U	ug/kg	360
				Nitrobenzene		U	ug/kg	360
				Pentachlorophenol		U	ug/kg	1800
				Phenanthrene		U	ug/kg	360
				Phenol		U	ug/kg	360
				Pyrene		U	ug/kg	360
	CAN074-7408-1010	0474710003SA	10-12	1,2,4-Trichlorobenzene		U	ug/kg	370
				1,2-Dichlorobenzene		U	ug/kg	370
				1,3-Dichlorobenzene		U	ug/kg	370
				1,4-Dichlorobenzene		U	ug/kg	370
				2,4,5-Trichlorophenol		U	ug/kg	1800
				2,4,6-Trichlorophenol		U	ug/kg	370
				2,4-Dichlorophenol		U	ug/kg	370
				2,4-Dimethylphenol		U	ug/kg	370
				2,4-Dinitrophenol		U	ug/kg	1800
				2,4-Dinitrotoluene		U	ug/kg	370
				2,6-Dinitrotoluene		U	ug/kg	370
				2-Chloronaphthalene		U	ug/kg	370
				2-Chlorophenol		U	ug/kg	370
				2-Methylnaphthalene		U	ug/kg	370
				2-Methylphenol		U	ug/kg	370
				2-Nitroaniline		U	ug/kg	1800
				2-Nitrophenol		U	ug/kg	370
				3,3'-Dichlorobenzidine		U	ug/kg	730
				3-Nitroaniline		U	ug/kg	1800
				4,6-Dinitro-2-methylphenol		U	ug/kg	1800
				4-Bromophenyl phenyl ether		U	ug/kg	370
				4-Chloro-3-methylphenol		U	ug/kg	370

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7408-1010	0474710003SA	10-12	4-Chloroaniline		U	ug/kg	370
				4-Chlorophenyl phenyl ether		U	ug/kg	370
				4-Methylphenol		U	ug/kg	370
				4-Nitroaniline		U	ug/kg	1800
				4-Nitrophenol		U	ug/kg	1800
				Acenaphthene		U	ug/kg	370
				Acenaphthylene		U	ug/kg	370
				Anthracene		U	ug/kg	370
				Benzo(a)anthracene		U	ug/kg	370
				Benzo(a)pyrene		U	ug/kg	370
				Benzo(b)fluoranthene		U	ug/kg	370
				Benzo(g,h,i)perylene		U	ug/kg	370
				Benzo(k)fluoranthene		U	ug/kg	370
				bis(2-Chloroethyl) ether		U	ug/kg	370
				bis(2-Chloroisopropyl)ether		U	ug/kg	370
				bis(2-Ethylhexyl)phthalate		U	ug/kg	370
				Butyl benzyl phthalate		U	ug/kg	370
				Carbazole		U	ug/kg	370
				Chrysene		U	ug/kg	370
				Di-n-butyl phthalate		U	ug/kg	370
				Di-n-octyl phthalate		U	ug/kg	370
				Dibenz(a,h)anthracene		U	ug/kg	370
				Dibenzofuran		U	ug/kg	370
				Diethyl phthalate		U	ug/kg	370
				Dimethyl phthalate		U	ug/kg	370
				Fluoranthene		U	ug/kg	370
				Fluorene		U	ug/kg	370
				Hexachlorobenzene		U	ug/kg	370
				Hexachlorobutadiene		U	ug/kg	370
				Hexachlorocyclopentadiene		U	ug/kg	370
				Hexachloroethane		U	ug/kg	370
				Indeno(1,2,3-cd)pyrene		U	ug/kg	370
				Isophorone		U	ug/kg	370
				N-Nitroso-di-n-propylamine		U	ug/kg	370
				N-Nitrosodiphenylamine		U	ug/kg	370
				Naphthalene		U	ug/kg	370
				Nitrobenzene		U	ug/kg	370
				Pentachlorophenol		U	ug/kg	1800
				Phenanthrene		U	ug/kg	370
				Phenol		U	ug/kg	370
				Pyrene		U	ug/kg	370
	CAN074-7408-1014	0474710004SA	14-16	1,2,4-Trichlorobenzene		U	ug/kg	380
				1,2-Dichlorobenzene		U	ug/kg	380
				1,3-Dichlorobenzene		U	ug/kg	380
				1,4-Dichlorobenzene		U	ug/kg	380
				2,4,5-Trichlorophenol		U	ug/kg	1800
				2,4,6-Trichlorophenol		U	ug/kg	380
				2,4-Dichlorophenol		U	ug/kg	380
				2,4-Dimethylphenol		U	ug/kg	380
				2,4-Dinitrophenol		U	ug/kg	1800
				2,4-Dinitrotoluene		U	ug/kg	380
				2,6-Dinitrotoluene		U	ug/kg	380
				2-Chloronaphthalene		U	ug/kg	380
				2-Chlorophenol		U	ug/kg	380
				2-Methylnaphthalene		U	ug/kg	380
				2-Methylphenol		U	ug/kg	380

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7408-1014	0474710004SA	14-16	2-Nitroaniline		U	ug/kg	1800
				2-Nitrophenol		U	ug/kg	380
				3,3'-Dichlorobenzidine		U	ug/kg	750
				3-Nitroaniline		U	ug/kg	1800
				4,6-Dinitro-2-methylphenol		U	ug/kg	1800
				4-Bromophenyl phenyl ether		U	ug/kg	380
				4-Chloro-3-methylphenol		U	ug/kg	380
				4-Chloroaniline		U	ug/kg	380
				4-Chlorophenyl phenyl ether		U	ug/kg	380
				4-Methylphenol		U	ug/kg	380
				4-Nitroaniline		U	ug/kg	1800
				4-Nitrophenol		U	ug/kg	1800
				Acenaphthene		U	ug/kg	380
				Acenaphthylene		U	ug/kg	380
				Anthracene		U	ug/kg	380
				Benzo(a)anthracene		U	ug/kg	380
				Benzo(a)pyrene		U	ug/kg	380
				Benzo(b)fluoranthene		U	ug/kg	380
				Benzo(g,h,i)perylene		U	ug/kg	380
				Benzo(k)fluoranthene		U	ug/kg	380
				bis(2-Chloroethyl) ether		U	ug/kg	380
				bis(2-Chloroisopropyl)ether		U	ug/kg	380
				bis(2-Ethylhexyl)phthalate		U	ug/kg	380
				Butyl benzyl phthalate		U	ug/kg	380
				Carbazole		U	ug/kg	380
				Chrysene		U	ug/kg	380
				Di-n-butyl phthalate		U	ug/kg	380
				Di-n-octyl phthalate		U	ug/kg	380
				Dibenz(a,h)anthracene		U	ug/kg	380
				Dibenzofuran		U	ug/kg	380
				Diethyl phthalate		U	ug/kg	380
				Dimethyl phthalate		U	ug/kg	380
				Fluoranthene		U	ug/kg	380
				Fluorene		U	ug/kg	380
				Hexachlorobenzene		U	ug/kg	380
				Hexachlorobutadiene		U	ug/kg	380
				Hexachlorocyclopentadiene		U	ug/kg	380
				Hexachloroethane		U	ug/kg	380
				Indeno(1,2,3-cd)pyrene		U	ug/kg	380
				Isophorone		U	ug/kg	380
				N-Nitroso-di-n-propylamine		U	ug/kg	380
				N-Nitrosodiphenylamine		U	ug/kg	380
				Naphthalene		U	ug/kg	380
				Nitrobenzene		U	ug/kg	380
				Pentachlorophenol		U	ug/kg	1800
				Phenanthrene		U	ug/kg	380
				Phenol		U	ug/kg	380
				Pyrene		U	ug/kg	380
	CAN074-7408-1022	0474710005SA	22-22.75	1,2,4-Trichlorobenzene		U	ug/kg	390
				1,2-Dichlorobenzene		U	ug/kg	390
				1,3-Dichlorobenzene		U	ug/kg	390
				1,4-Dichlorobenzene		U	ug/kg	390
				2,4,5-Trichlorophenol		U	ug/kg	1900
				2,4,6-Trichlorophenol		U	ug/kg	390
				2,4-Dichlorophenol		U	ug/kg	390
				2,4-Dimethylphenol		U	ug/kg	390

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7408-1022	0474710005SA	22-22.75	2,4-Dinitrophenol		U	ug/kg	1900
				2,4-Dinitrotoluene		U	ug/kg	390
				2,6-Dinitrotoluene		U	ug/kg	390
				2-Chloronaphthalene		U	ug/kg	390
				2-Chlorophenol		U	ug/kg	390
				2-Methylnaphthalene		U	ug/kg	390
				2-Methylphenol		U	ug/kg	390
				2-Nitroaniline		U	ug/kg	1900
				2-Nitrophenol		U	ug/kg	390
				3,3'-Dichlorobenzidine		U	ug/kg	780
				3-Nitroaniline		U	ug/kg	1900
				4,6-Dinitro-2-methylphenol		U	ug/kg	1900
				4-Bromophenyl phenyl ether		U	ug/kg	390
				4-Chloro-3-methylphenol		U	ug/kg	390
				4-Chloroaniline		U	ug/kg	390
				4-Chlorophenyl phenyl ether		U	ug/kg	390
				4-Methylphenol		U	ug/kg	390
				4-Nitroaniline		U	ug/kg	1900
				4-Nitrophenol		U	ug/kg	1900
				Acenaphthene		U	ug/kg	390
				Acenaphthylene		U	ug/kg	390
				Anthracene		U	ug/kg	390
				Benzo(a)anthracene		U	ug/kg	390
				Benzo(a)pyrene		U	ug/kg	390
				Benzo(b)fluoranthene		U	ug/kg	390
				Benzo(g,h,i)perylene		U	ug/kg	390
				Benzo(k)fluoranthene		U	ug/kg	390
				bis(2-Chloroethyl) ether		U	ug/kg	390
				bis(2-Chloroisopropyl)ether		U	ug/kg	390
				bis(2-Ethylhexyl)phthalate		U	ug/kg	390
				Butyl benzyl phthalate		U	ug/kg	390
				Carbazole		U	ug/kg	390
				Chrysene		U	ug/kg	390
				Di-n-butyl phthalate		U	ug/kg	390
				Di-n-octyl phthalate		U	ug/kg	390
				Dibenz(a,h)anthracene		U	ug/kg	390
				Dibenzofuran		U	ug/kg	390
				Diethyl phthalate		U	ug/kg	390
				Dimethyl phthalate		U	ug/kg	390
				Fluoranthene		U	ug/kg	390
				Fluorene		U	ug/kg	390
				Hexachlorobenzene		U	ug/kg	390
				Hexachlorobutadiene		U	ug/kg	390
				Hexachlorocyclopentadiene		U	ug/kg	390
				Hexachloroethane		U	ug/kg	390
				Indeno(1,2,3-cd)pyrene		U	ug/kg	390
				Isophorone		U	ug/kg	390
				N-Nitroso-di-n-propylamine		U	ug/kg	390
				N-Nitrosodiphenylamine		U	ug/kg	390
				Naphthalene		U	ug/kg	390
				Nitrobenzene		U	ug/kg	390
				Pentachlorophenol		U	ug/kg	1900
				Phenanthrene		U	ug/kg	390
				Phenol		U	ug/kg	390
				Pyrene		U	ug/kg	390
	CAN074-7408-1024	0474710006SA	24-25.4	1,2,4-Trichlorobenzene		U	ug/kg	370

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7408-1024	0474710006SA	24-25.4	1,2-Dichlorobenzene		U	ug/kg	370
				1,3-Dichlorobenzene		U	ug/kg	370
				1,4-Dichlorobenzene		U	ug/kg	370
				2,4,5-Trichlorophenol		U	ug/kg	1800
				2,4,6-Trichlorophenol		U	ug/kg	370
				2,4-Dichlorophenol		U	ug/kg	370
				2,4-Dimethylphenol		U	ug/kg	370
				2,4-Dinitrophenol		U	ug/kg	1800
				2,4-Dinitrotoluene		U	ug/kg	370
				2,6-Dinitrotoluene		U	ug/kg	370
				2-Chloronaphthalene		U	ug/kg	370
				2-Chlorophenol		U	ug/kg	370
				2-Methylnaphthalene		U	ug/kg	370
				2-Methylphenol		U	ug/kg	370
				2-Nitroaniline		U	ug/kg	1800
				2-Nitrophenol		U	ug/kg	370
				3,3'-Dichlorobenzidine		U	ug/kg	730
				3-Nitroaniline		U	ug/kg	1800
				4,6-Dinitro-2-methylphenol		U	ug/kg	1800
				4-Bromophenyl phenyl ether		U	ug/kg	370
				4-Chloro-3-methylphenol		U	ug/kg	370
				4-Chloroaniline		U	ug/kg	370
				4-Chlorophenyl phenyl ether		U	ug/kg	370
				4-Methylphenol		U	ug/kg	370
				4-Nitroaniline		U	ug/kg	1800
				4-Nitrophenol		U	ug/kg	1800
				Acenaphthene		U	ug/kg	370
				Acenaphthylene		U	ug/kg	370
				Anthracene		U	ug/kg	370
				Benzo(a)anthracene		U	ug/kg	370
				Benzo(a)pyrene		U	ug/kg	370
				Benzo(b)fluoranthene		U	ug/kg	370
				Benzo(g,h,i)perylene		U	ug/kg	370
				Benzo(k)fluoranthene		U	ug/kg	370
				bis(2-Chloroethyl) ether		U	ug/kg	370
				bis(2-Chloroisopropyl)ether		U	ug/kg	370
				bis(2-Ethylhexyl)phthalate		U	ug/kg	370
				Butyl benzyl phthalate		U	ug/kg	370
				Carbazole		U	ug/kg	370
				Chrysene		U	ug/kg	370
				Di-n-butyl phthalate		U	ug/kg	370
				Di-n-octyl phthalate		U	ug/kg	370
				Dibenz(a,h)anthracene		U	ug/kg	370
				Dibenzofuran		U	ug/kg	370
				Diethyl phthalate		U	ug/kg	370
				Dimethyl phthalate		U	ug/kg	370
				Fluoranthene		U	ug/kg	370
				Fluorene		U	ug/kg	370
				Hexachlorobenzene		U	ug/kg	370
				Hexachlorobutadiene		U	ug/kg	370
				Hexachlorocyclopentadiene		U	ug/kg	370
				Hexachloroethane		U	ug/kg	370
				Indeno(1,2,3-cd)pyrene		U	ug/kg	370
				Isophorone		U	ug/kg	370
				N-Nitroso-di-n-propylamine		U	ug/kg	370
				N-Nitrosodiphenylamine		U	ug/kg	370

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL	UNITS	DL
SVOC	CAN074-7408-1024	0474710006SA	24-25.4	Naphthalene		U	ug/kg	370
				Nitrobenzene		U	ug/kg	370
				Pentachlorophenol		U	ug/kg	1800
				Phenanthrene		U	ug/kg	370
				Phenol		U	ug/kg	370
				Pyrene		U	ug/kg	370
	CAN074-7408-1034	0474710007SA	34-36	1,2,4-Trichlorobenzene		U	ug/kg	340
				1,2-Dichlorobenzene		U	ug/kg	340
				1,3-Dichlorobenzene		U	ug/kg	340
				1,4-Dichlorobenzene		U	ug/kg	340
				2,4,5-Trichlorophenol		U	ug/kg	1600
				2,4,6-Trichlorophenol		U	ug/kg	340
				2,4-Dichlorophenol		U	ug/kg	340
				2,4-Dimethylphenol		U	ug/kg	340
				2,4-Dinitrophenol		U	ug/kg	1600
				2,4-Dinitrotoluene		U	ug/kg	340
				2,6-Dinitrotoluene		U	ug/kg	340
				2-Chloronaphthalene		U	ug/kg	340
				2-Chlorophenol		U	ug/kg	340
				2-Methylnaphthalene		U	ug/kg	340
				2-Methylphenol		U	ug/kg	340
				2-Nitroaniline		U	ug/kg	1600
				2-Nitrophenol		U	ug/kg	340
				3,3'-Dichlorobenzidine		U	ug/kg	680
				3-Nitroaniline		U	ug/kg	1600
				4,6-Dinitro-2-methylphenol		U	ug/kg	1600
				4-Bromophenyl phenyl ether		U	ug/kg	340
				4-Chloro-3-methylphenol		U	ug/kg	340
				4-Chloroaniline		U	ug/kg	340
				4-Chlorophenyl phenyl ether		U	ug/kg	340
				4-Methylphenol		U	ug/kg	340
				4-Nitroaniline		U	ug/kg	1600
				4-Nitrophenol		U	ug/kg	1600
				Acenaphthene		U	ug/kg	340
				Acenaphthylene		U	ug/kg	340
				Anthracene		U	ug/kg	340
				Benzo(a)anthracene		U	ug/kg	340
				Benzo(a)pyrene		U	ug/kg	340
				Benzo(b)fluoranthene		U	ug/kg	340
				Benzo(g,h,i)perylene		U	ug/kg	340
				Benzo(k)fluoranthene		U	ug/kg	340
				bis(2-Chloroethyl) ether		U	ug/kg	340
				bis(2-Chloroisopropyl)ether		U	ug/kg	340
				bis(2-Ethylhexyl)phthalate		U	ug/kg	340
				Butyl benzyl phthalate		U	ug/kg	340
				Carbazole		U	ug/kg	340
				Chrysene		U	ug/kg	340
				Di-n-butyl phthalate		U	ug/kg	340
				Di-n-octyl phthalate		U	ug/kg	340
				Dibenz(a,h)anthracene		U	ug/kg	340
				Dibenzofuran		U	ug/kg	340
				Diethyl phthalate		U	ug/kg	340
				Dimethyl phthalate		U	ug/kg	340
				Fluoranthene		U	ug/kg	340
				Fluorene		U	ug/kg	340
				Hexachlorobenzene		U	ug/kg	340

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7408-1034	0474710007SA	34-36	Hexachlorobutadiene		U	ug/kg	340
				Hexachlorocyclopentadiene		U	ug/kg	340
				Hexachloroethane		U	ug/kg	340
				Indeno(1,2,3-cd)pyrene		U	ug/kg	340
				Isophorone		U	ug/kg	340
				N-Nitroso-di-n-propylamine		U	ug/kg	340
				N-Nitrosodiphenylamine		U	ug/kg	340
				Naphthalene		U	ug/kg	340
				Nitrobenzene		U	ug/kg	340
				Pentachlorophenol		U	ug/kg	1600
				Phenanthrene		U	ug/kg	340
				Phenol		U	ug/kg	340
				Pyrene		U	ug/kg	340
	CAN074-7408-1044	0474710008SA	44-46	1,2,4-Trichlorobenzene		U	ug/kg	340
				1,2-Dichlorobenzene		U	ug/kg	340
				1,3-Dichlorobenzene		U	ug/kg	340
				1,4-Dichlorobenzene		U	ug/kg	340
				2,4,5-Trichlorophenol		U	ug/kg	1600
				2,4,6-Trichlorophenol		U	ug/kg	340
				2,4-Dichlorophenol		U	ug/kg	340
				2,4-Dimethylphenol		U	ug/kg	340
				2,4-Dinitrophenol		U	ug/kg	1600
				2,4-Dinitrotoluene		U	ug/kg	340
				2,6-Dinitrotoluene		U	ug/kg	340
				2-Chloronaphthalene		U	ug/kg	340
				2-Chlorophenol		U	ug/kg	340
				2-Methylnaphthalene		U	ug/kg	340
				2-Methylphenol		U	ug/kg	340
				2-Nitroaniline		U	ug/kg	1600
				2-Nitrophenol		U	ug/kg	340
				3,3'-Dichlorobenzidine		U	ug/kg	680
				3-Nitroaniline		U	ug/kg	1600
				4,6-Dinitro-2-methylphenol		U	ug/kg	1600
				4-Bromophenyl phenyl ether		U	ug/kg	340
				4-Chloro-3-methylphenol		U	ug/kg	340
				4-Chloroaniline		U	ug/kg	340
				4-Chlorophenyl phenyl ether		U	ug/kg	340
				4-Methylphenol		U	ug/kg	340
				4-Nitroaniline		U	ug/kg	1600
				4-Nitrophenol		U	ug/kg	1600
				Acenaphthene		U	ug/kg	340
				Acenaphthylene		U	ug/kg	340
				Anthracene		U	ug/kg	340
				Benzo(a)anthracene		U	ug/kg	340
				Benzo(a)pyrene		U	ug/kg	340
				Benzo(b)fluoranthene		U	ug/kg	340
				Benzo(g,h,i)perylene		U	ug/kg	340
				Benzo(k)fluoranthene		U	ug/kg	340
				bis(2-Chloroethyl) ether		U	ug/kg	340
				bis(2-Chloroisopropyl)ether		U	ug/kg	340
				bis(2-Ethylhexyl)phthalate		U	ug/kg	340
				Butyl benzyl phthalate		U	ug/kg	340
				Carbazole		U	ug/kg	340
				Chrysene		U	ug/kg	340
				Di-n-butyl phthalate		U	ug/kg	340
				Di-n-octyl phthalate		U	ug/kg	340

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7408-1044	0474710008SA	44-46	Dibenz(a,h)anthracene		U	ug/kg	340
				Dibenzofuran		U	ug/kg	340
				Diethyl phthalate		U	ug/kg	340
				Dimethyl phthalate		U	ug/kg	340
				Fluoranthene		U	ug/kg	340
				Fluorene		U	ug/kg	340
				Hexachlorobenzene		U	ug/kg	340
				Hexachlorobutadiene		U	ug/kg	340
				Hexachlorocyclopentadiene		U	ug/kg	340
				Hexachloroethane		U	ug/kg	340
				Indeno(1,2,3-cd)pyrene		U	ug/kg	340
				Isophorone		U	ug/kg	340
				N-Nitroso-di-n-propylamine		U	ug/kg	340
				N-Nitrosodiphenylamine		U	ug/kg	340
				Naphthalene		U	ug/kg	340
				Nitrobenzene		U	ug/kg	340
				Pentachlorophenol		U	ug/kg	1600
				Phenanthrene		U	ug/kg	340
				Phenol		U	ug/kg	340
				Pyrene		U	ug/kg	340
	CAN074-7408-1462	0474710002SA	6-8	1,2,4-Trichlorobenzene		U	ug/kg	360
				1,2-Dichlorobenzene		U	ug/kg	360
				1,3-Dichlorobenzene		U	ug/kg	360
				1,4-Dichlorobenzene		U	ug/kg	360
				2,4,5-Trichlorophenol		U	ug/kg	1800
				2,4,6-Trichlorophenol		U	ug/kg	360
				2,4-Dichlorophenol		U	ug/kg	360
				2,4-Dimethylphenol		U	ug/kg	360
				2,4-Dinitrophenol		U	ug/kg	1800
				2,4-Dinitrotoluene		U	ug/kg	360
				2,6-Dinitrotoluene		U	ug/kg	360
				2-Chloronaphthalene		U	ug/kg	360
				2-Chlorophenol		U	ug/kg	360
				2-Methylnaphthalene		U	ug/kg	360
				2-Methylphenol		U	ug/kg	360
				2-Nitroaniline		U	ug/kg	1800
				2-Nitrophenol		U	ug/kg	360
				3,3'-Dichlorobenzidine		U	ug/kg	730
				3-Nitroaniline		U	ug/kg	1800
				4,6-Dinitro-2-methylphenol		U	ug/kg	1800
				4-Bromophenyl phenyl ether		U	ug/kg	360
				4-Chloro-3-methylphenol		U	ug/kg	360
				4-Chloroaniline		U	ug/kg	360
				4-Chlorophenyl phenyl ether		U	ug/kg	360
				4-Methylphenol		U	ug/kg	360
				4-Nitroaniline		U	ug/kg	1800
				4-Nitrophenol		U	ug/kg	1800
				Acenaphthene		U	ug/kg	360
				Acenaphthylene		U	ug/kg	360
				Anthracene		U	ug/kg	360
				Benzo(a)anthracene		U	ug/kg	360
				Benzo(a)pyrene		U	ug/kg	360
				Benzo(b)fluoranthene		U	ug/kg	360
				Benzo(g,h,i)perylene		U	ug/kg	360
				Benzo(k)fluoranthene		U	ug/kg	360
				bis(2-Chloroethyl) ether		U	ug/kg	360

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7408-1462	0474710002SA	6-8	bis(2-Chloroisopropyl)ether		U	ug/kg	360
				bis(2-Ethylhexyl)phthalate		U	ug/kg	360
				Butyl benzyl phthalate		U	ug/kg	360
				Carbazole		U	ug/kg	360
				Chrysene		U	ug/kg	360
				Di-n-butyl phthalate		U	ug/kg	360
				Di-n-octyl phthalate		U	ug/kg	360
				Dibenz(a,h)anthracene		U	ug/kg	360
				Dibenzofuran		U	ug/kg	360
				Diethyl phthalate		U	ug/kg	360
				Dimethyl phthalate		U	ug/kg	360
				Fluoranthene		U	ug/kg	360
				Fluorene		U	ug/kg	360
				Hexachlorobenzene		U	ug/kg	360
				Hexachlorobutadiene		U	ug/kg	360
				Hexachlorocyclopentadiene		U	ug/kg	360
				Hexachloroethane		U	ug/kg	360
				Indeno(1,2,3-cd)pyrene		U	ug/kg	360
				Isophorone		U	ug/kg	360
				N-Nitroso-di-n-propylamine		U	ug/kg	360
				N-Nitrosodiphenylamine		U	ug/kg	360
				Naphthalene		U	ug/kg	360
				Nitrobenzene		U	ug/kg	360
				Pentachlorophenol		U	ug/kg	1800
				Phenanthrene		U	ug/kg	360
				Phenol		U	ug/kg	360
				Pyrene		U	ug/kg	360
	CAN074-7409-1006	0474380009SA		1,2,4-Trichlorobenzene		U	ug/kg	370
				1,2-Dichlorobenzene		U	ug/kg	370
				1,3-Dichlorobenzene		U	ug/kg	370
				1,4-Dichlorobenzene		U	ug/kg	370
				2,4,5-Trichlorophenol		U	ug/kg	1800
				2,4,6-Trichlorophenol		U	ug/kg	370
				2,4-Dichlorophenol		U	ug/kg	370
				2,4-Dimethylphenol		U	ug/kg	370
				2,4-Dinitrophenol		U	ug/kg	1800
				2,4-Dinitrotoluene		U	ug/kg	370
				2,6-Dinitrotoluene		U	ug/kg	370
				2-Chloronaphthalene		U	ug/kg	370
				2-Chlorophenol		U	ug/kg	370
				2-Methylnaphthalene		U	ug/kg	370
				2-Methylphenol		U	ug/kg	370
				2-Nitroaniline		U	ug/kg	1800
				2-Nitrophenol		U	ug/kg	370
				3,3'-Dichlorobenzidine		U	ug/kg	730
				3-Nitroaniline		U	ug/kg	1800
				4,6-Dinitro-2-methylphenol		U	ug/kg	1800
				4-Bromophenyl phenyl ether		U	ug/kg	370
				4-Chloro-3-methylphenol		U	ug/kg	370
				4-Chloroaniline		U	ug/kg	370
				4-Chlorophenyl phenyl ether		U	ug/kg	370
				4-Methylphenol		U	ug/kg	370
				4-Nitroaniline		U	ug/kg	1800
				4-Nitrophenol		U	ug/kg	1800
				Acenaphthene		U	ug/kg	370
				Acenaphthylene		U	ug/kg	370

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7409-1006	0474380009SA	6-8	Anthracene		U	ug/kg	370
				Benzo(a)anthracene		U	ug/kg	370
				Benzo(a)pyrene		U	ug/kg	370
				Benzo(b)fluoranthene		U	ug/kg	370
				Benzo(g,h,i)perylene		U	ug/kg	370
				Benzo(k)fluoranthene		U	ug/kg	370
				bis(2-Chloroethyl) ether		U	ug/kg	370
				bis(2-Chloroisopropyl)ether		U	ug/kg	370
				bis(2-Ethylhexyl)phthalate		U	ug/kg	370
				Butyl benzyl phthalate		U	ug/kg	370
				Carbazole		U	ug/kg	370
				Chrysene		U	ug/kg	370
				Di-n-butyl phthalate		U	ug/kg	370
				Di-n-octyl phthalate		U	ug/kg	370
				Dibenz(a,h)anthracene		U	ug/kg	370
				Dibenzofuran		U	ug/kg	370
				Diethyl phthalate		U	ug/kg	370
				Dimethyl phthalate		U	ug/kg	370
				Fluoranthene		U	ug/kg	370
				Fluorene		U	ug/kg	370
				Hexachlorobenzene		U	ug/kg	370
				Hexachlorobutadiene		U	ug/kg	370
				Hexachlorocyclopentadiene		U	ug/kg	370
				Hexachloroethane		U	ug/kg	370
				Indeno(1,2,3-cd)pyrene		U	ug/kg	370
				Isophorone		U	ug/kg	370
				N-Nitroso-di-n-propylamine		U	ug/kg	370
				N-Nitrosodiphenylamine		U	ug/kg	370
				Naphthalene		U	ug/kg	370
				Nitrobenzene		U	ug/kg	370
				Pentachlorophenol		U	ug/kg	1800
				Phenanthrene		U	ug/kg	370
				Phenol		U	ug/kg	370
				Pyrene		U	ug/kg	370
	CAN074-7409-1010	0474380010SA	10-12	1,2,4-Trichlorobenzene		U	ug/kg	360
				1,2-Dichlorobenzene		U	ug/kg	360
				1,3-Dichlorobenzene		U	ug/kg	360
				1,4-Dichlorobenzene		U	ug/kg	360
				2,4,5-Trichlorophenol		U	ug/kg	1800
				2,4,6-Trichlorophenol		U	ug/kg	360
				2,4-Dichlorophenol		U	ug/kg	360
				2,4-Dimethylphenol		U	ug/kg	360
				2,4-Dinitrophenol		U	ug/kg	1800
				2,4-Dinitrotoluene		U	ug/kg	360
				2,6-Dinitrotoluene		U	ug/kg	360
				2-Chloronaphthalene		U	ug/kg	360
				2-Chlorophenol		U	ug/kg	360
				2-Methylnaphthalene		U	ug/kg	360
				2-Methylphenol		U	ug/kg	360
				2-Nitroaniline		U	ug/kg	1800
				2-Nitrophenol		U	ug/kg	360
				3,3'-Dichlorobenzidine		U	ug/kg	720
				3-Nitroaniline		U	ug/kg	1800
				4,6-Dinitro-2-methylphenol		U	ug/kg	1800
				4-Bromophenyl phenyl ether		U	ug/kg	360
				4-Chloro-3-methylphenol		U	ug/kg	360

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL	UNITS	DL
SVOC	CAN074-7409-1010	0474380010SA	10-12	4-Chloroaniline		U	ug/kg	360
				4-Chlorophenyl phenyl ether		U	ug/kg	360
				4-Methylphenol		U	ug/kg	360
				4-Nitroaniline		U	ug/kg	1800
				4-Nitrophenol		U	ug/kg	1800
				Acenaphthene		U	ug/kg	360
				Acenaphthylene		U	ug/kg	360
				Anthracene		U	ug/kg	360
				Benzo(a)anthracene		U	ug/kg	360
				Benzo(a)pyrene		U	ug/kg	360
				Benzo(b)fluoranthene		U	ug/kg	360
				Benzo(g,h,i)perylene		U	ug/kg	360
				Benzo(k)fluoranthene		U	ug/kg	360
				bis(2-Chloroethyl) ether		U	ug/kg	360
				bis(2-Chloroisopropyl)ether		U	ug/kg	360
				bis(2-Ethylhexyl)phthalate		U	ug/kg	360
				Butyl benzyl phthalate		U	ug/kg	360
				Carbazole		U	ug/kg	360
				Chrysene		U	ug/kg	360
				Di-n-butyl phthalate		U	ug/kg	360
				Di-n-octyl phthalate		U	ug/kg	360
				Dibenz(a,h)anthracene		U	ug/kg	360
				Dibenzofuran		U	ug/kg	360
				Diethyl phthalate		U	ug/kg	360
				Dimethyl phthalate		U	ug/kg	360
				Fluoranthene		U	ug/kg	360
				Fluorene		U	ug/kg	360
				Hexachlorobenzene		U	ug/kg	360
				Hexachlorobutadiene		U	ug/kg	360
				Hexachlorocyclopentadiene		U	ug/kg	360
				Hexachloroethane		U	ug/kg	360
				Indeno(1,2,3-cd)pyrene		U	ug/kg	360
				Isophorone		U	ug/kg	360
				N-Nitroso-di-n-propylamine		U	ug/kg	360
				N-Nitrosodiphenylamine		U	ug/kg	360
				Naphthalene		U	ug/kg	360
				Nitrobenzene		U	ug/kg	360
				Pentachlorophenol		U	ug/kg	1800
				Phenanthrene		U	ug/kg	360
				Phenol		U	ug/kg	360
				Pyrene		U	ug/kg	360
	CAN074-7409-1014	0474380011SA	14-16	1,2,4-Trichlorobenzene		U	ug/kg	380
				1,2-Dichlorobenzene		U	ug/kg	380
				1,3-Dichlorobenzene		U	ug/kg	380
				1,4-Dichlorobenzene		U	ug/kg	380
				2,4,5-Trichlorophenol		U	ug/kg	1800
				2,4,6-Trichlorophenol		U	ug/kg	380
				2,4-Dichlorophenol		U	ug/kg	380
				2,4-Dimethylphenol		U	ug/kg	380
				2,4-Dinitrophenol		U	ug/kg	1800
				2,4-Dinitrotoluene		U	ug/kg	380
				2,6-Dinitrotoluene		U	ug/kg	380
				2-Chloronaphthalene		U	ug/kg	380
				2-Chlorophenol		U	ug/kg	380
				2-Methylnaphthalene		U	ug/kg	380
				2-Methylphenol		U	ug/kg	380

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7409-1014	0474380011SA	14-16	2-Nitroaniline		U	ug/kg	1800
				2-Nitrophenol		U	ug/kg	380
				3,3'-Dichlorobenzidine		U	ug/kg	760
				3-Nitroaniline		U	ug/kg	1800
				4,6-Dinitro-2-methylphenol		U	ug/kg	1800
				4-Bromophenyl phenyl ether		U	ug/kg	380
				4-Chloro-3-methylphenol		U	ug/kg	380
				4-Chloroaniline		U	ug/kg	380
				4-Chlorophenyl phenyl ether		U	ug/kg	380
				4-Methylphenol		U	ug/kg	380
				4-Nitroaniline		U	ug/kg	1800
				4-Nitrophenol		U	ug/kg	1800
				Acenaphthene		U	ug/kg	380
				Acenaphthylene		U	ug/kg	380
				Anthracene		U	ug/kg	380
				Benzo(a)anthracene		U	ug/kg	380
				Benzo(a)pyrene		U	ug/kg	380
				Benzo(b)fluoranthene		U	ug/kg	380
				Benzo(g,h,i)perylene		U	ug/kg	380
				Benzo(k)fluoranthene		U	ug/kg	380
				bis(2-Chloroethyl) ether		U	ug/kg	380
				bis(2-Chloroisopropyl)ether		U	ug/kg	380
				bis(2-Ethylhexyl)phthalate	55	J	ug/kg	380
				Butyl benzyl phthalate		U	ug/kg	380
				Carbazole		U	ug/kg	380
				Chrysene		U	ug/kg	380
				Di-n-butyl phthalate		U	ug/kg	380
				Di-n-octyl phthalate		U	ug/kg	380
				Dibenz(a,h)anthracene		U	ug/kg	380
				Dibenzofuran		U	ug/kg	380
				Diethyl phthalate		U	ug/kg	380
				Dimethyl phthalate		U	ug/kg	380
				Fluoranthene		U	ug/kg	380
				Fluorene		U	ug/kg	380
				Hexachlorobenzene		U	ug/kg	380
				Hexachlorobutadiene		U	ug/kg	380
				Hexachlorocyclopentadiene		U	ug/kg	380
				Hexachloroethane		U	ug/kg	380
				Indeno(1,2,3-cd)pyrene		U	ug/kg	380
				Isophorone		U	ug/kg	380
				N-Nitroso-di-n-propylamine		U	ug/kg	380
				N-Nitrosodiphenylamine		U	ug/kg	380
				Naphthalene		U	ug/kg	380
				Nitrobenzene		U	ug/kg	380
				Pentachlorophenol		U	ug/kg	1800
				Phenanthrene		U	ug/kg	380
				Phenol		U	ug/kg	380
				Pyrene		U	ug/kg	380
	CAN074-7409-1020	0474380012SA	20-20.5	1,2,4-Trichlorobenzene		U	ug/kg	370
				1,2-Dichlorobenzene		U	ug/kg	370
				1,3-Dichlorobenzene		U	ug/kg	370
				1,4-Dichlorobenzene		U	ug/kg	370
				2,4,5-Trichlorophenol		U	ug/kg	1800
				2,4,6-Trichlorophenol		U	ug/kg	370
				2,4-Dichlorophenol		U	ug/kg	370
				2,4-Dimethylphenol		U	ug/kg	370

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7409-1020	0474380012SA	20-20.5	2,4-Dinitrophenol		U	ug/kg	1800
				2,4-Dinitrotoluene		U	ug/kg	370
				2,6-Dinitrotoluene		U	ug/kg	370
				2-Chloronaphthalene		U	ug/kg	370
				2-Chlorophenol		U	ug/kg	370
				2-Methylnaphthalene		U	ug/kg	370
				2-Methylphenol		U	ug/kg	370
				2-Nitroaniline		U	ug/kg	1800
				2-Nitrophenol		U	ug/kg	370
				3,3'-Dichlorobenzidine		U	ug/kg	740
				3-Nitroaniline		U	ug/kg	1800
				4,6-Dinitro-2-methylphenol		U	ug/kg	1800
				4-Bromophenyl phenyl ether		U	ug/kg	370
				4-Chloro-3-methylphenol		U	ug/kg	370
				4-Chloroaniline		U	ug/kg	370
				4-Chlorophenyl phenyl ether		U	ug/kg	370
				4-Methylphenol		U	ug/kg	370
				4-Nitroaniline		U	ug/kg	1800
				4-Nitrophenol		U	ug/kg	1800
				Acenaphthene		U	ug/kg	370
				Acenaphthylene		U	ug/kg	370
				Anthracene		U	ug/kg	370
				Benzo(a)anthracene		U	ug/kg	370
				Benzo(a)pyrene		U	ug/kg	370
				Benzo(b)fluoranthene		U	ug/kg	370
				Benzo(g,h,i)perylene		U	ug/kg	370
				Benzo(k)fluoranthene		U	ug/kg	370
				bis(2-Chloroethyl) ether		U	ug/kg	370
				bis(2-Chloroisopropyl)ether		U	ug/kg	370
				bis(2-Ethylhexyl)phthalate		U	ug/kg	370
				Butyl benzyl phthalate		U	ug/kg	370
				Carbazole		U	ug/kg	370
				Chrysene		U	ug/kg	370
				Di-n-butyl phthalate		U	ug/kg	370
				Di-n-octyl phthalate		U	ug/kg	370
				Dibenz(a,h)anthracene		U	ug/kg	370
				Dibenzofuran		U	ug/kg	370
				Diethyl phthalate		U	ug/kg	370
				Dimethyl phthalate		U	ug/kg	370
				Fluoranthene		U	ug/kg	370
				Fluorene		U	ug/kg	370
				Hexachlorobenzene		U	ug/kg	370
				Hexachlorobutadiene		U	ug/kg	370
				Hexachlorocyclopentadiene		U	ug/kg	370
				Hexachloroethane		U	ug/kg	370
				Indeno(1,2,3-cd)pyrene		U	ug/kg	370
				Isophorone		U	ug/kg	370
				N-Nitroso-di-n-propylamine		U	ug/kg	370
				N-Nitrosodiphenylamine		U	ug/kg	370
				Naphthalene		U	ug/kg	370
				Nitrobenzene		U	ug/kg	370
				Pentachlorophenol		U	ug/kg	1800
				Phenanthrene		U	ug/kg	370
				Phenol		U	ug/kg	370
				Pyrene		U	ug/kg	370
	CAN074-7409-1024	0474380013SA	24-24.75	1,2,4-Trichlorobenzene		U	ug/kg	380

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7409-1024	0474380013SA	24-24.75	1,2-Dichlorobenzene		U	ug/kg	380
				1,3-Dichlorobenzene		U	ug/kg	380
				1,4-Dichlorobenzene		U	ug/kg	380
				2,4,5-Trichlorophenol		U	ug/kg	1800
				2,4,6-Trichlorophenol		U	ug/kg	380
				2,4-Dichlorophenol		U	ug/kg	380
				2,4-Dimethylphenol		U	ug/kg	380
				2,4-Dinitrophenol		U	ug/kg	1800
				2,4-Dinitrotoluene		U	ug/kg	380
				2,6-Dinitrotoluene		U	ug/kg	380
				2-Chloronaphthalene		U	ug/kg	380
				2-Chlorophenol		U	ug/kg	380
				2-Methylnaphthalene		U	ug/kg	380
				2-Methylphenol		U	ug/kg	380
				2-Nitroaniline		U	ug/kg	1800
				2-Nitrophenol		U	ug/kg	380
				3,3'-Dichlorobenzidine		U	ug/kg	760
				3-Nitroaniline		U	ug/kg	1800
				4,6-Dinitro-2-methylphenol		U	ug/kg	1800
				4-Bromophenyl phenyl ether		U	ug/kg	380
				4-Chloro-3-methylphenol		U	ug/kg	380
				4-Chloroaniline		U	ug/kg	380
				4-Chlorophenyl phenyl ether		U	ug/kg	380
				4-Methylphenol		U	ug/kg	380
				4-Nitroaniline		U	ug/kg	1800
				4-Nitrophenol		U	ug/kg	1800
				Acenaphthene		U	ug/kg	380
				Acenaphthylene		U	ug/kg	380
				Anthracene		U	ug/kg	380
				Benzo(a)anthracene		U	ug/kg	380
				Benzo(a)pyrene		U	ug/kg	380
				Benzo(b)fluoranthene		U	ug/kg	380
				Benzo(g,h,i)perylene		U	ug/kg	380
				Benzo(k)fluoranthene		U	ug/kg	380
				bis(2-Chloroethyl) ether		U	ug/kg	380
				bis(2-Chloroisopropyl)ether		U	ug/kg	380
				bis(2-Ethylhexyl)phthalate	62	J	ug/kg	380
				Butyl benzyl phthalate		U	ug/kg	380
				Carbazole		U	ug/kg	380
				Chrysene		U	ug/kg	380
				Di-n-butyl phthalate		U	ug/kg	380
				Di-n-octyl phthalate	72	J	ug/kg	380
				Dibenz(a,h)anthracene		U	ug/kg	380
				Dibenzofuran		U	ug/kg	380
				Diethyl phthalate		U	ug/kg	380
				Dimethyl phthalate		U	ug/kg	380
				Fluoranthene		U	ug/kg	380
				Fluorene		U	ug/kg	380
				Hexachlorobenzene		U	ug/kg	380
				Hexachlorobutadiene		U	ug/kg	380
				Hexachlorocyclopentadiene		U	ug/kg	380
				Hexachloroethane		U	ug/kg	380
				Indeno(1,2,3-cd)pyrene		U	ug/kg	380
				Isophorone		U	ug/kg	380
				N-Nitroso-di-n-propylamine		U	ug/kg	380
				N-Nitrosodiphenylamine		U	ug/kg	380

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7409-1024	0474380013SA	24-24.75	Naphthalene		U	ug/kg	380
				Nitrobenzene		U	ug/kg	380
				Pentachlorophenol		U	ug/kg	1800
				Phenanthrene		U	ug/kg	380
				Phenol		U	ug/kg	380
				Pyrene		U	ug/kg	380
	CAN074-7409-1034	0474380014SA	34-36	1,2,4-Trichlorobenzene		U	ug/kg	350
				1,2-Dichlorobenzene		U	ug/kg	350
				1,3-Dichlorobenzene		U	ug/kg	350
				1,4-Dichlorobenzene		U	ug/kg	350
				2,4,5-Trichlorophenol		U	ug/kg	1700
				2,4,6-Trichlorophenol		U	ug/kg	350
				2,4-Dichlorophenol		U	ug/kg	350
				2,4-Dimethylphenol		U	ug/kg	350
				2,4-Dinitrophenol		U	ug/kg	1700
				2,4-Dinitrotoluene		U	ug/kg	350
				2,6-Dinitrotoluene		U	ug/kg	350
				2-Chloronaphthalene		U	ug/kg	350
				2-Chlorophenol		U	ug/kg	350
				2-Methylnaphthalene		U	ug/kg	350
				2-Methylphenol		U	ug/kg	350
				2-Nitroaniline		U	ug/kg	1700
				2-Nitrophenol		U	ug/kg	350
				3,3'-Dichlorobenzidine		U	ug/kg	710
				3-Nitroaniline		U	ug/kg	1700
				4,6-Dinitro-2-methylphenol		U	ug/kg	1700
				4-Bromophenyl phenyl ether		U	ug/kg	350
				4-Chloro-3-methylphenol		U	ug/kg	350
				4-Chloroaniline		U	ug/kg	350
				4-Chlorophenyl phenyl ether		U	ug/kg	350
				4-Methylphenol		U	ug/kg	350
				4-Nitroaniline		U	ug/kg	1700
				4-Nitrophenol		U	ug/kg	1700
				Acenaphthene		U	ug/kg	350
				Acenaphthylene		U	ug/kg	350
				Anthracene		U	ug/kg	350
				Benzo(a)anthracene		U	ug/kg	350
				Benzo(a)pyrene		U	ug/kg	350
				Benzo(b)fluoranthene		U	ug/kg	350
				Benzo(g,h,i)perylene		U	ug/kg	350
				Benzo(k)fluoranthene		U	ug/kg	350
				bis(2-Chloroethyl) ether		U	ug/kg	350
				bis(2-Chloroisopropyl)ether		U	ug/kg	350
				bis(2-Ethylhexyl)phthalate		U	ug/kg	350
				Butyl benzyl phthalate		U	ug/kg	350
				Carbazole		U	ug/kg	350
				Chrysene		U	ug/kg	350
				Di-n-butyl phthalate		U	ug/kg	350
				Di-n-octyl phthalate		U	ug/kg	350
				Dibenz(a,h)anthracene		U	ug/kg	350
				Dibenzofuran		U	ug/kg	350
				Diethyl phthalate		U	ug/kg	350
				Dimethyl phthalate		U	ug/kg	350
				Fluoranthene		U	ug/kg	350
				Fluorene		U	ug/kg	350
				Hexachlorobenzene		U	ug/kg	350

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL	UNITS	DL
SVOC	CAN074-7409-1034	0474380014SA	34-36	Hexachlorobutadiene		U	ug/kg	350
				Hexachlorocyclopentadiene		U	ug/kg	350
				Hexachloroethane		U	ug/kg	350
				Indeno(1,2,3-cd)pyrene		U	ug/kg	350
				Isophorone		U	ug/kg	350
				N-Nitroso-di-n-propylamine		U	ug/kg	350
				N-Nitrosodiphenylamine		U	ug/kg	350
				Naphthalene		U	ug/kg	350
				Nitrobenzene		U	ug/kg	350
				Pentachlorophenol		U	ug/kg	1700
				Phenanthrene		U	ug/kg	350
				Phenol		U	ug/kg	350
				Pyrene		U	ug/kg	350
	CAN074-7409-1044	0474380015SA	44-46	1,2,4-Trichlorobenzene		U	ug/kg	340
				1,2-Dichlorobenzene		U	ug/kg	340
				1,3-Dichlorobenzene		U	ug/kg	340
				1,4-Dichlorobenzene		U	ug/kg	340
				2,4,5-Trichlorophenol		U	ug/kg	1600
				2,4,6-Trichlorophenol		U	ug/kg	340
				2,4-Dichlorophenol		U	ug/kg	340
				2,4-Dimethylphenol		U	ug/kg	340
				2,4-Dinitrophenol		U	ug/kg	1600
				2,4-Dinitrotoluene		U	ug/kg	340
				2,6-Dinitrotoluene		U	ug/kg	340
				2-Chloronaphthalene		U	ug/kg	340
				2-Chlorophenol		U	ug/kg	340
				2-Methylnaphthalene		U	ug/kg	340
				2-Methylphenol		U	ug/kg	340
				2-Nitroaniline		U	ug/kg	1600
				2-Nitrophenol		U	ug/kg	340
				3,3'-Dichlorobenzidine		U	ug/kg	680
				3-Nitroaniline		U	ug/kg	1600
				4,6-Dinitro-2-methylphenol		U	ug/kg	1600
				4-Bromophenyl phenyl ether		U	ug/kg	340
				4-Chloro-3-methylphenol		U	ug/kg	340
				4-Chloroaniline		U	ug/kg	340
				4-Chlorophenyl phenyl ether		U	ug/kg	340
				4-Methylphenol		U	ug/kg	340
				4-Nitroaniline		U	ug/kg	1600
				4-Nitrophenol		U	ug/kg	1600
				Acenaphthene		U	ug/kg	340
				Acenaphthylene		U	ug/kg	340
				Anthracene		U	ug/kg	340
				Benzo(a)anthracene		U	ug/kg	340
				Benzo(a)pyrene		U	ug/kg	340
				Benzo(b)fluoranthene		U	ug/kg	340
				Benzo(g,h,i)perylene		U	ug/kg	340
				Benzo(k)fluoranthene		U	ug/kg	340
				bis(2-Chloroethyl) ether		U	ug/kg	340
				bis(2-Chloroisopropyl)ether		U	ug/kg	340
				bis(2-Ethylhexyl)phthalate		U	ug/kg	340
				Butyl benzyl phthalate		U	ug/kg	340
				Carbazole		U	ug/kg	340
				Chrysene		U	ug/kg	340
				Di-n-butyl phthalate		U	ug/kg	340
				Di-n-octyl phthalate		U	ug/kg	340

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7409-1044	0474380015SA	44-46	Dibenz(a,h)anthracene		U	ug/kg	340
				Dibenzofuran		U	ug/kg	340
				Diethyl phthalate		U	ug/kg	340
				Dimethyl phthalate		U	ug/kg	340
				Fluoranthene		U	ug/kg	340
				Fluorene		U	ug/kg	340
				Hexachlorobenzene		U	ug/kg	340
				Hexachlorobutadiene		U	ug/kg	340
				Hexachlorocyclopentadiene		U	ug/kg	340
				Hexachloroethane		U	ug/kg	340
				Indeno(1,2,3-cd)pyrene		U	ug/kg	340
				Isophorone		U	ug/kg	340
				N-Nitroso-di-n-propylamine		U	ug/kg	340
				N-Nitrosodiphenylamine		U	ug/kg	340
				Naphthalene		U	ug/kg	340
				Nitrobenzene		U	ug/kg	340
				Pentachlorophenol		U	ug/kg	1600
				Phenanthrene		U	ug/kg	340
				Phenol		U	ug/kg	340
				Pyrene		U	ug/kg	340
	CAN074-7410-1010	0474380001SA	10-12	1,2,4-Trichlorobenzene		U	ug/kg	380
				1,2-Dichlorobenzene		U	ug/kg	380
				1,3-Dichlorobenzene		U	ug/kg	380
				1,4-Dichlorobenzene		U	ug/kg	380
				2,4,5-Trichlorophenol		U	ug/kg	1800
				2,4,6-Trichlorophenol		U	ug/kg	380
				2,4-Dichlorophenol		U	ug/kg	380
				2,4-Dimethylphenol		U	ug/kg	380
				2,4-Dinitrophenol		U	ug/kg	1800
				2,4-Dinitrotoluene		U	ug/kg	380
				2,6-Dinitrotoluene		U	ug/kg	380
				2-Chloronaphthalene		U	ug/kg	380
				2-Chlorophenol		U	ug/kg	380
				2-Methylnaphthalene		U	ug/kg	380
				2-Methylphenol		U	ug/kg	380
				2-Nitroaniline		U	ug/kg	1800
				2-Nitrophenol		U	ug/kg	380
				3,3'-Dichlorobenzidine		U	ug/kg	750
				3-Nitroaniline		U	ug/kg	1800
				4,6-Dinitro-2-methylphenol		U	ug/kg	1800
				4-Bromophenyl phenyl ether		U	ug/kg	380
				4-Chloro-3-methylphenol		U	ug/kg	380
				4-Chloroaniline		U	ug/kg	380
				4-Chlorophenyl phenyl ether		U	ug/kg	380
				4-Methylphenol		U	ug/kg	380
				4-Nitroaniline		U	ug/kg	1800
				4-Nitrophenol		U	ug/kg	1800
				Acenaphthene		U	ug/kg	380
				Acenaphthylene		U	ug/kg	380
				Anthracene		U	ug/kg	380
				Benzo(a)anthracene		U	ug/kg	380
				Benzo(a)pyrene		U	ug/kg	380
				Benzo(b)fluoranthene		U	ug/kg	380
				Benzo(g,h,i)perylene		U	ug/kg	380
				Benzo(k)fluoranthene		U	ug/kg	380
				bis(2-Chloroethyl) ether		U	ug/kg	380

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7410-1010	0474380001SA	10-12	bis(2-Chloroisopropyl)ether		U	ug/kg	380
				bis(2-Ethylhexyl)phthalate		U	ug/kg	380
				Butyl benzyl phthalate		U	ug/kg	380
				Carbazole		U	ug/kg	380
				Chrysene		U	ug/kg	380
				Di-n-butyl phthalate		U	ug/kg	380
				Di-n-octyl phthalate		U	ug/kg	380
				Dibenz(a,h)anthracene		U	ug/kg	380
				Dibenzofuran		U	ug/kg	380
				Diethyl phthalate		U	ug/kg	380
				Dimethyl phthalate		U	ug/kg	380
				Fluoranthene		U	ug/kg	380
				Fluorene		U	ug/kg	380
				Hexachlorobenzene		U	ug/kg	380
				Hexachlorobutadiene		U	ug/kg	380
				Hexachlorocyclopentadiene		U	ug/kg	380
				Hexachloroethane		U	ug/kg	380
				Indeno(1,2,3-cd)pyrene		U	ug/kg	380
				Isophorone		U	ug/kg	380
				N-Nitroso-di-n-propylamine		U	ug/kg	380
				N-Nitrosodiphenylamine		U	ug/kg	380
				Naphthalene		U	ug/kg	380
				Nitrobenzene		U	ug/kg	380
				Pentachlorophenol		U	ug/kg	1800
				Phenanthrene		U	ug/kg	380
				Phenol		U	ug/kg	380
				Pyrene	43	J	ug/kg	380
	CAN074-7410-1016	0474380002SA	16-16.9	1,2,4-Trichlorobenzene		U	ug/kg	360
				1,2-Dichlorobenzene		U	ug/kg	360
				1,3-Dichlorobenzene		U	ug/kg	360
				1,4-Dichlorobenzene		U	ug/kg	360
				2,4,5-Trichlorophenol		U	ug/kg	1700
				2,4,6-Trichlorophenol		U	ug/kg	360
				2,4-Dichlorophenol		U	ug/kg	360
				2,4-Dimethylphenol		U	ug/kg	360
				2,4-Dinitrophenol		U	ug/kg	1700
				2,4-Dinitrotoluene		U	ug/kg	360
				2,6-Dinitrotoluene		U	ug/kg	360
				2-Chloronaphthalene		U	ug/kg	360
				2-Chlorophenol		U	ug/kg	360
				2-Methylnaphthalene		U	ug/kg	360
				2-Methylphenol		U	ug/kg	360
				2-Nitroaniline		U	ug/kg	1700
				2-Nitrophenol		U	ug/kg	360
				3,3'-Dichlorobenzidine		U	ug/kg	710
				3-Nitroaniline		U	ug/kg	1700
				4,6-Dinitro-2-methylphenol		U	ug/kg	1700
				4-Bromophenyl phenyl ether		U	ug/kg	360
				4-Chloro-3-methylphenol		U	ug/kg	360
				4-Chloroaniline		U	ug/kg	360
				4-Chlorophenyl phenyl ether		U	ug/kg	360
				4-Methylphenol		U	ug/kg	360
				4-Nitroaniline		U	ug/kg	1700
				4-Nitrophenol		U	ug/kg	1700
				Acenaphthene		U	ug/kg	360
				Acenaphthylene		U	ug/kg	360

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7410-1016	0474380002SA	16-16.9	Anthracene		U	ug/kg	360
				Benzo(a)anthracene		U	ug/kg	360
				Benzo(a)pyrene		U	ug/kg	360
				Benzo(b)fluoranthene		U	ug/kg	360
				Benzo(g,h,i)perylene		U	ug/kg	360
				Benzo(k)fluoranthene		U	ug/kg	360
				bis(2-Chloroethyl) ether		U	ug/kg	360
				bis(2-Chloroisopropyl)ether		U	ug/kg	360
				bis(2-Ethylhexyl)phthalate		U	ug/kg	360
				Butyl benzyl phthalate		U	ug/kg	360
				Carbazole		U	ug/kg	360
				Chrysene		U	ug/kg	360
				Di-n-butyl phthalate		U	ug/kg	360
				Di-n-octyl phthalate		U	ug/kg	360
				Dibenz(a,h)anthracene		U	ug/kg	360
				Dibenzofuran		U	ug/kg	360
				Diethyl phthalate		U	ug/kg	360
				Dimethyl phthalate		U	ug/kg	360
				Fluoranthene		U	ug/kg	360
				Fluorene		U	ug/kg	360
				Hexachlorobenzene		U	ug/kg	360
				Hexachlorobutadiene		U	ug/kg	360
				Hexachlorocyclopentadiene		U	ug/kg	360
				Hexachloroethane		U	ug/kg	360
				Indeno(1,2,3-cd)pyrene		U	ug/kg	360
				Isophorone		U	ug/kg	360
				N-Nitroso-di-n-propylamine		U	ug/kg	360
				N-Nitrosodiphenylamine		U	ug/kg	360
				Naphthalene		U	ug/kg	360
				Nitrobenzene		U	ug/kg	360
				Pentachlorophenol		U	ug/kg	1700
				Phenanthrene	42	J	ug/kg	360
				Phenol		U	ug/kg	360
				Pyrene	73	J	ug/kg	360
	CAN074-7410-1020	0474380003SA	20-20.9	1,2,4-Trichlorobenzene		U	ug/kg	350
				1,2-Dichlorobenzene		U	ug/kg	350
				1,3-Dichlorobenzene		U	ug/kg	350
				1,4-Dichlorobenzene		U	ug/kg	350
				2,4,5-Trichlorophenol		U	ug/kg	1700
				2,4,6-Trichlorophenol		U	ug/kg	350
				2,4-Dichlorophenol		U	ug/kg	350
				2,4-Dimethylphenol		U	ug/kg	350
				2,4-Dinitrophenol		U	ug/kg	1700
				2,4-Dinitrotoluene		U	ug/kg	350
				2,6-Dinitrotoluene		U	ug/kg	350
				2-Chloronaphthalene		U	ug/kg	350
				2-Chlorophenol		U	ug/kg	350
				2-Methylnaphthalene		U	ug/kg	350
				2-Methylphenol		U	ug/kg	350
				2-Nitroaniline		U	ug/kg	1700
				2-Nitrophenol		U	ug/kg	350
				3,3'-Dichlorobenzidine		U	ug/kg	710
				3-Nitroaniline		U	ug/kg	1700
				4,6-Dinitro-2-methylphenol		U	ug/kg	1700
				4-Bromophenyl phenyl ether		U	ug/kg	350
				4-Chloro-3-methylphenol		U	ug/kg	350

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7410-1020	0474380003SA	20-20.9	4-Chloroaniline		U	ug/kg	350
				4-Chlorophenyl phenyl ether		U	ug/kg	350
				4-Methylphenol		U	ug/kg	350
				4-Nitroaniline		U	ug/kg	1700
				4-Nitrophenol		U	ug/kg	1700
				Acenaphthene		U	ug/kg	350
				Acenaphthylene		U	ug/kg	350
				Anthracene		U	ug/kg	350
				Benzo(a)anthracene		U	ug/kg	350
				Benzo(a)pyrene		U	ug/kg	350
				Benzo(b)fluoranthene		U	ug/kg	350
				Benzo(g,h,i)perylene		U	ug/kg	350
				Benzo(k)fluoranthene		U	ug/kg	350
				bis(2-Chloroethyl) ether		U	ug/kg	350
				bis(2-Chloroisopropyl)ether		U	ug/kg	350
				bis(2-Ethylhexyl)phthalate	320	J	ug/kg	350
				Butyl benzyl phthalate		U	ug/kg	350
				Carbazole		U	ug/kg	350
				Chrysene		U	ug/kg	350
				Di-n-butyl phthalate		U	ug/kg	350
				Di-n-octyl phthalate		U	ug/kg	350
				Dibenz(a,h)anthracene		U	ug/kg	350
				Dibenzofuran		U	ug/kg	350
				Diethyl phthalate		U	ug/kg	350
				Dimethyl phthalate		U	ug/kg	350
				Fluoranthene		U	ug/kg	350
				Fluorene		U	ug/kg	350
				Hexachlorobenzene		U	ug/kg	350
				Hexachlorobutadiene		U	ug/kg	350
				Hexachlorocyclopentadiene		U	ug/kg	350
				Hexachloroethane		U	ug/kg	350
				Indeno(1,2,3-cd)pyrene		U	ug/kg	350
				Isophorone		U	ug/kg	350
				N-Nitroso-di-n-propylamine		U	ug/kg	350
				N-Nitrosodiphenylamine		U	ug/kg	350
				Naphthalene		U	ug/kg	350
				Nitrobenzene		U	ug/kg	350
				Pentachlorophenol	42	J	ug/kg	1700
				Phenanthrene		U	ug/kg	350
				Phenol		U	ug/kg	350
				Pyrene		U	ug/kg	350
	CAN074-7410-1024	0474380004SA	24-26	1,2,4-Trichlorobenzene		U	ug/kg	370
				1,2-Dichlorobenzene		U	ug/kg	370
				1,3-Dichlorobenzene		U	ug/kg	370
				1,4-Dichlorobenzene		U	ug/kg	370
				2,4,5-Trichlorophenol		U	ug/kg	1800
				2,4,6-Trichlorophenol		U	ug/kg	370
				2,4-Dichlorophenol		U	ug/kg	370
				2,4-Dimethylphenol		U	ug/kg	370
				2,4-Dinitrophenol		U	ug/kg	1800
				2,4-Dinitrotoluene		U	ug/kg	370
				2,6-Dinitrotoluene		U	ug/kg	370
				2-Chloronaphthalene		U	ug/kg	370
				2-Chlorophenol		U	ug/kg	370
				2-Methylnaphthalene		U	ug/kg	370
				2-Methylphenol		U	ug/kg	370

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7410-1024	0474380004SA	24-26	2-Nitroaniline		U	ug/kg	1800
				2-Nitrophenol		U	ug/kg	370
				3,3'-Dichlorobenzidine		U	ug/kg	730
				3-Nitroaniline		U	ug/kg	1800
				4,6-Dinitro-2-methylphenol		U	ug/kg	1800
				4-Bromophenyl phenyl ether		U	ug/kg	370
				4-Chloro-3-methylphenol		U	ug/kg	370
				4-Chloroaniline		U	ug/kg	370
				4-Chlorophenyl phenyl ether		U	ug/kg	370
				4-Methylphenol		U	ug/kg	370
				4-Nitroaniline		U	ug/kg	1800
				4-Nitrophenol		U	ug/kg	1800
				Acenaphthene		U	ug/kg	370
				Acenaphthylene		U	ug/kg	370
				Anthracene		U	ug/kg	370
				Benzo(a)anthracene		U	ug/kg	370
				Benzo(a)pyrene		U	ug/kg	370
				Benzo(b)fluoranthene		U	ug/kg	370
				Benzo(g,h,i)perylene		U	ug/kg	370
				Benzo(k)fluoranthene		U	ug/kg	370
				bis(2-Chloroethyl) ether		U	ug/kg	370
				bis(2-Chloroisopropyl)ether		U	ug/kg	370
				bis(2-Ethylhexyl)phthalate		U	ug/kg	370
				Butyl benzyl phthalate		U	ug/kg	370
				Carbazole		U	ug/kg	370
				Chrysene		U	ug/kg	370
				Di-n-butyl phthalate		U	ug/kg	370
				Di-n-octyl phthalate		U	ug/kg	370
				Dibenz(a,h)anthracene		U	ug/kg	370
				Dibenzofuran		U	ug/kg	370
				Diethyl phthalate		U	ug/kg	370
				Dimethyl phthalate		U	ug/kg	370
				Fluoranthene		U	ug/kg	370
				Fluorene		U	ug/kg	370
				Hexachlorobenzene		U	ug/kg	370
				Hexachlorobutadiene		U	ug/kg	370
				Hexachlorocyclopentadiene		U	ug/kg	370
				Hexachloroethane		U	ug/kg	370
				Indeno(1,2,3-cd)pyrene		U	ug/kg	370
				Isophorone		U	ug/kg	370
				N-Nitroso-di-n-propylamine		U	ug/kg	370
				N-Nitrosodiphenylamine		U	ug/kg	370
				Naphthalene		U	ug/kg	370
				Nitrobenzene		U	ug/kg	370
				Pentachlorophenol		U	ug/kg	1800
				Phenanthrene		U	ug/kg	370
				Phenol		U	ug/kg	370
				Pyrene		U	ug/kg	370
	CAN074-7410-1032	0474380005SA	32-34	1,2,4-Trichlorobenzene		U	ug/kg	350
				1,2-Dichlorobenzene		U	ug/kg	350
				1,3-Dichlorobenzene		U	ug/kg	350
				1,4-Dichlorobenzene		U	ug/kg	350
				2,4,5-Trichlorophenol		U	ug/kg	1700
				2,4,6-Trichlorophenol		U	ug/kg	350
				2,4-Dichlorophenol		U	ug/kg	350
				2,4-Dimethylphenol		U	ug/kg	350

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL	UNITS	DL
SVOC	CAN074-7410-1032	0474380005SA	32-34	2,4-Dinitrophenol		U	ug/kg	1700
				2,4-Dinitrotoluene		U	ug/kg	350
				2,6-Dinitrotoluene		U	ug/kg	350
				2-Chloronaphthalene		U	ug/kg	350
				2-Chlorophenol		U	ug/kg	350
				2-Methylnaphthalene		U	ug/kg	350
				2-Methylphenol		U	ug/kg	350
				2-Nitroaniline		U	ug/kg	1700
				2-Nitrophenol		U	ug/kg	350
				3,3'-Dichlorobenzidine		U	ug/kg	690
				3-Nitroaniline		U	ug/kg	1700
				4,6-Dinitro-2-methylphenol		U	ug/kg	1700
				4-Bromophenyl phenyl ether		U	ug/kg	350
				4-Chloro-3-methylphenol		U	ug/kg	350
				4-Chloroaniline		U	ug/kg	350
				4-Chlorophenyl phenyl ether		U	ug/kg	350
				4-Methylphenol		U	ug/kg	350
				4-Nitroaniline		U	ug/kg	1700
				4-Nitrophenol		U	ug/kg	1700
				Acenaphthene		U	ug/kg	350
				Acenaphthylene		U	ug/kg	350
				Anthracene		U	ug/kg	350
				Benzo(a)anthracene		U	ug/kg	350
				Benzo(a)pyrene		U	ug/kg	350
				Benzo(b)fluoranthene		U	ug/kg	350
				Benzo(g,h,i)perylene		U	ug/kg	350
				Benzo(k)fluoranthene		U	ug/kg	350
				bis(2-Chloroethyl) ether		U	ug/kg	350
				bis(2-Chloroisopropyl)ether		U	ug/kg	350
				bis(2-Ethylhexyl)phthalate		U	ug/kg	350
				Butyl benzyl phthalate		U	ug/kg	350
				Carbazole		U	ug/kg	350
				Chrysene		U	ug/kg	350
				Di-n-butyl phthalate		U	ug/kg	350
				Di-n-octyl phthalate		U	ug/kg	350
				Dibenz(a,h)anthracene		U	ug/kg	350
				Dibenzofuran		U	ug/kg	350
				Diethyl phthalate		U	ug/kg	350
				Dimethyl phthalate		U	ug/kg	350
				Fluoranthene		U	ug/kg	350
				Fluorene		U	ug/kg	350
				Hexachlorobenzene		U	ug/kg	350
				Hexachlorobutadiene		U	ug/kg	350
				Hexachlorocyclopentadiene		U	ug/kg	350
				Hexachloroethane		U	ug/kg	350
				Indeno(1,2,3-cd)pyrene		U	ug/kg	350
				Isophorone		U	ug/kg	350
				N-Nitroso-di-n-propylamine		U	ug/kg	350
				N-Nitrosodiphenylamine		U	ug/kg	350
				Naphthalene		U	ug/kg	350
				Nitrobenzene		U	ug/kg	350
				Pentachlorophenol		U	ug/kg	1700
				Phenanthrene		U	ug/kg	350
				Phenol		U	ug/kg	350
				Pyrene		U	ug/kg	350
	CAN074-7410-1038	0474380006SA	38-40	1,2,4-Trichlorobenzene		U	ug/kg	340

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7410-1038	0474380006SA	38-40	1,2-Dichlorobenzene		U	ug/kg	340
				1,3-Dichlorobenzene		U	ug/kg	340
				1,4-Dichlorobenzene		U	ug/kg	340
				2,4,5-Trichlorophenol		U	ug/kg	1700
				2,4,6-Trichlorophenol		U	ug/kg	340
				2,4-Dichlorophenol		U	ug/kg	340
				2,4-Dimethylphenol		U	ug/kg	340
				2,4-Dinitrophenol		U	ug/kg	1700
				2,4-Dinitrotoluene		U	ug/kg	340
				2,6-Dinitrotoluene		U	ug/kg	340
				2-Chloronaphthalene		U	ug/kg	340
				2-Chlorophenol		U	ug/kg	340
				2-Methylnaphthalene		U	ug/kg	340
				2-Methylphenol		U	ug/kg	340
				2-Nitroaniline		U	ug/kg	1700
				2-Nitrophenol		U	ug/kg	340
				3,3'-Dichlorobenzidine		U	ug/kg	680
				3-Nitroaniline		U	ug/kg	1700
				4,6-Dinitro-2-methylphenol		U	ug/kg	1700
				4-Bromophenyl phenyl ether		U	ug/kg	340
				4-Chloro-3-methylphenol		U	ug/kg	340
				4-Chloroaniline		U	ug/kg	340
				4-Chlorophenyl phenyl ether		U	ug/kg	340
				4-Methylphenol		U	ug/kg	340
				4-Nitroaniline		U	ug/kg	1700
				4-Nitrophenol		U	ug/kg	1700
				Acenaphthene		U	ug/kg	340
				Acenaphthylene		U	ug/kg	340
				Anthracene		U	ug/kg	340
				Benzo(a)anthracene		U	ug/kg	340
				Benzo(a)pyrene		U	ug/kg	340
				Benzo(b)fluoranthene		U	ug/kg	340
				Benzo(g,h,i)perylene		U	ug/kg	340
				Benzo(k)fluoranthene		U	ug/kg	340
				bis(2-Chloroethyl) ether		U	ug/kg	340
				bis(2-Chloroisopropyl)ether		U	ug/kg	340
				bis(2-Ethylhexyl)phthalate		U	ug/kg	340
				Butyl benzyl phthalate		U	ug/kg	340
				Carbazole		U	ug/kg	340
				Chrysene		U	ug/kg	340
				Di-n-butyl phthalate		U	ug/kg	340
				Di-n-octyl phthalate		U	ug/kg	340
				Dibenz(a,h)anthracene		U	ug/kg	340
				Dibenzofuran		U	ug/kg	340
				Diethyl phthalate		U	ug/kg	340
				Dimethyl phthalate		U	ug/kg	340
				Fluoranthene		U	ug/kg	340
				Fluorene		U	ug/kg	340
				Hexachlorobenzene		U	ug/kg	340
				Hexachlorobutadiene		U	ug/kg	340
				Hexachlorocyclopentadiene		U	ug/kg	340
				Hexachloroethane		U	ug/kg	340
				Indeno(1,2,3-cd)pyrene		U	ug/kg	340
				Isophorone		U	ug/kg	340
				N-Nitroso-di-n-propylamine		U	ug/kg	340
				N-Nitrosodiphenylamine		U	ug/kg	340

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7410-1038	0474380006SA	38-40	Naphthalene		U	ug/kg	340
				Nitrobenzene		U	ug/kg	340
				Pentachlorophenol		U	ug/kg	1700
				Phenanthrene		U	ug/kg	340
				Phenol		U	ug/kg	340
				Pyrene		U	ug/kg	340
	CAN074-7410-1048	0474380008SA	48-50	1,2,4-Trichlorobenzene		U	ug/kg	370
				1,2-Dichlorobenzene		U	ug/kg	370
				1,3-Dichlorobenzene		U	ug/kg	370
				1,4-Dichlorobenzene		U	ug/kg	370
				2,4,5-Trichlorophenol		U	ug/kg	1800
				2,4,6-Trichlorophenol		U	ug/kg	370
				2,4-Dichlorophenol		U	ug/kg	370
				2,4-Dimethylphenol		U	ug/kg	370
				2,4-Dinitrophenol		U	ug/kg	1800
				2,4-Dinitrotoluene		U	ug/kg	370
				2,6-Dinitrotoluene		U	ug/kg	370
				2-Chloronaphthalene		U	ug/kg	370
				2-Chlorophenol		U	ug/kg	370
				2-Methylnaphthalene		U	ug/kg	370
				2-Methylphenol		U	ug/kg	370
				2-Nitroaniline		U	ug/kg	1800
				2-Nitrophenol		U	ug/kg	370
				3,3'-Dichlorobenzidine		U	ug/kg	740
				3-Nitroaniline		U	ug/kg	1800
				4,6-Dinitro-2-methylphenol		U	ug/kg	1800
				4-Bromophenyl phenyl ether		U	ug/kg	370
				4-Chloro-3-methylphenol		U	ug/kg	370
				4-Chloroaniline		U	ug/kg	370
				4-Chlorophenyl phenyl ether		U	ug/kg	370
				4-Methylphenol		U	ug/kg	370
				4-Nitroaniline		U	ug/kg	1800
				4-Nitrophenol		U	ug/kg	1800
				Acenaphthene		U	ug/kg	370
				Acenaphthylene		U	ug/kg	370
				Anthracene		U	ug/kg	370
				Benzo(a)anthracene		U	ug/kg	370
				Benzo(a)pyrene		U	ug/kg	370
				Benzo(b)fluoranthene		U	ug/kg	370
				Benzo(g,h,i)perylene		U	ug/kg	370
				Benzo(k)fluoranthene		U	ug/kg	370
				bis(2-Chloroethyl) ether		U	ug/kg	370
				bis(2-Chloroisopropyl)ether		U	ug/kg	370
				bis(2-Ethylhexyl)phthalate		U	ug/kg	370
				Butyl benzyl phthalate		U	ug/kg	370
				Carbazole		U	ug/kg	370
				Chrysene		U	ug/kg	370
				Di-n-butyl phthalate		U	ug/kg	370
				Di-n-octyl phthalate		U	ug/kg	370
				Dibenz(a,h)anthracene		U	ug/kg	370
				Dibenzofuran		U	ug/kg	370
				Diethyl phthalate		U	ug/kg	370
				Dimethyl phthalate		U	ug/kg	370
				Fluoranthene		U	ug/kg	370
				Fluorene		U	ug/kg	370
				Hexachlorobenzene		U	ug/kg	370

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7410-1048	0474380008SA	48-50	Hexachlorobutadiene		U	ug/kg	370
				Hexachlorocyclopentadiene		U	ug/kg	370
				Hexachloroethane		U	ug/kg	370
				Indeno(1,2,3-cd)pyrene		U	ug/kg	370
				Isophorone		U	ug/kg	370
				N-Nitroso-di-n-propylamine		U	ug/kg	370
				N-Nitrosodiphenylamine		U	ug/kg	370
				Naphthalene		U	ug/kg	370
				Nitrobenzene		U	ug/kg	370
				Pentachlorophenol		U	ug/kg	1800
				Phenanthrene		U	ug/kg	370
				Phenol		U	ug/kg	370
				Pyrene		U	ug/kg	370
	CAN074-7410-1461	0474380007SA	38-40	1,2,4-Trichlorobenzene		U	ug/kg	340
				1,2-Dichlorobenzene		U	ug/kg	340
				1,3-Dichlorobenzene		U	ug/kg	340
				1,4-Dichlorobenzene		U	ug/kg	340
				2,4,5-Trichlorophenol		U	ug/kg	1700
				2,4,6-Trichlorophenol		U	ug/kg	340
				2,4-Dichlorophenol		U	ug/kg	340
				2,4-Dimethylphenol		U	ug/kg	340
				2,4-Dinitrophenol		U	ug/kg	1700
				2,4-Dinitrotoluene		U	ug/kg	340
				2,6-Dinitrotoluene		U	ug/kg	340
				2-Chloronaphthalene		U	ug/kg	340
				2-Chlorophenol		U	ug/kg	340
				2-Methylnaphthalene		U	ug/kg	340
				2-Methylphenol		U	ug/kg	340
				2-Nitroaniline		U	ug/kg	1700
				2-Nitrophenol		U	ug/kg	340
				3,3'-Dichlorobenzidine		U	ug/kg	680
				3-Nitroaniline		U	ug/kg	1700
				4,6-Dinitro-2-methylphenol		U	ug/kg	1700
				4-Bromophenyl phenyl ether		U	ug/kg	340
				4-Chloro-3-methylphenol		U	ug/kg	340
				4-Chloroaniline		U	ug/kg	340
				4-Chlorophenyl phenyl ether		U	ug/kg	340
				4-Methylphenol		U	ug/kg	340
				4-Nitroaniline		U	ug/kg	1700
				4-Nitrophenol		U	ug/kg	1700
				Acenaphthene		U	ug/kg	340
				Acenaphthylene		U	ug/kg	340
				Anthracene		U	ug/kg	340
				Benzo(a)anthracene		U	ug/kg	340
				Benzo(a)pyrene		U	ug/kg	340
				Benzo(b)fluoranthene		U	ug/kg	340
				Benzo(g,h,i)perylene		U	ug/kg	340
				Benzo(k)fluoranthene		U	ug/kg	340
				bis(2-Chloroethyl) ether		U	ug/kg	340
				bis(2-Chloroisopropyl)ether		U	ug/kg	340
				bis(2-Ethylhexyl)phthalate		U	ug/kg	340
				Butyl benzyl phthalate		U	ug/kg	340
				Carbazole		U	ug/kg	340
				Chrysene		U	ug/kg	340
				Di-n-butyl phthalate		U	ug/kg	340
				Di-n-octyl phthalate		U	ug/kg	340

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7410-1461	0474380007SA	38-40	Dibenz(a,h)anthracene		U	ug/kg	340
				Dibenzofuran		U	ug/kg	340
				Diethyl phthalate		U	ug/kg	340
				Dimethyl phthalate		U	ug/kg	340
				Fluoranthene		U	ug/kg	340
				Fluorene		U	ug/kg	340
				Hexachlorobenzene		U	ug/kg	340
				Hexachlorobutadiene		U	ug/kg	340
				Hexachlorocyclopentadiene		U	ug/kg	340
				Hexachloroethane		U	ug/kg	340
				Indeno(1,2,3-cd)pyrene		U	ug/kg	340
				Isophorone		U	ug/kg	340
				N-Nitroso-di-n-propylamine		U	ug/kg	340
				N-Nitrosodiphenylamine		U	ug/kg	340
				Naphthalene		U	ug/kg	340
				Nitrobenzene		U	ug/kg	340
				Pentachlorophenol		U	ug/kg	1700
				Phenanthrene		U	ug/kg	340
				Phenol		U	ug/kg	340
				Pyrene		U	ug/kg	340
	CAN074-7413-1004	0475450003SA	4-6	1,2,4-Trichlorobenzene		U	ug/kg	350
				1,2-Dichlorobenzene		U	ug/kg	350
				1,3-Dichlorobenzene		U	ug/kg	350
				1,4-Dichlorobenzene		U	ug/kg	350
				2,4,5-Trichlorophenol		U	ug/kg	1700
				2,4,6-Trichlorophenol		U	ug/kg	350
				2,4-Dichlorophenol		U	ug/kg	350
				2,4-Dimethylphenol		U	ug/kg	350
				2,4-Dinitrophenol		U	ug/kg	1700
				2,4-Dinitrotoluene		U	ug/kg	350
				2,6-Dinitrotoluene		U	ug/kg	350
				2-Chloronaphthalene		U	ug/kg	350
				2-Chlorophenol		U	ug/kg	350
				2-Methylnaphthalene		U	ug/kg	350
				2-Methylphenol		U	ug/kg	350
				2-Nitroaniline		U	ug/kg	1700
				2-Nitrophenol		U	ug/kg	350
				3,3'-Dichlorobenzidine		U	ug/kg	700
				3-Nitroaniline		U	ug/kg	1700
				4,6-Dinitro-2-methylphenol		U	ug/kg	1700
				4-Bromophenyl phenyl ether		U	ug/kg	350
				4-Chloro-3-methylphenol		U	ug/kg	350
				4-Chloroaniline		U	ug/kg	350
				4-Chlorophenyl phenyl ether		U	ug/kg	350
				4-Methylphenol		U	ug/kg	350
				4-Nitroaniline		U	ug/kg	1700
				4-Nitrophenol		U	ug/kg	1700
				Acenaphthene		U	ug/kg	350
				Acenaphthylene		U	ug/kg	350
				Anthracene		U	ug/kg	350
				Benzo(a)anthracene		U	ug/kg	350
				Benzo(a)pyrene		U	ug/kg	350
				Benzo(b)fluoranthene		U	ug/kg	350
				Benzo(g,h,i)perylene		U	ug/kg	350
				Benzo(k)fluoranthene		U	ug/kg	350
				bis(2-Chloroethyl) ether		U	ug/kg	350

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7413-1004	0475450003SA	4-6	bis(2-Chloroisopropyl)ether		U	ug/kg	350
				bis(2-Ethylhexyl)phthalate		U	ug/kg	350
				Butyl benzyl phthalate		U	ug/kg	350
				Carbazole		U	ug/kg	350
				Chrysene		U	ug/kg	350
				Di-n-butyl phthalate		U	ug/kg	350
				Di-n-octyl phthalate		U	ug/kg	350
				Dibenz(a,h)anthracene		U	ug/kg	350
				Dibenzofuran		U	ug/kg	350
				Diethyl phthalate		U	ug/kg	350
				Dimethyl phthalate		U	ug/kg	350
				Fluoranthene		U	ug/kg	350
				Fluorene		U	ug/kg	350
				Hexachlorobenzene		U	ug/kg	350
				Hexachlorobutadiene		U	ug/kg	350
				Hexachlorocyclopentadiene		U	ug/kg	350
				Hexachloroethane		U	ug/kg	350
				Indeno(1,2,3-cd)pyrene		U	ug/kg	350
				Isophorone		U	ug/kg	350
				N-Nitroso-di-n-propylamine		U	ug/kg	350
				N-Nitrosodiphenylamine		U	ug/kg	350
				Naphthalene		U	ug/kg	350
				Nitrobenzene		U	ug/kg	350
				Pentachlorophenol		U	ug/kg	1700
				Phenanthrene		U	ug/kg	350
				Phenol		U	ug/kg	350
				Pyrene		U	ug/kg	350
	CAN074-7413-1008	0475450004SA	8-10	1,2,4-Trichlorobenzene		U	ug/kg	350
				1,2-Dichlorobenzene		U	ug/kg	350
				1,3-Dichlorobenzene		U	ug/kg	350
				1,4-Dichlorobenzene		U	ug/kg	350
				2,4,5-Trichlorophenol		U	ug/kg	1700
				2,4,6-Trichlorophenol		U	ug/kg	350
				2,4-Dichlorophenol		U	ug/kg	350
				2,4-Dimethylphenol		U	ug/kg	350
				2,4-Dinitrophenol		U	ug/kg	1700
				2,4-Dinitrotoluene		U	ug/kg	350
				2,6-Dinitrotoluene		U	ug/kg	350
				2-Chloronaphthalene		U	ug/kg	350
				2-Chlorophenol		U	ug/kg	350
				2-Methylnaphthalene		U	ug/kg	350
				2-Methylphenol		U	ug/kg	350
				2-Nitroaniline		U	ug/kg	1700
				2-Nitrophenol		U	ug/kg	350
				3,3'-Dichlorobenzidine		U	ug/kg	700
				3-Nitroaniline		U	ug/kg	1700
				4,6-Dinitro-2-methylphenol		U	ug/kg	1700
				4-Bromophenyl phenyl ether		U	ug/kg	350
				4-Chloro-3-methylphenol		U	ug/kg	350
				4-Chloroaniline		U	ug/kg	350
				4-Chlorophenyl phenyl ether		U	ug/kg	350
				4-Methylphenol		U	ug/kg	350
				4-Nitroaniline		U	ug/kg	1700
				4-Nitrophenol		U	ug/kg	1700
				Acenaphthene		U	ug/kg	350
				Acenaphthylene		U	ug/kg	350

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7413-1008	0475450004SA	8-10	Anthracene		U	ug/kg	350
				Benzo(a)anthracene		U	ug/kg	350
				Benzo(a)pyrene		U	ug/kg	350
				Benzo(b)fluoranthene		U	ug/kg	350
				Benzo(g,h,i)perylene		U	ug/kg	350
				Benzo(k)fluoranthene		U	ug/kg	350
				bis(2-Chloroethyl) ether		U	ug/kg	350
				bis(2-Chloroisopropyl)ether		U	ug/kg	350
				bis(2-Ethylhexyl)phthalate		U	ug/kg	350
				Butyl benzyl phthalate		U	ug/kg	350
				Carbazole		U	ug/kg	350
				Chrysene		U	ug/kg	350
				Di-n-butyl phthalate		U	ug/kg	350
				Di-n-octyl phthalate		U	ug/kg	350
				Dibenz(a,h)anthracene		U	ug/kg	350
				Dibenzofuran		U	ug/kg	350
				Diethyl phthalate		U	ug/kg	350
				Dimethyl phthalate		U	ug/kg	350
				Fluoranthene		U	ug/kg	350
				Fluorene		U	ug/kg	350
				Hexachlorobenzene		U	ug/kg	350
				Hexachlorobutadiene		U	ug/kg	350
				Hexachlorocyclopentadiene		U	ug/kg	350
				Hexachloroethane		U	ug/kg	350
				Indeno(1,2,3-cd)pyrene		U	ug/kg	350
				Isophorone		U	ug/kg	350
				N-Nitroso-di-n-propylamine		U	ug/kg	350
				N-Nitrosodiphenylamine		U	ug/kg	350
				Naphthalene		U	ug/kg	350
				Nitrobenzene		U	ug/kg	350
				Pentachlorophenol		U	ug/kg	1700
				Phenanthrene		U	ug/kg	350
				Phenol		U	ug/kg	350
				Pyrene		U	ug/kg	350
	CAN074-7413-1012	0475450006SA	12-13.4	1,2,4-Trichlorobenzene		U	ug/kg	360
				1,2-Dichlorobenzene		U	ug/kg	360
				1,3-Dichlorobenzene		U	ug/kg	360
				1,4-Dichlorobenzene		U	ug/kg	360
				2,4,5-Trichlorophenol		U	ug/kg	1700
				2,4,6-Trichlorophenol		U	ug/kg	360
				2,4-Dichlorophenol		U	ug/kg	360
				2,4-Dimethylphenol		U	ug/kg	360
				2,4-Dinitrophenol		U	ug/kg	1700
				2,4-Dinitrotoluene		U	ug/kg	360
				2,6-Dinitrotoluene		U	ug/kg	360
				2-Chloronaphthalene		U	ug/kg	360
				2-Chlorophenol		U	ug/kg	360
				2-Methylnaphthalene		U	ug/kg	360
				2-Methylphenol		U	ug/kg	360
				2-Nitroaniline		U	ug/kg	1700
				2-Nitrophenol		U	ug/kg	360
				3,3'-Dichlorobenzidine		U	ug/kg	710
				3-Nitroaniline		U	ug/kg	1700
				4,6-Dinitro-2-methylphenol		U	ug/kg	1700
				4-Bromophenyl phenyl ether		U	ug/kg	360
				4-Chloro-3-methylphenol		U	ug/kg	360

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7413-1012	0475450006SA	12-13.4	4-Chloroaniline		U	ug/kg	360
				4-Chlorophenyl phenyl ether		U	ug/kg	360
				4-Methylphenol		U	ug/kg	360
				4-Nitroaniline		U	ug/kg	1700
				4-Nitrophenol		U	ug/kg	1700
				Acenaphthene		U	ug/kg	360
				Acenaphthylene		U	ug/kg	360
				Anthracene		U	ug/kg	360
				Benzo(a)anthracene		U	ug/kg	360
				Benzo(a)pyrene		U	ug/kg	360
				Benzo(b)fluoranthene		U	ug/kg	360
				Benzo(g,h,i)perylene		U	ug/kg	360
				Benzo(k)fluoranthene		U	ug/kg	360
				bis(2-Chloroethyl) ether		U	ug/kg	360
				bis(2-Chloroisopropyl)ether		U	ug/kg	360
				bis(2-Ethylhexyl)phthalate		U	ug/kg	360
				Butyl benzyl phthalate		U	ug/kg	360
				Carbazole		U	ug/kg	360
				Chrysene		U	ug/kg	360
				Di-n-butyl phthalate		U	ug/kg	360
				Di-n-octyl phthalate		U	ug/kg	360
				Dibenz(a,h)anthracene		U	ug/kg	360
				Dibenzofuran		U	ug/kg	360
				Diethyl phthalate		U	ug/kg	360
				Dimethyl phthalate		U	ug/kg	360
				Fluoranthene		U	ug/kg	360
				Fluorene		U	ug/kg	360
				Hexachlorobenzene		U	ug/kg	360
				Hexachlorobutadiene		U	ug/kg	360
				Hexachlorocyclopentadiene		U	ug/kg	360
				Hexachloroethane		U	ug/kg	360
				Indeno(1,2,3-cd)pyrene		U	ug/kg	360
				Isophorone		U	ug/kg	360
				N-Nitroso-di-n-propylamine		U	ug/kg	360
				N-Nitrosodiphenylamine		U	ug/kg	360
				Naphthalene		U	ug/kg	360
				Nitrobenzene		U	ug/kg	360
				Pentachlorophenol		U	ug/kg	1700
				Phenanthrene		U	ug/kg	360
				Phenol		U	ug/kg	360
				Pyrene		U	ug/kg	360
	CAN074-7413-1464	0475450005SA	4-6	1,2,4-Trichlorobenzene		U	ug/kg	350
				1,2-Dichlorobenzene		U	ug/kg	350
				1,3-Dichlorobenzene		U	ug/kg	350
				1,4-Dichlorobenzene		U	ug/kg	350
				2,4,5-Trichlorophenol		U	ug/kg	1700
				2,4,6-Trichlorophenol		U	ug/kg	350
				2,4-Dichlorophenol		U	ug/kg	350
				2,4-Dimethylphenol		U	ug/kg	350
				2,4-Dinitrophenol		U	ug/kg	1700
				2,4-Dinitrotoluene		U	ug/kg	350
				2,6-Dinitrotoluene		U	ug/kg	350
				2-Chloronaphthalene		U	ug/kg	350
				2-Chlorophenol		U	ug/kg	350
				2-Methylnaphthalene		U	ug/kg	350
				2-Methylphenol		U	ug/kg	350

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7413-1464	0475450005SA	4-6	2-Nitroaniline		U	ug/kg	1700
				2-Nitrophenol		U	ug/kg	350
				3,3'-Dichlorobenzidine		U	ug/kg	700
				3-Nitroaniline		U	ug/kg	1700
				4,6-Dinitro-2-methylphenol		U	ug/kg	1700
				4-Bromophenyl phenyl ether		U	ug/kg	350
				4-Chloro-3-methylphenol		U	ug/kg	350
				4-Chloroaniline		U	ug/kg	350
				4-Chlorophenyl phenyl ether		U	ug/kg	350
				4-Methylphenol		U	ug/kg	350
				4-Nitroaniline		U	ug/kg	1700
				4-Nitrophenol		U	ug/kg	1700
				Acenaphthene		U	ug/kg	350
				Acenaphthylene		U	ug/kg	350
				Anthracene		U	ug/kg	350
				Benzo(a)anthracene		U	ug/kg	350
				Benzo(a)pyrene		U	ug/kg	350
				Benzo(b)fluoranthene		U	ug/kg	350
				Benzo(g,h,i)perylene		U	ug/kg	350
				Benzo(k)fluoranthene		U	ug/kg	350
				bis(2-Chloroethyl) ether		U	ug/kg	350
				bis(2-Chloroisopropyl)ether		U	ug/kg	350
				bis(2-Ethylhexyl)phthalate		U	ug/kg	350
				Butyl benzyl phthalate		U	ug/kg	350
				Carbazole		U	ug/kg	350
				Chrysene		U	ug/kg	350
				Di-n-butyl phthalate		U	ug/kg	350
				Di-n-octyl phthalate		U	ug/kg	350
				Dibenz(a,h)anthracene		U	ug/kg	350
				Dibenzofuran		U	ug/kg	350
				Diethyl phthalate		U	ug/kg	350
				Dimethyl phthalate		U	ug/kg	350
				Fluoranthene		U	ug/kg	350
				Fluorene		U	ug/kg	350
				Hexachlorobenzene		U	ug/kg	350
				Hexachlorobutadiene		U	ug/kg	350
				Hexachlorocyclopentadiene		U	ug/kg	350
				Hexachloroethane		U	ug/kg	350
				Indeno(1,2,3-cd)pyrene		U	ug/kg	350
				Isophorone		U	ug/kg	350
				N-Nitroso-di-n-propylamine		U	ug/kg	350
				N-Nitrosodiphenylamine		U	ug/kg	350
				Naphthalene		U	ug/kg	350
				Nitrobenzene		U	ug/kg	350
				Pentachlorophenol		U	ug/kg	1700
				Phenanthrene		U	ug/kg	350
				Phenol		U	ug/kg	350
				Pyrene		U	ug/kg	350
	CAN074-7414-1006	0475450008SA	6-8	1,2,4-Trichlorobenzene		U	ug/kg	370
				1,2-Dichlorobenzene		U	ug/kg	370
				1,3-Dichlorobenzene		U	ug/kg	370
				1,4-Dichlorobenzene		U	ug/kg	370
				2,4,5-Trichlorophenol		U	ug/kg	1800
				2,4,6-Trichlorophenol		U	ug/kg	370
				2,4-Dichlorophenol		U	ug/kg	370
				2,4-Dimethylphenol		U	ug/kg	370

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7414-1006	0475450008SA	6-8	2,4-Dinitrophenol		U	ug/kg	1800
				2,4-Dinitrotoluene		U	ug/kg	370
				2,6-Dinitrotoluene		U	ug/kg	370
				2-Chloronaphthalene		U	ug/kg	370
				2-Chlorophenol		U	ug/kg	370
				2-Methylnaphthalene		U	ug/kg	370
				2-Methylphenol		U	ug/kg	370
				2-Nitroaniline		U	ug/kg	1800
				2-Nitrophenol		U	ug/kg	370
				3,3'-Dichlorobenzidine		U	ug/kg	740
				3-Nitroaniline		U	ug/kg	1800
				4,6-Dinitro-2-methylphenol		U	ug/kg	1800
				4-Bromophenyl phenyl ether		U	ug/kg	370
				4-Chloro-3-methylphenol		U	ug/kg	370
				4-Chloroaniline		U	ug/kg	370
				4-Chlorophenyl phenyl ether		U	ug/kg	370
				4-Methylphenol		U	ug/kg	370
				4-Nitroaniline		U	ug/kg	1800
				4-Nitrophenol		U	ug/kg	1800
				Acenaphthene		U	ug/kg	370
				Acenaphthylene		U	ug/kg	370
				Anthracene		U	ug/kg	370
				Benzo(a)anthracene		U	ug/kg	370
				Benzo(a)pyrene		U	ug/kg	370
				Benzo(b)fluoranthene		U	ug/kg	370
				Benzo(g,h,i)perylene		U	ug/kg	370
				Benzo(k)fluoranthene		U	ug/kg	370
				bis(2-Chloroethyl) ether		U	ug/kg	370
				bis(2-Chloroisopropyl)ether		U	ug/kg	370
				bis(2-Ethylhexyl)phthalate		U	ug/kg	370
				Butyl benzyl phthalate		U	ug/kg	370
				Carbazole		U	ug/kg	370
				Chrysene		U	ug/kg	370
				Di-n-butyl phthalate		U	ug/kg	370
				Di-n-octyl phthalate		U	ug/kg	370
				Dibenz(a,h)anthracene		U	ug/kg	370
				Dibenzofuran		U	ug/kg	370
				Diethyl phthalate		U	ug/kg	370
				Dimethyl phthalate		U	ug/kg	370
				Fluoranthene		U	ug/kg	370
				Fluorene		U	ug/kg	370
				Hexachlorobenzene		U	ug/kg	370
				Hexachlorobutadiene		U	ug/kg	370
				Hexachlorocyclopentadiene		U	ug/kg	370
				Hexachloroethane		U	ug/kg	370
				Indeno(1,2,3-cd)pyrene		U	ug/kg	370
				Isophorone		U	ug/kg	370
				N-Nitroso-di-n-propylamine		U	ug/kg	370
				N-Nitrosodiphenylamine		U	ug/kg	370
				Naphthalene		U	ug/kg	370
				Nitrobenzene		U	ug/kg	370
				Pentachlorophenol		U	ug/kg	1800
				Phenanthrene		U	ug/kg	370
				Phenol		U	ug/kg	370
				Pyrene		U	ug/kg	370
	CAN074-7414-1010	0475450007SA	10-12	1,2,4-Trichlorobenzene		U	ug/kg	370

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7414-1010	0475450007SA	10-12	1,2-Dichlorobenzene		U	ug/kg	370
				1,3-Dichlorobenzene		U	ug/kg	370
				1,4-Dichlorobenzene		U	ug/kg	370
				2,4,5-Trichlorophenol		U	ug/kg	1800
				2,4,6-Trichlorophenol		U	ug/kg	370
				2,4-Dichlorophenol		U	ug/kg	370
				2,4-Dimethylphenol		U	ug/kg	370
				2,4-Dinitrophenol		U	ug/kg	1800
				2,4-Dinitrotoluene		U	ug/kg	370
				2,6-Dinitrotoluene		U	ug/kg	370
				2-Chloronaphthalene		U	ug/kg	370
				2-Chlorophenol		U	ug/kg	370
				2-Methylnaphthalene		U	ug/kg	370
				2-Methylphenol		U	ug/kg	370
				2-Nitroaniline		U	ug/kg	1800
				2-Nitrophenol		U	ug/kg	370
				3,3'-Dichlorobenzidine		U	ug/kg	740
				3-Nitroaniline		U	ug/kg	1800
				4,6-Dinitro-2-methylphenol		U	ug/kg	1800
				4-Bromophenyl phenyl ether		U	ug/kg	370
				4-Chloro-3-methylphenol		U	ug/kg	370
				4-Chloroaniline		U	ug/kg	370
				4-Chlorophenyl phenyl ether		U	ug/kg	370
				4-Methylphenol		U	ug/kg	370
				4-Nitroaniline		U	ug/kg	1800
				4-Nitrophenol		U	ug/kg	1800
				Acenaphthene		U	ug/kg	370
				Acenaphthylene		U	ug/kg	370
				Anthracene		U	ug/kg	370
				Benzo(a)anthracene		U	ug/kg	370
				Benzo(a)pyrene		U	ug/kg	370
				Benzo(b)fluoranthene		U	ug/kg	370
				Benzo(g,h,i)perylene		U	ug/kg	370
				Benzo(k)fluoranthene		U	ug/kg	370
				bis(2-Chloroethyl) ether		U	ug/kg	370
				bis(2-Chloroisopropyl)ether		U	ug/kg	370
				bis(2-Ethylhexyl)phthalate		U	ug/kg	370
				Butyl benzyl phthalate		U	ug/kg	370
				Carbazole		U	ug/kg	370
				Chrysene		U	ug/kg	370
				Di-n-butyl phthalate		U	ug/kg	370
				Di-n-octyl phthalate		U	ug/kg	370
				Dibenz(a,h)anthracene		U	ug/kg	370
				Dibenzofuran		U	ug/kg	370
				Diethyl phthalate		U	ug/kg	370
				Dimethyl phthalate		U	ug/kg	370
				Fluoranthene		U	ug/kg	370
				Fluorene		U	ug/kg	370
				Hexachlorobenzene		U	ug/kg	370
				Hexachlorobutadiene		U	ug/kg	370
				Hexachlorocyclopentadiene		U	ug/kg	370
				Hexachloroethane		U	ug/kg	370
				Indeno(1,2,3-cd)pyrene		U	ug/kg	370
				Isophorone		U	ug/kg	370
				N-Nitroso-di-n-propylamine		U	ug/kg	370
				N-Nitrosodiphenylamine		U	ug/kg	370

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7414-1010	0475450007SA	10-12	Naphthalene		U	ug/kg	370
				Nitrobenzene		U	ug/kg	370
				Pentachlorophenol		U	ug/kg	1800
				Phenanthrene		U	ug/kg	370
				Phenol		U	ug/kg	370
				Pyrene		U	ug/kg	370
	CAN074-7414-1014	0475450009SA	14-16	1,2,4-Trichlorobenzene		U	ug/kg	370
				1,2-Dichlorobenzene		U	ug/kg	370
				1,3-Dichlorobenzene		U	ug/kg	370
				1,4-Dichlorobenzene		U	ug/kg	370
				2,4,5-Trichlorophenol		U	ug/kg	1800
				2,4,6-Trichlorophenol		U	ug/kg	370
				2,4-Dichlorophenol		U	ug/kg	370
				2,4-Dimethylphenol		U	ug/kg	370
				2,4-Dinitrophenol		U	ug/kg	1800
				2,4-Dinitrotoluene		U	ug/kg	370
				2,6-Dinitrotoluene		U	ug/kg	370
				2-Chloronaphthalene		U	ug/kg	370
				2-Chlorophenol		U	ug/kg	370
				2-Methylnaphthalene		U	ug/kg	370
				2-Methylphenol		U	ug/kg	370
				2-Nitroaniline		U	ug/kg	1800
				2-Nitrophenol		U	ug/kg	370
				3,3'-Dichlorobenzidine		U	ug/kg	740
				3-Nitroaniline		U	ug/kg	1800
				4,6-Dinitro-2-methylphenol		U	ug/kg	1800
				4-Bromophenyl phenyl ether		U	ug/kg	370
				4-Chloro-3-methylphenol		U	ug/kg	370
				4-Chloroaniline		U	ug/kg	370
				4-Chlorophenyl phenyl ether		U	ug/kg	370
				4-Methylphenol		U	ug/kg	370
				4-Nitroaniline		U	ug/kg	1800
				4-Nitrophenol		U	ug/kg	1800
				Acenaphthene		U	ug/kg	370
				Acenaphthylene		U	ug/kg	370
				Anthracene		U	ug/kg	370
				Benzo(a)anthracene		U	ug/kg	370
				Benzo(a)pyrene		U	ug/kg	370
				Benzo(b)fluoranthene		U	ug/kg	370
				Benzo(g,h,i)perylene		U	ug/kg	370
				Benzo(k)fluoranthene		U	ug/kg	370
				bis(2-Chloroethyl) ether		U	ug/kg	370
				bis(2-Chloroisopropyl)ether		U	ug/kg	370
				bis(2-Ethylhexyl)phthalate		U	ug/kg	370
				Butyl benzyl phthalate		U	ug/kg	370
				Carbazole		U	ug/kg	370
				Chrysene		U	ug/kg	370
				Di-n-butyl phthalate		U	ug/kg	370
				Di-n-octyl phthalate		U	ug/kg	370
				Dibenz(a,h)anthracene		U	ug/kg	370
				Dibenzofuran		U	ug/kg	370
				Diethyl phthalate		U	ug/kg	370
				Dimethyl phthalate		U	ug/kg	370
				Fluoranthene		U	ug/kg	370
				Fluorene		U	ug/kg	370
				Hexachlorobenzene		U	ug/kg	370

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7414-1014	0475450009SA	14-16	Hexachlorobutadiene		U	ug/kg	370
				Hexachlorocyclopentadiene		U	ug/kg	370
				Hexachloroethane		U	ug/kg	370
				Indeno(1,2,3-cd)pyrene		U	ug/kg	370
				Isophorone		U	ug/kg	370
				N-Nitroso-di-n-propylamine		U	ug/kg	370
				N-Nitrosodiphenylamine		U	ug/kg	370
				Naphthalene		U	ug/kg	370
				Nitrobenzene		U	ug/kg	370
				Pentachlorophenol		U	ug/kg	1800
				Phenanthrene		U	ug/kg	370
				Phenol		U	ug/kg	370
				Pyrene		U	ug/kg	370
	CAN074-7415-1004	0475450010SA	4-6	1,2,4-Trichlorobenzene		U	ug/kg	380
				1,2-Dichlorobenzene		U	ug/kg	380
				1,3-Dichlorobenzene		U	ug/kg	380
				1,4-Dichlorobenzene		U	ug/kg	380
				2,4,5-Trichlorophenol		U	ug/kg	1800
				2,4,6-Trichlorophenol		U	ug/kg	380
				2,4-Dichlorophenol		U	ug/kg	380
				2,4-Dimethylphenol		U	ug/kg	380
				2,4-Dinitrophenol		U	ug/kg	1800
				2,4-Dinitrotoluene		U	ug/kg	380
				2,6-Dinitrotoluene		U	ug/kg	380
				2-Chloronaphthalene		U	ug/kg	380
				2-Chlorophenol		U	ug/kg	380
				2-Methylnaphthalene		U	ug/kg	380
				2-Methylphenol		U	ug/kg	380
				2-Nitroaniline		U	ug/kg	1800
				2-Nitrophenol		U	ug/kg	380
				3,3'-Dichlorobenzidine		U	ug/kg	750
				3-Nitroaniline		U	ug/kg	1800
				4,6-Dinitro-2-methylphenol		U	ug/kg	1800
				4-Bromophenyl phenyl ether		U	ug/kg	380
				4-Chloro-3-methylphenol		U	ug/kg	380
				4-Chloroaniline		U	ug/kg	380
				4-Chlorophenyl phenyl ether		U	ug/kg	380
				4-Methylphenol		U	ug/kg	380
				4-Nitroaniline		U	ug/kg	1800
				4-Nitrophenol		U	ug/kg	1800
				Acenaphthene		U	ug/kg	380
				Acenaphthylene		U	ug/kg	380
				Anthracene		U	ug/kg	380
				Benzo(a)anthracene		U	ug/kg	380
				Benzo(a)pyrene		U	ug/kg	380
				Benzo(b)fluoranthene		U	ug/kg	380
				Benzo(g,h,i)perylene		U	ug/kg	380
				Benzo(k)fluoranthene		U	ug/kg	380
				bis(2-Chloroethyl) ether		U	ug/kg	380
				bis(2-Chloroisopropyl)ether		U	ug/kg	380
				bis(2-Ethylhexyl)phthalate		U	ug/kg	380
				Butyl benzyl phthalate		U	ug/kg	380
				Carbazole		U	ug/kg	380
				Chrysene		U	ug/kg	380
				Di-n-butyl phthalate		U	ug/kg	380
				Di-n-octyl phthalate		U	ug/kg	380

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7415-1004	0475450010SA	4-6	Dibenz(a,h)anthracene		U	ug/kg	380
				Dibenzofuran		U	ug/kg	380
				Diethyl phthalate		U	ug/kg	380
				Dimethyl phthalate		U	ug/kg	380
				Fluoranthene		U	ug/kg	380
				Fluorene		U	ug/kg	380
				Hexachlorobenzene		U	ug/kg	380
				Hexachlorobutadiene		U	ug/kg	380
				Hexachlorocyclopentadiene		U	ug/kg	380
				Hexachloroethane		U	ug/kg	380
				Indeno(1,2,3-cd)pyrene		U	ug/kg	380
				Isophorone		U	ug/kg	380
				N-Nitroso-di-n-propylamine		U	ug/kg	380
				N-Nitrosodiphenylamine		U	ug/kg	380
				Naphthalene		U	ug/kg	380
				Nitrobenzene		U	ug/kg	380
				Pentachlorophenol		U	ug/kg	1800
				Phenanthrene		U	ug/kg	380
				Phenol		U	ug/kg	380
				Pyrene		U	ug/kg	380
	CAN074-7415-1008	0475450011SA	8-10	1,2,4-Trichlorobenzene		U	ug/kg	370
				1,2-Dichlorobenzene		U	ug/kg	370
				1,3-Dichlorobenzene		U	ug/kg	370
				1,4-Dichlorobenzene		U	ug/kg	370
				2,4,5-Trichlorophenol		U	ug/kg	1800
				2,4,6-Trichlorophenol		U	ug/kg	370
				2,4-Dichlorophenol		U	ug/kg	370
				2,4-Dimethylphenol		U	ug/kg	370
				2,4-Dinitrophenol		U	ug/kg	1800
				2,4-Dinitrotoluene		U	ug/kg	370
				2,6-Dinitrotoluene		U	ug/kg	370
				2-Chloronaphthalene		U	ug/kg	370
				2-Chlorophenol		U	ug/kg	370
				2-Methylnaphthalene		U	ug/kg	370
				2-Methylphenol		U	ug/kg	370
				2-Nitroaniline		U	ug/kg	1800
				2-Nitrophenol		U	ug/kg	370
				3,3'-Dichlorobenzidine		U	ug/kg	730
				3-Nitroaniline		U	ug/kg	1800
				4,6-Dinitro-2-methylphenol		U	ug/kg	1800
				4-Bromophenyl phenyl ether		U	ug/kg	370
				4-Chloro-3-methylphenol		U	ug/kg	370
				4-Chloroaniline		U	ug/kg	370
				4-Chlorophenyl phenyl ether		U	ug/kg	370
				4-Methylphenol		U	ug/kg	370
				4-Nitroaniline		U	ug/kg	1800
				4-Nitrophenol		U	ug/kg	1800
				Acenaphthene		U	ug/kg	370
				Acenaphthylene		U	ug/kg	370
				Anthracene		U	ug/kg	370
				Benzo(a)anthracene		U	ug/kg	370
				Benzo(a)pyrene		U	ug/kg	370
				Benzo(b)fluoranthene		U	ug/kg	370
				Benzo(g,h,i)perylene		U	ug/kg	370
				Benzo(k)fluoranthene		U	ug/kg	370
				bis(2-Chloroethyl) ether		U	ug/kg	370

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7415-1008	0475450011SA	8-10	bis(2-Chloroisopropyl)ether		U	ug/kg	370
				bis(2-Ethylhexyl)phthalate		U	ug/kg	370
				Butyl benzyl phthalate		U	ug/kg	370
				Carbazole		U	ug/kg	370
				Chrysene		U	ug/kg	370
				Di-n-butyl phthalate		U	ug/kg	370
				Di-n-octyl phthalate		U	ug/kg	370
				Dibenz(a,h)anthracene		U	ug/kg	370
				Dibenzofuran		U	ug/kg	370
				Diethyl phthalate		U	ug/kg	370
				Dimethyl phthalate		U	ug/kg	370
				Fluoranthene		U	ug/kg	370
				Fluorene		U	ug/kg	370
				Hexachlorobenzene		U	ug/kg	370
				Hexachlorobutadiene		U	ug/kg	370
				Hexachlorocyclopentadiene		U	ug/kg	370
				Hexachloroethane		U	ug/kg	370
				Indeno(1,2,3-cd)pyrene		U	ug/kg	370
				Isophorone		U	ug/kg	370
				N-Nitroso-di-n-propylamine		U	ug/kg	370
				N-Nitrosodiphenylamine		U	ug/kg	370
				Naphthalene		U	ug/kg	370
				Nitrobenzene		U	ug/kg	370
				Pentachlorophenol		U	ug/kg	1800
				Phenanthrene		U	ug/kg	370
				Phenol		U	ug/kg	370
				Pyrene		U	ug/kg	370
	CAN074-7415-1012	0475450012SA	12-14	1,2,4-Trichlorobenzene		U	ug/kg	360
				1,2-Dichlorobenzene		U	ug/kg	360
				1,3-Dichlorobenzene		U	ug/kg	360
				1,4-Dichlorobenzene		U	ug/kg	360
				2,4,5-Trichlorophenol		U	ug/kg	1800
				2,4,6-Trichlorophenol		U	ug/kg	360
				2,4-Dichlorophenol		U	ug/kg	360
				2,4-Dimethylphenol		U	ug/kg	360
				2,4-Dinitrophenol		U	ug/kg	1800
				2,4-Dinitrotoluene		U	ug/kg	360
				2,6-Dinitrotoluene		U	ug/kg	360
				2-Chloronaphthalene		U	ug/kg	360
				2-Chlorophenol		U	ug/kg	360
				2-Methylnaphthalene		U	ug/kg	360
				2-Methylphenol		U	ug/kg	360
				2-Nitroaniline		U	ug/kg	1800
				2-Nitrophenol		U	ug/kg	360
				3,3'-Dichlorobenzidine		U	ug/kg	730
				3-Nitroaniline		U	ug/kg	1800
				4,6-Dinitro-2-methylphenol		U	ug/kg	1800
				4-Bromophenyl phenyl ether		U	ug/kg	360
				4-Chloro-3-methylphenol		U	ug/kg	360
				4-Chloroaniline		U	ug/kg	360
				4-Chlorophenyl phenyl ether		U	ug/kg	360
				4-Methylphenol		U	ug/kg	360
				4-Nitroaniline		U	ug/kg	1800
				4-Nitrophenol		U	ug/kg	1800
				Acenaphthene		U	ug/kg	360
				Acenaphthylene		U	ug/kg	360

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7415-1012	0475450012SA	12-14	Anthracene		U	ug/kg	360
				Benzo(a)anthracene		U	ug/kg	360
				Benzo(a)pyrene		U	ug/kg	360
				Benzo(b)fluoranthene		U	ug/kg	360
				Benzo(g,h,i)perylene		U	ug/kg	360
				Benzo(k)fluoranthene		U	ug/kg	360
				bis(2-Chloroethyl) ether		U	ug/kg	360
				bis(2-Chloroisopropyl)ether		U	ug/kg	360
				bis(2-Ethylhexyl)phthalate		U	ug/kg	360
				Butyl benzyl phthalate		U	ug/kg	360
				Carbazole		U	ug/kg	360
				Chrysene		U	ug/kg	360
				Di-n-butyl phthalate		U	ug/kg	360
				Di-n-octyl phthalate		U	ug/kg	360
				Dibenz(a,h)anthracene		U	ug/kg	360
				Dibenzofuran		U	ug/kg	360
				Diethyl phthalate		U	ug/kg	360
				Dimethyl phthalate		U	ug/kg	360
				Fluoranthene		U	ug/kg	360
				Fluorene		U	ug/kg	360
				Hexachlorobenzene		U	ug/kg	360
				Hexachlorobutadiene		U	ug/kg	360
				Hexachlorocyclopentadiene		U	ug/kg	360
				Hexachloroethane		U	ug/kg	360
				Indeno(1,2,3-cd)pyrene		U	ug/kg	360
				Isophorone		U	ug/kg	360
				N-Nitroso-di-n-propylamine		U	ug/kg	360
				N-Nitrosodiphenylamine		U	ug/kg	360
				Naphthalene		U	ug/kg	360
				Nitrobenzene		U	ug/kg	360
				Pentachlorophenol		U	ug/kg	1800
				Phenanthrene		U	ug/kg	360
				Phenol		U	ug/kg	360
				Pyrene		U	ug/kg	360
	CAN074-7418-1005	0475450013SA	5-7	1,2,4-Trichlorobenzene		U	ug/kg	350
				1,2-Dichlorobenzene		U	ug/kg	350
				1,3-Dichlorobenzene		U	ug/kg	350
				1,4-Dichlorobenzene		U	ug/kg	350
				2,4,5-Trichlorophenol		U	ug/kg	1700
				2,4,6-Trichlorophenol		U	ug/kg	350
				2,4-Dichlorophenol		U	ug/kg	350
				2,4-Dimethylphenol		U	ug/kg	350
				2,4-Dinitrophenol		U	ug/kg	1700
				2,4-Dinitrotoluene		U	ug/kg	350
				2,6-Dinitrotoluene		U	ug/kg	350
				2-Chloronaphthalene		U	ug/kg	350
				2-Chlorophenol		U	ug/kg	350
				2-Methylnaphthalene		U	ug/kg	350
				2-Methylphenol		U	ug/kg	350
				2-Nitroaniline		U	ug/kg	1700
				2-Nitrophenol		U	ug/kg	350
				3,3'-Dichlorobenzidine		U	ug/kg	690
				3-Nitroaniline		U	ug/kg	1700
				4,6-Dinitro-2-methylphenol		U	ug/kg	1700
				4-Bromophenyl phenyl ether		U	ug/kg	350
				4-Chloro-3-methylphenol		U	ug/kg	350

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7418-1005	0475450013SA	5-7	4-Chloroaniline		U	ug/kg	350
				4-Chlorophenyl phenyl ether		U	ug/kg	350
				4-Methylphenol		U	ug/kg	350
				4-Nitroaniline		U	ug/kg	1700
				4-Nitrophenol		U	ug/kg	1700
				Acenaphthene		U	ug/kg	350
				Acenaphthylene		U	ug/kg	350
				Anthracene		U	ug/kg	350
				Benzo(a)anthracene		U	ug/kg	350
				Benzo(a)pyrene		U	ug/kg	350
				Benzo(b)fluoranthene		U	ug/kg	350
				Benzo(g,h,i)perylene		U	ug/kg	350
				Benzo(k)fluoranthene		U	ug/kg	350
				bis(2-Chloroethyl) ether		U	ug/kg	350
				bis(2-Chloroisopropyl)ether		U	ug/kg	350
				bis(2-Ethylhexyl)phthalate		U	ug/kg	350
				Butyl benzyl phthalate		U	ug/kg	350
				Carbazole		U	ug/kg	350
				Chrysene		U	ug/kg	350
				Di-n-butyl phthalate		U	ug/kg	350
				Di-n-octyl phthalate		U	ug/kg	350
				Dibenz(a,h)anthracene		U	ug/kg	350
				Dibenzofuran		U	ug/kg	350
				Diethyl phthalate		U	ug/kg	350
				Dimethyl phthalate		U	ug/kg	350
				Fluoranthene		U	ug/kg	350
				Fluorene		U	ug/kg	350
				Hexachlorobenzene		U	ug/kg	350
				Hexachlorobutadiene		U	ug/kg	350
				Hexachlorocyclopentadiene		U	ug/kg	350
				Hexachloroethane		U	ug/kg	350
				Indeno(1,2,3-cd)pyrene		U	ug/kg	350
				Isophorone		U	ug/kg	350
				N-Nitroso-di-n-propylamine		U	ug/kg	350
				N-Nitrosodiphenylamine		U	ug/kg	350
				Naphthalene		U	ug/kg	350
				Nitrobenzene		U	ug/kg	350
				Pentachlorophenol		U	ug/kg	1700
				Phenanthrene		U	ug/kg	350
				Phenol		U	ug/kg	350
				Pyrene		U	ug/kg	350
	CAN074-7418-1009	0475450014SA	9-11	1,2,4-Trichlorobenzene		U	ug/kg	350
				1,2-Dichlorobenzene		U	ug/kg	350
				1,3-Dichlorobenzene		U	ug/kg	350
				1,4-Dichlorobenzene		U	ug/kg	350
				2,4,5-Trichlorophenol		U	ug/kg	1700
				2,4,6-Trichlorophenol		U	ug/kg	350
				2,4-Dichlorophenol		U	ug/kg	350
				2,4-Dimethylphenol		U	ug/kg	350
				2,4-Dinitrophenol		U	ug/kg	1700
				2,4-Dinitrotoluene		U	ug/kg	350
				2,6-Dinitrotoluene		U	ug/kg	350
				2-Chloronaphthalene		U	ug/kg	350
				2-Chlorophenol		U	ug/kg	350
				2-Methylnaphthalene		U	ug/kg	350
				2-Methylphenol		U	ug/kg	350

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7418-1009	0475450014SA	9-11	2-Nitroaniline		U	ug/kg	1700
				2-Nitrophenol		U	ug/kg	350
				3,3'-Dichlorobenzidine		U	ug/kg	700
				3-Nitroaniline		U	ug/kg	1700
				4,6-Dinitro-2-methylphenol		U	ug/kg	1700
				4-Bromophenyl phenyl ether		U	ug/kg	350
				4-Chloro-3-methylphenol		U	ug/kg	350
				4-Chloroaniline		U	ug/kg	350
				4-Chlorophenyl phenyl ether		U	ug/kg	350
				4-Methylphenol		U	ug/kg	350
				4-Nitroaniline		U	ug/kg	1700
				4-Nitrophenol		U	ug/kg	1700
				Acenaphthene		U	ug/kg	350
				Acenaphthylene		U	ug/kg	350
				Anthracene		U	ug/kg	350
				Benzo(a)anthracene		U	ug/kg	350
				Benzo(a)pyrene		U	ug/kg	350
				Benzo(b)fluoranthene		U	ug/kg	350
				Benzo(g,h,i)perylene		U	ug/kg	350
				Benzo(k)fluoranthene		U	ug/kg	350
				bis(2-Chloroethyl) ether		U	ug/kg	350
				bis(2-Chloroisopropyl)ether		U	ug/kg	350
				bis(2-Ethylhexyl)phthalate		U	ug/kg	350
				Butyl benzyl phthalate		U	ug/kg	350
				Carbazole		U	ug/kg	350
				Chrysene		U	ug/kg	350
				Di-n-butyl phthalate		U	ug/kg	350
				Di-n-octyl phthalate		U	ug/kg	350
				Dibenz(a,h)anthracene		U	ug/kg	350
				Dibenzofuran		U	ug/kg	350
				Diethyl phthalate		U	ug/kg	350
				Dimethyl phthalate		U	ug/kg	350
				Fluoranthene		U	ug/kg	350
				Fluorene		U	ug/kg	350
				Hexachlorobenzene		U	ug/kg	350
				Hexachlorobutadiene		U	ug/kg	350
				Hexachlorocyclopentadiene		U	ug/kg	350
				Hexachloroethane		U	ug/kg	350
				Indeno(1,2,3-cd)pyrene		U	ug/kg	350
				Isophorone		U	ug/kg	350
				N-Nitroso-di-n-propylamine		U	ug/kg	350
				N-Nitrosodiphenylamine		U	ug/kg	350
				Naphthalene		U	ug/kg	350
				Nitrobenzene		U	ug/kg	350
				Pentachlorophenol		U	ug/kg	1700
				Phenanthrene		U	ug/kg	350
				Phenol		U	ug/kg	350
				Pyrene		U	ug/kg	350
	CAN074-7418-1015	0475450015SA	15-17.2	1,2,4-Trichlorobenzene		U	ug/kg	350
				1,2-Dichlorobenzene		U	ug/kg	350
				1,3-Dichlorobenzene		U	ug/kg	350
				1,4-Dichlorobenzene		U	ug/kg	350
				2,4,5-Trichlorophenol		U	ug/kg	1700
				2,4,6-Trichlorophenol		U	ug/kg	350
				2,4-Dichlorophenol		U	ug/kg	350
				2,4-Dimethylphenol		U	ug/kg	350

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7418-1015	0475450015SA	15-17.2	2,4-Dinitrophenol		U	ug/kg	1700
				2,4-Dinitrotoluene		U	ug/kg	350
				2,6-Dinitrotoluene		U	ug/kg	350
				2-Chloronaphthalene		U	ug/kg	350
				2-Chlorophenol		U	ug/kg	350
				2-Methylnaphthalene		U	ug/kg	350
				2-Methylphenol		U	ug/kg	350
				2-Nitroaniline		U	ug/kg	1700
				2-Nitrophenol		U	ug/kg	350
				3,3'-Dichlorobenzidine		U	ug/kg	700
				3-Nitroaniline		U	ug/kg	1700
				4,6-Dinitro-2-methylphenol		U	ug/kg	1700
				4-Bromophenyl phenyl ether		U	ug/kg	350
				4-Chloro-3-methylphenol		U	ug/kg	350
				4-Chloroaniline		U	ug/kg	350
				4-Chlorophenyl phenyl ether		U	ug/kg	350
				4-Methylphenol		U	ug/kg	350
				4-Nitroaniline		U	ug/kg	1700
				4-Nitrophenol		U	ug/kg	1700
				Acenaphthene		U	ug/kg	350
				Acenaphthylene		U	ug/kg	350
				Anthracene		U	ug/kg	350
				Benzo(a)anthracene		U	ug/kg	350
				Benzo(a)pyrene		U	ug/kg	350
				Benzo(b)fluoranthene		U	ug/kg	350
				Benzo(g,h,i)perylene		U	ug/kg	350
				Benzo(k)fluoranthene		U	ug/kg	350
				bis(2-Chloroethyl) ether		U	ug/kg	350
				bis(2-Chloroisopropyl)ether		U	ug/kg	350
				bis(2-Ethylhexyl)phthalate		U	ug/kg	350
				Butyl benzyl phthalate		U	ug/kg	350
				Carbazole		U	ug/kg	350
				Chrysene		U	ug/kg	350
				Di-n-butyl phthalate		U	ug/kg	350
				Di-n-octyl phthalate		U	ug/kg	350
				Dibenz(a,h)anthracene		U	ug/kg	350
				Dibenzofuran		U	ug/kg	350
				Diethyl phthalate		U	ug/kg	350
				Dimethyl phthalate		U	ug/kg	350
				Fluoranthene		U	ug/kg	350
				Fluorene		U	ug/kg	350
				Hexachlorobenzene		U	ug/kg	350
				Hexachlorobutadiene		U	ug/kg	350
				Hexachlorocyclopentadiene		U	ug/kg	350
				Hexachloroethane		U	ug/kg	350
				Indeno(1,2,3-cd)pyrene		U	ug/kg	350
				Isophorone		U	ug/kg	350
				N-Nitroso-di-n-propylamine		U	ug/kg	350
				N-Nitrosodiphenylamine		U	ug/kg	350
				Naphthalene		U	ug/kg	350
				Nitrobenzene		U	ug/kg	350
				Pentachlorophenol		U	ug/kg	1700
				Phenanthrene		U	ug/kg	350
				Phenol		U	ug/kg	350
				Pyrene		U	ug/kg	350
	CAN074-7418-1465	0475450016SA		1,2,4-Trichlorobenzene		U	ug/kg	350

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7418-1465	0475450016SA	15-17.2	1,2-Dichlorobenzene		U	ug/kg	350
				1,3-Dichlorobenzene		U	ug/kg	350
				1,4-Dichlorobenzene		U	ug/kg	350
				2,4,5-Trichlorophenol		U	ug/kg	1700
				2,4,6-Trichlorophenol		U	ug/kg	350
				2,4-Dichlorophenol		U	ug/kg	350
				2,4-Dimethylphenol		U	ug/kg	350
				2,4-Dinitrophenol		U	ug/kg	1700
				2,4-Dinitrotoluene		U	ug/kg	350
				2,6-Dinitrotoluene		U	ug/kg	350
				2-Chloronaphthalene		U	ug/kg	350
				2-Chlorophenol		U	ug/kg	350
				2-Methylnaphthalene		U	ug/kg	350
				2-Methylphenol		U	ug/kg	350
				2-Nitroaniline		U	ug/kg	1700
				2-Nitrophenol		U	ug/kg	350
				3,3'-Dichlorobenzidine		U	ug/kg	700
				3-Nitroaniline		U	ug/kg	1700
				4,6-Dinitro-2-methylphenol		U	ug/kg	1700
				4-Bromophenyl phenyl ether		U	ug/kg	350
				4-Chloro-3-methylphenol		U	ug/kg	350
				4-Chloroaniline		U	ug/kg	350
				4-Chlorophenyl phenyl ether		U	ug/kg	350
				4-Methylphenol		U	ug/kg	350
				4-Nitroaniline		U	ug/kg	1700
				4-Nitrophenol		U	ug/kg	1700
				Acenaphthene		U	ug/kg	350
				Acenaphthylene		U	ug/kg	350
				Anthracene		U	ug/kg	350
				Benzo(a)anthracene		U	ug/kg	350
				Benzo(a)pyrene		U	ug/kg	350
				Benzo(b)fluoranthene		U	ug/kg	350
				Benzo(g,h,i)perylene		U	ug/kg	350
				Benzo(k)fluoranthene		U	ug/kg	350
				bis(2-Chloroethyl) ether		U	ug/kg	350
				bis(2-Chloroisopropyl)ether		U	ug/kg	350
				bis(2-Ethylhexyl)phthalate		U	ug/kg	350
				Butyl benzyl phthalate		U	ug/kg	350
				Carbazole		U	ug/kg	350
				Chrysene		U	ug/kg	350
				Di-n-butyl phthalate		U	ug/kg	350
				Di-n-octyl phthalate		U	ug/kg	350
				Dibenz(a,h)anthracene		U	ug/kg	350
				Dibenzofuran		U	ug/kg	350
				Diethyl phthalate		U	ug/kg	350
				Dimethyl phthalate		U	ug/kg	350
				Fluoranthene		U	ug/kg	350
				Fluorene		U	ug/kg	350
				Hexachlorobenzene		U	ug/kg	350
				Hexachlorobutadiene		U	ug/kg	350
				Hexachlorocyclopentadiene		U	ug/kg	350
				Hexachloroethane		U	ug/kg	350
				Indeno(1,2,3-cd)pyrene		U	ug/kg	350
				Isophorone		U	ug/kg	350
				N-Nitroso-di-n-propylamine		U	ug/kg	350
				N-Nitrosodiphenylamine		U	ug/kg	350

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL	UNITS	DL
SVOC	CAN074-7418-1465	0475450016SA	15-17.2	Naphthalene		U	ug/kg	350
				Nitrobenzene		U	ug/kg	350
				Pentachlorophenol		U	ug/kg	1700
				Phenanthrene		U	ug/kg	350
				Phenol		U	ug/kg	350
				Pyrene		U	ug/kg	350
	CAN074-7423-1004	0476170001SA	4-6	1,2,4-Trichlorobenzene		U	ug/kg	350
				1,2-Dichlorobenzene		U	ug/kg	350
				1,3-Dichlorobenzene		U	ug/kg	350
				1,4-Dichlorobenzene		U	ug/kg	350
				2,4,5-Trichlorophenol		U	ug/kg	1700
				2,4,6-Trichlorophenol		U	ug/kg	350
				2,4-Dichlorophenol		U	ug/kg	350
				2,4-Dimethylphenol		U	ug/kg	350
				2,4-Dinitrophenol		U	ug/kg	1700
				2,4-Dinitrotoluene		U	ug/kg	350
				2,6-Dinitrotoluene		U	ug/kg	350
				2-Chloronaphthalene		U	ug/kg	350
				2-Chlorophenol		U	ug/kg	350
				2-Methylnaphthalene		U	ug/kg	350
				2-Methylphenol		U	ug/kg	350
				2-Nitroaniline		U	ug/kg	1700
				2-Nitrophenol		U	ug/kg	350
				3,3'-Dichlorobenzidine		U	ug/kg	700
				3-Nitroaniline		U	ug/kg	1700
				4,6-Dinitro-2-methylphenol		U	ug/kg	1700
				4-Bromophenyl phenyl ether		U	ug/kg	350
				4-Chloro-3-methylphenol		U	ug/kg	350
				4-Chloroaniline		U	ug/kg	350
				4-Chlorophenyl phenyl ether		U	ug/kg	350
				4-Methylphenol		U	ug/kg	350
				4-Nitroaniline		U	ug/kg	1700
				4-Nitrophenol		U	ug/kg	1700
				Acenaphthene		U	ug/kg	350
				Acenaphthylene		U	ug/kg	350
				Anthracene		U	ug/kg	350
				Benzo(a)anthracene		U	ug/kg	350
				Benzo(a)pyrene		U	ug/kg	350
				Benzo(b)fluoranthene		U	ug/kg	350
				Benzo(g,h,i)perylene		U	ug/kg	350
				Benzo(k)fluoranthene		U	ug/kg	350
				bis(2-Chloroethyl) ether		U	ug/kg	350
				bis(2-Chloroisopropyl)ether		U	ug/kg	350
				bis(2-Ethylhexyl)phthalate		U	ug/kg	350
				Butyl benzyl phthalate		U	ug/kg	350
				Carbazole		U	ug/kg	350
				Chrysene		U	ug/kg	350
				Di-n-butyl phthalate		U	ug/kg	350
				Di-n-octyl phthalate		U	ug/kg	350
				Dibenz(a,h)anthracene		U	ug/kg	350
				Dibenzofuran		U	ug/kg	350
				Diethyl phthalate		U	ug/kg	350
				Dimethyl phthalate		U	ug/kg	350
				Fluoranthene		U	ug/kg	350
				Fluorene		U	ug/kg	350
				Hexachlorobenzene		U	ug/kg	350

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL	UNITS	DL
SVOC	CAN074-7423-1004	0476170001SA	4-6	Hexachlorobutadiene		U	ug/kg	350
				Hexachlorocyclopentadiene		U	ug/kg	350
				Hexachloroethane		U	ug/kg	350
				Indeno(1,2,3-cd)pyrene		U	ug/kg	350
				Isophorone		U	ug/kg	350
				N-Nitroso-di-n-propylamine		U	ug/kg	350
				N-Nitrosodiphenylamine		U	ug/kg	350
				Naphthalene		U	ug/kg	350
				Nitrobenzene		U	ug/kg	350
				Pentachlorophenol		U	ug/kg	1700
				Phenanthrene		U	ug/kg	350
				Phenol		U	ug/kg	350
				Pyrene		U	ug/kg	350
	CAN074-7423-1008	0476170002SA	8-10	1,2,4-Trichlorobenzene		U	ug/kg	350
				1,2-Dichlorobenzene		U	ug/kg	350
				1,3-Dichlorobenzene		U	ug/kg	350
				1,4-Dichlorobenzene		U	ug/kg	350
				2,4,5-Trichlorophenol		U	ug/kg	1700
				2,4,6-Trichlorophenol		U	ug/kg	350
				2,4-Dichlorophenol		U	ug/kg	350
				2,4-Dimethylphenol		U	ug/kg	350
				2,4-Dinitrophenol		U	ug/kg	1700
				2,4-Dinitrotoluene		U	ug/kg	350
				2,6-Dinitrotoluene		U	ug/kg	350
				2-Chloronaphthalene		U	ug/kg	350
				2-Chlorophenol		U	ug/kg	350
				2-Methylnaphthalene		U	ug/kg	350
				2-Methylphenol		U	ug/kg	350
				2-Nitroaniline		U	ug/kg	1700
				2-Nitrophenol		U	ug/kg	350
				3,3'-Dichlorobenzidine		U	ug/kg	700
				3-Nitroaniline		U	ug/kg	1700
				4,6-Dinitro-2-methylphenol		U	ug/kg	1700
				4-Bromophenyl phenyl ether		U	ug/kg	350
				4-Chloro-3-methylphenol		U	ug/kg	350
				4-Chloroaniline		U	ug/kg	350
				4-Chlorophenyl phenyl ether		U	ug/kg	350
				4-Methylphenol		U	ug/kg	350
				4-Nitroaniline		U	ug/kg	1700
				4-Nitrophenol		U	ug/kg	1700
				Acenaphthene		U	ug/kg	350
				Acenaphthylene		U	ug/kg	350
				Anthracene		U	ug/kg	350
				Benzo(a)anthracene		U	ug/kg	350
				Benzo(a)pyrene		U	ug/kg	350
				Benzo(b)fluoranthene		U	ug/kg	350
				Benzo(g,h,i)perylene		U	ug/kg	350
				Benzo(k)fluoranthene		U	ug/kg	350
				bis(2-Chloroethyl) ether		U	ug/kg	350
				bis(2-Chloroisopropyl)ether		U	ug/kg	350
				bis(2-Ethylhexyl)phthalate		U	ug/kg	350
				Butyl benzyl phthalate		U	ug/kg	350
				Carbazole		U	ug/kg	350
				Chrysene		U	ug/kg	350
				Di-n-butyl phthalate		U	ug/kg	350
				Di-n-octyl phthalate		U	ug/kg	350

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL	UNITS	DL
SVOC	CAN074-7423-1008	0476170002SA	8-10	Dibenz(a,h)anthracene		U	ug/kg	350
				Dibenzofuran		U	ug/kg	350
				Diethyl phthalate		U	ug/kg	350
				Dimethyl phthalate		U	ug/kg	350
				Fluoranthene		U	ug/kg	350
				Fluorene		U	ug/kg	350
				Hexachlorobenzene		U	ug/kg	350
				Hexachlorobutadiene		U	ug/kg	350
				Hexachlorocyclopentadiene		U	ug/kg	350
				Hexachloroethane		U	ug/kg	350
				Indeno(1,2,3-cd)pyrene		U	ug/kg	350
				Isophorone		U	ug/kg	350
				N-Nitroso-di-n-propylamine		U	ug/kg	350
				N-Nitrosodiphenylamine		U	ug/kg	350
				Naphthalene		U	ug/kg	350
				Nitrobenzene		U	ug/kg	350
				Pentachlorophenol		U	ug/kg	1700
				Phenanthrene		U	ug/kg	350
				Phenol		U	ug/kg	350
				Pyrene		U	ug/kg	350
	CAN074-7423-1012	0476170003SA	12-14	1,2,4-Trichlorobenzene		U	ug/kg	350
				1,2-Dichlorobenzene		U	ug/kg	350
				1,3-Dichlorobenzene		U	ug/kg	350
				1,4-Dichlorobenzene		U	ug/kg	350
				2,4,5-Trichlorophenol		U	ug/kg	1700
				2,4,6-Trichlorophenol		U	ug/kg	350
				2,4-Dichlorophenol		U	ug/kg	350
				2,4-Dimethylphenol		U	ug/kg	350
				2,4-Dinitrophenol		U	ug/kg	1700
				2,4-Dinitrotoluene		U	ug/kg	350
				2,6-Dinitrotoluene		U	ug/kg	350
				2-Chloronaphthalene		U	ug/kg	350
				2-Chlorophenol		U	ug/kg	350
				2-Methylnaphthalene		U	ug/kg	350
				2-Methylphenol		U	ug/kg	350
				2-Nitroaniline		U	ug/kg	1700
				2-Nitrophenol		U	ug/kg	350
				3,3'-Dichlorobenzidine		U	ug/kg	700
				3-Nitroaniline		U	ug/kg	1700
				4,6-Dinitro-2-methylphenol		U	ug/kg	1700
				4-Bromophenyl phenyl ether		U	ug/kg	350
				4-Chloro-3-methylphenol		U	ug/kg	350
				4-Chloroaniline		U	ug/kg	350
				4-Chlorophenyl phenyl ether		U	ug/kg	350
				4-Methylphenol		U	ug/kg	350
				4-Nitroaniline		U	ug/kg	1700
				4-Nitrophenol		U	ug/kg	1700
				Acenaphthene		U	ug/kg	350
				Acenaphthylene		U	ug/kg	350
				Anthracene		U	ug/kg	350
				Benzo(a)anthracene		U	ug/kg	350
				Benzo(a)pyrene		U	ug/kg	350
				Benzo(b)fluoranthene		U	ug/kg	350
				Benzo(g,h,i)perylene		U	ug/kg	350
				Benzo(k)fluoranthene		U	ug/kg	350
				bis(2-Chloroethyl) ether		U	ug/kg	350

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
SVOC	CAN074-7423-1012	0476170003SA	12-14	bis(2-Chloroisopropyl)ether		U	ug/kg	350
				bis(2-Ethylhexyl)phthalate		U	ug/kg	350
				Butyl benzyl phthalate		U	ug/kg	350
				Carbazole		U	ug/kg	350
				Chrysene		U	ug/kg	350
				Di-n-butyl phthalate		U	ug/kg	350
				Di-n-octyl phthalate		U	ug/kg	350
				Dibenz(a,h)anthracene		U	ug/kg	350
				Dibenzofuran		U	ug/kg	350
				Diethyl phthalate		U	ug/kg	350
				Dimethyl phthalate		U	ug/kg	350
				Fluoranthene		U	ug/kg	350
				Fluorene		U	ug/kg	350
				Hexachlorobenzene		U	ug/kg	350
				Hexachlorobutadiene		U	ug/kg	350
				Hexachlorocyclopentadiene		U	ug/kg	350
				Hexachloroethane		U	ug/kg	350
				Indeno(1,2,3-cd)pyrene		U	ug/kg	350
				Isophorone		U	ug/kg	350
				N-Nitroso-di-n-propylamine		U	ug/kg	350
				N-Nitrosodiphenylamine		U	ug/kg	350
				Naphthalene		U	ug/kg	350
				Nitrobenzene		U	ug/kg	350
				Pentachlorophenol		U	ug/kg	1700
				Phenanthrene		U	ug/kg	350
				Phenol		U	ug/kg	350
				Pyrene		U	ug/kg	350
TIC-8240	CAN074-7409-1044	0474380015SA	44-46	Unknown	7.2	NJ	ug/kg	
	CAN074-7410-1020	0474380003SA	20-20.9	Ethylenediamine	6.5	NJ	ug/kg	
	CAN074-7414-1010	0475450007SA	10-12	Nonanal	6.8	NJ	ug/kg	
	CAN074-7414-1014	0475450009SA	14-16	Nonanal	7.3	NJ	ug/kg	
	CAN074-7418-1465	0475450016SA	15-17.2	Nonanal	6.7	NJ	ug/kg	
TIC-8270	CAN074-7409-1010	0474380010SA	10-12	Saturated Hydrocarbon: C10-C20	200	NJ	ug/kg	
	CAN074-7409-1014	0474380011SA	14-16	Octadecanoic acid, butyl ester	240	NJ	ug/kg	
	CAN074-7410-1020	0474380003SA	20-20.9	Octadecanoic acid, butyl ester	220	NJ	ug/kg	
	CAN074-7413-1012	0475450006SA	12-13.4	Hexadecanoic acid, butyl ester	500	NJ	ug/kg	
				Octadecanoic acid, butyl ester	330	NJ	ug/kg	
	CAN074-7413-1464	0475450005SA	4-6	Hexadecanoic acid, butyl ester	660	NJ	ug/kg	
				Octadecanoic acid, butyl ester	360	NJ	ug/kg	
				Saturated Hydrocarbon: >C20	270	NJ	ug/kg	
	CAN074-7414-1006	0475450008SA	6-8	Hexadecanoic acid, butyl ester	230	NJ	ug/kg	
	CAN074-7414-1010	0475450007SA	10-12	Hexadecanoic acid, butyl ester	170	NJ	ug/kg	
	CAN074-7414-1014	0475450009SA	14-16	Hexadecanoic acid, butyl ester	280	NJ	ug/kg	
				Octadecanoic acid, butyl ester	150	NJ	ug/kg	
	CAN074-7415-1008	0475450011SA	8-10	Octadecanoic acid, butyl ester	200	NJ	ug/kg	
	CAN074-7418-1005	0475450013SA	5-7	Hexadecanoic acid, butyl ester	370	NJ	ug/kg	
				Octadecanoic acid, butyl ester	200	NJ	ug/kg	
	CAN074-7418-1009	0475450014SA	9-11	1,3-Propanediol, 2,2-dimethyl-	200	NJ	ug/kg	
	CAN074-7418-1015	0475450015SA	15-17.2	Hexadecanoic acid, butyl ester	320	NJ	ug/kg	
				Octadecanoic acid, butyl ester	190	NJ	ug/kg	
VOC	CAN074-7401-1018	0474710014SA	18-20	1,1,1-Trichloroethane		U	ug/kg	5.8
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.8
				1,1,2-Trichloroethane		U	ug/kg	5.8

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
VOC	CAN074-7401-1018	0474710014SA	18-20	1,1-Dichloroethane		U	ug/kg	5.8
				1,1-Dichloroethene		U	ug/kg	5.8
				1,2-Dichloroethane		U	ug/kg	5.8
				1,2-Dichloroethene (total)		U	ug/kg	5.8
				1,2-Dichloropropane		U	ug/kg	5.8
				2-Butanone (MEK)		U	ug/kg	12
				2-Hexanone		U	ug/kg	12
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	12
				Acetone		U	ug/kg	12
				Benzene		U	ug/kg	5.8
				Bromodichloromethane		U	ug/kg	5.8
				Bromoform		U	ug/kg	5.8
				Bromomethane		U	ug/kg	12
				Carbon disulfide		U	ug/kg	5.8
				Carbon tetrachloride		U	ug/kg	5.8
				Chlorobenzene		U	ug/kg	5.8
				Chloroethane		U	ug/kg	12
				Chloroform		U	ug/kg	5.8
				Chloromethane		U	ug/kg	12
				cis-1,3-Dichloropropene		U	ug/kg	5.8
				Dibromochloromethane		U	ug/kg	5.8
				Ethylbenzene		U	ug/kg	5.8
				Methylene chloride		U	ug/kg	5.8
				Styrene		U	ug/kg	5.8
				Tetrachloroethene		U	ug/kg	5.8
				Toluene		U	ug/kg	5.8
				trans-1,3-Dichloropropene		U	ug/kg	5.8
				Trichloroethene		U	ug/kg	5.8
				Vinyl chloride		U	ug/kg	12
				Xylenes (total)		U	ug/kg	5.8
	CAN074-7402-1018	0475450002SA		1,1,1-Trichloroethane		U	ug/kg	5.7
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.7
				1,1,2-Trichloroethane		U	ug/kg	5.7
				1,1-Dichloroethane		U	ug/kg	5.7
				1,1-Dichloroethene		U	ug/kg	5.7
				1,2-Dichloroethane		U	ug/kg	5.7
				1,2-Dichloroethene (total)		U	ug/kg	5.7
				1,2-Dichloropropane		U	ug/kg	5.7
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	11
				Benzene		U	ug/kg	5.7
				Bromodichloromethane		U	ug/kg	5.7
				Bromoform		U	ug/kg	5.7
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.7
				Carbon tetrachloride		U	ug/kg	5.7
				Chlorobenzene		U	ug/kg	5.7
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.7
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.7
				Dibromochloromethane		U	ug/kg	5.7
				Ethylbenzene		U	ug/kg	5.7
				Methylene chloride		U	ug/kg	5.7

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
VOC	CAN074-7402-1018	0475450002SA	18-20	Styrene		U	ug/kg	5.7
				Tetrachloroethene		U	ug/kg	5.7
				Toluene		U	ug/kg	5.7
				trans-1,3-Dichloropropene		U	ug/kg	5.7
				Trichloroethene		U	ug/kg	5.7
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.7
	CAN074-7403-1018	0475450001SA		1,1,1-Trichloroethane		U	ug/kg	5.5
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.5
				1,1,2-Trichloroethane		U	ug/kg	5.5
				1,1-Dichloroethane		U	ug/kg	5.5
				1,1-Dichloroethene		U	ug/kg	5.5
				1,2-Dichloroethane		U	ug/kg	5.5
				1,2-Dichloroethene (total)		U	ug/kg	5.5
				1,2-Dichloropropane		U	ug/kg	5.5
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	11
				Benzene		U	ug/kg	5.5
				Bromodichloromethane		U	ug/kg	5.5
				Bromoform		U	ug/kg	5.5
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.5
				Carbon tetrachloride		U	ug/kg	5.5
				Chlorobenzene		U	ug/kg	5.5
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.5
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.5
				Dibromochloromethane		U	ug/kg	5.5
				Ethylbenzene		U	ug/kg	5.5
				Methylene chloride		U	ug/kg	5.5
				Styrene		U	ug/kg	5.5
				Tetrachloroethene		U	ug/kg	5.5
				Toluene		U	ug/kg	5.5
				trans-1,3-Dichloropropene		U	ug/kg	5.5
				Trichloroethene		U	ug/kg	5.5
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.5
	CAN074-7404-1018	0474710011SA		1,1,1-Trichloroethane		U	ug/kg	5.4
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.4
				1,1,2-Trichloroethane		U	ug/kg	5.4
				1,1-Dichloroethane		U	ug/kg	5.4
				1,1-Dichloroethene		U	ug/kg	5.4
				1,2-Dichloroethane		U	ug/kg	5.4
				1,2-Dichloroethene (total)		U	ug/kg	5.4
				1,2-Dichloropropane		U	ug/kg	5.4
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	11
				Benzene		U	ug/kg	5.4
				Bromodichloromethane		U	ug/kg	5.4
				Bromoform		U	ug/kg	5.4
				Bromomethane		U	ug/kg	11

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
VOC	CAN074-7404-1018	0474710011SA	18-20	Carbon disulfide		U	ug/kg	5.4
				Carbon tetrachloride		U	ug/kg	5.4
				Chlorobenzene		U	ug/kg	5.4
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.4
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.4
				Dibromochloromethane		U	ug/kg	5.4
				Ethylbenzene		U	ug/kg	5.4
				Methylene chloride		U	ug/kg	5.4
				Styrene		U	ug/kg	5.4
				Tetrachloroethene		U	ug/kg	5.4
				Toluene		U	ug/kg	5.4
				trans-1,3-Dichloropropene		U	ug/kg	5.4
				Trichloroethene		U	ug/kg	5.4
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.4
	CAN074-7405-1018	0474710009SA		1,1,1-Trichloroethane		U	ug/kg	5.6
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.6
				1,1,2-Trichloroethane		U	ug/kg	5.6
				1,1-Dichloroethane		U	ug/kg	5.6
				1,1-Dichloroethene		U	ug/kg	5.6
				1,2-Dichloroethane		U	ug/kg	5.6
				1,2-Dichloroethene (total)		U	ug/kg	5.6
				1,2-Dichloropropane		U	ug/kg	5.6
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	11
				Benzene		U	ug/kg	5.6
				Bromodichloromethane		U	ug/kg	5.6
				Bromoform		U	ug/kg	5.6
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.6
				Carbon tetrachloride		U	ug/kg	5.6
				Chlorobenzene		U	ug/kg	5.6
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.6
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.6
				Dibromochloromethane		U	ug/kg	5.6
				Ethylbenzene		U	ug/kg	5.6
				Methylene chloride		U	ug/kg	5.6
				Styrene		U	ug/kg	5.6
				Tetrachloroethene		U	ug/kg	5.6
				Toluene		U	ug/kg	5.6
				trans-1,3-Dichloropropene		U	ug/kg	5.6
				Trichloroethene		U	ug/kg	5.6
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.6
	CAN074-7405-1463	0474710010SA		1,1,1-Trichloroethane		U	ug/kg	5.6
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.6
				1,1,2-Trichloroethane		U	ug/kg	5.6
				1,1-Dichloroethane		U	ug/kg	5.6
				1,1-Dichloroethene		U	ug/kg	5.6
				1,2-Dichloroethane		U	ug/kg	5.6

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
VOC	CAN074-7405-1463	0474710010SA	18-20	1,2-Dichloroethene (total)		U	ug/kg	5.6
				1,2-Dichloropropane		U	ug/kg	5.6
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	11
				Benzene		U	ug/kg	5.6
				Bromodichloromethane		U	ug/kg	5.6
				Bromoform		U	ug/kg	5.6
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.6
				Carbon tetrachloride		U	ug/kg	5.6
				Chlorobenzene		U	ug/kg	5.6
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.6
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.6
				Dibromochloromethane		U	ug/kg	5.6
				Ethylbenzene		U	ug/kg	5.6
				Methylene chloride		U	ug/kg	5.6
				Styrene		U	ug/kg	5.6
				Tetrachloroethene		U	ug/kg	5.6
				Toluene		U	ug/kg	5.6
				trans-1,3-Dichloropropene		U	ug/kg	5.6
				Trichloroethene		U	ug/kg	5.6
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.6
	CAN074-7406-1018	0474710012SA		1,1,1-Trichloroethane		U	ug/kg	5.4
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.4
				1,1,2-Trichloroethane		U	ug/kg	5.4
				1,1-Dichloroethane		U	ug/kg	5.4
				1,1-Dichloroethene		U	ug/kg	5.4
				1,2-Dichloroethane		U	ug/kg	5.4
				1,2-Dichloroethene (total)		U	ug/kg	5.4
				1,2-Dichloropropane		U	ug/kg	5.4
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	11
				Benzene		U	ug/kg	5.4
				Bromodichloromethane		U	ug/kg	5.4
				Bromoform		U	ug/kg	5.4
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.4
				Carbon tetrachloride		U	ug/kg	5.4
				Chlorobenzene		U	ug/kg	5.4
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.4
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.4
				Dibromochloromethane		U	ug/kg	5.4
				Ethylbenzene		U	ug/kg	5.4
				Methylene chloride		U	ug/kg	5.4
				Styrene		U	ug/kg	5.4
				Tetrachloroethene		U	ug/kg	5.4
				Toluene		U	ug/kg	5.4

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
VOC	CAN074-7406-1018	0474710012SA	18-20	trans-1,3-Dichloropropene		U	ug/kg	5.4
				Trichloroethene		U	ug/kg	5.4
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.4
	CAN074-7407-1018	0474710013SA		1,1,1-Trichloroethane		U	ug/kg	5.6
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.6
				1,1,2-Trichloroethane		U	ug/kg	5.6
				1,1-Dichloroethane		U	ug/kg	5.6
				1,1-Dichloroethene		U	ug/kg	5.6
				1,2-Dichloroethane		U	ug/kg	5.6
				1,2-Dichloroethene (total)		U	ug/kg	5.6
				1,2-Dichloropropane		U	ug/kg	5.6
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	11
				Benzene		U	ug/kg	5.6
				Bromodichloromethane		U	ug/kg	5.6
				Bromoform		U	ug/kg	5.6
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.6
				Carbon tetrachloride		U	ug/kg	5.6
				Chlorobenzene		U	ug/kg	5.6
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.6
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.6
				Dibromochloromethane		U	ug/kg	5.6
				Ethylbenzene		U	ug/kg	5.6
				Methylene chloride		U	ug/kg	5.6
				Styrene		U	ug/kg	5.6
				Tetrachloroethene		U	ug/kg	5.6
				Toluene	9.2		ug/kg	5.6
				trans-1,3-Dichloropropene		U	ug/kg	5.6
				Trichloroethene		U	ug/kg	5.6
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.6
	CAN074-7408-1006	0474710001SA	6-8	1,1,1-Trichloroethane		U	ug/kg	5.5
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.5
				1,1,2-Trichloroethane		U	ug/kg	5.5
				1,1-Dichloroethane		U	ug/kg	5.5
				1,1-Dichloroethene		U	ug/kg	5.5
				1,2-Dichloroethane		U	ug/kg	5.5
				1,2-Dichloroethene (total)		U	ug/kg	5.5
				1,2-Dichloropropane		U	ug/kg	5.5
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	11
				Benzene		U	ug/kg	5.5
				Bromodichloromethane		U	ug/kg	5.5
				Bromoform		U	ug/kg	5.5
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.5
				Carbon tetrachloride		U	ug/kg	5.5
				Chlorobenzene		U	ug/kg	5.5

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
VOC	CAN074-7408-1006	0474710001SA	6-8	Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.5
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.5
				Dibromochloromethane		U	ug/kg	5.5
				Ethylbenzene		U	ug/kg	5.5
				Methylene chloride		U	ug/kg	5.5
				Styrene		U	ug/kg	5.5
				Tetrachloroethene		U	ug/kg	5.5
				Toluene		U	ug/kg	5.5
				trans-1,3-Dichloropropene		U	ug/kg	5.5
				Trichloroethene		U	ug/kg	5.5
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.5
	CAN074-7408-1010	0474710003SA	10-12	1,1,1-Trichloroethane		U	ug/kg	5.5
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.5
				1,1,2-Trichloroethane		U	ug/kg	5.5
				1,1-Dichloroethane		U	ug/kg	5.5
				1,1-Dichloroethene		U	ug/kg	5.5
				1,2-Dichloroethane		U	ug/kg	5.5
				1,2-Dichloroethene (total)		U	ug/kg	5.5
				1,2-Dichloropropane		U	ug/kg	5.5
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	11
				Benzene		U	ug/kg	5.5
				Bromodichloromethane		U	ug/kg	5.5
				Bromoform		U	ug/kg	5.5
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.5
				Carbon tetrachloride		U	ug/kg	5.5
				Chlorobenzene		U	ug/kg	5.5
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.5
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.5
				Dibromochloromethane		U	ug/kg	5.5
				Ethylbenzene		U	ug/kg	5.5
				Methylene chloride		U	ug/kg	5.5
				Styrene		U	ug/kg	5.5
				Tetrachloroethene		U	ug/kg	5.5
				Toluene		U	ug/kg	5.5
				trans-1,3-Dichloropropene		U	ug/kg	5.5
				Trichloroethene		U	ug/kg	5.5
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.5
	CAN074-7408-1014	0474710004SA	14-16	1,1,1-Trichloroethane		U	ug/kg	5.7
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.7
				1,1,2-Trichloroethane		U	ug/kg	5.7
				1,1-Dichloroethane		U	ug/kg	5.7
				1,1-Dichloroethene		U	ug/kg	5.7
				1,2-Dichloroethane		U	ug/kg	5.7
				1,2-Dichloroethene (total)		U	ug/kg	5.7
				1,2-Dichloropropane		U	ug/kg	5.7
				2-Butanone (MEK)		U	ug/kg	11

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
VOC	CAN074-7408-1014	0474710004SA	14-16	2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	11
				Benzene		U	ug/kg	5.7
				Bromodichloromethane		U	ug/kg	5.7
				Bromoform		U	ug/kg	5.7
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.7
				Carbon tetrachloride		U	ug/kg	5.7
				Chlorobenzene		U	ug/kg	5.7
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.7
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.7
				Dibromochloromethane		U	ug/kg	5.7
				Ethylbenzene		U	ug/kg	5.7
				Methylene chloride		U	ug/kg	5.7
				Styrene		U	ug/kg	5.7
				Tetrachloroethene		U	ug/kg	5.7
				Toluene		U	ug/kg	5.7
				trans-1,3-Dichloropropene		U	ug/kg	5.7
				Trichloroethene		U	ug/kg	5.7
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.7
	CAN074-7408-1022	0474710005SA	22-22.75	1,1,1-Trichloroethane		U	ug/kg	5.9
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.9
				1,1,2-Trichloroethane		U	ug/kg	5.9
				1,1-Dichloroethane		U	ug/kg	5.9
				1,1-Dichloroethene		U	ug/kg	5.9
				1,2-Dichloroethane		U	ug/kg	5.9
				1,2-Dichloroethene (total)		U	ug/kg	5.9
				1,2-Dichloropropane		U	ug/kg	5.9
				2-Butanone (MEK)		U	ug/kg	12
				2-Hexanone		U	ug/kg	12
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	12
				Acetone		U	ug/kg	12
				Benzene		U	ug/kg	5.9
				Bromodichloromethane		U	ug/kg	5.9
				Bromoform		U	ug/kg	5.9
				Bromomethane		U	ug/kg	12
				Carbon disulfide		U	ug/kg	5.9
				Carbon tetrachloride		U	ug/kg	5.9
				Chlorobenzene		U	ug/kg	5.9
				Chloroethane		U	ug/kg	12
				Chloroform		U	ug/kg	5.9
				Chloromethane		U	ug/kg	12
				cis-1,3-Dichloropropene		U	ug/kg	5.9
				Dibromochloromethane		U	ug/kg	5.9
				Ethylbenzene		U	ug/kg	5.9
				Methylene chloride		U	ug/kg	5.9
				Styrene		U	ug/kg	5.9
				Tetrachloroethene		U	ug/kg	5.9
				Toluene		U	ug/kg	5.9
				trans-1,3-Dichloropropene		U	ug/kg	5.9
				Trichloroethene		U	ug/kg	5.9
				Vinyl chloride		U	ug/kg	12

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
VOC	CAN074-7408-1022	0474710005SA	22-22.75	Xylenes (total)		U	ug/kg	5.9
	CAN074-7408-1024	0474710006SA	24-25.4	1,1,1-Trichloroethane		U	ug/kg	5.6
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.6
				1,1,2-Trichloroethane		U	ug/kg	5.6
				1,1-Dichloroethane		U	ug/kg	5.6
				1,1-Dichloroethene		U	ug/kg	5.6
				1,2-Dichloroethane		U	ug/kg	5.6
				1,2-Dichloroethene (total)		U	ug/kg	5.6
				1,2-Dichloropropane		U	ug/kg	5.6
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	11
				Benzene		U	ug/kg	5.6
				Bromodichloromethane		U	ug/kg	5.6
				Bromoform		U	ug/kg	5.6
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.6
				Carbon tetrachloride		U	ug/kg	5.6
				Chlorobenzene		U	ug/kg	5.6
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.6
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.6
				Dibromochloromethane		U	ug/kg	5.6
				Ethylbenzene		U	ug/kg	5.6
				Methylene chloride		U	ug/kg	5.6
				Styrene		U	ug/kg	5.6
				Tetrachloroethene		U	ug/kg	5.6
				Toluene		U	ug/kg	5.6
				trans-1,3-Dichloropropene		U	ug/kg	5.6
				Trichloroethene		U	ug/kg	5.6
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.6
	CAN074-7408-1034	0474710007SA	34-36	1,1,1-Trichloroethane		U	ug/kg	5.1
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.1
				1,1,2-Trichloroethane		U	ug/kg	5.1
				1,1-Dichloroethane		U	ug/kg	5.1
				1,1-Dichloroethene		U	ug/kg	5.1
				1,2-Dichloroethane		U	ug/kg	5.1
				1,2-Dichloroethene (total)		U	ug/kg	5.1
				1,2-Dichloropropane		U	ug/kg	5.1
				2-Butanone (MEK)		U	ug/kg	10
				2-Hexanone		U	ug/kg	10
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	10
				Acetone		U	ug/kg	10
				Benzene		U	ug/kg	5.1
				Bromodichloromethane		U	ug/kg	5.1
				Bromoform		U	ug/kg	5.1
				Bromomethane		U	ug/kg	10
				Carbon disulfide		U	ug/kg	5.1
				Carbon tetrachloride		U	ug/kg	5.1
				Chlorobenzene		U	ug/kg	5.1
				Chloroethane		U	ug/kg	10
				Chloroform		U	ug/kg	5.1
				Chloromethane		U	ug/kg	10

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL	UNITS	DL
VOC	CAN074-7408-1034	0474710007SA	34-36	cis-1,3-Dichloropropene		U	ug/kg	5.1
				Dibromochloromethane		U	ug/kg	5.1
				Ethylbenzene		U	ug/kg	5.1
				Methylene chloride		U	ug/kg	5.1
				Styrene		U	ug/kg	5.1
				Tetrachloroethene		U	ug/kg	5.1
				Toluene		U	ug/kg	5.1
				trans-1,3-Dichloropropene		U	ug/kg	5.1
				Trichloroethene		U	ug/kg	5.1
				Vinyl chloride		U	ug/kg	10
				Xylenes (total)		U	ug/kg	5.1
	CAN074-7408-1044	0474710008SA	44-46	1,1,1-Trichloroethane		U	ug/kg	5.1
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.1
				1,1,2-Trichloroethane		U	ug/kg	5.1
				1,1-Dichloroethane		U	ug/kg	5.1
				1,1-Dichloroethene		U	ug/kg	5.1
				1,2-Dichloroethane		U	ug/kg	5.1
				1,2-Dichloroethene (total)		U	ug/kg	5.1
				1,2-Dichloropropane		U	ug/kg	5.1
				2-Butanone (MEK)		U	ug/kg	10
				2-Hexanone		U	ug/kg	10
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	10
				Acetone		U	ug/kg	10
				Benzene		U	ug/kg	5.1
				Bromodichloromethane		U	ug/kg	5.1
				Bromoform		U	ug/kg	5.1
				Bromomethane		U	ug/kg	10
				Carbon disulfide		U	ug/kg	5.1
				Carbon tetrachloride		U	ug/kg	5.1
				Chlorobenzene		U	ug/kg	5.1
				Chloroethane		U	ug/kg	10
				Chloroform		U	ug/kg	5.1
				Chloromethane		U	ug/kg	10
				cis-1,3-Dichloropropene		U	ug/kg	5.1
				Dibromochloromethane		U	ug/kg	5.1
				Ethylbenzene		U	ug/kg	5.1
				Methylene chloride		U	ug/kg	5.1
				Styrene		U	ug/kg	5.1
				Tetrachloroethene		U	ug/kg	5.1
				Toluene		U	ug/kg	5.1
				trans-1,3-Dichloropropene		U	ug/kg	5.1
				Trichloroethene		U	ug/kg	5.1
				Vinyl chloride		U	ug/kg	10
				Xylenes (total)		U	ug/kg	5.1
	CAN074-7408-1462	0474710002SA	6-8	1,1,1-Trichloroethane		U	ug/kg	5.5
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.5
				1,1,2-Trichloroethane		U	ug/kg	5.5
				1,1-Dichloroethane		U	ug/kg	5.5
				1,1-Dichloroethene		U	ug/kg	5.5
				1,2-Dichloroethane		U	ug/kg	5.5
				1,2-Dichloroethene (total)		U	ug/kg	5.5
				1,2-Dichloropropane		U	ug/kg	5.5
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	11

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
VOC	CAN074-7408-1462	0474710002SA	6-8	Benzene		U	ug/kg	5.5
				Bromodichloromethane		U	ug/kg	5.5
				Bromoform		U	ug/kg	5.5
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.5
				Carbon tetrachloride		U	ug/kg	5.5
				Chlorobenzene		U	ug/kg	5.5
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.5
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.5
				Dibromochloromethane		U	ug/kg	5.5
				Ethylbenzene		U	ug/kg	5.5
				Methylene chloride		U	ug/kg	5.5
				Styrene		U	ug/kg	5.5
				Tetrachloroethene		U	ug/kg	5.5
				Toluene		U	ug/kg	5.5
				trans-1,3-Dichloropropene		U	ug/kg	5.5
				Trichloroethene		U	ug/kg	5.5
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.5
	CAN074-7409-1006	0474380009SA		1,1,1-Trichloroethane		U	ug/kg	5.5
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.5
				1,1,2-Trichloroethane		U	ug/kg	5.5
				1,1-Dichloroethane		U	ug/kg	5.5
				1,1-Dichloroethene		U	ug/kg	5.5
				1,2-Dichloroethane		U	ug/kg	5.5
				1,2-Dichloroethene (total)		U	ug/kg	5.5
				1,2-Dichloropropane		U	ug/kg	5.5
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone	4.5	J	ug/kg	11
				Benzene		U	ug/kg	5.5
				Bromodichloromethane		U	ug/kg	5.5
				Bromoform		U	ug/kg	5.5
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.5
				Carbon tetrachloride		U	ug/kg	5.5
				Chlorobenzene		U	ug/kg	5.5
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.5
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.5
				Dibromochloromethane		U	ug/kg	5.5
				Ethylbenzene		U	ug/kg	5.5
				Methylene chloride		U	ug/kg	5.5
				Styrene		U	ug/kg	5.5
				Tetrachloroethene		U	ug/kg	5.5
				Toluene		U	ug/kg	5.5
				trans-1,3-Dichloropropene		U	ug/kg	5.5
				Trichloroethene		U	ug/kg	5.5
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.5
	CAN074-7409-1010	0474380010SA	10-12	1,1,1-Trichloroethane		U	ug/kg	5.5
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.5

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
VOC	CAN074-7409-1010	0474380010SA	10-12	1,1,2-Trichloroethane		U	ug/kg	5.5
				1,1-Dichloroethane		U	ug/kg	5.5
				1,1-Dichloroethene		U	ug/kg	5.5
				1,2-Dichloroethane		U	ug/kg	5.5
				1,2-Dichloroethene (total)		U	ug/kg	5.5
				1,2-Dichloropropane		U	ug/kg	5.5
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone	3.4	J	ug/kg	11
				Benzene		U	ug/kg	5.5
				Bromodichloromethane		U	ug/kg	5.5
				Bromoform		U	ug/kg	5.5
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.5
				Carbon tetrachloride		U	ug/kg	5.5
				Chlorobenzene		U	ug/kg	5.5
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.5
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.5
				Dibromochloromethane		U	ug/kg	5.5
				Ethylbenzene		U	ug/kg	5.5
				Methylene chloride		U	ug/kg	5.5
				Styrene		U	ug/kg	5.5
				Tetrachloroethene		U	ug/kg	5.5
				Toluene		U	ug/kg	5.5
				trans-1,3-Dichloropropene		U	ug/kg	5.5
				Trichloroethene		U	ug/kg	5.5
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.5
	CAN074-7409-1014	0474380011SA	14-16	1,1,1-Trichloroethane		U	ug/kg	5.8
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.8
				1,1,2-Trichloroethane		U	ug/kg	5.8
				1,1-Dichloroethane		U	ug/kg	5.8
				1,1-Dichloroethene		U	ug/kg	5.8
				1,2-Dichloroethane		U	ug/kg	5.8
				1,2-Dichloroethene (total)		U	ug/kg	5.8
				1,2-Dichloropropane		U	ug/kg	5.8
				2-Butanone (MEK)		U	ug/kg	12
				2-Hexanone		U	ug/kg	12
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	12
				Acetone	5.3	J	ug/kg	12
				Benzene		U	ug/kg	5.8
				Bromodichloromethane		U	ug/kg	5.8
				Bromoform		U	ug/kg	5.8
				Bromomethane		U	ug/kg	12
				Carbon disulfide		U	ug/kg	5.8
				Carbon tetrachloride		U	ug/kg	5.8
				Chlorobenzene		U	ug/kg	5.8
				Chloroethane		U	ug/kg	12
				Chloroform		U	ug/kg	5.8
				Chloromethane		U	ug/kg	12
				cis-1,3-Dichloropropene		U	ug/kg	5.8
				Dibromochloromethane		U	ug/kg	5.8
				Ethylbenzene		U	ug/kg	5.8

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
VOC	CAN074-7409-1014	0474380011SA	14-16	Methylene chloride		U	ug/kg	5.8
				Styrene		U	ug/kg	5.8
				Tetrachloroethene		U	ug/kg	5.8
				Toluene		U	ug/kg	5.8
				trans-1,3-Dichloropropene		U	ug/kg	5.8
				Trichloroethene		U	ug/kg	5.8
				Vinyl chloride		U	ug/kg	12
				Xylenes (total)		U	ug/kg	5.8
	CAN074-7409-1020	0474380012SA	20-20.5	1,1,1-Trichloroethane		U	ug/kg	5.6
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.6
				1,1,2-Trichloroethane		U	ug/kg	5.6
				1,1-Dichloroethane		U	ug/kg	5.6
				1,1-Dichloroethene		U	ug/kg	5.6
				1,2-Dichloroethane		U	ug/kg	5.6
				1,2-Dichloroethene (total)		U	ug/kg	5.6
				1,2-Dichloropropane		U	ug/kg	5.6
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	12
				Benzene		U	ug/kg	5.6
				Bromodichloromethane		U	ug/kg	5.6
				Bromoform		U	ug/kg	5.6
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.6
				Carbon tetrachloride		U	ug/kg	5.6
				Chlorobenzene		U	ug/kg	5.6
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.6
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.6
				Dibromochloromethane		U	ug/kg	5.6
				Ethylbenzene		U	ug/kg	5.6
				Methylene chloride	3.8	J	ug/kg	5.6
				Styrene		U	ug/kg	5.6
				Tetrachloroethene		U	ug/kg	5.6
				Toluene		U	ug/kg	5.6
				trans-1,3-Dichloropropene		U	ug/kg	5.6
				Trichloroethene		U	ug/kg	5.6
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.6
	CAN074-7409-1024	0474380013SA	24-24.75	1,1,1-Trichloroethane		U	ug/kg	5.8
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.8
				1,1,2-Trichloroethane		U	ug/kg	5.8
				1,1-Dichloroethane		U	ug/kg	5.8
				1,1-Dichloroethene		U	ug/kg	5.8
				1,2-Dichloroethane		U	ug/kg	5.8
				1,2-Dichloroethene (total)		U	ug/kg	5.8
				1,2-Dichloropropane		U	ug/kg	5.8
				2-Butanone (MEK)		U	ug/kg	12
				2-Hexanone		U	ug/kg	12
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	12
				Acetone		U	ug/kg	12
				Benzene		U	ug/kg	5.8
				Bromodichloromethane		U	ug/kg	5.8
				Bromoform		U	ug/kg	5.8

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
VOC	CAN074-7409-1024	0474380013SA	24-24.75	Bromomethane		U	ug/kg	12
				Carbon disulfide		U	ug/kg	5.8
				Carbon tetrachloride		U	ug/kg	5.8
				Chlorobenzene		U	ug/kg	5.8
				Chloroethane		U	ug/kg	12
				Chloroform		U	ug/kg	5.8
				Chloromethane		U	ug/kg	12
				cis-1,3-Dichloropropene		U	ug/kg	5.8
				Dibromochloromethane		U	ug/kg	5.8
				Ethylbenzene		U	ug/kg	5.8
				Methylene chloride	13		ug/kg	5.8
				Styrene		U	ug/kg	5.8
				Tetrachloroethene		U	ug/kg	5.8
				Toluene		U	ug/kg	5.8
				trans-1,3-Dichloropropene		U	ug/kg	5.8
				Trichloroethene		U	ug/kg	5.8
				Vinyl chloride		U	ug/kg	12
				Xylenes (total)		U	ug/kg	5.8
	CAN074-7409-1034	0474380014SA	34-36	1,1,1-Trichloroethane		U	ug/kg	5.3
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.3
				1,1,2-Trichloroethane		U	ug/kg	5.3
				1,1-Dichloroethane		U	ug/kg	5.3
				1,1-Dichloroethene		U	ug/kg	5.3
				1,2-Dichloroethane		U	ug/kg	5.3
				1,2-Dichloroethene (total)		U	ug/kg	5.3
				1,2-Dichloropropane		U	ug/kg	5.3
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone	4	J	ug/kg	11
				Benzene		U	ug/kg	5.3
				Bromodichloromethane		U	ug/kg	5.3
				Bromoform		U	ug/kg	5.3
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.3
				Carbon tetrachloride		U	ug/kg	5.3
				Chlorobenzene		U	ug/kg	5.3
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.3
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.3
				Dibromochloromethane		U	ug/kg	5.3
				Ethylbenzene		U	ug/kg	5.3
				Methylene chloride		U	ug/kg	5.3
				Styrene		U	ug/kg	5.3
				Tetrachloroethene		U	ug/kg	5.3
				Toluene		U	ug/kg	5.3
				trans-1,3-Dichloropropene		U	ug/kg	5.3
				Trichloroethene		U	ug/kg	5.3
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.3
	CAN074-7409-1044	0474380015SA	44-46	1,1,1-Trichloroethane		U	ug/kg	5.1
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.1
				1,1,2-Trichloroethane		U	ug/kg	5.1
				1,1-Dichloroethane		U	ug/kg	5.1
				1,1-Dichloroethene		U	ug/kg	5.1

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
VOC	CAN074-7409-1044	0474380015SA	44-46	1,2-Dichloroethane		UJ	ug/kg	5.1
				1,2-Dichloroethene (total)		U	ug/kg	5.1
				1,2-Dichloropropane		U	ug/kg	5.1
				2-Butanone (MEK)	1.5	J	ug/kg	10
				2-Hexanone		U	ug/kg	10
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	10
				Acetone		U	ug/kg	10
				Benzene		U	ug/kg	5.1
				Bromodichloromethane		U	ug/kg	5.1
				Bromoform		U	ug/kg	5.1
				Bromomethane		U	ug/kg	10
				Carbon disulfide		U	ug/kg	5.1
				Carbon tetrachloride		U	ug/kg	5.1
				Chlorobenzene		U	ug/kg	5.1
				Chloroethane		U	ug/kg	10
				Chloroform		U	ug/kg	5.1
				Chloromethane		U	ug/kg	10
				cis-1,3-Dichloropropene		U	ug/kg	5.1
				Dibromochloromethane		U	ug/kg	5.1
				Ethylbenzene		U	ug/kg	5.1
				Methylene chloride		U	ug/kg	5.1
				Styrene		U	ug/kg	5.1
				Tetrachloroethene		U	ug/kg	5.1
				Toluene		U	ug/kg	5.1
				trans-1,3-Dichloropropene		U	ug/kg	5.1
				Trichloroethene		U	ug/kg	5.1
				Vinyl chloride		U	ug/kg	10
				Xylenes (total)		U	ug/kg	5.1
	CAN074-7410-1010	0474380001SA	10-12	1,1,1-Trichloroethane		U	ug/kg	5.7
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.7
				1,1,2-Trichloroethane		U	ug/kg	5.7
				1,1-Dichloroethane		U	ug/kg	5.7
				1,1-Dichloroethene		U	ug/kg	5.7
				1,2-Dichloroethane		U	ug/kg	5.7
				1,2-Dichloroethene (total)		U	ug/kg	5.7
				1,2-Dichloropropane		U	ug/kg	5.7
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	11
				Benzene		U	ug/kg	5.7
				Bromodichloromethane		U	ug/kg	5.7
				Bromoform		U	ug/kg	5.7
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.7
				Carbon tetrachloride		U	ug/kg	5.7
				Chlorobenzene		U	ug/kg	5.7
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.7
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.7
				Dibromochloromethane		U	ug/kg	5.7
				Ethylbenzene		U	ug/kg	5.7
				Methylene chloride	2.3	J	ug/kg	5.7
				Styrene		U	ug/kg	5.7
				Tetrachloroethene		U	ug/kg	5.7

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL	UNITS	DL
VOC	CAN074-7410-1010	0474380001SA	10-12	Toluene		U	ug/kg	5.7
				trans-1,3-Dichloropropene		U	ug/kg	5.7
				Trichloroethene		U	ug/kg	5.7
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.7
	CAN074-7410-1016	0474380002SA	16-16.9	1,1,1-Trichloroethane		U	ug/kg	5.4
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.4
				1,1,2-Trichloroethane		U	ug/kg	5.4
				1,1-Dichloroethane		U	ug/kg	5.4
				1,1-Dichloroethene		U	ug/kg	5.4
				1,2-Dichloroethane		U	ug/kg	5.4
				1,2-Dichloroethene (total)		U	ug/kg	5.4
				1,2-Dichloropropane		U	ug/kg	5.4
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	11
				Benzene		U	ug/kg	5.4
				Bromodichloromethane		U	ug/kg	5.4
				Bromoform		U	ug/kg	5.4
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.4
				Carbon tetrachloride		U	ug/kg	5.4
				Chlorobenzene		U	ug/kg	5.4
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.4
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.4
				Dibromochloromethane		U	ug/kg	5.4
				Ethylbenzene		U	ug/kg	5.4
				Methylene chloride	2	J	ug/kg	5.4
				Styrene		U	ug/kg	5.4
				Tetrachloroethene		U	ug/kg	5.4
				Toluene		U	ug/kg	5.4
				trans-1,3-Dichloropropene		U	ug/kg	5.4
				Trichloroethene		U	ug/kg	5.4
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.4
	CAN074-7410-1020	0474380003SA	20-20.9	1,1,1-Trichloroethane		U	ug/kg	5.4
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.4
				1,1,2-Trichloroethane		U	ug/kg	5.4
				1,1-Dichloroethane		U	ug/kg	5.4
				1,1-Dichloroethene		U	ug/kg	5.4
				1,2-Dichloroethane		U	ug/kg	5.4
				1,2-Dichloroethene (total)		U	ug/kg	5.4
				1,2-Dichloropropane		U	ug/kg	5.4
				2-Butanone (MEK)	2.2	J	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	11
				Benzene		U	ug/kg	5.4
				Bromodichloromethane		U	ug/kg	5.4
				Bromoform		U	ug/kg	5.4
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.4
				Carbon tetrachloride		U	ug/kg	5.4

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL	UNITS	DL
VOC	CAN074-7410-1020	0474380003SA	20-20.9	Chlorobenzene		U	ug/kg	5.4
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.4
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.4
				Dibromochloromethane		U	ug/kg	5.4
				Ethylbenzene		U	ug/kg	5.4
				Methylene chloride	1.6	J	ug/kg	5.4
				Styrene		U	ug/kg	5.4
				Tetrachloroethene		U	ug/kg	5.4
				Toluene		U	ug/kg	5.4
				trans-1,3-Dichloropropene		U	ug/kg	5.4
				Trichloroethene		U	ug/kg	5.4
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.4
	CAN074-7410-1024	0474380004SA	24-26	1,1,1-Trichloroethane		U	ug/kg	5.5
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.5
				1,1,2-Trichloroethane		U	ug/kg	5.5
				1,1-Dichloroethane		U	ug/kg	5.5
				1,1-Dichloroethene		U	ug/kg	5.5
				1,2-Dichloroethane		U	ug/kg	5.5
				1,2-Dichloroethene (total)		U	ug/kg	5.5
				1,2-Dichloropropane		U	ug/kg	5.5
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone	11	J	ug/kg	11
				Benzene		U	ug/kg	5.5
				Bromodichloromethane		U	ug/kg	5.5
				Bromoform		U	ug/kg	5.5
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.5
				Carbon tetrachloride		U	ug/kg	5.5
				Chlorobenzene		U	ug/kg	5.5
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.5
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.5
				Dibromochloromethane		U	ug/kg	5.5
				Ethylbenzene		U	ug/kg	5.5
				Methylene chloride		U	ug/kg	5.5
				Styrene		U	ug/kg	5.5
				Tetrachloroethene		U	ug/kg	5.5
				Toluene		U	ug/kg	5.5
				trans-1,3-Dichloropropene		U	ug/kg	5.5
				Trichloroethene		U	ug/kg	5.5
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.5
	CAN074-7410-1032	0474380005SA	32-34	1,1,1-Trichloroethane		U	ug/kg	5.2
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.2
				1,1,2-Trichloroethane		U	ug/kg	5.2
				1,1-Dichloroethane		U	ug/kg	5.2
				1,1-Dichloroethene		U	ug/kg	5.2
				1,2-Dichloroethane		U	ug/kg	5.2
				1,2-Dichloroethene (total)		U	ug/kg	5.2
				1,2-Dichloropropane		U	ug/kg	5.2

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL	UNITS	DL
VOC	CAN074-7410-1032	0474380005SA	32-34	2-Butanone (MEK)		U	ug/kg	10
				2-Hexanone		U	ug/kg	10
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	10
				Acetone	6	J	ug/kg	10
				Benzene		U	ug/kg	5.2
				Bromodichloromethane		U	ug/kg	5.2
				Bromoform		U	ug/kg	5.2
				Bromomethane		U	ug/kg	10
				Carbon disulfide		U	ug/kg	5.2
				Carbon tetrachloride		U	ug/kg	5.2
				Chlorobenzene		U	ug/kg	5.2
				Chloroethane		U	ug/kg	10
				Chloroform		U	ug/kg	5.2
				Chloromethane		U	ug/kg	10
				cis-1,3-Dichloropropene		U	ug/kg	5.2
				Dibromochloromethane		U	ug/kg	5.2
				Ethylbenzene		U	ug/kg	5.2
				Methylene chloride		U	ug/kg	5.2
				Styrene		U	ug/kg	5.2
				Tetrachloroethene		U	ug/kg	5.2
				Toluene		U	ug/kg	5.2
				trans-1,3-Dichloropropene		U	ug/kg	5.2
				Trichloroethene		U	ug/kg	5.2
				Vinyl chloride		U	ug/kg	10
				Xylenes (total)		U	ug/kg	5.2
	CAN074-7410-1038	0474380006SA	38-40	1,1,1-Trichloroethane		U	ug/kg	5.2
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.2
				1,1,2-Trichloroethane		U	ug/kg	5.2
				1,1-Dichloroethane		U	ug/kg	5.2
				1,1-Dichloroethene		U	ug/kg	5.2
				1,2-Dichloroethane		U	ug/kg	5.2
				1,2-Dichloroethene (total)		U	ug/kg	5.2
				1,2-Dichloropropane		U	ug/kg	5.2
				2-Butanone (MEK)		U	ug/kg	10
				2-Hexanone		U	ug/kg	10
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	10
				Acetone	3.4	J	ug/kg	10
				Benzene		U	ug/kg	5.2
				Bromodichloromethane		U	ug/kg	5.2
				Bromoform		U	ug/kg	5.2
				Bromomethane		U	ug/kg	10
				Carbon disulfide		U	ug/kg	5.2
				Carbon tetrachloride		U	ug/kg	5.2
				Chlorobenzene		U	ug/kg	5.2
				Chloroethane		U	ug/kg	10
				Chloroform		U	ug/kg	5.2
				Chloromethane		U	ug/kg	10
				cis-1,3-Dichloropropene		U	ug/kg	5.2
				Dibromochloromethane		U	ug/kg	5.2
				Ethylbenzene		U	ug/kg	5.2
				Methylene chloride		U	ug/kg	5.2
				Styrene		U	ug/kg	5.2
				Tetrachloroethene		U	ug/kg	5.2
				Toluene		U	ug/kg	5.2
				trans-1,3-Dichloropropene		U	ug/kg	5.2
				Trichloroethene		U	ug/kg	5.2

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
VOC	CAN074-7410-1038	0474380006SA	38-40	Vinyl chloride		U	ug/kg	10
				Xylenes (total)		U	ug/kg	5.2
	CAN074-7410-1048	0474380008SA	48-50	1,1,1-Trichloroethane		U	ug/kg	5.6
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.6
				1,1,2-Trichloroethane		U	ug/kg	5.6
				1,1-Dichloroethane		U	ug/kg	5.6
				1,1-Dichloroethene		U	ug/kg	5.6
				1,2-Dichloroethane		U	ug/kg	5.6
				1,2-Dichloroethene (total)		U	ug/kg	5.6
				1,2-Dichloropropane		U	ug/kg	5.6
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone	3.2	J	ug/kg	11
				Benzene		U	ug/kg	5.6
				Bromodichloromethane		U	ug/kg	5.6
				Bromoform		U	ug/kg	5.6
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.6
				Carbon tetrachloride		U	ug/kg	5.6
				Chlorobenzene		U	ug/kg	5.6
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.6
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.6
				Dibromochloromethane		U	ug/kg	5.6
				Ethylbenzene		U	ug/kg	5.6
				Methylene chloride		U	ug/kg	5.6
				Styrene		U	ug/kg	5.6
				Tetrachloroethene		U	ug/kg	5.6
				Toluene		U	ug/kg	5.6
				trans-1,3-Dichloropropene		U	ug/kg	5.6
				Trichloroethene		U	ug/kg	5.6
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.6
	CAN074-7410-1461	0474380007SA	38-40	1,1,1-Trichloroethane		U	ug/kg	5.2
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.2
				1,1,2-Trichloroethane		U	ug/kg	5.2
				1,1-Dichloroethane		U	ug/kg	5.2
				1,1-Dichloroethene		U	ug/kg	5.2
				1,2-Dichloroethane		U	ug/kg	5.2
				1,2-Dichloroethene (total)		U	ug/kg	5.2
				1,2-Dichloropropane		U	ug/kg	5.2
				2-Butanone (MEK)		U	ug/kg	10
				2-Hexanone		U	ug/kg	10
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	10
				Acetone	3.3	J	ug/kg	10
				Benzene		U	ug/kg	5.2
				Bromodichloromethane		U	ug/kg	5.2
				Bromoform		U	ug/kg	5.2
				Bromomethane		U	ug/kg	10
				Carbon disulfide		U	ug/kg	5.2
				Carbon tetrachloride		U	ug/kg	5.2
				Chlorobenzene		U	ug/kg	5.2
				Chloroethane		U	ug/kg	10
				Chloroform		U	ug/kg	5.2

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
VOC	CAN074-7410-1461	0474380007SA	38-40	Chloromethane		U	ug/kg	10
				cis-1,3-Dichloropropene		U	ug/kg	5.2
				Dibromochloromethane		U	ug/kg	5.2
				Ethylbenzene		U	ug/kg	5.2
				Methylene chloride		U	ug/kg	5.2
				Styrene		U	ug/kg	5.2
				Tetrachloroethene		U	ug/kg	5.2
				Toluene		U	ug/kg	5.2
				trans-1,3-Dichloropropene		U	ug/kg	5.2
				Trichloroethene		U	ug/kg	5.2
				Vinyl chloride		U	ug/kg	10
				Xylenes (total)		U	ug/kg	5.2
	CAN074-7413-1004	0475450003SA	4-6	1,1,1-Trichloroethane		U	ug/kg	5.3
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.3
				1,1,2-Trichloroethane		U	ug/kg	5.3
				1,1-Dichloroethane		U	ug/kg	5.3
				1,1-Dichloroethene		U	ug/kg	5.3
				1,2-Dichloroethane		U	ug/kg	5.3
				1,2-Dichloroethene (total)		U	ug/kg	5.3
				1,2-Dichloropropane		U	ug/kg	5.3
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	11
				Benzene		U	ug/kg	5.3
				Bromodichloromethane		U	ug/kg	5.3
				Bromoform		U	ug/kg	5.3
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.3
				Carbon tetrachloride		U	ug/kg	5.3
				Chlorobenzene		U	ug/kg	5.3
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.3
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.3
				Dibromochloromethane		U	ug/kg	5.3
				Ethylbenzene		U	ug/kg	5.3
				Methylene chloride		U	ug/kg	5.3
				Styrene		U	ug/kg	5.3
				Tetrachloroethene		U	ug/kg	5.3
				Toluene		U	ug/kg	5.3
				trans-1,3-Dichloropropene		U	ug/kg	5.3
				Trichloroethene		U	ug/kg	5.3
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.3
	CAN074-7413-1008	0475450004SA	8-10	1,1,1-Trichloroethane		U	ug/kg	5.3
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.3
				1,1,2-Trichloroethane		U	ug/kg	5.3
				1,1-Dichloroethane		U	ug/kg	5.3
				1,1-Dichloroethene		U	ug/kg	5.3
				1,2-Dichloroethane		U	ug/kg	5.3
				1,2-Dichloroethene (total)		U	ug/kg	5.3
				1,2-Dichloropropane		U	ug/kg	5.3
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
VOC	CAN074-7413-1008	0475450004SA	8-10	Acetone		U	ug/kg	11
				Benzene		U	ug/kg	5.3
				Bromodichloromethane		U	ug/kg	5.3
				Bromoform		U	ug/kg	5.3
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.3
				Carbon tetrachloride		U	ug/kg	5.3
				Chlorobenzene		U	ug/kg	5.3
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.3
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.3
				Dibromochloromethane		U	ug/kg	5.3
				Ethylbenzene		U	ug/kg	5.3
				Methylene chloride		U	ug/kg	5.3
				Styrene		U	ug/kg	5.3
				Tetrachloroethene		U	ug/kg	5.3
				Toluene		U	ug/kg	5.3
				trans-1,3-Dichloropropene		U	ug/kg	5.3
				Trichloroethene		U	ug/kg	5.3
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.3
	CAN074-7413-1012	0475450006SA	12-13.4	1,1,1-Trichloroethane		U	ug/kg	5.4
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.4
				1,1,2-Trichloroethane		U	ug/kg	5.4
				1,1-Dichloroethane		U	ug/kg	5.4
				1,1-Dichloroethene		U	ug/kg	5.4
				1,2-Dichloroethane		U	ug/kg	5.4
				1,2-Dichloroethene (total)		U	ug/kg	5.4
				1,2-Dichloropropane		U	ug/kg	5.4
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	11
				Benzene		U	ug/kg	5.4
				Bromodichloromethane		U	ug/kg	5.4
				Bromoform		U	ug/kg	5.4
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.4
				Carbon tetrachloride		U	ug/kg	5.4
				Chlorobenzene		U	ug/kg	5.4
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.4
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.4
				Dibromochloromethane		U	ug/kg	5.4
				Ethylbenzene		U	ug/kg	5.4
				Methylene chloride		U	ug/kg	5.4
				Styrene		U	ug/kg	5.4
				Tetrachloroethene		U	ug/kg	5.4
				Toluene		U	ug/kg	5.4
				trans-1,3-Dichloropropene		U	ug/kg	5.4
				Trichloroethene		U	ug/kg	5.4
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.4
	CAN074-7413-1464	0475450005SA	4-6	1,1,1-Trichloroethane		U	ug/kg	5.3

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
VOC	CAN074-7413-1464	0475450005SA	4-6	1,1,2,2-Tetrachloroethane		U	ug/kg	5.3
				1,1,2-Trichloroethane		U	ug/kg	5.3
				1,1-Dichloroethane		U	ug/kg	5.3
				1,1-Dichloroethene		U	ug/kg	5.3
				1,2-Dichloroethane		U	ug/kg	5.3
				1,2-Dichloroethene (total)		U	ug/kg	5.3
				1,2-Dichloropropane		U	ug/kg	5.3
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	11
				Benzene		U	ug/kg	5.3
				Bromodichloromethane		U	ug/kg	5.3
				Bromoform		U	ug/kg	5.3
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.3
				Carbon tetrachloride		U	ug/kg	5.3
				Chlorobenzene		U	ug/kg	5.3
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.3
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.3
				Dibromochloromethane		U	ug/kg	5.3
				Ethylbenzene		U	ug/kg	5.3
				Methylene chloride		U	ug/kg	5.3
				Styrene		U	ug/kg	5.3
				Tetrachloroethene		U	ug/kg	5.3
				Toluene		U	ug/kg	5.3
				trans-1,3-Dichloropropene		U	ug/kg	5.3
				Trichloroethene		U	ug/kg	5.3
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.3
	CAN074-7414-1006	0475450008SA	6-8	1,1,1-Trichloroethane		U	ug/kg	5.6
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.6
				1,1,2-Trichloroethane		U	ug/kg	5.6
				1,1-Dichloroethane		U	ug/kg	5.6
				1,1-Dichloroethene		U	ug/kg	5.6
				1,2-Dichloroethane		U	ug/kg	5.6
				1,2-Dichloroethene (total)		U	ug/kg	5.6
				1,2-Dichloropropane		U	ug/kg	5.6
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	11
				Benzene		U	ug/kg	5.6
				Bromodichloromethane		U	ug/kg	5.6
				Bromoform		U	ug/kg	5.6
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.6
				Carbon tetrachloride		U	ug/kg	5.6
				Chlorobenzene		U	ug/kg	5.6
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.6
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.6
				Dibromochloromethane		U	ug/kg	5.6

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
VOC	CAN074-7414-1006	0475450008SA	6-8	Ethylbenzene		U	ug/kg	5.6
				Methylene chloride		U	ug/kg	5.6
				Styrene		U	ug/kg	5.6
				Tetrachloroethene		U	ug/kg	5.6
				Toluene		U	ug/kg	5.6
				trans-1,3-Dichloropropene		U	ug/kg	5.6
				Trichloroethene		U	ug/kg	5.6
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.6
	CAN074-7414-1010	0475450007SA	10-12	1,1,1-Trichloroethane		U	ug/kg	5.6
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.6
				1,1,2-Trichloroethane		U	ug/kg	5.6
				1,1-Dichloroethane		U	ug/kg	5.6
				1,1-Dichloroethene		U	ug/kg	5.6
				1,2-Dichloroethane		U	ug/kg	5.6
				1,2-Dichloroethene (total)		U	ug/kg	5.6
				1,2-Dichloropropane		U	ug/kg	5.6
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	11
				Benzene		U	ug/kg	5.6
				Bromodichloromethane		U	ug/kg	5.6
				Bromoform		U	ug/kg	5.6
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.6
				Carbon tetrachloride		U	ug/kg	5.6
				Chlorobenzene		U	ug/kg	5.6
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.6
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.6
				Dibromochloromethane		U	ug/kg	5.6
				Ethylbenzene		U	ug/kg	5.6
				Methylene chloride		U	ug/kg	5.6
				Styrene		U	ug/kg	5.6
				Tetrachloroethene		U	ug/kg	5.6
				Toluene		U	ug/kg	5.6
				trans-1,3-Dichloropropene		U	ug/kg	5.6
				Trichloroethene		U	ug/kg	5.6
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.6
	CAN074-7414-1014	0475450009SA	14-16	1,1,1-Trichloroethane		U	ug/kg	5.6
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.6
				1,1,2-Trichloroethane		U	ug/kg	5.6
				1,1-Dichloroethane		U	ug/kg	5.6
				1,1-Dichloroethene		U	ug/kg	5.6
				1,2-Dichloroethane		U	ug/kg	5.6
				1,2-Dichloroethene (total)		U	ug/kg	5.6
				1,2-Dichloropropane		U	ug/kg	5.6
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	11
				Benzene		U	ug/kg	5.6
				Bromodichloromethane		U	ug/kg	5.6

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
VOC	CAN074-7414-1014	0475450009SA	14-16	Bromoform		U	ug/kg	5.6
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.6
				Carbon tetrachloride		U	ug/kg	5.6
				Chlorobenzene		U	ug/kg	5.6
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.6
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.6
				Dibromochloromethane		U	ug/kg	5.6
				Ethylbenzene		U	ug/kg	5.6
				Methylene chloride		U	ug/kg	5.6
				Styrene		U	ug/kg	5.6
				Tetrachloroethene		U	ug/kg	5.6
				Toluene	1.3	J	ug/kg	5.6
				trans-1,3-Dichloropropene		U	ug/kg	5.6
				Trichloroethene		U	ug/kg	5.6
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.6
	CAN074-7415-1004	0475450010SA	4-6	1,1,1-Trichloroethane		U	ug/kg	5.7
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.7
				1,1,2-Trichloroethane		U	ug/kg	5.7
				1,1-Dichloroethane		U	ug/kg	5.7
				1,1-Dichloroethene		U	ug/kg	5.7
				1,2-Dichloroethane		U	ug/kg	5.7
				1,2-Dichloroethene (total)		U	ug/kg	5.7
				1,2-Dichloropropane		U	ug/kg	5.7
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	11
				Benzene		U	ug/kg	5.7
				Bromodichloromethane		U	ug/kg	5.7
				Bromoform		U	ug/kg	5.7
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.7
				Carbon tetrachloride		U	ug/kg	5.7
				Chlorobenzene		U	ug/kg	5.7
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.7
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.7
				Dibromochloromethane		U	ug/kg	5.7
				Ethylbenzene		U	ug/kg	5.7
				Methylene chloride		U	ug/kg	5.7
				Styrene		U	ug/kg	5.7
				Tetrachloroethene		U	ug/kg	5.7
				Toluene		U	ug/kg	5.7
				trans-1,3-Dichloropropene		U	ug/kg	5.7
				Trichloroethene		U	ug/kg	5.7
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.7
	CAN074-7415-1008	0475450011SA	8-10	1,1,1-Trichloroethane		U	ug/kg	5.5
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.5
				1,1,2-Trichloroethane		U	ug/kg	5.5
				1,1-Dichloroethane		U	ug/kg	5.5

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
VOC	CAN074-7415-1008	0475450011SA	8-10	1,1-Dichloroethene		U	ug/kg	5.5
				1,2-Dichloroethane		U	ug/kg	5.5
				1,2-Dichloroethene (total)		U	ug/kg	5.5
				1,2-Dichloropropane		U	ug/kg	5.5
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	11
				Benzene		U	ug/kg	5.5
				Bromodichloromethane		U	ug/kg	5.5
				Bromoform		U	ug/kg	5.5
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.5
				Carbon tetrachloride		U	ug/kg	5.5
				Chlorobenzene		U	ug/kg	5.5
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.5
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.5
				Dibromochloromethane		U	ug/kg	5.5
				Ethylbenzene		U	ug/kg	5.5
				Methylene chloride		U	ug/kg	5.5
				Styrene		U	ug/kg	5.5
				Tetrachloroethene		U	ug/kg	5.5
				Toluene	1.9	J	ug/kg	5.5
				trans-1,3-Dichloropropene		U	ug/kg	5.5
				Trichloroethene		U	ug/kg	5.5
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.5
	CAN074-7415-1012	0475450012SA	12-14	1,1,1-Trichloroethane		U	ug/kg	5.5
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.5
				1,1,2-Trichloroethane		U	ug/kg	5.5
				1,1-Dichloroethane		U	ug/kg	5.5
				1,1-Dichloroethene		U	ug/kg	5.5
				1,2-Dichloroethane		U	ug/kg	5.5
				1,2-Dichloroethene (total)		U	ug/kg	5.5
				1,2-Dichloropropane		U	ug/kg	5.5
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	11
				Benzene		U	ug/kg	5.5
				Bromodichloromethane		U	ug/kg	5.5
				Bromoform		U	ug/kg	5.5
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.5
				Carbon tetrachloride		U	ug/kg	5.5
				Chlorobenzene		U	ug/kg	5.5
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.5
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.5
				Dibromochloromethane		U	ug/kg	5.5
				Ethylbenzene		U	ug/kg	5.5
				Methylene chloride		U	ug/kg	5.5
				Styrene		U	ug/kg	5.5

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL	UNITS	DL
VOC	CAN074-7415-1012	0475450012SA	12-14	Tetrachloroethene		U	ug/kg	5.5
				Toluene		U	ug/kg	5.5
				trans-1,3-Dichloropropene		U	ug/kg	5.5
				Trichloroethene		U	ug/kg	5.5
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.5
	CAN074-7418-1005	0475450013SA	5-7	1,1,1-Trichloroethane		U	ug/kg	5.3
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.3
				1,1,2-Trichloroethane		U	ug/kg	5.3
				1,1-Dichloroethane		U	ug/kg	5.3
				1,1-Dichloroethene		U	ug/kg	5.3
				1,2-Dichloroethane		U	ug/kg	5.3
				1,2-Dichloroethene (total)		U	ug/kg	5.3
				1,2-Dichloropropane		U	ug/kg	5.3
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	11
				Benzene		U	ug/kg	5.3
				Bromodichloromethane		U	ug/kg	5.3
				Bromoform		U	ug/kg	5.3
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.3
				Carbon tetrachloride		U	ug/kg	5.3
				Chlorobenzene		U	ug/kg	5.3
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.3
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.3
				Dibromochloromethane		U	ug/kg	5.3
				Ethylbenzene		U	ug/kg	5.3
				Methylene chloride		U	ug/kg	5.3
				Styrene		U	ug/kg	5.3
				Tetrachloroethene		U	ug/kg	5.3
				Toluene		U	ug/kg	5.3
				trans-1,3-Dichloropropene		U	ug/kg	5.3
				Trichloroethene		U	ug/kg	5.3
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.3
	CAN074-7418-1009	0475450014SA	9-11	1,1,1-Trichloroethane		U	ug/kg	5.3
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.3
				1,1,2-Trichloroethane		U	ug/kg	5.3
				1,1-Dichloroethane		U	ug/kg	5.3
				1,1-Dichloroethene		U	ug/kg	5.3
				1,2-Dichloroethane		U	ug/kg	5.3
				1,2-Dichloroethene (total)		U	ug/kg	5.3
				1,2-Dichloropropane		U	ug/kg	5.3
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	11
				Benzene		U	ug/kg	5.3
				Bromodichloromethane		U	ug/kg	5.3
				Bromoform		U	ug/kg	5.3
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.3

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
VOC	CAN074-7418-1009	0475450014SA	9-11	Carbon tetrachloride		U	ug/kg	5.3
				Chlorobenzene		U	ug/kg	5.3
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.3
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.3
				Dibromochloromethane		U	ug/kg	5.3
				Ethylbenzene		U	ug/kg	5.3
				Methylene chloride		U	ug/kg	5.3
				Styrene		U	ug/kg	5.3
				Tetrachloroethene		U	ug/kg	5.3
				Toluene		U	ug/kg	5.3
				trans-1,3-Dichloropropene		U	ug/kg	5.3
				Trichloroethene		U	ug/kg	5.3
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.3
	CAN074-7418-1015	0475450015SA	15-17.2	1,1,1-Trichloroethane		U	ug/kg	5.3
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.3
				1,1,2-Trichloroethane		U	ug/kg	5.3
				1,1-Dichloroethane		U	ug/kg	5.3
				1,1-Dichloroethene		U	ug/kg	5.3
				1,2-Dichloroethane		U	ug/kg	5.3
				1,2-Dichloroethene (total)		U	ug/kg	5.3
				1,2-Dichloropropane		U	ug/kg	5.3
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	11
				Benzene		U	ug/kg	5.3
				Bromodichloromethane		U	ug/kg	5.3
				Bromoform		U	ug/kg	5.3
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.3
				Carbon tetrachloride		U	ug/kg	5.3
				Chlorobenzene		U	ug/kg	5.3
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.3
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.3
				Dibromochloromethane		U	ug/kg	5.3
				Ethylbenzene		U	ug/kg	5.3
				Methylene chloride		U	ug/kg	5.3
				Styrene		U	ug/kg	5.3
				Tetrachloroethene		U	ug/kg	5.3
				Toluene		U	ug/kg	5.3
				trans-1,3-Dichloropropene		U	ug/kg	5.3
				Trichloroethene		U	ug/kg	5.3
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.3
	CAN074-7418-1465	0475450016SA		1,1,1-Trichloroethane		U	ug/kg	5.3
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.3
				1,1,2-Trichloroethane		U	ug/kg	5.3
				1,1-Dichloroethane		U	ug/kg	5.3
				1,1-Dichloroethene		U	ug/kg	5.3
				1,2-Dichloroethane		U	ug/kg	5.3
				1,2-Dichloroethene (total)		U	ug/kg	5.3

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL	UNITS	DL
VOC	CAN074-7418-1465	0475450016SA	15-17.2	1,2-Dichloropropane		U	ug/kg	5.3
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	11
				Benzene		U	ug/kg	5.3
				Bromodichloromethane		U	ug/kg	5.3
				Bromoform		U	ug/kg	5.3
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.3
				Carbon tetrachloride		U	ug/kg	5.3
				Chlorobenzene		U	ug/kg	5.3
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.3
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.3
				Dibromochloromethane		U	ug/kg	5.3
				Ethylbenzene		U	ug/kg	5.3
				Methylene chloride		U	ug/kg	5.3
				Styrene		U	ug/kg	5.3
				Tetrachloroethene		U	ug/kg	5.3
				Toluene		U	ug/kg	5.3
				trans-1,3-Dichloropropene		U	ug/kg	5.3
				Trichloroethene		U	ug/kg	5.3
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.3
	CAN074-7423-1004	0476170001SA	4-6	1,1,1-Trichloroethane		U	ug/kg	5.3
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.3
				1,1,2-Trichloroethane		U	ug/kg	5.3
				1,1-Dichloroethane		U	ug/kg	5.3
				1,1-Dichloroethene		U	ug/kg	5.3
				1,2-Dichloroethane		U	ug/kg	5.3
				1,2-Dichloroethene (total)		U	ug/kg	5.3
				1,2-Dichloropropane		U	ug/kg	5.3
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	11
				Benzene		U	ug/kg	5.3
				Bromodichloromethane		U	ug/kg	5.3
				Bromoform		U	ug/kg	5.3
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.3
				Carbon tetrachloride		U	ug/kg	5.3
				Chlorobenzene		U	ug/kg	5.3
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.3
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.3
				Dibromochloromethane		U	ug/kg	5.3
				Ethylbenzene		U	ug/kg	5.3
				Methylene chloride		U	ug/kg	5.3
				Styrene		U	ug/kg	5.3
				Tetrachloroethene		U	ug/kg	5.3
				Toluene		U	ug/kg	5.3
				trans-1,3-Dichloropropene		U	ug/kg	5.3

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
VOC	CAN074-7423-1004	0476170001SA	4-6	Trichloroethene		U	ug/kg	5.3
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.3
	CAN074-7423-1008	0476170002SA	8-10	1,1,1-Trichloroethane		U	ug/kg	5.3
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.3
				1,1,2-Trichloroethane		U	ug/kg	5.3
				1,1-Dichloroethane		U	ug/kg	5.3
				1,1-Dichloroethene		U	ug/kg	5.3
				1,2-Dichloroethane		U	ug/kg	5.3
				1,2-Dichloroethene (total)		U	ug/kg	5.3
				1,2-Dichloropropane		U	ug/kg	5.3
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	11
				Benzene		U	ug/kg	5.3
				Bromodichloromethane		U	ug/kg	5.3
				Bromoform		U	ug/kg	5.3
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.3
				Carbon tetrachloride		U	ug/kg	5.3
				Chlorobenzene		U	ug/kg	5.3
				Chloroethane		U	ug/kg	11
				Chloroform		U	ug/kg	5.3
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.3
				Dibromochloromethane		U	ug/kg	5.3
				Ethylbenzene		U	ug/kg	5.3
				Methylene chloride		U	ug/kg	5.3
				Styrene		U	ug/kg	5.3
				Tetrachloroethene		U	ug/kg	5.3
				Toluene		U	ug/kg	5.3
				trans-1,3-Dichloropropene		U	ug/kg	5.3
				Trichloroethene		U	ug/kg	5.3
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.3
	CAN074-7423-1012	0476170003SA	12-14	1,1,1-Trichloroethane		U	ug/kg	5.3
				1,1,2,2-Tetrachloroethane		U	ug/kg	5.3
				1,1,2-Trichloroethane		U	ug/kg	5.3
				1,1-Dichloroethane		U	ug/kg	5.3
				1,1-Dichloroethene		U	ug/kg	5.3
				1,2-Dichloroethane		U	ug/kg	5.3
				1,2-Dichloroethene (total)		U	ug/kg	5.3
				1,2-Dichloropropane		U	ug/kg	5.3
				2-Butanone (MEK)		U	ug/kg	11
				2-Hexanone		U	ug/kg	11
				4-Methyl-2-pentanone (MIBK)		U	ug/kg	11
				Acetone		U	ug/kg	11
				Benzene		U	ug/kg	5.3
				Bromodichloromethane		U	ug/kg	5.3
				Bromoform		U	ug/kg	5.3
				Bromomethane		U	ug/kg	11
				Carbon disulfide		U	ug/kg	5.3
				Carbon tetrachloride		U	ug/kg	5.3
				Chlorobenzene		U	ug/kg	5.3
				Chloroethane		U	ug/kg	11

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
VOC	CAN074-7423-1012	0476170003SA	12-14	Chloroform		U	ug/kg	5.3
				Chloromethane		U	ug/kg	11
				cis-1,3-Dichloropropene		U	ug/kg	5.3
				Dibromochloromethane		U	ug/kg	5.3
				Ethylbenzene		U	ug/kg	5.3
				Methylene chloride		U	ug/kg	5.3
				Styrene		U	ug/kg	5.3
				Tetrachloroethene		U	ug/kg	5.3
				Toluene		U	ug/kg	5.3
				trans-1,3-Dichloropropene		U	ug/kg	5.3
				Trichloroethene		U	ug/kg	5.3
				Vinyl chloride		U	ug/kg	11
				Xylenes (total)		U	ug/kg	5.3
WET-CHEM	CAN074-7401-1018	0474710014SA	18-20	Cyanide		U	mg/kg	0.58
				Total Organic Carbon		U	mg/kg	2000
				Total Petroleum Hydrocarbons		U	mg/kg	46
	CAN074-7402-1018	0475450002SA		Cyanide		U	mg/kg	0.57
				Total Petroleum Hydrocarbons		U	mg/kg	45.4
	CAN074-7403-1018	0475450001SA		Cyanide		U	mg/kg	0.55
				Total Petroleum Hydrocarbons		U	mg/kg	44.1
	CAN074-7404-1018	0474710011SA		Cyanide		U	mg/kg	0.54
				Total Petroleum Hydrocarbons		U	mg/kg	43.2
	CAN074-7405-1018	0474710009SA		Cyanide		U	mg/kg	0.56
				Total Organic Carbon		U	mg/kg	2000
				Total Petroleum Hydrocarbons		U	mg/kg	44.6
	CAN074-7405-1463	0474710010SA		Cyanide		U	mg/kg	0.56
				Total Organic Carbon		U	mg/kg	2000
				Total Petroleum Hydrocarbons		U	mg/kg	44.5
	CAN074-7406-1018	0474710012SA		Cyanide		U	mg/kg	0.54
				Total Petroleum Hydrocarbons		U	mg/kg	43.2
	CAN074-7407-1018	0474710013SA		Cyanide		U	mg/kg	0.56
				Total Organic Carbon		U	mg/kg	2000
				Total Petroleum Hydrocarbons		U	mg/kg	45.2
	CAN074-7408-1006	0474710001SA	6-8	Cyanide		U	mg/kg	0.55
				Total Petroleum Hydrocarbons	62.9		mg/kg	43.9
	CAN074-7408-1010	0474710003SA	10-12	Cyanide		U	mg/kg	0.55
				Total Petroleum Hydrocarbons	48.6		mg/kg	44.3
	CAN074-7408-1014	0474710004SA	14-16	Cyanide		U	mg/kg	0.57
				Total Petroleum Hydrocarbons	46.9		mg/kg	45.7
	CAN074-7408-1022	0474710005SA	22-22.75	Cyanide		U	mg/kg	0.59
				Total Petroleum Hydrocarbons		U	mg/kg	47
	CAN074-7408-1024	0474710006SA	24-25.4	Cyanide		U	mg/kg	0.56
				Total Petroleum Hydrocarbons		U	mg/kg	44.5
	CAN074-7408-1034	0474710007SA	34-36	Cyanide		U	mg/kg	0.51
				Total Petroleum Hydrocarbons		U	mg/kg	41.2
	CAN074-7408-1044	0474710008SA	44-46	Cyanide		U	mg/kg	0.51
				Total Petroleum Hydrocarbons		U	mg/kg	41.1
	CAN074-7408-1462	0474710002SA	6-8	Cyanide		U	mg/kg	0.55
				Total Petroleum Hydrocarbons		U	mg/kg	44.1
	CAN074-7409-1006	0474380009SA		Cyanide		U	mg/kg	0.55
				Total Petroleum Hydrocarbons		U	mg/kg	44.3
	CAN074-7409-1010	0474380010SA	10-12	Cyanide		U	mg/kg	0.55
				Total Organic Carbon		U	mg/kg	2000
				Total Petroleum Hydrocarbons		U	mg/kg	43.9
	CAN074-7409-1014	0474380011SA	14-16	Cyanide		U	mg/kg	0.58

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
WET-CHEM	CAN074-7409-1014	0474380011SA	14-16	Total Petroleum Hydrocarbons		U	mg/kg	46.2
	CAN074-7409-1020	0474380012SA	20-20.5	Cyanide		U	mg/kg	0.56
				Total Petroleum Hydrocarbons		U	mg/kg	44.9
	CAN074-7409-1024	0474380013SA	24-24.75	Cyanide		U	mg/kg	0.58
				Total Petroleum Hydrocarbons		U	mg/kg	46.1
	CAN074-7409-1034	0474380014SA	34-36	Cyanide		U	mg/kg	0.53
				Total Petroleum Hydrocarbons		U	mg/kg	42.7
	CAN074-7409-1044	0474380015SA	44-46	Cyanide		U	mg/kg	0.51
				Total Petroleum Hydrocarbons		U	mg/kg	41
	CAN074-7410-1010	0474380001SA	10-12	Cyanide		U	mg/kg	0.57
				Total Petroleum Hydrocarbons		U	mg/kg	45.5
	CAN074-7410-1016	0474380002SA	16-16.9	Cyanide		U	mg/kg	0.54
				Total Petroleum Hydrocarbons		U	mg/kg	43.2
	CAN074-7410-1020	0474380003SA	20-20.9	Cyanide		U	mg/kg	0.54
				Total Petroleum Hydrocarbons		U	mg/kg	43
	CAN074-7410-1024	0474380004SA	24-26	Cyanide		U	mg/kg	0.55
				Total Petroleum Hydrocarbons		U	mg/kg	44.3
	CAN074-7410-1032	0474380005SA	32-34	Cyanide		U	mg/kg	0.52
				Total Petroleum Hydrocarbons		U	mg/kg	41.8
	CAN074-7410-1038	0474380006SA	38-40	Cyanide		U	mg/kg	0.52
				Total Organic Carbon		U	mg/kg	2000
				Total Petroleum Hydrocarbons		U	mg/kg	41.4
	CAN074-7410-1048	0474380008SA	48-50	Cyanide		U	mg/kg	0.56
				Total Petroleum Hydrocarbons		U	mg/kg	44.6
	CAN074-7410-1461	0474380007SA	38-40	Cyanide		U	mg/kg	0.52
				Total Organic Carbon		U	mg/kg	2000
				Total Petroleum Hydrocarbons		U	mg/kg	41.3
	CAN074-7413-1004	0475450003SA	4-6	Cyanide		U	mg/kg	0.53
				Total Petroleum Hydrocarbons		U	mg/kg	42.6
	CAN074-7413-1008	0475450004SA	8-10	Cyanide		U	mg/kg	0.53
				Total Petroleum Hydrocarbons		U	mg/kg	42.4
	CAN074-7413-1012	0475450006SA	12-13.4	Cyanide		U	mg/kg	0.54
				Total Petroleum Hydrocarbons		U	mg/kg	43
	CAN074-7413-1464	0475450005SA	4-6	Cyanide		U	mg/kg	0.53
				Total Petroleum Hydrocarbons		U	mg/kg	42.5
	CAN074-7414-1006	0475450008SA	6-8	Cyanide		U	mg/kg	0.56
				Total Petroleum Hydrocarbons		U	mg/kg	44.8
	CAN074-7414-1010	0475450007SA	10-12	Cyanide		U	mg/kg	0.56
				Total Petroleum Hydrocarbons		U	mg/kg	45.1
	CAN074-7414-1014	0475450009SA	14-16	Cyanide		U	mg/kg	0.56
				Total Petroleum Hydrocarbons		U	mg/kg	45.1
	CAN074-7415-1004	0475450010SA	4-6	Cyanide		U	mg/kg	0.57
				Total Petroleum Hydrocarbons		U	mg/kg	45.8
	CAN074-7415-1008	0475450011SA	8-10	Cyanide		U	mg/kg	0.55
				Total Petroleum Hydrocarbons		U	mg/kg	44.3
	CAN074-7415-1012	0475450012SA	12-14	Cyanide		U	mg/kg	0.55
				Total Petroleum Hydrocarbons		U	mg/kg	44
	CAN074-7418-1005	0475450013SA	5-7	Cyanide		U	mg/kg	0.53
				Total Petroleum Hydrocarbons		U	mg/kg	42
	CAN074-7418-1009	0475450014SA	9-11	Cyanide		U	mg/kg	0.53
				Total Petroleum Hydrocarbons		U	mg/kg	42.1
	CAN074-7418-1015	0475450015SA	15-17.2	Cyanide		U	mg/kg	0.53
				Total Petroleum Hydrocarbons			mg/kg	42.2
	CAN074-7418-1465	0475450016SA		Cyanide		U	mg/kg	0.53
				Total Petroleum Hydrocarbons		U	mg/kg	42.3
	CAN074-7423-1004	0476170001SA	4-6	Cyanide		U	mg/kg	0.53

CANNON AFB - Landfill #1
SUMMARY OF RESULTS

CHEM GROUP	Field ID	Lab ID	DEPTH	CHEMICAL	RESULT	QUAL.	UNITS	DL
WET-CHEM	CAN074-7423-1004	0476170001SA	4-6	Total Petroleum Hydrocarbons		U	mg/kg	42.4
	CAN074-7423-1008	0476170002SA	8-10	Cyanide		U	mg/kg	0.53
				Total Petroleum Hydrocarbons		U	mg/kg	42.2
	CAN074-7423-1012	0476170003SA	12-14	Cyanide		U	mg/kg	0.53
				Total Petroleum Hydrocarbons		U	mg/kg	42.3

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303-694-2770

Chain of Custody Record

Data Package 1

PROJECT NO. Cannon AFB LF-1 9|C114LL1

SAMPLERS: (Signature) David K Nicholson

DATE	TIME	SAMPLE NUMBER	List A	VOCs	TOC					NUMBER OF CONTAINERS
2/20	1458	CAN074-7410-1010	x	x				–	01	4
"	1533	CAN074-7410-1016	x	x				–	02	4
"	1553	CAN074-7410-1020	x	x				–	03	4
"	1624	CAN074-7410-1024	x	x				–	04	4
2/21	0808	CAN074-7410-1032	x	x				–	05	4
"	0848	CAN074-7410-1038	x	x	x			–	06	4
"	0848	CAN074-7410-1461	x	x	x			–	07	4
"	1020	CAN074-7410-1048	x	x				–	08	4
"	1516	CAN074-7409-1006	x	x				–	09	4
"	1529	CAN074-7409-1010	x	x	x			–	10	4
"	1546	CAN074-7409-1014	x	x				–	11	4
2/22	0814	CAN074-7409-1020	x	x				–	12	4
"	0855	CAN074-7409-1024	x	x				–	13	4
"	0949	CAN074-7409-1034	x	x				–	14 MS MSD	8
"	~~1046~~ 1050	CAN074-7409-1044	x	x				–	15	4
									TOTAL NUMBER OF CONTAINERS	64

REMARKS (Sample preservation, handling procedures, etc.)

For _____

QOL#47438

Matrix- Soil

All samples stored on ice.

List A =
Semi-vols 8270
Metals (total) 6010/7000
Herbicides 8150
Pests/PCBs 8080
Pet. Hydrocarb. 418.1

MS/MSD sample

This is all of Data Package #1.

Contact Personnel:
Julie Essey
740-3910

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
David K Nicholson	2/22/96 1200			2/27/96 0430	

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
Fedex				

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C-O-C ~~LF-1~~ Q-2

Chain of Custody Record

Data Package #2

PROJECT NO. Cannon AFB LF-1
91C114LL-2C

SAMPLERS: (Signature) David K Nicholson

	DATE	TIME	SAMPLE NUMBER	VOCs 8240	List A							NUMBER OF CONTAINERS
01	2/22	1529	CAN074-7408-1006	X	X							4
02	"	1529	CAN074-7408-1462	X	X							4
03	"	1551	CAN074-7408-1010	X	X							4
04	"	1605	CAN074-7408-1014	X	X							4
05	"	1642	CAN074-7408-1022	X	X							4
06	2/23	0736	CAN074-7408-1024	X	X							4
07	"	0838	CAN074-7408-1034	X	X							4
08	"	0940	CAN074-7408-1044	X	X							4
											TOTAL NUMBER OF CONTAINERS	32

REMARKS (Sample preservation, handling procedures, etc.)

For 8218846156

Matrix- Soil

All samples stored on ice.

List A =
Semi Vols 8270
Total Metals 6010/7000
Pesticides 8150
Pests/PCBs 8080
Pet. Hydrocarbons 418.1

Contact Personnel:
Julie Essig
303 740-3910

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
David K Nicholson	2/23/96 1200	Steve Bruinsma		2/24/96 0800	

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
Fedex				

Cooler temp - 2.0 °C

047471

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C-O-C Q-3

Chain of Custody Record

Data Package 2

PROJECT NO. Cannon AFB LF-1
91C114LL1

SAMPLERS: (Signature) David K Nichols

	DATE	TIME	SAMPLE NUMBER	VOCs	List A	TOC					NUMBER OF CONTAINERS
09	2/23	1515	CAN074-7405-1018	x	x	x					4
10	"	1515	CAN074-7405-1463	x	x	x					4
11	"	1630	CAN074-7404-1018	x	x						4
12	2/24	1625	CAN074-7406-1018	x	x						4
13 3 MS/SD	2/25	0932	CAN074-7407-1018	x	x	x					8
14	"	1107	CAN074-7401-1018	x	x	x					4
										TOTAL NUMBER OF CONTAINERS	28

ANALYSES

REMARKS (Sample preservation, handling procedures, etc.)
Airbill # For 8218846134

Matrix- Soil +

~~[illegible]~~

All samples stored on ice.

MS/MSD Sample

List A =
SVOCs - 8270
Total Metals 6010/7000
Herbicides 8150
Pesticides/PCBs 8080
Pet. Hydrocarbons 418.1

This completes Data Package #2

Contact Personnel:
Julie Essey
303 740-3910

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
David K Nichols	2/26/96 1200				

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
Fedex			K. Zahlibra	2/27/96 0900

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C-O-C Q-4

Chain of Custody Record

PROJECT NO. 91C114LL1-2C
Cannon AFB LF-1

SAMPLERS: (Signature) David K Nichols

For Airbill # 8218846112

DATE	TIME	SAMPLE NUMBER	VOCs	SVOCs	Total Metals/Cyanide	TOC	Herbicides/Pesticides/PCBs	Pot. Methanol		NUMBER OF CONTAINERS	REMARKS (Sample preservation, handling procedures, etc.)
15 2/25	1445	CAW074-7401-1481	X	X	X	X	X	X		13	Matrix- Water
											All samples stored on ice.
											Contact Personnel: Julie Essey 303 740-3910
					TOTAL NUMBER OF CONTAINERS					13	

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
David K Nichols	2/26/96 1200				

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
Fedex			K. Zahlice	2/27/96 0900

Cooler temp. 2-9 °C

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C-O-C Q-S
Chain of Custody Record
Data Package #3

PROJECT NO. 91C114LL-2C
Cannon AFB LF-1

SAMPLERS: (Signature) David K Nichols

DATE	TIME	SAMPLE NUMBER	VOCs	List A						NUMBER OF CONTAINERS
2/26	1205	CAN074-7403-1018	x	x				(-41)		4
"	1415	CAN074-7402-1018	x	x				(-42)		4
2/27	1010	CAN074-7411-1012	x	x						4
"	1010	CAN074-7411-1464	x	x						4
"	1110	CAN074-7412-1013	x	x						4
									TOTAL NUMBER OF CONTAINERS	20

REMARKS (Sample preservation, handling procedures, etc.)
Airbill # For 8218846064

QDL#47545

Matrix- Soil

All samples stored on ice.

List A =
SVOCs 8270
total metals 6010/7000
herbicides 8150
pest/PCBs 8080
Pet. Hydrocarbons 418.1

Contact Personnel:
Julie Essey
303 740-3910

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
David K Nichols	2/27/91 1200				

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
Fedex			Anthony Turner	2/28/91 1#9:5#

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C-O-C Q-6

Chain of Custody Record

Data Package #3

PROJECT NO. 91C114LL1-2C
Cannon AFB LF1

SAMPLERS: (Signature) David R Nichols

REMARKS (Sample preservation, handling procedures, etc.)
Airbill # For 8218846086

SOL # 47545

DATE	TIME	SAMPLE NUMBER	VOCs	List A						NUMBER OF CONTAINERS
2/27	1427	CAN074-7413-1004	x	x					-03	4
"	1440	CAN074-7413-1008	x	x					-04	4
"	1427	CAN074-7413-1464	x	x					-05	4
"	1459	CAN074-7413-1012	x	x					-06	4
"	1624	CAN074-7414-1010	x	x					-07	4
"	1610	CAN074-7414-1006	x	x					-08	4
"	1640	CAN074-7414-1014	x	x					-09	4
2/28	0846	CAN074-7415-1004	x	x					-10	4
"	0905	CAN074-7415-1008	x	x					-11	4
"	0915	CAN074-7415-1012	x	x					-12	4
									TOTAL NUMBER OF CONTAINERS	

Matrix- Soil

All samples stored on ice.

List A =
SVOCs 8270
herbicides 8150
Pest/PCBs 8080
Total Metals 6010/7000
Pet Hydrocarbons 418.1

This completes Data Package # 3

Contact Personnel:
Julie Essey
303 740-3910

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
David Nichols	2/28/96 1200				

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
Fedex			Anthony Turner	2/29/96 0915

2.2°C

Woodward-Clyde Consultants

Stanford Place 3, Suite 1000
Denver, Colorado 80237

4582 South Ulster Street
303-694-2770

C-O-C Q-7

Chain of Custody Record

PROJECT NO. 91C114LL1-2C
Cannon AFB LF-1

SAMPLERS: (Signature) David K Nichols

DATE	TIME	SAMPLE NUMBER	VOCs	List A						NUMBER OF CONTAINERS
2/29	0910	CAN074-7418-1005	x	x				–	13	4
"	0918	CAN074-7418-1009	x	x				–	14	4
"	0940	CAN074-7418-1015	x	x			–	– MS	15 MSD	7
"	0940	CAN074-7418-1465	x	x				–	16	4
		TOTAL NUMBER OF CONTAINERS								19

ANALYSES

REMARKS (Sample preservation, handling procedures, etc.)
Airbill # For 8218846101

QADL# 47545

Matrix- Soil

MS/MSD

All samples stored on ice.

List A =
SVOCs 8270
Total Metals 6010/7000
Herbicides 8150
Pests/PCBs 8080
Pet Hydrocarbs 418.1

Contact Personnel:
Julie Essey
303 740-3910

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
David K Nichols	2/29/90 1200				

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
Fedex			[illegible]	3/1/90 0900

Woodward-Clyde Consultants

Stanford Place 3, Suite 1000
Denver, Colorado 80237

4582 South Ulster Street
303-694-2770

C-O-C Q-8

Chain of Custody Record

Data Package # 4

PROJECT NO. 91C114LL1-2C
Camon AFB LF-1

SAMPLERS: (Signature) David K Nichols

REMARKS (Sample preservation, handling procedures, etc.)
~~Airbill #~~
For

	DATE	TIME	SAMPLE NUMBER	VOCs	List A						NUMBER OF CONTAINERS
01	2/29	1720	CAN074-7423-1004	x	x						4
02	"	1745	CAN074-7423-1008	x	x						4
03	"	1800	CAN074-7423-1012	x	x						4
			TOTAL NUMBER OF CONTAINERS								12

Matrix- Soil

All samples stored on ice.

List A =
SVOCs 8270
total metals 6010/7000
herbicides 8150
Pests/PCBs 8080
Pet Hydrocarbons 418.1

DKN

This completes the project.

Contact Personnel:
Julie Essey
303 740-3910

RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)	RELINQUISHED BY: (Signature)	DATE/TIME	RECEIVED BY: (Signature)
David K Nichols	3/2/96 1000				

METHOD OF SHIPMENT:	SHIPPED BY: (Signature)	COURIER: (Signature)	RECEIVED FOR LAB BY: (Signature)	DATE/TIME
Courier			K Zahlice	3/2/96 1040

APPENDIX E
DATA VALIDATION REPORT

APPENDIX E
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1.0
FULL VALIDATION

This report describes the results of the complete ("full") data validation conducted on data package #047438 which contained results for the following analyses on soil boring samples collected during the RCRA Facility Investigation for Landfill No. 1 in Clovis, New Mexico:

- Volatiles
- Semivolatiles
- Organochlorine pesticides/PCBs
- Chlorinated Herbicides
- Metals and Cyanide
- Total Recoverable Petroleum Hydrocarbons (TRPH)
- Total Organic Carbon (TOC)

The data package was reviewed for adherence to the analytical methods and the Quality Assurance Project Plan (QAPP) requirements. The quality of the analyses was evaluated using applicable guidance from the USEPA Contract Laboratory Program National Functional Guidelines for Organic Data Review (February 1994) and USEPA Contract Laboratory Program National Functional Guidelines for Inorganic Data Review (February 1994). Qualifiers assigned by the data reviewer have been transcribed onto the laboratory reporting forms. Results for the following samples were reported in data package #047438.

Field ID	Lab ID	Comments
CAN074-7410-1010	047438-0001	
CAN074-7410-1016	047438-0002	
CAN074-7410-1020	047438-0003	
CAN074-7410-1024	047438-0004	
CAN074-7410-1032	047438-0005	
CAN074-7410-1038	047438-0006	Field Duplicate
CAN074-7410-1461	047438-0007	Field Duplicate
CAN074-7410-1048	047438-0008	
CAN074-7409-1006	047438-0009	
CAN074-7409-1010	047438-0010	
CAN074-7409-1010	047438-0011	
CAN074-7409-1020	047438-0012	
CAN074-7409-1024	047438-0013	

Field ID	Lab ID	Comments
CAN074-7409-1034	047438-0014	MS/MSD Analysis
CAN074-7409-1044	047438-0015	

All results reported as detected at concentrations below their respective reporting limit have been qualified as estimated and flagged with a "J" qualifier. For some analyses, a few minor differences between the relative percent differences (RPDs) calculated during data review and those reported by the laboratory are noted in the data review narratives. (The RPD is a comparison of results generated by duplicate analyses used to evaluate precision.) These differences are due to the laboratory calculating the RPDs before rounding the percent recoveries and sample results. The laboratory reports the rounded percent recoveries and sample results on the hard copy data sheets which were used by the data reviewer. It is the judgment of the data reviewer that these minor differences do not affect the evaluation of the data quality.

1.1 VOLATILE ORGANIC ANALYSIS

Method 8240, from SW-846, Test Methods for Evaluating Solid Waste (3rd Edition, including Updates I, II and IIA, promulgated September, 1994) was used to analyze for the volatile organic compounds on the Target Analyte List (TAL). These analytes are listed in Table 8-2 of the QAPP. The 8420 analyte list includes additional analytes beyond the TAL analytes, however, results for only the TAL analytes were reported and the data evaluation only considered these analytes.

Overall Assessment - All volatile organic data reported in this data package are considered to be valid (valid results include estimated values), and are considered to be usable for meeting project objectives. The results of the QC samples analyses satisfied the QAPP acceptance criteria for the quality parameters of accuracy, precision, representativeness, and completeness. As all analytical results are considered usable for meeting project objectives, the analytical completeness for the volatile organic data in this data package is 100% which satisfies the completeness goal of 90% specified in the QAPP.

Case Narrative - The case narrative indicated that no problems were encountered during the volatile organics analyses performed on these samples.

Holding Times - Holding times were calculated by subtracting the sampling date for a given sample reported on the COC form from the analysis date reported on the sample result form. The QAPP specifies that samples for volatile organics analyses must be analyzed within 14 days of sample collection. All analyses were performed within holding times limits and no qualification of data on the basis of holding times was necessary.

Instrument Performance (GC/MS Tuning) - The instrument performance summary sheets were reviewed to verify that the ion abundance criteria for bromofluorobenzene specified in the method were met and that the instrument performance check was performed at the beginning of each 12-hour period in which samples or standards were analyzed. The accompanying raw data were reviewed to check that ion abundance calculations reported on the summary form were correct; to see that no transcription errors were made; and to check that the mass assignments were correct.

GC/MS tuning data were complete and in compliance with the above criteria. All values were within acceptance criteria and no qualification of the data was necessary.

Initial Calibration - Two instruments, Instruments H and J, were used to conduct the analysis of samples from this data package. Initial calibration data for the volatile organic TAL analytes were provided for each of the instruments.

Review of the initial calibration summary sheets and of the instrument printouts indicated that the initial calibrations were performed using the proper number (five standards) and concentrations (20, 50, 100, 150, and 200 ppm) of standards.

The relative response factors (RRFs) and percent relative standard deviations (%RSDs) reported on the initial calibration summary reports were evaluated against the following acceptance criteria specified in the Functional Guidelines: initial calibration RRFs must be equal to or greater than 0.050 and the percent relative standard deviation (%RSD) over the RRFs for the five standards must be ≤ 30%. For both initial calibrations (Instrument H and Instrument J), results for all TAL analytes satisfied the RRF and %RSD criteria and data qualification on the basis of the initial calibration was not necessary.

Approximately 10 percent of the RRFs and %RSDs reported on the summary report were recalculated from the instruments printout and no errors in calculation or transcription were found.

Continuing Calibration - Four continuing calibrations were associated with samples from this data package; two associated with each instrument. Review of the continuing calibration summary sheets and of the instrument printouts indicated that the continuing calibrations were performed using the appropriate mid-range standard immediately following the instrument performance check (tuning check).

The continuing calibration relative response factors (RRF) and percent differences (%Ds) between the initial calibration average RRF and the continuing calibration RRF reported on the summary reports were compared to the following acceptance criteria contained in the Functional Guidelines: continuing calibration RRFs must be equal to or greater than 0.050 and the %D must be ≤ 25%. For the continuing calibrations on Instrument H and the continuing calibration of 02/27/96 on Instrument J, the aforementioned evaluation criteria were satisfied for all TAL analytes. For the continuing calibration of 03/07/96 on Instrument J, all RRFs for TAL analytes were greater than 0.050, however, the %D for one analyte was greater than 25%; the percent difference for 1,2-Dichloroethane was 33.9 percent. Consequently, the result for 1,2-Dichloroethane in the only associated sample, CAN074-7409-1044, has been qualified as estimated.

Approximately 10 percent of the RRFs and %Ds reported on the summary report were recalculated from the instruments printout and no errors in recalculation or transcription were found.

Method Blanks - Method blank contamination was evaluated by reviewing the method blank result form(s), the associated raw data, and the QC lot assignment report which details the samples associated with each method blank. Data qualification on the basis of method blank contamination was issued under the following conditions: results for an analyte reported as detected in a sample that was also reported as detected in an associated method blank were qualified as nondetect if 1) the sample concentration was less than five times the blank concentration if the analyte is considered to be a non-common laboratory contaminants, or 2) the sample concentration was less than ten times the blank concentration if the analyte is considered to be a common laboratory contaminant (e.g., methylene chloride, acetone, 2-butanone).

The sample analyses were conducted in four analytical runs, two on each instrument. As such, there are four method blanks associated with the samples reported in this data package. One or two target analytes were reported as detected in each blank. The analytes detected in each blank and the resultant actions are detailed below.

Methylene chloride was reported as detected at a concentration of 2.6 ug/l in the blank run on Instrument H on 03/04/96. Methylene chloride, considered a common laboratory contaminant, was reported as detected in all nine of the associated samples at concentrations less than 10 times the blank concentration. Consequently, the methylene chloride results for all nine samples have been qualified as nondetect at the reporting limit as the reported values were less than the reporting limit. The affected samples are: CAN074-7410-1024, CAN074-7410-1032, CAN074-7410-1038, CAN074-7410-1461, CAN074-7410-1048, CAN074-7409-1006, CAN074-7409-1010, CAN074-7409-1014, and CAN074-7409-1034.

Acetone and 1,1,2,2-Tetrachloroethane were reported as detected at the respective concentrations of 3.5 and 3.0 ug/l in the blank run on Instrument H on 03/07/96. Acetone, considered a common laboratory contaminant, was reported as detected in both of the associated samples at concentrations less than 10 times the blank concentration. Consequently, the acetone results for samples CAN074-7409-1020 and CAN074-7409-1024 have been qualified as nondetect at the reporting limit or reported value if the reported value exceeded the reporting limit. 1,1,2,2-Tetrachloroethane was not reported as detected in either of the associated samples and data qualification for this analyte was not necessary.

Acetone was reported as detected at a concentration of 1.3 ug/l in the blank run on Instrument J on 02/27/96. Acetone, considered a common laboratory contaminant, was reported as detected in all three of the associated samples at concentrations less than 10 times the blank concentration. Consequently, the acetone results for samples CAN074-7410-1010, CAN074-7410-1016 and CAN074-7410-1020 were qualified as nondetect at the reporting limits.

Acetone and methylene chloride were reported as detected in the blank run on Instrument J on 03/07/96 at the respective concentrations of 2.0 and 1.0 ug/l. Acetone and methylene chloride, considered common laboratory contaminants, were reported as detected in the associated sample at concentrations less than 10 times the blank concentration. Consequently, the acetone and

methylene chloride results for sample CAN074-7409-1044 have been qualified as nondetect at the reporting limit as the reported values were less than the reporting limit.

Laboratory Control Samples - Two types of laboratory control samples (LCS) were analyzed and reported: single control samples (SCS) and duplicate control samples (DCS). The SCS sample is a blank sample (the method blank sample) in which the spike compounds are the surrogate compounds. The DCSs are a pair of LCS samples into which the matrix spike compounds are spiked along with the surrogate compounds. An SCS and DCS sample pair were associated with each of the continuing calibrations.

The SCS and DCS results reported on the summary forms were compared to the acceptance criteria contained in Tables 4-3 and 4-2a of the QAPP, respectively. All spike recoveries and all RPDs between the DCS1 and DCS2 results were within the QAPP-specified acceptance limits indicating that acceptable laboratory accuracy and precision were achieved. Data qualification on the basis of laboratory control sample results was not necessary.

The raw data were checked to verify the recoveries reported on the summary forms and approximately 5% of the values were recalculated from the raw data. No calculation or transcription errors were found.

System Monitoring Compound (Surrogate) Spike Recovery - The surrogate recoveries listed on the sample reporting forms were compared to the acceptance criteria contained in Table 4-3 of the QAPP. For all samples, all surrogate recoveries were within the QAPP-specified acceptance limits indicating that acceptable accuracy was achieved with respect to the individual sample analyses. Data qualification on the basis of surrogate recoveries was not necessary.

The raw data were checked to verify the recoveries reported on the sample summary forms and approximately 5% of the values were recalculated from the raw data. No calculation or transcription errors were found.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) - The matrix spike/matrix spike duplicate results reported on the summary form were compared to the acceptance criteria contained in Table 4-4 of the QAPP. All MS and MSD spike recoveries and all RPDs between the MS and MSD results were within the QAPP-specified acceptance limits indicating that project objectives

for accuracy and precision were achieved with respect to the site-specific sample matrix (soils from LF-1). Data qualification on the basis of MS/MSD results was not necessary.

The raw data were checked to verify the recoveries reported on the summary forms and approximately 5% of the values were recalculated from the raw data. No calculation or transcription errors were found.

Internal Standard Performance - To evaluate internal standard performance, the following items were reviewed: the internal standard summary forms provided in the raw data for each sample, the raw sample data for each sample, the raw continuing calibration data, and the run log sheets.

The raw sample data were checked to verify that the internal standard areas and retention times reported on the summary forms were correct. The run-logs and continuing calibration raw data were used to check that the internal standard areas and retention times for samples were compared to the appropriate continuing calibration standard. The data reviewer also checked that allowable internal standard area ranges and retention time windows were calculated properly. The internal standard area counts for samples must not vary by more than a factor of two (-50% to +100%) from the associated 12-hour continuing calibration and the retention time of the internal standards must not vary more than ±30 seconds from the retention time of the associated 12-hour continuing calibration.

For all samples, the internal standard areas and retention times were within the acceptance criteria and data qualification on the basis of internal standard performance was not necessary.

Field Duplicate Results - Collocated field duplicate samples (discrete samples from same interval) were collected to assess field representativeness. Representativeness is the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a point, or an environmental condition. Field duplicate results were evaluated by comparing the results for the sample and its duplicate. The following evaluation criteria contained in the QAPP were used to evaluate the field duplicate results: for analytes where both reported values were >5 times the reporting limit, an RPD between the sample and its duplicate result <50% was considered to be indicative of acceptable representativeness of the sample to the medium sampled, and for analytes where one or both reported values were ≤5 times the reporting limit, a difference between the results within ±2 times the reporting limit

was considered to be indicative of acceptable representativeness of the sample to the medium sampled.

This data package contained one field duplicate sample pair, samples CAN074-7410-1038 and CAN074-7410-1461. Results for all analytes satisfied the applicable criterion and data qualification on the basis of the field duplicate results was not necessary. As the field duplicate results satisfied the QAPP evaluation criteria for field duplicate result agreement, they are considered to be indicative of satisfactory representativeness of the sample to the medium sampled.

Target Compound Identification - Target compound identification is made based on relative retention times (RRTs) and a comparison of sample and standard mass spectra. In order for a target analyte to be positively identified, the following two criteria must be satisfied: 1) the target analyte RRT in the sample must be within ±0.006 RRT units of the target analyte RRT in the associated standard, and 2) the target analyte mass spectrum from the sample must match the target analyte mass spectrum from the standard according to the following three criteria: all ions present in the standard mass spectrum at a relative intensity greater than 10% must be present in the sample spectrum; the relative intensities of these ions must agree within ±20% between the standard and sample spectrum; ions present at greater than 10% in the sample mass spectrum but not present in the standard spectrum must be considered and accounted for.

The raw data for all samples were reviewed and no errors in target compound identification were found.

Target Compound Quantitation - Target compound quantitation was evaluated by examining raw sample quantitation printouts and recalculating positive results. The sample quantitation reports were checked to see that all detected compounds were reported as such and that no detected compounds were overlooked in reporting. In addition, several positive results were recalculated from the raw data to verify that the correct internal standard, quantitation ion, and RRF were used to quantitate the compound, and that the appropriate internal standards, quantitation ions, and RRFs were consistently used for quantitation throughout the analyses. No errors in compound quantitation were identified.

Results reported below the reporting limit were qualified as estimated, denoted by a "J" qualifier.

Tentatively Identified Compounds - The evaluation of the volatile organic tentatively identified compounds (TICs) included an evaluation of the following criteria as described in the USEPA Contract Laboratory National Functional Guidelines for Organic Data Review, February 1994:

- Major ions (i.e., greater than 10% relative intensity) present in the reference spectrum were checked for presence in the sample spectrum. Major ions present in the sample spectrum were also checked for presence or absence in the reference spectrum.

- The relative intensities of the major ions were checked for agreement within ± 20% between the sample and reference spectra.

- Blank chromatograms were examined to verify that TIC peaks present in samples were not present in the blanks.

- The laboratory identification of TICs not present in associated blanks but identified as reagent contaminants, solvent preservatives, aldol condensation products or other common laboratory artifacts/contaminants were reviewed and qualified as unusable (R).

TICs were reported as detected in three samples. All TIC identifications provided by the laboratory are considered to be tentative, denoted by an 'N' data qualifier, and the associated quantity is considered to be an estimated quantity, denoted by a 'J' data qualifier. The identifications are considered to be tentative as the relative retention times for the TICs are not known and the accompanying mass spectral data is not considered to definitively support specific identifications. The values are considered to be estimated values as the true RRF for the TOC is not known and an RRF of 1.0 is assumed for calculations. The results of the TIC review for these samples is presented below.

<u>CAN074-7410-1010</u> - Only one TIC was reported as detected in this sample. The library search matched the sample spectrum with a specific type of siloxane, however, the analyst generalized the library match to siloxane. Although this modification is considered to be acceptable, the identification as a TIC has been rejected because siloxanes are common

laboratory artifacts attributable to column bleed. As the identified compound is a known laboratory contaminant, it can not be considered a TIC.

CAN074-7410-1020 - Three TICs were reported as detected in this sample. Two were identified as siloxanes and the other was identified as ethylenediamine. For the siloxanes, the library search matched the sample spectra with a specific type of siloxane, however, the analyst generalized the library matches to siloxane. Although this modification is considered to be acceptable, the identifications as TICs have been rejected because siloxanes are common laboratory artifacts attributable to column bleed. As the identified compounds are a known laboratory contaminant, they can not be considered TICs. For the other TIC, the sample mass spectrum supports the identification of ethylenediamine, as all ions in the reference spectrum are in the sample spectrum at comparative relative abundances, however, there appears to be a co-eluting compound as the sample spectrum contains many ions not present in the reference spectrum. The possibility of co-elution is supported by the broadness of the TIC peak in the sample chromatogram.

CAN074-7409-1004 - Three TICs were reported as detected in this sample. Two were identified as siloxanes and the other was identified as N-ethyl-N-phenyl formamide. For the siloxanes, the library search matched the sample spectra with a specific type of siloxane, however, the analyst generalized the library matches to siloxane. Although this modification is considered to be acceptable, the identifications as TICs have been rejected because siloxanes are common laboratory artifacts attributable to column bleed. As the identified compounds are a known laboratory contaminant, they can not be considered TICs. For the other TIC, the mass spectral evidence, does not support the identification of N-ethyl-N-phenyl formamide as there are major ions present in the reference spectrum which are barely present in the sample spectrum and there are major ions present in the sample spectrum which are not present in the reference spectrum. The relative ion abundances between the sample and reference spectra are not comparable. Consequently, the data reviewer changed this TIC identification to Unknown Compound.

Completeness - The analytical data package was evaluated for completeness of deliverables against the following criteria:

- Presence of tabulated results of organic compounds identified and quantified and reporting limits for all analytes for all samples.

- Presence of COCs, case narrative detailing the problems in the data package, and analytical results for all required QC sample analyses.

- Raw data system printouts including date of analysis, analyst, parameters analyzed, calibration curve, continuing calibration checks, method blank, sample number, sample duplicate, spike, control sample, spike level, sample preparation/extraction sheets, and run logs.

Data package deliverables were found to be complete.

1.2 SEMIVOLATILE ORGANIC ANALYSIS

Method 8270, from SW-846, Test Methods for Evaluating Solid Waste (3rd Edition, including Updates I, II and IIA, promulgated September, 1994) was used to analyze for the semivolatile organic compounds on the Target Analyte List (TAL). These analytes are listed in Table 8-3 of the QAPP. The 8470 analyte list includes additional analytes beyond the TAL analytes, however, results for only the TAL analytes were reported and the data evaluation only considered these analytes.

Overall Assessment - All semivolatile organic data reported in this data package are considered to be valid (valid results include estimated values), they are therefore considered to be usable for meeting project objectives. The results of the QC samples analyses satisfied the QAPP acceptance criteria for the quality parameters of accuracy, precision, representativeness, and completeness. As all analytical results are considered usable for meeting project objectives, the analytical completeness for the semivolatile organic data in this data package is 100% which satisfies the completeness goal of 90% specified in the QAPP.

Case Narrative - The case narrative indicated that no problems were encountered during the semivolatile organic analyses performed on these samples.

Holding Times - The extraction holding times were calculated by subtracting the collection date for a given sample reported on the COC form from the extraction date listed on the sample results form. The analysis holding times were calculated by subtracting the extraction date from the analysis date; both dates are found on the sample reporting form. The QAPP holding time criteria are that samples must be extracted within 14 days of collection and analyzed within 40 days of extraction. All extractions and analyses were performed within holding times limits and no qualification of data on the basis of holding times was necessary.

Instrument Performance (GC/MS Tuning) - The instrument performance summary sheets were reviewed to verify that the ion abundance criteria for decachlorotriphenylphosphine (DFTPP) specified in the method were met and that the instrument performance check was performed at the beginning of each 12-hour period in which samples or standards were analyzed. The accompanying raw data were reviewed to check that ion abundance calculations reported on the summary form were correct; to see that no transcription errors were made; and to check that the mass assignments were correct.

GC/MS tuning data were complete and in compliance with the above criteria. All values were within acceptance criteria and no qualification of the data was necessary.

Initial Calibration - One instrument, Instrument E, was used to conduct the analysis of samples from this data package. Review of the initial calibration summary sheets and of the instrument printouts indicated that the initial calibrations were performed using the proper number (five standards) and concentrations (20, 50, 80, 120, and 160 ppm) of standards.

The relative response factors (RRFs) and percent relative standard deviations (%RSDs) reported on the initial calibration summary report were evaluated against the following acceptance criteria specified in the Functional Guidelines: initial calibration RRFs must be equal to or greater than 0.050 and the percent relative standard deviation (%RSD) over the RRFs for the five standards must be ≤ 30%. For all TAL analytes, the RRF and %RSD criteria were satisfied and data qualification on the basis of the initial calibration was not necessary.

Approximately 10 percent of the RRFs and %RSDs reported on the summary report were recalculated from the instruments printout and no errors in calculation or transcription were found.

Continuing Calibration - Two continuing calibrations were associated with samples from this data package. Review of the continuing calibration summary sheets and of the instrument printouts indicated that the continuing calibrations were performed using the appropriate mid-range standard immediately following the instrument performance check (tuning check).

The continuing calibration relative response factors (RRF) and percent differences (%Ds) between the initial calibration average RRF and the continuing calibration RRF reported on the summary reports were compared to the following acceptance criteria contained in the Functional Guidelines: continuing calibration RRFs must be equal to or greater than 0.050 and the %D must be ≤ 25%. For both continuing calibrations, the evaluation criteria were satisfied by all TAL analytes and data qualification on the basis of continuing calibration was not necessary.

Approximately 10 percent of the RRFs and %Ds reported on the summary report were recalculated from the instruments printout and no errors in recalculation or transcription were found.

Method Blanks - Method blank contamination was evaluated by reviewing the method blank result form(s), the associated raw data, and the QC lot assignment report which details the samples associated with each method blank. Data qualification on the basis of method blank contamination was issued under the following conditions: results for an analyte reported as detected in a sample that was also reported as detected in an associated method blank were qualified as nondetect if 1) the sample concentration was less than five times the blank concentration if the analyte is considered to be a non-common laboratory contaminants, or 2) the sample concentration was less than ten times the blank concentration if the analyte is considered to be a common laboratory contaminant (e.g. phthalates).

The sample analyses were conducted in one analytical run and as such, there is one method blank associated with the samples reported in this data package. No TAL analytes were reported as detected in the blank sample and data qualification on the basis of the blank results was not necessary.

Laboratory Control Samples - Two types of laboratory control samples (LCS) were analyzed and reported: single control samples (SCS) and duplicate control samples (DCS). The SCS sample is a blank sample (the method blank sample) in which the spike compounds are the surrogate

compounds. The DCSs are a pair of LCS samples into which the matrix spike compounds are spiked along with the surrogate compounds. An SCS and DCS sample pair were associated with the analytical run.

The SCS and DCS results reported on the summary forms were compared to the acceptance criteria contained in Tables 4-3 and 4-2b of the QAPP, respectively. All spike recoveries and all RPDs between the DCS1 and DCS2 results were within the QAPP-specified acceptance limits indicating that acceptable laboratory accuracy and precision were achieved. Data qualification on the basis of laboratory control sample results was not necessary.

The raw data were checked to verify the recoveries reported on the sample summary forms and approximately 5% of the values were recalculated from the raw data. No calculation or transcription errors were found.

System Monitoring Compound (Surrogate) Spike Recovery - The surrogate recoveries listed on the sample reporting forms were compared to the acceptance criteria contained in Table 4-3 of the QAPP. For all samples, all surrogate recoveries were within the QAPP-specified acceptance limits indicating that acceptable accuracy was achieved with respect to the individual sample analyses. Data qualification on the basis of surrogate recoveries was not necessary.

The raw data were checked to verify the recoveries reported on the sample summary forms and approximately 5% of the values were recalculated from the raw data. No calculation or transcription errors were found.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) - The matrix spike/matrix spike duplicate results reported on the summary form were compared to the acceptance criteria contained in Table 4-4 of the QAPP. All MS and MSD spike recoveries and all relative percent differences (RPDs) between the MS and MSD results were within the QAPP-specified acceptance limits indicating that project objectives for accuracy and precision were achieved with respect to the site-specific sample matrix (soils from LF-1). Data qualification on the basis of MS/MSD results was not necessary.

The raw data were checked to verify the recoveries reported on the sample summary forms and approximately 5% of the values were recalculated from the raw data. No calculation or transcription errors were found.

Internal Standard Performance - To evaluate internal standard performance, the following items were reviewed: the internal standard summary forms provided in the raw data for each sample, the raw sample data for each sample, the raw continuing calibration data, and the run log sheets.

The raw sample data were checked to verify that the internal standard areas and retention times reported on the summary forms were correct. The run-logs and continuing calibration raw data were used to check that the internal standard areas and retention times for samples were compared to the appropriate continuing calibration standard. The data reviewer also checked that allowable internal standard area ranges and retention time windows were calculated properly. The internal standard area counts for samples must not vary by more than a factor of two (-50% to +100%) from the associated 12-hour continuing calibration and the retention time of the internal standards must not vary more than ±30 seconds from the retention time of the associated 12-hour continuing calibration.

For all samples, the internal standard areas and retention times were within the acceptance criteria and data qualification on the basis of internal standard performance was not necessary.

Field Duplicate Results - Collocated field duplicate samples (discrete samples from same interval) were collected to assess field representativeness. Representativeness is the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a point, or an environmental condition. Field duplicate results were evaluated by comparing the results for the sample and its duplicate. The following evaluation criteria contained in the QAPP were used to evaluate the field duplicate results: for analytes where both reported values were >5 times the reporting limit, an RPD between the sample and its duplicate result <50% was considered to be indicative of acceptable representativeness of the sample to the medium sampled, and for analytes where one or both reported values were ≤5 times the reporting limit, a difference between the results within ±2 times the reporting limit was considered to be indicative of acceptable representativeness of the sample to the medium sampled.

This data package contained one field duplicate sample pair, samples CAN074-7410-1038 and CAN074-7410-1461. Results for all analytes satisfied the applicable criterion and data qualification on the basis of the field duplicate results was not necessary. As the field duplicate results satisfied the QAPP evaluation criteria for field duplicate result agreement, they are considered to be indicative of satisfactory representativeness of the sample to the medium sampled.

Target Compound Identification - Target compound identification is made based on relative retention times (RRTs) and a comparison of sample and standard mass spectra. In order for a target analyte to be positively identified, the following two criteria must be satisfied: 1) the target analyte RRT in the sample must be within ±0.006 RRT units of the target analyte RRT in the associated standard, and 2) the target analyte mass spectrum from the sample must match the target analyte mass spectrum from the standard according to the following three criteria: all ions present in the standard mass spectrum at a relative intensity greater than 10% <u>must</u> be present in the sample spectrum; the relative intensities of these ions must agree within ±20% between the standard and sample spectrum; ions present at greater than 10% in the <u>sample</u> mass spectrum but not present in the <u>standard</u> spectrum must be considered and accounted for.

The raw data for all samples were reviewed. The identifications of phthalates in two samples are do not meet all three criteria. The mass spectra for bis(2-ethylhexyl)phthalate in sample CAN074-7409-1014 and bis(2-ethylhexyl)phthalate and di-n-octyl-phthalate in sample CAN074-7409-1024 show evidence of a coeluting compound. The sample mass spectra contain the ions present in the reference spectra at acceptable relative abundances, however, the sample spectra also include additional ions that are not present in the reference spectra. These additional ions were not accounted for by the analyst. As the sample spectra contain the ions present in the reference spectra at acceptable relative abundances, it is likely that the identified target analytes are present, however, the additional ions may indicate that another compound is coeluting with the target compound. A coeluting compound would serve to enhance the reported concentration of the target analyte. Consequently, these results have been qualified as estimated values.

Target Compound Quantitation - Target compound quantitation was evaluated by examining raw sample quantitation printouts and recalculating positive results. The sample quantitation reports were checked to see that all detected compounds were reported as such and that no detected compounds were overlooked in reporting. In addition, several positive results were recalculated from the raw data to verify that the correct internal standard, quantitation ion, and

RRF were used to quantitate the compound, and that the appropriate internal standards, quantitation ions, and RRFs were consistently used for quantitation throughout the analyses. No errors in compound quantitation were identified.

Results reported below the reporting limit were qualified as estimated, denoted by a "J" qualifier.

Tentatively Identified Compounds - The evaluation of the semivolatile organic tentatively identified compounds (TICs) included an evaluation of the following criteria as described in the USEPA Contract Laboratory National Functional Guidelines for Organic Data Review, February 1994:

- Major ions (i.e., greater than 10% relative intensity) present in the reference spectrum were checked for presence in the sample spectrum. Major ions present in the sample spectrum were also checked for presence or absence in the reference spectrum.

- The relative intensities of the major ions were checked for agreement within ± 20% between the sample and reference spectra.

- Blank chromatograms were examined to verify that TIC peaks present in samples were not present in the blanks.

- The laboratory identification of TICs not present in associated blanks but identified as reagent contaminants, solvent preservatives, aldol condensation products or other common laboratory artifacts/contaminants were reviewed and qualified as unusable (R).

TICs were reported as detected in three samples. All TIC identifications provided by the laboratory are considered to be tentative, denoted by an "N" data qualifier, and the associated quantity is considered to be an estimated quantity, denoted by a "J" data qualifier. The identifications are considered to be tentative the relative retention times for the TICs are not known and the accompanying mass spectral data is not considered to definitively support specific identifications. The values are considered to be estimated values as the true RRF for

the TOC is not known and an RRF of 1.0 is assumed for calculations. The results of the TIC review for these samples is presented below.

CAN074-7410-1020 - One TIC was reported as detected in this sample. The library search matched the sample spectrum with the butyl ester of octadecanoic acid. The sample mass spectrum supports this identification as all ions in the reference spectrum are in the sample spectrum at comparative relative abundances. No modifications of the identification were considered to be necessary.

CAN074-7409-1010 - One TIC was reported as detected in this sample. The library search matched the sample spectrum with tridecane, however, the analyst modified the identification to a saturated hydrocarbon in the C_{10} - C_{20} range. The sample mass spectrum supports the tridecane identification as all ions in the reference spectrum are in the sample spectrum at comparative relative abundances, however, the data reviewer accepts the analyst's modification as it is a more conservative identification.

CAN074-7409-1014 - One TIC was reported as detected in this sample. The library search matched the sample spectrum with the butyl ester of octadecanoic acid. The sample mass spectrum supports this identification as all ions in the reference spectrum are in the sample spectrum at comparative relative abundances. No modifications of the identification were considered to be necessary.

Completeness - The analytical data package was evaluated for completeness of deliverables against the following criteria:

- Presence of tabulated results of organic compounds identified and quantified and reporting limits for all analytes for all samples.

- Presence of COCs, case narrative detailing the problems in the data package, and analytical results for all required QC sample analyses.

- Raw data system printouts including date of analysis, analyst, parameters analyzed, calibration curve, continuing calibration checks, method blank,

sample number, sample duplicate, spike, control sample, spike level, sample preparation/extraction sheets, and run logs.

Data package deliverables were found to be complete.

1.3 ORGANOCHLORINE PESTICIDES/PCBs ANALYSIS

Method 8080, from SW-846, Test Methods for Evaluating Solid Waste (3rd Edition, including Updates I, II and IIA, promulgated September, 1994) was used to analyze for the pesticides and PCB compounds on the Target Analyte List (TAL). These analytes are listed in Table 8-4 of the QAPP. The 8080 analyte list includes additional analytes beyond the TAL analytes, however, results for only the TAL analytes were reported and the data evaluation only considered these analytes.

Overall Assessment - The pesticide/PCBs data are considered to be usable for meeting project objectives without qualification. All recoveries for laboratory control samples and matrix spike samples and all duplicate analyses satisfied the accuracy and precision QA objectives specified in the QAPP demonstrating that acceptable accuracy and precision were achieved. As such, the analytical completeness for the pesticides/PCBs analyses is 100 percent, satisfying the completeness goal of 90 percent.

Case Narrative - The case narrative indicated that no problems were encountered during the pesticides/PCBs analyses performed on these samples.

Holding Times - The extraction holding times were calculated by subtracting the collection date for a given sample reported on the COC form from the extraction date listed on the sample results form. The analysis holding times were calculated by subtracting the extraction date from the analysis date; both dates are found on the sample reporting form. The QAPP holding time criteria are that samples must be extracted within 14 days of collection and analyzed within 40 days of extraction. All extractions and analyses were performed within holding times limits and no qualification of data on the basis of holding times was necessary.

Initial Calibration - To evaluate the initial calibration, the initial calibration summary sheets and instrument printouts (quantitation reports and chromatograms) were reviewed. The initial

calibration summary sheets indicated that the external standard method of calibration was used. The calibration sequence consisted of analyzing the following standards in the following order: an evaluation mixture to determine the percent breakdown of Endrin and DDT, five concentration levels of a standard containing all of the single component pesticides and alpha- and gamma-chlordane, a technical chlordane standard, a Toxaphene standard, a standard of each Aroclor, and a standard containing the Appendix IX analytes not included in the target analyte list for Method 8080.

The laboratory analyzed the initial calibration data with a $1/x^2$ -weighted linear regression and sample results were calculated from the resultant calibration line. The analyte responses reported on the initial calibration quantitation reports for three analytes on each column were entered into a spreadsheet to verify the initial calibration data reported by the laboratory. For all analytes tested, the correlation coefficients obtained for the $1/x^2$ -weighted linear regressions were greater than 0.995, indicating sufficient linearity. Data qualification on the basis of initial calibration was not considered necessary.

Continuing Calibration - To evaluate continuing calibration, the continuing calibration summary sheets, the sample quantitation reports, and chromatograms were reviewed.

For the first of the four continuing calibration verification analyses, the retention times of all analytes were within ±0.07 minutes of the expected retention times as determined from the mid-concentration level initial calibration standard. For the other three calibration verification analyses, the retention times of all analytes, except the two analytes which coelute on the RTx-5 column, were within ±0.07 minutes of the expected retention times. The coeluting compounds on the RTx-5 column are 4.4'-DDT and Dieldrin and their retention time in the last three continuing calibration verification analyses was within ±0.09 minutes of the expected retention time. According to a GC analyst at Quanterra, the maximum acceptable retention time difference is typically around ±0.07 minutes, however, the retention time differences noted for the coeluting compounds were considered acceptable.

For all four single component calibration verification analyses, the percent differences (%Ds) between the true concentration and the measured concentration results were less than 15 percent, the laboratory acceptance limit which parallels the Method 8080 requirement that the %D between the average calibration factor determined from the initial calibration and the calibration factor

determined by the continuing calibration be less than 15 percent. The spreadsheet used for analyzing the initial calibration data was also used to verify reported concentrations for the continuing calibration analyses. No errors in reported measured concentrations were found (concentrations calculated from the $1/x^2$ -weighted linear regression line). No Aroclors, Toxaphene, or technical chlordane were identified in the samples and as such confirmation standard analyses were not performed. The analytical sequence was reviewed and found to be acceptable.

Method Blank - Method blank contamination was evaluated by reviewing the method blank reporting forms, raw method blank sample data, and QC Lot assignments designated on the preparation logs. A method blank and associated samples share a unique QC Lot number. Results for any analytes reported as detected in samples which was also reported as detected in an associated blank were qualified as nondetect if the sample concentration was less than 5 times the blank concentration.

There was one method blank associated with the preparation and analysis of these samples. No target compounds were detected in the method blank and data qualification was not required.

Laboratory Control Sample (LCS) Analysis - Two types of laboratory control samples (LCS) were analyzed and reported: single control samples (SCS) and duplicate control samples (DCS). The SCS sample is a blank sample (the method blank sample) in which the spike compounds are the surrogate compounds. The DCSs are a pair of LCS samples into which the matrix spike compounds are spiked along with the surrogate compounds. An SCS and DCS sample pair were associated with each of the continuing calibrations.

The SCS and DCS results reported on the summary forms were compared to the acceptance criteria contained in Tables 4-3 and 4-2c of the QAPP, respectively. All spike recoveries and all RPDs between the DCS1 and DCS2 results were within the QAPP-specified acceptance limits indicating that acceptable laboratory accuracy and precision were achieved. Data qualification on the basis of the LCS results was not necessary.

The raw data were checked to verify the recoveries reported on the sample summary forms and approximately 5% of the values were recalculated from the raw data. No calculation or transcription errors were found.

Surrogate Spike Compound Recovery - Three surrogate compounds were spiked into every field and QC sample prior to extraction. The surrogate recoveries listed in the raw data (on the form summarizing the results for both analytical columns) were compared to the surrogate recoveries reported on the sample reporting forms (Form I equivalent) and the spreadsheet used for analyzing the initial calibration data was also used to verify reported surrogate concentrations for several samples. No calculation or transcription errors were found.

The surrogate recoveries listed on the sample reporting forms were compared to the QA objectives specified in Table 4-3 of the QAPP. The recoveries of surrogate compound Dibutylchlorendate in all samples were within the acceptance limits specified by the QAPP. The QAPP did not contain acceptance limits for the other two surrogate compounds, Tetrachloro-m-xylene (TCX) and Decachlorobiphenyl (DCB), however, the recoveries of TCX and DCB in all samples were within the laboratory's acceptance limits which were considered to be sufficiently stringent for generating data which meets project objectives. As all surrogate recoveries were within the QAPP and laboratory's acceptance limits, the attainment of satisfactory accuracy with respect to the individual sample analyses is indicated.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis - The matrix spike/matrix spike duplicate results reported on the summary form were compared to the acceptance criteria contained in Table 4-4 of the QAPP. All MS and MSD spike recoveries and all RPDs between the MS and MSD results were within the QAPP-specified acceptance limits indicating that project objectives for accuracy and precision were achieved with respect to the site-specific sample matrix (soils from LF-1). Data qualification on the basis of MS/MSD results was not necessary.

The raw data were checked to verify the recoveries reported on the sample summary forms and approximately 5% of the values were recalculated from the raw data using the spreadsheet. No calculation or transcription errors were found.

Field Duplicate Results - Collocated field duplicate samples (discrete samples from same interval) were collected to assess field representativeness. Representativeness is the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a point, or an environmental condition. Field duplicate results were evaluated by comparing the results for the sample and its duplicate. The following evaluation criteria

contained in the QAPP were used to evaluate the field duplicate results: for analytes where both reported values were >5 times the reporting limit, an RPD between the sample and its duplicate result <50% was considered to be indicative of acceptable representativeness of the sample to the medium sampled, and for analytes where one or both reported values were ≤5 times the reporting limit, a difference between the results within ±2 times the reporting limit was considered to be indicative of acceptable representativeness of the sample to the medium sampled.

This data package contained one field duplicate sample pair, samples CAN074-7410-1038 and CAN074-7410-1461. Results for all analytes satisfied the applicable criterion and data qualification on the basis of the field duplicate results was not necessary. As the field duplicate results satisfied the QAPP evaluation criteria for field duplicate result agreement, they are considered to be indicative of satisfactory representativeness of the sample to the medium sampled.

Target Compound Identification, Quantitation, and Reporting Limits - A spreadsheet in which the $1/x^2$ -weighted linear regression was applied to the initial calibration data was used to verify reported concentrations. No errors were found in pesticide or PCB identification or quantitation. Retention times for analytes reported as present were within ±0.04 minutes of the expected retention times as determined from the initial calibration. The reporting limits obtained satisfied the requirements of the QAPP. Data qualification on the basis of target compound identification, quantitation, and reporting limits was not necessary.

Completeness of the Data Package - The analytical data package was evaluated for completeness of deliverables against the following criteria;

- Presence of tabulated results of organic compounds identified and quantified and reporting limits for all analytes determined to be not present.

- Presence of COCs, case narrative, and analytical results for all QC analyses including laboratory spikes, matrix spikes, laboratory duplicates, matrix spike duplicates, blanks, and initial calibration and continuing calibration analyses.

- Raw data system printouts (summary forms, quantitation reports, and chromatograms) for all sample and QC sample analyses which include the date of analysis, analyst, parameters analyzed, and spike level.

- Presence of sample preparation/extraction logs, which include the QC samples and their spiking levels, and run logs.

Data package deliverables that did not meet the above criteria were documented and the missing deliverables were obtained from the laboratory.

1.4 CHLORINATED HERBICIDES ANALYSIS

Method 8150, from SW-846, Test Methods for Evaluating Solid Waste (3rd Edition, including Updates I, II and IIA, promulgated September, 1994) was used to analyze for the chlorinated herbicides compounds listed on Table 8-5 of the QAPP.

Overall Assessment - The herbicides data are considered to be usable for meeting project objectives without qualification. All recoveries for laboratory control samples and matrix spike samples and all duplicate analyses satisfied the accuracy and precision QA objectives specified in the QAPP demonstrating that acceptable accuracy and precision were achieved. As such, the analytical completeness for the herbicides analyses is 100 percent, satisfying the completeness goal of 90 percent.

Case Narrative - The case narrative indicated that no problems were encountered during the pesticides/PCBs analyses performed on these samples.

Holding Times - The extraction holding times were calculated by subtracting the collection date for a given sample reported on the COC form from the extraction date listed on the sample results form. The analysis holding times were calculated by subtracting the extraction date from the analysis date; both dates are found on the sample reporting form. The QAPP holding time criteria are that samples must be extracted within 14 days of collection and analyzed within 40 days of extraction. All extractions and analyses were performed within holding times limits and no qualification of data on the basis of holding times was necessary.

Initial Calibration - To evaluate the initial calibration, the initial calibration summary sheets and instrument printouts (quantitation reports and chromatograms) were reviewed. The initial calibration summary sheets indicated that the external standard method of calibration was used for the five point calibration.

The laboratory analyzed the initial calibration data with a $1/x^2$ -weighted linear regression and sample results were calculated from the resultant calibration line. The analyte responses reported on the initial calibration quantitation reports for two analytes on each column were entered into a spreadsheet to verify the initial calibration data reported by the laboratory. For all analytes tested, the correlation coefficients obtained for the $1/x^2$ -weighted linear regressions were greater than 0.995, indicating sufficient linearity. Data qualification on the basis of initial calibration was not considered necessary.

Continuing Calibration - To evaluate continuing calibration, the continuing calibration summary sheets, the sample quantitation reports, and chromatograms were reviewed.

For both continuing calibration verification analyses, the retention times of all analytes were within ±0.02 minutes of the expected retention times as determined from the mid-concentration level initial calibration standard. For both four single component calibration verification analyses, the percent differences (%Ds) between the true concentration and the measured concentration results were less than 15 percent, the laboratory acceptance limit which parallels the Method 8150 requirement that the %D between the average calibration factor determined from the initial calibration and the calibration factor determined by the continuing calibration be less than 15 percent. The spreadsheet used for analyzing the initial calibration data was also used to verify reported concentrations for the continuing calibration analyses. No errors in reported measured concentrations were found (concentrations calculated from the $1/x^2$ -weighted linear regression line). The analytical sequence was reviewed and met method requirements.

Method Blank - Method blank contamination was evaluated by reviewing the method blank reporting forms, raw method blank sample data, and QC Lot assignments designated on the preparation logs. A method blank and associated samples share a unique QC Lot number. Results for any analytes reported as detected in samples which was also reported as detected in an associated blank were qualified as nondetect if the sample concentration was less than 5 times the blank concentration.

There was one method blank associated with the preparation and analysis of these samples. No target compounds were detected in the method blank and data qualification was not required.

Laboratory Control Sample (LCS) Analysis - Two types of laboratory control samples (LCS) were analyzed and reported: single control samples (SCS) and duplicate control samples (DCS). The SCS sample is a blank sample (the method blank sample) in which the spike compounds are the surrogate compounds. The DCSs are a pair of LCS samples into which the matrix spike compounds are spiked along with the surrogate compounds. An SCS and DCS sample pair were associated with each of the continuing calibrations.

The SCS and DCS results reported on the summary forms were compared to the acceptance criteria contained in Tables 4-3 and 4-2d of the QAPP, respectively. All spike recoveries and all RPDs between the DCS1 and DCS2 results were within the QAPP-specified acceptance limits indicating that acceptable laboratory accuracy and precision were achieved. Data qualification on the basis of the LCS results was not necessary.

The raw data were checked to verify the recoveries reported on the sample summary forms and approximately 5% of the values were recalculated from the raw data. No calculation or transcription errors were found.

Surrogate Spike Compound Recovery - One surrogate compound was spiked into every field and QC sample prior to extraction. The surrogate recoveries listed in the raw data (on the form summarizing the results for both analytical columns) were compared to the surrogate recoveries reported on the sample reporting forms (Form I equivalent) and the spreadsheet used for analyzing the initial calibration data was also used to verify reported surrogate concentrations for several samples. No calculation or transcription errors were found.

The surrogate recoveries listed on the sample reporting forms were compared to the QA objectives specified in Table 4-3 of the QAPP. The recoveries of the surrogate compound in all samples were within the acceptance limits specified in the QAPP indicating satisfactory accuracy with respect to the individual sample analyses.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis - The matrix spike/matrix spike duplicate results reported on the summary form were compared to the acceptance criteria contained in Table 4-4 of the QAPP. All MS and MSD spike recoveries and all relative percent differences (RPDs) between the MS and MSD results were within the QAPP-specified acceptance limits indicating that project objectives for accuracy and precision were achieved with respect to the site-specific sample matrix (soils from LF-1). Data qualification on the basis of MS/MSD results was not necessary.

The raw data were checked to verify the recoveries reported on the sample summary forms and approximately 5% of the values were recalculated from the raw data using the spreadsheet. No calculation or transcription errors were found.

Field Duplicate Results - Collocated field duplicate samples (discrete samples from same interval) were collected to assess field representativeness. Representativeness is the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a point, or an environmental condition. Field duplicate results were evaluated by comparing the results for the sample and its duplicate. The following evaluation criteria contained in the QAPP were used to evaluate the field duplicate results: for analytes where both reported values were >5 times the reporting limit, an RPD between the sample and its duplicate result <50% was considered to be indicative of acceptable representativeness of the sample to the medium sampled, and for analytes where one or both reported values were ≤5 times the reporting limit, a difference between the results within ±2 times the reporting limit was considered to be indicative of acceptable representativeness of the sample to the medium sampled.

This data package contained one field duplicate sample pair, samples CAN074-7410-1038 and CAN074-7410-1461. Results for all analytes satisfied the applicable criterion and data qualification on the basis of the field duplicate results was not necessary. As the field duplicate results satisfied the QAPP evaluation criteria for field duplicate result agreement, they are considered to be indicative of satisfactory representativeness of the sample to the medium sampled.

Target Compound Identification, Quantitation, and Reporting Limits - A spreadsheet in which the $1/x^2$ -weighted linear regression was applied to the initial calibration data was used to verify reported concentrations. No errors were found in herbicide identification or quantitation.

Retention times for analytes reported as present were within ±0.02 minutes of the expected retention times as determined from the initial calibration. The reporting limits obtained satisfied the requirements of the QAPP. Data qualification on the basis of target compound identification, quantitation, and reporting limits was not necessary. In addition, chromatographic performance remained satisfactory throughout sample analysis as baselines and peak shapes were satisfactory.

Completeness of the Data Package - The analytical data package was evaluated for completeness of deliverables against the following criteria;

- Presence of tabulated results of organic compounds identified and quantified and reporting limits for all analytes determined to be not present.

- Presence of COCs, case narrative, and analytical results for all QC analyses including laboratory spikes, matrix spikes, laboratory duplicates, matrix spike duplicates, blanks, and initial calibration and continuing calibration analyses.

- Raw data system printouts (summary forms, quantitation reports, and chromatograms) for all sample and QC sample analyses which include the date of analysis, analyst, parameters analyzed, and spike level.

- Presence of sample preparation/extraction logs, which include the QC samples and their spiking levels, and run logs.

Data package deliverables were found to be complete.

1.5 METALS ANALYSIS

Analysis of metals was conducted using methods from SW-846, Test Methods for Evaluating Solid Waste (3rd Edition, including Updates I, II, and IIA, promulgated September, 1994). The list of the metals analyzed and the analytical methods followed are listed below:

Method 6010: Aluminum, Antimony, Barium, Beryllium, Cadmium, Calcium, Chromium, Cobalt, Copper, Iron, Magnesium, Manganese, Nickel, Potassium, Silver, Sodium, Vanadium, and Zinc
Method 7060: Arsenic

Method 7421: Lead
Method 7471: Mercury
Method 7740: Selenium
Method 7841: Thallium

Overall Assessment - All metals data reported in this data package are considered to be valid (valid results include estimated results), they are therefore considered to be usable for meeting project objectives. The QAPP acceptance criteria for quality parameters of precision, representativeness, and completeness were satisfied by the analyses. Some analytical data were estimated due to matrix spike recoveries outside of acceptance limits for aluminum, antimony, and selenium, and for some post-digestion spike recoveries outside of control limits for selenium and thallium. However, as all analytical results are considered usable for meeting project objectives, the analytical completeness for the metals data in this data package is 100% which satisfies the completeness goal of 90% specified in the QAPP.

Case Narrative - The information reported in the case narrative is summarized below.

- Samples CAN074-7410-1016, CAN074-7410-1020, CAN074-7410-1024, CAN074-7409-1006, and CAN074-7409-1020 by Method 6010 were analyzed at a dilution in order to quantitate calcium within the calibration range. For each sample, results for all analytes were reported from the diluted analysis.

- Three samples, CAN074-7410-1016, CAN074-7410-1020, and CAN074-7409-1020, analyzed for lead were diluted and re-analyzed due to matrix interference or concentration of the target analytes exceeding the calibration curve. The reporting limits were raised accordingly.

- The reporting limits for all of the selenium analyses in this data package were elevated due to matrix interferences. Samples CAN074-7410-1010, CAN074-7410-1016, CAN074-7409-1010, CAN074-7409-1020, and CAN074-7409-1024, required dilution and reporting limits were raised accordingly.

- One sample, CAN074-7410-1016, required dilution for arsenic due to matrix interference and the reporting limit was raised accordingly.

- Ten of the fifteen thallium analyses were reported with elevated reporting limits due to matrix interference. Six of the 10 samples, samples CAN074-7410-1016, CAN074-7410-1020, CAN074-7410-1024, CAN074-7409-1006, CAN074-7409-1020, and CAN074-7409-1024, were diluted and re-analyzed.

- The matrix spike recoveries for aluminum, antimony, and selenium were outside of the acceptance limits due to matrix interference.

Holding Times - Analysis holding times were calculated by subtracting the sample analysis dates found on the run logs from the sample collection dates found on the COCs. All samples were analyzed within the holding time criteria specified by Table 5-1 in the QAPP. All analyses were performed within holding times and data qualification on the basis of holding times was not necessary.

Initial Calibration - Evaluation of initial calibration involved examination of the raw data generated by the individual instruments and laboratory bench sheets, if used, for the specific analyses. For the inductively-coupled plasma atomic emission spectroscopy analysis, the table of True Values for Calibration and QC Check Samples (Metals) was used to evaluate whether the results reported on the raw data printouts met method acceptance criteria. For the atomic absorption analyses, a linear regression was performed on the initial calibration data.

Inductively-Coupled Plasma (ICP) Atomic Emission Spectroscopy - One analytical sequence/run was conducted for the ICP metals determinations. The ICP instrument was calibrated with a blank and two standards. The initial calibration was followed by analysis of a standard with analyte concentrations two times the concentrations in the initial calibration verification standard. Analyte recoveries for this standard were within 95 to 105 percent of true values. The initial calibration performed satisfied the method's initial calibration requirements.

Graphite Furnace Atomic Absorption (GFAA) - The GFAA analytical technique was used to analyze for arsenic, lead, selenium, and thallium. For each analyte, a blank and three standards were used to generate the analytical curves. The linear regression correlation coefficients were greater than 0.995, the acceptance limit specified in the Functional Guidelines, indicating sufficient linearity of instrument response. Following the initial calibration and prior to the initial calibration

verification, a standard containing analytes at concentrations near the detection limit was analyzed. Recoveries were between 90 and 110 percent. The initial calibrations performed satisfy the method's requirements for initial calibration.

Cold Vapor Atomic Absorption - A blank and four standards were used to generate the analytical curve. The linear regression correlation coefficient calculated by the reviewer was greater than 0.995, the method evaluation criterion for determining acceptable linearity of instrument response. The initial calibration performed satisfies the method's initial calibration requirements.

Initial and Continuing Calibration Verification - Evaluation of initial and continuing calibration (ICV and CCV) verification involved examination of the raw data generated by the individual instruments and laboratory bench sheets, if used, for the specific analyses. For the inductively-coupled plasma atomic emission spectroscopy analysis, the table of True Values for Calibration and QC Check Samples (Metals) was used to evaluate whether the results reported on the raw data printouts met method acceptance criteria. For the atomic absorption analyses, the concentration of the ICV and CCV samples were evaluated using the raw data and the table of True Values for Calibration and QC Check Samples (Metals) to establish whether the results reported on the raw data printouts met method acceptance criteria.

Inductively-Coupled Plasma (ICP) Atomic Emission Spectroscopy - The analytical sequence was preceded by an initial calibration verification standard and continuing calibration verification standards were run after every 10 samples. As there were no forms summarizing the calibration data, the data reviewer used the raw data printouts and the table of True Values for Calibration and QC Samples provided by the laboratory to calculate the percent recovery of each analyte in each calibration verification standard. All recoveries were within 90 to 110 percent, the acceptance limits specified in the Functional Guidelines. The calibration verification analyses satisfied the method requirements for ongoing calibration.

Graphite Furnace Atomic Absorption (GFAA) - The analytical sequence was preceded by an initial calibration verification standard and continuing calibration verification standards were run after every 10 samples. The data reviewer verified that the information reported on the laboratory benchsheets (summary forms) agreed with the raw data printouts. The true values reported at the top of the benchsheets were used to verify reported recoveries for calibration verification analyses. All recoveries were within 90 to 110 percent, the acceptance limits specified in the Functional

Guidelines. No transcription or calculation errors were found. The calibration verifications performed satisfied method requirements for ongoing calibration.

Cold Vapor Atomic Absorption - The analytical sequence was preceded by an initial calibration verification standard and a continuing calibration verification standard was run after every 10 samples. The data reviewer compared the raw data system printouts with the benchsheets and no discrepancies were found. The table of True Values for Calibration and QC Samples provided by the laboratory was used to verify that the percent recoveries reported on the benchsheets by the laboratory were correct. All recoveries were within 80 to 120 percent, the acceptance limits specified in the Functional Guidelines. No transcription or calculation errors were found. The calibration verifications performed satisfied method requirements for ongoing calibration.

Blanks - Method blank contamination was evaluated by reviewing the method blank reporting forms, raw method blank sample data, and QC Lot assignments designated on the preparation logs. A method blank and associated samples share a unique QC Lot number. Results for any analytes reported as detected in samples which were also reported as detected in an associated blank were qualified as nondetect if the sample concentration was less than 5 times the blank concentration.

Preparation blanks (method/reagent blanks) were prepared and at least one preparation blank was associated with the samples in this data package. A calibration blank was analyzed following all calibration verification analyses. The raw data were used to verify that the results reported on the method blank reporting forms were correct. No errors in reporting were found. The raw data for the continuing calibration blanks were examined and results were compared to the method blank reporting limits to determine if analytes were present in the calibration blanks at detectable levels. No target analytes were reported as detected in the calibration blanks or preparation blanks, and no negative results were greater than 2x the absolute value of the reporting limit. As no target compounds were reported as detected and there was no significant potential for reporting of the sample results with a negative bias, no qualification of data was necessary.

Inductively-Coupled Plasma (ICP) Interference Check Sample (ICS) - Results reported in the raw data system printouts were compared to the true values presented in the table of True Values for Calibration and QC Check Samples provided by the laboratory.

Recoveries for analytes present in ICS solutions A and AB, for both the initial and final analyses, were within ± 20 percent, the acceptance limit specified by the Functional Guidelines. Data qualification on the basis of the ICP ICS results was not considered to be necessary as no field samples contained concentrations of interfering analytes at the concentrations present in the ICS solutions and the ICS results did not indicate the presence of interference problems.

Laboratory Control Sample Analysis (LCS) - The laboratory prepared duplicate laboratory control samples (DCSs). A DCS is the preparation of two identical but individual LCSs which are prepared and analyzed with a batch of samples and the results compared so that laboratory precision, as well as laboratory accuracy, can be assessed.

Laboratory control sample analyses were evaluated by reviewing the DCS reporting forms, raw DCS sample data, and QC Lot assignments designated on the preparation logs. A DCS sample pair and its associated samples share a unique QC Lot number.

The raw data were reviewed to verify that the results reported on the DCS laboratory control sample reporting forms were correct. No errors in reporting were found. The recovery of all analytes and the calculated relative percent difference for the DCS samples were within the QAPP-specified acceptance limits specified by Table 4-5 in the QAPP indicating that project objectives for laboratory accuracy and precision with respect to method performance on the general sample matrix (soil) were achieved.

Duplicate Sample Analysis - Duplicate sample analyses are performed in order to assess analytical precision. A duplicate sample analysis was performed with additional portions of sample CAN074-7409-1034, reported in this data package. These QC analyses are associated with samples reported in this data package.

Duplicate sample analyses were evaluated by reviewing the duplicate sample reporting forms and raw sample data. No transcription errors between the raw data and reporting forms were found and no calculation errors of RPD were found. The duplicate sample analysis evaluation criteria applied are as follows: if both the original and duplicate sample results were greater than or equal to 5 times the reporting limit, satisfactory analytical precision was demonstrated if the RPD between the duplicate results was less than or equal to 20 percent, the acceptance limit presented by Table 4-5 in the QAPP, and if the original or duplicate sample result was less than 5 times the

reporting limit, satisfactory analytical precision was demonstrated if the results agreed within 2 times the reporting limit.

The acceptance criteria above were satisfied by all analytes for the duplicate sample analysis and no qualification of data was necessary.

Spike Sample Analysis - Matrix spike analyses are performed in order to assess analytical accuracy with respect to the general sample matrix (e.g., soil samples from LF-1). A matrix spike sample analysis was performed with additional portions of sample CAN074-7409-1034. This QC analysis is associated with samples reported in this data package.

Matrix spike sample analysis was evaluated by reviewing the matrix spike sample reporting forms and raw sample data. No transcription errors between the raw data and reporting forms were found and no calculation errors of spike recoveries were found. Appropriate matrix spike levels were used for the matrix spike analysis. Matrix spike recoveries were compared to the acceptance limits presented by Table 4-5 in the QAPP and the acceptance criteria above were satisfied by all analytes for the spike sample analysis, with the exception of aluminum, antimony, and selenium. The spike recoveries for antimony and selenium were below the 80% - 120% acceptance range, at 54% and 52%, respectively. Therefore, as there may be the potential for a low bias in the associated results, all of the antimony and selenium sample results for this data package have been qualified as estimated and flagged `J'. For aluminum the spike recovery was above the acceptance range at 383%, and as there may be the potential for a high bias to the reporting of results, all positive associated sample results have been qualified as estimated, and flagged `J'. All aluminum results in this data package were reported as detects, and therefore all the aluminum results have been qualified as estimated.

Graphite Furnace Atomic Absorption (GFAA) QC - Arsenic, selenium, thallium, and lead results were obtained by the Graphite Furnace Atomic Absorption analytical technique. The raw data and benchsheets (summary sheets) were reviewed to evaluate the GFAA QC procedures.

All GFAA results reported were within the calibration range. Each sample was injected once. Post digestion spikes were performed on all samples immediately following analysis of the unspiked sample. As discussed below, some post-digestion spike recoveries were reported outside the 85-115 percent acceptance range for each of the metals analyzed by GFAA.

Three samples analyzed for lead were diluted and re-analyzed due to matrix interference or concentration of the target analyte exceeding the calibration curve. The initial post-digestion spikes for samples CAN074-7410-1016 and CAN074-7410-1020 were below 40% recovery, and the samples were diluted and re-analyzed. The initial analysis for sample CAN074-7409-1020 had a lead concentration which exceeded the calibration curve and the sample was diluted and re-analyzed. The post-digestion spike recoveries for the diluted analyses were within acceptance limits, and no qualification of the sample results was necessary. The reporting limits were raised accordingly.

All the post-digestion spikes for the initial selenium analyses were below the 85% acceptance limit. The reporting limits for all of the selenium analyses in this data package were elevated due to matrix interferences. The post-digestion spike recoveries for the first analysis of the following five samples, CAN074-7410-1010, CAN074-7410-1016, CAN074-7409-1010, CAN074-7409-1020, and CAN074-7409-1024, were less than 40% recovery and the samples were diluted and re-analyzed, and the reporting limits were raised accordingly. The post-digestion spikes for the remaining selenium analyses were reported between 40% to 85% recovery and the results were reported as non-detect. The laboratory raised the reporting limit by a factor of 2, but did not dilute or re-analyze these samples. All of the post-digestion spikes for the reported results were outside the acceptance limits and within 40% to 85% recovery which indicates that the sample results may have the potential for a low bias. Therefore, all the selenium sample results in this data package have been qualified as estimated, and flagged `J'.

One arsenic sample, CAN074-7410-1016, required dilution and re-analysis due to the post-digestion spike reported below 40% recovery. The reporting limit was raised accordingly. The post-digestion spike recovery for the diluted analysis was within acceptance limits, and no qualification of the sample result was necessary.

Reporting limits for ten of the fifteen thallium analyses were elevated due to low post digestion spike recovery. For six of the 10 samples, samples CAN074-7410-1016, CAN074-7410-1020, CAN074-7410-1024, CAN074-7409-1006, CAN074-7409-1020, and CAN074-7409-1024, the post-digestion spikes were below 40% recovery and the samples were diluted and re-analyzed. The reporting limits were raised accordingly. For samples CAN074-7410-1010, CAN074-7410-1032, CAN074-7409-1010, and CAN074-7409-1014 the post-digestion spikes were reported

between 40% to 85% recovery and the results were reported as non-detect. The laboratory raised the reporting limit by a factor of 2, but did not dilute or re-analyze these samples. All of the post-digestion spikes for these ten thallium sample results were outside the acceptance limits, including the re-analyses, but within 40% to 85% recovery which indicates that the sample results may have the potential for a low bias. Therefore, these ten thallium sample results have been qualified as estimated, and flagged 'J'.

ICP Serial Dilution - One serial dilution analysis was conducted on sample CAN074-7409-1044. No analytes were reported at concentrations >50 reporting limit and no results from the sample and serial dilution were reported outside of 10% of each other. Therefore, the criteria for the evaluation of serial dilution analyses were satisfied and no qualification of data was necessary.

Field Duplicate Results - Collocated field duplicate samples (discrete samples from same interval) were collected to assess field representativeness. Representativeness is the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a point, or an environmental condition. Field duplicate results were evaluated by comparing the results for the sample and its duplicate. The following evaluation criteria contained in the QAPP were used to evaluate the field duplicate results: for analytes where both reported values were >5 times the reporting limit, an RPD between the sample and its duplicate result <50% was considered to be indicative of acceptable representativeness of the sample to the medium sampled, and for analytes where one or both reported values were ≤5 times the reporting limit, a difference between the results within ±2 times the reporting limit was considered to be indicative of acceptable representativeness of the sample to the medium sampled.

This data package contained one field duplicate sample pair, samples CAN074-7410-1038 and CAN074-7410-1461. Results for all analytes satisfied the applicable criterion and data qualification on the basis of the field duplicate results was not necessary. As the field duplicate results satisfied the QAPP evaluation criteria for field duplicate result agreement, they are considered to be indicative of satisfactory representativeness of the sample to the medium sampled.

Verification/Quantitation - No errors in transcription or calculation were found. Reported results for metals determined by ICP are the average of two determinations.

Completeness of the Data Package - The analytical data package was evaluated for completeness of deliverables against the following criteria;

- Presence of tabulated results of metals identified and quantified and reporting limits for all analytes determined to be not present.

- Presence of COCs, case narrative, and analytical results for all QC analyses including laboratory spikes, matrix spikes, laboratory duplicates, matrix spike duplicates, blanks, and initial calibration and continuing calibration analyses.

- Presence of all raw data including data system printouts, benchsheets, instrument summary reports for all sample and QC sample analyses which include the date of analysis, analyst, parameters analyzed, and spike level.

- Presence of sample preparation/extraction logs, which include the QC samples and their spiking levels, and run logs.

Data package deliverables were found to be complete.

1.6 CYANIDE ANALYSES

Method 9010/9012, from SW-848, Test Methods for Evaluating Solid Waste (3rd Edition, including Updates I, II, and IIA, promulgated September, 1994) were used to analyze for cyanide.

Overall Assessment - The cyanide data are considered to be usable for meeting project objectives without qualification.. The results of the QC sample analyses satisfied the QAPP acceptance criteria for the quality parameters of accuracy, precision, representativeness, and completeness. As all analytical results are considered usable for meeting project objectives, the analytical completeness for the cyanide data is 100% which satisfies the completeness goal of 90% specified in the QAPP.

Case Narrative - The case narrative indicated that no problems were encountered during the cyanide analyses performed on these samples.

Holding Times - Holding times were calculated by subtracting the sample analysis date found on the benchsheets from the sample collection dates specified on the COCs. The holding times were compared to the requirements specified by Table 5-1 in the QAPP. All sample analyses were conducted within the holding time requirements and data qualification was not necessary.

Calibration - The calibration procedures were evaluated by reviewing the benchsheets and raw data system printouts. A six point initial calibration was performed for the cyanide analysis. The data reviewer entered the initial calibration data into a spreadsheet and analyzed it with a linear regression function. The data reviewer's calculated correlation coefficients for the linear regressions agreed with the laboratory's reported correlation coefficients which were greater than 0.995 indicating sufficient linearity of instrument response. The recoveries of cyanide in all initial calibration and continuing calibration verification analyses ranged form 95 to 105 percent and were considered to be acceptable. No calculation or transcription errors were found. Data qualification on the basis of initial and continuing calibration verification was not necessary.

Blanks - Blank contamination was evaluated by reviewing the method blank reporting forms, benchsheets, raw method and calibration blank sample data, and QC Lot assignments designated on the preparation logs. A method blank and associated samples share a unique QC Lot number. Results for cyanide reported as detected in samples which were also reported as detected in an associated blank were qualified as nondetect if the sample concentration was less than 5 times the blank concentration.

The frequency of method and calibration blanks was satisfactory. Cyanide were not detected in any of the method blanks or calibration blanks and data qualification was not necessary.

Laboratory Control Sample (LCS) Analysis - The DCS reporting forms, laboratory benchsheets, raw data, and preparation logs were reviewed. The QC Lot number on the preparation logs were used to determine the association of DCSs with samples.

One duplicate control sample (DCS) pair was prepared with the samples reported in this data package. The recoveries of cyanide in the DCS1s and DCS2s and the relative percent differences between the DCS1 and DCS2 results were within the specified acceptance limits shown in Table 4-5 in the QAPP indicating project objectives for accuracy and precision with respect to method

performance on the general sample matrix (soil) were satisfied. Data qualification based on the LCS results was not required.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis - One matrix spike/matrix spike duplicate (MS/MSD) analysis was associated with the samples from this data package. The MS/MSD analysis was conducted on sample CAN074-7409-1034.

Matrix spike/matrix spike duplicate sample analyses were evaluated by reviewing the matrix spike sample/matrix spike duplicate sample reporting forms and raw sample data. No transcription errors between the raw data and reporting forms were found and no calculation errors of spike recoveries were found. Matrix spike and matrix spike duplicate recoveries and the RPDs between them were compared to the acceptance limits presented in Table 4-5 of the QAPP.

Results for these MS/MSD analyses satisfied the evaluation criteria specified in the QAPP indicating that project objectives for accuracy and precision with respect to site-specific sample matrix were satisfied. Data qualification was not required.

Field Duplicate Results - Collocated field duplicate samples (discrete samples from same interval) were collected to assess field representativeness. Representativeness is the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a point, or an environmental condition. Field duplicate results were evaluated by comparing the results for the sample and its duplicate. The following evaluation criteria contained in the QAPP were used to evaluate the field duplicate results: for analytes where both reported values were >5 times the reporting limit, an RPD between the sample and its duplicate result <50% was considered to be indicative of acceptable representativeness of the sample to the medium sampled, and for analytes where one or both reported values were ≤5 times the reporting limit, a difference between the results within ±2 times the reporting limit was considered to be indicative of acceptable representativeness of the sample to the medium sampled.

This data package contained one field duplicate sample pair, samples CAN074-7410-1038 and CAN074-7410-1461. Results for all analytes satisfied the applicable criterion and data qualification on the basis of the field duplicate results was not necessary. As the field duplicate results satisfied

the QAPP evaluation criteria for field duplicate result agreement, they are considered to be indicative of satisfactory representativeness of the sample to the medium sampled.

Target Compound Identification, Quantitation, and Reporting Limits - No errors were found in cyanide identification and quantitation. The reporting limits obtained satisfied the requirements of the QAPP.

Completeness of the Data Package - The analytical data package was evaluated for completeness of deliverables against the following criteria;

- Presence of tabulated results of organic compounds identified and quantified and reporting limits for all analytes determined to be not present.

- Presence of COCs, case narrative, and analytical results for all QC analyses including laboratory spikes, matrix spikes, laboratory duplicates, matrix spike duplicates, blanks, and initial calibration and continuing calibration analyses.

- Raw data system printouts (benchsheets, raw data system printouts, and preparation logs) for all sample and QC sample analyses which include the date of analysis, analyst, parameters analyzed, and spike level.

- Presence of sample preparation/extraction logs, which include the QC samples and their spiking levels, and run logs.

Data package deliverables were found to be complete.

1.7 TOTAL RECOVERABLE PETROLEUM HYDROCARBONS (TRPH) ANALYSIS

Method 418.1, Methods for Chemical Analysis of Water and Wastes (EPA-600/4-79-020, March 1979) was used to analyze for Total Recoverable Petroleum Hydrocarbons (TRPH).

Overall Assessment - The TRPH data are considered to be usable for meeting project objectives without qualification. The results of the QC sample analyses satisfied the QAPP acceptance criteria for the quality parameters of accuracy, precision, representativeness, and completeness. As all

analytical results are considered usable for meeting project objectives, the analytical completeness for the TRPH data is 100% which satisfies the completeness goal of 90% specified in the QAPP.

Case Narrative - The case narrative indicated that no problems were encountered during the TRPH analyses performed on these samples.

Holding Times - Holding times were calculated by subtracting the analysis date found on the benchsheets from the sample collection dates specified on the COCs. The holding times were compared to the requirements specified by Table 5-1 in the QAPP. All sample analyses were conducted within the holding time requirements and data qualification was not necessary.

Calibration - The calibration procedures were evaluated by reviewing the benchsheets and raw data system printouts. A four point initial calibration was performed. The data reviewer entered the initial calibration data into a spreadsheet and analyzed it with a linear regression function. The data reviewer's calculated correlation coefficient for the linear regression agreed with the laboratory's reported correlation coefficient which was greater than 0.995 indicating sufficient linearity of instrument response. The recoveries of TRPH for all initial calibration and continuing calibration verification analyses ranged form 99 to 100 percent and were considered to be acceptable. Data qualification on the basis of initial and continuing calibration verification was not necessary.

Method Blanks - Method blank contamination was evaluated by reviewing the method blank reporting forms, raw method blank sample data, and QC Lot assignments designated on the preparation logs. A method blank and associated samples share a unique QC Lot number.

Results for any analytes reported as detected in samples which was also reported as detected in an associated blank were qualified as nondetect if the sample concentration was less than 5 times the blank concentration.

There were three method blanks associated with the preparation and analysis of these samples. TRPH was not detected in any of the method blanks and data qualification was not required.

Laboratory Control Sample (LCS) Analysis - The laboratory prepared duplicate laboratory control samples (DCSs) for the TRPH analysis. A DCS is the preparation of two identical but

individual LCSs which are prepared and analyzed with a batch of samples and the results compared so that precision, as well as accuracy, can be assessed.

Laboratory control sample analyses were evaluated by reviewing the DCS reporting forms, raw DCS sample data, and QC Lot assignments designated on the preparation logs. A DCS sample pair and its associated samples share a unique QC Lot number.

One DCS sample pair was prepared with the samples reported in this data package. The recoveries of TRPH in the DCS1s and DCS2s and the relative percent differences (RPDs) between the DCS1 and DCS2 results were within the specified acceptance limits, (shown by Table 4-6 in the QAPP), indicating that project objectives for accuracy and precision with respect to method performance on the general sample matrix (soil) were satisfied. Data qualification based on the DCS results was not required.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis - One matrix spike/matrix spike duplicate (MS/MSD) analysis was associated with the samples from this data package. The MS/MSD analysis was conducted on sample CAN074-7409-1034.

Matrix spike/matrix spike duplicate sample analyses were evaluated by reviewing the matrix spike sample/matrix spike duplicate sample reporting forms and raw sample data. No transcription errors between the raw data and reporting forms were found and no calculation errors of spike recoveries were found. Matrix spike and matrix spike duplicate recoveries and the RPDs between them were compared to the acceptance limits presented in Table 4-6 of the QAPP.

Results for these MS/MSD analyses satisfied the evaluation criteria specified in the QAPP indicating that project objectives for accuracy and precision with respect to the site-specific sample matrix were satisfied. Data qualification was not required.

Field Duplicate Results - Collocated field duplicate samples (discrete samples from same interval) were collected to assess field representativeness. Representativeness is the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a point, or an environmental condition. Field duplicate results were evaluated by comparing the results for the sample and its duplicate. The following evaluation criteria contained in the QAPP were used to evaluate the field duplicate results: for analytes where

both reported values were >5 times the reporting limit, an RPD between the sample and its duplicate result <50% was considered to be indicative of acceptable representativeness of the sample to the medium sampled, and for analytes where one or both reported values were ≤5 times the reporting limit, a difference between the results within ±2 times the reporting limit was considered to be indicative of acceptable representativeness of the sample to the medium sampled.

This data package contained one field duplicate sample pair, samples CAN074-7410-1038 and CAN074-7410-1461. Results for all analytes satisfied the applicable criterion and data qualification on the basis of the field duplicate results was not necessary. As the field duplicate results satisfied the QAPP evaluation criteria for field duplicate result agreement, they are considered to be indicative of satisfactory representativeness of the sample to the medium sampled.

Target Compound Identification, Quantitation, and Reporting Limits - No errors were found in TRPH identification and quantitation. The reporting limits obtained satisfied the requirements of the QAPP. No data qualification on the basis target compound identification, quantitation, or reporting limits was required.

Completeness of the Data Package - The analytical data package was evaluated for completeness of deliverables against the following criteria;

- Presence of tabulated results for TRPH identified and quantified and reporting limits for TRPH when determined to be not present.

- Presence of COCs, case narrative, and analytical results for all QC analyses including laboratory spikes, matrix spikes, and matrix spike duplicates; laboratory duplicates and matrix spike duplicates; blanks; and initial calibration and continuing calibration analyses.

- Presence of all raw data including data system printouts and benchsheets for all sample and QC sample analyses which include the date of analysis, analyst, parameters analyzed, and spike level.

- Presence of sample preparation/extraction logs, which include the QC samples and their spiking levels, and run logs.

Data package deliverables were found to be complete.

1.8 TOTAL ORGANIC CARBON (TOC) ANALYSIS

Three samples, CAN074-7410-1038, CAN074-7410-1461, and CAN074-7409-1010, from this data package were analyzed for Total Organic Carbon (TOC) by Method 9060, from SW-846, Test Methods for Evaluating Solid Waste (3rd Edition, including Updates I, II, and IIA, promulgated September, 1994).

Overall Assessment - The TOC data are considered to be usable for meeting project objectives without qualification.. The results of the QC sample analyses satisfied the QAPP acceptance criteria for the quality parameters of accuracy, precision, representativeness, and completeness. As all analytical results are considered usable for meeting project objectives, the analytical completeness for the TOC data is 100% which satisfies the completeness goal of 90% specified in the QAPP.

Case Narrative - The case narrative indicated that no problems were encountered during the TOC analyses performed on these samples.

Holding Times - The sample holding time was calculated by subtracting the analysis date on the benchsheet from the collection date specified on the COCs. The holding time was compared to the requirements specified by Table 5-1 in the QAPP. The TOC analysis was conducted within the holding time requirement and data qualification was not necessary.

Calibration - To evaluate calibration, the laboratory benchsheets and raw data system printouts were reviewed. No transcription errors between the raw data printout and the benchsheet were found. The instrument was calibrated by analyzing a 12 percent carbon standard three times. The results obtained for the three analyses were 12.12 percent, 12.29 percent, and 12.20 percent which convert to percent differences between the true value and measured values of 1%, 2.4%, and 1.7%. These results satisfy the instrument manufacturer's guidelines for initial calibration. The frequency of calibration verification analyses was satisfactory. The percent recoveries obtained for the

associated continuing calibration verifications were reported as 100 percent. Data qualification on the basis of continuing calibration verification was not considered to be necessary.

Blanks - Blank contamination was evaluated by reviewing the method blank reporting forms, benchsheets, raw method blank and calibration blank sample data, and QC Lot assignments designated on the preparation logs. A method blank and associated samples share a unique QC Lot number. Results for any analytes reported as detected in samples which were also reported as detected in an associated blank were qualified as nondetect if the sample concentration was less than 5 times the blank concentration.

The frequency of method and calibration blanks was satisfactory. TOC was not reported as detected in any of the method blanks or calibration blanks and data qualification was not required.

Laboratory Control Sample (LCS) Analysis - The DCS reporting forms, benchsheets, raw data, and preparation logs were reviewed. The QC Lot numbers on the preparation logs were used to determine the association of DCSs with samples.

One duplicate control sample (DCS) pair was prepared for the TOC analyses included in the analytical run reported in this data package. The recoveries of TOC in DCS1 and DCS2 and the relative percent difference between the DCS1 and DCS2 results were within the QAPP-specified acceptance limits (Table 4-6) indicating project objectives for accuracy and precision with respect to method performance on the general sample matrix (soil) were satisfied. Data qualification based on the LCS results was not required.

Matrix Spike/Matrix Spike Duplicate (MS/MSD) Analysis - A MS/MSD analysis was performed on sample CAN074-7407-1018 which was reported in another data package and associated with samples in this data package. No problems were reported with the MS/MSD analysis on sample CAN074-7407-1018 and therefore no qualification of data on the basis of the MS/MSD analysis was necessary.

Field Duplicate Results - Collocated field duplicate samples (discrete samples from same interval) were collected to assess field representativeness. Representativeness is the degree to which data accurately and precisely represent a characteristic of a population, parameter variations at a point, or an environmental condition. Field duplicate results were evaluated by

comparing the results for the sample and its duplicate. The following evaluation criteria contained in the QAPP were used to evaluate the field duplicate results: for analytes where both reported values were >5 times the reporting limit, an RPD between the sample and its duplicate result <50% was considered to be indicative of acceptable representativeness of the sample to the medium sampled, and for analytes where one or both reported values were ≤5 times the reporting limit, a difference between the results within ±2 times the reporting limit was considered to be indicative of acceptable representativeness of the sample to the medium sampled.

This data package contained one field duplicate sample pair, samples CAN074-7410-1038 and CAN074-7410-1461. Results for all analytes satisfied the applicable criterion and data qualification on the basis of the field duplicate results was not necessary. As the field duplicate results satisfied the QAPP evaluation criteria for field duplicate result agreement, they are considered to be indicative of satisfactory representativeness of the sample to the medium sampled.

Target Compound Quantitation and Reporting Limits - No errors were found in target compound quantitation. All samples were analyzed for TOC in quadruplicate and the reporting limits obtained satisfied the requirements of the QAPP.

Completeness of the Data Package - The analytical data package was evaluated for completeness of deliverables against the following criteria;

- Presence of tabulated results of organic compounds identified and quantified and reporting limits for all analytes determined to be not present.

- Presence of COCs, case narrative, and analytical results for all QC analyses including laboratory spikes, matrix spikes, laboratory duplicates, matrix spike duplicates, blanks, and initial calibration and continuing calibration analyses.

- Raw data system printouts (summary forms, quantitation reports, and chromatograms) for all sample and QC sample analyses which include the date of analysis, analyst, parameters analyzed, and spike level.

- Presence of sample preparation/extraction logs, which include the QC samples and their spiking levels, and run logs.

Data package deliverables were found to be complete.

2.1 QC REVIEW - PARAMETER SUMMARY

2.1.1 Introduction

For each analysis, QC parameters are reviewed in order to evaluate the usability of the sample data in meeting the project objectives. As specified in the DCQAP, the QC parameters that were evaluated for the analyses are: holding times, blank contamination, surrogate recoveries, matrix spike/matrix spike duplicates spike recoveries and relative percent differences (RPDs), duplicate control sample recoveries and RPDs, surrogate control sample recoveries, laboratory duplicate precision, field duplicates agreement, overall assessment of the sample data and completeness of the sample data. The specific requirements for each method are discussed in the following sections. The QC review reports for each SDG discuss any QA/QC parameters outside acceptance limits, explanation of all data requiring qualification and any professional judgment used by the reviewer.

The association of MS/MSD analyses and field duplicate samples to the field samples are shown in Tables E2-1 and E2-2. In each of these tables, the QC sample(s) are listed with the associated samples.

QC reviews were performed on the following analytical fractions: volatiles, semivolatiles, pesticides/PCBs, chlorinated herbicides, metals, cyanide, total recoverable petroleum hydrocarbons (TRPH), and total organic carbon (TOC).

All results reported as detected at concentrations below their respective reporting limit have been qualified as estimated and flagged "J". Precision of the analyses with respect to a given analyte is evaluated by calculating the relative percent difference (RPD) from duplicate results (e.g., matrix spike/matrix spike duplicate; sample/lab duplicate). Some minor differences are present between the RPDs discussed in the validation and QC review reports and those reported by the laboratory. These differences are due to the laboratory calculating the RPDs before rounding the percent recoveries and sample results. The laboratory reports the rounded percent recoveries and sample

results on the hard copy data sheets which were used by the data reviewer. It is the judgment of the data reviewer that these minor differences do not affect the evaluation of the data quality.

2.1.2 Metals and Total Cyanide

Holding Times. Holding times were calculated by subtracting the sampling date for a given sample on the Chain-of-Custody (COC) form from the analysis date(s) listed on the sample result forms. Holding time limits for analysis for metals other than mercury are 6 months from date of sample collection. The holding time limits for analysis for mercury and cyanide are 28 days and 14 days, respectively, from date of sample collection. Sample analyses not meeting the holding time criteria are discussed in the QC review reports.

Blanks. Method blank contamination was evaluated by reviewing the method blank result forms as well as the QC lot assignment report that details the samples associated with a given method blank. Initial Calibration Blanks (ICBs) and Continuing Calibration Blanks (CCBs) were evaluated by reviewing the raw data. ICB are associated with all samples analyzed in an analytical run sequence. CCBs are associated with the samples that they bracket. For initial or continuing calibration blanks associated with a soil sample, the equivalent concentration in soil was calculated by assuming that all of the analyte present in the blank analyzed was potentially present in the sample aliquot analyzed. An analyte was considered to be present in the blank at a concentration requiring evaluation of the effect on associated sample data if its equivalent absolute value was greater than 1/2 the reporting limit. Any analyte reported as detected in a sample that also was reported at a concentration requiring evaluation in an associated blank was qualified as a non-detect if the sample concentration was less than five times the equivalent blank concentration. ICBs or CCBs exhibiting negative blank concentrations resulted in the qualification of associated sample data using the following criterion: sample results including non-detects, less than or equal to 3X the absolute value of the blank contamination, were qualified as estimated due to a potential low bias. Qualification of sample results on the basis of method blank contamination is discussed in the QC review reports.

Duplicate Control Samples (DCS) and Matrix Spike (MS). DCS and MS QC summary reports as well as the QC lot assignment reports were reviewed. QC lot assignment reports detailed the samples associated with a given DCS lot. DCS spike recoveries or RPDs and MS

spike recoveries outside of the acceptance limits listed below are discussed in the QC review reports.

Analyte	Percent Recovery		RPD	
	Water	Soil	Water	Soil
ICP Metals	80-120	80-120	20	20
Arsenic	81-116	75-128	13	13
Lead	71-136	71-132	17	16
Selenium	73-125	71-129	15	12
Mercury	83-112	88-113	12	12
Thallium	75-125	48-152	20	20
Cyanide	75-119	75-125	17	20

Duplicate Sample Analysis. QC summary reports for matrix duplicate samples were reviewed. The RPDs reported on these summary forms were evaluated using the following criteria. If both the sample and matrix duplicate value were greater than 5X the reporting limit, the RPD was compared to the criteria listed below. If either value reported was less than 5X the reporting limit, the difference between the two results was compared to the criterion of ±2X the reporting limit. Laboratory duplicate results not meeting the above criteria are discussed in the QC review reports.

Analyte	RPDs	
	Water	Soil
ICP Metals	20	20
Arsenic	13	13
Lead	17	16
Selenium	15	12
Mercury	12	12
Thallium	20	20
Cyanide	17	20

Field Duplicates. Field duplicate results were evaluated by comparing the results for the sample and its duplicate. For soil field duplicate results where both values are >5X the reporting limit, the RPD between the sample and its duplicate was compared against a criterion of <100%. For duplicate pairs where one or both values reported are <5X the reporting limit, the difference between the results was compared to a criterion of ± 3X the

reporting limit. Field duplicate results not meeting the above criteria are discussed in the QC review reports.

Completeness. The analytical data package was evaluated for completeness of deliverables against the following criteria:

- Presence of tabulated results of inorganic compounds identified and quantified and reporting limits for all analytes for all samples.

- Presence of COCs; case narrative detailing the problems in the SDG, and analytical results for: QC sample spikes, sample duplicates; ICVs, CCVs, blank results; standard procedural blanks and ICP interference check sample.

- Raw data system printouts including date of analysis, analyst, parameters analyzed, calibration curve, continuing calibration checks, method blank, sample number, sample duplicate, spike, control sample, spike level, sample preparation/extraction sheets, and run logs.

Data package deliverables that did not meet the above criteria were documented and the missing deliverables were obtained from the contract laboratory. Any documents not obtainable from the laboratory are noted in the QC review reports.

Overall Assessment. The usability of the data was evaluated as to whether the accuracy and precision goals for the sample analyses, based on DCS and MS recoveries and laboratory duplicate RPDs, were met for all analytes. The results of this evaluation are contained in the QC Review reports.

2.1.3 Volatile Organic Analysis

Holding Times. Holding times were calculated by subtracting the sampling date for a given sample on the COC form from the analysis date listed on the sample result form(s). The holding time limit for analysis for volatile organics is 14 days from the date of sample collection. Samples analyses not meeting the holding time criterion are discussed in the QC review reports.

Blanks. Method blank contamination was evaluated by reviewing the method blank result form(s) as well as the QC lot assignment report which details the samples associated with a given method blank. Any analyte reported as detected in a sample that was also reported as detected in an associated blank was qualified if the sample concentration was less than five times the blank concentration, or ten times the blank concentration if the analyte is a common laboratory contaminant. Qualification of sample results on the basis of method blank contamination is discussed in the QC review reports.

Surrogate Recoveries. Surrogate recoveries for each sample were evaluated by reviewing the recoveries listed on the sample result forms against the criteria listed in the table below. Sample analyses with surrogate recoveries not meeting the criteria are discussed in the QC review reports.

	Percent Recovery	
Surrogate Compound	Water	Soil/Sediment
1,2-Dichloroethane-d4	76-114	70-121
Toluene-d8	88-110	81-117
4-Bromofluorobenzene	86-115	75-121

Surrogate Control Samples (SCS). SCS summary reports and QC lot assignment reports were reviewed. Surrogate recoveries were reported for each SCS on these forms. SCS surrogate recovery limits are listed in the table below. SCSs with surrogate recoveries outside of these limits are discussed in the QC review reports.

	Percent Recovery	
Surrogate Compound	Water	Soil/Sediment
1,2-Dichloroethane-d4	85-111	82-112
Toluene-d8	91-110	90-112
4-Bromofluorobenzene	86-110	84-109

Duplicate Control Samples (DCS). DCS summary reports and QC lot assignment reports were reviewed. DCS recovery and RPD limits are listed in the table below. DCS recoveries and RPDs outside of these limits are discussed in the QC review reports.

Analyte	Percent Recovery		RPD	
	Water	Soil	Water	Soil
1,1-Dichloroethene	77-174	65-137	17	20
Trichloroethene	77-119	83-118	13	12
Benzene	80-117	80-119	12	10
Toluene	80-119	80-119	11	12
Chlorobenzene	81-120	80-119	14	12

Matrix Spike/Matrix Spike Duplicates (MS/MSD). MS/MSD summary forms were reviewed. MS/MSD recoveries and RPD limits are listed below. If MS/MSD recoveries or RPDs were outside of these limits, the surrogate recoveries for the sample, the MS and the MSD, the associated DCS recoveries and RPDs and the associated SCS recoveries were also evaluated to help determine if the MS/MSD outliers were due to matrix effects. MS/MSD results not meeting the above criteria are discussed in the QC review reports.

Analyte	Percent Recovery		RPD	
	Water	Soil	Water	Soil
1,1-Dichloroethene	1-234	1-234	17	20
Trichloroethene	71-157	71-157	13	12
Benzene	37-151	37-151	12	10
Toluene	47-150	47-150	11	12
Chlorobenzene	37-160	37-160	14	12

Field Duplicates. Field duplicate results were evaluated by comparing the results for the sample and its duplicate. For soil field duplicate results where both values are >5X the reporting limit, the RPD between the sample and its duplicate was compared against a criterion of <100%. For duplicate pairs where one or both values reported are <5X the reporting limit, the difference between the results was compared to a criterion of ±3X the reporting limit. Field duplicate results not meeting the above criteria are discussed in the QC review reports.

Tentatively Identified Compounds (TICs). Reported TICs not present in associated blanks but identified as reagent contaminants, solvent preservatives, aldol condensation products or other common laboratory artifacts/contaminants were reviewed using guidance from EPA's National Functional Guidelines for Organic Data Review, February 1994 and are discussed in the QC reviews.

Completeness. The analytical data package was evaluated for completeness of deliverables against the following criteria:

- Presence of tabulated results of organic compounds identified and quantified and reporting limits for all analytes for all samples.

- Presence of COCs; case narrative detailing the problems in the SDG, and analytical results for: QC sample spikes, sample duplicates; ICVs, CCVs, blank results; and standard procedural blanks.

- Raw data system printouts including date of analysis, analyst, parameters analyzed, calibration curve, continuing calibration checks, method blank, sample number, sample duplicate, spike, control sample, spike level, sample preparation/extraction sheets, and run logs.

Data package deliverables that did not meet the above criteria were documented and the missing deliverables were obtained from the contract laboratory. Any documents not obtainable from the laboratory are noted in the QC review reports.

Overall Assessment. The usability of the data was evaluated as to whether the accuracy and precision goals for the sample analyses, based on SCS, DCS, surrogate and MS/MSD recoveries and DCS and MS/MSD RPDs, were met for all analytes. The results of this evaluation are contained in the QC Review reports.

2.1.4 Semivolatile Organic Analysis

Holding Times. Holding times were calculated by subtracting the sampling date for a given sample on the COC form from the extraction date listed on the sample result form(s) and subtracting the extraction date from the date of analysis listed on the sample result form. For soil samples, the holding time limit for extraction for semivolatile organics is 14 days from the date of sample collection. For water samples, the holding time limit for extraction for semivolatile organics is 7 days from the date of sample collection. The holding time limit for

analysis is 40 days from sample extraction. Samples analyses not meeting the holding time criteria are discussed in the QC review reports.

Blanks. Method blank contamination was evaluated by reviewing the method blank result form(s) as well as the QC lot assignment report which details the samples associated with a given method blank. Any analyte reported as detected in a sample that was also reported as detected in an associated blank was qualified if the sample concentration was less than five times the blank concentration, or ten times the blank concentration if the analyte is a common laboratory contaminant. Qualification of sample results on the basis of method blank contamination is discussed in the QC review reports.

Surrogate Recoveries. Surrogate recoveries for each sample were evaluated by reviewing the recoveries listed on the sample result forms against the criteria listed in the table below. Sample analyses with surrogate recoveries not meeting the criteria are discussed in the QC review reports.

	Percent Recovery	
Surrogate Compound	Water	Soil/Sediment
2-Fluorobiphenyl	43-116	30-115
Nitrobenzene-d5	35-114	23-120
Terphenyl-d14	33-141	18-137
2-Fluorophenol	21-100	25-121
Phenol-d5	54-105	24-113
2,4,6-Tribromophenol	10-123	19-122

Surrogate Control Samples (SCS). SCS summary reports and QC lot assignment reports were reviewed. Surrogate recoveries were reported for each SCS on these forms. SCS surrogate recovery limits are listed in the table below. SCSs with surrogate recoveries outside of these limits are discussed in the QC review reports.

Surrogate Compound	Percent Recovery	
	Water	Soil/Sediment
2-Fluorobiphenyl	43-104	61-114
Nitrobenzene-d5	49-113	62-110
Terphenyl-d14	33-139	49-137
2-Fluorophenol	42-100	60-115
Phenol-d5	54-105	61-111
2,4,6-Tribromophenol	33-123	44-110

Duplicate Control Samples (DCS). DCS summary reports and QC lot assignment reports were reviewed. DCS recovery and RPD limits are listed in the table below. DCS recoveries and RPDs outside of these limits are discussed in the QC review reports.

Analyte	Percent Recovery		RPD	
	Water	Soil	Water	Soil
Phenol	45-109	45-107	29	19
2-Chlorophenol	47-111	46-112	29	17
1,4-Dichlorobenzene	32-103	58-101	28	22
N-Nitroso-di-n-propylamine	49-107	58-101	24	18
1,2,4-Trichlorobenzene	44-102	59-103	27	24
4-Chloro-3-methylphenol	50-115	41-123	27	16
Acenaphthene	47-109	54-110	24	15
4-Nitrophenol	40-127	30-132	51	22
2,4-Dinitrotoluene	46-118	51-117	22	17
Pentachlorophenol	30-136	32-130	34	29
Pyrene	52-115	52-115	23	20

Matrix Spike/Matrix Spike Duplicates (MS/MSD). MS/MSD summary forms were reviewed. MS/MSD recoveries and RPD limits are listed below. If MS/MSD recoveries or RPDs were outside of these limits, the surrogate recoveries for the sample, the MS and the MSD, the associated DCS recoveries and RPDs and the associated SCS recoveries were also evaluated to help determine if the MS/MSD outliers were due to matrix effects. MS/MSD results not meeting the above criteria are discussed in the QC review reports.

Analyte	Percent Recovery		RPD	
	Water	Soil	Water	Soil
Phenol	5-112	5-112	29	19
2-Chlorophenol	23-134	23-134	19	17
1,4-Dichlorobenzene	20-124	20-124	28	22

Analyte	Percent Recovery		RPD	
	Water	Soil	Water	Soil
N-Nitroso-di-n-propylamine	1-230	1-230	24	18
1,2,4-Trichlorobenzene	44-142	44-142	27	24
4-Chloro-3-methylphenol	22-127	22-127	27	16
Acenaphthene	47-145	47-145	24	15
4-Nitrophenol	1-132	1-132	51	22
2,4-Dinitrotoluene	39-139	39-139	22	17
Pentachlorophenol	14-176	14-176	34	29
Pyrene	52-115	52-115	23	20

Field Duplicates. Field duplicate results were evaluated by comparing the results for the sample and its duplicate. For soil field duplicate results where both values are >5X the reporting limit, the RPD between the sample and its duplicate was compared against a criterion of <100%. For duplicate pairs where one or both values reported are <5X the reporting limit, the difference between the results was compared to a criterion of ±3X the reporting limit. Field duplicate results not meeting the above criteria are discussed in the QC review reports.

Tentatively Identified Compounds (TICs). Reported TICs not present in associated blanks but identified as reagent contaminants, solvent preservatives, aldol condensation products or other common laboratory artifacts/contaminants were reviewed using guidance from EPA's National Functional Guidelines for Organic Data Review, February 1994 and are discussed in the QC reviews.

Completeness. The analytical data package was evaluated for completeness of deliverables against the following criteria:

- Presence of tabulated results of organic compounds identified and quantified and reporting limits for all analytes for all samples.

- Presence of COCs; case narrative detailing the problems in the SDG, and analytical results for: QC sample spikes, sample duplicates; ICVs, CCVs, blank results; and standard procedural blanks.

- Raw data system printouts including date of analysis, analyst, parameters analyzed, calibration curve, continuing calibration checks, method blank, sample number, sample duplicate, spike, control sample, spike level, sample preparation/extraction sheets, and run logs.

Data package deliverables that did not meet the above criteria were documented and the missing deliverables were obtained from the contract laboratory. Any documents not obtainable from the laboratory are noted in the QC review reports.

Overall Assessment. The usability of the data was evaluated as to whether the accuracy and precision goals for the sample analyses, based on SCS, DCS, surrogate and MS/MSD recoveries and DCS and MS/MSD RPDs, were met for all analytes. The results of this evaluation are contained in the QC Review reports.

2.1.5 Organochlorine Pesticide/PCB Organic Analysis

Holding Times. Holding times were calculated by subtracting the sampling date for a given sample on the COC form from the extraction date listed on the sample result form(s) and subtracting the extraction date from the date of analysis listed on the sample result form. For soil samples, the holding time limit for extraction for Pesticide/PCB is 14 days from the date of sample collection. For water samples, the holding time limit for extraction is 7 days from the date of sample collection. The holding time limit for analysis is 40 days from sample extraction. Samples analyses not meeting the holding time criteria are discussed in the QC review reports.

Blanks. Method blank contamination was evaluated by reviewing the method blank result form(s) as well as the QC lot assignment report which details the samples associated with a given method blank. Any analyte reported as detected in a sample that was also reported as detected in an associated blank was qualified if the sample concentration was less than five times the blank concentration. Qualification of sample results on the basis of method blank contamination is discussed in the QC review reports.

Surrogate Recoveries. Surrogate recoveries for each sample were evaluated by reviewing the recoveries listed on the sample result forms against the criteria listed in the table below.

Sample analyses with surrogate recoveries not meeting the criteria are discussed in the QC review reports.

Surrogate	Percent Recovery	
	Water	Soil/Sediment
Dibutylchlorendate	56-138	49-134
Tetrachloro-m-xylene (TCX)	54-106	42-114
Decachlorobiphenyl (DCB)	65-145	69-142

Surrogate Control Samples (SCS). SCS summary reports and QC lot assignment reports were reviewed. Surrogate recoveries were reported for each SCS on these forms. SCS recovery limits are listed in the table below. SCSs with surrogate recoveries outside of these limits are discussed in the QC review reports.

Surrogate	Percent Recovery	
	Water	Soil/Sediment
Dibutylchlorendate	53-138	49-134
Tetrachloro-m-xylene (TCX)	54-106	42-114
Decachlorobiphenyl (DCB)	65-145	69-142

Duplicate Control Samples (DCS). DCS summary reports and QC lot assignment reports were reviewed. DCS recovery and RPD limits are listed in the table below. DCS recoveries and RPDs outside of these limits are discussed in the QC review reports.

Analyte	Percent Recovery		RPD	
	Water	Soil	Water	Soil
Aldrin	69-112	71-122	16	11
gamma-BHC	81-117	63-130	13	11
4,4'-DDT	76-125	63-137	14	10
Dieldrin	77-111	57-123	13	10
Endrin	83-122	58-133	14	10
Heptachlor	72-125	62-136	11	10

Matrix Spike/Matrix Spike Duplicates (MS/MSD). MS/MSD summary forms were reviewed. MS/MSD recoveries and RPD limits are listed below. If MS/MSD recoveries or RPDs were outside of these limits, the surrogate recoveries for the sample, the MS and the MSD, the associated DCS recoveries and RPDs and the associated SCS recoveries were also evaluated

to help determine if the MS/MSD outliers were due to matrix effects. MS/MSD results not meeting the above criteria are discussed in the QC review reports.

Analyte	Percent Recovery		RPD	
	Water	Soil	Water	Soil
Aldrin	42-122	42-122	20	20
gamma-BHC	32-127	32-127	20	20
Dieldrin	36-146	36-146	20	20
Endrin	30-147	30-147	20	20
Heptachlor	34-111	34-111	20	20
4,4'-DDT	25-160	25-160	20	20

Field Duplicates. Field duplicate results were evaluated by comparing the results for the sample and its duplicate. For soil field duplicate results where both values are >5X the reporting limit, the RPD between the sample and its duplicate was compared against a criterion of <100%. For duplicate pairs where one or both values reported are <5X the reporting limit, the difference between the results was compared to a criterion of ±3X the reporting limit. Field duplicate results not meeting the above criteria are discussed in the QC review reports.

Completeness. The analytical data package was evaluated for completeness of deliverables against the following criteria:

- Presence of tabulated results of organic compounds identified and quantified and reporting limits for all analytes for all samples.

- Presence of COCs; case narrative detailing the problems in the SDG, and analytical results for: QC sample spikes, sample duplicates; ICVs, CCVs, blank results; and standard procedural blanks.

- Raw data system printouts including date of analysis, analyst, parameters analyzed, calibration curve, continuing calibration checks, method blank, sample number, sample duplicate, spike, control sample, spike level, sample preparation/extraction sheets, and run logs.

Data package deliverables that did not meet the above criteria were documented and the missing deliverables were obtained from the contract laboratory. Any documents not obtainable from the laboratory are noted in the QC review reports.

Overall Assessment. The usability of the data was evaluated as to whether the accuracy and precision goals for the sample analyses, based on SCS, DCS, surrogate and MS/MSD recoveries and DCS and MS/MSD RPDs, were met for all analytes. The results of this evaluation are contained in the QC Review reports.

2.1.6 Chlorinated Herbicides Analysis

Holding Times. Holding times were calculated by subtracting the sampling date for a given sample on the COC form from the extraction date listed on the sample result form(s) and subtracting the extraction date from the date of analysis listed on the sample results form. For soil samples, the holding time limit for extraction for herbicides is 14 days from the date of sample collection. For water samples, the holding time limit for extraction for herbicides is 7 days from the date of sample collection. The holding time limit for analysis is 40 days from sample extraction. Samples analyses not meeting the holding time criterion are discussed in the QC review reports.

Blanks. Method blank contamination was evaluated by reviewing the method blank result form(s) as well as the QC lot assignment report which details the samples associated with a given method blank. Any analyte reported as detected in a sample that was also reported as detected in an associated blank was qualified if the sample concentration was less than five times the blank concentration. Qualification of sample results on the basis of method blank contamination is discussed in the QC review reports.

Surrogate Recoveries. Surrogate recoveries for each sample were evaluated by reviewing the recoveries listed on the sample result forms against the criteria listed in the table below. Sample analyses with surrogate recoveries not meeting the criteria are discussed in the QC review reports.

Surrogate Compound	Percent Recovery	
	Water	Soil/Sediment
2,4-Dichlorophenylacetic acid	45-123	42-125

Surrogate Control Samples (SCS). SCS summary reports and QC lot assignment reports were reviewed. Surrogate recoveries were reported for each SCS on these forms. SCS surrogate recovery limits are listed in the table below. SCSs with surrogate recoveries outside of these limits are discussed in the QC review reports.

Surrogate Compound	Percent Recovery	
	Water	Soil/Sediment
2,4-Dichlorophenylacetic acid	45-123	42-125

Duplicate Control Samples (DCS). DCS summary reports and QC lot assignment reports were reviewed. DCS recovery and RPD limits are listed in the table below. DCS recoveries and RPDs outside of these limits are discussed in the QC review reports.

Analyte	Percent Recovery		RPD	
	Water	Soil	Water	Soil
2,4-D	44-97	37-100	34	36
2,4,5-TP (silvex)	49-102	42-107	32	29
2,4,5-T	47-110	29-118	32	29

Matrix Spike/matrix spike duplicates (MS/MSD). MS/MSD summary forms were reviewed. MS/MSD recoveries and RPD limits are listed below. If MS/MSD recoveries or RPDs were outside of these limits, the surrogate recoveries for the sample, the MS and the MSD, the associated DCS recoveries and RPDs and the associated SCS recoveries were also evaluated to help determine if the MS/MSD outliers were due to matrix effects. MS/MSD results not meeting the above criteria are discussed in the QC review reports.

Analyte	Percent Recovery		RPD	
	Water	Soil	Water	Soil
2,4-D	44-97	37-100	34	36
2,4,5-TP (silvex)	49-102	42-107	32	29
2,4,5-T	47-110	29-118	32	29

Field Duplicates. Field duplicate results were evaluated by comparing the results for the sample and its duplicate. For soil field duplicate results where both values are >5X the reporting limit, the RPD between the sample and its duplicate was compared against a criterion of <100%. For duplicate pairs where one or both values reported are <5X the reporting limit, the difference between the results was compared to a criterion of ±3X the reporting limit. Field duplicate results not meeting the above criteria are discussed in the QC review reports.

Completeness. The analytical data package was evaluated for completeness of deliverables against the following criteria:

- Presence of tabulated results of organic compounds identified and quantified and reporting limits for all analytes for all samples.

- Presence of COCs; case narrative detailing the problems in the SDG, and analytical results for: QC sample spikes, sample duplicates; ICVs, CCVs, blank results; and standard procedural blanks.

- Raw data system printouts including date of analysis, analyst, parameters analyzed, calibration curve, continuing calibration checks, method blank, sample number, sample duplicate, spike, control sample, spike level, sample preparation/extraction sheets, and run logs.

Data package deliverables that did not meet the above criteria were documented and the missing deliverables were obtained from the contract laboratory. Any documents not obtainable from the laboratory are noted in the QC review reports.

Overall Assessment. The usability of the data was evaluated as to whether the accuracy and precision goals for the sample analyses, based on SCS, DCS, surrogate and MS/MSD recoveries and DCS and MS/MSD RPDs, were met for all analytes. The results of this evaluation are contained in the QC Review reports.

2.1.7 Total Recoverable Petroleum Hydrocarbon (TRPH) Analysis

Holding Times. Holding times were calculated by subtracting the sampling date for a given sample on the COC form from the analysis dates listed on the sample result forms. Holding time limits for TRPH analysis are 28 days from date of sample collection. Sample analyses not meeting the holding time criteria are discussed in the QC review reports.

Blanks. Method blank contamination was evaluated by reviewing the method blank result forms as well as the QC lot assignment report that details the samples associated with a given method blank. Any analyte reported as detected in a sample that was also reported as detected in an associated blank was qualified if the sample concentration was less than five times the blank concentration. Qualification of sample results on the basis of method blank contamination is discussed in the QC review reports.

Duplicate Control Samples (DCS. DCS summary reports as well as the QC lot assignment reports were reviewed. DCS spike recoveries or RPDs outside of the 73-121% recovery and 21% RPD acceptance limits are discussed in the QC review reports.

Matrix Spike/matrix spike duplicates (MS/MSD). MS/MSD summary reports were reviewed. MS/MSD recoveries and RPDs outside of the 53-131% recovery and 39% RPD acceptance limits are discussed in the QC review reports.

Laboratory Duplicates. QC summary reports for laboratory duplicate samples were reviewed. For laboratory duplicate results, if both values are >5X the reporting limit, the RPD between the sample and its duplicate was evaluated against the criterion of <21%. If either value reported is <5X the reporting limit, the difference between the results was evaluated against the criterion of ±3X the reporting limit adjusted for dilution. Results outside of these limits are discussed in the QC review reports.

Field Duplicates. . Field duplicate results were evaluated by comparing the results for the sample and its duplicate. For soil field duplicate results where both values are >5X the reporting limit, the RPD between the sample and its duplicate was compared against a criterion of <100%. For duplicate pairs where one or both values reported are <5X the reporting limit, the difference between the results was compared to a criterion of ±3X the

reporting limit. Field duplicate results not meeting the above criteria are discussed in the QC review reports.

Completeness. The analytical data package was evaluated for completeness of deliverables against the following criteria:

- Presence of tabulated results of concentration and reporting limits for TRPH for all samples.

- Presence of COCs; case narrative detailing the problems in the SDG, and analytical results for: QC sample spikes, sample duplicates; ICVs, CCVs, blank results; and standard procedural blanks.

- Raw data system printouts including date of analysis, analyst, parameters analyzed, calibration curve, continuing calibration checks, method blank, sample number, sample duplicate, spike, control sample, spike level, sample preparation/extraction sheets, and run logs.

Data package deliverables that did not meet the above criteria were documented and the missing deliverables were obtained from the contract laboratory. Any documents not obtainable from the laboratory are noted in the QC review reports.

Overall Assessment. The usability of the data was evaluated as to whether the accuracy and precision goals for the sample analyses, based on DCS and MS/MSD recoveries and RPDs, and laboratory duplicate RPDs were met for all analytes. The results of this evaluation are contained in the QC Review reports.

2.1.8 Total Organic Carbon (TOC) Analysis

Holding Times. Holding times were calculated by subtracting the sampling date for a given sample on the COC form from the analysis dates listed on the sample result forms. Holding time limits for TOC analysis are 28 days from date of sample collection. Sample analyses not meeting the holding time criteria are discussed in the QC review reports.

Blanks. Method blank contamination was evaluated by reviewing the method blank result forms as well as the QC lot assignment report that details the samples associated with a given method blank. Any analyte reported as detected in a sample that was also reported as detected in an associated blank was qualified if the sample concentration was less than five times the blank concentration. Qualification of sample results on the basis of method blank contamination is discussed in the QC review reports.

Duplicate Control Samples (DCS). DCS summary reports as well as the QC lot assignment reports were reviewed. DCS spike recoveries or RPDs outside of the 91-111% recovery and 10% RPD acceptance limits are discussed in the QC review reports.

Matrix Spike/Matrix Spike Duplicates (MS/MSD). MS/MSD summary reports were reviewed. MS/MSD recoveries and RPDs outside of the 90-110% recovery and 10% RPD acceptance limits are discussed in the QC review reports.

Laboratory Duplicates. QC summary reports for laboratory duplicate samples were reviewed. For laboratory duplicate results, if both values are >5X the reporting limit, the RPD between the sample and its duplicate was evaluated against the criterion of <10%. If either value reported is <5X the reporting limit, the difference between the results was evaluated against the criterion of ±3X the reporting limit adjusted for dilution. Results outside of these limits are discussed in the QC review reports.

Field Duplicates. Field duplicate results were evaluated by comparing the results for the sample and its duplicate. For soil field duplicate results where both values are >5X the reporting limit, the RPD between the sample and its duplicate was compared against a criterion of <100%. For duplicate pairs where one or both values reported are <5X the reporting limit, the difference between the results was compared to a criterion of ±3X the reporting limit. Field duplicate results not meeting the above criteria are discussed in the QC review reports.

Completeness. The analytical data package was evaluated for completeness of deliverables against the following criteria:

- Presence of tabulated results of concentration and reporting limits for TOC for all samples.

- Presence of COCs; case narrative detailing the problems in the SDG, and analytical results for: QC sample spikes, sample duplicates; ICVs, CCVs, blank results; and standard procedural blanks.

- Raw data system printouts including date of analysis, analyst, parameters analyzed, calibration curve, continuing calibration checks, method blank, sample number, sample duplicate, spike, control sample, spike level, sample preparation/extraction sheets, and run logs.

Data package deliverables that did not meet the above criteria were documented and the missing deliverables were obtained from the contract laboratory. Any documents not obtainable from the laboratory are noted in the QC review reports.

Overall Assessment. The usability of the data was evaluated as to whether the accuracy and precision goals for the sample analyses, based on DCS and MS/MSD recoveries and RPDs, and laboratory duplicate RPDs were met for all analytes. The results of this evaluation are contained in the QC Review reports.

2.2 QC REVIEW DATA PACKAGE #2

2.2.1 Introduction

Samples were analyzed for the following analyses: volatile organics, semivolatile organics, pesticide/PCBs, herbicides, TAL metals, total recoverable petroleum hydrocarbons, total organic carbon, and cyanide. The samples reported in this data package and their corresponding laboratory identifications are listed below.

Field ID	Laboratory ID
CAN074-7408-1006	047471-0001-SA
CAN074-7408-1462	047471-0002-SA (field duplicate of sample CAN074-7408-1006)
CAN074-7408-1010	047471-0003-SA
CAN074-7408-1014	047471-0004-SA
CAN074-7408-1022	047471-0005-SA

Field ID	Laboratory ID
CAN074-7408-1024	047471-0006-SA
CAN074-7408-1034	047471-0007-SA
CAN074-7408-1044	047471-0008-SA
CAN074-7405-1018	047471-0009-SA
CAN074-7405-1463	047471-0010-SA (field duplicate of sample CAN074-7405-1018)
CAN074-7404-1018	047471-0011-SA
CAN074-7406-1018	047471-0012-SA
CAN074-7407-1018	047471-0013-SA,MS,MSD,DU
CAN074-7401-1018	047471-0014-SA
CAN074-7401-1418	047471-0015-SA (water used for grouting and steam cleaning of auger)

Sample CAN074-7407-1018 was analyzed as an MS/MSD sample (MS/Dup for metals) and is associated with the following samples in this data package:

CAN074-7408-1024	CAN074-7408-1034	CAN074-7408-1044
CAN074-7405-1018	CAN074-7405-1463	CAN074-7404-1018
CAN074-7406-1018	CAN074-7407-1018	CAN074-7401-1018

The matrix spike analysis on sample CAN074-7409-1034 (reported in Data Package #1) is associated with the following samples in this data package:

CAN074-7408-1006	CAN074-7408-1014
CAN074-7408-1462	CAN074-7408-1022
CAN074-7408-1010	

2.2.2 Volatile Organics by Method 8240

Samples were analyzed for volatile organics by Method 8240. The QC review parameters outlined in section 2.1.1.2 were within acceptance limits with the exception of blank contamination.

2.2.2.1 Blank Contamination

The method blank 06 MAR 96-H had acetone and methylene chloride reported as detected at concentrations of 3.5 µg/kg and 1.6 ug/kg, respectively. All soil samples in this data package were associated with this method blank. Acetone and methylene chloride results for the

associated samples were reported at concentrations less than ten times the amount found in the method blank and below the reporting limit; and therefore, were qualified as non-detect (U) at the reporting limit.

2.2.2.2 Tentatively Identified Compounds (TICs)

Volatile TICs were reported in six of the samples: CAN074-7408-1010, CAN074-7408-1014, CAN074-7408-1034, CAN074-7408-1044, CAN074-7404-1018, and CAN074-7401-1018. All of the TICs reported were siloxanes (common laboratory artifact attributed to column bleed); these results were qualified as unusable (R).

2.2.2.3 Overall Assessment

Project goals for accuracy and precision with regard to method performance and the sample matrix as measured by spike recoveries (surrogate spikes, matrix spikes and laboratory control sample spikes) and RPDs between duplicate results (matrix spike duplicates, laboratory control sample duplicates, and matrix duplicates) were attained. The field duplicate results satisfied the QAPP evaluation criteria for field duplicate result agreement and are considered to be indicative of satisfactory representativeness of the samples to the medium sampled. All acetone and methylene chloride results were qualified as non-detects due to method blank contamination. The sample data are considered to be useable for meeting project objectives with the qualification noted in the above narrative.

2.2.3 Semivolatile Organics by Method 8270

Samples were analyzed for semivolatile organics by Method 8270. The QC review parameters outlined in section 2.1.1.3 were within acceptance limits with the exception of blank contamination.

2.2.3.1 Blank Contamination

The water method blank 29 FEB 96-S1 had diethyl phthalate reported as detected at a concentration of 1.1 µg/L. However, diethyl phthalate was reported as non-detect in the associated water sample CAN074-7401-1481 and no data qualification was required.

2.2.3.2 Tentatively Identified Compounds (TICs)

Semivolatile TICs were reported in the one water sample: CAN074-7401-1418. There was a total of four (4) TICs reported; these were all qualified NJ.

2.2.3.3 Overall Assessment

Project goals for accuracy and precision with regard to method performance and the sample matrix as measured by spike recoveries (surrogate spikes, matrix spikes and laboratory control sample spikes) and RPDs between duplicate results (matrix spike duplicates, laboratory control sample duplicates, and matrix duplicates) were attained. The field duplicate results satisfied the QAPP evaluation criteria for field duplicate result agreement and are considered to be indicative of satisfactory representativeness of the samples to the medium sampled. The sample data are considered to be useable for meeting project objectives with the qualification noted in the above narrative.

2.2.4 Organochlorine Pesticide/PCBs by Method 8080

Samples were analyzed for pesticide/PCBs by Method 8080. The QC review parameters outlined in section 2.1.1.4 were within acceptance limits and no data qualification was required.

2.2.4.1 Overall Assessment

Project goals for accuracy and precision with regard to method performance and the sample matrix as measured by spike recoveries (surrogate spikes, matrix spikes and laboratory control sample spikes) and RPDs between duplicate results (matrix spike duplicates, laboratory control sample duplicates, and matrix duplicates) were attained. The field duplicate results satisfied the QAPP evaluation criteria for field duplicate result agreement and are considered to be indicative of satisfactory representativeness of the samples to the medium sampled. The sample data are considered to be useable for meeting project objectives without qualification.

2.2.5 Herbicides by Method 8150

Samples were analyzed for herbicides by Method 8150. The QC review parameters outlined in section 2.1.1.6 were within acceptance limits and no data qualification was required.

2.2.5.1 Overall Assessment

Project goals for accuracy and precision with regard to method performance and the sample matrix as measured by spike recoveries (surrogate spikes, matrix spikes and laboratory control sample spikes) and RPDs between duplicate results (matrix spike duplicates, laboratory control sample duplicates, and matrix duplicates) were attained. The field duplicate results satisfied the QAPP evaluation criteria for field duplicate result agreement and are considered to be indicative of satisfactory representativeness of the samples to the medium sampled. The sample data are considered to be useable for meeting project objectives without qualification.

2.2.6 Metals

Samples were analyzed for metals by SW-846 methodology. The QC review parameters outlined in section 2.1.1.1 were within acceptance limits with the exception of laboratory duplicate precision and MS spike recoveries.

2.2.6.1 Case Narrative

The laboratory case narrative noted several raised reporting limits that were either due to dilutions or low analytical spike recoveries. These are summarized in the table below:

Lead / 7421	Selenium / 7740	Thallium / 7841	Arsenic / 7060
CAN074-7408-1006	CAN074-7401-1481	CAN074-7408-1010	CAN074-7407-1018
CAN074-7408-1462	CAN074-7408-1006	CAN074-7408-1014	
CAN074-7408-1010	CAN074-7408-1462	CAN074-7408-1006	
CAN074-7408-1014	CAN074-7408-1010	CAN074-7408-1462	
CAN074-7408-1022	CAN074-7408-1014	CAN074-7408-1022	
CAN074-7408-1044	CAN074-7408-1022	CAN074-7408-1024	
CAN074-7405-1018	CAN074-7405-1018	CAN074-7405-1018	
CAN074-7404-1018	CAN074-7405-1463	CAN074-7405-1463	
CAN074-7407-1018	CAN074-7404-1018	CAN074-7404-1018	
CAN074-7401-1018	CAN074-7406-1018	CAN074-7406-1018	
	CAN074-7401-1018	CAN074-7407-1018	

Lead / 7421	Selenium / 7740	Thallium / 7841	Arsenic / 7060
		CAN074-7401-1018 CAN074-7401-1481	

2.2.6.2 Laboratory Duplicates

The laboratory duplicate analysis for sample CAN074-7407-1018 resulted in RPD values outside acceptance limits (specified in section 2.1.2) for barium (91%) and calcium (23%). Barium and calcium results for samples associated with this laboratory duplicate analysis were qualified as estimated (J/UJ). These include the following samples: CAN074-7408-1024, CAN074-7408-1034, CAN074-7408-1044, CAN074-7405-1018, CAN074-7405-1463, CAN074-7404-1018, CAN074-7406-1018, CAN074-7407-1018, and CAN074-7401-1018.

2.2.6.3 MS Spike Recoveries

The matrix spike analysis for sample CAN074-7407-1018 resulted in spike recoveries for antimony (66%) and barium (250%) outside the acceptance limits specified in section 2.1.2. All antimony results for samples associated with this matrix spike analysis were reported as non-detects and, therefore, were qualified as estimated UJ due to a potential low bias. All barium results for samples associated with this matrix spike analysis were reported as detects, and these were qualified as estimated J due to a potential high bias. Associated samples for both antimony and barium include the following: CAN074-7408-1024, CAN074-7408-1034, CAN074-7408-1044, CAN074-7405-1018, CAN074-7405-1463, CAN074-7404-1018, CAN074-7406-1018, CAN074-7407-1018, and CAN074-7401-1018.

The percent recoveries for aluminum, antimony and selenium for the matrix spike analysis for sample CAN074-7409-1034, reported in Data Package #1, were outside the acceptance limits of 80 to 120 percent. The spike recoveries for antimony (54%) and selenium (52%) were below the acceptance limits indicating a potential low bias. As such, all associated antimony and selenium results were qualified as estimated (J/UJ). The percent recovery for aluminum was 383 percent, above the upper acceptance limit indicating a potential high bias. All detected aluminum results in associated samples were qualified as estimated (J). Associated samples in this data package include: CAN074-7408-1006, CAN074-7408-1014, CAN074-7408-1462, CAN074-7408-1022 and CAN074-7408-1010.

2.2.6.4 Overall Assessment

Project goals for accuracy and precision with regard to the method as measured by the DCS recoveries and RPDs were met. Project goals for accuracy with regard to the sample matrix as measured by the MS recoveries were met with the exception noted in section 2.2.7.3 above. Project goals for precision with regard to the sample matrix as measured by the laboratory duplicate samples were met with the exceptions noted in section 2.2.7.2. The field duplicate results satisfied the QAPP evaluation criteria for field duplicate result agreement and are considered to be indicative of satisfactory representativeness of the samples to the medium sampled. The sample data are considered to be useable for meeting project objectives with the qualification noted in the above narrative.

2.2.7 Total Recoverable Petroleum Hydrocarbons (TRPH)

Samples were analyzed for TRPH by method 418.1. The QC review parameters outlined in section 2.1.1.7 were within acceptance limits, and no data qualification was required.

2.2.7.1 Overall Assessment

Project goals for accuracy and precision with regard to method performance and the sample matrix as measured by spike recoveries (surrogate spikes, matrix spikes and laboratory control sample spikes) and RPDs between duplicate results (matrix spike duplicates, laboratory control sample duplicates, and matrix duplicates) were attained. The field duplicate results satisfied the QAPP evaluation criteria for field duplicate result agreement and are considered to be indicative of satisfactory representativeness of the samples to the medium sampled. The sample data are considered to be useable for meeting project objectives without qualification.

2.2.8 Total Organic Carbon (TOC)

Samples CAN074-B310-1044 and CAN074-B311-1055 were analyzed for TOC. The QC review parameters outlined in section 2.1.1.8 were within acceptance limits, and no data qualification was required.

2.2.8.1 Overall Assessment

Project goals for accuracy and precision with regard to method performance and the sample matrix as measured by spike recoveries (surrogate spikes, matrix spikes and laboratory control sample spikes) and RPDs between duplicate results (matrix spike duplicates, laboratory control sample duplicates, and matrix duplicates) were attained. The field duplicate results satisfied the QAPP evaluation criteria for field duplicate result agreement and are considered to be indicative of satisfactory representativeness of the samples to the medium sampled. The sample data are considered to be useable for meeting project objectives without qualification.

2.2.9 Cyanide

Ten samples and one field duplicate were analyzed for cyanide. The QC review parameters outlined in section 2.1.1.1 were within acceptance limits, and no data qualification was required.

2.2.9.1 Overall Assessment

Project goals for accuracy and precision with regard to method performance and the sample matrix as measured by spike recoveries (surrogate spikes, matrix spikes and laboratory control sample spikes) and RPDs between duplicate results (matrix spike duplicates, laboratory control sample duplicates, and matrix duplicates) were attained. The field duplicate results satisfied the QAPP evaluation criteria for field duplicate result agreement and are considered to be indicative of satisfactory representativeness of the samples to the medium sampled. The sample data are considered to be useable for meeting project objectives without qualification.

2.3 QC REVIEW DATA PACKAGE #3

2.3.1 Introduction

Samples were analyzed for the following analyses: volatile organics, semivolatile organics, pesticide/PCBs, herbicides, TAL metals, total recoverable petroleum hydrocarbons, and cyanide. The samples reported in this data package and their corresponding laboratory identifications are listed below.

Field ID	Laboratory ID
CAN074-7403-1018	047545-0001-SA
CAN074-7402-1018	047545-0002-SA
CAN074-7411-1012	canceled
CAN074-7411-1464	canceled
CAN074-7412-1013	canceled
CAN074-7413-1004	047545-0003-SA
CAN074-7413-1008	047545-0004-SA
CAN074-7413-1464	047545-0005-SA (field duplicate of sample CAN074-7413-1004)
CAN074-7413-1012	047545-0006-SA
CAN074-7414-1010	047545-0007-SA
CAN074-7414-1006	047545-0008-SA
CAN074-7414-1014	047545-0009-SA
CAN074-7415-1004	047545-0010-SA
CAN074-7415-1008	047545-0011-SA
CAN074-7415-1012	047545-0012-SA
CAN074-7418-1005	047545-0013-SA
CAN074-7418-1009	047545-0014-SA
CAN074-7418-1015	047545-0015-SA,MS,MSD,DU
CAN074-7418-1465	047545-0016-SA (field duplicate of sample CAN074-7418-1015)

Sample CAN074-7418-1015 was analyzed as an MS/MSD sample (MS/Dup for metals) and is associated with samples in this data package. The MS/MSD analysis on sample CAN074-7407-1018, reported in Data Package #2, is also associated with samples in this data package.

The matrix spike analysis on sample CAN074-7418-1015 is associated with the following samples in this data package:

CAN074-7415-1012	CAN074-7418-1005	CAN074-7418-1009
CAN074-7418-1015	CAN074-7418-1465	

The matrix spike analysis on sample CAN074-7407-1018 (reported in Data Package #2) is associated with the following samples in this data package:

CAN074-7403-1018	CAN074-7402-1018	CAN074-7413-1004
CAN074-7413-1008	CAN074-7413-1464	CAN074-7413-1012
CAN074-7414-1010	CAN074-7414-1006	CAN074-7414-1014
CAN074-7415-1004	CAN074-7415-1008	

2.3.2 Volatile Organics by Method 8240

Samples were analyzed for volatile organics by Method 8240. The QC review parameters outlined in section 2.1.1.2 were within acceptance limits with the exception of blank contamination.

2.3.2.1 Blank Contamination

The method blank 08 MAR 96-H had acetone and methylene chloride reported as detected at concentrations of 2.0 µg/kg and 1.2 ug/kg, respectively. All soil samples in this data package were associated with this method blank. Acetone and methylene chloride results for the associated samples were reported at concentrations less than ten times the amount found in the method blank and below the reporting limit for all samples except for acetone in samples CAN074-7413-1012 and CAN074-7418-1465. Acetone in these two samples was reported slightly above the reporting limit at 15 ug/kg and 12 ug/kg, respectively. For these two samples, the acetone was qualified as non-detect and the reporting limit was raised to 15 ug/kg and 12 ug/kg accordingly. Methylene chloride was reported below the reporting limit for samples CAN074-7413-1012 and CAN074-7418-1465. Acetone and methylene chloride results which were reported below the reporting limit were qualified as non-detects at the reporting limit.

2.3.2.2 Tentatively Identified Compounds (TICs)

Volatile TICs were reported in five of the samples: CAN074-7402-1018, CAN074-7413-1012, CAN074-7414-1010, CAN074-7414-1014, and CAN074-7418-1465. There was a total of five (5) TICs reported. Two of these were siloxanes (common laboratory artifact attributed to column bleed); these results were qualified as unusable (R). The remaining three (3) TICs were qualified NJ.

2.3.2.3 Overall Assessment

Project goals for accuracy and precision with regard to method performance and the sample matrix as measured by spike recoveries (surrogate spikes, matrix spikes and laboratory control sample spikes) and RPDs between duplicate results (matrix spike duplicates, laboratory control sample

duplicates, and matrix duplicates) were attained. The field duplicate results satisfied the QAPP evaluation criteria for field duplicate result agreement and are considered to be indicative of satisfactory representativeness of the samples to the medium sampled. Acetone and methylene chloride results were qualified as non-detect due to method blank contamination. The sample data are considered to be useable for meeting project objectives with the qualification noted in the above narrative.

2.3.3 Semivolatile Organics by Method 8270

Samples were analyzed for semivolatile organics by Method 8270. The QC review parameters outlined in section 2.1.1.3 were within acceptance limits with the exception of blank contamination.

2.3.3.1 Blank Contamination

The method blank 11 MAR 96-S1 had dimethyl phthalate reported as detected at a concentration of 34 µg/kg. All soil samples in this data package were associated with this method blank. Nine (9) of the samples had dimethyl phthalate reported at concentrations less than ten times the amount found in the method blank and below or slightly above the reporting limit; and therefore, were qualified as non-detect (U) at the reporting limit. Dimethyl phthalate was reported as a non-detect in the remaining seven (7) samples and no qualification was necessary.

2.3.3.2 Tentatively Identified Compounds (TICs)

Semivolatile TICs were reported in nine of the samples: CAN074-7413-1464, CAN074-7413-1012, CAN074-7414-1010, CAN074-7414-1006, and CAN074-7414-1014, CAN074-7415-1008, CAN074-7418-1005, CAN074-7418-1009, and CAN074-7418-1015. There was a total of twenty nine (29) TICs reported. Fourteen (14) of these were siloxanes (common laboratory artifact attributed to column bleed); these results were qualified as unusable (R). The remaining fifteen (15) TICs were qualified NJ.

2.3.3.3 Overall Assessment

Project goals for accuracy and precision with regard to method performance and the sample matrix as measured by spike recoveries (surrogate spikes, matrix spikes and laboratory control sample spikes) and RPDs between duplicate results (matrix spike duplicates, laboratory control sample duplicates, and matrix duplicates) were attained. The field duplicate results satisfied the QAPP evaluation criteria for field duplicate result agreement and are considered to be indicative of satisfactory representativeness of the samples to the medium sampled. Dimethyl phthalate results for nine samples were qualified as a non-detect due to method blank contamination. The sample data are considered to be useable for meeting project objectives with the qualification noted in the above narrative.

2.3.4 Organochlorine Pesticide/PCBs by Method 8080

Samples were analyzed for pesticide/PCBs by Method 8080. The QC review parameters outlined in section 2.1.1.4 were within acceptance limits and no data qualification was required.

2.3.4.1 Overall Assessment

Project goals for accuracy and precision with regard to method performance and the sample matrix as measured by spike recoveries (surrogate spikes, matrix spikes and laboratory control sample spikes) and RPDs between duplicate results (matrix spike duplicates, laboratory control sample duplicates, and matrix duplicates) were attained. The field duplicate results satisfied the QAPP evaluation criteria for field duplicate result agreement and are considered to be indicative of satisfactory representativeness of the samples to the medium sampled. The sample data are considered to be useable for meeting project objectives without qualification.

2.3.5 Herbicides by Method 8150

Samples were analyzed for herbicides by Method 8150. The QC review parameters outlined in section 2.1.1.6 were within acceptance limits and no data qualification was required.

2.3.5.1 Overall Assessment

Project goals for accuracy and precision with regard to method performance and the sample matrix as measured by spike recoveries (surrogate spikes, matrix spikes and laboratory control sample spikes) and RPDs between duplicate results (matrix spike duplicates, laboratory control sample duplicates, and matrix duplicates) were attained. The field duplicate results satisfied the QAPP evaluation criteria for field duplicate result agreement and are considered to be indicative of satisfactory representativeness of the samples to the medium sampled. The sample data are considered to be useable for meeting project objectives without qualification.

2.3.6 Metals

Samples were analyzed for metals by SW-846 methodology. The QC review parameters outlined in section 2.1.2 were within acceptance limits with the exception of laboratory duplicate precision and MS spike recoveries.

2.3.6.1 Case Narrative

The laboratory case narrative noted several raised reporting limits that were either due to dilutions or low analytical spike recoveries. These are summarized in the table below:

ICP / 6010	Selenium / 7740	Thallium / 7841	Lead / 7421
CAN074-7403-1018	CAN074-7403-1018	CAN074-7403-1018	CAN074-7413-1008
CAN074-7413-1008	CAN074-7402-1018	CAN074-7402-1018	CAN074-7413-1464
CAN074-7414-1010	CAN074-7413-1004	CAN074-7413-1004	CAN074-7413-1012
CAN074-7414-1006	CAN074-7413-1008	CAN074-7413-1008	CAN074-7414-1006
CAN074-7414-1014	CAN074-7413-1464	CAN074-7413-1464	
CAN074-7415-1008	CAN074-7413-1012	CAN074-7413-1012	
CAN074-7415-1012	CAN074-7414-1010	CAN074-7414-1010	
CAN074-7418-1009	CAN074-7414-1006	CAN074-7414-1006	
CAN074-7418-1015	CAN074-7414-1014	CAN074-7414-1014	
CAN074-7418-1465	CAN074-7418-1009	CAN074-7415-1004	
	CAN074-7418-1015	CAN074-7415-1008	
	CAN074-7418-1465	CAN074-7415-1012	
		CAN074-7418-1009	
		CAN074-7418-1015	
		CAN074-7418-1465	

2.3.6.2 Laboratory Duplicates

The laboratory duplicate analysis for sample CAN074-7418-1015 resulted in RPD values outside acceptance limits (specified in section 2.1.2) for barium (40%). Barium results for samples associated with this laboratory duplicate analysis were qualified as estimated (J/UJ). These include the following samples: CAN074-7415-1012, CAN074-7418-1005, CAN074-7418-1009, CAN074-7418-1015, and CAN074-7418-1465.

The RPDs for barium (91%) and calcium (23%) were outside of acceptance limits for the laboratory duplicate analysis for sample CAN074-7407-1018, reported in Data Package #2. Barium and calcium results for associated samples in this data package were qualified as estimated (J/UJ). The associated samples requiring qualification for barium and calcium are:

CAN074-7403-1018	CAN074-7402-1018	CAN074-7413-1004
CAN074-7413-1008	CAN074-7413-1464	CAN074-7413-1012
CAN074-7414-1010	CAN074-7414-1006	CAN074-7414-1014
CAN074-7415-1004	CAN074-7415-1008	

2.3.6.3 MS Spike Recoveries

The matrix spike analysis for sample CAN074-7418-1015 resulted in spike recoveries for barium (144%), chromium (55%), selenium (56%), and thallium (46%) outside the acceptance limits specified in section 2.1.2. All selenium and thallium results for samples associated with this matrix spike analysis were reported as non-detects and, therefore, were qualified as estimated (UJ) due to a potential low bias. All barium results for samples associated with this matrix spike analysis were reported as detects, and these were qualified as estimated (J) due to a potential high bias. Chromium results were reported as either non-detects or detects, and were qualified as estimated (J/UJ) due to a potential low bias. Associated samples for these four analytes include the following: CAN074-7415-1012, CAN074-7418-1005, CAN074-7418-1009, CAN074-7418-1015, and CAN074-7418-1465.

The percent recoveries for antimony (66%) and barium (250%) were outside the acceptance limits of 80 to 120 percent for the matrix spike analysis on sample CAN074-7407-1018, reported in Data Package #2. All associated antimony results in this data package were

qualified as estimated (J/UJ) due to a potential low bias and all associated detected barium results were qualified as estimated (J) due to a potential high bias. The following samples in this data package were associated with the matrix spike analysis on sample CAN074-7407-1018:

CAN074-7403-1018	CAN074-7402-1018	CAN074-7413-1004
CAN074-7413-1008	CAN074-7413-1464	CAN074-7413-1012
CAN074-7414-1010	CAN074-7414-1006	CAN074-7414-1014
CAN074-7415-1004	CAN074-7415-1008	

2.3.6.4 Overall Assessment

Project goals for accuracy and precision with regard to the method as measured by the DCS recoveries and RPDs were met. Project goals for accuracy with regard to the matrix as measured by the MS recoveries were met with the exception noted in section 2.3.6.3 above. Project goals for precision with regard to the sample matrix as measured by the laboratory duplicate samples were met with the exceptions noted in section 2.3.6.2. The field duplicate results satisfied the QAPP evaluation criteria for field duplicate result agreement and are considered to be indicative of satisfactory representativeness of the samples to the medium sampled. The sample data are considered to be useable for meeting project objectives with the qualification noted in the above narrative.

2.3.7 Total Recoverable Petroleum Hydrocarbons (TRPH)

Samples were analyzed for TRPH by method 418.1. The QC review parameters outlined in section 2.1.1.7 were within acceptance limits, with the exception of the method blank. No data qualification was required.

2.3.7.1 Blank Contamination

TRPH was reported as detected in the method blank associated with all TRPH samples. However, since all TRPH results were reported as non-detects, no qualification was necessary.

2.3.7.2 Overall Assessment

Project goals for accuracy and precision with regard to method performance and the sample matrix as measured by spike recoveries (surrogate spikes, matrix spikes and laboratory control sample spikes) and RPDs between duplicate results (matrix spike duplicates, laboratory control sample duplicates, and matrix duplicates) were attained. The field duplicate results satisfied the QAPP evaluation criteria for field duplicate result agreement and are considered to be indicative of satisfactory representativeness of the samples to the medium sampled. The sample data are considered to be useable for meeting project objectives without qualification.

2.3.8 Total Organic Carbon (TOC)

Samples CAN074-B310-1044 and CAN074-B311-1055 were analyzed for TOC. The QC review parameters outlined in section 2.1.1.8 were within acceptance limits, and no data qualification was required.

2.3.8.1 Overall Assessment

Project goals for accuracy and precision with regard to method performance and the sample matrix as measured by spike recoveries (surrogate spikes, matrix spikes and laboratory control sample spikes) and RPDs between duplicate results (matrix spike duplicates, laboratory control sample duplicates, and matrix duplicates) were attained. The field duplicate results satisfied the QAPP evaluation criteria for field duplicate result agreement and are considered to be indicative of satisfactory representativeness of the samples to the medium sampled. The sample data are considered to be useable for meeting project objectives without qualification.

2.3.9 Cyanide

Ten samples and one field duplicate were analyzed for cyanide. The QC review parameters outlined in section 2.1.1.1 were within acceptance limits, and no data qualification was required.

2.3.9.1 Overall Assessment

Project goals for accuracy and precision with regard to method performance and the sample matrix as measured by spike recoveries (surrogate spikes, matrix spikes and laboratory control sample spikes) and RPDs between duplicate results (matrix spike duplicates, laboratory control sample duplicates, and matrix duplicates) were attained. The field duplicate results satisfied the QAPP evaluation criteria for field duplicate result agreement and are considered to be indicative of satisfactory representativeness of the samples to the medium sampled. The sample data are considered to be useable for meeting project objectives without qualification.

2.4 QC REVIEW DATA PACKAGE #4

2.4.1 Introduction

Samples were analyzed for the following analyses: volatile organics, semivolatile organics, pesticide/PCBs, herbicides, TAL metals, total recoverable petroleum hydrocarbons, and cyanide. The samples reported in this data package and their corresponding laboratory identifications are listed below.

Field ID	Laboratory ID
CAN074-7423-1004	047617-0001-SA
CAN074-7422-1008	047617-0002-SA
CAN074-7423-1012	047617-0003-SA

Sample CAN074-7418-1015, reported in Data Package #3, was analyzed as an MS/MSD sample (MS/Dup for metals) and is associated with the samples in this data package.

2.4.2 Volatile Organics by Method 8240

Samples were analyzed for volatile organics by Method 8240. The QC review parameters outlined in section 2.1.1.2 were within acceptance limits with the exception of blank contamination.

2.4.2.1 Blank Contamination

The method blank 07 MAR 96-J had acetone and methylene chloride reported as detected at concentrations of 2.0 µg/kg and 1.1 ug/kg, respectively. All soil samples in this data package were associated with this method blank. Acetone results for the associated samples were reported at concentrations less than ten times the amount found in the method blank and below the reporting limit; and therefore, were qualified as non-detect (U) at the reporting limit. Methylene chloride was reported at a concentration less than ten times the amount found in the method blank and below the reporting limit in sample CAN074-7423-1004, and was qualified as non-detect at the reporting limit. Methylene chloride was reported as a non-detect in the other two samples and no qualification was necessary.

2.4.2.2 Tentatively Identified Compounds (TICs)

Volatile TICs were reported as detected in one (1) of the samples: CAN074-7423-1012. There was a total of one (1) TIC reported. The one TIC was siloxane, a common laboratory artifact attributed to column bleed; the result was qualified as unusable (R).

2.4.2.3 Overall Assessment

Project goals for accuracy and precision with regard to method performance and the sample matrix as measured by spike recoveries (surrogate spikes, matrix spikes and laboratory control sample spikes) and RPDs between duplicate results (matrix spike duplicates, laboratory control sample duplicates, and matrix duplicates) were attained. The field duplicate results satisfied the QAPP evaluation criteria for field duplicate result agreement and are considered to be indicative of satisfactory representativeness of the samples to the medium sampled. Acetone results in all samples and one methylene chloride result in sample CAN074-7423-1004 were qualified as non-detects due to method blank contamination. The sample data are considered to be useable for meeting project objectives with the qualification noted in the above narrative.

2.4.3 Semivolatile Organics by Method 8270

Samples were analyzed for semivolatile organics by Method 8270. The QC review parameters outlined in section 2.1.1.3 were within acceptance limits.

2.4.3.1 Tentatively Identified Compounds (TICs)

Semivolatile TICs were reported in one (1) of the samples: CAN074-7423-1008. There was a total of one (1) TIC reported; the result was qualified NJ.

2.4.3.2 Overall Assessment

Project goals for accuracy and precision with regard to method performance and the sample matrix as measured by spike recoveries (surrogate spikes, matrix spikes and laboratory control sample spikes) and RPDs between duplicate results (matrix spike duplicates, laboratory control sample duplicates, and matrix duplicates) were attained. The field duplicate results satisfied the QAPP evaluation criteria for field duplicate result agreement and are considered to be indicative of satisfactory representativeness of the samples to the medium sampled. The sample data are considered to be useable for meeting project objectives with the qualification noted in the above narrative.

2.4.4 Organochlorine Pesticide/PCBs by Method 8080

Samples were analyzed for pesticide/PCBs by Method 8080. The QC review parameters outlined in section 2.1.1.4 were within acceptance limits and no data qualification was required.

2.4.4.1 Overall Assessment

Project goals for accuracy and precision with regard to method performance and the sample matrix as measured by spike recoveries (surrogate spikes, matrix spikes and laboratory control sample spikes) and RPDs between duplicate results (matrix spike duplicates, laboratory control sample duplicates, and matrix duplicates) were attained. The field duplicate results satisfied the QAPP evaluation criteria for field duplicate result agreement and are considered to be indicative of satisfactory representativeness of the samples to the medium sampled. The sample data are considered to be useable for meeting project objectives without qualification.

2.4.5 Herbicides by Method 8150

Samples were analyzed for herbicides by Method 8150. The QC review parameters outlined in section 2.1.1.6 were within acceptance limits and no data qualification was required.

2.4.5.1 Overall Assessment

Project goals for accuracy and precision with regard to method performance and the sample matrix as measured by spike recoveries (surrogate spikes, matrix spikes and laboratory control sample spikes) and RPDs between duplicate results (matrix spike duplicates, laboratory control sample duplicates, and matrix duplicates) were attained. The field duplicate results satisfied the QAPP evaluation criteria for field duplicate result agreement and are considered to be indicative of satisfactory representativeness of the samples to the medium sampled. The sample data are considered to be useable for meeting project objectives without qualification.

2.4.6 Metals

Samples were analyzed for metals by SW-846 methodology. The QC review parameters outlined in section 2.1.1.1 were within acceptance limits with the exception of laboratory duplicate precision and MS spike recoveries.

2.4.6.1 Case Narrative

The laboratory case narrative noted several raised reporting limits that were either due to dilutions or low analytical spike recoveries. These are summarized in the table below:

Lead / 7421	Selenium / 7740	Thallium / 7841
CAN074-7423-1004	CAN074-7423-1004	CAN074-7423-1004
CAN074-7423-1008	CAN074-7423-1008	CAN074-7423-1008
	CAN074-7423-1012	CAN074-7423-1012

2.4.6.2 Laboratory Duplicates

The RPD for barium (40%) for the associated laboratory duplicate analysis (sample CAN074-7418-1015) reported in Data Package #3, was outside the QAPP acceptance limit. The barium results reported for the samples in this data package were qualified as estimated (J).

2.4.6.3 MS Spike Recoveries

Percent recoveries for four analytes in the associated matrix spike sample (CAN074-7418-1015) reported in data package #3 were outside the QAPP acceptance range of 80-120 percent. The percent recoveries reported for barium, chromium, selenium and thallium were 144%, 55%, 56%, and 46%, respectively. All chromium, selenium and thallium results for samples in this data package were qualified as estimated (J/UJ) due to a potential low bias. All positive barium results for samples in this data package were reported as detects and were qualified as estimated (J) due to a potential high bias.

2.4.6.4 Overall Assessment

Project goals for accuracy and precision with regard to the method as measured by the DCS recoveries and RPDs were met. Project goals for accuracy with regard to the matrix as measured by the MS recoveries were met with the exceptions noted in the QC review narrative for data package #3. Project goals for precision with regard to the sample matrix as measured by the laboratory duplicate samples were met with the exceptions noted in the QC review narrative for data package #3. The field duplicate results satisfied the QAPP evaluation criteria for field duplicate result agreement and are considered to be indicative of satisfactory representativeness of the samples to the medium sampled. The sample data are considered to be useable for meeting project objectives with the qualification noted in the above narrative.

2.4.7 Total Recoverable Petroleum Hydrocarbons (TRPH)

Samples were analyzed for TRPH by method 418.1. The QC review parameters outlined in section 2.1.1.7 were within acceptance limits, and no data qualification was required.

2.4.7.1 Overall Assessment

Project goals for accuracy and precision with regard to method performance and the sample matrix as measured by spike recoveries (surrogate spikes, matrix spikes and laboratory control sample spikes) and RPDs between duplicate results (matrix spike duplicates, laboratory control sample duplicates, and matrix duplicates) were attained. The field duplicate results satisfied the QAPP evaluation criteria for field duplicate result agreement and are considered to be indicative of satisfactory representativeness of the samples to the medium sampled. The sample data are considered to be useable for meeting project objectives without qualification.

2.4.8 Total Organic Carbon (TOC)

Samples CAN074-B310-1044 and CAN074-B311-1055 were analyzed for TOC. The QC review parameters outlined in section 2.1.1.8 were within acceptance limits, and no data qualification was required.

2.4.8.1 Overall Assessment

Project goals for accuracy and precision with regard to method performance and the sample matrix as measured by spike recoveries (surrogate spikes, matrix spikes and laboratory control sample spikes) and RPDs between duplicate results (matrix spike duplicates, laboratory control sample duplicates, and matrix duplicates) were attained. The field duplicate results satisfied the QAPP evaluation criteria for field duplicate result agreement and are considered to be indicative of satisfactory representativeness of the samples to the medium sampled. The sample data are considered to be useable for meeting project objectives without qualification.

2.4.9 Cyanide

Ten samples and one field duplicate were analyzed for cyanide. The QC review parameters outlined in section 2.1.1.1 were within acceptance limits, and no data qualification was required.

2.4.9.1 Overall Assessment

Project goals for accuracy and precision with regard to method performance and the sample matrix as measured by spike recoveries (surrogate spikes, matrix spikes and laboratory control sample spikes) and RPDs between duplicate results (matrix spike duplicates, laboratory control sample duplicates, and matrix duplicates) were attained. The field duplicate results satisfied the QAPP evaluation criteria for field duplicate result agreement and are considered to be indicative of satisfactory representativeness of the samples to the medium sampled. The sample data are considered to be useable for meeting project objectives without qualification.

TABLE E2-1
FIELD DUPLICATE ASSOCIATIONS

	Data Package 1	Data Package 2	Data Packages 3 and 4
Field Duplicates	CAN074-7410-1038 CAN074-7410-1461	CAN074-7408-1006 CAN074-7408-1462	CAN074-7413-1004 CAN074-7413-1464
Associated Field Samples	CAN074-7410-1010 CAN074-7410-1016 CAN074-7410-1020 CAN074-7410-1024 CAN074-7410-1032 CAN074-7410-1048 CAN074-7410-1010 CAN074-7409-1006 CAN074-7409-1010 CAN074-7409-1014 CAN074-7409-1020 CAN074-7409-1024 CAN074-7409-1044	CAN074-7408-1010 CAN074-7408-1014 CAN074-7408-1022 CAN074-7408-1024 CAN074-7408-1034 CAN074-7408-1044	CAN074-7403-1018 CAN074-7402-1018 CAN074-7413-1008 CAN074-7413-1012 CAN074-7414-1010 CAN074-7414-1006 CAN074-7414-1014
Field Duplicates		CAN074-7405-1018 CAN074-7405-1463	CAN074-7418-1015 CAN074-7418-1465
Associated Field Samples		CAN074-7404-1018 CAN074-7406-1018 CAN074-7401-1018 CAN074-7407-1014	CAN074-7415-1004 CAN074-7415-1008 CAN074-7415-1012 CAN074-7418-1005 CAN074-7418-1009 CAN074-7423-1004 CAN074-7423-1008 CAN074-7423-1012

TABLE E2-2
MATRIX SPIKE/MATRIX SPIKE DUPLICATE/DUPLICATE ASSOCIATIONS

MS/MSD, MS/D	CAN074-7409-1034	CAN074-7407-1018	CAN074-7418-1015
1	CAN074-7410-1010	CAN074-7408-1024	CAN074-7415-1012
2	CAN074-7410-1016	CAN074-7408-1034	CAN074-7418-1005
3	CAN074-7410-1020	CAN074-7408-1044	CAN074-7418-1009
4	CAN074-7410-1024	CAN074-7405-1018	CAN074-7423-1004
5	CAN074-7410-1032	CAN074-7405-1463	CAN074-7423-1008
6	CAN074-7410-1048	CAN074-7404-1018	CAN074-7423-1012
7	CAN074-7410-1010	CAN074-7406-1018	CAN074-7418-1015
8	CAN074-7409-1006	CAN074-7401-1018	CAN074-7418-1465
9	CAN074-7409-1010	CAN074-7407-1014	
10	CAN074-7409-1014	CAN074-7413-1004	
11	CAN074-7409-1020	CAN074-7413-1464	
12	CAN074-7409-1024	CAN074-7403-1018	
13	CAN074-7409-1044	CAN074-7402-1018	
14	CAN074-7408-1006	CAN074-7413-1008	
15	CAN074-7408-1462	CAN074-7413-1012	
16	CAN074-7408-1010	CAN074-7414-1010	
17	CAN074-7408-1014	CAN074-7414-1006	
18	CAN074-7408-1022	CAN074-7414-1014	
19		CAN074-7415-1004	
20		CAN074-7415-1008	

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September 17, 1997

U.S. Department of the Army
Corps of Engineers, Omaha District
Attn: CENWO-ED-EC (Mr. Steve Peterson)
215 North 17th Street
Omaha, Nebraska 68102-4978

Subject: Final Phase I RFI Report for Landfill No. 1
Cannon Air Force Base, New Mexico
Contract DACW45-90-D-0008
Delivery Order No. 0034, Modification No. 003402
WCFS Project No. 9C114LL1

Dear Mr. Peterson:

Please find enclosed the Final Phase I RFI report for Landfill No. 1. The Final RFI report contains those revisions necessary to address the New Mexico Environment Department's comments received on June 25, 1997.

If you have questions regarding the Phase I RFI Report or the project in general, please do not hesitate to call me at (303) 740-2799.

Sincerely,

Jeffrey Ehrenzeller
Project Manager

JLE:kab
Enclosures (5)
(1 copy sent)

1c w/5 enclosures: Mr. Sanford Hutsell, Cannon AFB, NM
1c w/1 enclosure: Ms. Margaret Patterson, Langley AFB
1c w/ 1 enclosure: File: 9C114LL1.6B.1

9C114LL1/LE4.DOC September 17, 1997(11:45 AM)/MISCVN6

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FINAL
VOLUME I

PHASE I RCRA FACILITY INVESTIGATION REPORT FOR LANDFILL NO. 1 (SWMU NO 74) CANNON AIR FORCE BASE CLOVIS, NEW MEXICO

Prepared for
U.S. Department of the Army
Corps of Engineers, Omaha District
Omaha, Nebraska
September 1997

Woodward-Clyde

Woodward-Clyde Consultants
101 S. 108th Avenue
Omaha, NE 68154

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LIST OF ACRONYMS

ACC	Air Combat Command
AFB	Air Force Base
B.P.	Before Present
bgs	below ground surface
CEC	cation exchange capacity
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CL	inorganic clays
cm/sec	centimeters per second
CME	Central Mine Equipment
CMI	Corrective Measures Implementation
CMS	Corrective Measures Study
COC	Chain-of-Custody
COI	chemical of interest
CUZ	Compatible Use Zone
DQCR	daily quality control report
EM	electromagnetic
EPA	U.S. Environmental Protection Agency
FD	Field Duplicate
FS	Feasibility Study
FSP	Field Sampling Plan
FSPS	Field Sampling Plan Supplement
GC	clayey gravels
gpm	gallons per minute
HHRS	human health risk screen
HI	Hazard Index
HQ	Hazard Quotient
IRP	Installation Restoration Program
m^2/g	square meters per gram
MCPP	2-(2-methyl-4-chlorophenoxy) propionic acid
meq/100 g	milliequivalents per 100 grams

MFH	military family housing
mg/l	milligrams per liter
mph	miles per hour
MRD	Missouri River Division
MS/MSD	matrix spike/matrix spike duplicate
msl	mean sea level
mv	millivolts
NAPL	non-aqueous phase liquid
NCP	National Oil and Hazardous Substance Pollution Contingency Plan
NMED	New Mexico Environment Department
NWR	National Wildlife Refuge
PA	Preliminary Assessment
PAH	polynuclear aromatic hydrocarbon
PCB	polychlorinated biphenyl
PCP	pentachlorophenol
PID	photoionization detector
ppm	parts per million
PRG	preliminary remediation goal
PVC	polyvinyl chloride
QAPP	Quality Assurance Project Plan
RAS	Relevant and Appropriate Standard
RBC	risk-based concentration
RCRA	Resource Conservation and Recovery Act
RD/RA	Remedial Design/Remedial Action
RFA	RCRA Facility Assessment
RFI	RCRA Facility Investigation
ROD	Record of Decision
SC	clayey sand
SI	Site Investigation
SM	silty sand
SOP	standard operating procedure
SOS	Statement of Services
SP	poorly graded sands

SSL	soil screening levels
SVOC	semivolatile organic compound
SWMU	Solid Waste Management Unit
TAL	target analyte list
TCL	Target Compound List
TFW	Tactical Fighter Wing
TIC	tentatively identified compound
TOC	total organic carbon
TRPH	total recoverable petroleum hydrocarbons
UCL	upper confidence limit
USAF	United States Air Force
USCS	Unified Soil Classification System
USDA-SCS	United States Department of Agriculture - Soil Conservation Service Comprehensive Soil Classification System
USFWS	U.S. Fish and Wildlife Service
UTL	upper tolerance limit
VOC	volatile organic compound
W-C	Woodward-Clyde
WCFS	Woodward-Clyde Federal Services

EXECUTIVE SUMMARY

A Phase I RCRA Facility Investigation (RFI) was conducted to evaluate the nature and extent of potential soil contamination at Landfill No. 1 (SWMU No. 74) located at the Cannon Air Force Base Installation (Cannon AFB) near Clovis, New Mexico. This SWMU was identified during a RCRA Facility Assessment (RFA) performed by the U.S. Environmental Protection Agency in 1987.

The Phase I RFI was conducted to satisfy requirements of the United States Air Force (USAF) Installation Restoration Program (IRP), as well as the conditions of the Cannon AFB RCRA operating permit. Activities for the Phase I RFI effort at Landfill No. 1 were performed in accordance with the approved RFI Work Plan documents for Landfill No. 1 in January 1996.

A human health risk screen was performed as part of the RFI to help support risk decisions for Landfill No. 1.

Field Activities

The Phase I RFI field activities were carried out between September 1995 and March 1996 and consisted of establishing a site survey grid, surface geophysical surveying, and a subsurface soil investigation.

The site survey grid was established prior to the start of the surface geophysical surveys. The survey grid was established across Landfill No. 1 by a local land surveying company (licensed in the state of New Mexico) to conduct surface geophysical surveys across the site and to assist in choosing boring locations for the subsurface soil investigation.

Following the completion of the site survey grid, W-C conducted electromagnetic (EM) surveys across Landfill No. 1. These surveys were conducted from September 21 through September 25, 1995. The objectives of the geophysical investigation included:

- Delineating the edges of the landfill
- Locating waste-filled pits, trenches or cells within the landfill, if present
- Identifying potential areas of contamination and
- Identifying buried metallic objects

Considering the site history at Landfill No. 1, the geophysical investigation consisted of two different types of EM surveys. One of the EM surveys was conducted using the Geonics EM-31 and the other EM survey was conducted using the Geonics EM-61.

Results of the EM-31 horizontal and vertical dipole modes for the quadrature response and inphase responses are dominated by anomalies associated with various cultural features. These features include water lines associated with the irrigation system for the golf course, a basketball court, roads, water main lines and other utilities. EM-61 results included non-cultural anomalies as well as some of the cultural features seen on the EM-31 plot along with anomalies that are likely stormwater drop inlets and or sprinkler heads on the golf course. Based on the interpretation of the geophysical results, a subsurface soil investigation was designed.

The subsurface investigation for the Phase I RFI at Landfill No. 1 was conducted from February 20 through March 1, 1996. Twenty-three soil borings were drilled, and subsurface samples were collected and submitted for chemical analysis from 15 of these boring locations. Borings were drilled to depths ranging from 10 to 50 feet below ground surface. Borings were drilled using a truck-mounted Central Mine Equipment (CME) 75 high-torque auger drill rig using hollow-stem augers. CME 5-foot continuous core barrels were used to collect samples for description of the landfill material. Upon retrieval and opening of each core barrel, the core was screened with a photoionization detector (PID) for the presence of volatile organic vapors.

After sampling through the landfill material, if present, and identifying the landfill/native soil interface, soil samples were collected for chemical and/or lithologic description using 2-foot-long, 2½-inch-ID stainless steel split spoons. Upon retrieval and opening of the split spoon, the PID was used to screen the entire sample for the presence of volatile organic vapors. Samples were also collected for soil headspace analysis using a PID from each sample

interval. A grab sample was collected immediately from the sampling interval for volatile organic compound (VOC) analysis and the remaining soil was placed in a stainless steel bowl and homogenized and placed into appropriate sampling jars for other designated analysis.

Nature and Extent of Contamination

The nature and extent of subsurface soil contamination at Landfill No. 1, was described based on the validated chemical results obtained during the Phase I RFI. Metals that were found above the upper estimated background range for Cannon AFB and chemical compounds that do not occur naturally in the environment were identified and described as to their occurrence at the Landfill No. 1 site. Chemicals analyzed during the Phase I RFI included a list of 23 metals, cyanide, volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), pesticides/polychlorinated biphenyls (PCBs), herbicides, and total recoverable petroleum hydrocarbons (TRPH). In addition, volatile and semivolatile tentatively identified (TIC) compounds were identified. Forty-three samples were collected and analyzed for each analysis. The occurrence of these compounds is discussed below:

Metals

Of the 23 metals analyzed, five metals (excluding commonly occurring elements calcium and magnesium) were, detected above the estimated background range in one or more subsurface soil samples collected from Landfill No. 1 during the Phase I RFI. Their frequency of occurrence, the borings where they were found, and the range of reported concentrations are summarized below:

Metal Results Above the Estimated Background Range[1]

Analyte	Frequency of Occurrence Above Background[1]	Range of Concentrations Above Background (mg/kg)	Estimated Background Range[1] for Cannon AFB (mg/kg)
Barium	5 samples in four borings	559J - 1180J	0 - 548
Beryllium	1 sample in one boring	0.67	0 - 0.6
Cobalt	2 samples in two borings	4.4 - 4.5	0 - 4.0
Manganese	1 sample in one boring	188	0 - 151.8
Vanadium	1 sample in one boring	25.7	1.7 - 25.0

J = Estimated Value
[1] Background mean plus or minus two standard deviations. Table 2-6 in Concentrations of Naturally Occurring Chemical Constituents in Soil and Groundwater, Cannon AFB, New Mexico (W-C 1994).
[2] Borings where exceedances occurred are listed in Table 4-18.

Calcium and magnesium were considered to be naturally occurring even though there were occurrences of these compounds above the estimated background ranges and, therefore, were not considered as contaminants at Landfill No. 1.

Of the remaining sixteen metals analyzed (aluminum, antimony, arsenic, cadmium, chromium, copper, iron, lead, mercury, nickel, potassium, selenium, silver, sodium, thallium, and zinc) were not detected at concentrations above the estimated background range and were, therefore, not further evaluated within the RFI report.

Given the isolated and random occurrence of these metals above the estimated background range within individual borings and areally across Landfill No. 1, it appears that site-specific geologic factors probably account for many of the exceedances. In a majority of cases, the metals listed above did not exceed background in the sample collected immediately beneath the landfill cell. Typically within the same boring the metal exceeding the estimated background range was not detected above background in samples collected above or below the interval where the exceedance occurred.

Volatile Organic Compounds

Toluene was the only VOC detected in subsurface soil at Landfill No. 1, aside from identified laboratory contaminants.

Concentrations of toluene ranged from 1.3J µg/kg to 9.2 µg/kg. Two of the three detections of toluene were below the laboratory reporting limit and were therefore, in the range for which quantitation is considered uncertain and were qualified as estimated. The maximum detection of 9.2 µg/kg for toluene was found in soil collected from 18 to 20 feet bgs in boring 74-07 where no landfill material was identified.

Semivolatile Organic Compounds

Three SVOCs (phenanthrene, pyrene, pentachlorophenol), aside from the identified SVOC laboratory contaminants, were detected in 3 subsurface soil samples collected from one boring 74-10.

The concentrations reported for phenanthrene, pyrene, and pentachlorophenol were all below the laboratory reporting limit. As such, they were in the range for which quantitation of sample results is uncertain and were qualified as estimated. These SVOCs were found in the three subsurface samples collected immediately below landfill material at depths from 2 to 14 feet below subsurface landfill debris. These compounds were not found below this depth or in any other sample collected from Landfill No. 1.

Pesticides/Herbicides

Only one herbicide was detected [2-(2-methyl-4-chlorophenoxy) propionic acid (MCPP)], at a concentration of 12,000 μg/kg in the sample collected immediately below landfill material at boring 74-18. This compound was not found in the two subsurface soil samples collected below this sample interval nor in any other samples collected from Landfill No. 1.

PCBs and Cyanide

No PCBs or cyanide were detected in subsurface soil samples collected during the Phase I RFI at Landfill No. 1.

TRPH

TRPH was detected in 4 subsurface soil samples from two borings. Concentrations ranged from 42.2 mg/kg to 62.9 mg/kg. These results indicate the presence of only minor contamination.

Volatile and Semivolatile TICs

During the Phase I RFI, three VOC and five SVOC TICs were reported by the laboratory. These TICs were categorized based on the nature of the compound and as to their potential toxicity to the environment or human health. The majority of compounds appeared to be potentially non-toxic and included alcohols, aldehydes, fatty acids esters, saturated hydrocarbons and unknowns. Only one VOC TIC, ethylenediamine was evaluated as being potentially toxic and was further evaluated in the human health risk screen.

In summary, it appears that if a release of hazardous constituents has occurred at Landfill No. 1, it has been insignificant. Additionally, based on the fact that free liquids or soil saturated with liquid wastes were not observed within the landfill wastes while drilling, the potential for a release to occur at Landfill No. 1 in the future is minimal.

Chemical Fate and Transport

Chemicals detected at Landfill No. 1 were grouped into VOCs/herbicides, SVOCs/pesticides, and metals to evaluate fate and transport. The following conclusions were drawn from the evaluation:

VOCs/Herbicides

Toluene is likely to be medium to highly mobile in the subsurface soil environment and is not likely to persist for long periods of time due to high vapor pressure, high volatilization potential and high biodegradation rates.

MCPP is not likely to persist in the environment over time due to a very high water solubility, a tendency not to adsorb to clays, and a high biodegradation rate.

SVOCs/Pesticides

Pyrene, phenanthrene, and PCP are likely to be relatively immobile due to low vapor pressure, low water solubility, and tendency to adsorb to clays present in the soils. In addition these three compounds have a moderate to low biodegradation rate.

4,4'-DDT is likely to persist in the environment due to an extremely low vapor pressure, low water solubility, and tendency to readily adsorb to soil. 4,4'-DDT also has a low biodegradation rate.

Metals

Based on general characteristics of subsurface soil at Landfill No. 1 which include moderate clay content and an alkaline soil pH, metals are not likely to be mobile in the subsurface but would persist for long periods of time. The potential for precipitation of metals in the subsurface, thus limiting downward migration in the vadose zone, is evidenced by caliche layers encountered in the borings drilled during the Phase I RFI.

Human Health Risk Screen

A Human Health Risk Screen (HHRS) was performed as part of the Phase I evaluation for Landfill No. 1 to evaluate whether chemicals of interest (COIs) were detected in subsurface soils at levels that may pose an unacceptable risk to human health. The chemicals identified in the description of nature and extent of contamination were evaluated for selection of COIs for the HHRS. Maximum site concentrations were compared to Region III RBCs for residential soil ingestion to estimate potential noncancer hazard and cancer risk regardless of sample depth. Conservative assumptions were used for long-term residential exposure to soil even though future residential use at Landfill No. 1 is unlikely. Therefore, the results overestimate actual hazard/risk at the site.

COIs evaluated during the HHRS included:

Inorganic Compounds	Organic Compounds
Barium	Toluene (VOC)
	Pyrene (SVOC)
	PCP (SVOC)
	MCPP (Herbicide)
	4,4'-DDT (Pesticide)

No COI had a maximum concentration exceeding its Region III RBC. The cumulative cancer risk from exposure to maximum concentrations of 4,4'-DDT and PCP was 1×10^{-8}, well below EPA's "point of departure" of 1×10^{-6} for evaluating cancer risk at contaminated sites. The cumulative Hazard Index (HI) for noncarcinogenic effects was less than 1 (HI=0.4), indicating that maximum concentrations of noncarcinogenic chemicals in soil at the site do not pose an unacceptable risk to human health.

Compounds without toxicity values and TICs were evaluated qualitatively and were not considered to pose a threat to human health based on low toxicity, low potential for human exposure (due to infrequent detection), and low detected concentrations.

Based on the results of the HHRS, it was concluded that chemicals in subsurface soil at Landfill No. 1 do not pose an unacceptable risk to human health.

Recommendations

Based on the results and conclusions of the Phase I RFI, **"No Further Action"** is recommended for this SWMU. This recommendation is supported by the lack of a significant release of hazardous constituents into subsurface soil and a human health risk screen that indicated that COIs in subsurface soil at Landfill No. 1 do not pose an unacceptable risk to human health.

1.0
INTRODUCTION

1.1 PURPOSE AND SCOPE OF REPORT

The purpose of this Phase I Resource Conservation and Recovery Act (RCRA) Facility Investigation (RFI) Report is to present results of activities performed to characterize the nature and extent of contamination (if any) beneath Landfill No. 1, Solid Waste Management Unit (SWMU) No. 74, at Cannon Air Force Base (AFB), Clovis, New Mexico. The information obtained from the Phase I investigation at Landfill No. 1 including laboratory analytical results was used to evaluate whether a release of hazardous constituents had occurred to subsurface soil beneath the landfill and, if so, whether remedial action (i.e., a Corrective Measures Study (CMS) under RCRA or a Feasibility Study (FS) under the Comprehensive Environmental Response, Compensation, and Liability Act [CERCLA]) was necessary. A human health risk screen was also performed to support a decision regarding: (1) additional investigation (2) remedial action, or (3) no further action for this SWMU.

This RFI was conducted to satisfy requirements of the United States Air Force (USAF) Installation Restoration Program (IRP), as well as the conditions of the Cannon AFB RCRA operating permit. Activities for the Phase I RFI effort at Landfill No. 1 were conducted in accordance with the RFI Work Plan dated August 1995 and the Field Sampling Plan Supplement (FSPS) dated November 1995. The RFI Work Plan included a Field Sampling Plan (FSP) and a FSPS and a Quality Assurance Project Plan (QAPP). These plans will hereafter be referred to as the Work Plan. The current Community Relations Plan for Cannon AFB was considered adequate by U.S. Army Corps of Engineers (USACE) and Cannon AFB, and therefore was not revised for the Landfill No. 1 investigation.

1.2 REGULATORY FRAMEWORK

As a condition of their RCRA Part B permit, Cannon AFB must evaluate SWMUs identified by the Environmental Protection Agency (EPA) during the RCRA Facility Assessment (RFA). Therefore, the Phase I investigation conducted at Landfill No. 1 by Woodward-Clyde

(W-C) was designed to satisfy RFI guidance for characterizing the SWMU and developing and implementing corrective action measures, if necessary. The New Mexico Environment Department (NMED) is the lead regulatory agency for the RFI conducted at Landfill No. 1. NMED approved the Phase I RFI Work Plan documents for Landfill No. 1 in January 1996.

To satisfy funding requirements under the USAF IRP, the investigation conducted by W-C at Landfill No. 1 also followed the IRP CERCLA-based environmental restoration program for characterizing the nature and extent of risks posed by uncontrolled hazardous waste sites and for evaluating potential remedial options. The USAF is the lead agency for implementing IRP activities.

The following discussion provides a brief comparison of the RCRA and CERCLA programs. While RCRA authorizes a general regulatory program to manage all hazardous wastes from "cradle-to-grave" (from generation to ultimate disposal), CERCLA provides authority to respond whenever a release or substantial threat of a release that threatens human health or the environment occurs. CERCLA is the more comprehensive statute, as CERCLA "hazardous substances" encompass RCRA "hazardous wastes" as well as other pollutants regulated by the Clean Air Act, and the Toxic Substances Control Act. Thus, all RCRA "hazardous wastes" may trigger CERCLA response actions when released into the environment.

Under the IRP, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP) guides the CERCLA-based environmental restoration program response process.

The RCRA and CERCLA programs use different terminology but follow roughly parallel procedures in responding to releases (Table 1-1).

1.3 REPORT ORGANIZATION

The Phase I RFI Report for Landfill No. 1 is organized into nine sections and appendixes described below:

- Section 1.0, Introduction, describes the report organization, states the purpose and scope of the report, discusses the regulatory framework, and provides the general background information for Cannon AFB.

- Section 2.0, Physical Characteristics, presents the landfill setting, history of use, past investigations, land use and demography, and regional soil and geology pertinent to Landfill No. 1.

- Section 3.0, Field Investigation, presents the field investigation objectives and methods and describes the specific field investigation activities conducted at Landfill No. 1. In addition, site-specific soil and geologic conditions and the landfill waste characterization at Landfill No. 1 are described.

- Section 4.0, Nature and Extent of Contamination, presents the chemical analytical results along with an assessment of data quality and describes the nature and extent of contamination in the soils, if any, based on the RFI results.

- Section 5.0, Contaminant Fate and Transport, discusses the factors that affect the movement and persistence of the contaminants identified in Section 4.0, describes potential routes of contaminant migration, and provides support for the human health risk screen.

- Section 6.0, Human Health Risk Screen, presents the results of the risk screen performed for human health.

- Section 7.0, Relevant and Appropriate Standards (RASs), presents RASs used for evaluating the nature and extent of potential hazardous waste contamination at Landfill No. 1.

- Section 8.0, Conclusions and Recommendations, provides the conclusions and recommendations based on the results of the field investigation and the human health risk screen for Landfill No. 1.

- Section 9.0, References, lists references for documents used in preparation of the Phase I RFI Report.

- Appendixes

  - Appendix A contains the Surveyor Notes
  - Appendix B contains the Geophysical Survey Technical Report.
  - Appendix C contains lithologic boring logs and gradational analyses from the Phase I drilling program.
  - Appendix D contains the database printout for the soil analytical data results.
  - Appendix E provides details of the quality assurance procedures implemented for this project including laboratory data validation reports.

1.4 INSTALLATION BACKGROUND INFORMATION

1.4.1 Description and History of Cannon Air Force Base

Cannon AFB is located in Curry County, New Mexico, approximately seven miles west of the City of Clovis. The base is situated on approximately 4,320 acres south of the intersection of U.S. Highway 84/60 and New Mexico Highway 277. The vicinity map of Cannon AFB is shown in Figure 1-1, and the site map of Cannon AFB is shown in Figure 1-2. Base facilities include the airfield area with operation, maintenance, and support facilities located primarily northwest of the airfield area. Base housing is located in the northwest

quarter of the base and north of the base, west of New Mexico Highway 277. Additional ancillary base support facilities such as the wastewater lagoons, fire department training area, and munitions storage are located south and east of the airfield.

Cannon AFB dates to 1929 when Portair Field was established on the site. Portair Field was a civilian passenger terminal for early commercial transcontinental flights. In 1942, the Army Air Corps took control of the civilian airfield, and it became known as the Clovis Army Air Base. In early 1945, the base was renamed Clovis Army Air Field. Flying, bombing, and gunnery classes continued through the end of World War II. By mid-1946, however, the airfield was placed on a reduced operational status and flying activities decreased. The installation was deactivated in May 1947. The types of aircraft stationed at Cannon AFB from 1942 to 1947 included B-17, B-24, and B-29 heavy bombers.

The base was reassigned to the Tactical Air Command in July 1951. The first unit, the 140th Fighter-Bomber Wing, arrived in October of that year. The airfield was formally reactivated in November 1951 as Clovis AFB. Between 1952 and 1957, the 50th and 388th Fighter-Bomber Wings were activated and, upon their transfer, were replaced by the 312th and 474th Groups. Predominant aircraft stationed at Clovis AFB from 1951 to 1957 included the P-51 "Mustang" fighter and the F-86 "Sabre" fighter jet.

In June 1957, the base became a permanent installation and was renamed Cannon Air Force Base in honor of the late General John K. Cannon, a former commander of the Tactical Air Command. In October 1957, the 312th and 474th Fighter-Bomber Groups were redesignated tactical fighter wings, and the 832nd Air Division was activated to oversee their activities.

In 1959, the 312th Tactical Fighter Wing (TFW) was deactivated and replaced at Cannon AFB by the 27th TFW. In December 1965, the base's mission changed to that of a replacement training unit, and the 27th TFW became the largest such unit in the Tactical Air Command. The predominant aircraft stationed at Cannon AFB from 1957 to 1965 was the F-100 "Super Sabre" fighter jet.

The 832nd Air Division was deactivated in July 1975, leaving the 27th TFW the principal Air Force unit at Cannon AFB. In early 1981, the 27th TFW was designated a Rapid Deployment Joint Task Force member.

The primary mission of Cannon AFB has remained relatively unchanged since 1965, i.e., to develop and maintain an F-111 tactical fighter wing capable of day, night, and all-weather combat operations and to provide replacement training of combat aircrews for tactical organizations worldwide. Aircraft stationed at Cannon AFB since 1965 include the F-100 "Super Sabre" fighter jet (1957-1969), the F-111A (1969), the F-111E (1969-1971), and the F-111D (1971-present). Approximately 70 F-111D aircraft are assigned to Cannon AFB.

In 1992, Cannon AFB became part of the Air Combat Command (ACC) as the result of the overall realignment of Air Force Commands and the ongoing downsizing of the U.S. Military.

1.4.2 Facility Characteristics

The following subsections discuss the geography, land use and demography, climatology, and biological resources for Cannon AFB.

1.4.2.1 Physical Geography

Cannon AFB is situated in the Southern High Plains Physiographic Province in the Llano Estacado subprovince, as shown on Figure 1-3 (Hawley et al. 1976). The Llano Estacado is a nearly flat plain sloping gently (10 to 15 feet per mile) to the east and southeast. Elevations in the eastern New Mexico portion of the Llano Estacado exceed 4,000 feet above mean sea level (msl). In the vicinity of Cannon AFB, elevations range from 4,250 feet to 4,350 feet above msl.

The most prominent geomorphic features in the vicinity of Cannon AFB are blowouts and broad, widely spaced valleys. Less common landforms are relict sand dunes located along the northern side of the Portales Valley south of the base. Relict dunes are not found on or near Cannon AFB.

Blowouts are broad shallow depressions which form as the result of soil erosion by wind. Blowouts commonly collect surface runoff from small to moderate sized drainage areas. During periods of rainfall, runoff collects in blowouts to form ephemeral playa lakes. Playas have no external surface drainage. Water is lost by infiltration to the soil and evaporation; without recharge, playa lakes persist for only a few days or weeks. Three playas are located within the base, and several more are found to the north and east of the base. Stream valleys tend to be fairly broad and widely spaced.

Streams are ephemeral and drainages are poorly developed. No streams exist on or near Cannon AFB. Running Water Draw and Frio Draw, located about 10 and 20 miles, respectively, north of Cannon AFB, are the nearest streams. These are second-order streams. Both streams are very straight, flow southeast, and have rectilinear drainage patterns with short laterals.

1.4.2.2 Land Use Near Cannon AFB and Demography

This section provides a broad overview of site-wide land use and demographics, including the general area surrounding Cannon AFB. A more specific description of the demographics and land use at Landfill No. 1 is given in later sections of this RFI report.

Cannon AFB is located in southern Curry County, approximately seven miles west of the City of Clovis, New Mexico, which is the county seat. Bureau of Census data for 1990 reports the population of Curry County and the City of Clovis as 44,020 and 32,767, respectively. In 1991, Cannon AFB had a resident population of approximately 4,650, including military personnel and their dependents.

Currently, 1,841 housing units are controlled by Cannon AFB. Unaccompanied enlisted personnel reside in 830 dormitory units on-base. Military families live in 1,011 units, 250 of which are located off-base. Typically, military family housing (MFH) is maintained at 95 percent occupancy, while 5 percent are undergoing repairs and renovations.

Major industries by employment in Curry County include the retail trade, government, and services. Cannon AFB is the largest single employer within the county. The total work force

on Cannon AFB is approximately 5,940 positions, which includes approximately 5,040 military and 900 civil service personnel.

Medical services are provided for Cannon AFB personnel and their dependents by two general hospitals in the surrounding communities and by the base hospital. Education of student dependents is provided by the Clovis Municipal School District. A total of 1,735 dependents of Cannon AFB personnel enrolled in Clovis schools during the 1989-1990 school year (USAF 1990).

Land use within Curry County is primarily agricultural. The county has a total land area of 897,000 acres with 837,200 acres designated as farmland; 133,700 acres of this are considered prime farmland (USAF 1990). Lands surrounding Cannon AFB are classified as irrigated farmland of statewide importance. Principal crops include corn, grain, sorghum, wheat, barley, oats, alfalfa, cotton, and various vegetables. Cattle ranching occurs throughout the county.

The City of Clovis is the commercial center for eastern New Mexico and western Texas and is one of the primary growth centers in a 17-county area. The Clovis planning area boundary extends for a five-mile area around the city. Currently, no land use or zoning controls restrict the type and amount of construction in the proximity of Cannon AFB.

Within Cannon AFB, there are several land uses occurring, including residential, commercial (businesses, offices, commissary, etc.), industrial (facilities associated with base operations), recreational, and vacant land. The USAF has also designated Compatible Use Zones (CUZs) around Cannon AFB. The CUZs provide for compatible uses in areas subject to noise and accident hazards. The local communities or county governments are responsible for adopting appropriate land use controls to prevent incompatible development. The county has not passed zoning ordinances controlling development around Cannon AFB. Incompatible land use (in regard to the Air Force's CUZs) has occurred to the northeast of the base and includes both commercial and residential development.

1.4.2.3 Climatology

The climate of east-central New Mexico is classified as tropical semi-arid. Average monthly temperatures range from a January low of 39°F to a July high of 78°F. Extreme daily temperatures range from -11°F to 106°F. Average monthly precipitation ranges from 0.4 inches in winter to 2.7 inches in July. The maximum recorded 24-hour rainfall is 4.7 inches, which occurred in August 1985 (Hale 1992). Rainfall occurs on eight or more days per month during the summer precipitation maximum. Mean annual precipitation is approximately 15 inches. The mean annual lake evaporation is 69 inches/year. Prevailing winds are from the west at an average of 8 miles per hour (mph).

The atmosphere around the area of Cannon AFB is generally well mixed. The seasonal and annual average mixing heights can vary from 400 meters in the morning to 4,000 meters in the afternoon. The afternoon mixing heights are typically greater during the spring and fall seasons. The morning mixing heights are usually low, due to nighttime heat loss from the ground, producing surface-based temperature inversions. After sunrise, these inversions generally break up, and solar heating of the earth's surface causes vertical mixing in the atmosphere (USAF 1990).

Dust is frequently entrained into the atmosphere in this region of the country because of gusty winds and the semi-arid climate. The Texas Panhandle-eastern New Mexico area is considered the worst area in the United States for windblown dust. Occasionally, this windblown dust is of sufficient quantity to restrict visibility. Most of the seasonal dust storms occur in March and April, when the wind speeds are typically high.

1.4.2.4 Biological Resources

Land adjacent to Cannon AFB is primarily used for agriculture, and little natural vegetation remains in the area. Specifically, Landfill No. 1 is located beneath a portion of the 14th fairway of the Whispering Winds Golf Course. The golf course is surrounded primarily by residential and commercial land uses at the base. The wildlife species that are common to agricultural areas throughout the region include bobwhite quail and pheasant. The few playa lakes in the area are used by upland game for cover, by waterfowl for resting and feeding, and by wildlife in

general for drinking. Nearby riverbeds also provide water sources during rainy seasons. During periods of low rainfall, the riverbeds are dry.

Plant Resources. The climate of the Base area is considered semi-arid. The thin layer of topsoil in the vicinity of Cannon AFB is sandy loam, which is highly susceptible to wind erosion. The undisturbed natural vegetation is mostly shortgrass prairie, including blue grama grassland and mixed grama grassland vegetation types, which have moderately fast recovery rates.

The predominant land use of the region is rangeland, primarily for cattle grazing. In general, moderately grazed rangeland areas of the types occurring in the project area are highly productive in terms of both forage quality and quantity. The rangeland in the vicinity may support up to 15 to 20 head of cattle per section, depending on the rainfall. Large trees do not uniformly exist in the vicinity of the range except where planted around buildings and other structures on the Cannon AFB. Woodlands composed of large shrubs and small trees are confined to riparian areas and playa lakes in the vicinity.

The following plants are candidate species for the Federal List of Endangered and Threatened Wildlife and Plants, and are reportedly found within a 50-mile radius of Cannon AFB: chatterbox orchid (*Epipactus gigantea*), spiny aster (*Aster harridus*), Whittmans milkvetch (*Astragalus witmanii*), dune unicornplant (*Proboscidea sabulosa*), and the tall plains spurge (*Euphorbia strictior*). No federally-protected endangered plants are known to be present on Cannon AFB (Lee Wan and Associates 1990).

New Mexico's rare and endangered plant inventory (Sivinski and Lightfoot 1992) lists only tall plain's spurge as occurring within Curry County. Tall plain's spurge is a state rare and protected plant species (List 2), and a federal 3C species. State List 2 species are considered rare and sensitive plant species because of restricted distribution or low numerical density (Sivinski and Lightfoot 1992). They need not be endemic to New Mexico, but must be regionally endemic or rare throughout their range. Since they are rare, these species are sensitive to long-term or cumulative land use impacts and are vulnerable to biological or climatic events that could eventually threaten them with extinction or extirpation. List 2 species are monitored by the State of New Mexico to determine if they should ever be

elevated to List 1 endangered status. List 2 species are not protected by state statute or policy. Federal 3C species are taxa which have proven to be more abundant or widespread than previously believed and/or which have no identifiable threats.

Wildlife Resources. The eastern New Mexico area contains many nongame wildlife species that are typical of the High Plains. Most of these species are distributed widely throughout the western United States. Species diversity is low in most habitats because of the low vegetation diversity. Most amphibian species are associated with riparian habitats and playa lakes. Reptiles are found in all terrestrial habitat types but are most abundant in scrub/grasslands. Nocturnal rodents are the most abundant members of the small mammal community.

Grasslands on the High Plains support a variety of seed-eating sparrows and other ground-dwelling birds, both as residents and migrants. Raptors (hawks and owls) are relatively abundant in all habitats in the region. Insectivorous and tree-nesting species are most abundant in riparian areas. Shorebirds and waterbirds and migratory waterfowl in general use the rivers, playa lakes, and reservoirs of the region.

Two National Wildlife Refuges (NWRs) are located near Cannon AFB. The Grulla and Muleshoe NWRs are within 30 miles of Cannon AFB. These areas provide high-quality habitat for migratory and breeding waterfowl.

Big-game species in the area include mule deer, white-tailed deer, pronghorn, and barbary sheep. Pronghorn are the most abundant game animal in the area. Several species of upland game, such as quail, ring-necked pheasant, and turkey are common in the area. Reservoirs (Ute Lake, Conchas Lake, and Clayton Lake) and playa lakes are important waterfowl habitats in the region. Numerous species of native and introduced fish inhabit the rivers and perennial streams, and the reservoirs support recreational fishing of warm-water species such as walleye, crappie, channel catfish, largemouth bass, and bluegill.

As determined by the regional office of the U.S. Fish and Wildlife Service (USFWS), two federally-listed endangered animal species, the bald eagle (*Haliaeetus leucocephalus*) and the American peregrine falcon (*Falco peregrinus anatum*), are known to inhabit the area within a 50-mile radius of Cannon AFB. The New Mexico Department of Game and Fish (1995) lists

the bald eagle as a State threatened species and the peregrine falcon as a State endangered species. Baird's sparrow (*Ammodramus bairdii*) is also listed by the New Mexico Department of Game and Fish as a State threatened species. The Mississippi kite (*Ictinia mississippiensis*), has been removed from the State endangered list. The Department of Game and Fish lists the black-footed ferret (*Mustela nigripes*), a federally endangered species, to be extirpated and no longer occurring in the state (New Mexico Department of Game and Fish 1995). Native wildlife listed by the State as no longer occurring in Curry County include the American bison (*Bos bison*) and the extinct Merriams' elk (*Cervus elaphus merriani*). State and Federal threatened, endangered, and candidate species are listed in Table 1-2.

Baird's sparrow is a migrant species. As a migrant species, Baird's sparrow would occur mainly in autumn in the eastern plains and southern lowlands of Curry County. Migrants appear as early as the first week of August and move further south by November. The species seems to have declined in abundance throughout its range in the Southwest due to loss of shrubby shortgrass habitat.

The bald eagle and peregrine falcon may occur infrequently in the vicinity of Cannon AFB. The bald eagle migrates and winters from the northern border of New Mexico to the Gila, lower Rio Grande, middle Pecos, and Canadian valleys. It is seen occasionally in summer and as a breeding bird, with nest reported in the extreme northern and western parts of the state. Winter and migrant populations appear to have increased with reservoir construction. The peregrine falcon is widely distributed but population numbers are low. The American subspecies breed statewide in New Mexico, but mainly west of the eastern plains.

TABLE 1-1

COMPARISON OF RCRA AND IRP - CERCLA PROCESS
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

RCRA Process	IRP - CERCLA Process
RCRA Facility Assessment (RFA) (Agency-conducted)	Preliminary Assessment (PA)/Site Investigation (SI)
RCRA Facility Investigation (RFI)	Remedial Investigation (RI)
Corrective Measures Study (CMS)	Feasibility Study (FS)
Statement of Basis/Response to Comments	Record of Decision (ROD)

TABLE 1-2

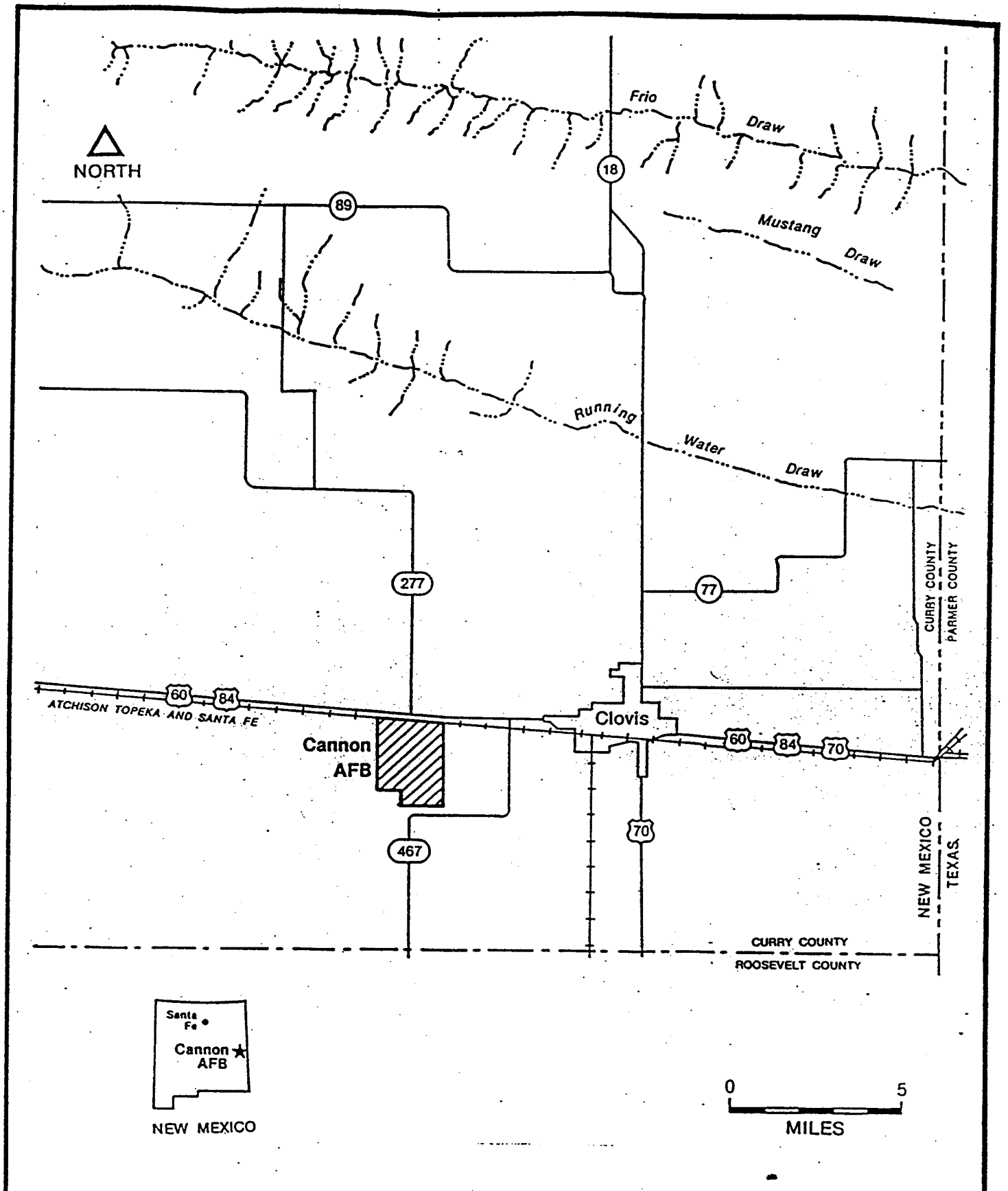
FEDERAL- AND STATE-PROTECTED ANIMALS POTENTIALLY OCCURRING IN THE VICINITY OF CANNON AFB (CURRY COUNTY)
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

	Common Name	Scientific Name	Federal Status	State Status
Birds				
	Baird's Sparrow	*Ammodramus bairdii*	candidate, C2	threatened
	bald eagle	*Haliaeetus leucocephalis*	threatened	threatened
	peregrine falcon	*Falco peregrinus*	endangered	endangered
	ferruginous hawk	*Buteo regalis*	candidate, C2	
	loggerhead shrike	*Lanius ludovicianus*	candidate, C2	
	western burrowing owl	*Athene cunicularia hypugea*	candidate, C2	
Mammals				
	black-footed ferret	*Mustela nigripes*	endangered	extirpated
	plains pocket gopher	*Geomys bursarius*	candidate, C2	
	swift fox	*Vulpes velox*	candidate, C1*	
Reptiles				
	Texas horned lizard	*Phrynosoma cornutum*	candidate, C2	

Federal Candidate, Category 1 -- Taxa for which the USFWS has on file sufficient information on biological vulnerability and threat(s) to support proposals to list them as endangered or threatened species. Proposed rules have not yet been issued because this action is precluded at present by other listing activity. *The swift fox is listed in the November 15, 1994 Federal Register as a C2 candidate species, although the New Mexico State Office of the USFWS lists it as a C1 candidate species.

Federal Candidate, Category 2 -- Taxa for which information now in the possession of the USFWS indicates that proposing to list as endangered or threatened is possibly appropriate, but for which persuasive data on biological vulnerability and threats are not currently available to support proposed rules. USFWS emphasizes that these taxa are not being proposed for listing, and there are no current plans for such proposals until additional supporting information becomes available. Further biological research and field study usually will be necessary to ascertain the status of taxa in this category. It is unlikely that many will be found not to warrant listing, either because they are not threatened or in greater danger of extinction than some taxa already found in Category 1.

Source: New Mexico Dept. of Game and Fish 1995.
USFWS 1995.



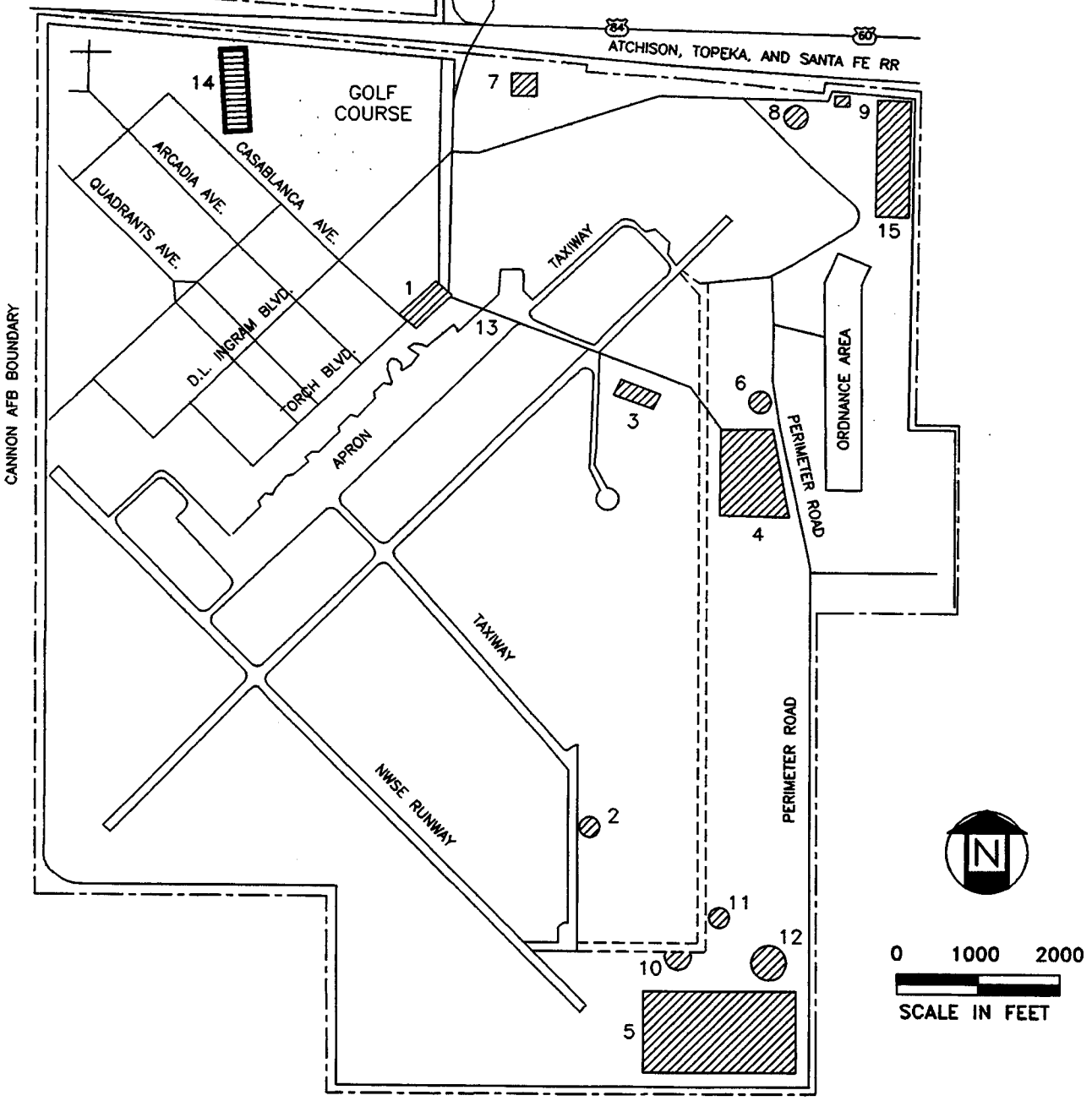
BASE MAP ADAPTED FROM FINAL REPORT, IRP PHASE II, (RADIAN 1986)

Job No. : 9C114LL1	VICINITY MAP CANNON AFB, NM
Prepared by : K.A.P.	
Date : 5/22/96	

FIG. 1-1

EXPLANATION

1. AGE DRAINAGE DITCH – SWMU 34/IRP SD–15
2. ENGINE TEST CELL AREA – SWMU 86–90/IRP SD–11
3. NE STORMWATER DRAINAGE AREA – SWMU 95/IRP SD–20
4. WASTEWATER LAGOONS – SWMU 101,102
5. OLD ENTOMOLOGY RINSE AREA – SWMU 96/IRP SD–17
6. OLD ENTOMOLOGY RINSE AREA – SWMU 96/IRP SD–17
7. SLUDGE WEATHERING PIT – SWMU 76/IRP WP–14
8. FIRE DEPT. TRAINING AREA NO. 1 – SWMU 78/IRP FT–6
9. SOLVENT DISPOSAL SITE – SWMU 81/IRP DP–16
10. FIRE DEPT. TRAINING AREA NO. 2 – SWMU 106/IRP FT–7
11. FIRE DEPT. TRAINING AREA NO. 3 – SWMU 107/IRP FT–8
12. FIRE DEPT. TRAINING AREA NO. 4 – SWMU 109
13. SANITARY SEWER LINE – SWMU 98
14. **LANDFILL NO. 1 – SWMU 74/IRP LF–1**
15. LANDFILL NO. 2 – SWMU 82/IRP LF–2

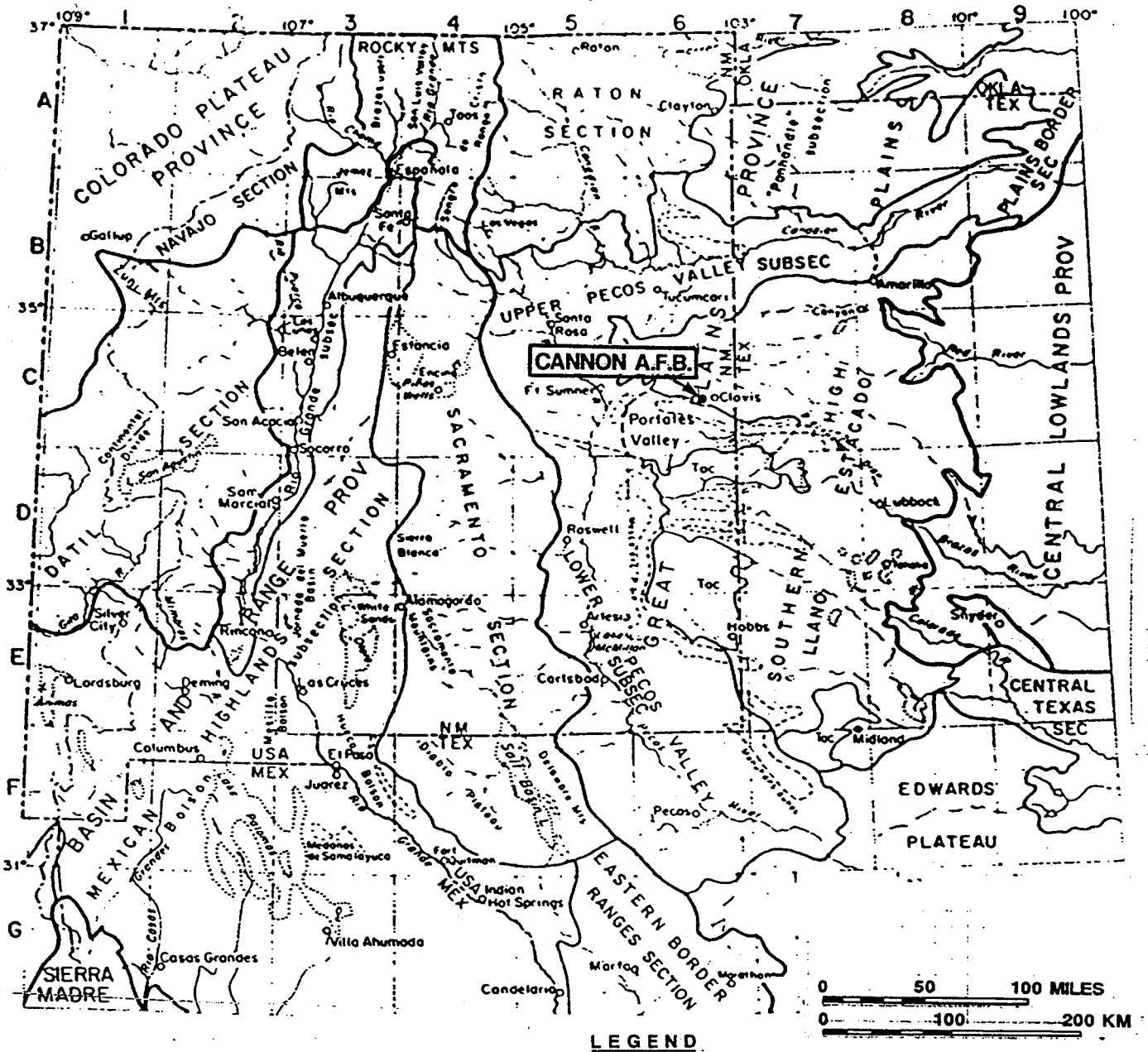


Job No. : 9C114LL1	IRP/SWMU SITE LOCATION MAP
Prepared by : S.L.C.	CANNON AFB, NEW MEXICO
Date : 4/30/96	

3M11FXXX

FIG. 1–2

150271



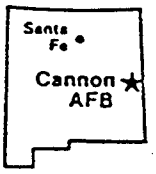
LEGEND

UPPER QUATERNARY EOLION SAND SHEETS WITH DUNE FIELDS

DEPRESSIONS OCUPIED BY UPPER PLEISTOCENE "FLUVIAL" LAKES

Toc — RELICT OGALLA CAPROCK SURFACE

SOURCE: QUATERNARY STRATIGRAPHY IN THE BASIN & RANGE AND GREAT PLAINS PROVINCES NEW MEXICO & WEST TEXAS; HAWLEY, BACKMAN, MANLEY.



NEW MEXICO

Job No. : 9C114LL1	GEOMORPHIC PROVINCE MAP
Prepared by : K.A.P.	CANNON AFB, NEW MEXICO
Date : 5/22/96	

FIG. 1-3

2.0
PHYSICAL CHARACTERISTICS

2.1 SWMU DESCRIPTION

2.1.1 Setting

Landfill No. 1 (SWMU No. 74) is an inactive landfill located in the northwestern area of Cannon AFB (Figure 1-2) beneath a portion of the 14th fairway of the Whispering Winds Golf Course (Figure 2-1). The overall landfill site is relatively flat and covered by grass of the 14th fairway except in a few local areas that have little or no vegetation. The general flow of surface water runoff resulting from storms is toward the east into a pond located east of the 15th fairway.

2.1.2 History of Use

Landfill No. 1 was the original landfill on the base and received wastes from 1943 to 1946. The apparent mode of operation at this landfill site was for wastes to be placed in trenches, and then burned and buried. It was reportedly unlined, and it occupied approximately 8 acres in the northwestern area of the base under what is now the base golf course. Waste materials received at this site reportedly included domestic solid wastes and shop wastes, including waste oils and solvents, paint strippers and thinners, outdated paint, pesticide containers, and various empty cans and drums (Radian 1986).

2.1.3 Previous Investigations Pertinent to Landfill No. 1

Radian Corporation previously investigated what was reported to be Landfill No. 1 in 1984 and 1985 under the IRP. The location was placed 1,000 feet north of Cannon AFB hospital (Lee Wan and Associates 1990). However, none of the five soil borings drilled during the investigation encountered landfill material.

Because of the uncertainty concerning the location of Landfill No. 1, a review of aerial photographs from 1945 and 1946 was performed by Lee Wan and Associates, Inc. Although the exact location and dimensions could not be determined, Lee Wan and Associates located the landfill northeast of the base hospital using photographic evidence. A subsequent review of aerial photographs from 1939 and from 1951 through 1979 by W-C in conjunction with USACE and Cannon AFB personnel during March 1992 showed evidence of possible surface activity and/or disturbance in the area where Lee Wan located the landfill. Based on the available information, WCC delineated the approximate area of the suspected landfill in the field. It was located in the northwestern area of the base, across portions of the golf course and driving range, approximately 400 feet northeast of the base hospital.

W-C's field investigation activities at Landfill No. 1 in March and April 1992 consisted of conducting a geophysical survey along 15 traverses, drilling 32 geotechnical soil borings, and collecting 25 lithologic soil samples for archival purposes. The results of the geophysical EM-31 survey at Landfill No. 1 indicated the presence of variably sized conductivity anomalies. The character of the anomalies indicated the possible influence of underground utilities, the golf course sprinkler system, and moist soils near the playa lakes and greens, instead of buried landfill materials. A total of 32 geotechnical soil borings were drilled in the suspected landfill area in an attempt to locate the Landfill No. 1 waste cells. The results of the drilling program indicated that no landfill materials were encountered in any of the borings and that the geologic material appeared to be undisturbed. Based on those results, it did not appear that Landfill No. 1 was present at the suspected location.

During the summer of 1993, Cannon AFB began modification and expansion of the Whispering Winds Golf Course. In the process of installing the sprinkler system, evidence of burn and bury trenches, potentially associated with landfill activities, was encountered. The location of these burn and bury areas is approximately 1,000 feet north-northwest of the base hospital and correspond approximately with the area in which soil borings were previously drilled by Radian in 1984 and 1985 (Figure 2-1).

2.1.4 Land Use and Demography

Base personnel use the golf course frequently on a year-round basis. An average of 23,000 rounds of golf (i.e., 23,000 person visits, with each visit lasting approximately 1 to 3 hours) are shot each year, with an average daily usage of approximately 40 rounds per weekday and 80 rounds per weekend day. In addition, golf course maintenance personnel are in the area approximately 8 hours a day, five days a week.

2.2 REGIONAL SOILS

Soils in the vicinity of Cannon AFB are classified as silty sand (SM) to clayey sand (SC) under the Unified Soil Classification System (USCS), and as aridisols (calciorthids) under the United States Department of Agriculture - Soil Conservation Service Comprehensive Soil Classification System (USDA-SCS). The following summary is based on the Curry County Soil Survey (USDA 1958). Figure 2-2 depicts the various soil types mapped at Cannon AFB. Soil characteristics are briefly described in the following paragraphs.

The most common soil type on Cannon AFB is the Amarillo fine sandy loam, 0 to 2 percent slope phase (map symbol Ab). This soil consists of a thin sandy A horizon, well defined clayey B_{1-3} horizons, with a calcic B_3 horizon at depths below 40 inches. The calcic B_3 horizon lies on a calcic C horizon or on caliche. The surface soil is brown (7.5 YR 5/5, dry) and subsurface soils are reddish-brown (5 YR 4/4, dry) to yellowish-red (15 YR 5/6, dry). The calcic C horizon underlying the Amarillo Fine Sandy loam is white. The Amarillo fine sandy loam soil type is present on all relatively flat surfaces at the base but is also found on slopes associated with playas (map symbol Ac). A small area of Amarillo loamy fine sandy 0 to 2 percent slope phase (map symbol Ag) is mapped in the southeast corner of the base.

Clovis fine sandy loams, 0-2 percent slope phase (map symbol Cb) and 2-5 percent slope phase (map symbol Cc), are similar to Amarillo fine sandy loams. Clovis soils are reddish-brown on the surface and in the subsurface, with a white Calcic C horizon. In the Clovis soils, the depth to the calcic C horizon ranges from 28 to 56 inches. The depth to caliche exceeds 56 inches. Clovis and Amarillo fine sandy loams occur in close association.

In a few limited areas, particularly along the steeper slopes around playas, Mausker fine sandy loam, 0 to 2 percent slope phase (map symbol Ma), and 2 to 5 percent phase (map symbol Mb) are found. Mausker fine sandy loams have no B horizons and are very calcareous. Mausker fine sandy loam soils are brown (10 YR 5/3, dry) to light brown (7.15 YR 6/4, dry) at the surface with a pink to reddish-yellow (7.5 YR 7/5, dry) calcic C horizon. Associated with the Mausker fine sandy loam soils around the base Playa Lake are Potter fine sandy loam soils, 0 to 5 percent slope phase (map symbol Pa). This soil typically has a thin A horizon, is grayish brown (10 YR 5/2, dry), with no B horizon; it is similar to Mausker soils. Potter soils are shallow and strongly calcareous, and overlie hard consolidated caliche. The calcic C horizon is within two feet of the surface.

The A and B horizons of Amarillo and Clovis fine sandy loams are rapidly to moderately permeable. Mausker fine sandy loam A and Ac horizons are rapidly permeable. Permeabilities in calcic B and C horizons are moderate (USDA 1958).

Soils anticipated to be found in the area of Landfill No. 1 include the Clovis Fine Sandy Loam (2 to 5 percent) slope phase and the Amarillo Find Sandy Loam, (0 to 2 percent) slope phase. However, due to construction activities implemented during the completion of the Golf Course, the upper soil profile most likely has been altered from natural conditions and may, in part, be fill material.

2.3 REGIONAL GEOLOGY AND HYDROGEOLOGY

Regional Geology

The near-surface stratigraphic units of interest at Cannon AFB are the Late Miocene-Late Pliocene age Ogallala Formation and the Early Triassic Dockum Group shown in Figures 2-3 and 2-4.

The Dockum Group consists of three formations. The stratigraphically lowest unit is the Santa Rosa Sandstone. Overlying the Santa Rosa Sandstone are the Chinle and Redonda Formations. The Chinle and Redonda Formations are composed mainly of red shales with lesser interbedded sands and are known locally as "redbeds." The top of the Dockum Group is marked by an

erosional unconformity having relief of up to several hundred feet (Lee Wan and Associates 1990).

The Ogallala Formation overlies the Dockum Group redbeds. The Ogallala Formation extends from eastern New Mexico and Colorado into Texas, Oklahoma, Kansas, Nebraska, and South Dakota. Drillers' logs from Cannon AFB indicate that the Ogallala Formation varies from 360 to 415 feet in thickness. The incised upper surface of Triassic redbeds strongly influences the Ogallala thickness. Stream valleys in the post-Triassic unconformity are deep and trend dominantly east-west. Thus, Ogallala thickness may thus vary significantly over short north-south distances.

The Ogallala is erosionally truncated to the south along the abandoned Portales Valley, to the west along the Pecos River Valley, and to the north in a series of ephemeral stream valleys. The Ogallala Formation extends more than 125 miles to the east before terminating as an escarpment in Briscoe County, Texas. Springs and seeps are common along the erosional margins of the Ogallala.

The Ogallala dips gently and monoclinally to the southeast in the vicinity of Cannon AFB. As reported in Lee Wan and Associates (1990), data suggest that some Quaternary warping may have occurred; however, most of the structures are well to the northwest and southwest of Cannon AFB. No faults or buried structural lineaments are known to exist in the vicinity of Cannon AFB.

The Ogallala Formation is composed of unconsolidated poorly sorted gravel, sand, silts, and clays. The base of the Ogallala is generally marked by gravel, cobble, and boulder deposits. This basal member contains sediments derived from igneous and sedimentary rocks transported from the mountains to the west. The Ogallala Formation was laid down by stream and overbank deposits formed within coalescing alluvial fans. These fans form a broad pediment along the eastern flank of the Rocky Mountains. As is typical of alluvial deposits, Ogallala internal stratigraphy varies vertically and horizontally over short distances.

Except where strongly cemented by calcium carbonate (caliche), the sediments of the Ogallala are loose and friable. Authigenic and allogenic clays are found as a trace to abundant matrix

mineral (Lee Wan and Associates 1990). Five zones have been identified within the Ogallala of east central New Mexico on the basis of clay minerals. Smectites (montmorillonites) and attapulgite (with sepeolite) are the dominant clays throughout the Ogallala. Illite is a lesser, but persistent clay, as is kaolinite. Smectite is a swelling clay, causing deep cracks to form in dry surface soils. Smectite in particular and, to a lesser extent, attapulgite and illite, are clays with moderate to high cation exchange capacities (CEC). The formation as a whole should therefore have a relatively high CEC, which should inhibit the migration of charged contaminants, and especially ionic forms of metals (Lee Wan and Associates 1990).

Caliche is a major feature of the Ogallala Formation, occurring as nearly continuous to discontinuous layers throughout. A generalized geologic column at Cannon AFB is shown in Figure 2-4. Caliche is hard, white to pale tan on fresh surfaces, weathering to gray, and has a chalky appearance. Caliche forms as calcium carbonate leached from overlying sediments, and precipitates in the pore space of the host sediments. Precipitation is caused by the evaporation of downward percolating water. The caliche may thus mark the position of ancient vadose zones. Radiocarbon dates for the upper "climax" caliche range from approximately 27,000 years Before Present (B.P.) to approximately 42,000 years B.P. (Lee Wan and Associates 1990).

Caliche is relatively soluble in acidic water (pH<7) or in waters containing dissolved carbon dioxide. The top surface of the upper "climax" caliche in fresh outcrop shows solution etching.

The Ogallala has numerous continuous to discontinuous caliche layers throughout its thickness. The upper "climax" caliche is pisolitic (Lee Wan and Associates 1990). The pisolites are thought to have formed as the caliche was repeatedly chemically weathered and brecciated during Pleistocene pluvials and later recemented during drier intervals. This upper caliche outcrops around playas and the bounding escarpments of the Ogallala and is locally termed "caprock." The "climax" caliche is typically 3 to 5 feet thick. Caliches which occur lower in the Ogallala are platy and harder. Caliche is likely thin or absent below playas.

Regional Hydrogeology

The lower portion of the Ogallala Formation is the primary regional aquifer for both potable and irrigation water. No deeper aquifers are used in the vicinity of Cannon AFB. The Ogallala aquifer is part of the High Plains aquifer which extends continuously from Wyoming and South Dakota into New Mexico and Texas. In east central New Mexico, the Ogallala aquifer rests on Dockum Group redbeds, which serve as the basal confining layer. The Ogallala is a water table, or unconfined aquifer. The Ogallala aquifer has a southeasterly regional gradient of about 10 to 15 feet/mile (Weeks and Gutentag 1981). Well yields vary from less than one gallon per minute (gpm) in thin silts and sands, and up to 1,600 gpm in thick sands and gravels (Lee Wan and Associates 1990). Water quality is generally good with dissolved solids ranging from 250 to 500 milligrams per liter (mg/L) (Gutentag et al. 1984) and fluorides ranging from 2.2 to 2.7 mg/L (William Matotan and Associates Inc. 1985).

At Cannon AFB, the Ogallala aquifer has an average saturated thickness of 120 feet based on mid-1960's data. Saturated thickness ranges from 93 to 143 feet and is influenced by the configuration of the erosional unconformity surface marking the top of the Dockum Group. The local groundwater gradient is southeasterly at 7 to 15 feet/mile (USAF 1990). Figure 2-5 shows water table elevation contours for 1982. Flow within the saturated zone may be influenced by the configuration of the top of the Dockum Group. Yields in tests of Cannon AFB water wells have ranged from 205 to 1,150 gpm. Specific capacities range from 11.4 to 27.9 gallons per foot (gal/ft) (Lee Wan and Associates 1990).

Very rough estimates of hydraulic conductivity were made from well pump tests conducted by Cannon AFB in water wells 5, 8 and 9 (Figure 2-6) using the Theis equation. The data used in these calculations were obtained to evaluate pump rates, efficiency, and well yield and were not intended for use in calculating aquifer properties. The results of these calculations should, therefore, be considered as estimates only.

Hydraulic conductivity values for water wells 5 and 9 were approximately 2.0×10^{-3} centimeters per second (cm/sec). Calculations for water well 8 result in a hydraulic conductivity of 2.0×10^{-2} cm/sec. These estimates appear to be low when compared to published hydraulic conductivity data for sands and gravels (Freeze and Cherry 1979). As

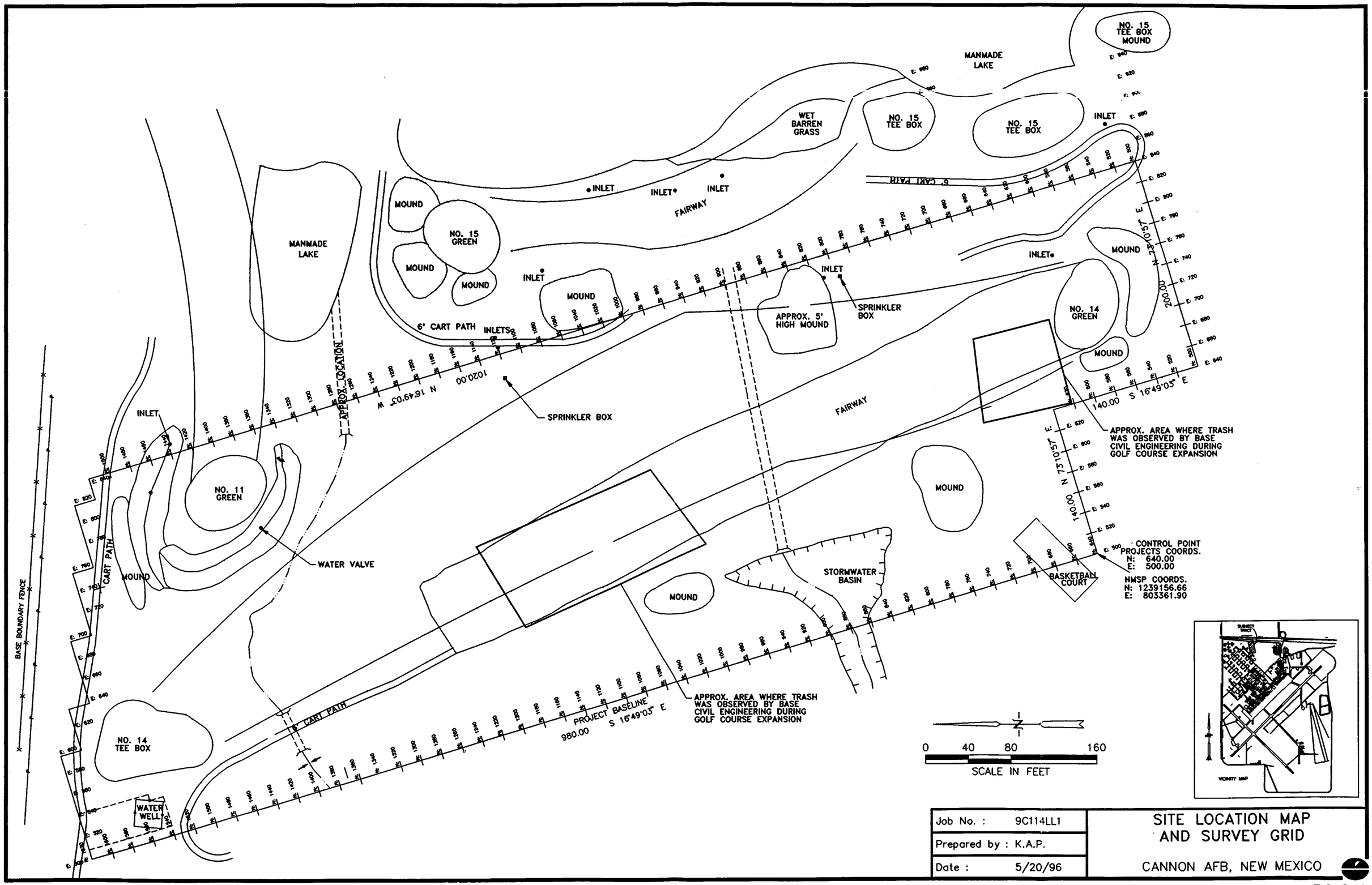
reported in Kearney (1987), a groundwater flow velocity of about 150 feet per year has been estimated. This calculation suggests a hydraulic conductivity of approximately 1.0×10^{-1} cm/sec.

The presence of interstitial clays may account for both the variability and low values of hydraulic conductivities. Boring logs from Cannon AFB IRP projects and published reports (Lee Wan and Associates 1990) indicated that interstitial and interstratified clays are abundant in the Ogallala Formation.

Recharge to the Ogallala is primarily through precipitation. Kearney (1987) indicated that the recharge rate may be as much as 1.0 inch per year. Due to the high evapotranspiration rate and low precipitation, recharge occurs only during heavy rainfall events in which the infiltration capacity of the soil is exceeded and runoff occurs, or during cool months when precipitation exceeds evapotranspiration. Excess runoff flows to playas, and the presence of water in playas may allow deep percolation to the aquifer. It is possible that the caliche may be thin or absent directly below the playas.

Discharge from the Ogallala Formation occurs through well pumping and springs along the eroded margins. Spring discharge does not occur on or near Cannon AFB. Domestic and irrigation water wells are common on and around the base. However, the rate of discharge exceeds local recharge. Water levels in the Ogallala Formation have declined steadily from the 1930s to the present. From the 1930s to 1980, a decline of 50 to 100 feet has been observed in the area around Clovis, New Mexico. Luckey et al. (1981) states, "the largest area of water level decline exceeding 100 feet occurs south of the Canadian River extending from Curry County, New Mexico to Crosby County, Texas."

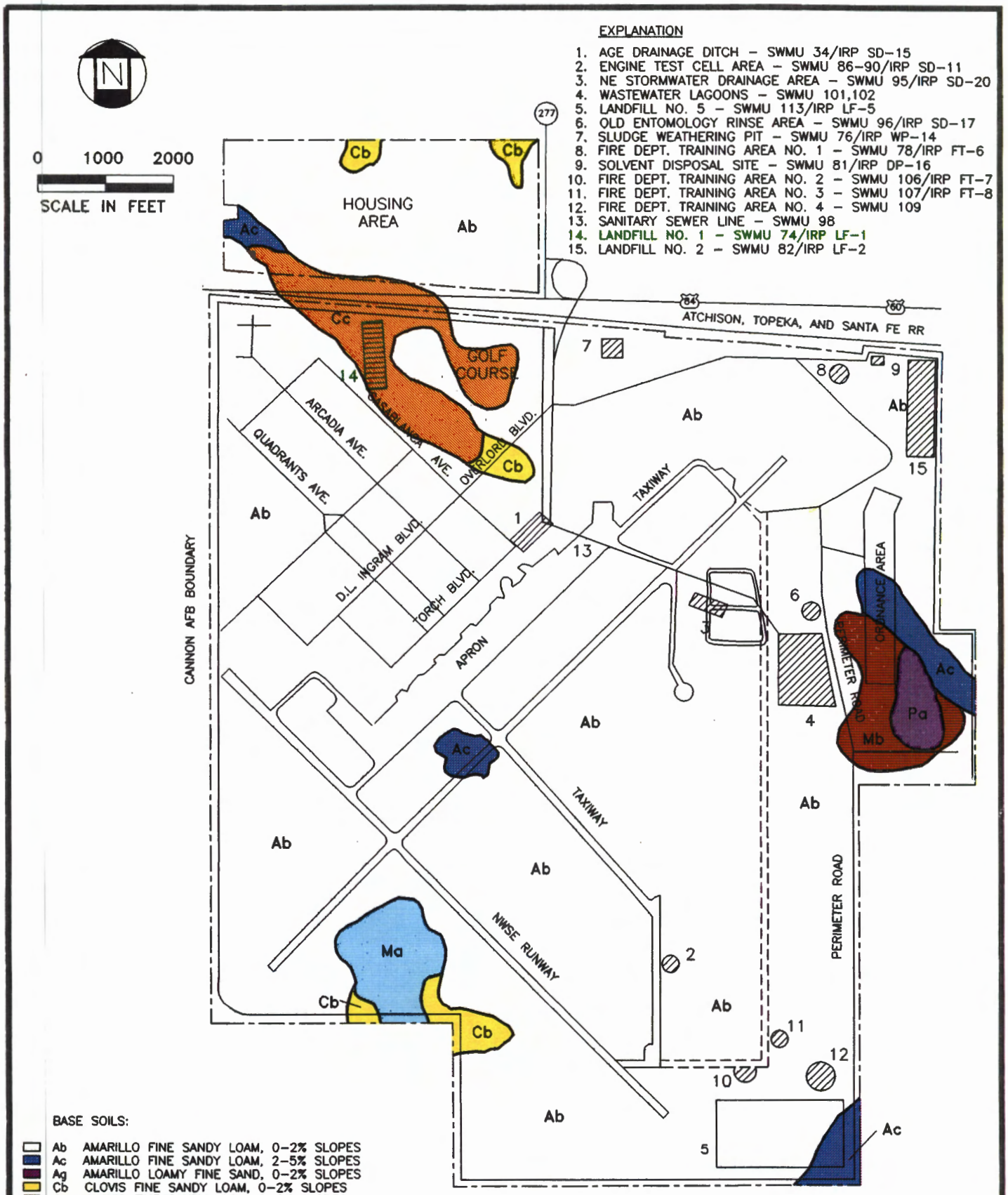
The Ogallala Formation will continue to be used as the primary source of potable and irrigation water for eastern New Mexico. The New Mexico State Engineer designated Curry County as a Water Basin in 1989. This designation allows for regulation of water rights, usage, and well drilling.



Job No. : 9C114LL1	SITE LOCATION MAP AND SURVEY GRID
Prepared by : K.A.P.	
Date : 5/20/96	CANNON AFB, NEW MEXICO

FIG. 2-1

114LL003



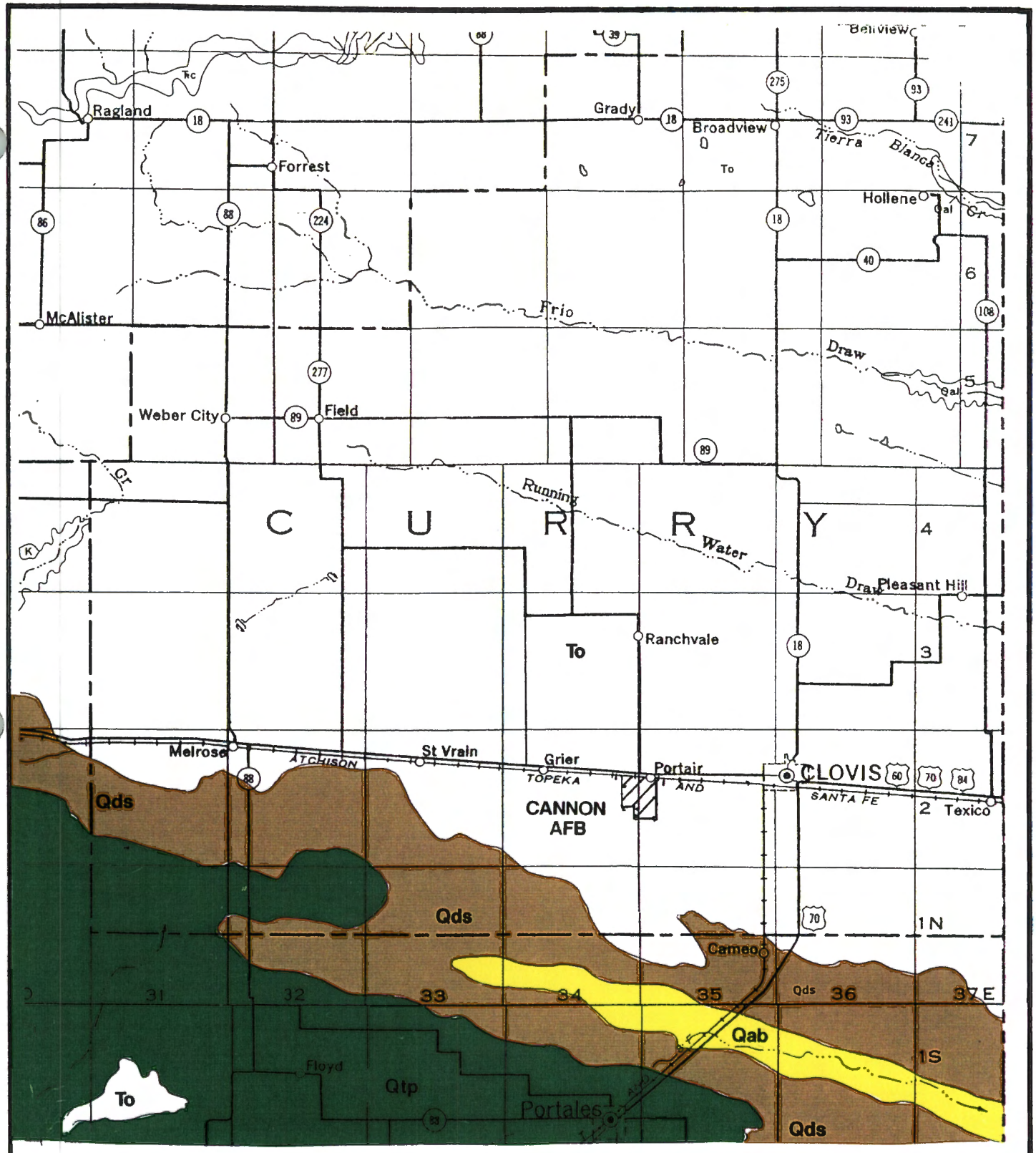
SOURCE: USDA-S.C.S., SOIL SURVEY OF CURRY COUNTY N.M., 1958

Job No. : 9C114LL1	DISTRIBUTION OF SOILS BY TYPE
Prepared by : K.A.P.	CANNON AFB, NEW MEXICO
Date : 5/22/96	

3M11F28

FIG. 2-2

150271



LEGEND

Qtp	GRAVEL, SAND & CALICHE
Qds	DUNE SAND
Qab	ALLUVIUM
To	OGALLALA FORMATION

N

0 2.5 5 10
SCALE IN MILES

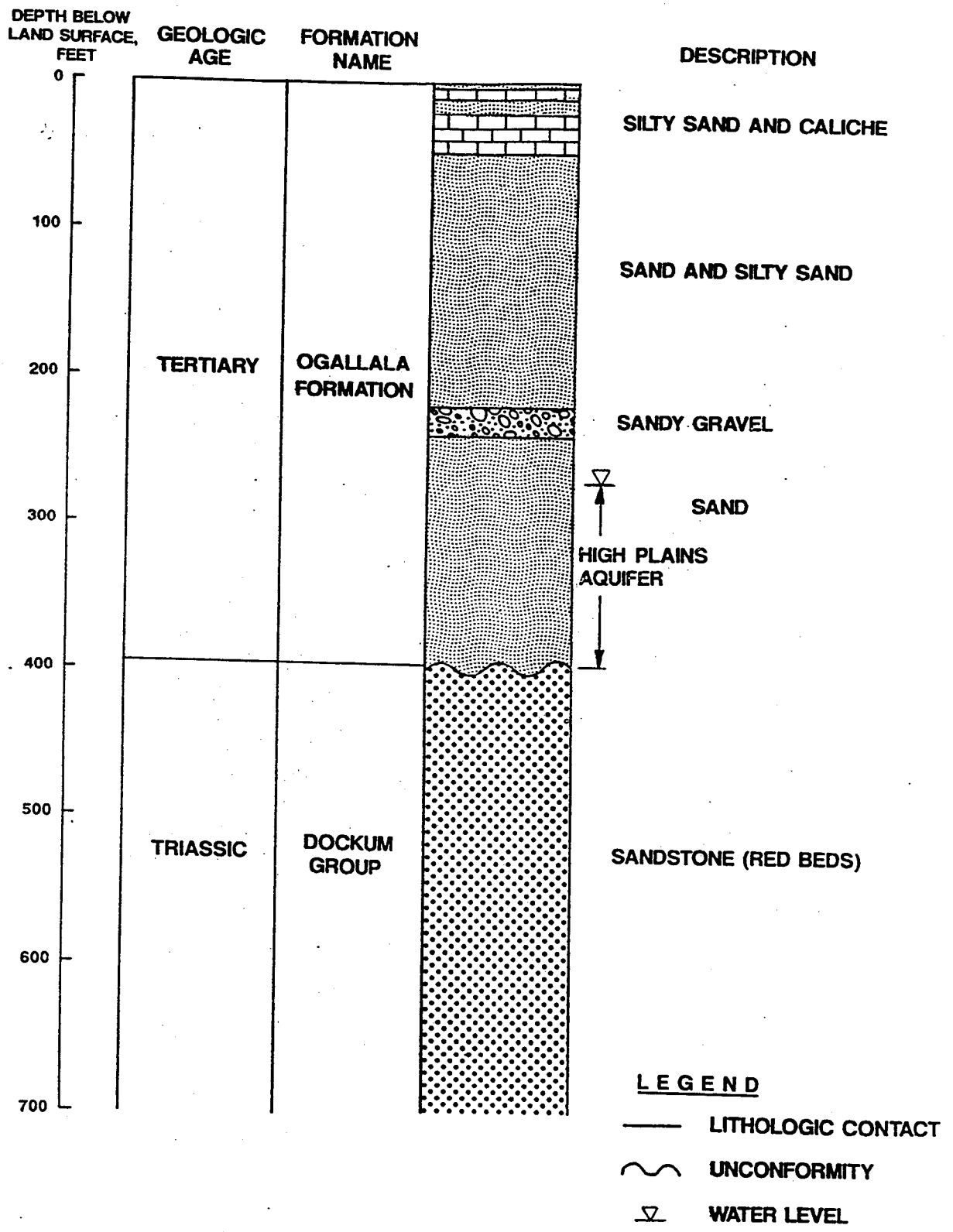
SOURCE: U.S.G.S. GEOLOGIC MAP OF NORTHERN N.M., 1962

NEW MEXICO

Job No. : 9C114LL1	GENERALIZED GEOLOGIC MAP
Prepared by : K.A.P.	CANNON AFB, NEW MEXICO
Date : 5/22/96	

FIG. 2-3

150271



MODIFIED FROM GUTENTAG ET.AL. 1984

Job No. : 9C114LL1	GENERALIZED GEOLOGIC COLUMN OF CANNON AFB, NEW MEXICO
Prepared by : K.A.P.	
Date : 5/22/96	

FIG. 2-4

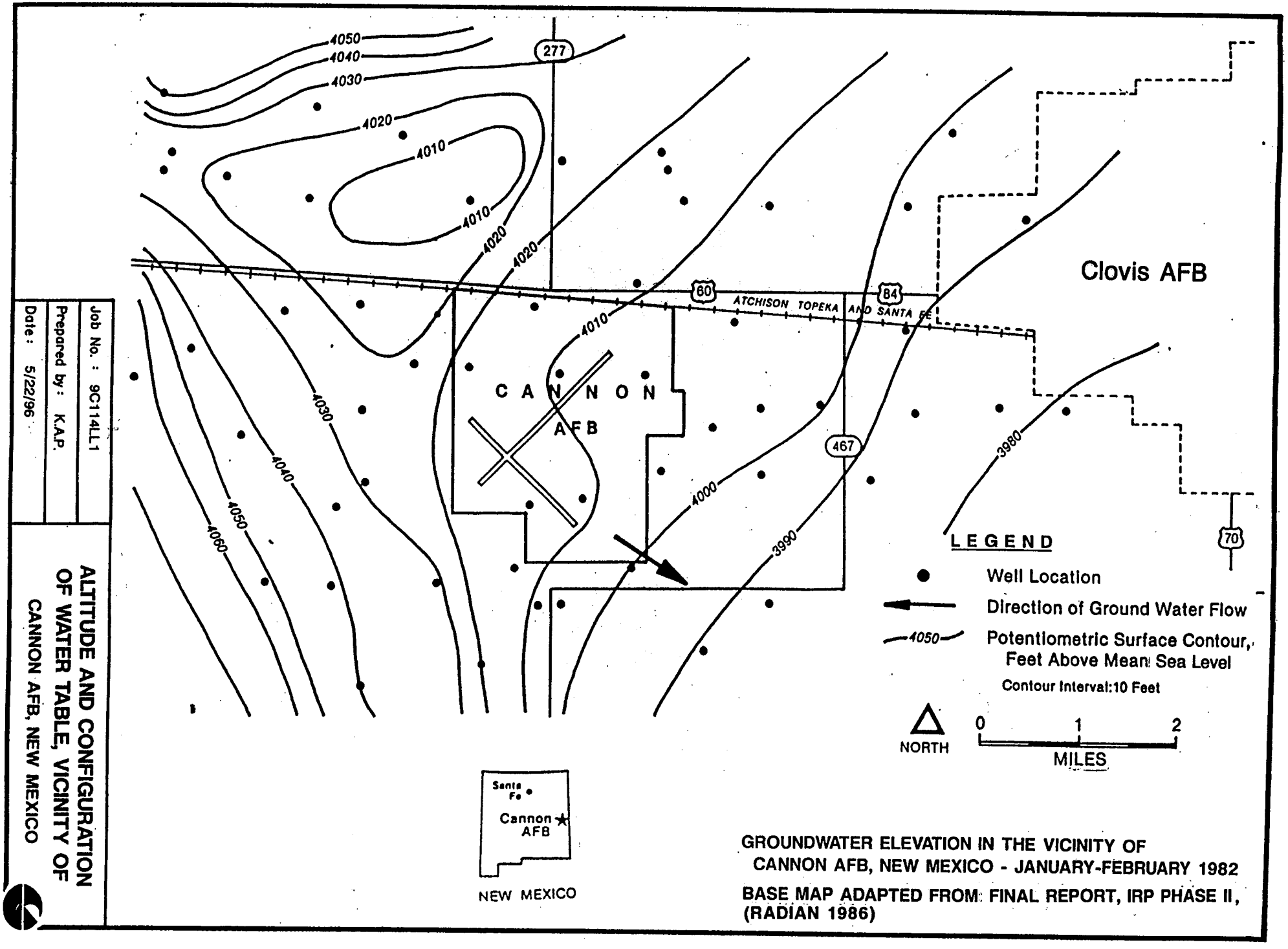
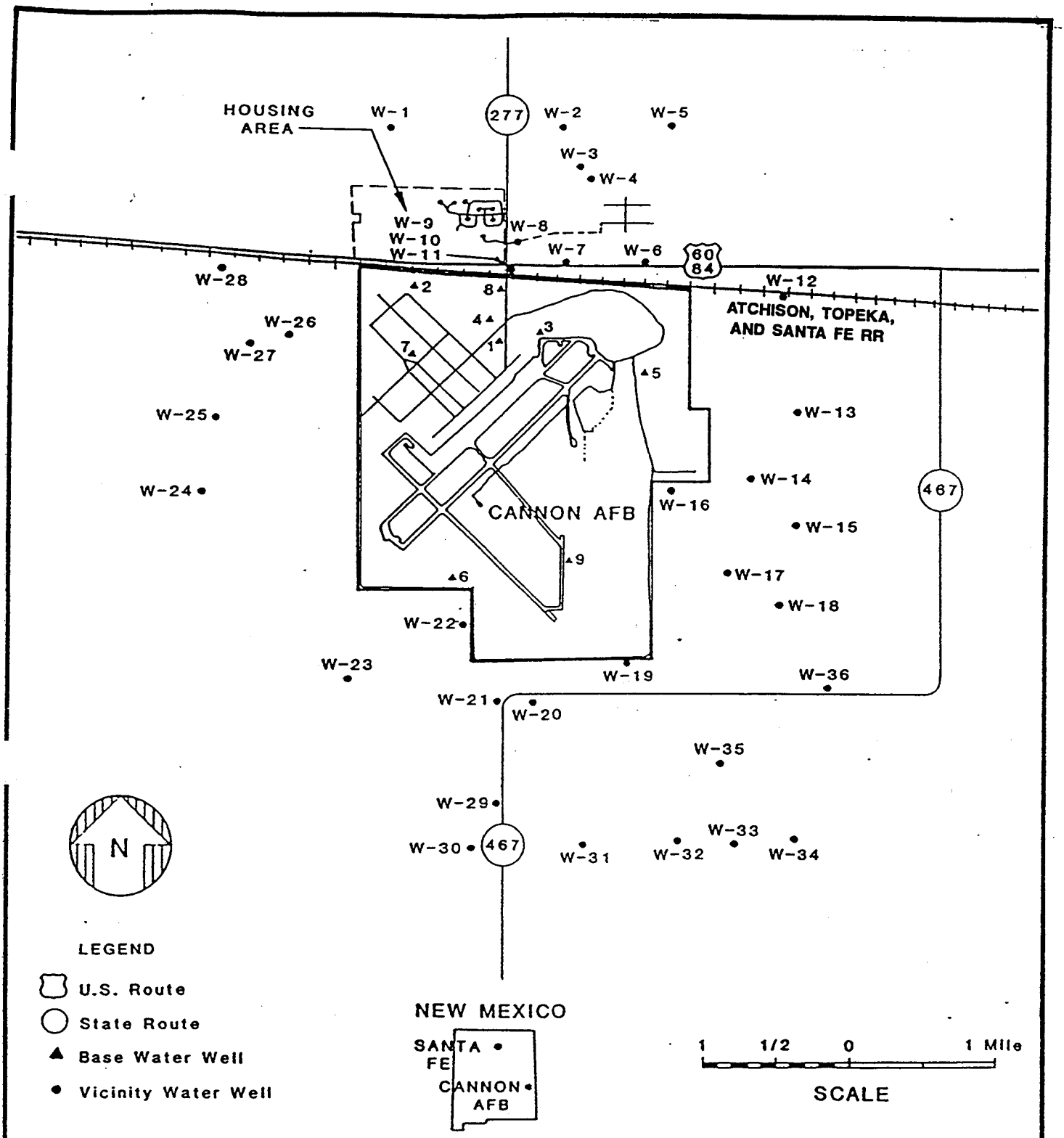

4050
4040
4030
4020
4010
4010
4020
4020
4010
4030
4040
4050
4060
4000
3990
3980
277
60
84
467
70
ATCHISON TOPEKA AND SANTA FE
CANNON AFB
Clovis AFB
LEGEND
Well Location
Direction of Ground Water Flow
4050
Potentiometric Surface Contour, Feet Above Mean Sea Level
Contour Interval:10 Feet
NORTH
0
1
2
MILES
Santa Fe
Cannon AFB
NEW MEXICO
GROUNDWATER ELEVATION IN THE VICINITY OF CANNON AFB, NEW MEXICO - JANUARY-FEBRUARY 1982
BASE MAP ADAPTED FROM: FINAL REPORT, IRP PHASE II, (RADIAN 1986)
Job No. : 9C114LL1
Prepared by: K.A.P.
Date: 5/22/96
ALTITUDE AND CONFIGURATION OF WATER TABLE, VICINITY OF CANNON AFB, NEW MEXICO
136236

FIG. 2-5



SOURCE: FINAL REPORT, IRP PHASE II (RADIAN 1986)

Job No. : 9C114LL1	WATER WELL LOCATIONS ON AND NEAR CANNON AFB, NM
Prepared by : K.A.P.	
Date : 5/22/96	

FIG. 2-6

3.0
FIELD INVESTIGATION OBJECTIVES, METHODS AND RESULTS

This section provides a discussion of the field investigation objectives, field methods and procedures, and field activities conducted by W-C at Landfill No. 1 between the period of September 1995 through March 1996. Site-specific geologic information and landfill material characterization obtained from the drilling program are also presented.

3.1 LANDFILL NO. 1 FIELD INVESTIGATION OBJECTIVES

The Work Plan was prepared to guide the Phase I RFI investigation and satisfy the Cannon AFB RCRA Part B permit conditions. The following Project Objectives were developed and presented in the Work Plan for the Phase I RFI.

- Collect environmental data of sufficient quality and quantity to characterize the nature and extent of contamination resulting from a release of Landfill-related chemicals to the degree that the potential for significant risk to human health or the environment can be determined.

- Collect environmental data of sufficient quality and quantity to evaluate the potential for releases to migrate toward receptors in all significant pathways as determined from conceptual modeling.

- Collect environmental data of sufficient quality to be used in a Health and Environmental Assessment, and collect data of sufficient quantity to address all appropriate exposure pathways.

- Collect environmental data of sufficient quality and quantity to support a recommendation of "no further action," if warranted, following the evaluation of the findings of the investigation.

- Collect data of a quality that can be used as part of any required follow-on study including a Corrective Measures Study.

The rationale for the field investigation activities and sampling locations was presented in the Work Plan and the FSPS (W-C 1995a). Standard operating procedures (SOPs) and sampling protocols for the field investigations at Landfill No. 1 are contained within the QAPP.

The field activities at Landfill No. 1 were conducted to meet specific task objectives. The objective of the site survey conducted from September 19 to September 27, 1995 over Landfill No. 1 was to establish a grid for the geophysical surveys. The objectives of the geophysical surveys (electromagnetic EM-31 and EM-61 surveys) conducted across Landfill No. 1 were to delineate the edges of the landfill; locate waste-filled pits, trenches or cells within the landfill; identify potential areas of contamination; and detect buried metallic objects. The objective of the drilling and soil sampling at Landfill No. 1 was to evaluate whether a release of hazardous constituents had occurred to the subsurface soils and obtain site specific geologic information.

3.2 FIELD OBJECTIVES, METHODS AND RESULTS

This section provides a discussion of the site survey grid, specific field investigation objectives, methods and results for the geophysical surveys, and the collection of subsurface soil samples for chemical and geotechnical analysis (including sample labeling, sample handling, documentation, and analysis) at Landfill No. 1.

3.2.1 Site Survey Grid

A survey grid was established by a local land surveying company (licensed in the state of New Mexico), Lydick Engineer and Surveyors (Lydick), to provide ground control. The grid established at Landfill No. 1 measured 440 feet in the east-west direction and 1,120 in the north-south direction. The site grid coordinates for Landfill No. 1 are shown in Figure 2-1. The grid was established with wooden survey stakes placed at 20-foot centers along the eastern, western, northern, and southern boundaries of the area of interest. In addition, survey laths annotated with field grid coordinates marked with florescent ribbon were placed around the perimeter of the grid every 20 feet. The eastern base line was established between the 14th and 15th fairways to minimize disruption of golfing activities. Lydick established additional survey points using pin flags on 80-foot centers in the interior of the area of interest. The field coordinate system was converted to state plane coordinates for final plotting. The survey grid

was established using total station optical survey techniques. Ten soil boring locations described in the FSPS were horizontally located, and the elevation was surveyed prior to beginning drilling activities. Locations of an additional 13 borings that were added to the Phase I Field Program were also surveyed. A copy of the surveyor's notes are contained in Appendix A.

3.2.2 Geophysical Investigation

The geophysical investigation at Landfill No. 1 was conducted to support subsurface remedial investigations at Landfill No. 1. The geophysical field work occurred from September 21 through September 25, 1995, and was documented in the report entitled "Geophysical Survey Technical Report." This report is included as Appendix B of this RFI report. The Geophysical Survey Technical Report included the purpose and scope of the geophysical work, the geophysical methods used, the detailed field activities, and the survey results and conclusions. The objectives of the geophysical investigations, the field methods, and the results for the EM surveys are summarized below.

The objectives of the geophysical investigation included:

- Delineating the edges of the landfill
- Locating waste-filled pits, trenches or cells within the landfill, if present
- Identifying potential areas of contamination and
- Identifying buried metallic objects such as drums

The surface geophysical techniques used to accomplish these objectives were electromagnetic (EM) surveys. These surveys were conducted in accordance with SOP No. 2, Surface Geophysical Surveys, which is contained in the QAPP. The geophysical investigations at Landfill No. 1 were designed to account for site-specific conditions and the likely site history of Landfill No. 1. Historical records indicated that a variety of materials could have been disposed in the landfill, including metal cans and drums, waste oils, solvents and construction debris.

Considering the historical information described above, the geophysical investigation consisted of two different types of EM surveys. One of the EM surveys was conducted using the Geonics EM-31, and the other EM survey was conducted using the Geonics EM-61. The EM-31 survey

was intended to provide electrical conductivity data to detect possible landfill debris and delineate possible disturbed areas in the near-surface soils. The EM-61 survey was intended to provide focused mapping of buried metallic objects.

Electromagnetic Surveys

The Geonics EM-31 instrument was used to perform one of the EM surveys for the geophysical investigation of Landfill No. 1. The EM method using the Geonics EM-31 provides a rapid means of measuring the electrical conductivity of subsurface materials including soil and rock. EM conductivity data can aid the characterization of:

- Lateral extent of landfill and/or trench materials
- Buried metallic objects
- Depth and thickness of subsurface units
- Soil and rock units, and lateral variations within the units
- Lateral extent of paleochannels

The EM method using the EM-31 involves the induction of an electrical current into the earth. A small alternating current is generated by a transmitter coil that transmits a primary, time-varying magnetic field into the ground. Through inductive coupling, the primary magnetic field produces small eddy currents in the subsurface, which in turn, create their own secondary magnetic field. A receiver coil measures both the primary and secondary fields. Changes in magnitude and phase of the individual currents are output as voltages and are related to the subsurface electrical conductivity. Electrical conductivity is a function of the soil or rock type, the porosity and permeability of the rock units, and the fluids and fluid constituents filling pore spaces.

The depth of investigation of the EM-31 is dependent on the instrument mode of operation. Quadrature phase and inphase measurements were obtained using both the horizontal and vertical dipole modes for investigation depths of approximately 7 to 8 feet and 14 to 16 feet, respectively. The EM-31 survey was conducted using a uniform 10-foot station spacing.

The quadrature phase measurement is linearly related to the ground conductivity and therefore responsive to geologic variations. The inphase component reading is the ratio of the induced

magnetic field to the primary field, and is more responsive to the presence of metallic objects than the quadrature phase. It should be noted that variations in both the quadrature and inphase readings from some background level are often more diagnostic than the absolute values.

A second type of EM survey for the geophysical investigation of Landfill No. 1 was conducted using the Geonics EM-61. The EM-61 is a time domain EM instrument that is specifically designed to detect buried metal objects. The instrument generates rapid EM pulses through a transmitter coil. These pulses induce secondary EM fields in the subsurface. The secondary EM fields induced from moderately conductive subsurface materials (i.e. soil and rock) are of relatively short duration. However, the secondary EM fields induced from buried metallic objects are longer duration. The EM-61 measures this prolonged response from metallic objects after the EM response from conductive earth materials dissipates.

Since the measurement is made after termination of the primary pulse, the response is practically independent of the electrical conductivity of the ground. In rare instances, magnetic-rich soils that have magnetite can produce low-amplitude anomalies. However, these anomalies are much smaller than those associated with buried metal. Therefore, the depth of investigation of the instrument is relatively unaffected by site-specific ground conditions. The EM-61 generally provides high resolution of metallic objects, and is reportedly capable of detecting a single 55 gallon drum to a depth of 10 feet.

The EM-61 measures the EM response in millivolts (mv). Similar to EM-31 data, the variations in EM response readings from some background level are usually more diagnostic than the absolute values. EM response values can be plotted and contoured to evaluate the variations across the site. Variations in the EM response resulting from buried metallic objects, such as buried drums are generally manifested by relatively large (greater than about 50 mv) anomalies. Although the EM-61 data are generally less susceptible to surface interference than the EM-31 data, EM-61 anomalies can be masked by the interfering effects from utility lines or other metallic objects.

The response amplitude for a given anomaly is primarily a function of the anomaly depth, although anomaly size has some effect as well. It is thus useful to have some means of interpreting the depth of a given anomaly. The EM-61 has a two-receiver coil system that facilitates the discrimination of near-surface objects from deeper targets. The EM-61 can

output the response of either (or both) coils, and can output a differential between the two. By comparing the output from both coils, near-surface anomalies can be identified.

The EM-61 survey was conducted using a nominal station spacing of about 1 foot and line separation spacing of 5 feet. The EM-61 was operated using the wheel trigger mode. Prior to conducting the survey, several test lines were conducted to calibrate the wheel trigger to the site-specific conditions. During data collection, fiducial data markers were recorded at 100-foot increments using the EM-61's manual trigger. Processing of the EM-61 data included correcting the data station values using the survey line start and end point and fiducial marker information. In general, the wheel mode trigger provided accurate data stationing and the data processing resulted in only minor stationing adjustments.

Several portions of the EM-61 transects were reoccupied to help assess data repeatability as well as the geologic noise level. Those results indicated good repeatability with a relatively low noise level of 5 to 8 mv.

Geophysical Results

Upon completion of the EM surveys, the data were downloaded to a personal computer. The data were than formatted for input to a contouring program. Data plotting and contouring was accomplished using the computer software GEOSOFT. Inputs to the contouring program include the station coordinates and values, a selected spacing for gridding the raw data, and a contour interval. Various cultural features were encountered at the site that are readily apparent on the geophysics data contour maps. These features included tee boxes, golf greens, grass covered earthen mounds, cart paths, sprinkler boxes, and underground irrigation piping and stormwater basins.

Results of the EM-31 horizontal and vertical dipole modes for the quadrature response and inphase responses are dominated by anomalies associated with various known cultural features. These features include water lines associated with the irrigation system for the golf course, a basketball court, roads, water main lines, and other utilities. Some of these utility lines are apparent in the geophysical results as long narrow linear anomalies that generally trend northwest-southeast (see the vertical dipole mode quadrature results in Figure 3-1). Other features apparent on the EM-31 contour maps include the pump house and piping in the vicinity

of the golf greens. Areas likely associated with moisture variations in the site soils are also apparent on the maps near the irrigated 14th green, along some of the irrigation lines, and the low area adjacent to the pond in the east portion of the survey area.

The EM-61 results also show some of the same cultural features seen on the EM-31 plots. Additionally, most of the EM-61 anomalies appear to be at or near ground surface, as many of the anomalies observed in the Channel 2 results are subdued or disappear in the Channel 4 output. These anomalies are likely related to stormwater inlets and/or sprinkler heads on the golf course. The EM-61 results indicated that there was no clear evidence of buried metal indicative of landfill or waste disposal cells and trenches in the area investigated, including the two areas where trash was observed by Cannon AFB personnel during excavation for the golf course irrigation system (Figure 3-2).

Note that the EM-61 Channel 4 response data were contoured at 10 mv, a very fine contour interval. The anomalies apparent on the color-enhanced map of Figure 3-2 represent subtle features that have been amplified to aid interpretation. Additionally, as stated previously, the effects due to geologic noise are likely on the order of 5 to 8 mv. Since EM-61 anomalies of concern should exceed the noise level, a minimum response of 10 to 15 mv is appropriate for considering an area anomalous.

Using a conservative approach, several anomalies identified in the EM-31 survey which could not be explained entirely by cultural features were investigated during the soil investigation (boreholes 74-01 through 74-06) (Figure 3-1). The remaining four borings, 74-07 through 74-10 were drilled in areas identified as anomalous in the EM-61 Channel 4 results. These anomalies were not directly attributable to the irrigation system and other cultural features and occurred near those areas where trash and debris were previously observed by Cannon AFB during irrigation system installation (Figure 3-2) (W-C 1995a).

3.2.3 Subsurface Soil Investigation

Subsurface drilling was conducted from February 20 through March 1, 1996 at Landfill No. 1. Twenty-three soil borings designated 74-01 through 74-23 were drilled to depths ranging from 10 to 50 feet below ground surface (bgs) except boring 74-16. Boring 74-16

was drilled to about 6 feet bgs when a water line was encountered. The location was therefore abandoned.

As stated in the FSP and the FSPS, the overall objective of subsurface investigation at Landfill No. 1 was:

- Characterize the concentrations of landfill-related chemicals in subsurface soil at the site.

- Characterize the vertical and lateral distribution of landfill-related chemicals and evaluate the potential for any chemicals of concern found in soils to impact the groundwater.

Ten borings were originally selected to be drilled in areas identified from the surface geophysical survey results. These 10 boring locations were approved by NMED as presented in the FSPS (W-C 1995a). Subsurface soil samples were collected for chemical and geotechnical analyses in accordance with the approved Work Plan as amended in the FSPS.

In accordance with the FSPS, if landfill material was encountered during drilling soil samples were collected continuously using stainless steel split spoons from the base of the landfill/native soil interface to 40 feet below the landfill cell for lithologic description. Seven soil samples were collected and submitted for chemical analyses from each boring, generally at sample intervals of 2.0, 6.0, 10.0, 16.0, 20.0, 30.0, and 40.0 feet below the landfill/native soil interface. If the sample collected before the designated interval for chemical analyses exhibited a higher photoionization detector (PID) headspace reading during field screening activities, it was submitted for analysis in place of the sample from the designated interval. If landfill debris or chemical odors/staining were not observed in the field while drilling, borings were terminated at 20 feet bgs, and one sample was collected from the base of the boring and submitted for chemical analysis.

Of the 10 planned borings drilled, the 6 borings drilled in anomalous areas of the EM-31 (74-01 through 74-06) did not encounter landfill material. Of the 4 borings (74-07 through 74-10) drilled in anomalous areas of the EM-61 Channel 4 data with response amplitudes greater than 8 mv, and where trash was identified during installation of the irrigation system

on the Golf Course, 3 of these borings (74-08, 74-09, and 74-10) encountered landfill material.

Based on the subsurface data obtained from the 10 initially planned borings, 13 additional borings (74-11 through 74-23) were drilled during the Phase I field activities to further evaluate the extent of landfill debris. The 13 additional boring locations were selected and agreed upon by Cannon AFB, USACE, and W-C prior to drilling and the rationale for these locations is discussed below.

Two of these thirteen borings drilled (borings 74-11 and 74-12) were drilled in anomalous areas identified on the EM-31 survey map (located immediately northwest and southeast of boring 74-10) (Figure 3-1). Landfill material was not encountered at these 2 boring locations and, therefore, no samples were collected and submitted for chemical analysis.

An additional 11 borings (74-13 through 74-23) were drilled to further evaluate small-amplitude anomalies identified in the EM-61 Channel 4 response geophysical data (Figure 3-2). Of the 11 borings drilled, five borings (74-13, 74-14, 74-15, 74-16, and 74-23) were drilled in areas with response amplitudes greater than 8 mv (yellow, orange, and pink colored areas) (Figure 3-2). These locations were typically chosen in semi-continuous anomalous areas of slightly elevated EM-61 response (Figure 3-2). Taking a conservative approach, an additional six borings (74-17 through 74-22) were drilled in areas with response amplitudes less than 8 mv (green or blue colored areas) (Figure 3-2). Of the five locations drilled in areas with response exceeding 8 mv, four of the borings (74-13, 74-14, 74-15 and 74-23) encountered landfill material. Boring 74-16 was terminated at about 6 feet bgs due to a water line being punctured. Of the six locations drilled in areas with responses of less then 8 mv, only one boring (74-18) encountered landfill material.

For the additional 13 borings drilled during the Phase I field investigation, if landfill material was encountered, soil samples were collected for chemical analysis at depths of 0-2, 4-6 and 8-10 feet below the base of the landfill material and the boring was terminated. If landfill material was not encountered, the boring was terminated after verification that landfill material was not present at the location (typically 15 feet bgs) and no samples were collected for chemical analysis.

The sampling scheme implemented for the 13 additional borings (i.e. sample collection at 2, 6 and 10 feet below the base of the landfill material) was designed to evaluate whether a release had occurred from landfill materials. Field observation and PID measurements were used to evaluate whether sampling was required deeper than 10 feet below the landfill. No samples deeper than 10 feet below the landfill were required in any of the 13 borings based on the fact that no visual observations of contamination or elevated PID readings were noted in the native soil below the landfill/native soil interface. If visual contamination or elevated PID readings had been observed in the bottom-most sample (collected from 8 to 10 feet below the landfill material) in the 13 additional borings then deeper samples would have been collected.

The soil borings were drilled, sampled, lithologically logged, and grouted in accordance with SOP No. 7 - Subsurface Drilling and Sampling, SOP No. 8 - Lithologic Descriptions of Subsurface Samples, and SOP No. 9 - Boring Abandonment contained in the QAPP. Layne Environmental Services, Inc. of Denver, Colorado drilled the soil borings with a truck-mounted Central Mine Equipment (CME) 75 high-torque auger drill rig using hollow-stem augers. A field boring log containing the following information was completed for each boring drilled:

- Boring number, location, and elevation
- Drilling agency, equipment, method, and driller's name
- Geologist's name
- Date started and finished
- Completion depth
- Type of samplers used
- Number and depths of analytical and geotechnical samples
- Number of blows per 6 inches, and sample recoveries
- Sample identification numbers and quality assurance/quality control (QA/QC) samples
- Observations of any contamination or odors
- PID readings for soil samples
- USCS classifications and lithologic descriptions
- Downhole moisture conditions while drilling

Lithologic boring logs for each boring are included in Appendix C. CME 5-foot continuous core barrels were used to collect soil samples for description of the soil and landfill waste material. Upon retrieval and opening of the core barrel, a calibrated PID was used to screen the entire sample for the presence of volatile organic vapors. This was conducted by scanning the core with the PID probe and recording the highest reading noted, if any. In addition, the PID was used to monitor the breathing zone of on-site personnel. Landfill waste material encountered was described in detail and recorded on the boring log. If landfill debris was encountered, the landfill/native soil interface was identified and stainless steel split spoon samplers were used to collect subsequent subsurface samples for lithologic and chemical analysis.

The stainless steel split spoon was driven 24 inches below the top of a targeted interval or until refusal (100 plus blowcounts) with a pneumatic 140-pound hammer falling 30 inches. The number of hammer blows per 6 inches was recorded on the boring log. Upon retrieval and opening of the split spoon, the PID was again used to screen the entire sample for the presence of volatile organic vapors in addition to monitoring the breathing zone of the on-site personnel. Soil was immediately placed into two 4 ounce glass jars for volatile organic compound (VOC) analysis. Soil samples were also collected from each interval for soil headspace analysis. Soil headspace analysis was performed by filling a clean jar approximately two-thirds full with soil, placing aluminum foil tightly over the top and allowing the sample to stabilize for about 20 minutes. Using a PID, the probe was inserted through the foil and the reading recorded. The remainder of the soil sample was then extracted from the stainless steel split spoon, placed into a decontaminated stainless steel bowl and mixed thoroughly with a decontaminated stainless steel trowel. The soil was then placed into two 8 ounce glass jars for the following analyses, semivolatile organic compound (SVOC), target analyte list (TAL) metals (including cyanide), pesticides/polychlorinated biphenyls (PCBs) and herbicides, and total recoverable petroleum hydrocarbons (TRPH). In addition, 10 percent of the total number of samples selected from various depths in different borings were also analyzed for total organic carbon. Seven soil samples from various stratigraphic depths were collected from the original 10 boring locations and analyzed for grain size (sieve and hydrometer analysis), and moisture content.

All soil cuttings were placed in drums and the drums labeled with the following information, "Contents Awaiting Testing," Woodward-Clyde Federal Services (WCFS), Landfill No. 1, the boring number, soil interval (depth in feet bgs) placed in each drum, date, and the USAF

contact name and phone number. In addition, each drum was given a unique identification number (i.e., LF-1-1, LF-1-2 etc.). An inventory list of all drums was compiled and is shown in Table 3-2. At the completion of each boring, the drums were transported to the northwest corner of Landfill No. 5 in the designated drum staging area. In July 1996, the contents of 13 drums from Landfill No. 1 were identified as investigation derived waste (IDW) that was not considered a hazardous waste (i.e., soil cuttings from borings that did not encounter landfill material) and were placed into a small depression at Landfill No. 5. Soil from the remaining 7 drums was placed into a rolloff container, and a representative sample was collected and analyzed for toxic characteristic leaching procedure (TCLP) volatile organic compounds, TCLP semi-volatile organic compounds, TCLP pesticides, TCLP herbicides, and TCLP metals (including arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver). Analytical results indicated that the IDW in the rolloff container was not considered a characteristic hazardous waste. This material was disposed of on-site at Cannon AFB's construction debris landfill. In addition, decontamination water collected and stored temporarily in drums was analyzed for volatile organic compounds, semi-volatile organic compounds, pesticides, herbicides, and metals (including arsenic, barium, cadmium, chromium, lead, mercury, selenium, and silver). The results indicated that none of the constituents analyzed for exceeded applicable standards, so the water was subsequently disposed of on-site at Cannon AFB's Wastewater Lagoons."

Each boring was grouted with a portland/cement and bentonite (5%) mixture by placing a tremie pipe (polyvinyl chloride [PVC] pipe) in the hole and removing the augers. The grout was pumped slowly through the PVC pipe and the pipe removed upon completion of the grouting. Borings were grouted to approximately 1 foot bgs then allowed to settle at each soil boring. Clean soil was then placed in the hole and a grass plug placed over the top. A stake to be surveyed at the completion of the soil investigation was placed at each boring location following grouting.

QA/QC Samples Collected

In accordance with the QAPP, QA/QC samples (field duplicates, matrix spike/matrix spike duplicates [MS/MSDs], and split samples) were also collected and submitted to the analytical laboratory to provide a means of assessing the quality of the data obtained during the field sampling program. A total of 5 field duplicates, and 3 MS/MSDs were collected during the

field investigation activities. Blind field duplicate samples were collected to check for sampling and laboratory reproducibility. MS/MSDs were collected to evaluate the precision and accuracy of the analyses on a given sample matrix. One sample of the potable water used for decontamination was collected at the supply location near the contractor's area at the base to evaluate the quality of the water used during the course of the field work. Field duplicate samples were submitted blind to the laboratory.

In addition to the QA/QC samples described above, 5 split samples were collected and submitted to the USACE Missouri River Division (MRD) QA laboratory in Omaha, Nebraska. These samples were analyzed for the same parameters as the field samples to aid in evaluating interlaboratory precision as well as consistency of field techniques.

Summary information for soil borings drilled during the Phase I investigation is presented in Table 3-3. Included is a record of the subsurface and QA/QC samples collected for chemical or geotechnical analysis including boring number, sampling interval, sample identification number, PID soil headspace readings, types of QA/QC samples, date and time samples were collected, and analytical parameters tested. In addition, an indication if landfill material was encountered at a boring location and the interval landfill debris was encountered is included.

3.2.4.1 Decontamination Procedures

Decontamination procedures were performed in accordance with SOP No. 1 - Equipment Decontamination. All soil sampling equipment, including stainless steel bowls, trowels, split spoons, and core barrels, was decontaminated between samples. The sampling equipment, was decontaminated using an Alconox wash, a potable water rinse, a nitric acid rinse, and a final deionized water rinse.

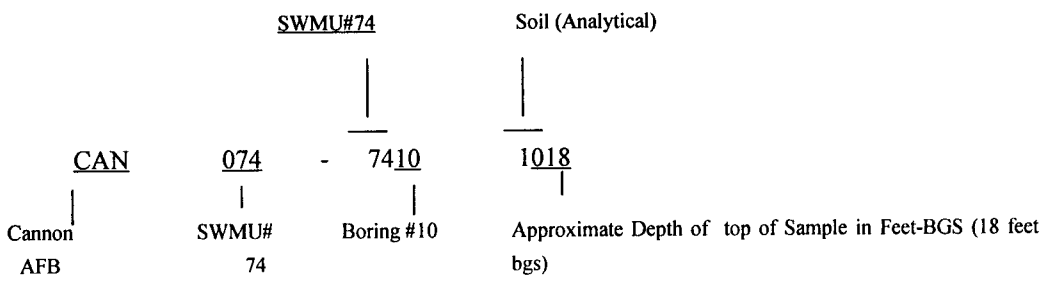
The drill rigs, augers, drill bit, CME core barrels, and other larger downhole equipment were decontaminated at the decontamination pad located in the northwest corner of Landfill No 5. Decontamination procedures for the rig and associated downhole equipment (i.e., augers, drill bit) consisted of an Alconox wash using a high pressure steam cleaner, and a potable water rinse.

Upon completion of the drilling activities, soil remaining on the decontamination pad from cleaning of the augers was shoveled into drums and waste water remaining on the pad was placed into drums. Soil and waste water were placed into separate drums, and the drum contents labeled. At the completion of the project, all decontamination pad drums were placed on wooden pallets in the drum staging area, in the northwest corner of Landfill No. 5.

3.2.4.2 Sample Designation

In accordance with the SOP No. 12 in the QAPP, the sample designation system for analytical and geotechnical samples and associated QA/QC samples was a three-letter and eleven-digit/letter unique identification for each sample (CANXXX-YYYY-ZZZZ). CANXXX is the facility identifier with CAN identifying Cannon AFB and XXX identifying the specific SWMU. The next four digits/letters (YYYY) identify the specific sampling location, incorporating both the SWMU number and the boring number, with the first two numbers corresponding to the SWMU identification number and the last two numbers corresponding to the specific boring number.

The last four characters (ZZZZ) are the sample identifier. The first digit corresponds to the type of sample (i.e., 1 for soil (analytical) and 4 for soil (geotechnical). The last 3 numbers correspond to the beginning depth of the sample in feet bgs for all soil samples. The following is an example of an identification number for this field investigation.



The QA/QC samples were identified at the location where they were collected and assigned a unique identification number following the same procedure above except for the last four digit (ZZZZ) identifier. The first two numbers of the QA/QC sample identifier corresponded to SWMU #074 which was the number 14. The various SWMUs at Cannon AFB were numbered to aid in the identification of QA/QC samples gathered for each SWMU. Landfill No. 1 sample

identification nomenclature followed this convention so that 14 = SWMU No. 74, Landfill No. 1. The third number was either the number 6 denoting a field duplicate, a number 8 denoting a decontamination water sample, or the number 0 denoting the MRD sample split. The last (fourth) digit corresponded to the sequential number of the particular QA/QC sample type.

The only QA/QC sample type which was not identified above was the MS/MSD. These samples were not discrete samples, but rather an analytical sample which was first analyzed and then spiked by the laboratory and reanalyzed. The samples that were chosen for MS/MSD analyses were labeled in the field as MS/MSD samples and were noted as such on the Chain-of-Custody (COC) forms.

3.2.4.3 Sample Handling, Documentation, and Analysis

All labeling, preservation, handling, shipping, documentation, and tracking for the samples collected for the Phase I RCRA Field Investigation at Landfill No. 1 were performed in accordance with SOP No. 12 - Sample Handling, Documentation, and Analysis contained within the QAPP.

All sample labels were filled out with waterproof ink. Soil and water sample labels, as well as all sample containers, were supplied by the analytical laboratory. Analytical sample containers were placed in reclosable plastic storage bags and wrapped in protective packing material (i.e., bubble packing). Samples were then placed in trash bags inside a cooler with ice (double bagged using plastic trash bags) for overnight express carrier shipment to Quanterra Laboratory (Quanterra), Arvada, Colorado. A completed and signed COC was placed in each cooler being shipped. A numbered custody seal was placed on the outside lid of each cooler, and the coolers were taped shut.

The surface and subsurface soil samples were analyzed for the following analytical parameters using SW-846 methods:

- Target Compound List (TCL) VOC Method 8240;
- TCL SVOC Method 8270;
- TAL Metals (M) and Cyanide Methods 6010, 7060, 7471, 7740, 7421, 7841; 9012

- Organochlorine pesticides and PCBs (Pesticide/PCB) Method 8080;
- Chlorinated herbicides Method 8150;
- TOC Method 9060; and
- TRPH Method 418.1.

Geotechnical gradation samples were labeled and placed in protective packing material (i.e., bubble packing). At completion of field activities, the samples were shipped to the W-C Totowa Geotechnical Laboratory in Totowa, New Jersey. Gradation (ASTM D-421) and hydrometer (ASTM D-422) analyses were performed on seven soil samples by Totowa Laboratory to evaluate the particle size distribution of the soil sample. The distribution of particles larger than 0.074 millimeters (i.e., retained on the No. 200 sieve) was determined by sieving, while the distribution of particles smaller than 0.074 millimeters was determined by hydrometer analysis. Gradational analyses results are included in Appendix C.

Documentation of observations and data acquired in the field provided information on the acquisition of samples and also provided a permanent record of field activities. The observations and data were recorded by a geologist and geologist assistant with waterproof ink in permanently bound weatherproof field log books with consecutively numbered pages. In addition, all pertinent sampling information for every sample collected for chemical analyses was recorded on a field sampling data sheet. The field sampling data sheets for subsurface soil samples along with field log books are filed in the W-C Denver, Colorado office.

To supplement the information recorded in the field book and field sampling data sheets, A-E daily quality control reports (DQCRs) were completed by the site manager each day which included documenting equipment used on site, work performed by each drill rig, QC activities, and problems which occurred during the day (if any). These reports were prepared in accordance with the USACE Statement of Services (SOS). The DQCRs are on file in the W-C Denver, Colorado office.

3.3 SITE GEOLOGY AND LANDFILL WASTE CHARACTERIZATION

Site Geology

The near surface stratigraphy (upper 50 feet) beneath Landfill No. 1 consists of Tertiary Miocene to Pliocene fluvial deposits of the Ogallala Formation. The Ogallala Formation consists of stream and overbank deposits formed within coalescing alluvial fans. The total thickness of the Ogallala deposit beneath Landfill No. 1 is not presently known, but based on regional information, may be as thick as 390 feet.

As is typical of alluvial deposits, the stratigraphy from boring to boring beneath Landfill No. 1 varies both vertically and laterally over short distances, in particular with respect to caliche or highly calcareous zones within the units. Five geologic cross-sections A-A', B-B', C-C', D-D' and E-E', were constructed to illustrate the vertical and lateral variation of geologic units observed beneath Landfill No. 1. Figure 3-3 shows the locations of the geological cross-sectional lines and Figures 3-4 through 3-8 are the geological cross-sections. Samples collected for analytical and geotechnical analysis are identified along with landfill material, if encountered, at each boring location.

From lithologic descriptions of the borings, the Ogallala beneath Landfill No. 1 consists primarily of interbedded caliche units and calcareous silty sand units (referenced as "SM" in accordance with the USCS). Calcareous fine-grained sands with trace amounts of silts (referenced as SP in accordance with the USCS) are also found beneath Landfill No. 1. The Caliche units are found at various stratigraphic depths, interbedded with the silty sand or fine-grained sand units, and are generally laterally discontinuous from boring to boring except at a few locations. The caliche units are generally described as medium dense to very dense with color varying from whitish, tan, yellowish, light orange and buff. The caliche units vary in density being crumbly and friable at some locations and highly cemented in others. Typically the caliche units appeared chalky and were fine-grained.

The calcareous silty sand (SM) unit is described as a very fine to fine-grained sand with occasional clay. The unit is variable in color and is described as dark reddish brown, dark brown, light orange, tan, pinkish white calcareous silty sand. The unit is variable in its calcium

carbonate content and, therefore, its density. Density ranges from medium dense to very dense. Caliche nodules usually tan to chalky white in color occur throughout this unit.

Occasionally during field logging, some sand units were described as having only trace amounts of silt; therefore, the unit was classified according to the USCS as a poorly-graded fine-grained sand (SP). These units were logged at a few boring locations and at various stratigraphic depths. Overall the SP units are similar to the SM units (described above) except for the amount of silt observed during boring logging.

Minor occurrence of calcareous silt units (ML) and clayey silty sand units (SC) were also encountered beneath Landfill No. 1. The geologic units encountered beneath Landfill No. 1 during the Phase I RFI drilling program typically showed dry conditions.

Grain size analyses (hydrometer and sieve analysis) were performed by an off-site laboratory on 7 soil samples. These soil samples were collected at various stratigraphic depths and in different boring locations. Table 3-4 summarizes the USCS results obtained from the laboratory analysis and compares them to the field USCS designation by the field geologist. Minor variations in soil classification were observed in 6 of the 7 soil sample compared. Four of the 7 soil samples analyzed (soil samples from borings 74-02, 74-03, 74-06, and 74-07) were classified by the laboratory as clayey sands (SC) while what was observed and logged by the geologists was a silty sand (SM) or caliche unit. One of the 7 soil samples (soil sample from boring 74-01) collected and analyzed for grain size analysis resulted in the laboratory identifying the unit as a clay (CL) where it was logged in the field as a silty sand (SM) and one of the soil samples collected for geotechnical analysis was identified by the laboratory as a gravel sand and clay (GC) while the unit was logged in the field as a silty sand (SM) with large white caliche nodules.

Landfill Cells

The geophysical results at Landfill No. 1 did not clearly delineate landfill cells or trenches within the investigation area, however anomalous areas were identified which were likely to be indicative of landfill cells and boring locations selected and drilled during the Phase I investigation.

Landfill material was found in eight of the twenty-two borings drilled (Borings 74-08, 74-09, 74-10, 74-13, 74-14, 74-15, 74-18, and 74-23) at Landfill No. 1. The subsurface investigations revealed that the base of landfill debris ranged in depth from about 3.5 to 8 feet bgs. Table 3-3 summarizes the depth of the landfill/native soil interface encountered at each boring location. Material encountered and observed while drilling through the landfill was primarily construction debris which consisted of nails, bricks, sheet rock fragments, roofing material, insulation, ceramic tile and wood debris. Minor amounts of domestic waste were encountered and consisted of paper and glass fragments. Burned wood, ashes, charcoal and cinders in varying proportions were found at each of the boring locations that encountered landfill material. The landfill debris encountered was usually found intermixed with soil.

Landfill Native Soils

Soils in the vicinity of Landfill No. 1 based on the soil survey of Curry County, New Mexico (USDA 1958) consist of fine sandy loams of either the Clovis and Amarillo Group. The Clovis and Amarillo Group regionally consists of calcareous sands, silts and clays. Native soil encountered at Landfill No. 1 during the February 1996 field investigations consisted primarily of a dark brown to reddish brown clay to silty clay. In addition, calcareous reddish brown clayey sandy silt units and fine-grained silty sand units that are reddish tan, light tan, and dark brown in color are common. Small rootlets are common to these soils.

TABLE 3-1
SOIL BORING LOCATIONS FOR LANDFILL NO. 1
INCLUDING LOCATION RATIONALE
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

	Location Field Coordinates (Grid Point)			
Boring Number	Northing (feet)	Easting (feet)	Elevation (feet)	Location Rationale[1]
74-01	550.0	870.00	4296.71	1
74-02	865.37	857.82	4296.23	1
74-03	1068.76	852.24	4299.10	1
74-04	1174.51	765.42	4300.54	1
74-05	1130.00	730.00	4301.40	1
74-06	870.00	740.00	4298.97	1
74-07	500.00	740.00	4298.89	1
74-08	710.00	660.00	4299.49	1
74-09	765.00	685.00	4299.67	1
74-10	1175.00	595.00	4304.63	1
74-11	1200.00	570.00	4303.97	1
74-12	1038.90	602.56	4304.30	1
74-13	1119.98	569.74	4304.47	2
74-14	661.96	695.68	4298.70	2
74-15	648.64	657.41	4299.22	2
74-16[2]	790	730	NA	2
74-17	1172.51	545.94	4304.24	2
74-18	1115.97	623.71	4305.42	2
74-19	689.49	592.12	4301.37	2
74-20	697.13	730.83	4298.52	2
74-21	1200.96	649.59	4304.21	2
74-22	1282.13	662.33	4302.91	2
74-23	976.67	539.05	4303.59	2

Notes:
NA - not available
[1] Location Rationale:
1 Within anomalies identified by the EM-31.
2 Within anomalies identified by the EM-61 Channel 4.
[2] Location Approximate. Boring was not surveyed due to a water line being encountered during drilling.

TABLE 3-2
DRUM INVENTORY LIST
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

Date	Drum Identification No.	Borehole No.	Sample Depth	Description
Soil Cuttings				
2/20-21/96	LF-1-1	74-10	0-30'	Landfill Material/Native Soil
2/21/96	LF-1-2	74-10	30'-50'	Native Soil
2/21/96	LF-1-3	74-09	0-34'	Landfill Material/Native Soil
2/22/96	LF-1-4	74-09	34-46'	Native Soil
2/22-23/96	LF-1-5	74-08	0-36'	Landfill Material/Native Soil
2/23/96	LF-1-6	74-08	36-46'	Native Soil
2/23/96	LF-1-7	74-05	0-20'	Native Soil
2/23/96	LF-1-8	74-04	0-20'	Native Soil
2/24/96	LF-1-9	74-06	0-20'	Native Soil
2/25/96	LF-1-10	74-07	0-20'	Native Soil
2/25/96	LF-1-11	74-01	0-20'	Native Soil
2/26/96	LF-1-12	74-03	0-20'	Native Soil
2/26/96	LF-1-13	74-02	0-20'	Native Soil
2/27/96	LF-1-14	74-11	0-14'	Native Soil
		74-12	0-15'	Native Soil
2/27/96	LF-1-15	74-13	0-14'	Landfill Material/Native Soil
		74-14	0-16'	Landfill Material/Native Soil
2/28/96	LF-1-16	74-15	0-16'	Landfill Material/Native Soil
2/28/29	LF-1-17	74-17	0-14'	Native Soil
		74-18	0-17'	Landfill Material/Native Soil
2/29/96	LF-1-18	74-19	0-14'	Native Soil
		74-20	0-14'	Native Soil
2/29/96	LF-1-19	74-21	0-14'	Native Soil
		74-22	0-10'	Native Soil
2/29/96	LF-1-20	74-23	0-14'	Landfill Material/Native Soil
Decontamination Water				
2/19-3/1/96	LF-1-21			
2/19-3/1/96	LF-1-22			
2/19-3/1/96	LF-1-23			
2/19-3/1/96	LF-1-24			
2/19-3/1/96	LF-1-25			
Decontamination Material[1]				
3/1/96	LF-1-26			
3/1/96	LF-1-27			

[1] Includes plastic sheeting, sludge and water from decontamination pad, and bentonite and cement bags.

TABLE 3-3

SUMMARY OF SUBSURFACE SOIL AND QA/QC SAMPLES COLLECTED FOR CHEMICAL OR GEOTECHNICAL ANALYSES AT LANDFILL NO. 1
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

BORING NUMBER	LANDFILL MATERIAL ENCOUNTERED	DEPTH FROM (feet)	DEPTH TO (feet)	SAMPLE IDENTIFICATION NUMBER	SOIL HEADSPACE PID READINGS (ppm)	QA/QC SAMPLES	DATE SAMPLED	TIME SAMPLED	ANALYTICAL PARAMETERS										
									8270-TCL	8240-TCL	8080-TCL	8150-TCL	6010-TAL	9012	418.1 (TPH)	9060 (TOC)	GRAIN SIZE ASTM D421/D422	ASTM D4318	MOISTURE-ASTM D2216
7401	No	8	10	CAN074-7401-4008	--		2/25/96	1034									x	x	x
		18	20	CAN074-7401-1018	4.0		2/25/96	1107	x	x	x	x	x	x	x	x			
		18	20	CAN074-7401-1403	4.0	MRD	2/25/96	1107	x	x	x	x	x	x	x	x			
		NA	NA	CAN074-7401-1481	--	Decon.	2/25/96	1445	x	x	x	x	x	x	x	x			
7402	No	10	12	CAN074-7402-4010	1.7		2/26/96	1354									x	x	x
		18	20	CAN074-7402-1018	1.2		2/26/96	1415	x	x	x	x	x	x	x				
7403	No	10	12	CAN074-7403-4010	3.4		2/26/96	1130									x	x	x
		18	20	CAN074-7403-1018	0.8		2/26/96	1205	x	x	x	x	x	x	x				
7404	No	18	20	CAN074-7404-1018	6.9		2/23/96	1630	x	x	x	x	x	x	x				
7405	No	18	20	CAN074-7405-1018	7.2		2/23/96	1515	x	x	x	x	x	x	x	x			
		18	20	CAN074-7405-1463	7.2	FD	2/23/96	1515	x	x	x	x	x	x	x	x			
7406	No	18	20	CAN074-7406-1018	7.0		2/24/96	1625	x	x	x	x	x	x	x				
		18	20	CAN074-7406-4018	7.0		2/24/96	1620									x	x	x
7407	No	10	12	CAN074-7407-4010	5.8		2/25/96	910									x	x	x
		18	20	CAN074-7407-1018	1.8	MS/MSD	2/25/96	932	x	x	x	x	x	x	x	x			
7408	Yes	6	8	CAN074-7408-1006	8.2		2/22/96	1529	x	x	x	x	x	x	x				
	(1.2-6')	6	8	CAN074-7408-1462	8.2	FD	2/22/96	1529	x	x	x	x	x	x	x				
		10	12	CAN074-7408-1010	7.9		2/22/96	1551	x	x	x	x	x	x	x				
		14	16	CAN074-7408-1014	9.0		2/22/96	1605	x	x	x	x	x	x	x				
		14	16	CAN074-7408-1402		MRD	2/22/96	1605	x	x	x	x	x	x	x				
		22	22.8	CAN074-7408-1022	8.3		2/22/96	1707	x	x	x	x	x	x	x				
		24	25.4	CAN074-7408-1024	7.0		2/23/96	736	x	x	x	x	x	x	x				
		34	36	CAN074-7408-1034	7.0		2/23/96	838	x	x	x	x	x	x	x				
		44	46	CAN074-7408-1044	7.3		2/23/96	940	x	x	x	x	x	x	x				
7409	Yes	6	8	CAN074-7409-1006	8.6		2/21/96	1516	x	x	x	x	x	x	x				
	(0.8-6')	10	12	CAN074-7409-1010	8.5		2/21/96	1529	x	x	x	x	x	x	x	x			
		14	16	CAN074-7409-1014	8.2		2/21/96	1546	x	x	x	x	x	x	x				
		16	18	CAN074-7409-4016	8.0		2/21/96	1600									x	x	x
		20	20.5	CAN074-7409-1020	8.4		2/22/96	814	x	x	x	x	x	x	x				
		24	24.8	CAN074-7409-1024	7.6		2/22/96	855	x	x	x	x	x	x	x				
		34	36	CAN074-7409-1034	8.6	MS/MSD	2/22/96	949	x	x	x	x	x	x	x				
		44	46	CAN074-7409-1044	7.7		2/22/96	1050	x	x	x	x	x	x	x				
		44	46	CAN074-7409-1401	7.7	MRD	2/22/96	1050	x	x	x	x	x	x	x				
7410	Yes	10	12	CAN074-7410-1010	25.0		2/20/96	1458	x	x	x	x	x	x	x				
	(4-8')	16	16.9	CAN074-7410-1016	8.1		2/20/96	1533	x	x	x	x	x	x	x				
		20	20.9	CAN074-7410-1020	6.0		2/20/96	1553	x	x	x	x	x	x	x				
		24	26	CAN074-7410-1024	6.5		2/20/96	1624	x	x	x	x	x	x	x				
		32	34	CAN074-7410-1032	7.8		2/21/96	808	x	x	x	x	x	x	x				
		38	40	CAN074-7410-1038	8.8		2/21/96	848	x	x	x	x	x	x	x	x			
		38	40	CAN074-7410-1461	8.8	FD	2/21/96	848	x	x	x	x	x	x	x	x			
		48	50	CAN074-7410-1048	8.8		2/21/96	1020	x	x	x	x	x	x	x				
		48	50	CAN074-7410-4048	8.8		2/21/96	1020									x	x	x
7413	Yes	4	6	CAN074-7413-1004	0.0		2/27/96	1427	x	x	x	x	x	x	x				
	(3-4')	8	10	CAN074-7413-1008	1.4		2/27/96	1440	x	x	x	x	x	x	x				
		4	6	CAB074-7413-1464	1.4	FD	2/27/96	1427	x	x	x	x	x	x	x				
		12	13.4	CAN074-7413-1012	1.0		2/27/96	1459	x	x	x	x	x	x	x				

TABLE 3-3

SUMMARY OF SUBSURFACE SOIL AND QA/QC SAMPLES COLLECTED FOR CHEMICAL OR GEOTECHNICAL ANALYSES AT LANDFILL NO. 1
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

BORING NUMBER	LANDFILL MATERIAL ENCOUNTERED	DEPTH FROM (feet)	DEPTH TO (feet)	SAMPLE IDENTIFICATION NUMBER	SOIL HEADSPACE PID READINGS (ppm)	QA/QC SAMPLES	DATE SAMPLED	TIME SAMPLED	ANALYTICAL PARAMETERS										
									8270-TCL	8240-TCL	8080-TCL	8150-TCL	6010-TAL	9012	418.1 (TPH)	9060 (TOC)	GRAIN SIZE ASTM D421/D422	ASTM D4318	MOISTURE-ASTM D2216
7414	Yes (2.2-5')	6	8	CAN074-7414-1006	0.1		2/27/96	1610	x	x	x	x	x	x	x				
		6	8	CAN074-7414-1404	0.1	MRD	2/27/96	1610	x	x	x	x	x	x	x				
		10	12	CAN074-7414-1010	1.2		2/27/96	1624	x	x	x	x	x	x	x				
		14	16	CAN074-7414-1014	0.0		2/27/96	1640	x	x	x	x	x	x	x				
7415	Yes (0-3.5')	4	6	CAN074-7415-1004	0.0		2/28/96	846	x	x	x	x	x	x	x				
		8	10	CAN074-7415-1008	0.0		2/28/96	905	x	x	x	x	x	x	x				
		12	14	CAN074-7415-1012	0.8		2/28/96	915	x	x	x	x	x	x	x				
7418	Yes (4-4.5')	5	7	CAN074-7418-1005	5.3		2/29/96	910	x	x	x	x	x	x	x				
		9	11	CAN074-7418-1009	5.0		2/29/96	918	x	x	x	x	x	x	x				
		15	17.2	CAN074-7418-1015	4.1	MS/MSD	2/29/96	940	x	x	x	x	x	x	x				
		15	17.2	CAN074-7418-1465	4.1	FD	2/29/96	940	x	x	x	x	x	x	x				
		15	17.2	CAN074-7418-1405	4.1	MRD	2/29/96	940	x	x	x	x	x	x	x				
7423	Yes (0-3.5')	4	6	CAN074-7423-1004	6.0		2/29/96	1720	x	x	x	x	x	x	x				
		8	10	CAN074-7423-1008	16.0		2/29/96	1745	x	x	x	x	x	x	x				
		12	14	CAN074-7423-1012	1.2		2/29/96	1800	x	x	x	x	x	x	x				

Explanation of QA/QC Samples

MS/MSD - Matrix Spike/Matrix Spike Duplicate (Matrix Spike/Matrix Duplicate for metals)
FD - Field Duplicate (of sample listed directly above)
MRD - QA/QC Split sample sent to U.S. Army, Missouri River Division Laboratory
Decon. - Decontamination water

Explanation of Analytical Parameters (see Table 3-1 for references)

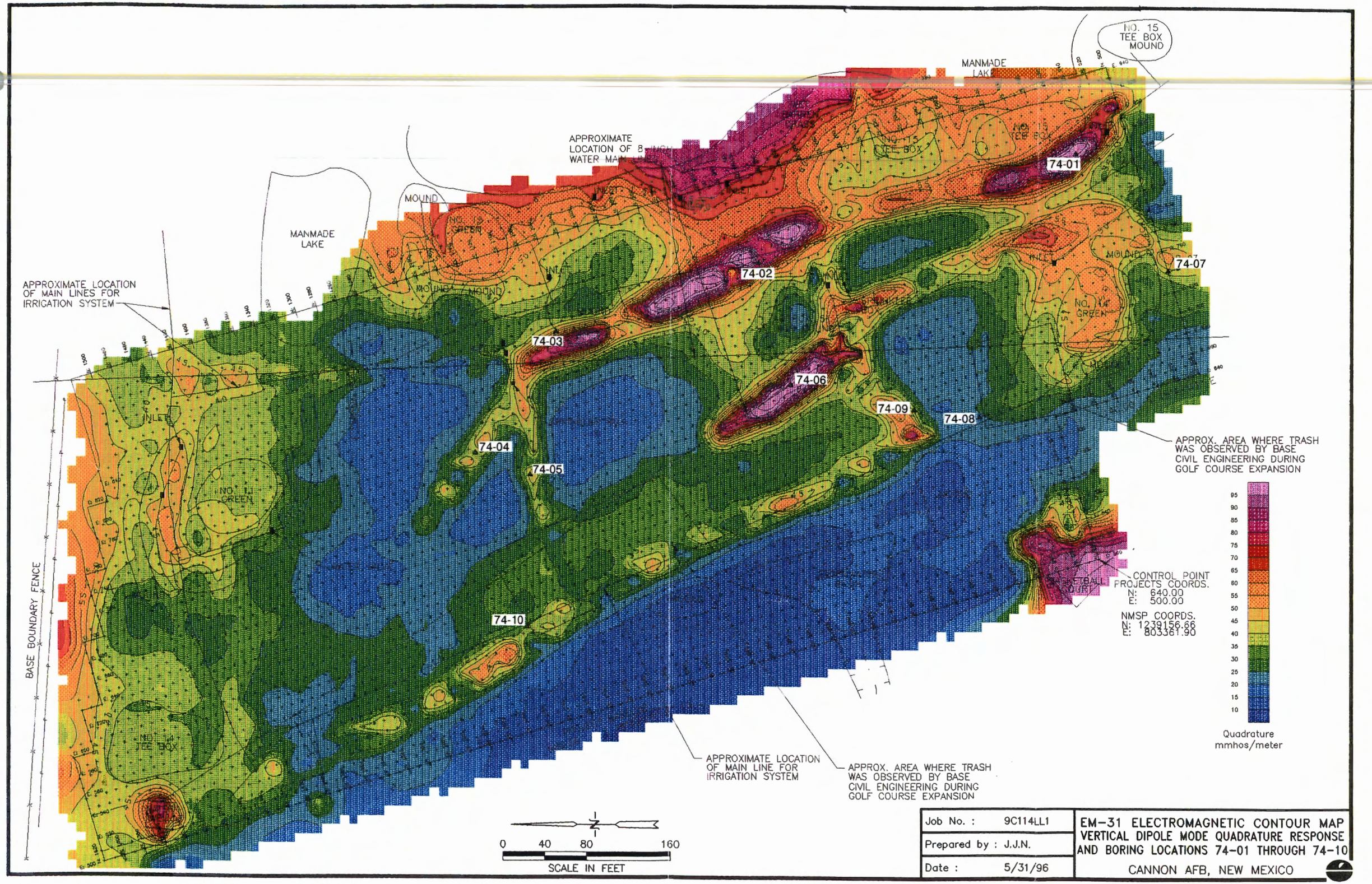
8240-TCL = Volatile Organics
8270-TCL = Semivolatile Organics
8080-TCL = Pesticides/PCBs
8150-TCL = Herbicides
6010-TAL = Metals; also includes mercury and graphite furnace metals (4)
418.1 = Total Petroleum Hydrocarbons
9012 = Cyanide
9060 = Total Organic Carbon

TABLE 3-4

LABORATORY GRADATIONAL ANALYSIS COMPARED TO FIELD USC CLASSIFICATION
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

Boring No.	Sample I.D.	Depth (feet) bgs	Laboratory USC Designation	Field USC Classification Designation
74-01	CAN074-7401-4008	8-10	CL	SM
74-02	CAN074-7402-4010	10-12	SC	Caliche
74-03	CAN074-7403-4010	10-12	SC	SM/Caliche
74-06	CAN074-7406-4018	18-20	SC	Caliche
74-07	CAN074-7407-4010	10-12	SC	SM/Caliche
74-09	CAN074-7409-4016	16-18	GC	SM
74-10	CAN074-7410-4048	48-50	SP-SM	SP-SM

bgs - below ground surface
SC - Clayey sands
SM - Silty sand
CL - Inorganic clays
SP - Poorly graded sands, little to no fines
GC - Clayey gravels, gravel-sand-clay mixtures



Job No. :	9C114LL1
Prepared by :	J.J.N.
Date :	5/31/96

EM-31 ELECTROMAGNETIC CONTOUR MAP VERTICAL DIPOLE MODE QUADRATURE RESPONSE AND BORING LOCATIONS 74-01 THROUGH 74-10

CANNON AFB, NEW MEXICO

FIG. 3-1

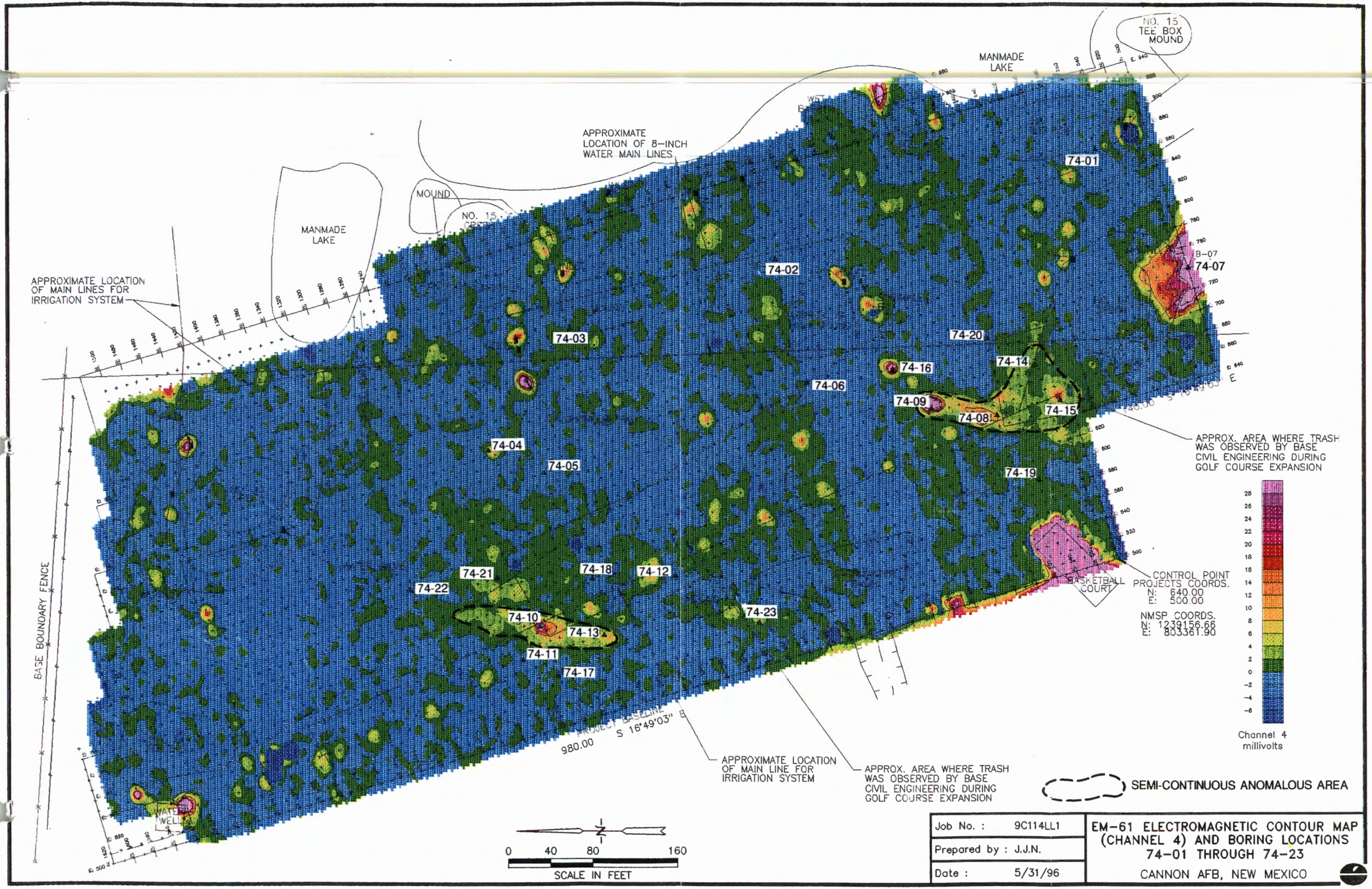
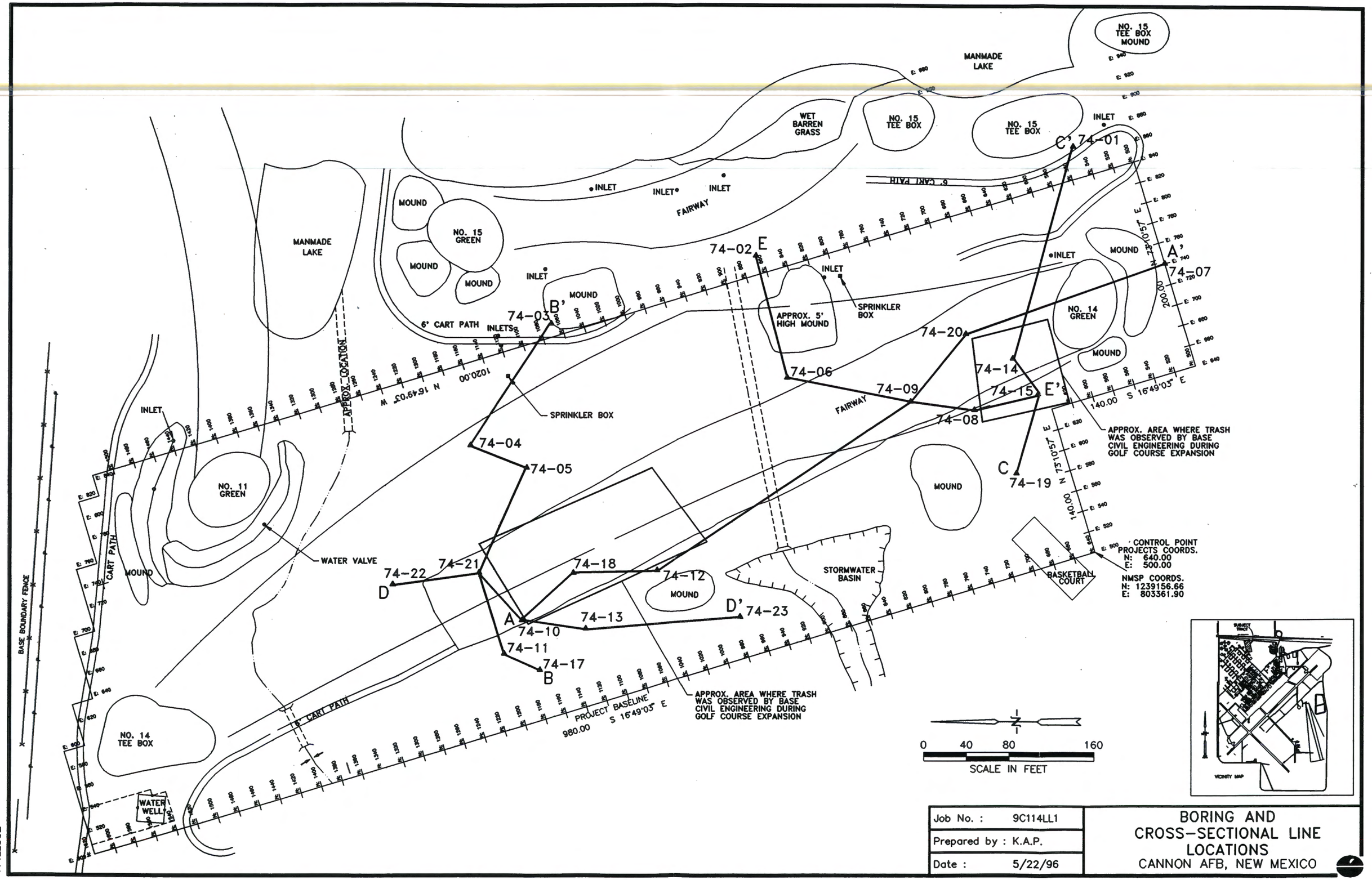

NO. 15
TEE BOX
MOUND
MANMADE
LAKE
APPROXIMATE
LOCATION OF 8-INCH
WATER MAIN LINES
MOUND
NO. 15
MANMADE
LAKE
APPROXIMATE LOCATION
OF MAIN LINES FOR
IRRIGATION SYSTEM
74-01
74-02
74-03
74-04
74-05
74-06
74-07
B-07
74-08
74-09
74-10
74-11
74-12
74-13
74-14
74-15
74-16
74-17
74-18
74-19
74-20
74-21
74-22
74-23
APPROX. AREA WHERE TRASH
WAS OBSERVED BY BASE
CIVIL ENGINEERING DURING
GOLF COURSE EXPANSION
BASKETBALL
COURT
CONTROL POINT
PROJECTS COORDS.
N: 640.00
E: 500.00
NMSP COORDS.
N: 1239156.66
E: 803361.90
Channel 4
millivolts
BASE BOUNDARY FENCE
PROJECT BASELINE
S 16°49'03" E
980.00
APPROXIMATE LOCATION
OF MAIN LINE FOR
IRRIGATION SYSTEM
APPROX. AREA WHERE TRASH
WAS OBSERVED BY BASE
CIVIL ENGINEERING DURING
GOLF COURSE EXPANSION
SEMI-CONTINUOUS ANOMALOUS AREA
WATER
WELLS
0 40 80 160
SCALE IN FEET
Job No. : 9C114LL1
Prepared by : J.J.N.
Date : 5/31/96
EM-61 ELECTROMAGNETIC CONTOUR MAP
(CHANNEL 4) AND BORING LOCATIONS
74-01 THROUGH 74-23
CANNON AFB, NEW MEXICO

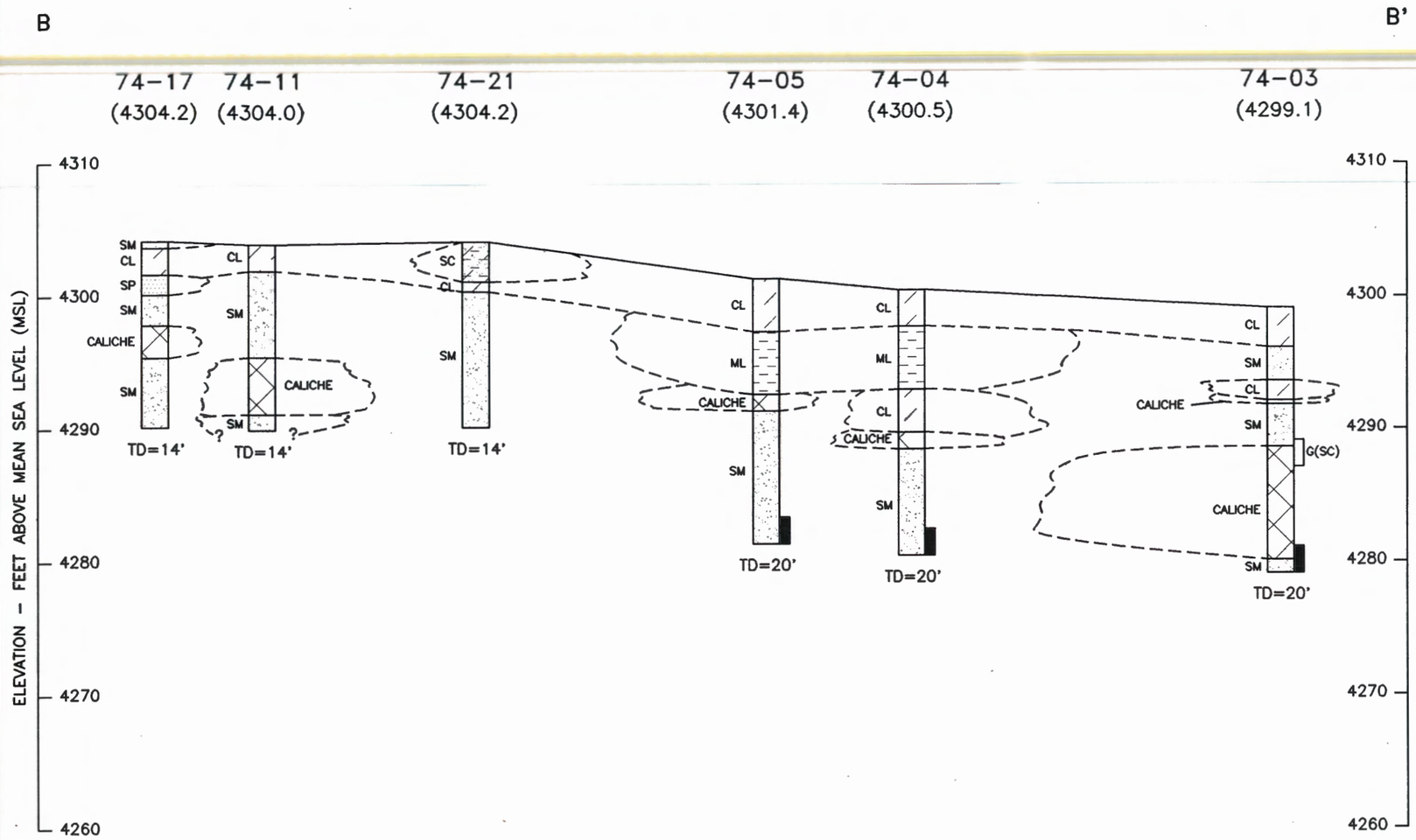
FIG. 3-2



Job No. : 9C114LL1	BORING AND CROSS-SECTIONAL LINE LOCATIONS CANNON AFB, NEW MEXICO
Prepared by : K.A.P.	
Date : 5/22/96	

FIG. 3-3

114LL002



LEGEND

(CL) CLAY, WITH TRACES OF SILT AND SAND, CALCAREOUS

(SM) SILTY SAND, CALCAREOUS

(ML) SILT

(SC) CLAYEY SILTY SAND

(SP) POORLY GRADED, FINE-GRAINED SANDS, TRACE OF SILT, CALCAREOUS

CALICHE, MEDIUM DENSE TO VERY DENSE, WHITISH, TAN, LIGHT ORANGE, BUFF, CHALKY, FRIABLE OR HIGHLY CEMENTED

LANDFILL MATERIAL

CHEMICAL ANALYTICAL SAMPLE COLLECTED

G(SM) GEOTECHNICAL SAMPLE COLLECTED. (SM) – USCS CLASSIFICATION SYMBOL ACCORDING TO LABORATORY GRAIN SIZE ANALYSIS

TD TOTAL DEPTH OF SOIL BORING IN FEET BELOW GROUND SURFACE

NOTES

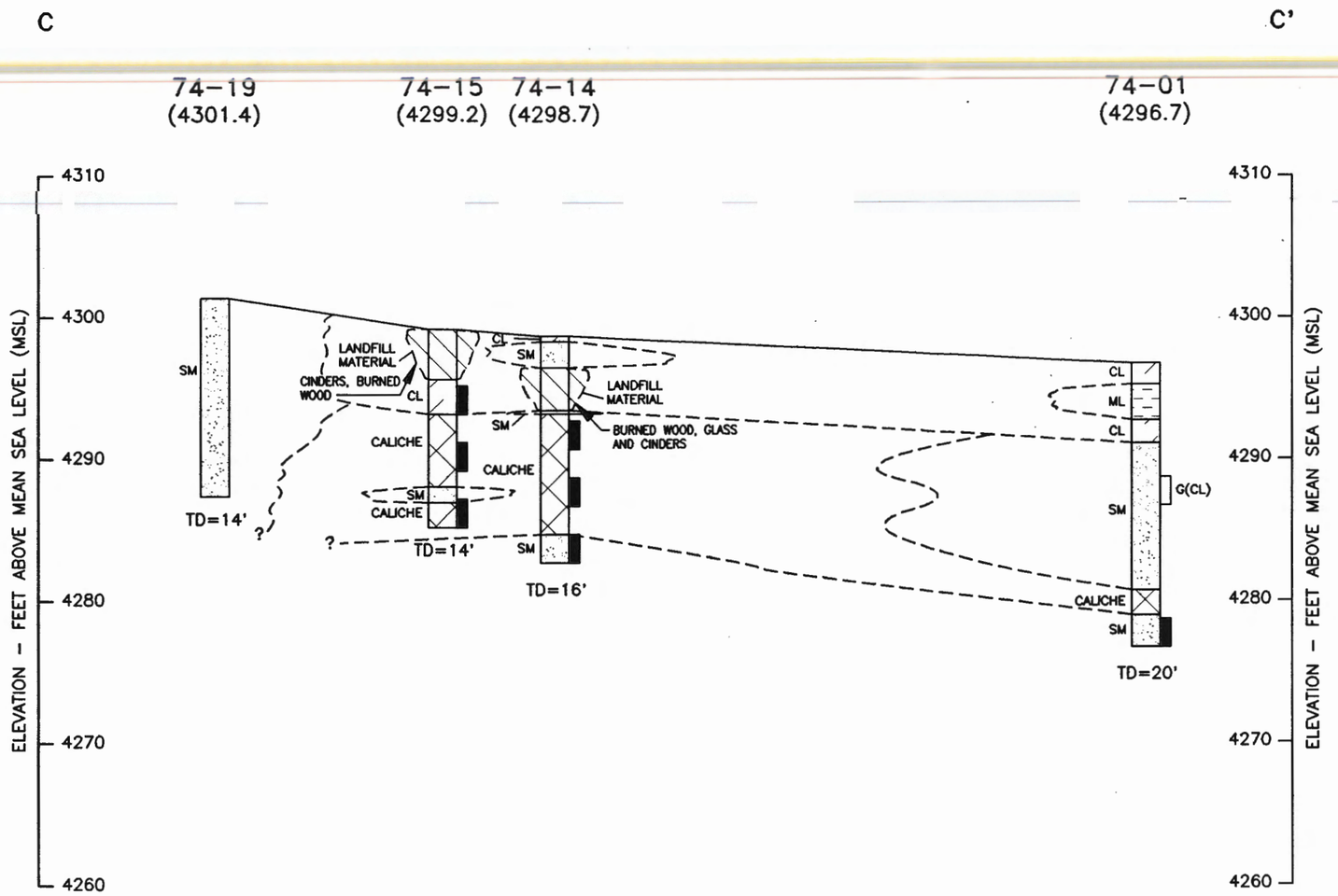
1. THE LOCATION OF THESE BORINGS ARE SHOWN IN FIGURE 3-3
2. BORINGS WERE DRILLED IN FEBRUARY 1996 DURING THE PHASE I RFI DRILLING PROGRAM.

VERTICAL SCALE: 1"=10'
HORIZONTAL SCALE: 1"=50'

Job No. : 9C114LL1	GEOLOGIC CROSS SECTION B-B' LANDFILL NO. 1
Prepared by : K.A.P.	
Date : 4/15/96	CANNON AFB, NEW MEXICO

FIG. 3-5

L1P-00



LEGEND

(CL) CLAY, WITH TRACES OF SILT AND SAND, CALCAREOUS

(SM) SILTY SAND, CALCAREOUS

(ML) SILT

(SC) CLAYEY SILTY SAND

(SP) POORLY GRADED, FINE-GRAINED SANDS, TRACE OF SILT, CALCAREOUS

CALICHE, MEDIUM DENSE TO VERY DENSE, WHITISH, TAN, LIGHT ORANGE, BUFF, CHALKY, FRIABLE OR HIGHLY CEMENTED

LANDFILL MATERIAL

CHEMICAL ANALYTICAL SAMPLE COLLECTED

G(SM) GEOTECHNICAL SAMPLE COLLECTED. (SM) - USCS CLASSIFICATION SYMBOL ACCORDING TO LABORATORY GRAIN SIZE ANALYSIS

TD TOTAL DEPTH OF SOIL BORING IN FEET BELOW GROUND SURFACE

NOTES

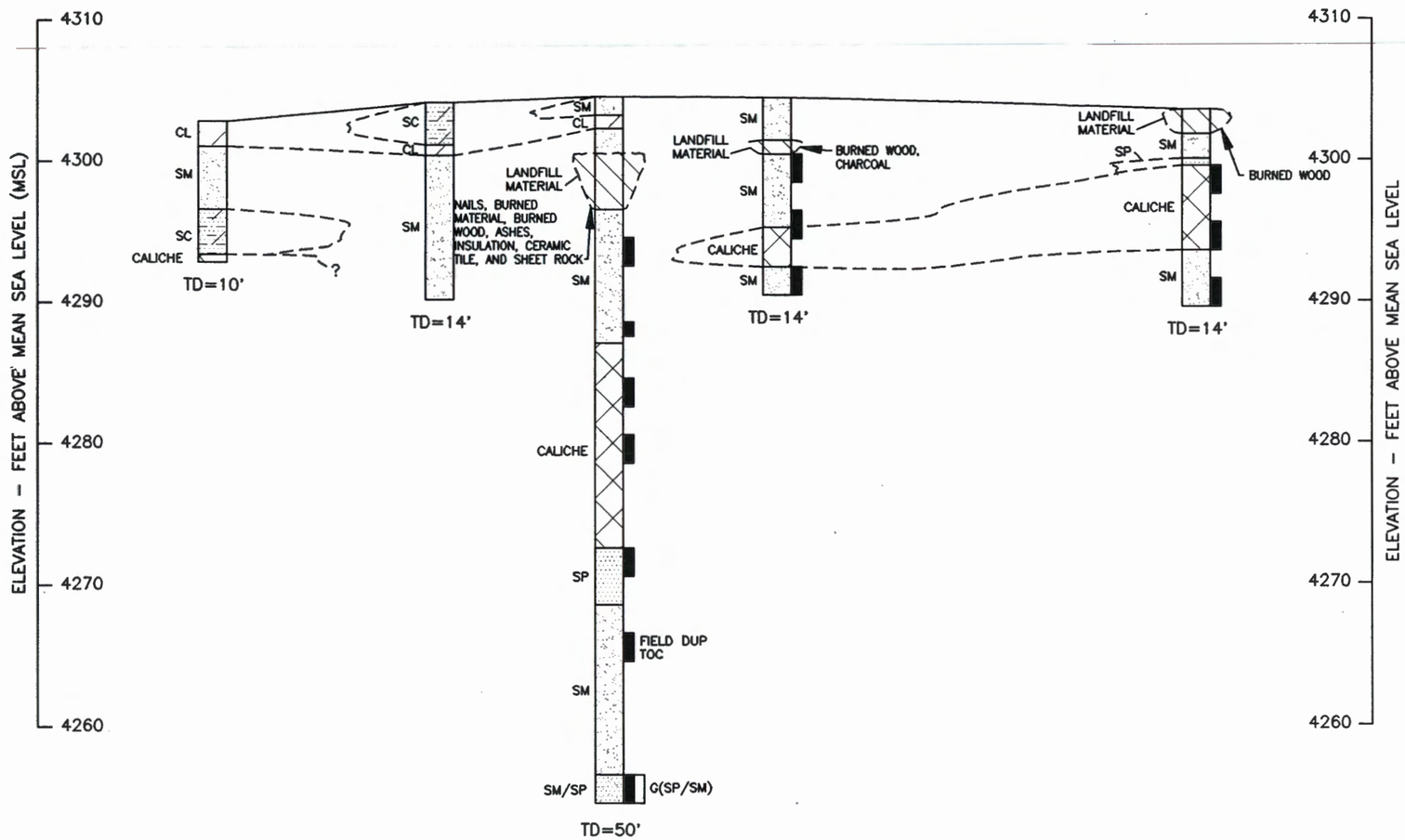
1. THE LOCATION OF THESE BORINGS ARE SHOWN IN FIGURE 3-3.
2. BORINGS WERE DRILLED IN FEBRUARY 1996 DURING THE PHASE I RFI DRILLING PROGRAM.

VERTICAL SCALE: 1"=10'
HORIZONTAL SCALE: 1"=50'

Job No. : 9C114LL1	GEOLOGIC CROSS SECTION C-C' LANDFILL NO. 1
Prepared by : K.A.P.	CANNON AFB, NEW MEXICO
Date : 4/15/96	

FIG. 3-6

L1P-00



LEGEND

(CL) CLAY, WITH TRACES OF SILT AND SAND, CALCAREOUS

(SM) SILTY SAND, CALCAREOUS

(ML) SILT

(SC) CLAYEY SILTY SAND

(SP) POORLY GRADED, FINE-GRAINED SANDS, TRACE OF SILT, CALCAREOUS

CALICHE, MEDIUM DENSE TO VERY DENSE, WHITISH, TAN, LIGHT ORANGE, BUFF, CHALKY, FRIABLE OR HIGHLY CEMENTED

LANDFILL MATERIAL

CHEMICAL ANALYTICAL SAMPLE COLLECTED

G(SM) GEOTECHNICAL SAMPLE COLLECTED. (SM) - USCS CLASSIFICATION SYMBOL ACCORDING TO LABORATORY GRAIN SIZE ANALYSIS

TD TOTAL DEPTH OF SOIL BORING IN FEET BELOW GROUND SURFACE

NOTES

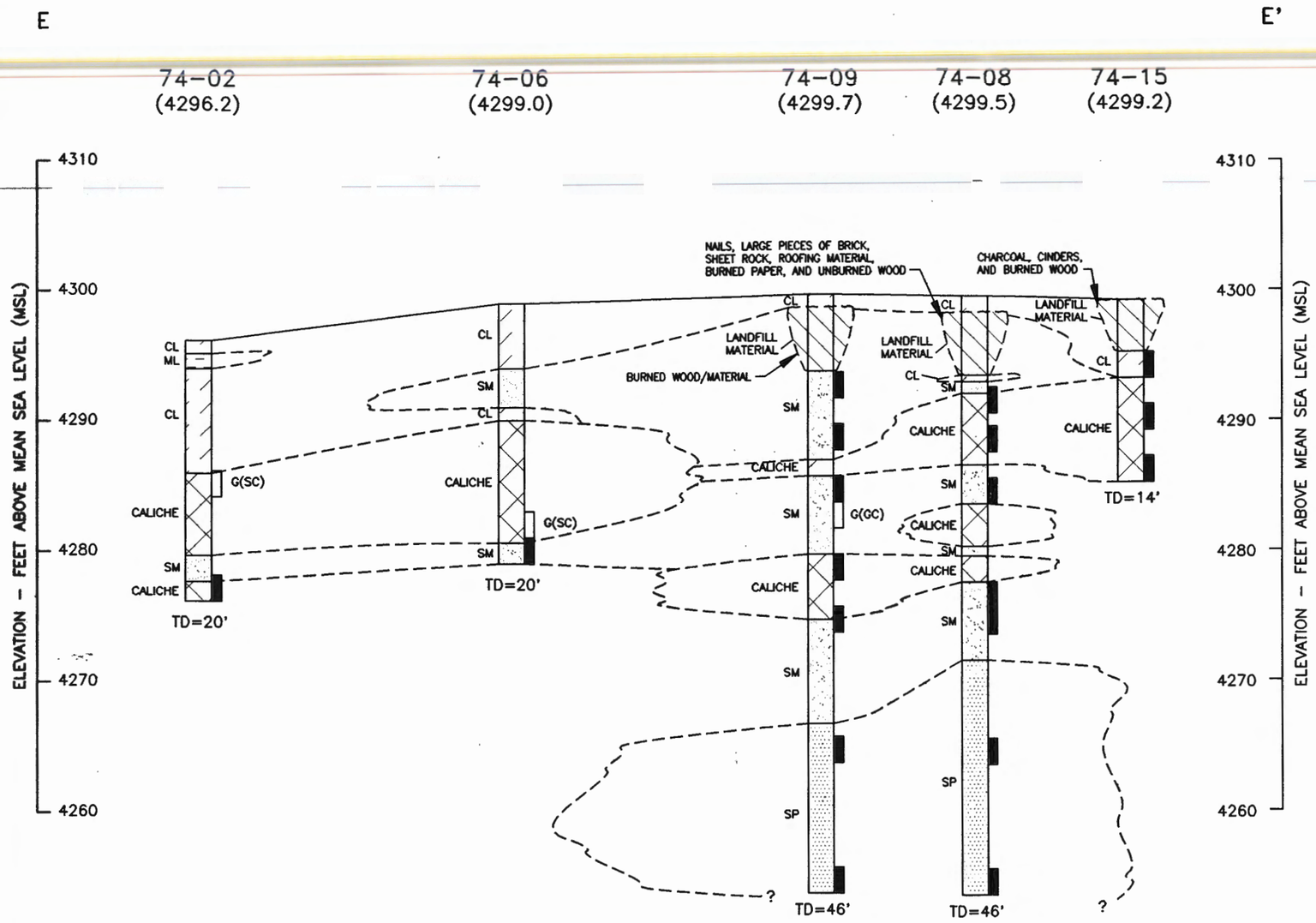
1. THE LOCATION OF THESE BORINGS ARE SHOWN IN FIGURE 3-3.
2. BORINGS WERE DRILLED IN FEBRUARY 1996 DURING THE PHASE I RFI DRILLING PROGRAM.

VERTICAL SCALE: 1"=10'
HORIZONTAL SCALE: 1"=50'

Job No. : 9C114LL1	GEOLOGIC CROSS SECTION D-D' LANDFILL NO. 1
Prepared by : K.A.P.	CANNON AFB, NEW MEXICO
Date : 4/15/96	

FIG. 3-7

L1P-00



LEGEND

(CL) CLAY, WITH TRACES OF SILT AND SAND, CALCAREOUS

(SM) SILTY SAND, CALCAREOUS

(ML) SILT

(SC) CLAYEY SILTY SAND

(SP) POORLY GRADED, FINE-GRAINED SANDS, TRACE OF SILT, CALCAREOUS

CALICHE, MEDIUM DENSE TO VERY DENSE, WHITISH, TAN, LIGHT ORANGE, BUFF, CHALKY, FRIABLE OR HIGHLY CEMENTED

LANDFILL MATERIAL

CHEMICAL ANALYTICAL SAMPLE COLLECTED

GEOTECHNICAL SAMPLE COLLECTED.
G(SM) (SM) – USCS CLASSIFICATION SYMBOL ACCORDING TO LABORATORY GRAIN SIZE ANALYSIS

TD TOTAL DEPTH OF SOIL BORING IN FEET BELOW GROUND SURFACE

NOTES

1. THE LOCATION OF THESE BORINGS ARE SHOWN IN FIGURE 3-3.
2. BORINGS WERE DRILLED IN FEBRUARY 1996 DURING THE PHASE I RFI DRILLING PROGRAM.

VERTICAL SCALE: 1" =10'
HORIZONTAL SCALE: 1" =50'

Job No. : 9C114LL1	GEOLOGIC CROSS SECTION E-E' LANDFILL NO. 1
Prepared by : K.A.P.	CANNON AFB, NEW MEXICO
Date : 4/15/96	

FIG. 3-8

L1P-00

4.0
NATURE AND EXTENT OF CONTAMINATION

4.1 INTRODUCTION

This section describes the nature and extent of contamination found in subsurface soil at Landfill No. 1 based on the validated chemical results obtained from the Phase I RFI. Section 4.2 discusses the quality assurance procedures related to field and laboratory data including specific QA/QC activities, and data validation. Section 4.3 discusses the nature and extent of the following: commonly occurring elements (calcium, potassium, magnesium, and sodium) in subsurface soil above regional and site-specific background ranges; metals concentrations detected above the established background at Cannon AFB; VOCs; SVOCs; pesticide/PCBs; herbicides; cyanide; and TRPH; if any, at Landfill No. 1. Tentatively identified compounds (TICs) identified by the laboratory are also addressed.

4.2 QUALITY ASSURANCE/QUALITY CONTROL OF DATA

This section summarizes quality assurance procedures related to field and laboratory data and the results of analysis of quality control samples taken during the Phase I RFI at Landfill No. 1. Appendix D contains the database printout of the validated analytical results for the samples collected as part of this project. The detailed data validation report is provided as Appendix E.

The data quality assurance objectives for the Phase I RFI at Landfill No. 1 are discussed in Section 4 of the QAPP. The analytical procedures utilized for the samples collected from Landfill No. 1 are summarized in Table 8-1 of the QAPP. QA/QC measures were followed throughout the analytical program as part of method and QAPP requirements, as discussed below in Sections 4.2.1 and 4.2.2.

In the Phase I RFI at Landfill No. 1 QAPP, data quality assurance objectives for analytical data were expressed in terms of accuracy, precision, completeness, comparability, and representativeness. Brief definitions of these terms, as presented in the QAPP, follow:

Accuracy is the degree of agreement of a measurement or series of measurements with the accepted reference or true value. An evaluation of the accuracy of a measurement system provides an estimate of bias. The accuracy of an analytical method is evaluated by analyzing known reference standards. The percent recovery achieved by analysis of known reference standards or spiking compounds will be used to define the accuracy of the compounds of interest.

The exact bias of a system will never be known since the true values are not accessible; however, inferences can be drawn from the results of blank samples taken in the field, of method blanks, and spiked sample analyses prepared in the laboratory. Acceptance limits for accuracy for each type of analytical measurement are defined in the QAPP.

Precision is the measure of variability between individual sample measurements under prescribed conditions. Precision can be assessed by replicate measurements of known laboratory standards and analysis of duplicate environmental samples. Precision will typically be determined as the relative percent difference (RPD) between duplicate sample results; however, replicate samples can be compared by calculating the sample standard deviation.

Replicate samples are expected to contain identical contaminant concentrations; therefore, any variability in results must be due to variability introduced by sampling (or heterogeneity of sample media), handling, or laboratory procedures. Acceptance limits for precision for each type of analytical measurement are defined in the QAPP.

Completeness is a measure of the amount of valid data obtained from a measurement system compared to the amount that could be obtained under optimum conditions. Amounts of data to be collected are defined in the QAPP, which sets the analytical completeness goal for the analytical program at 90 percent.

Comparability expresses the confidence with which one data set can be compared with another. Comparability can be related to accuracy and precision as these quantities are measures of data reliability. Data are comparable if siting considerations, collection techniques, and measurement procedures, methods, and reporting limits are equivalent for the samples within a sample set.

Qualitatively, data subjected to the strict QA/QC procedures will be deemed more reliable, and therefore more comparable, than other data. The SOPs describe the sampling and reporting procedures that were followed in order to produce comparable data.

Representativeness is the degree to which a set of data accurately represents the characteristics of a population, a process condition, or an environmental condition. Data are usually considered representative if the sample distribution is within statistically defined bounds of the population mean and variance. Representativeness depends on the sample media and the area being studied.

Representativeness was maintained during the sample collection effort by completing all sampling in compliance with the procedures set forth in the FSP, QAPP and SOPs.

4.2.1 Specific Types of QA/QC Activities

Specific QA activities required by the QAPP included the following:

- A PID was calibrated daily prior to field activities beginning using 100 ppm isobutylene gas. Calibration activities were recorded in a field logbook including the serial number, response of the calibration gas and span of the PID.

- Adherence to required analytical and reporting procedures as described in the laboratory's Laboratory Quality Management Plan (LQMP) and documentation of all laboratory procedures

- Completeness of laboratory data packages

- Proper storage and archiving of all data

- Independent data review (10% full validation, 90% QC review)

Specific QC samples included the following:

- Laboratory QC samples for soils
  - Matrix spike/matrix spike duplicate (MS/MSD)analyses (matrix spike/duplicate analyses for metals) on field samples
  - Method blanks
  - Laboratory control samples

- Field QC samples for soils
  - Field Duplicate samples

- Sample Splits for soils
  - Ten percent of the soils samples were sent to the USACE Missouri River Division laboratory for confirmation analysis

4.2.2 Overall Assessment of Data Quality

As summarized above and discussed in detail in the full validation and QC review reports in Appendix D, fulfillment of accuracy and precision criteria was evaluated for all sample results and qualification or rejection of sample data was performed in accordance with guidance provided in the Functional Guidelines. After completion of the data review, the percent completeness of the analytical results was calculated and compared the data QA goal. The analytical data as qualified and presented in this report have been found to meet the data quality assurance objectives specified in the QAPP as summarized below.

4.2.3.1 Accuracy

The overall analytical accuracy for the LANDFILL NO. 1 investigation was assessed by comparing the percent recoveries of spike analytes (surrogate spikes, matrix spike/matrix spike duplicate, laboratory control sample spikes) in all field and QC samples to QAPP-specified acceptance ranges. The overall level of analytical accuracy attained for this project is considered to be acceptable as no data were considered to be unusable due to unacceptable spike recoveries. Analytical results associated with spike recoveries outside of QAPP

acceptance ranges were qualified as estimated on the basis of spike recoveries to indicate that the reported value may have an associated bias.

Organic Analyses - All surrogate recoveries, laboratory control sample spike recoveries, and matrix spike/matrix spike duplicate recoveries were within the acceptance ranges specified in the QAPP.

Metals - All laboratory control sample spike recoveries were within the QAPP acceptance range, however, some matrix spike recoveries did not fall within acceptance limits. These instances are detailed in the data validation and QC review reports presented in Appendix D. Approximately 12 percent of the metals results were qualified as estimated due to matrix spike recoveries.

Other Analyses - All laboratory control sample spike recoveries and matrix spike/matrix spike duplicate recoveries were within the acceptance ranges specified in the QAPP.

4.2.3.2 Precision

The overall precision for the Landfill No. 1 investigation was assessed by comparing the relative percent differences for duplicate measurements (MS/MSD analyses, laboratory duplicate control sample analyses and laboratory duplicate results) to the QAPP-specified acceptance limits. The overall level of analytical precision attained for this project is considered to be acceptable as no data were considered to be unusable due to unacceptable duplicate results. Analytical results associated with duplicate results outside of QAPP acceptance ranges were qualified as estimated on the basis of imprecision to indicate that the reported value may not be a wholly reliable representative of the true value.

Organic Analyses - Duplicate laboratory control sample results and matrix spike/matrix spike duplicate results were within the acceptance ranges specified in the QAPP.

Metals - Results for some analytes in the three duplicate sample analyses did not fall within the QAPP acceptance limits. These instances are detailed in the data validation and QC review

reported presented in Appendix D. Approximately 4.2 percent of the metals results were qualified as estimated due to matrix spike recoveries.

Other Analyses - All laboratory control sample duplicate results and matrix spike/matrix spike duplicate results were within the acceptance ranges specified in the QAPP.

The results for all analyses for all five field duplicate sample pairs satisfied the evaluation criteria contained in the QAPP indicating that satisfactory sampling and analysis precision was achieved.

4.2.3.3 Completeness

Some analytical results were qualified as estimated during the data review process, however, no analytical results were considered to be unusable. As such, the percent completeness for the LANDFILL NO. 1 investigation was 100 percent, satisfying the completeness goal of 90 percent specified in the QAPP. Completeness, which is defined as the percentage of analytical results judged to be valid, includes estimated values.

4.2.3.4 Representativeness

Surface geophysical surveys were conducted across Landfill No. 1 to assist in locating potential landfill cells, if present, and to assist in choosing appropriate boring locations in order to collect representative subsurface soil samples from Landfill No. 1.

In addition, representativeness was maintained during the sample collection effort by completing all sampling in compliance with the procedures set forth in the FSP, QAPP and SOPs.

4.2.3.5 Comparability

The data within this data set are considered to be comparable (the results can be compared to one another with confidence) for several reasons. First, acceptable levels of accuracy and precision were attained and these parameters are considered to be measures of data reliability.

Second, the siting considerations, collection techniques, and measurement procedures, methods, and reporting limits were equivalent for the samples within this sample set as the work was governed by an approved WP containing a FSP, QAPP, and SOPs. Third, the data were subjected to strict field and laboratory QA/QC procedures (including independent data review) and, therefore, are deemed more reliable, and therefore more comparable, than other data.

4.2.3.6 Data Qualifier Statistics

The following subsections present statistics about the percentage of data qualified as estimated by method. In addition, a breakdown of the qualified data by data quality issue is also given.

VOA - Approximately 1.2 percent of the VOA soils data were qualified as estimated (17 of 1419 results). Of the 17 estimated results, approximately 6 percent were due to calibration problems (1 result) and the remaining 94 percent were due to values reported as detected below the reporting limit (16 results).

SVOA - Approximately 0.3 percent of the SVOA soils data were qualified as estimated (8 of 2709 results). All estimated results were due to values reported as detected below the reporting limit.

Pesticide/PCB - Less than 0.1 percent of the pesticide/PCB soils data were qualified as estimated (1 of 1161 results). The estimated result was due to a value reported as detected below the reporting limit.

Herbicides - No data were qualified.

TRPH - No data were qualified.

Metals - For the metals analyses, approximately 29 percent of the data were qualified as estimated due to laboratory duplicates, laboratory control sample results, MS recoveries or reported concentration below the reporting limit (283 of 989 results). Results reported as detected below the reporting limit represent approximately 52 percent of the data requiring qualification (148 of 283). Results qualified as estimated on the basis of matrix spike

recoveries represents approximately 33 percent of the estimated metals data (93 of 283). Results qualified as estimated on the basis of duplicate analysis results represents approximately 6 percent of the data qualified as estimated (17 of 283). And data qualified as estimated due to both matrix spike recoveries and duplicate analyses represents approximately 9 percent of the metals data qualified as estimated (25 of 283).

TOC - No data were qualified.

Cyanide - No data were qualified.

4.3 SUBSURFACE SOIL

The purpose of this section is to present the nature and extent of subsurface soil contamination identified at Landfill No. 1 during the Phase I RFI conducted in February 1996.

For this discussion, subsurface soil that contains detectable concentrations of chemical compounds that do not occur naturally in the environment (i.e., organic chemical compounds) and metals that were detected at concentrations higher than the estimated background range established for the soil in the area were identified and their nature and extent described. A human health risk screen was performed as part of this RFI (Section 6.0) to assess the potential risk to public health and the environment from contaminants described herein.

Inorganic and organic constituents detected in subsurface soil collected for chemical analyses from 15 borings are discussed in detail below by the following chemical groups: commonly occurring elements (calcium, magnesium, potassium, and sodium), metals, VOCs, SVOCs, pesticides/PCBs, herbicides, cyanide, and TRPH. TICs identified by the laboratory are also discussed.

Background concentration ranges were previously estimated for Cannon AFB and presented in the report entitled "Concentrations of Selected Naturally Occurring Chemical Constituents in Soil and Groundwater" (W-C 1994). Background ranges for soil were developed in the

1994 study using chemical data from 49 soil samples collected during past investigations in areas believed to represent locations that have not been impacted by past or current activities at Cannon AFB. The background soil locations included: 2 locations in off-base areas, 14 locations near the sanitary sewer line, 17 locations west of Landfill No. 2, 4 locations west of Landfill No. 25, and 12 locations along the base perimeter at Cannon AFB. The range of background concentrations in soil for the 1994 study was estimated as the mean plus or minus two standard deviations. In a normal population, 5 percent of sample results are expected to exceed the mean plus two standard deviations. The mean plus two standard deviations was used as screening level to identify metals in subsurface soil that may exceed background levels.

4.3.1 Commonly Occurring Elements

Forty-three subsurface soil samples (plus QA/QC samples) were analyzed for the commonly occurring elements calcium, magnesium, potassium, and sodium. Minimum, maximum, and mean values for these four elements are listed in Table 4-1 along with estimated background ranges for soil at Cannon AFB (W-C 1994) and concentration ranges for these elements typical of soil of the southwest United States (Lindsay 1979). Calcium, magnesium, potassium, and sodium concentrations reported in all subsurface samples analyzed are summarized by boring and are presented in Tables 4-2 through 4-16. Calcium was found in 16 subsurface samples from 8 borings in concentrations above the upper value of the estimated background range of 166,199 mg/kg. These 16 samples were collected between approximately 6 and 24 feet bgs and concentrations ranged from 167,000 mg/kg - 309,000 mg/kg (Table 4-17). High concentrations of calcium are due to the calcareous nature of the geologic units beneath Landfill No. 1 (i.e., caliche units and calcium carbonate silty sands). The maximum value of calcium in soil was 309,000 mg/kg found at 6 feet bgs in boring 74-09 in a calcareous silty sand unit. Although calcium was detected above the estimated background range for Cannon AFB in several soil samples collected during the Phase I RFI, this element was below the maximum literature value of 500,000 mg/kg for calcium in soil of the Southwest U.S.

Magnesium was found at concentrations above the upper estimated background value (9,912 mg/kg) in six subsurface samples collected from four borings (74-07, 74-08, 74-09

and 74-10) (Table 4-17). The range of concentrations detected above the estimated background range was 10,700 mg/kg to 19,100 mg/kg. Magnesium concentrations reported above background were found in soil collected at depths of 14 to 26 feet bgs from the four borings and occurred in caliche units and calcareous silty sand units. The highest concentration was detected in a calcareous silty sand unit found at a depth of 22 feet bgs (approximately 16 feet below the base of the landfill material) at boring 74-08 (Figure 4-5). Three of the six magnesium concentrations found above the estimated background range occurred in samples from 2 borings (74-07 and 74-08) that did not encounter landfill material (Figures 4-1 and 4-5). The other three samples where magnesium concentrations were detected above the estimated background range were found in subsurface samples collected 8 and 16 feet below landfill material. No exceedances of magnesium above the estimated background range were found in samples collected immediately below identified landfill material in any boring. Magnesium concentrations in soil that exceeded the estimated background range at Landfill No. 1 are believed to be due to site-specific geologic conditions. Magnesium can substitute for calcium within caliche units, and the occurrence of magnesium concentrations above estimated background range in soils at Landfill No. 1 is believed to be due, in part, from this substitution. Three of the magnesium concentrations above background were found in caliche units, while the other three occurrences of magnesium above background were found in calcareous silty sand units.

Out of the 43 samples analyzed for sodium, 24 samples were reported below the estimated background range (834 mg/kg) for sodium (including both detectable results and non-detects with detection limits below the estimated background range). However, 19 samples were reported with elevated detection limits (above the estimated background value). These elevated detection limits for sodium were all reported in samples which were analyzed at a dilution to quantitate calcium within the calibration range.

Potassium was not found above the estimated background range in any soil sample collected from Landfill No. 1 and is not further discussed.

4.3.2 Metals

Forty-three subsurface soil samples (plus QA/QC samples) from 15 of the 23 borings were collected and analyzed for 23 metals (including the commonly occurring metals calcium, magnesium, potassium, and sodium). Metals concentrations reported in the soil samples collected during the Phase I RFI are summarized by boring (74-01 through 74-10, 74-13, 74-14, 74-15, 74-18, and 74-23) and are presented in Tables 4-2 through 4-16, respectively. The occurrence and concentrations of metals detected in subsurface soils beneath Landfill No. 1 were compared to the estimated background range previously developed for each of the metals at Cannon AFB to describe the nature and extent of contamination in soil.

A total of 23 soil samples (subsurface samples) showed concentrations of one or more metals above the background range for the Phase I RFI at Landfill No. 1. Table 4-17 summarizes the results for metals that exceeded the estimated background range and lists the soil sample depths and locations where these metals occurred. Table 4-18 provides a summary of metals found above the estimated background range in subsurface soil samples by boring. These metals and their concentrations are displayed on geologic cross-section A-A' through E-E' (Figures 4-1 through 4-5) to illustrate the lateral and vertical occurrence of metals detected above the estimated background range.

<u>Subsurface Soil</u>

The metals analyses results for the 43 subsurface soil samples collected at Landfill No. 1 showed that 5 metals (barium, beryllium, cobalt, manganese and vanadium) were detected at concentrations above the estimated background range (excluding the two commonly occurring elements calcium and magnesium).

A summary of their frequency of occurrence in subsurface samples, the range of reported concentrations above the estimated background range, and the background range of each metal is shown below, followed by a discussion of the occurrence of each of these metals at Landfill No. 1.

Metals Detected Above Estimated Background Range

Analyte	Frequency of Occurrence Above Background[2]	Range of Concentrations Above Background (mg/kg)	Estimated Background Range[1] for Cannon AFB (mg/kg)
Barium	5 samples in four borings	559J - 1180J	0 - 548
Beryllium	1 sample in one boring	0.67	0 - 0.6
Cobalt	2 samples in two borings	4.4 - 4.5	0 - 4.0
Manganese	1 sample in one boring	188	0 - 151.8
Vanadium	1 sample in one boring	25.7	1.7 - 25.0

J = Estimated Value

[1] Background range is estimated as the mean plus or minus two standard deviations. Table 2-6 in Concentrations of Naturally Occurring Chemical Constituents in Soil and Groundwater at Cannon AFB, New Mexico (W-C 1994).

[2] Borings where exceedances occurred are listed in Table 4-18.

Barium was found above the upper estimated background value (548 mg/kg) in five soil samples from four boring locations (Table 4-17) The highest concentration reported was 1,180J mg/kg in the sample collected from a depth of 10 feet bgs (4.5 feet below the base of the landfill cell) at location 74-14 (Figure 4-3). Barium was not detected at concentrations above the estimated background range in the soil sample collected for chemical analysis above this sample interval; however, barium was detected above the estimated background range in the soil sample collected from 14-16 feet bgs at this borehole location. The concentration detected was 625J mg/kg. The other three occurrences of barium were found at three borings (74-13, 74-18 and 74-23) in soil samples collected from depths of 8 to 14 feet bgs (Figures 4-1 and 4-4). Concentrations above the estimated background range in the three borings ranged from 559J mg/kg to 843J mg/kg. Barium concentrations that exceeded the estimated background range were found primarily in silty sand units with a high content of calcium or within caliche units. In four of the five soil samples where barium exceeded the estimated background range, calcium was also found above the estimated background range. Barium can substitute for calcium in the caliche units, and the occurrence of barium concentrations above background in soil at Landfill No. 1 is believed to be due, in part, from this substitution.

Beryllium was found at a concentration above the upper estimated background value (0.6 mg/kg) in one sample at boring location 74-23 (Table 4-17). Beryllium was reported at a concentration of 0.67 mg/kg (just slightly above background) and was found in the soil sample collected from 4 to 6 feet bgs (the sample collected immediately below landfill material) (Figure 4-4). Beryllium, however, was not found above the estimated background range in the two samples collected below this interval at depths of 8 to 10 and 12 to 14 feet bgs. Beryllium in the sample collected from 4 to 6 feet was also found in association with cobalt and manganese, which were detected in concentrations above the estimated background ranges.

Cobalt was found at concentrations above the upper estimated background value (4.0 mg/kg) in two subsurface samples collected from two borings (74-01 and 74-23) (Table 4-17). Cobalt concentrations above background (4.5 mg/kg and 4.4 mg/kg) were found in the sample collected at the base of boring 74-01 (18 to 20 feet bgs) and in the sample collected immediately beneath the landfill material at boring location 74-23 (4 to 6 feet bgs), respectively (Figures 4-3 and 4-4). The concentration detected in boring 74-01 is likely due to site-specific geologic conditions since no landfill material was encountered at this borehole location and the concentration detected was only slightly above the upper estimated background value. The cobalt concentration detected at borehole 74-23 was found in association with beryllium and manganese concentrations that also exceeded the estimated background ranges; however, cobalt was not found above the estimated background range in the two subsurface samples collected below this sample interval in boring 74-27.

Manganese was found above the upper estimated background value (151.8 mg/kg) in one subsurface soil sample collected from a depth of 4 to 6 feet bgs (immediately below landfill material) from boring 74-23 (Table 4-17). The concentration detected was 188 mg/kg (Figure 4-4). Manganese was detected with concentrations of beryllium and cobalt that also exceeded the estimated background range in the same sample. Manganese did not exceed background in the two samples collected below this sample interval at this boring location.

Vanadium was found above the upper estimated background value (25 mg/kg) in one subsurface sample collected from a depth of 18 to 20 feet bgs in boring 74-01 (Table 4-17).

The concentration detected was 25.7 mg/kg, just slightly above the estimated background range.

4.3.3 Volatile Organic Compounds

Forty-three subsurface soil samples (plus QA/QC samples) were collected from 15 borings and analyzed for VOCs. VOCs in subsurface soil samples are summarized by boring and are presented in Tables 4-2 through 4-16. Table 4-19 provides a summary of the VOC concentrations detected, excluding those VOC analytes considered to be common laboratory contaminants (i.e., 2-butanone, acetone, and methylene chloride).

Aside from the laboratory contaminants, toluene was the only VOC detected at Landfill No. 1, and this compound was found in three subsurface soil samples collected from three borings: 74-07, 74-14 and 74-15. Toluene was detected at a concentration of 9.2 μg/kg in soil collected from 18 to 20 feet bgs from boring 74-07 (Figure 4-1). No other samples were collected at this borehole location.

Toluene was detected at a concentration of 1.3J μg/kg in the sample collected from the bottom of boring 74-14 at a depth of 14 to 16 feet bgs (8.5 feet below the landfill material). The two soil samples collected above this sample interval, however, did not contain detectable levels of toluene. Toluene was also detected at a concentration of 1.9J μg/kg in the middle soil sample collected from 8 to 10 feet bgs (4.5 feet below landfill material) from boring 74-15. The soil sample collected in this boring above and below this sample interval did not contain detectable levels of toluene. The concentrations of toluene in the two soil samples from borings 74-14 and 74-15 were both below the laboratory reporting limit and were, therefore, qualified as estimated.

4.3.4 Semivolatile Organic Compounds

Forty-three subsurface samples (plus QA/QC samples) were collected from 15 borings and analyzed for SVOCs. Results of the analyses for these samples were used to describe the nature and extent of SVOC contamination at Landfill No. 1. SVOC concentrations detected in these samples are summarized by boring and are presented in Tables 4-2 through 4-16. Table 4-19 provides a summary of the SVOCs detected, excluding those analytes considered

to be common laboratory contaminants. The SVOCs considered to be common laboratory contaminants for this investigation are bis(2-ethylhexyl)phthalate and di-n-butyl phthalate.

Only three SVOCs other than common laboratory contaminants were detected in the samples collected at Landfill No. 1. These compounds were all detected within the same boring (74-10). Two of the three SVOCs detected at Landfill No. 1 are polynuclear aromatic hydrocarbons (PAHs) (phenanthrene and pyrene). In addition, one phenol was detected, pentachlorophenol (PCP) (Figures 4-1 and 4-4).

Pyrene was detected in two of the three subsurface soil samples collected from boring 74-10. These two soil samples were collected at depths of 10 to 12 feet and 16 to 18 feet bgs (approximately 2 and 8 feet below landfill material) at concentrations of 43J µg/kg and 73J µg/kg. In both cases, pyrene was detected at concentrations well below the laboratory reporting limit of 380 and 360 µg/kg, respectively. Pyrene was not, however, detected in the five subsurface soil samples collected below these sample intervals at this boring location.

Phenanthrene was detected in only one soil sample collected from boring 74-10. The soil sample was collected at a depth of 16 to 18 feet bgs (approximately 8 feet below landfill material). Phenanthrene was detected at a concentration of 42J µg/kg (well below the laboratory reporting limit of 360 µg/kg). Phenanthrene was not detected in the soil sample collected 2 feet below the landfill material or in the five subsurface soil samples collected between depths of 18 to 50 feet bgs in boring 74-10.

PCP was detected in only one soil sample collected from boring 74-10. The soil sample was collected at a depth of 20 to 22 feet bgs, and PCP was detected at a concentration of 42J µg/kg (well below the laboratory reporting limit of 1700 µg/kg). PCP was not detected in the two samples collected above or the four samples collected below this sample interval at depths between 22 to 50 feet bgs.

These three SVOCs were only detected at boring 74-10 and were not detected in any other samples or borings from Landfill No. 1.

4.3.5 Pesticide/PCB Compounds

Forty-three samples (plus QA/QC samples) were collected and analyzed for pesticides/PCB compounds. 4,4'-DDT was the only pesticide detected and was reported at a concentration of 3.2J µg/kg in the soil sample collected from a depth of 10 to 12 feet bgs (or 2 feet below the landfill material) from boring 74-10 (Table 4-19) (Figures 4-1 and 4-4). This concentration was below the laboratory reporting limit of 3.8 µg/kg and was, therefore, qualified as estimated. No other occurrence of this compound was detected in soil from Landfill No. 1. In addition, PCBs were not detected in any soil samples collected from Landfill No. 1.

4.3.6 Herbicides

Forty-three samples (plus QA/QC samples) were analyzed for herbicides. Only one herbicide compound, 2-(2-methyl-4-chlorophenoxy) propionic acid (MCPP) was found in one sample at boring 74-18 (Table 4-19) (Figure 4-1). MCPP was detected at a concentration of 12,000 µg/kg in soil collected from 5 to 7 feet bgs (immediately below the base of the landfill material). The two samples collected below this sample interval at 9-11 and 15-17 feet bgs did not contain detectable levels of MCPP nor did any other samples collected from Landfill No. 1.

4.3.7 Cyanide

Forty-three samples (plus QA/QC samples) were analyzed for cyanide. There were no detections of cyanide reported in any of the samples analyzed.

4.3.8 Total Recoverable Petroleum Hydrocarbons

Forty-three samples (plus QA/QC samples) were collected and analyzed for TRPH. TRPH was found in four soil samples collected from borings 74-08 and 74-18. Concentrations ranged from 42.2 mg/kg to 62.9 mg/kg (Table 4-19).

TRPH was detected in three subsurface soil samples collected at depths of 6 to 8, 10 to 12 and 14 to 16 feet bgs from boring 74-08, with concentrations decreasing with depth. TRPH

was not detected in the four subsurface samples collected below these sample intervals at this boring location. TRPH was detected in the bottom sample collected at a depth of 15-17 feet bgs (8.5 feet below landfill material) at boring 74-18. TRPH was detected at a concentration of 42.2 mg/kg (Figure 4-1). TRPH was not detected in the two samples collected above this sample interval.

4.4 SEMIVOLATILE AND VOLATILE ORGANIC TENTATIVELY IDENTIFIED COMPOUNDS

During the Phase I RFI, three volatile and five semivolatile organic TICs (including one petroleum related TIC) were reported by the laboratory. The occurrence of each of these TICs, their frequency of occurrence, the boring locations where these compounds were detected, and their range of concentrations are summarized in Table 4-19. These TICs and their concentrations are displayed on five geologic profiles (A-A' through E-E') (Figures 4-6 through 4-10) to illustrate the lateral and vertical distribution of these chemicals in soil at Landfill No. 1.

The three volatile compounds which were identified are:

- Ethylenediamine
- Nonanal (aldehyde)
- Unknown

The five semi-volatile compounds which were identified are:

- 2,2-dimethyl-1,3-Propanediol (alcohol)
- Hexadecanoic acid, butyl ester (fatty acid ester)
- Hexanedioic acid, bis (2-ethylhexyl ester) (fatty acid ester)
- Octadecanoic acid, butyl ester (fatty acid ester)
- Saturated Hydrocarbons: C10-C20

Aldehydes, fatty acids, and fatty acid esters are typically used in household and personal care products and would be expected to be seen in domestic landfills. Alcohols are used as

solvents, in paints and lacquers; as plasticizers for PVC resins; in perfumes, cosmetics and pharmaceutical formulations; in lubricants, resins, baking finishes, inks, rubber, paper, photography and dry cleaning products. Aldehydes are used in perfumes and as flavoring agents. Fatty acids are derived from or contained in animal or vegetable fats or oils and are generally used in lubricants, paints, lacquers, candles, salad oils, shortening, synthetic detergents, and cosmetics. The potential for toxicity is low for all TICs at concentrations observed in samples collected during the Phase I RFI.

A discussion of the VOC-TICs and SVOC-TICs, is presented below.

VOC-TICs

Ethylenediamine was found in only one subsurface sample (concentration of 6.5NJ µg/kg) collected at a depth of 20-22 feet bgs (approximately 11.5 feet below the base of the landfill material) at boring 74-10 (Figure 4-8). This TIC was not detected in the two samples collected above or the four samples collected below this sample interval in boring 74-10. One SVOC (PCP) and one SVOC TIC (octadecanoic acid, butyl ester) was also associated with this TIC.

Nonanal was detected at concentrations of 6.8NJ µg/kg and 7.3NJ µg/kg in two subsurface soil samples collected from boring 74-14 (Figure 4-7). Nonanal was detected at a depth of 10 to 12 and 14 to 16 feet bgs, but was not found in the sample collected immediately below the landfill material. This TIC was not detected in any other boring nor was it found in any other soil collected at Landfill No. 1 in boring 74-10. This TIC was found with the SVOC TIC (hexadecanoic acid, butyl ester) in the sample collected from 10 to 12 bgs and was found with toluene and two SVOC TICs (hexadecanoic acid, butyl ester and octadecanoic acid, butyl ester) in the sample collected from 14 to 16 feet bgs.

Saturated hydrocarbon TICs between C10 and C20 were detected in only one sample collected at depth of 10 to 12 bgs in boring 74-09 (Figure 4-9). Saturated hydrocarbons were detected at a concentration of 200NJ µg/kg. This TIC was not detected in this boring in the sample collected above or the five samples collected below this sample interval nor in any

other sample collected from Landfill No. 1. This TIC was also not found with any other organic compounds.

SVOC-TICs of Interest

2,2-dimethyl-1,3-Propanediol was tentatively identified at a concentration of 200NJ µg/kg in the subsurface sample collected from a depth of 9 to 11 feet bgs (approximately 4.5 feet below the base of the landfill material) at boring 74-18 (Figure 4-6). This TIC was not identified in the sample collected immediately above or immediately below this sample interval in boring 74-18 nor in any other soil sample collected at Landfill No. 1. No other organics were detected in this sample at this boring location.

Hexanedioic acid, bis(2-ethylhexyl) ester was found in only one subsurface sample collected from boring 74-23 (Figure 4-8). This compound was detected at a concentration of 670NJ µg/kg in the second subsurface sample collected at a depth of 8 to 10 feet bgs (approximately 6 feet below the base of the landfill cell) (Figure 4-8). This TIC was not detected in the sample collected above or below this sample interval and was not found in association with any other organic compound. In addition, this compound was not detected in any other soil collected from Landfill No. 1.

Hexadecanoic acid, butyl ester was detected in six subsurface soil samples collected from three borings (74-13, 74-14 and 74-18). Hexadecanoic acid, butyl ester was found in the bottom sample collected from a depth of 12 to 14 feet bgs at boring 74-13 at a concentration of 500NJ µg/kg (Figure 4-8). This TIC was found in association with another SVOC-TIC octadecanoic acid, butyl ester. At boring 74-14 hexadecanoic acid, butyl ester was detected in the three subsurface samples collected beneath the landfill material at concentrations of 230NJ µg/kg, 170NJ µg/kg, and 280NJ µg/kg, respectively (Figure 4-7). This was the only compound detected in the sample collected immediately below the landfill material (approximately 6 to 8 feet bgs). Hexadecanoic acid, butyl ester was found in association with a VOC-TIC (nonanal) in the sample collected at 10 to 12 feet bgs and the bottom sample collected from a depth of 14 to 16 feet bgs (approximately 8.5 feet below landfill debris) was found in association with the VOC-TIC nonanal, the SVOC-TIC octadecanoic acid, butyl ester, and toluene. At boring 74-18, hexadecanoic acid, butyl ester was detected in two

subsurface samples collected from a depth of 5 to 7 and 15 to 17 feet bgs (Figure 4-6). Concentrations were reported as 370NJ µg/kg and 320NJ µg/kg, respectively (showing a slight decrease in concentration with depth). In the sample collected from 5 to 7 feet bgs, this TIC was found with SVOC-TIC octadecanoic acid, butyl ester, and with the herbicide MCPP. The sample collected from the base of the boring at 15 to 17 feet bgs was found with the SVOC-TIC octadecanoic acid, butyl ester and TRPH.

Octadecanoic acid, butyl ester was detected in seven samples collected in six of the eight borings (74-09, 74-10, 74-13, 74-14, 74-15, and 74-18) that detected landfill material (Figures 4-6, 4-7 and 4-8). Concentrations ranged from 150NJ to 330NJ µg/kg (Table 4-19). Octadecanoic acid, butyl ester was found in the sample collected from 9 to 11 feet bgs (approximately 4 feet below the landfill material) in boring 74-09. This TIC was not found with any other organics nor was it found in the sample collected above nor the five samples collected below this sample interval in this boring. Octadecanoic acid, butyl ester was found in the sample collected from 8 to 10 feet bgs (approximately 4 feet below landfill material) in boring 74-15. This TIC was not found with any other organic nor was it found in the sample collected above or below this sample interval in this boring.

At boring 74-10, octadecanoic acid, butyl ester was found in only one of the seven samples collected for chemical analysis at this boring location. It was found in the sample collected from 20 to 22 feet bgs (approximately 12 feet below landfill material) but was not found in the two samples above or four samples collected below this sample interval in boring 74-10. It was found with the VOC-TIC ethylenediamine and the SVOC PCP.

Octadecanoic acid, butyl ester was found in the bottom sample collected from 12 to 14 feet bgs in boring 74-13. This sample was found with one other SVOC-TIC, hexadecanoic acid, butyl ester, and was not found in the two samples collected above this sample interval.

In boring 74-18, octadecanoic acid, butyl ester was found in the sample collected immediately below the landfill material (five feet bgs) and in the bottom sample collected from a depth of 8.5 feet below landfill debris at this boring, showing a slight decrease in concentration. At both sample intervals, the SVOC-TIC hexadecanoic acid, butyl ester was also found in association with this TIC. In addition, the herbicide MCPP was found in the

sample collected immediately below the landfill material and TRPH was found in the sample collected 8.5 feet below the landfill debris.

Octadecanoic acid, butyl ester was found in the bottom sample collected from 14 to 16 feet bgs (approximately 8 feet bgs) in boring 74-14. This TIC was not found in the two samples collected above this sample interval. This TIC was found with the SVOC-TIC hexadecanoic acid, butyl ester and the VOC-TIC nonanal.

4.5 LANDFILL WASTE MATERIAL

Landfill material encountered during the Phase I RFI at Landfill No. 1 was primarily construction debris with minor amounts of domestic waste. Construction debris included nails, brick, sheet rock fragments, roofing material, insulation, ceramic tile and wood debris. Domestic wastes included paper and glass fragments. It is important to note that liquid wastes or soil saturated with liquid waste were not encountered in the landfill material during the drilling and field logging of the landfill material. In addition, the debris observed was minimal in thickness (i.e., 5.5 feet maximum) and was found primarily intermixed with soil. Evidence of burned material (primarily wood) was observed in all borings which encountered landfill material.

Field screening using a PID was performed over landfill debris in samples retrieved from drilling at Landfill No. 1. The majority of the PID readings of the landfill material were recorded as non-detects except in a few cases where PID readings increased to a maximum of 4.2 ppm. PID field screening indicated that low levels of volatile organic vapors were present in the landfill debris.

TABLE 4-1

MINIMUM, MAXIMUM, AND MEAN VALUES OF MAJOR ELEMENTS MEASURED IN SOIL SAMPLES AT LANDFILL NO. 1

Landfill No. 1 (SWMU NO. 74) Phase I RFI
Cannon AFB, New Mexico

Element	Site Minimum (mg/kg)	Site Maximum (mg/kg)	Site Mean (mg/kg)	Established Background Range for Soils[1] at Cannon AFB (mg/kg)	Common Background Range[2] (mg/kg)
Calcium	322	309,000	130,947	0 to 166,119	7,000 to 500,000
Magnesium	416	19,100	5,092	0 to 9,912	600 to 6,000
Potassium	121	1,710	637	0 to 2,531	400 to 30,000
Sodium	ND	267	570[3]	0 to 834	750 to 7,500

[1] Background range is estimated as the background mean plus or minus two standard deviations. Woodward-Clyde. 1994. Concentrations of Selected Naturally Occurring Chemical Constituents in Soil and Groundwater, Cannon AFB, New Mexico.

[2] Source: Lindsay, W.L., 1979. Chemical Equilibria in Soils. John Wily & Sons, N.Y., N.Y.
(mg/kg) = Milligrams per kilogram

[3]The mean was calculated by assuming non-detected compounds were present at one-half the detection limit. Due to elevated detection limits, the calculated mean is greater than the maximum detected value.

ND = Non-detect

TABLE 4-2
Results for Metals and Other Detected Chemical Compounds
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

BORING 74-01

Chemical	Sample Interval (ft bgs)			Estimated Background Range[1]
	18-20			
	Results[2]	Qual[3]	DL	
Aluminum	3010		11.5	596 - 10,796
Antimony		UJ	6.9	0 - 29.6
Arsenic	0.82		0.58	0 - 10.5
Barium	49.4	J	1.2	0 - 548
Beryllium		U	0.23	0 - 0.6
Cadmium		U	0.58	0 - 2.1
Calcium	87200	J	23	0 - 166,119
Chromium	2.9		1.2	0.8 - 12.0
Cobalt	**4.5**		1.2	0 - 4.0
Copper	3.3		2.3	0 - 10.1
Iron	4200		11.5	0 - 8,564
Lead	1.7		1.2	0 - 18.4
Magnesium	8720		23	0 - 9,912
Manganese	127		1.2	0 - 151.8
Mercury		U	0.12	0 - 0.2
Nickel	5.7		4.6	0 - 9.7
Potassium	541	J	575	0 - 2,531
Selenium		U	1.2	0 - 36.8
Silver		U	1.2	0 - 1.8
Sodium		U	575	0 - 834
Thallium	0.12	J	1.2	0 - 6.2
Vanadium	**25.7**		1.2	1.7 - 25.0
Zinc	4.8		2.3	0 - 20.7

(1) Background mean plus or minus two standard deviations. Table 2-6 in Concentrations of Selected Naturally Occurring Chemical Constituents in Soil and Groundwater, Cannon AFB, New Mexico (W-C 1994).

(2) Metals concentrations are in milligrams per kilogram (mg/kg), organic concentrations are in micrograms per kilogram (µg/kg)

(3) U = Not Detected J = Estimated Value UJ = Not Detected, Estimated Reporting Limit

Results that are shaded and in bold are concentrations above the estimated background range.

TABLE 4-3
Results for Metals and Other Detected Chemical Compounds
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

BORING 74-02

Chemical	Sample Interval (ft bgs)			Estimated Background Range[1]
	18-20			
	Results[2]	Qual[3]	DL	
Aluminum	4500		11.4	596 - 10,796
Antimony		UJ	6.8	0 - 29.6
Arsenic	0.75		0.57	0 - 10.5
Barium	27.4	J	1.1	0 - 548
Beryllium	0.31		0.23	0 - 0.6
Cadmium		U	0.57	0 - 2.1
Calcium	75300	J	22.7	0 - 166,119
Chromium	4.8		1.1	0.8 - 12.0
Cobalt	1.6		1.1	0 - 4.0
Copper	3.2		2.3	0 - 10.1
Iron	3290		11.4	0 - 8,564
Lead	2.2		0.57	0 - 18.4
Magnesium	4430		22.7	0 - 9,912
Manganese	24.3		1.1	0 - 151.8
Mercury		U	0.11	0 - 0.2
Nickel	5.9		4.5	0 - 9.7
Potassium	851		568	0 - 2,531
Selenium		U	1.1	0 - 36.8
Silver		U	1.1	0 - 1.8
Sodium		U	568	0 - 834
Thallium		U	1.1	0 - 6.2
Vanadium	13		1.1	1.7 - 25.0
Zinc	5.6		2.3	0 - 20.7

(1) Background mean plus or minus two standard deviations. Table 2-6 in Concentrations of Selected Naturally Occurring Chemical Constituents in Soil and Groundwater, Cannon AFB, New Mexico (W-C 1994).

(2) Metals concentrations are in milligrams per kilogram (mg/kg), organic concentrations are in micrograms per kilogram (µg/kg)

(3) U = Not Detected J = Estimated Value UJ = Not Detected, Estimated Reporting Limit

Results that are shaded and in bold are concentrations above the estimated background range.

TABLE 4-4
Results for Metals and Other Detected Chemical Compounds
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

BORING 74-03

Chemical	Sample Interval (ft bgs)			Estimated Background Range[1]
	18-20			
	Results[2]	Qual[3]	DL	
Aluminum	2200		22	596 - 10,796
Antimony		UJ	13.2	0 - 29.6
Arsenic	1.4		0.55	0 - 10.5
Barium	88.9	J	2.2	0 - 548
Beryllium		U	0.44	0 - 0.6
Cadmium		U	1.1	0 - 2.1
Calcium	**193000**	J	44.1	0 - 166,119
Chromium	1.7	J	2.2	0.8 - 12.0
Cobalt	0.68	J	2.2	0 - 4.0
Copper	2.6	J	4.4	0 - 10.1
Iron	1640		22	0 - 8,564
Lead	0.98		0.55	0 - 18.4
Magnesium	4210		44.1	0 - 9,912
Manganese	12.7		2.2	0 - 151.8
Mercury		U	0.11	0 - 0.2
Nickel	3.9	J	8.8	0 - 9.7
Potassium	351	J	1100	0 - 2,531
Selenium		U	1.1	0 - 36.8
Silver		U	2.2	0 - 1.8
Sodium		U	1100	0 - 834
Thallium	0.015	J	1.1	0 - 6.2
Vanadium	11.1		2.2	1.7 - 25.0
Zinc	4	J	4.4	0 - 20.7

(1) Background mean plus or minus two standard deviations. Table 2-6 in Concentrations of Selected Naturally Occurring Chemical Constituents in Soil and Groundwater, Cannon AFB, New Mexico (W-C 1994).

(2) Metals concentrations are in milligrams per kilogram (mg/kg), organic concentrations are in micrograms per kilogram (µg/kg)

(3) U = Not Detected J = Estimated Value UJ = Not Detected, Estimated Reporting Limit

Results that are shaded and in bold are concentrations above the estimated background range.

TABLE 4-5
Results for Metals and Other Detected Chemical Compounds
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

BORING 74-04

Chemical	Sample Interval (ft bgs)			Estimated Background Range[1]
	18-20			
	Results[2]	Qual[3]	DL	
Aluminum	2970		10.8	596 - 10,796
Antimony		UJ	6.5	0 - 29.6
Arsenic	0.76		0.54	0 - 10.5
Barium	33.9	J	1.1	0 - 548
Beryllium		U	0.22	0 - 0.6
Cadmium		U	0.54	0 - 2.1
Calcium	74200	J	21.6	0 - 166,119
Chromium	2.3		1.1	0.8 - 12.0
Cobalt	1.7		1.1	0 - 4.0
Copper		U	2.2	0 - 10.1
Iron	2740		10.8	0 - 8,564
Lead	1.6		1.1	0 - 18.4
Magnesium	2650		21.6	0 - 9,912
Manganese	24.5		1.1	0 - 151.8
Mercury		U	0.11	0 - 0.2
Nickel	3.8	J	4.3	0 - 9.7
Potassium	484	J	540	0 - 2,531
Selenium		U	1.1	0 - 36.8
Silver		U	1.1	0 - 1.8
Sodium	29.1	J	540	0 - 834
Thallium		U	1.1	0 - 6.2
Vanadium	12.6		1.1	1.7 - 25.0
Zinc	4.8		2.2	0 - 20.7

(1) Background mean plus or minus two standard deviations. Table 2-6 in Concentrations of Selected Naturally Occurring Chemical Constituents in Soil and Groundwater, Cannon AFB, New Mexico (W-C 1994).

(2) Metals concentrations are in milligrams per kilogram (mg/kg), organic concentrations are in micrograms per kilogram (µg/kg)

(3) U = Not Detected J = Estimated Value UJ = Not Detected, Estimated Reporting Limit

Results that are shaded and in bold are concentrations above the estimated background range.

TABLE 4-6
Results for Metals and Other Detected Chemical Compounds
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

BORING 74-05

Chemical	Sample Interval (ft bgs) 18-20			Estimated Background Range[1]
	Results[2]	Qual[3]	DL	
Aluminum	6790		11.2	596 - 10,796
Antimony		UJ	6.7	0 - 29.6
Arsenic	1.9		0.56	0 - 10.5
Barium	85	J	1.1	0 - 548
Beryllium	0.42		0.22	0 - 0.6
Cadmium		U	0.56	0 - 2.1
Calcium	84500	J	22.3	0 - 166,119
Chromium	5.3		1.1	0.8 - 12.0
Cobalt	2.2		1.1	0 - 4.0
Copper	2.8		2.2	0 - 10.1
Iron	5090		11.2	0 - 8,564
Lead	3.2		2.8	0 - 18.4
Magnesium	4910		22.3	0 - 9,912
Manganese	50.4		1.1	0 - 151.8
Mercury		U	0.11	0 - 0.2
Nickel	6.2		4.5	0 - 9.7
Potassium	1370		558	0 - 2,531
Selenium		U	1.1	0 - 36.8
Silver		U	1.1	0 - 1.8
Sodium	102	J	558	0 - 834
Thallium		U	1.1	0 - 6.2
Vanadium	22.8		1.1	1.7 - 25.0
Zinc	10.5		2.2	0 - 20.7

(1) Background mean plus or minus two standard deviations. Table 2-6 in Concentrations of Selected Naturally Occurring Chemical Constituents in Soil and Groundwater, Cannon AFB, New Mexico (W-C 1994).

(2) Metals concentrations are in milligrams per kilogram (mg/kg), organic concentrations are in micrograms per kilogram (µg/kg)

(3) U = Not Detected J = Estimated Value UJ = Not Detected, Estimated Reporting Limit

Results that are shaded and in bold are concentrations above the estimated background range.

TABLE 4-7
Results for Metals and Other Detected Chemical Compounds
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

BORING 74-06

Chemical	Sample Interval (ft bgs)			Estimated Background Range[1]
	18-20			
	Results[2]	Qual[3]	DL	
Aluminum	2280		21.6	596 - 10,796
Antimony		UJ	12.9	0 - 29.6
Arsenic	1.2		0.54	0 - 10.5
Barium	44.3	J	2.2	0 - 548
Beryllium		U	0.43	0 - 0.6
Cadmium		U	1.1	0 - 2.1
Calcium	146000	J	43.2	0 - 166,119
Chromium		U	2.2	0.8 - 12.0
Cobalt	1.8	J	2.2	0 - 4.0
Copper		U	4.3	0 - 10.1
Iron	2130		21.6	0 - 8,564
Lead	1.7		0.54	0 - 18.4
Magnesium	3260		43.2	0 - 9,912
Manganese	28.2		2.2	0 - 151.8
Mercury		U	0.11	0 - 0.2
Nickel	2.6	J	8.6	0 - 9.7
Potassium	425	J	1080	0 - 2,531
Selenium		U	1.1	0 - 36.8
Silver		U	2.2	0 - 1.8
Sodium		U	1080	0 - 834
Thallium		U	1.1	0 - 6.2
Vanadium	8.8		2.2	1.7 - 25.0
Zinc	4.3		4.3	0 - 20.7

(1) Background mean plus or minus two standard deviations. Table 2-6 in Concentrations of Selected Naturally Occurring Chemical Constituents in Soil and Groundwater, Cannon AFB, New Mexico (W-C 1994).

(2) Metals concentrations are in milligrams per kilogram (mg/kg), organic concentrations are in micrograms per kilogram (µg/kg)

(3) U = Not Detected J = Estimated Value UJ = Not Detected, Estimated Reporting Limit

Results that are shaded and in bold are concentrations above the estimated background range.

TABLE 4-8
Results for Metals and Other Detected Chemical Compounds
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

BORING 74-07

Chemical	Sample Interval (ft bgs) 18-20			Estimated Background Range[1]
	Results[2]	Qual[3]	DL	
Aluminum	6110		11.3	596 - 10,796
Antimony		UJ	6.8	0 - 29.6
Arsenic	0.54	J	1.1	0 - 10.5
Barium	478	J	1.1	0 - 548
Beryllium	0.37		0.23	0 - 0.6
Cadmium		U	0.56	0 - 2.1
Calcium	13400	J	22.6	0 - 166,119
Chromium	5.3		1.1	0.8 - 12.0
Cobalt	2.4		1.1	0 - 4.0
Copper	4		2.3	0 - 10.1
Iron	5090		11.3	0 - 8,564
Lead	3.3		1.1	0 - 18.4
Magnesium	**11100**		22.6	0 - 9,912
Manganese	37.8		1.1	0 - 151.8
Mercury		U	0.11	0 - 0.2
Nickel	6.2		4.5	0 - 9.7
Potassium	1230		565	0 - 2,531
Selenium		U	0.56	0 - 36.8
Silver		U	1.1	0 - 1.8
Sodium		U	565	0 - 834
Thallium		U	1.1	0 - 6.2
Vanadium	18.2		1.1	1.7 - 25.0
Zinc	8.5		2.3	0 - 20.7
VOC - Toluene	9.2		5.6	

(1) Background mean plus or minus two standard deviations. Table 2-6 in Concentrations of Selected Naturally Occurring Chemical Constituents in Soil and Groundwater, Cannon AFB, New Mexico (W-C 1994).
(2) Metals concentrations are in milligrams per kilogram (mg/kg), organic concentrations are in micrograms per kilogram (µg/kg)
(3) U = Not Detected J = Estimated Value UJ = Not Detected, Estimated Reporting Limit
Results that are shaded and in bold are concentrations above the estimated background range.
VOC = volatile organic compound

TABLE 4-9
Results for Metals and Other Detected Chemical Compounds
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico
BORING 74-08

CHEMICAL	Sample Interval (ft bgs)												Estimated Background Range[1]
	6-8			10-12			14-16			22-22.75			
	Result[2]	Qual[3]	DL	Result[2]	Qual[3]	DL	Result[2]	Qual[3]	DL	Result[2]	Qual[3]	DL	
Aluminum	7250	J	22	3760	U	55.4	3470	J	22.9	4320	J	23.5	596 - 10,796
Antimony		UJ	13.2		UJ	33.2		UJ	13.7		UJ	14.1	0 - 29.6
Arsenic	0.85		0.55	1.4		0.55	1.6		0.57	1.1		0.59	0 - 10.5
Barium	197		2.2	123		5.5	228		2.3	133		2.4	0 - 548
Beryllium		U	0.44		U	1.1		U	0.46		U	0.47	0 - 0.6
Cadmium		U	1.1		U	2.8		U	1.1		U	1.2	0 - 2.1
Calcium	143000		43.9	**258000**		111	**186000**		45.7	121000		47	0 - 166,119
Chromium	5.2		2.2		U	5.5	2	J	2.3	4.8		2.4	0.8 - 12.0
Cobalt	4		2.2	3.5	J	5.5	3.8		2.3	2.1	J	2.4	0 - 4.0
Copper	3	J	4.4		U	11.1	2.8	J	4.6	3.8	J	4.7	0 - 10.1
Iron	5990		22	2360		55.4	2310		22.9	3200		23.5	0 - 8,564
Lead	3.6		1.1	1.7		1.1	2.1	J	2.9	2.5		1.2	0 - 18.4
Magnesium	2670		43.9	5640		111	**10700**		45.7	**19100**		47	0 - 9,912
Manganese	67.8		2.2	25.8		5.5	60.2		2.3	73.6		2.4	0 - 151.8
Mercury		U	0.11		U	0.11		U	0.11		U	0.12	0 - 0.2
Nickel	6.7	J	8.8	3.9	J	22.2	4.7	J	9.1	4.4	J	9.4	0 - 9.7
Potassium	1500		1100	617	J	2770	560	J	1140	705	J	1180	0 - 2,531
Selenium		UJ	1.1		UJ	1.1		UJ	1.1		U	1.2	0 - 36.8
Silver		U	2.2		U	5.5		U	2.3		U	2.4	0 - 1.8
Sodium		U	1100		U	2770	196	J	1140	243	J	1180	0 - 834
Thallium		U	1.1		U	2.2		U	1.1		U	1.2	0 - 6.2
Vanadium	14.1		2.2	16.5		5.5	16		2.3	18.8		2.4	1.7 - 25.0
Zinc	14.2		4.4	6.1	J	11.1	5		4.6	5.6		4.7	0 - 20.7
Total Petroleum Hydrocarbons	62.9		43.9	48.6		44.3	46.9		45.7		U	47	

(1) Background mean plus or minus two standard deviations. Table 2-6 in Concentrations of Selected Naturally Occurring Chemical Constituents in Soil and Groundwater, Cannon AFB, New Mexico (W-C 1994).
(2) Metals concentrations are in milligrams per kilogram (mg/kg), organic concentrations are in micrograms per kilogram (µg/kg)
(3) U = Not Detected J = Estimated Value UJ = Not Detected, Estimated Reporting Limit
Results that are shaded and in bold are concentrations above the estimated background range.

TABLE 4-9
Results for Metals and Other Detected Chemical Compounds
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico
BORING 74-08

CHEMICAL	Sample Interval (ft bgs)									Estimated Background Range[1]
	24-25.4			34-36			44-46			
	Result[2]	Qual[3]	DL	Result[2]	Qual[3]	DL	Result[2]	Qual[3]	DL	
Aluminum	3650		11.1	879		10.3	1360		10.3	596 - 10,796
Antimony		UJ	6.7		UJ	6.2		UJ	6.2	0 - 29.6
Arsenic	0.71		0.56	0.6		0.51	0.58		0.51	0 - 10.5
Barium	23	J	1.1	4.1	J	1	8.1	J	1	0 - 548
Beryllium		U	0.22		U	0.21		U	0.21	0 - 0.6
Cadmium		U	0.56		U	0.51		U	0.51	0 - 2.1
Calcium	21100	J	22.2	8110	J	20.6	6550	J	20.5	0 - 166,119
Chromium	4.4		1.1	0.93	J	1	1.6	J	1	0.8 - 12.0
Cobalt	2.2		1.1	0.6	J	1	0.73	J	1	0 - 4.0
Copper	1.9	J	2.2	0.36	J	2.1	0.87	J	2.1	0 - 10.1
Iron	3590		11.1	1380		10.3	2460		10.3	0 - 8,564
Lead	1.8		0.56	1.2		0.51	1		1	0 - 18.4
Magnesium	5960		22.2	684		20.6	828		20.5	0 - 9,912
Manganese	56.4		1.1	16		1	25.2		1	0 - 151.8
Mercury		U	0.11		U	0.1		U	0.1	0 - 0.2
Nickel	4	J	4.4	1.3	J	4.1	1.9	J	4.1	0 - 9.7
Potassium	656		556	191	J	514	283	J	514	0 - 2,531
Selenium		U	0.56		U	0.51		U	0.51	0 - 36.8
Silver		U	1.1		U	1		U	1	0 - 1.8
Sodium	109	J	556		U	514		U	514	0 - 834
Thallium		U	1.1		U	0.51		U	0.51	0 - 6.2
Vanadium	12.3		1.1	3.9		1	6.2		1	1.7 - 25.0
Zinc	6.7		2.2	2.7		2.1	3.8		2.1	0 - 20.7
Total Petroleum Hydrocarbons		U	44.5		U	41.2		U	41.1	

(1) Background mean plus or minus two standard deviations. Table 2-6 in Concentrations of Selected Naturally Occurring Chemical Constituents in Soil and Groundwater, Cannon AFB, New Mexico (W-C 1994).
(2) Metals concentrations are in milligrams per kilogram (mg/kg), organic concentrations are in micrograms per kilogram (µg/kg)
(3) U = Not Detected J = Estimated Value UJ = Not Detected, Estimated Reporting Limit
Results that are shaded and in bold are concentrations above the estimated background range.

TABLE 4-10
Results for Metals and Other Detected Chemical Compounds
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico
BORING 74-09

CHEMICAL	Sample Interval (ft bgs)												Estimated Background Range[1]
	6-8			10-12			14-16			20-20.5			
	Result[2]	Qual[3]	DL	Result[2]	Qual[3]	DL	Result[2]	Qual[3]	DL	Result[2]	Qual[3]	DL	
Aluminum	1640	J	55.3	2620	J	11	2720	J	11.6	1840	J	22.5	596 - 10,796
Antimony		UJ	33.2		UJ	6.6		UJ	6.9		UJ	13.5	0 - 29.6
Arsenic	1.5		0.55	1.6		0.55	1.3		0.58	1.3		0.56	0 - 10.5
Barium	171		5.5	51.9		1.1	277		1.2	194		2.2	0 - 548
Beryllium		U	1.1	0.26		0.22	0.28		0.23		U	0.45	0 - 0.6
Cadmium		U	2.8		U	0.55		U	0.58		U	1.1	0 - 2.1
Calcium	**309000**		111	38900		22	75900		23.1	143000		44.9	0 - 166,119
Chromium		U	5.5	2.1		1.1	2.1		1.2	2.4		2.2	0.8 - 12.0
Cobalt	3.1	J	5.5	1.2		1.1	1.3		1.2	1.6	J	2.2	0 - 4.0
Copper		U	11.1	1.7	J	2.2	1.7	J	2.3	2.3	J	4.5	0 - 10.1
Iron	1070		55.3	2170		11	1840		11.6	1160		22.5	0 - 8,564
Lead	1.6		0.55	3.2		0.55	3.2		0.58	7.9		2.8	0 - 18.4
Magnesium	4200		111	2640		22	4180		23.1	**17400**		44.9	0 - 9,912
Manganese	14.6		5.5	17		1.1	20.3		1.2	24.3		2.2	0 - 151.8
Mercury	0.16		0.11		U	0.11		U	0.12		U	0.11	0 - 0.2
Nickel		U	22.1	3.1	J	4.4	3.7	J	4.6	3.1	J	9	0 - 9.7
Potassium	406	J	2770	647		549	667		578	311	J	1120	0 - 2,531
Selenium		UJ	1.1		UJ	2.2		UJ	1.2		UJ	2.2	0 - 36.8
Silver		U	5.5		U	1.1		U	1.2		U	2.2	0 - 1.8
Sodium		U	2770		U	549	135	J	578		U	1120	0 - 834
Thallium		UJ	2.2	0.15	J	1.1	0.13	J	1.2		UJ	2.2	0 - 6.2
Vanadium	5.5		5.5	13.9		1.1	11		1.2	13.1		2.2	1.7-25.0
Zinc	1.7	J	11.1	3.9		2.2	3.8		2.3	2.4	J	4.5	0 - 20.7
VOC - Acetone	4.5	J	11	3.4	J	11	5.3	J	12		U	12	
VOC - Methylene chloride		U	5.5		U	5.5		U	5.8	3.8	J	5.6	
VOC - 2-Butanone (MEK)		U	11		U	11		U	12		U	11	
SVOC - bis(2-Ethylhexyl)phthalate		U	370		U	360	55	J	380		U	370	
SVOC - Di-n-octyl phthalate		U	370		U	360		U	380		U	370	
VOC-TIC - Unknown													
SVOC-TIC - Saturated Hydrocarbon: C10-C20				200	NJ								
SVOC-TIC - Octadecanoic acid, butyl ester							240	NJ					

(1) Background mean plus or minus two standard deviations. Table 2-6 in Concentrations of Selected Naturally Occurring Chemical Constituents in Soil and Groundwater, Cannon AFB, New Mexico (W-C 1994).
(2) Metals concentrations are in milligrams per kilogram (mg/kg), organic concentrations are in micrograms per kilogram (µg/kg)
(3) U = Not Detected J = Estimated Value UJ = Not Detected, Estimated Reporting Limit
Results that are shaded and in bold are concentrations above the estimated background range.
VOC = volatile organic compound SVOC = semivolatile organic compound TIC = tentatively identified compound

TABLE 4-10
Results for Metals and Other Detected Chemical Compounds
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico
BORING 74-09

CHEMICAL	Sample Interval (ft bgs)									Estimated Background Range[1]
	24-24.75			34-36			44-46			
	Result[2]	Qual[3]	DL	Result[2]	Qual[3]	DL	Result[2]	Qual[3]	DL	
Aluminum	2080	J	11.5	728	J	10.7	501	J	10.3	596 - 10,796
Antimony		UJ	6.9		UJ	6.4		UJ	6.2	0 - 29.6
Arsenic	1		0.58	0.69		0.53	0.72		0.51	0 - 10.5
Barium	97.2		1.2	14		1.1	4.4		1	0 - 548
Beryllium		U	0.23		U	0.21		U	0.21	0 - 0.6
Cadmium		U	0.58		U	0.53		U	0.51	0 - 2.1
Calcium	60900		23	5610		21.4	322		20.5	0 - 166,119
Chromium	2.2		1.2	1.8		1.1	0.99	J	1	0.8 - 12.0
Cobalt	1.3		1.2	0.48	J	1.1	0.5	J	1	0 - 4.0
Copper	1.6	J	2.3	0.45	J	2.1		U	2.1	0 - 10.1
Iron	1320		11.5	650		10.7	562		10.3	0 - 8,564
Lead	3.8		0.58	1.3		0.53	2		0.51	0 - 18.4
Magnesium	**15500**		23	900		21.4	416		20.5	0 - 9,912
Manganese	30.8		1.2	10.3		1.1	13		1	0 - 151.8
Mercury		U	0.12		U	0.11		U	0.1	0 - 0.2
Nickel	1.8	J	4.6	0.91	J	4.3		U	4.1	0 - 9.7
Potassium	307	J	576	153	J	534	121	J	513	0 - 2,531
Selenium		UJ	2.3		UJ	1.1		UJ	1	0 - 36.8
Silver		U	1.2		U	1.1		U	1	0 - 1.8
Sodium	103	J	576		U	534		U	513	0 - 834
Thallium		UJ	2.3		U	0.53		U	0.51	0 - 6.2
Vanadium	12.3		1.2	3.3		1.1	2.9		1	1.7-25.0
Zinc	2.4		2.3	1.3	J	2.1	1	J	2.1	0 - 20.7
VOC - Acetone		U	12	4	J	11		U	10	
VOC - Methylene chloride	13		5.8		U	5.3		U	5.1	
VOC - 2-Butanone (MEK)		U	12		U	11	1.5	J	10	
SVOC - bis(2-Ethylhexyl)phthalate	62	J	380		U	350		U	340	
SVOC - Di-n-octyl phthalate	72	J	380		U	350		U	340	
VOC-TIC - Unknown							7.2	NJ		
SVOC-TIC - Saturated Hydrocarbon: C10-C20										
SVOC-TIC - Octadecanoic acid, butyl ester										

(1) Background mean plus or minus two standard deviations. Table 2-6 in Concentrations of Selected Naturally Occurring Chemical Constituents in Soil and Groundwater, Cannon AFB, New Mexico (W-C 1994).
(2) Metals concentrations are in milligrams per kilogram (mg/kg), organic concentrations are in micrograms per kilogram (µg/kg)
(3) U = Not Detected J = Estimated Value UJ = Not Detected, Estimated Reporting Limit
Results that are shaded and in bold are concentrations above the estimated background range.
VOC = volatile organic compound SVOC = semivolatile organic compound TIC = tentatively identified compound

TABLE 4-11
Results for Metals and Other Detected Chemical Compounds
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico
BORING 74-10

Chemical	Sample Interval (ft bgs)												Estimated Background Range[1]
	10-12			16-16.9			20-20.9			24-26			
	Result[2]	Qual[3]	DL	Result[2]	Qual[3]	DL	Result[2]	Qual[3]	DL	Result[2]	Qual[3]	DL	
Aluminum	2340	J	11.4	2580	J	21.6	1560	J	53.7	1930	J	22.1	596 - 10,796
Antimony		UJ	6.8		UJ	13		UJ	32.2		UJ	13.3	0 - 29.6
Arsenic	3		0.57	2.4		1.1	2.3		0.54	1.5		0.55	0 - 10.5
Barium	105		1.1	214		2.2	297		5.4	342		2.2	0 - 548
Beryllium	0.31		0.23		U	0.43		U	1.1		U	0.44	0 - 0.6
Cadmium		U	0.57		U	1.1		U	2.7		U	1.1	0 - 2.1
Calcium	77000		22.7	**179000**		43.2	**236000**		107	**169000**		44.3	0 - 166,119
Chromium	2.9		1.1	3.3		2.2		U	5.4	4.5		2.2	0.8 - 12.0
Cobalt	2.1		1.1	2.8		2.2	2.4	J	5.4	1.9	J	2.2	0 - 4.0
Copper	1.9	J	2.3	1.5	J	4.3		U	10.7	2.5	J	4.4	0 - 10.1
Iron	1990		11.4	2010		21.6	1020		53.7	1610		22.1	0 - 8,564
Lead	5.3		0.57	7		1.1	1.3		1.1	1.8		0.55	0 - 18.4
Magnesium	1900		22.7	3770		43.2	5910		107	**10700**		44.3	0 - 9,912
Manganese	62		1.1	40.9		2.2	19.6		5.4	21.7		2.2	0 - 151.8
Mercury		U	0.11		U	0.11		U	0.11		U	0.11	0 - 0.2
Nickel	2.8	J	4.5	3	J	8.6		U	21.5	3.3	J	8.9	0 - 9.7
Potassium	606		568	629	J	1080	241	J	2690	273	J	1110	0 - 2,531
Selenium		UJ	2.3		UJ	2.2		UJ	1.1		UJ	1.1	0 - 36.8
Silver		U	1.1		U	2.2		U	5.4		U	2.2	0 - 1.8
Sodium	174	J	568	267	J	1080		U	2690		U	1110	0 - 834
Thallium		UJ	1.1		UJ	2.2		UJ	2.1		UJ	2.2	0 - 6.2
Vanadium	13.2		1.1	18.2		2.2	12.9		5.4	14		2.2	1.7 - 25.0
Zinc	5.7		2.3	3.7	J	4.3	1.2	J	10.7	2.2	J	4.4	0 - 20.7
VOC - 2-Butanone (MEK)		U	11		U	11	2.2	J	11		U	11	
VOC - Acetone		U	11		U	11		U	11	11	J	11	
VOC - Methylene chloride	2.3	J	5.7	2	J	5.4	1.6	J	5.4		U	5.5	
SVOC - bis(2-Ethylhexyl)phthalate		U	380		U	360	320	J	350		U	370	
SVOC - Pentachlorophenol		U	1800		U	1700	42	J	1700		U	1800	
SVOC - Phenanthrene		U	380	42	J	360		U	320		U	370	
SVOC - Pyrene	43	J	380	73	J	360		U	350		U	370	
VOC-TIC - Ethylenediamine							6.5	NJ					
SVOC-TIC - Octadecanoic acid, butyl							220	NJ					
Pest - 4,4'-DDT	3.2	J	3.8		U	3.6		U	3.5		U	3.7	

(1) Background mean plus or minus two standard deviations. Table 2-6 in Concentrations of Selected Naturally Occurring Chemical Constituents in Soil and Groundwater, Cannon AFB, New Mexico (W-C 1994).
(2) Metals concentrations are in milligrams per kilogram (mg/kg), organic concentrations are in micrograms per kilogram (µg/kg)
(3) U = Not Detected J = Estimated Value UJ = Not Detected, Estimated Reporting Limit
Results that are shaded and in bold are concentrations above the estimated background range.
VOC = volatile organic compound SVOC = semivolatile organic compound
TIC = tentatively identified compound Pest = pesticide compound

TABLE 4-11
Results for Metals and Other Detected Chemical Compounds
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico
BORING 74-10

Chemical	Sample Interval (ft bgs)									Estimated Background Range[1]
	32-34			38-40			48-50			
	Result[2]	Qual[3]	DL	Result[2]	Qual[3]	DL	Result[2]	Qual[3]	DL	
Aluminum	944	J	10.5	844	J	10.3	623	J	11.1	596 - 10,796
Antimony		UJ	6.3		UJ	6.2		UJ	6.7	0 - 29.6
Arsenic	0.96		0.52	1.3		0.52	1.2		0.56	0 - 10.5
Barium	27.9		1	14.9		1	12.5		1.1	0 - 548
Beryllium		U	0.21		U	0.21		U	0.22	0 - 0.6
Cadmium		U	0.52		U	0.52		U	0.56	0 - 2.1
Calcium	27500		20.9	1380		20.7	8740		22.3	0 - 166,119
Chromium	0.98	J	1	1.6		1	1.7		1.1	0.8 - 12.0
Cobalt	0.87	J	1	0.9	J	1	0.54	J	1.1	0 - 4.0
Copper	0.36	J	2.1	0.49	J	2.1	0.41	J	2.2	0 - 10.1
Iron	731		10.5	820		10.3	621		11.1	0 - 8,564
Lead	1.2		0.52	2.5		0.52	1.4		0.56	0 - 18.4
Magnesium	1470		20.9	704		20.7	525		22.3	0 - 9,912
Manganese	16.1		1	33.5		1	20.6		1.1	0 - 151.8
Mercury		U	0.1		U	0.1		U	0.11	0 - 0.2
Nickel	1	J	4.2	1	J	4.1	0.85	J	4.5	0 - 9.7
Potassium	151	J	523	211	J	517	146	J	557	0 - 2,531
Selenium		UJ	1		UJ	1		UJ	1.1	0 - 36.8
Silver		U	1		U	1		U	1.1	0 - 1.8
Sodium		U	523		U	517		U	557	0 - 834
Thallium		UJ	1		U	0.52	0.18	J	0.56	0 - 6.2
Vanadium	6.8		1	5.6		1	3.3		1.1	1.7 - 25.0
Zinc	0.99	J	2.1	1.6	J	2.1	1.4	J	2.2	0 - 20.7
VOC - 2-Butanone (MEK)		U	10		U	10		U	11	
VOC - Acetone	6	J	10	3.4	J	10	3.2	J	11	
VOC - Methylene chloride		U	5.2		U	5.2		U	5.6	
SVOC - bis(2-Ethylhexyl)phthalate		U	350		U	340		U	370	
SVOC - Pentachlorophenol		U	1700		U	1700		U	1800	
SVOC - Phenanthrene		U	350		U	340		U	370	
SVOC - Pyrene		U	350		U	340		U	370	
VOC-TIC - Ethylenediamine										
SVOC-TIC - Octadecanoic acid, butyl										
Pest - 4,4'-DDT		U	3.5		U	3.4		U	3.7	

(1) Background mean plus or minus two standard deviations. Table 2-6 in Concentrations of Selected Naturally Occurring Chemical Constituents in Soil and Groundwater, Cannon AFB, New Mexico (W-C 1994).
(2) Metals concentrations are in milligrams per kilogram (mg/kg), organic concentrations are in micrograms per kilogram (µg/kg)
(3) U = Not Detected J = Estimated Value UJ = Not Detected, Estimated Reporting Limit
Results that are shaded and in bold are concentrations above the estimated background range.
VOC = volatile organic compound
SVOC = semivolatile organic compound
TIC = tentatively identified compound
Pest = pesticide compound

TABLE 4-12
Results for Metals and Concentrations for Other Detected Chemical Compounds
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico
BORING 74-13

Chemical	Sample Interval (ft bgs)									Estimated Background Range[1]
	4-6			8-10			12-13.4			
	Result[2]	Qual[3]	DL	Result[2]	Qual[3]	DL	Result[2]	Qual[3]	DL	
Aluminum	5500		10.6	3910		21.2	5250		10.8	596 - 10,796
Antimony		UJ	6.4		UJ	12.7		UJ	6.5	0 - 29.6
Arsenic	2.8		0.53	2.5		0.53	2.2		0.54	0 - 10.5
Barium	131	J	1.1	293	J	2.1	**843**	J	1.1	0 - 548
Beryllium	0.3		0.21		U	0.42	0.26		0.22	0 - 0.6
Cadmium		U	0.53		U	1.1		U	0.54	0 - 2.1
Calcium	89100	J	21.3	147000	J	42.4	84300	J	21.5	0 - 166,119
Chromium	5.1		1.1	3.2		2.1	5.2		1.1	0.8 - 12.0
Cobalt	2.7		1.1	2.2		2.1	2.4		1.1	0 - 4.0
Copper	4.4		2.1	1.7	J	4.2	2.4		2.2	0 - 10.1
Iron	5280		10.6	3750		21.2	4570		10.8	0 - 8,564
Lead	4.4		0.53	3.2		1.1	3.7		1.1	0 - 18.4
Magnesium	1720		21.3	2650		42.4	3620		21.5	0 - 9,912
Manganese	82.9		1.1	50		2.1	67.9		1.1	0 - 151.8
Mercury		U	0.11		U	0.11		U	0.11	0 - 0.2
Nickel	5.9		4.3	4.4	J	8.5	5.6		4.3	0 - 9.7
Potassium	995		532	812	J	1060	1380		538	0 - 2,531
Selenium		U	1.1		U	1.1		U	1.1	0 - 36.8
Silver		U	1.1		U	2.1		U	1.1	0 - 1.8
Sodium		U	532		U	1060	169	J	538	0 - 834
Thallium		U	1.1	0.22	J	1.1		U	1.1	0 - 6.2
Vanadium	16.6		1.1	13.7		2.1	19.4		1.1	1.7 - 25.0
Zinc	11.8		2.1	8.7		4.2	8.9		2.2	0 - 20.7
SVOC-TIC - Hexadecanoic acid, butyl ester							500	NJ		
SVOC-TIC - Octadecanoic acid, butyl ester							330	NJ		

(1) Background mean plus or minus two standard deviations. Table 2-6 in Concentrations of Selected Naturally Occurring Chemical Constituents in Soil and Groundwater, Cannon AFB, New Mexico (W-C 1994).
(2) Metals concentrations are in milligrams per kilogram (mg/kg), organic concentrations are in micrograms per kilogram (µg/kg)
(3) U = Not Detected J = Estimated Value UJ = Not Detected, Estimated Reporting Limit
Results that are shaded and in bold are concentrations above the estimated background range.
SVOC = semivolatile organic compound TIC = tentatively identified compound

TABLE 4-13
Results for Metals and Other Detected Chemical Compounds
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico
BORING 74-14

Chemical	Sample Interval (ft bgs)									Estimated Background Range[1]
	6-8			10-12			14-16			
	Result[2]	Qual[3]	DL	Result[2]	Qual[3]	DL	Result[2]	Qual[3]	DL	
Aluminum	2730		56	2290		56.4	2620		56.4	596 - 10,796
Antimony		UJ	33.6		UJ	33.8		UJ	33.8	0 - 29.6
Arsenic	1.3		0.56	1.4		0.56	0.99		0.56	0 - 10.5
Barium	226	J	5.6	**1180**	J	5.6	**625**	J	5.6	0 - 548
Beryllium		U	1.1		U	1.1		U	1.1	0 - 0.6
Cadmium		U	2.8		U	2.8		U	2.8	0 - 2.1
Calcium	**284000**	J	112	**299000**	J	113	**264000**	J	113	0 - 166,119
Chromium		U	5.6		U	5.6		U	5.6	0.8 - 12.0
Cobalt	1.8	J	5.6		U	5.6		U	5.6	0 - 4.0
Copper		U	11.2		U	11.3		U	11.3	0 - 10.1
Iron	1820		56	1430		56.4	1810		56.4	0 - 8,564
Lead	0.65	J	1.1	0.65		0.56	0.68		0.56	0 - 18.4
Magnesium	4200		112	9040		113	9160		113	0 - 9,912
Manganese	39.1		5.6	31.8		5.6	22.4		5.6	0 - 151.8
Mercury		U	0.11		U	0.11		U	0.11	0 - 0.2
Nickel		U	22.4	5.2	J	22.6	5.2	J	22.6	0 - 9.7
Potassium	432	J	2800	264	J	2820	361	J	2820	0 - 2,531
Selenium		U	1.1		U	1.1		U	1.1	0 - 36.8
Silver		U	5.6		U	5.6		U	5.6	0 - 1.8
Sodium		U	2800		U	2820		U	2820	0 - 834
Thallium		U	1.1		U	1.1		U	1.1	0 - 6.2
Vanadium	6.8		5.6	19.6		5.6	22		5.6	1.7 - 25.0
Zinc	4.2	J	11.2	2.4	J	11.3	4.2	J	11.3	0 - 20.7
VOC - Toluene		U	5.6		U	5.6	1.3	J	5.6	
VOC-TIC - Nonanal				6.8	NJ		7.3	NJ		
SVOC-TIC - Hexadecanoic acid, butyl ester	230	NJ		170	NJ		280	NJ		
SVOC-TIC - Octadecanoic acid, butyl ester							150	NJ		

(1) Background mean plus or minus two standard deviations. Table 2-6 in Concentrations of Selected Naturally Occurring Chemical Constituents in Soil and Groundwater, Cannon AFB, New Mexico (W-C 1994).
(2) Metals concentrations are in milligrams per kilogram (mg/kg), organic concentrations are in micrograms per kilogram (µg/kg)
(3) U = Not Detected J = Estimated Value UJ = Not Detected, Estimated Reporting Limit
Results that are shaded and in bold are concentrations above the estimated background range.
VOC = volatile organic compound SVOC = semivolatile organic compound TIC = tentatively identified compound

TABLE 4-14
Results for Metals and Other Detected Chemical Commands
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon, AFB, New Mexico
BORING 74-15

Chemical	Sample Interval (ft bgs)									Estimated Background Range[1]
	4-6			8-10			12-14			
	Result[2]	Qual[3]	DL	Result[2]	Qual[3]	DL	Result[2]	Qual[3]	DL	
Aluminum	5010		11.4	3130		55.4	4580		22	596 - 10,796
Antimony		UJ	6.9		UJ	33.2		U	13.2	0 - 29.6
Arsenic	1.7		0.57	1		0.55	0.98		0.55	0 - 10.5
Barium	118	J	1.1	135	J	5.5	316	J	2.2	0 - 548
Beryllium		U	0.23		U	1.1		U	0.44	0 - 0.6
Cadmium		U	0.57		U	2.8		U	1.1	0 - 2.1
Calcium	102000	J	22.9	**290000**	J	111	**167000**		44	0 - 166,119
Chromium	4.6		1.1		U	5.5	3.3	J	2.2	0.8 - 12.0
Cobalt	2.5		1.1	2	J	5.5	1.4	J	2.2	0 - 4.0
Copper	3.8		2.3		U	11.1	0.74	J	4.4	0 - 10.1
Iron	4680		11.4	2350		55.4	3260		22	0 - 8,564
Lead	3.9		0.57	1.1		0.55	1.8		0.55	0 - 18.4
Magnesium	1600		22.9	5840		111	5070		44	0 - 9,912
Manganese	86.4		1.1	41.8		5.5	38.5		2.2	0 - 151.8
Mercury		U	0.11		U	0.11		U	0.11	0 - 0.2
Nickel	5.4		4.6		U	22.1	2.5	J	8.8	0 - 9.7
Potassium	958		572	437	J	2770	752	J	1100	0 - 2,531
Selenium		U	0.57		U	0.55		UJ	0.55	0 - 36.8
Silver		U	1.1		U	5.5		U	2.2	0 - 1.8
Sodium	94.5	J	572		U	2770		U	1100	0 - 834
Thallium	0.13	J	1.1		U	1.1		UJ	1.1	0 - 6.2
Vanadium	10.6		1.1	15.2		5.5	15.8		2.2	1.7 - 25.0
Zinc	11		2.3	4.7	J	11.1	6.9		4.4	0 - 20.7
VOC - Toluene		U	5.7	1.9	J	5.5		U	5.5	
SVOC-TIC - Octadecanoic acid, butyl ester				200	NJ					

(1) Background mean plus or minus two standard deviations. Table 2-6 in Concentrations of Selected Naturally Occurring Chemical Constituents in Soil and Groundwater, Cannon AFB, New Mexico (W-C 1994).
(2) Metals concentrations are in milligrams per kilogram (mg/kg), organic concentrations are in micrograms per kilogram (µg/kg)
(3) U = Not Detected J = Estimated Value UJ = Not Detected, Estimated Reporting Limit
Results that are shaded and in bold are concentrations above the estimated background range.
VOC = volatile organic compound SVOC = semivolatile organic compound TIC = tentatively identified compound

TABLE 4-15
Results for Metals and Other Detected Chemical Compounds
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico
BORING 74-18

Chemical	Sample Interval (ft bgs)									Estimated Background Range[1]
	5-7			9-11			15-17.2			
	Result[2]	Qual[3]	DL	Result[2]	Qual[3]	DL	Result[2]	Qual[3]	DL	
Aluminum	5960		10.5	3930		52.7	3320		52.8	596 - 10,796
Antimony		U	6.3		U	31.6		U	31.7	0 - 29.6
Arsenic	2.1		0.53	2.2		0.53	2.2		0.53	0 - 10.5
Barium	64.2	J	1.1	**559**	J	5.3	189	J	5.3	0 - 548
Beryllium	0.33		0.21		U	1.1		U	1.1	0 - 0.6
Cadmium		U	0.53		U	2.6		U	2.6	0 - 2.1
Calcium	4720		21	**261000**		105	**225000**		106	0 - 166,119
Chromium	7.5	J	1.1		UJ	5.3	11.9	J	5.3	0.8 - 12.0
Cobalt	3.2		1.1	3.8	J	5.3		U	5.3	0 - 4.0
Copper	5.2		2.1		U	10.5		U	10.6	0 - 10.1
Iron	7150		10.5	3440		52.7	2580		52.8	0 - 8,564
Lead	4.3		0.53	2.3		0.53	2		0.53	0 - 18.4
Magnesium	1220		21	3070		105	4510		106	0 - 9,912
Manganese	144		1.1	80.1		5.3	26.3		5.3	0 - 151.8
Mercury		U	0.11		U	0.11		U	0.11	0 - 0.2
Nickel	7		4.2	5.3	J	21.1		U	21.1	0 - 9.7
Potassium	1240		525	724	J	2630	543	J	2640	0 - 2,531
Selenium		UJ	0.53		UJ	1.1		UJ	1.1	0 - 36.8
Silver		U	1.1		U	5.3		U	5.3	0 - 1.8
Sodium		U	525		U	2630		U	2640	0 - 834
Thallium		UJ	0.53		UJ	1.1		UJ	1.1	0 - 6.2
Vanadium	15.9		1.1	12.5		5.3	14.1		5.3	1.7 - 25.0
Zinc	14.4		2.1	7.4	J	10.5	5	J	10.6	0 - 20.7
SVOC-TIC - 1,3-Propanediol, 2,2-dimethyl-				200	NJ					
SVOC-TIC - Hexadecanoic acid, butyl ester	370	NJ					320	NJ		
SVOC-TIC - Octadecanoic acid, butyl ester	200	NJ					190	NJ		
Herb - MCPP[4]	12000		5300		U	5300		U	5300	

(1) Background mean plus or minus two standard deviations. Table 2-6 in Concentrations of Selected Naturally Occurring Chemical Constituents in Soil and Groundwater, Cannon AFB, New Mexico (W-C 1994).
(2) Metals concentrations are in milligrams per kilogram (mg/kg), organic concentrations are in micrograms per kilogram (µg/kg)
(3) U = Not Detected J = Estimated Value UJ = Not Detected, Estimated Reporting Limit
(4) MCPP = 2-(2-Methyl-4-Chlorophenoxy) propionic acid
Results that are shaded and in bold are concentrations above the estimated background range.
SVOC = semivolatile organic compound TIC = tentatively identified compound Herb = herbicide

TABLE 4-16
Results for Metals and Other Detected Chemical Compounds
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico
BORING 74-23

Chemical	Sample Interval (ft bgs)									Estimated Background Range[1]
	4-6			8-10			12-14			
	Result[2]	Qual[3]	DL	Result[2]	Qual[3]	DL	Result[2]	Qual[3]	DL	
Aluminum	9520		21.2	5410		52.8	5080		52.8	596 - 10,796
Antimony		U	12.7		U	31.7		U	31.7	0 - 29.6
Arsenic	2.3		0.53	2.3		0.53	1.7		0.53	0 - 10.5
Barium	125	J	2.1	**796**	J	5.3	307	J	5.3	0 - 548
Beryllium	**0.67**		0.42		U	1.1		U	1.1	0 - 0.6
Cadmium		U	1.1		U	2.6		U	2.6	0 - 2.1
Calcium	121000		42.4	**274000**		106	**269000**		106	0 - 166,119
Chromium	7.7	J	2.1		UJ	5.3		UJ	5.3	0.8 - 12.0
Cobalt	**4.4**		2.1	2.8	J	5.3	2.7	J	5.3	0 - 4.0
Copper	4.6		4.2	2.1	J	10.6		U	10.6	0 - 10.1
Iron	8420		21.2	3690		52.8	3660		52.8	0 - 8,564
Lead	4.9	J	10.6	2.3		1.1	1.8		0.53	0 - 18.4
Magnesium	2710		42.4	4400		106	5060		106	0 - 9,912
Manganese	**188**		2.1	37.3		5.3	32.7		5.3	0 - 151.8
Mercury		U	0.11		U	0.11		U	0.11	0 - 0.2
Nickel	7.1	J	8.5	7.2	J	21.1	6.8	J	21.1	0 - 9.7
Potassium	1710		1060	1150	J	2640	1010	J	2640	0 - 2,531
Selenium		UJ	1.1		UJ	1.1		UJ	1.1	0 - 36.8
Silver		U	2.1		U	5.3		U	5.3	0 - 1.8
Sodium		U	1060		U	2640		U	2640	0 - 834
Thallium		UJ	1.1		UJ	1.1		UJ	1.1	0 - 6.2
Vanadium	24.4		2.1	12.3		5.3	11.2		5.3	1.7 - 25.0
Zinc	18.8		4.2	9.8	J	10.6	8.4	J	10.6	0 - 20.7
SVOC-TIC - Hexanedioic acid, bis(2-ethylhexyl)ester				670	NJ					

(1) Background mean plus or minus two standard deviations. Table 2-6 in Concentrations of Selected Naturally Occurring Chemical Constituents in Soil and Groundwater, Cannon AFB, New Mexico (W-C 1994).
(2) Metals concentrations are in milligrams per kilogram (mg/kg), organic concentrations are in micrograms per kilogram (µg/kg)
(3) U = Not Detected J = Estimated Value UJ = Not Detected, Estimated Reporting Limit
Results that are shaded and in bold are concentrations above the estimated background range.
SVOC = semivolatile organic compound TIC = tentatively identified compound

TABLE 4-17
METAL CONCENTRATIONS IN SUBSURFACE SOIL THAT EXCEEDED THE ESTIMATED BACKGROUND RANGE
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

Chemical	74-01	74-03	74-07	74-08			74-09			74-10			Estimated Background Range[2] (mg/kg)
	18 ft[1]	18 ft	18 ft	10 ft	14 ft	22 ft	6 ft	20 ft	24 ft	16 ft	20 ft	24 ft	
Barium													0-548
Beryllium													0-0.6
Calcium		193000 J		258000	186000		309000			179000	236000	169000	0-166,119
Cobalt	4.5												0-4.0
Magnesium			11100		10700	19100		17400	15500			10700	0-9,912
Manganese													0-151.8
Vanadium	25.7												1.7-25.0

Notes:
(1) Sample intervals are feet below ground surface.
(2) Background mean plus or minus two standard deviations. Table 2-6 in Concentrations of Selected Naturally Occurring Chemical Constituents in Soil and Groundwater, Cannon AFB, New Mexico (W-C 1994).
J = estimated value
* Metals concentrations are in milligrams per kilogram (mg/kg).

TABLE 4-17
METAL CONCENTRATIONS IN SUBSURFACE SOIL THAT EXCEEDED THE ESTIMATED BACKGROUND RANGE
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

Chemical	74-13	74-14			74-15		74-18		74-23			Estimated Background Range[2] (mg/kg)
	12 ft	6 ft	10 ft	14 ft	8 ft	12 ft	9 ft	15 ft	4 ft	8 ft	12 ft	
Barium	843 J		1180 J	625 J			559 J			796 J		0-548
Beryllium									0.67			0-0.6
Calcium		284000 J	299000 J	264000 J	290000 J	167000	261000	225000		274000	269000	0-166,119
Cobalt									4.4			0-4.0
Magnesium												0-9,912
Manganese									188			0-151.8
Vanadium												1.7-25.0

Notes:
(1) Sample intervals are feet below ground surface.
(2) Background mean plus or minus two standard deviations. Table 2-6 in Concentrations of Selected Naturally Occurring Chemical Constituents in Soil and Groundwater, Cannon AFB, New Mexico (W-C 1994).
J = estimated value
* Metals concentrations are in milligrams per kilogram (mg/kg).

TABLE 4-18

METAL CONCENTRATIONS ABOVE THE ESTIMATED BACKGROUND RANGE
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

Boring No.	Metals Above the Estimated Background Range
74-01	Co, V
74-03	Ca
74-07	Mg
74-08	Co, Ca, Mg
74-09	Ca, Mg
74-10	Ca, Mg
74-13	Ba
74-14	Ba, Ca
74-15	Ca
74-18	Ba, Ca
74-23	Ba, Be, Ca, Co, Mn

Notes:

The following is a summary of the metals detected above the estimated background range the borings where these metals were detected.

(Ba) Barium	74-13, 74-14, 74-18, 74-23
(Be) Beryllium	74-23
(Ca) Calcium	74-03, 74-08, 74-09, 74-10, 74-14, 74-15, 74-18, 74-23
(Co) Cobalt	74-01, 74-23
(Mg) Magnesium	74-07, 74-08, 74-09, 74-10
(Mn) Manganese	74-23
(V) Vanadium	74-01

TABLE 4-19
SUMMARY OF ORGANIC COMPOUNDS
IN SUBSURFACE SOIL
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

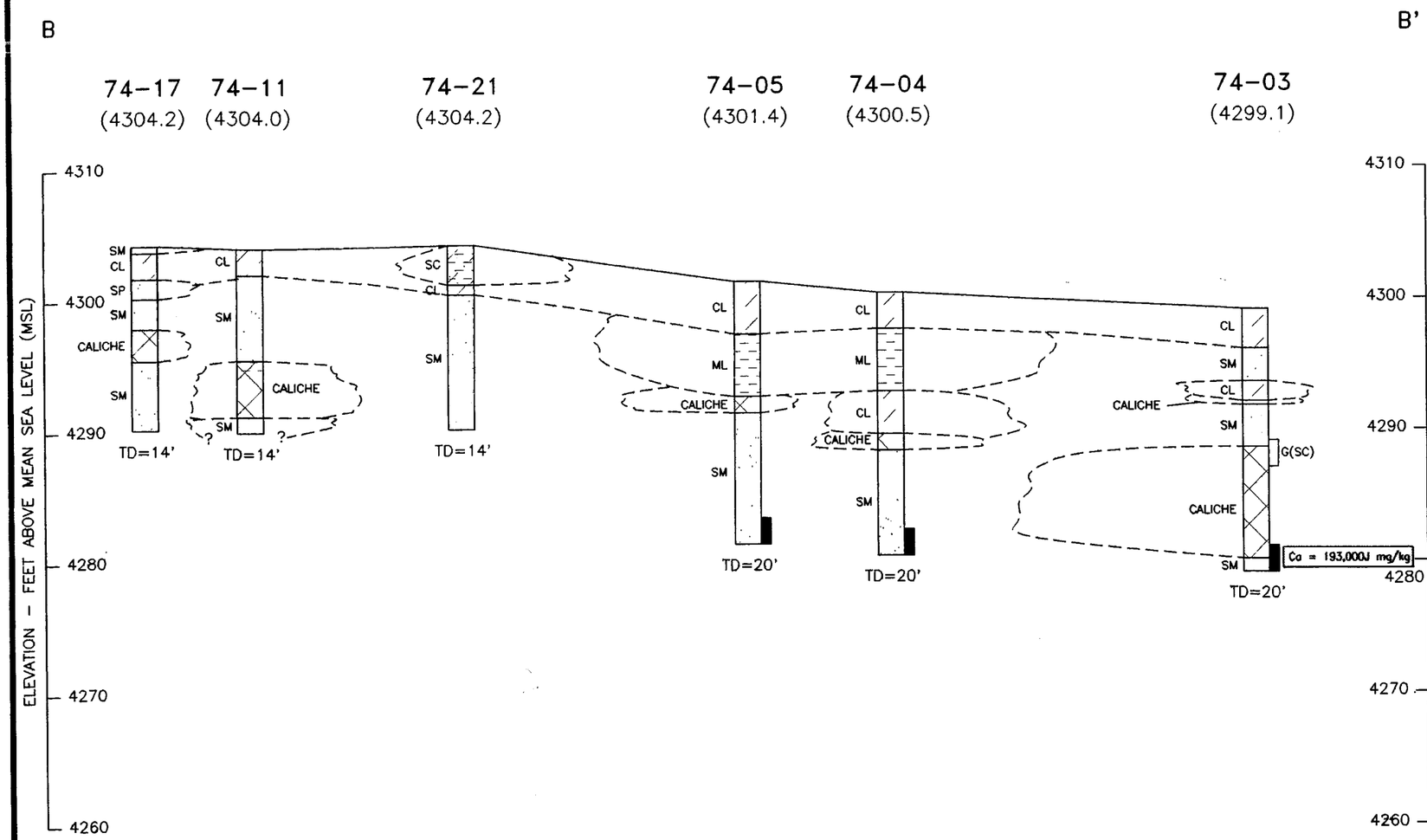
Chemical Group	Chemical	74-07	74-08			74-09			74-10		
		18 ft	6 ft	10 ft	14 ft	10 ft	14 ft	44 ft	10 ft	16 ft	20 ft
VOC	Toluene	9.2									
SVOC	Pentachlorophenol										42 J
SVOC	Phenanthrene									42 J	
SVOC	Pyrene								43 J	73 J	
HERBICIDE	MCPP										
PEST/PCB	4,4'-DDT								3.2 J		
TPH	Total Petroleum Hydrocarbons		62.9	48.6	46.9						
VOC-TIC	Ethylenediamine										6.5 NJ
VOC-TIC	Nonanal										
VOC-TIC	Unknown							7.2 NJ			
SVOC-TIC	1,3-Propanediol, 2,2-dimethyl-										
SVOC-TIC	Hexadecanoic acid, butyl ester										
SVOC-TIC	Hexanedioic acid, bis(2-ethylhexyl)ester										
SVOC-TIC	Octadecanoic acid, butyl ester						240 NJ				220 NJ
SVOC-TIC	Saturated Hydrocarbon: C10-C20					200 NJ					

VOC = volatile organic compound
SVOC = semivolatile organic compound
TIC = tentatively identified compound
MCPP = 2-(2-Methy-4-Chlorophenoxy) propionic acid
All results are reported in µg/kg, except for total petroleum hydrocarbons, which are reported in mg/kg.

TABLE 4-19
SUMMARY OF ORGANIC COMPOUNDS
IN SUBSURFACE SOIL
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

Chemical Group	Chemical	74-13	74-14			74-15	74-18			74-23
		12 ft	6 ft	10 ft	14 ft	8 ft	5 ft	9 ft	15 ft	8 ft
VOC	Toluene				1.3J	1.9J				
SVOC	Pentachlorophenol									
SVOC	Phenanthrene									
SVOC	Pyrene									
HERBICIDE	MCPP						12000			
PEST/PCB	4,4'-DDT									
TPH	Total Petroleum Hydrocarbons								42.2	
VOC-TIC	Ethylenediamine									
VOC-TIC	Nonanal			6.8 NJ	7.3 NJ					
VOC-TIC	Unknown									
SVOC-TIC	1,3-Propanediol, 2,2-dimethyl-							200 NJ		
SVOC-TIC	Hexadecanoic acid, butyl ester	500 NJ	230 NJ	170 NJ	280 NJ		370 NJ		320 NJ	
SVOC-TIC	Hexanedioic acid, bis(2-ethylhexyl)ester									670 NJ
SVOC-TIC	Octadecanoic acid, butyl ester	330 NJ			150 NJ	200 NJ	200 NJ		190 NJ	
SVOC-TIC	Saturated Hydrocarbon: C10-C20									

VOC = volatile organic compound
SVOC = semivolatile organic compound
TIC = tentatively identified compound
MCPP = 2-(2-Methy-4-Chlorophenoxy) propionic acid
All results are reported in µg/kg, except for total petroleum hydrocarbons, which are reported in mg/kg.



LEGEND

(CL) CLAY, WITH TRACES OF SILT AND SAND, CALCAREOUS

(SM) SILTY SAND, CALCAREOUS

(ML) SILT

(SC) CLAYEY SILTY SAND

(SP) POORLY GRADED, FINE-GRAINED SANDS, TRACE OF SILT, CALCAREOUS

CALICHE, MEDIUM DENSE TO VERY DENSE, WHITISH, TAN, LIGHT ORANGE, BUFF, CHALKY, FRIABLE OR HIGHLY CEMENTED

LANDFILL MATERIAL

CHEMICAL ANALYTICAL SAMPLE COLLECTED

G(SM) GEOTECHNICAL SAMPLE COLLECTED. (SM) – USCS CLASSIFICATION SYMBOL ACCORDING TO LABORATORY GRAIN SIZE ANALYSIS

TD TOTAL DEPTH OF SOIL BORING IN FEET BELOW GROUND SURFACE

J ESTIMATED VALUE

Ca = 167,000 mg/kg METALS CONCENTRATIONS ABOVE BACKGROUND

Ca – CALCIUM

NOTES

1. THE LOCATION OF THESE BORINGS ARE SHOWN IN FIGURE 3-3.
2. BORINGS WERE DRILLED IN FEBRUARY 1996 DURING THE PHASE I RFI DRILLING PROGRAM.

VERTICAL SCALE: 1"=10'
HORIZONTAL SCALE: 1"=50'

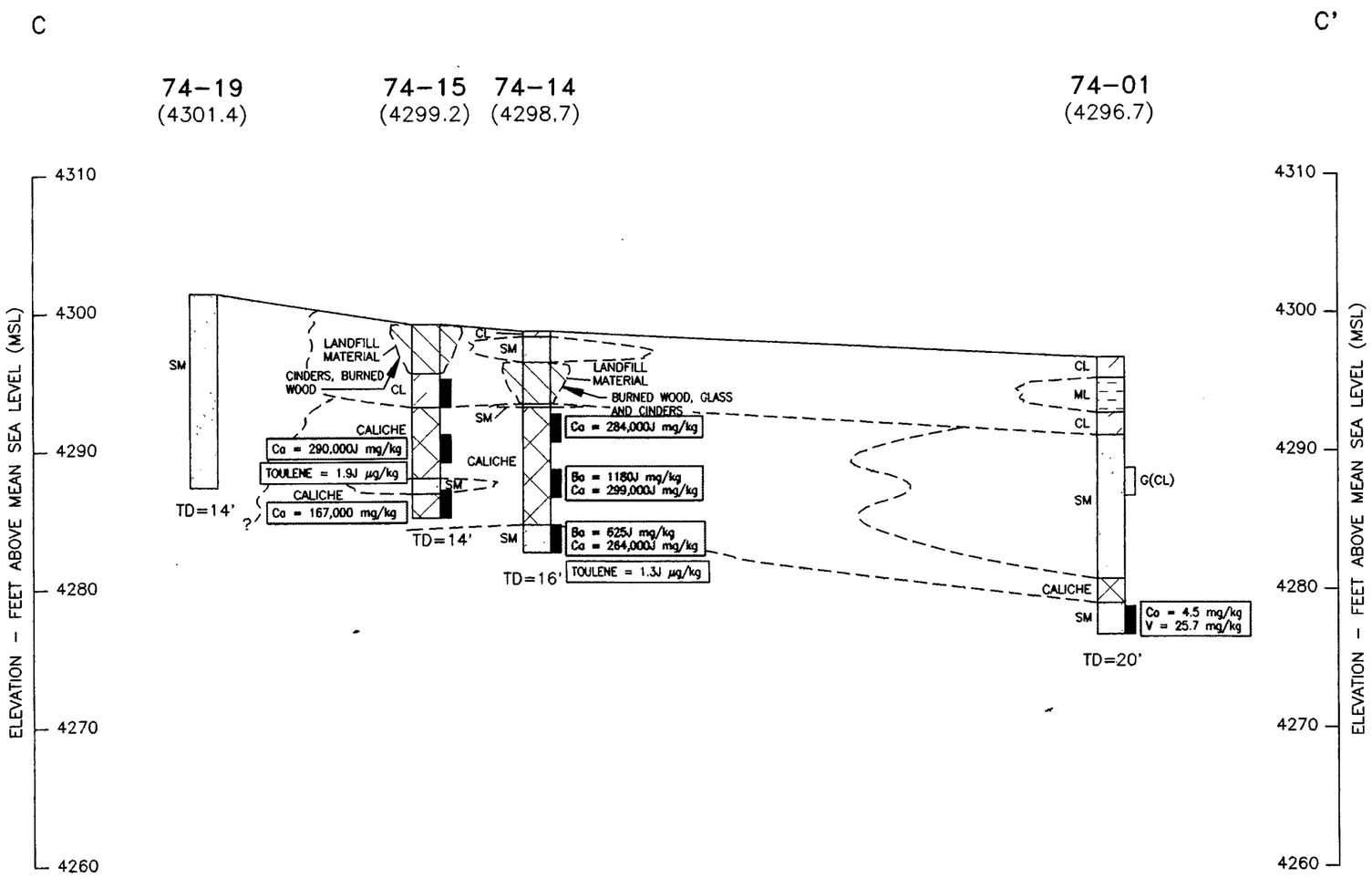
Job No. :	9C114LL1
Prepared by :	K.A.P.
Date :	4/15/96

INORGANIC AND ORGANIC CHEMICAL CONCENTRATIONS IN SOIL

GEOLOGIC CROSS SECTION B–B'
LANDFILL NO. 1
CANNON AFB, NEW MEXICO

FIG. 4–2

L1P–002B



LEGEND

(CL) CLAY, WITH TRACES OF SILT AND SAND, CALCAREOUS

(SM) SILTY SAND, CALCAREOUS

(ML) SILT

(SC) CLAYEY SILTY SAND

(SP) POORLY GRADED, FINE-GRAINED SANDS, TRACE OF SILT, CALCAREOUS

CALICHE, MEDIUM DENSE TO VERY DENSE, WHITISH, TAN, LIGHT ORANGE, BUFF, CHALKY, FRIABLE OR HIGHLY CEMENTED

LANDFILL MATERIAL

CHEMICAL ANALYTICAL SAMPLE COLLECTED

G(SM) GEOTECHNICAL SAMPLE COLLECTED. (SM) – USCS CLASSIFICATION SYMBOL ACCORDING TO LABORATORY GRAIN SIZE ANALYSIS

TD TOTAL DEPTH OF SOIL BORING IN FEET BELOW GROUND SURFACE

J ESTIMATED VALUE

Ca = 167,000 mg/kg METALS CONCENTRATIONS ABOVE BACKGROUND

Ba – BARIUM Ca – CALCIUM Co – COBALT V – VANADIUM

TOLUENE = 2.5J µg/kg VOLATILE ORGANIC COMPOUNDS

NOTES

1. THE LOCATION OF THESE BORINGS ARE SHOWN IN FIGURE 3-3.
2. BORINGS WERE DRILLED IN FEBRUARY 1996 DURING THE PHASE I RFI DRILLING PROGRAM.

VERTICAL SCALE: 1"=10'
HORIZONTAL SCALE: 1"=50'

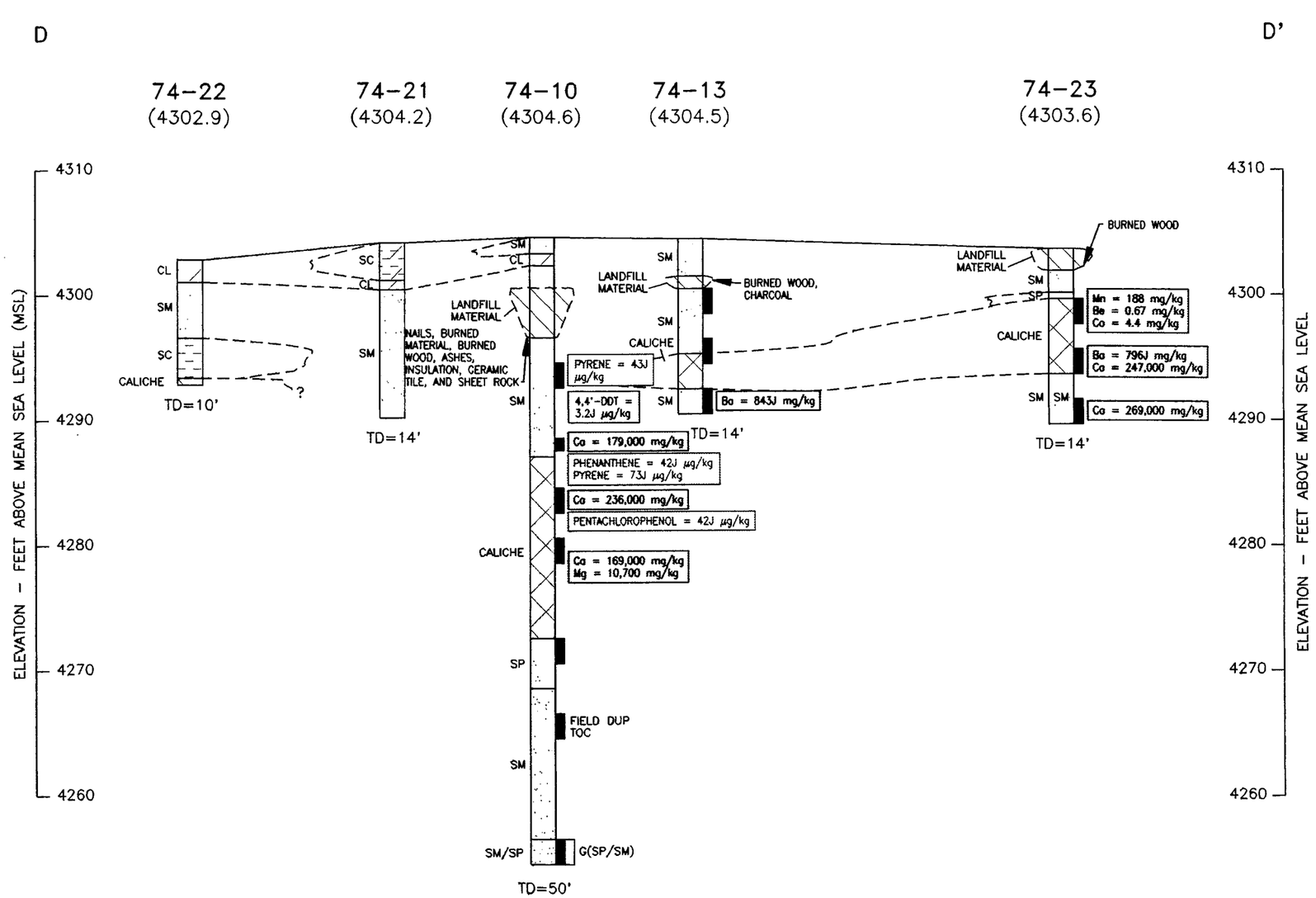
Job No. :	9C114LL1
Prepared by :	K.A.P.
Date :	4/15/96

INORGANIC AND ORGANIC CHEMICAL CONCENTRATIONS IN SOIL

GEOLOGIC CROSS SECTION C-C'
LANDFILL NO. 1
CANNON AFB, NEW MEXICO

FIG. 4-3

L1P-003B



LEGEND

(CL) CLAY, WITH TRACES OF SILT AND SAND, CALCAREOUS

(SM) SILTY SAND, CALCAREOUS

(ML) SILT

(SC) CLAYEY SILTY SAND

(SP) POORLY GRADED, FINE-GRAINED SANDS, TRACE OF SILT, CALCAREOUS

CALICHE, MEDIUM DENSE TO VERY DENSE, WHITISH, TAN, LIGHT ORANGE, BUFF, CHALKY, FRIABLE OR HIGHLY CEMENTED

LANDFILL MATERIAL

CHEMICAL ANALYTICAL SAMPLE COLLECTED

GEOTECHNICAL SAMPLE COLLECTED.
G(SM) (SM) - USCS CLASSIFICATION SYMBOL ACCORDING TO LABORATORY GRAIN SIZE ANALYSIS

TD TOTAL DEPTH OF SOIL BORING IN FEET BELOW GROUND SURFACE

J ESTIMATED VALUE

Ca = 167,000 mg/kg METALS CONCENTRATIONS ABOVE BACKGROUND

Ba = BARIUM Ca = CALCIUM Mg = MAGNESIUM
Be = BERYLLIUM Co = COBALT Mn = MANGANESE

PHENOL = 360 µg/kg SEMIVOLATILE ORGANIC COMPOUNDS

4,4'-DDT = 3.2J µg/kg PESTICIDES

NOTES

1. THE LOCATION OF THESE BORINGS ARE SHOWN IN FIGURE 3-3.
2. BORINGS WERE DRILLED IN FEBRUARY 1996 DURING THE PHASE I RFI DRILLING PROGRAM.

VERTICAL SCALE: 1"=10'
HORIZONTAL SCALE: 1"=50'

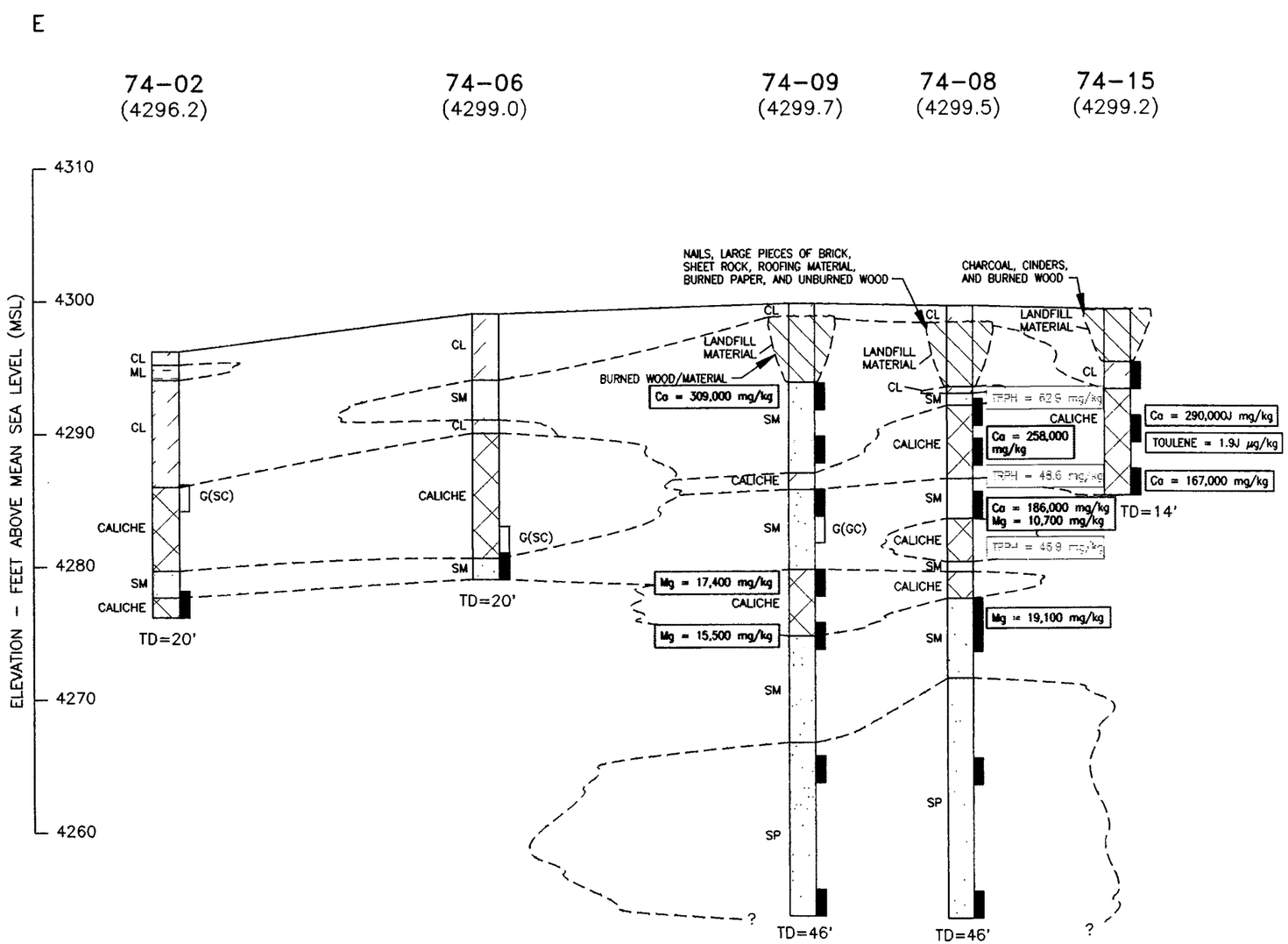
Job No. :	9C114LL1
Prepared by :	K.A.P.
Date :	4/15/96

INORGANIC AND ORGANIC CHEMICAL CONCENTRATIONS IN SOIL

GEOLOGIC CROSS SECTION D-D'
LANDFILL NO. 1
CANNON AFB, NEW MEXICO

FIG. 4-4

L1P-004B



LEGEND

(CL) CLAY, WITH TRACES OF SILT AND SAND, CALCAREOUS

(SM) SILTY SAND, CALCAREOUS

(ML) SILT

(SC) CLAYEY SILTY SAND

(SP) POORLY GRADED, FINE-GRAINED SANDS, TRACE OF SILT, CALCAREOUS

CALICHE, MEDIUM DENSE TO VERY DENSE, WHITISH, TAN, LIGHT ORANGE, BUFF, CHALKY, FRIABLE OR HIGHLY CEMENTED

LANDFILL MATERIAL

CHEMICAL ANALYTICAL SAMPLE COLLECTED

G(SM) GEOTECHNICAL SAMPLE COLLECTED. (SM) – USCS CLASSIFICATION SYMBOL ACCORDING TO LABORATORY GRAIN SIZE ANALYSIS

TD TOTAL DEPTH OF SOIL BORING IN FEET BELOW GROUND SURFACE

J ESTIMATED VALUE

Ca = 167,000 mg/kg METALS CONCENTRATIONS ABOVE BACKGROUND

Ca = CALCIUM Mg = MAGNESIUM

TOLUENE = 2.5J µg/kg VOLATILE ORGANIC COMPOUNDS

TRPH = 45.9 mg/kg TRPH – TOTAL RECOVERABLE PETROLEUM HYDROCARBONS

NOTES

1. THE LOCATION OF THESE BORINGS ARE SHOWN IN FIGURE 3-3.
2. BORINGS WERE DRILLED IN FEBRUARY 1996 DURING THE PHASE I RFI DRILLING PROGRAM.

VERTICAL SCALE: 1"=10'
HORIZONTAL SCALE: 1"=50'

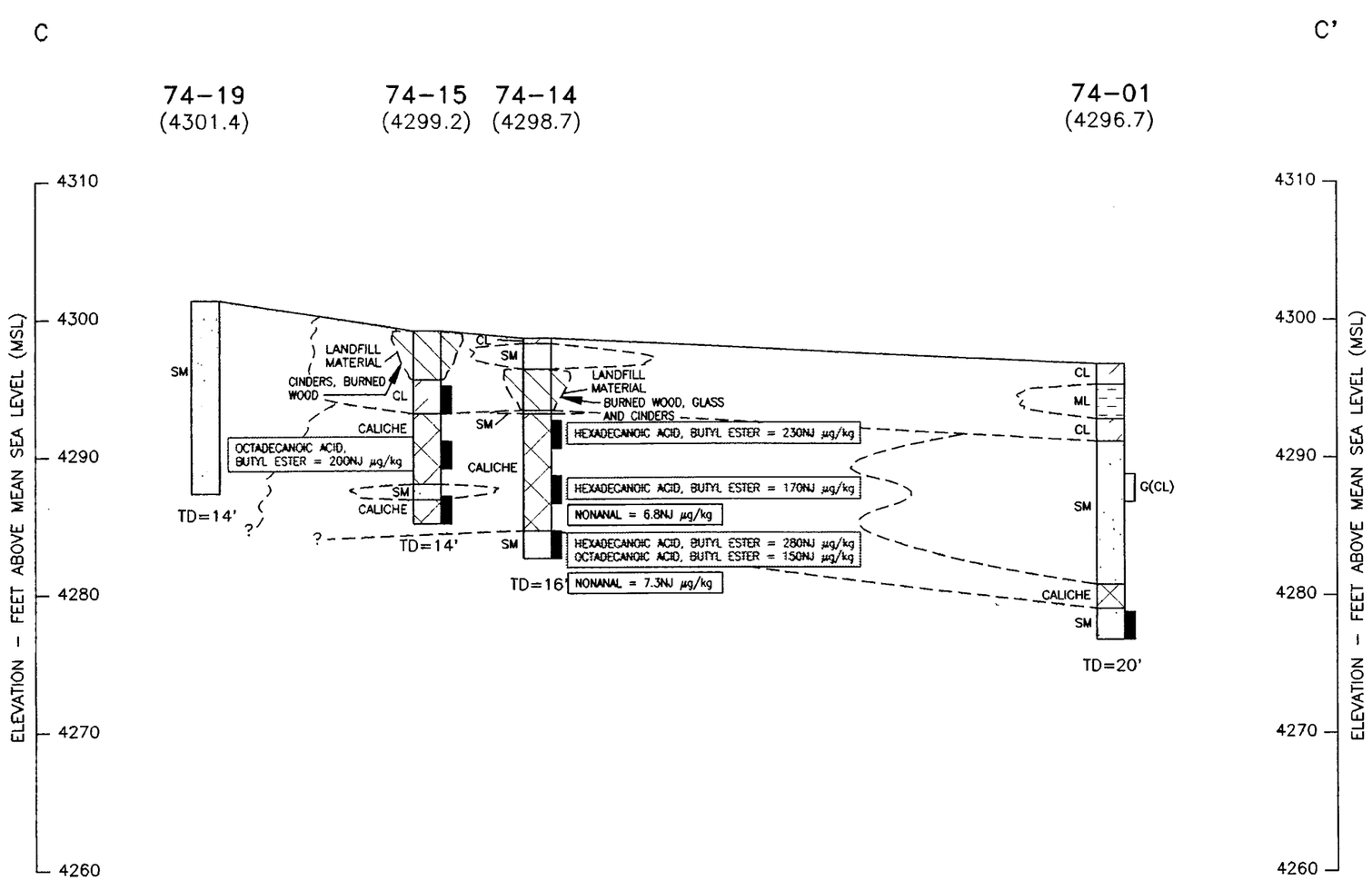
Job No. :	9C114LL1
Prepared by :	K.A.P.
Date :	4/15/96

INORGANIC AND ORGANIC CHEMICAL CONCENTRATIONS IN SOIL

GEOLOGIC CROSS SECTION E-E'
LANDFILL NO. 1
CANNON AFB, NEW MEXICO

FIG. 4-5

L1P-005B



LEGEND

(CL) CLAY, WITH TRACES OF SILT AND SAND, CALCAREOUS

(SM) SILTY SAND, CALCAREOUS

(ML) SILT

(SC) CLAYEY SILTY SAND

(SP) POORLY GRADED, FINE-GRAINED SANDS, TRACE OF SILT, CALCAREOUS

CALICHE, MEDIUM DENSE TO VERY DENSE, WHITISH, TAN, LIGHT ORANGE, BUFF, CHALKY, FRIABLE OR HIGHLY CEMENTED

LANDFILL MATERIAL

CHEMICAL ANALYTICAL SAMPLE COLLECTED

G(SM) GEOTECHNICAL SAMPLE COLLECTED. (SM) – USCS CLASSIFICATION SYMBOL ACCORDING TO LABORATORY GRAIN SIZE ANALYSIS

TD TOTAL DEPTH OF SOIL BORING IN FEET BELOW GROUND SURFACE

NJ TENTATIVELY IDENTIFIED COMPOUNDS WITH AN ESTIMATED CONCENTRATION

SATURATED HYDROCARBON: > C20 = 940 NJ µg/kg — TENTATIVELY IDENTIFIED SEMIVOLATILE ORGANIC COMPOUNDS

NONANAL = 570NJ µg/kg — TENTATIVELY IDENTIFIED VOLATILE ORGANIC COMPOUNDS

NOTES

1. THE LOCATION OF THESE BORINGS ARE SHOWN IN FIGURE 3-3.
2. BORINGS WERE DRILLED IN FEBRUARY 1996 DURING THE PHASE I RFI DRILLING PROGRAM.

VERTICAL SCALE: 1"=10'
HORIZONTAL SCALE: 1"=50'

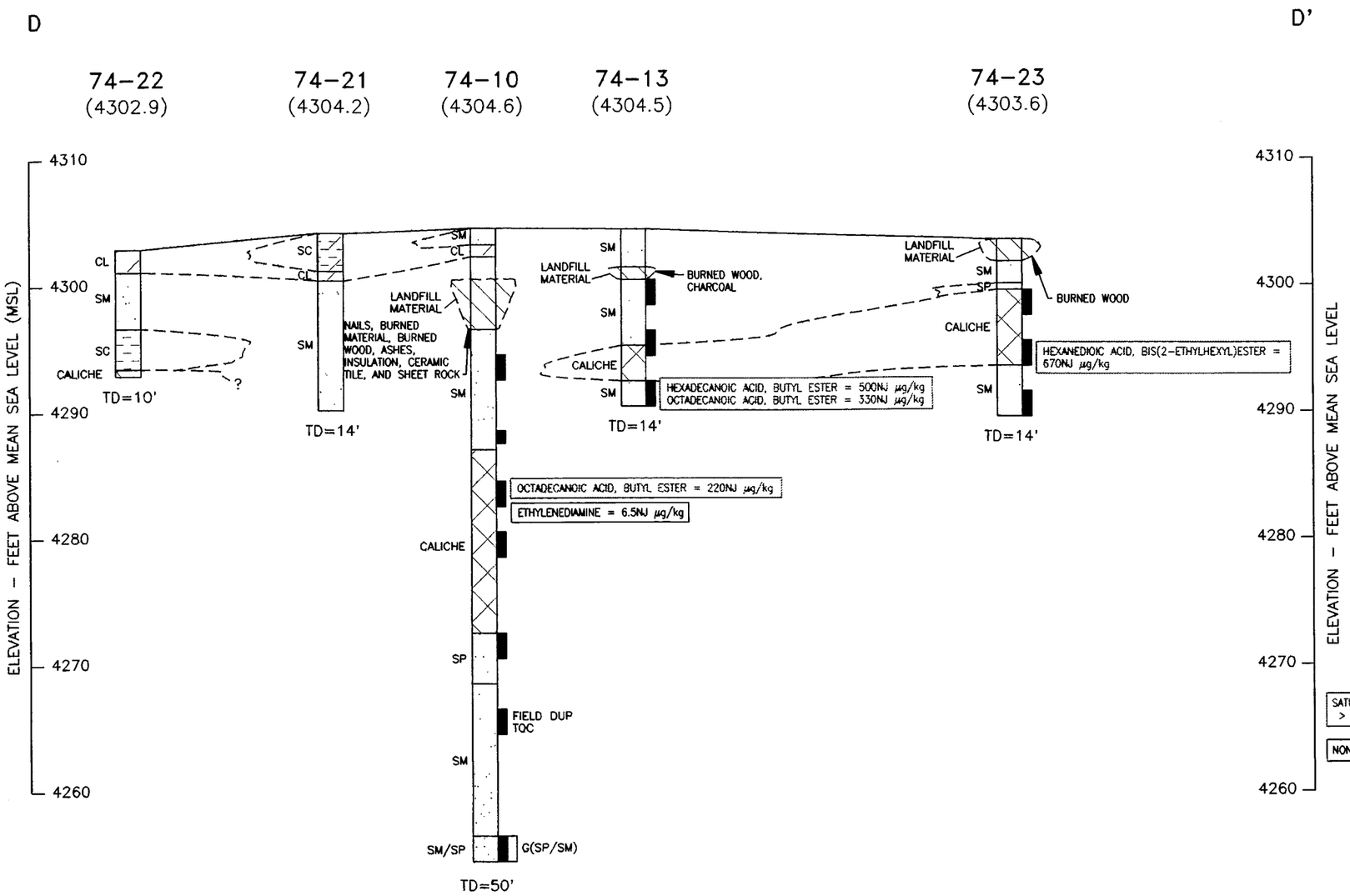
Job No. :	9C114LL1
Prepared by :	K.A.P.
Date :	4/15/96

SEMI-VOLATILE, VOLATILE, AND PETROLEUM RELATED TENTATIVELY IDENTIFIED COMPOUNDS IN SOIL

GEOLOGIC CROSS SECTION C-C'
LANDFILL NO. 1
CANNON AFB, NEW MEXICO

L1P-003C

FIG. 4-7



LEGEND

(CL) CLAY, WITH TRACES OF SILT AND SAND, CALCAREOUS

(SM) SILTY SAND, CALCAREOUS

(ML) SILT

(SC) CLAYEY SILTY SAND

(SP) POORLY GRADED, FINE-GRAINED SANDS, TRACE OF SILT, CALCAREOUS

CALICHE, MEDIUM DENSE TO VERY DENSE, WHITISH, TAN, LIGHT ORANGE, BUFF, CHALKY, FRIABLE OR HIGHLY CEMENTED

LANDFILL MATERIAL

CHEMICAL ANALYTICAL SAMPLE COLLECTED

G(SM) GEOTECHNICAL SAMPLE COLLECTED. (SM) – USCS CLASSIFICATION SYMBOL ACCORDING TO LABORATORY GRAIN SIZE ANALYSIS

TD TOTAL DEPTH OF SOIL BORING IN FEET BELOW GROUND SURFACE

NJ TENTATIVELY IDENTIFIED COMPOUNDS WITH AN ESTIMATED CONCENTRATION

SATURATED HYDROCARBON: > C20 = 940 NJ µg/kg — TENTATIVELY IDENTIFIED SEMIVOLATILE ORGANIC COMPOUNDS

NONANAL = 570NJ µg/kg — TENTATIVELY IDENTIFIED VOLATILE ORGANIC COMPOUNDS

NOTES

1. THE LOCATION OF THESE BORINGS ARE SHOWN IN FIGURE 3-3.
2. BORINGS WERE DRILLED IN FEBRUARY 1996 DURING THE PHASE I RFI DRILLING PROGRAM.

VERTICAL SCALE: 1"=10'
HORIZONTAL SCALE: 1"=50'

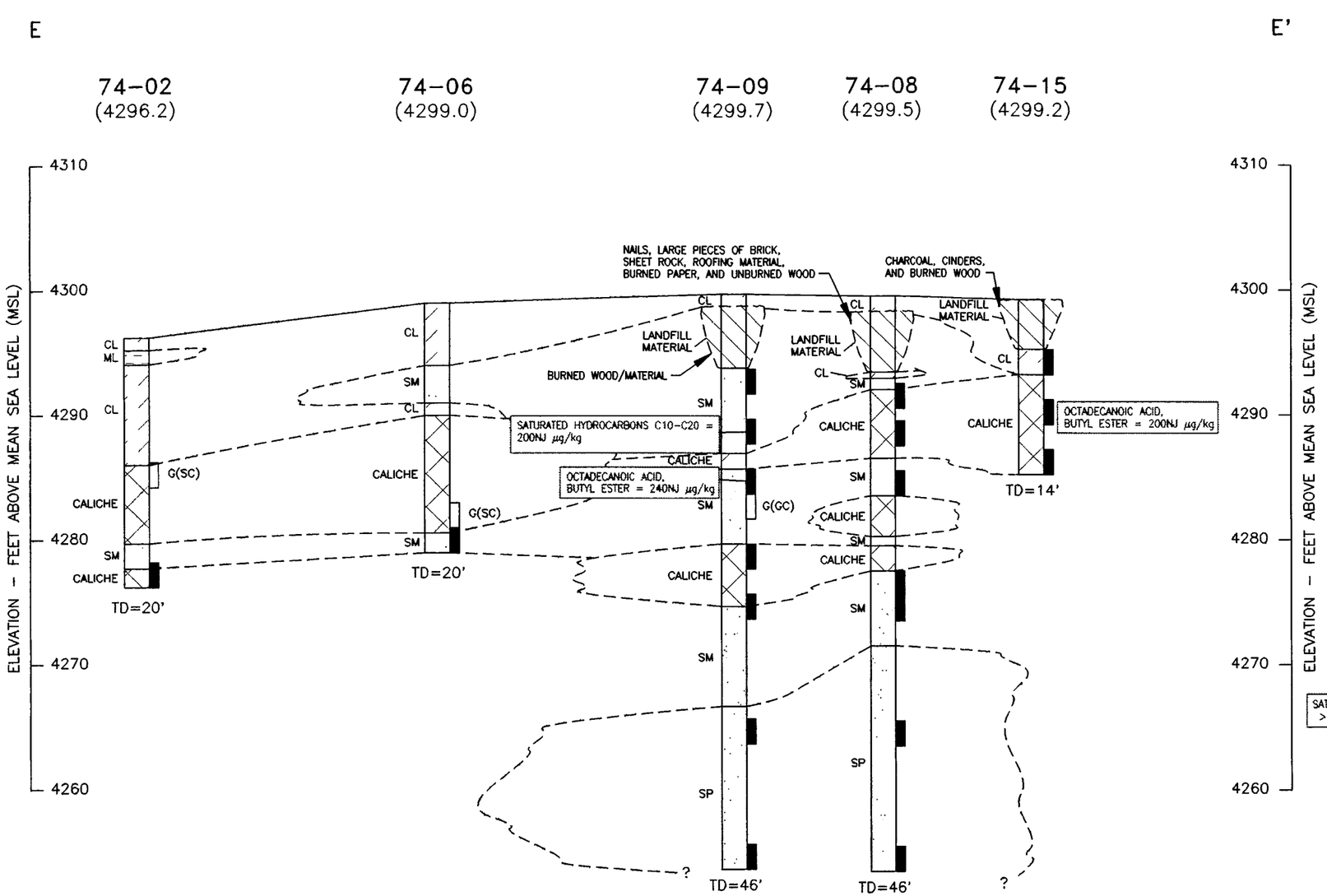
Job No. :	9C114LL1
Prepared by :	K.A.P.
Date :	4/15/96

SEMI-VOLATILE, VOLATILE, AND PETROLEUM RELATED TENTATIVELY IDENTIFIED COMPOUNDS IN SOIL

GEOLOGIC CROSS SECTION D-D'
LANDFILL NO. 1
CANNON AFB, NEW MEXICO

L1P-004C

FIG. 4-8



LEGEND

(CL) CLAY, WITH TRACES OF SILT AND SAND, CALCAREOUS

(SM) SILTY SAND, CALCAREOUS

(ML) SILT

(SC) CLAYEY SILTY SAND

(SP) POORLY GRADED, FINE-GRAINED SANDS, TRACE OF SILT, CALCAREOUS

CALICHE, MEDIUM DENSE TO VERY DENSE, WHITISH, TAN, LIGHT ORANGE, BUFF, CHALKY, FRIABLE OR HIGHLY CEMENTED

LANDFILL MATERIAL

CHEMICAL ANALYTICAL SAMPLE COLLECTED

G(SM) GEOTECHNICAL SAMPLE COLLECTED. (SM) – USCS CLASSIFICATION SYMBOL ACCORDING TO LABORATORY GRAIN SIZE ANALYSIS

TD TOTAL DEPTH OF SOIL BORING IN FEET BELOW GROUND SURFACE

NJ TENTATIVELY IDENTIFIED COMPOUNDS WITH AN ESTIMATED CONCENTRATION

SATURATED HYDROCARBON: > C20 = 940 NJ µg/kg — TENTATIVELY IDENTIFIED SEMIVOLATILE ORGANIC COMPOUNDS

NOTES

1. THE LOCATION OF THESE BORINGS ARE SHOWN IN FIGURE 3-3.
2. BORINGS WERE DRILLED IN FEBRUARY 1996 DURING THE PHASE I RFI DRILLING PROGRAM.

VERTICAL SCALE: 1"=10'
HORIZONTAL SCALE: 1"=50'

Job No. :	9C114LL1
Prepared by :	K.A.P.
Date :	4/15/96

SEMI-VOLATILE, VOLATILE, AND PETROLEUM RELATED TENTATIVELY IDENTIFIED COMPOUNDS IN SOIL

GEOLOGIC CROSS SECTION E-E'
LANDFILL NO. 1
CANNON AFB, NEW MEXICO

L1P-005C

FIG. 4-9

5.0
CONTAMINANT FATE AND TRANSPORT

Potential fate and transport mechanisms of organic compounds and metals found above estimated background ranges (Section 4.0) at Landfill No. 1 site are discussed in this section. The importance of physical and chemical properties of these chemicals which include metals and organic compounds in relation to transport mechanisms is presented. This generalized discussion provides useful insights on possible transport behavior and likely chemical persistence at the Landfill No. 1 site. The mobility and/or persistence of the chemicals in specific media are addressed next, followed by a discussion of exposure assessment for potential receptors and potential contaminant migration pathways.

5.1 POTENTIAL CONTAMINANT TRANSPORT MECHANISMS

Contaminants found in the soil at the Landfill No. 1 site could potentially move into other environmental media by several transport mechanisms. These mechanisms include (1) air - volatilization of organics and movement within soil gas or the atmosphere, and wind transport of metals and/or organics on- and off-site; (2) leaching - through the vadose zone; and (3) groundwater - subsequent movement via groundwater flow. These potential transport mechanisms are discussed below.

5.1.1 Air

Volatilization is a process by which an organic compound is transferred from soil or water medium into soil gas and/or the atmosphere. Volatilization is a significant mechanism for the migration of VOCs; however, it will have much less, or no, impact on most SVOCs and the metals detected. Volatilization will be enhanced by high soil temperature and bacterial action. Contaminant metals and organics which may also be absorbed to subsurface soil particles can also be dispersed in the atmosphere by physical transport if the soil is exposed or disturbed. Volatilization would thus modify organic concentrations associated with surface soils. The degree to which metal or organic chemical content could be modified

during transport will depend on the physio-chemical properties of the specific chemical of interest.

5.1.2 Leaching (Vadose Zone)

Chemicals potentially leached by percolating water in the subsurface at the Landfill No. 1 site could migrate, in the dissolved phase or as non-aqueous phase liquids (NAPLs), downward within the vadose zone. Contamination in the vadose zone may result from adsorption of dissolved-phase contaminants onto subsurface soils as the contaminants migrate downward with infiltrating meteoric water. Some of the contamination found in the subsurface soil could be due to such leaching and transport to deeper zones. Dissolved-phase contaminants not held in the vadose zone could ultimately reach the saturated zone where mixing with groundwater may occur. NAPLs not held as residual contamination in the vadose zone may move downward under the force of gravity until encountering a hydraulic (i.e., capillary fringe) or lithologic (fine-grained geologic layer) barrier.

If present, NAPLs can penetrate the capillary fringe and the water table only if the liquid has sufficient pressure head to overcome the capillary pressure (Anderson et al. 1992). Likewise, NAPLs can penetrate fine-grained geologic materials only if the liquid has sufficient pressure head to overcome the increased capillary pressure in the fine-grained materials. When capillary pressure cannot be overcome, lateral spreading or pooling of the liquid on top of the water table or fine-grained barrier may occur. In the case of a lens of fine-grained material surrounded by coarse-grained material, spreading may occur on top of the lens until the liquid spills over the edge of the lens, at which point the liquid may continue downward until reaching the water table or another lithologic barrier. It should be noted that NAPLs were not observed during the Phase I RFI at Landfill No. 1.

For extended periods following the initial release of contaminants, infiltrating precipitation moving downward through the vadose zone can leach contaminants from the zone of residual contamination and transport them to the saturated zone. This is an important transport mechanism for contaminants with high aqueous solubility. Contaminants with lower solubilities are less likely to be leached from the vadose zone and typically exhibit lower mobility. However, it appears that deep soils did not yield evidence of contamination at

levels above detection limits. Therefore, it appears that the leaching and transport in dissolved phase to deeper zones was limited at the Landfill No. 1 site.

5.1.3 Groundwater

As previously discussed, the Ogallala, or the Great Plains aquifer underlies the Cannon AFB. It consists of gravels, sands, silts and clays which vary from 360 to 415 feet in thickness at Cannon AFB. Caliche is a major feature of the Ogallala aquifer in the area and may vary from 5 to 25 feet in thickness. The predominant clay minerals within the Ogallala aquifer are smectites and attapulgite. The Ogallala aquifer has a saturated thickness of about 95 to 145 feet which is strongly influenced by the configuration of the erosional unconformity underlying the Ogallala aquifer. Based on information collected during the 1991 W-C investigation of 18 SWMUs, the unsaturated thickness of the Ogallala aquifer ranges from 264 to about 355 feet bgs. The recharge rate for the Ogallala aquifer has been estimated at 1 inch/year (Kearney 1987) and is attributable to the low annual rainfall coupled with the high annual evapotranspiration rate. The hydraulic gradient is toward the southeast at 7 to 15 feet/mile.

Groundwater from the Ogallala aquifer is the AFB's sole source of water which is supplied by nine wells. These wells have capacities of 200 to 765 gallons per minute (gpm) and were installed to total depths ranging from 357 to 415 feet bgs (USAF 1991). In 1984 these wells were producing at an average daily rate of 1.3 million gallons (William Matotan and Associates 1985). During the peak summer demand, about 25 percent of this water was used for irrigation.

Dissolution of metals and organics through the leaching of contaminated surface, or near surface soils by infiltrating meteoric water is considered the principal means by which contaminants could enter the groundwater beneath Landfill No. 1. This infiltrating water will originate from precipitation, probably during storm events. In the near surface, adsorption of chemicals of interest may play a role in retarding downward mobilization. However, dissolution and transport of contaminants to groundwater may be insignificant given the thickness of the vadose zone, the low annual precipitation and the low recharge rate at the site. For organics within the unsaturated zone, volatilization within the thick unsaturated

zone may limit the available volatile organics for dissolution. The nature of the contaminants found in soil during the Phase I RFI and their low concentrations indicate that transport through the vadose zone into groundwater is highly unlikely.

5.2 PHYSICAL AND CHEMICAL PROPERTIES

This section provides a discussion of the physical and chemical properties of the organic chemicals and metals above the estimated background range which directly affect their fate and transport. These properties are summarized in Table 5-2.

5.2.1 Volatilization

Volatilization will primarily affect the volatile organic contaminants in the soil. Organics influenced by this process will be transferred into a gaseous phase, soil gas and/or the atmosphere. Assuming that a free non-aqueous phase does not exist, volatilization will principally be controlled by a chemical's soil-vapor partition coefficient and Henry's Law constant. Water content of a soil, temperature, and atmospheric conditions (i.e., wind and sunlight) may also influence volatilization from a soil (Lyman et al. 1990).

Volatilization is a complex process that is dependent on very site-specific conditions. Nevertheless, some appreciation of an organic chemical's volatility can be made by considering the Henry's Law constant and vapor pressure values. Henry's Law constant is directly proportional to a chemical's vapor pressure and temperature and inversely proportional to its molecular weight and water solubility. Henry's Law constant values $> 10^{-3}$ atm-m^3/mole (atmospheres pressure times cubic meters of air per mole) are considered to have a high volatility while those with values $< 10^{-7}$ atm-m^3/mole are less volatile than water and will tend to concentrate in water as it evaporates (Lyman et al. 1990). Dragun (1988) and Olsen and Davis (1990) suggest comparable, though slightly different, values for high and low volatility. According to Ney (1990), organic vapor pressures of $> 10^{-2}$ mm Hg (millimeters of mercury) are indicative of high volatility while values of $< 10^{-6}$ mm Hg suggests low volatility.

5.2.2 Aqueous Solubility

Solubility is one of the most important factors influencing the fate and transport of metals and organic chemicals. For metals in solution, their solubility will be controlled by the solution Eh-pH relationships; number, concentrations, solubility product, etc. of ion complexes in solution; aqueous major ion chemistry; etc. Dissolved metal fate and transport will depend upon a number of very site-specific factors whose collection and/or calculation were beyond the scope of this investigation. Water solubility of organics is typically considered with respect to its octanol/water partition coefficient (K_{OW}). The K_{OW} value is defined as "... the ratio of a chemical's concentration in the octanol phase to its concentration in the aqueous phase of a two-phase system." (Lyman et al. 1990) Other factors which can affect an organic's solubility include adsorption, volatilization, and presence of organic carbon. According to Lyman et al. (1990), values of log $K_{OW} > 4$ indicate the organic is very hydrophobic and would have a low water solubility, high soil/sediment adsorption coefficients, lower mobility, and higher potential to bioaccumulate. Conversely, values of log $K_{OW} < 1$ suggest high solubilities and greater mobility, but small soil/sediment adsorption coefficients and decreased potential for bioaccumulation.

5.2.3 Adsorption

Adsorption is also an important factor which influences the fate and transport of both metals and organics. Typically, adsorption is expressed in terms of an adsorption coefficient, and it can be defined as the ratio to which a metal or an organic chemical partitions itself between the solid and solution phases. This can apply to water-saturated or unsaturated soils, storm water, sediment, or aquifer materials. Adsorption is often referred to in terms of the soil-water distribution coefficient - K_d, or distribution coefficient. K_d is defined as the ratio of concentration adsorbed on soil surfaces to the concentration in water. For organics, K_d has been strongly correlated with the fraction of total organic carbon in the solid matrix (f_{OC}) and which has been used to define the organic carbon partition coefficient - K_{OC} (Olsen and Davis 1990). It is defined as the ratio of K_d to f_{OC} (i.e., chemical adsorbed per unit weight of total organic carbon (TOC) in the soil/sediment/aquifer to the concentration of the chemical in solution at equilibrium). This correlation appears to hold over a wide range of TOC content values (i.e., 0.1 to 2 percent TOC) as reported by Lyman et al. (1990). For organics, a critical fraction of

organic carbon can be defined (i.e., < 0.1 percent TOC), below which inorganic clay surface reactions dominate the adsorption process (Olsen and Davis 1990). A qualitative assessment of chemical mobility based on K_d values has been made by Dragun (1988) as follows: > 10 immobile, 2 to 10 low mobility, 0.5 to 2 intermediate mobility, 0.1 to 0.5 mobile, and < 0.1 very mobile. K_{OC} values can range from 1 to 10^7; the higher the value, the less mobile the organic. Additional discussion on the importance of TOC and clay mineralogy in adsorption processes is presented below.

Total Organic Carbon

The fraction of TOC in geologic materials is strongly correlated with the potential for adsorption of contaminants in the subsurface, especially for adsorption of organic compounds. The partitioning of organic contaminants from the dissolved phase to the solid phase is usually proportional to the TOC content of the media. TOC content also influences biodegradation. Microorganisms, which are required to catalyze chemical-degradation reactions, are dependent on organic carbon as a food source.

The TOC content was measured from 5 samples collected at Landfill No. 1 during the Phase I RFI. TOC was reported in all cases as non-detect (reporting limit of less than 0.2%). Literature (McCarthy and Zachara 1989) reveals that whether chemicals adsorb onto organic or inorganic materials depends on the fraction of TOC relative to a specific critical level of TOC. This critical level is chemical-specific and dependent on site conditions. As the TOC content approaches the critical level, organic adsorbents begin to dominate the adsorption process. However, if the fraction of TOC is small, adsorption of organic chemicals to inorganic adsorbents (mostly clay) will be important.

Clay Content and Mineralogy

Clay content and mineralogy are important parameters affecting the adsorption of both organic and inorganic chemicals. A high content of clay in geologic materials provides favorable conditions for adsorption because of the following: (1) clay minerals have negatively charged surfaces and behave as inorganic adsorbents; (2) clays have relatively large surface areas, and adsorption tends to be greater when the surface area of the media is greater (all other factors

being equal); and (3) substantial clay content in geologic materials tends to reduce the effective permeability, thereby reducing migration velocities and increasing residence time so that the probability of geochemical processes approaching equilibrium is increased.

Based on the geologic characterization presented in Section 3.0, clay content in much of the geologic materials underlying Landfill No. 1 covers a range from 7.9 to 54.6 percent. Grain-size analyses showed that the average clay content in the 7 samples collected during the Phase I RFI at Landfill No. 1 was 32 percent with six samples exhibiting clay content above 25 percent (Appendix C).

Clay mineralogy is potentially significant to the adsorption process because the surface area and the cation exchange capacity (CEC) of clays varies with the specific mineralogy. The common clay minerals can be divided into five groups: smectites, vermiculites, illites, kaolinites, and chlorites. Their specific surface areas in terms of square meters/gram (m^2/g) and CEC can vary by orders of magnitude. Limited site-specific information on clay types for subsurface materials is available for Cannon AFB, and specific clay types present at Landfill No. 1 have not been determined.

5.2.4 Biodegradation

Biodegradation, including biotransformation, occurs via microorganisms that may be either attached to the soil, or present in the soil pores, or in solution. Factors affecting biodegradation rates include composition and size of the microbial population, presence of a suitable and available substrate (i.e., energy source), soil acidity and alkalinity, soil temperature and moisture, presence of essential inorganic elements, chemical concentration, oxygen availability, and adsorption (Dragun 1988). Typically, biodegradation rates are measured in half-lives which are defined as the time required for microbial degradation to reduce a chemical concentration by half. Biodegradation is typically associated with organics. Half-lives for organics in soil are cited in Table 5-1.

Frequently, the half-lives cited for organics can vary greatly. This variation is likely due to reductions below optimum in at least one of the above referenced factors which can thereby control the reaction rate (Dragun 1988).

5.2.5 Other Physical and Chemical Properties

The four processes previously discussed in this section probably represent the most important controls on the fate and transport of COIs at Landfill No. 1. However, it is important to recognize that other properties or processes also exist which could contribute to contaminant mobility and fate. Some of these properties and processes include bioconcentration, complexation, dehalogenation, diffusion, hydrolysis, oxidation, photolysis, precipitation, reduction, and solubility in solvents. These additional factors were not discussed individually because they are not considered to be as significant as the volatilization, aqueous solubility, adsorption, and biodegradation processes.

5.3 CONTAMINANT PERSISTENCE

Within a particular environmental medium, physical, chemical and biological processes affect the persistence of chemicals. Using the information on potential pathways and physical and chemical properties, together with the nature and extent of contamination information for Landfill No. 1 (Section 4.0), the persistence of organics and inorganics (metals) detected in subsurface soil at Landfill No. 1 is discussed in this section for soil only since groundwater has a low potential to be impacted at the site. For discussion purposes, VOCs and herbicides followed by SVOCs and pesticides detected at Landfill No. 1 are discussed below. Generalizations are drawn from these information sources, as well as site geologic and hydrogeologic features, to provide qualitative information on the fate and transport of chemicals identified.

5.3.1 Volatile Organic Compounds and Herbicides

Only one target VOC, toluene, was detected in three subsurface soil samples at the Landfill No. 1 site. Two of the three detections of toluene were at concentrations (i.e., 1.3J and 1.9J ug/kg) below the laboratory reporting limit and were, therefore, qualified as estimated. The third concentration was detected at a concentration of 9.2 ug/kg, slightly above the laboratory reporting limit.

The physical and chemical properties of toluene (Table 5-1) indicate that toluene is likely to be mobile in a soil environment because :

- Toluene has a high vapor pressure and is moderately to highly volatile. Toluene will likely partition to a vapor phase from soil but at the low concentrations in Landfill No. 1 soil, toluene is not considered to be a threat to air.

- Toluene is medium to highly soluble in water with solubility values ranging from 490 milligrams per liter (mg/l) to 627 mg/l but because of toluene's low concentrations in Landfill No. 1 soil and moderate to high volatility, toluene is not considered to be a threat to groundwater beneath Landfill No. 1 (approximately 270 feet bgs).

- Toluene has moderate K_{ow} and K_{oc} values that indicate that toluene will not readily adsorb to clays that are present in the subsurface soil at Landfill 1.

In addition, the short biodegradation half-life in soil for toluene (i.e. 4 to 22 days) indicate that this chemical will likely not persist in a subsurface environment for long periods of time as the potential for biodegradation to reduce chemical concentrations is quite high. Furthermore, the fact that toluene was detected at very low concentrations and was not detected in the soil samples collected above or below in borings 74-14 and 74-15 suggests that these isolated detections are likely the result of laboratory contamination since toluene is commonly used as a laboratory solvent, is present in many adhesives, such as on bottle labels, and is commonly detected in laboratory blank samples at similar concentrations.

Only one target herbicide compound, MCPP, was detected during the Phase I RFI in one subsurface soil sample collected from a depth of 5 to 7 feet bgs at a concentration of 12,000 ug/kg. MCPP was not detected in the two soil samples collected below 5 feet in this boring or in any other samples. MCPP is a commonly used herbicide and its presence in the subsurface at soil boring 74-18 is probably the result of applications of this herbicide at the golf course and not related to wastes disposed of at Landfill No. 1 during the 1940's.

MCPP like toluene is likely to be very mobile in a soil environment because:

- MCPP is very soluble in water (660,000 mg/l) and has very low K_{ow} and K_{oc} value (Table 5-1) indicating this compound will not readily adsorb to clays present at Landfill No. 1.

- In addition MCPP has a short biodegradation half-life (i.e. 7 to 10 days) suggesting that the chemical concentration could be significantly reduced in a short-time frame.

5.3.2 Semivolatile Organic Compounds and Pesticides

Only three target SVOCs, PCP, phenanthrene, and pyrene, were detected in the Landfill No. 1 soil. PCP was detected in only one subsurface soil sample collected from a depth of 20 to 20.9 feet bgs in boring 74-10. Phenanthrene was detected in only one subsurface soil sample collected from a depth of 16 to 16.9 feet bgs in boring 74-10. Pyrene was detected in two subsurface soil samples at concentrations of 43J ug/kg and 73J ug/kg at depths between 10-12 and 16-16.9 feet bgs, respectively, also in boring 74-10. All four of these values were well below the laboratory reporting limit and were therefore, qualified as estimated values.

PCP, phenanthrene, and pyrene could be relatively persistent in the environment and their transport potential appears to be limited because:

- PCP, phenanthrene, and pyrene have low vapor pressures which will increase their persistence on and in soil and these three compounds have low water solubility's (Table 5-1) thus limiting their mobility.

- Log K_{ow} and log K_{oc} values range from 3 to 5 indicating the chemicals are very hydrophobic and will likely adsorb to the clays present in the subsurface soils at Landfill No. 1 as clays have high surface areas which contribute to adsorption capacity.

In addition, pyrene, phenanthrene, and PCP have relatively long half-lives (Table 5-1) under aerobic conditions such as those found in the vadose zone at Landfill No. 1. and thus may be relatively persistent in the subsurface environment

Only one target pesticide, 4,4'-DDT was detected in one subsurface soil sample collected during the Phase I RFI. 4,4'-DDT was detected at 3.2J ug/kg at a depth of 10 to 12 feet in boring 74-10 where PCP and pyrene were also detected. Similar to that discussed for PCP and pyrene, 4,4'-DDT has limited migration potential in soil because:

- 4,4'-DDT has an extremely low vapor pressure in addition to a very low water solubility (less that 0.005 mg/l) (Table 5-1).

- 4,4'-DDT also has a Log K_{ow} and Log K_{oc} values greater than 4 indicating this chemical is very hydrophobic and can readily adsorb to clays that may be present in the subsurface soils at Landfill No. 1, thus limiting mobility of this compound.

In addition the long biodegradation half-life of 4,4'-DDT under aerobic conditions (i.e.. 2 to 15 years) suggests that this chemical will likely persist in the subsurface environment.

5.3.3 Metals

The metals which were above estimated background ranges (excluding calcium and magnesium) for Landfill No. 1 include barium, beryllium, cobalt, manganese, and vanadium. The nature and extent of these metals was previously addressed in Section 4.0 and detections above the background range were summarized in Table 4-17.

It is interesting to note from data in Table 4-17 that a majority of detections of metals above the estimated background range were isolated instances. Metals were typically detected above the estimated background range in one sample within a boring and were rarely found above background in other samples collected within the same boring (except for calcium, barium and magnesium due to geologic conditions).

With regard to mobility and persistence of metals in subsurface soil at Landfill No. 1, current site data do not allow a quantitative estimate of these properties. However, it is expected that metal complexes in soil or water will form reaction products that get incorporated into soil minerals, precipitate as oxide or hydroxide minerals, or form coatings on minerals (Dragun 1988). It is expected that most of the metals will be in the form of oxide, hydroxide, or oxyhydroxide complexes within soil or water. Based on existing site information, several generalizations can be made:

- Within this area of the Ogallala Formation (i.e., the uppermost geologic unit at Landfill No. 1), the predominant clay minerals are montmorillonites and attapulgite. The CEC for montomorillonite clays are generally quite high and range from 80 to 150 milliequivalents per 100 grams (meq/100 g) (Dragun 1988) while the CEC values for the attapulgite will be probably less than 50 meq/100 g. Based on grain-size information collected during this investigation, the clay content of subsurface soil material averaged 32 percent and was greater than 25 percent in six of the seven samples collected. The relatively high CEC of clays within the Ogallala Formation and a moderate to high clay content would suggest that the mobility of metals of interest in subsurface soil at Landfill No. 1 would be limited because of adsorption of metals to clay surfaces.

- The pH of soil can also influence mobility of metals. For example, alkaline or near-neutral pH values usually result in negatively-charged surfaces on clays and relatively high CEC and cation adsorption sites (Dragun 1988). The alkaline pH of 7.0 to 8.0 reported in the Curry County Soil Survey (USDA 1958) for soil at Cannon AFB suggests that cation exchange and cation adsorption are probably significant transport processes for metals. Additionally, at soil pH values greater than 5 or 6, most inorganic cations will precipitate as hydroxides or carbonates (i.e., caliche); therefore, their mobility in the vadose zone will be reduced.

Available information indicates that metals in subsurface soil at Landfill No. 1 are probably not very mobile but are likely to be persistent.

In summary, chemicals detected above estimated background ranges for Landfill No. 1 were grouped into VOCs/herbicides and SVOCs/pesticides and metals to evaluate fate and transport. The following conclusions can be drawn from the evaluation:

VOCs/Herbicides

Toluene is likely to be medium to highly mobile in the subsurface soil environment and is not likely to persist for long periods of time due to high vapor pressure, high volatilization potential and high biodegradation rates.

MCPP is not likely to persist in the environment over time due to a very high water solubility, a tendency not to adsorb to clays, and a high biodegradation rate.

SVOCs/Pesticides

Pyrene, phenanthrene, and PCP are likely to be relatively immobile due to low vapor pressure, low water solubility, and tendency to adsorb to clays present in the soils. In addition these three compounds have moderate to low biodegradation rates.

4,4'-DDT is likely to persist in the environment due to an extremely low vapor pressure, low water solubility, and tendency to readily adsorb to soil. 4-4'-DDT also has a low biodegradation rate.

Metals

Based on general characteristics of subsurface soil at Landfill No. 1 which include moderate to high clay content and an alkaline soil pH, metals are not likely to be mobile in the subsurface but would persist for long periods of time. The potential for precipitation of metals in the subsurface, thus limiting downward migration in the vadose zone, is evidenced by caliche layers encountered in the borings drilled during the Phase I RFI.

TABLE 5-1
PHYSICAL AND CHEMICAL PROPERTIES OF DETECTED ORGANIC CHEMICALS[(1)]
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

Chemical	Molecular Formula	Molecular Weight (g/mole)	Water Solubility[1] (mg/L)	Vapor Pressure[1] mmHg	Henry's Law Constant[1] (atm-m^3/mole)	Log K_{ow}[1]	Log K_{oc}[1]	Biodegradation Rate in Soil[2] (half-life in days)
Volatile Organic Compounds								
Toluene	C_7H_7	92	490-627 at 25°C	22 at 20°C	$6.7x10^{-3}$; $6.74x10^{-3}$ at 25°C	2.11-2.80	2.06; 2.18	4-22
Semi-Volatile Organic Compounds								
Pentachlorophenol	C_6HCl_5O	266	20-25 at 25°C	$2.14x10^{-5}$ - $1.7x10^{-4}$	$2.8x10^{-7}$ - $3.4x10^{-6}$	3.69-5.86	2.95; 2.96	23-178
Phenanthrene	$C_{14}H_{10}$	178	0.71-1.6 at 25°C	$6.80x10^{-4}$ at 25°C	$1.3x10^{-4}$ - $5.48x10^{-5}$	4.16-4.568	3.72-4.59	16-200
Pyrene	$C_{16}H_{10}$	202	0.132-0.171 at 25°C	$2.5x10^{-6}$ at 25°C; $6.85x10^{-7}$ at 25°C	$1.09x10^{-5}$; $1.87x10^{-5}$	4.88-5.32	4.66-5.13	210-1898
Pesticides/Herbicides								
4,4'-DDT	$C_{14}H_9Cl_5$	355	0.0031-0.0034 at 25°C	$1.7x10^{-10}$ - $1.9x10^{-7}$ at 20°C	$3.8x10^{-5}$ - $1.03x10^{-4}$	4.89-6.44	5.14-6.26	$1.8x10^4$-$1.4x10^5$
MCPP - Mecoprop	$C_{10}H_{11}C10_3$	214	660,000[(3)]	--	--	1.26[(4)]	1.30[(3)]	7-10

Notes:
All values at 25°C where noted in reference and/or unless otherwise specified.
All references from Montgomery and Welkom 1990, except 6, 7, 13, 17, 26, 34 and 35 from Dragun 1988

g	grams	atm-m3/mo	atmospheres pressure times cubic meters of air per mole
mg/L	milligrams per liter	Kow	octanol water partition coefficient
mmHg	millimeters of mercury	Koc	Organic carbon partition coefficient

(1) Groundwater Chemicals Desk Reference, Montgomery, John H. and L.M. Welkom, 1991.
(2) Handbook of Environmental Degradation Rates, Howard, Phillip H. et al., 1991.
(3) Wauchop et al., 1992.
(4) Royal Society of Chemistry Information Systems, The Agrochemicals Handbook, Third Edition. 1994. Unwin Brothers Ltd., Survey, England.

NA Not available in references cited

6.0
HUMAN HEALTH RISK SCREEN

The purpose of the human health risk screen (HHRS) is to determine whether chemicals were detected in subsurface soil at levels that may pose an unacceptable risk to human health. Surface soil was not a medium of concern because the site is a golf course and has a vegetated clean soil cover (surface soil was not sampled).

The HHRS is screening level because

- It estimates site risk using maximum detected chemical concentrations regardless of sample depth.
- It uses conservative exposure assumptions for long-term residential exposure to soil, even though future residential use is unlikely.

The screening-level risk assessment using maximum concentrations and residential exposure assumptions will overestimate actual site risk under current and future land use conditions. Actual site-specific risk will be lower than estimated by this approach.

The steps in the HHRS are:

1. Exposure Assessment (Section 6.1): Describes current and future land use, potential receptors, and exposure pathways.
2. Identification of Chemicals of Interest (COIs) (Section 6.2): Selects COIs based on background comparison and other criteria.
3. Risk Screen Methodology (Section 6.3): Describes the derivation of EPA Region III risk-based concentrations (RBCs) and their application in risk assessment.
4. RBC Comparison (Chemical-Specific Risk) (Section 6.4): Estimates chemical-specific hazard quotients (HQs) and cancer risk by comparing maximum concentrations of COIs to EPA Region III RBCs.

5. Cumulative Cancer Risk and Hazard Index (Section 6.5): Estimates cumulative hazard/risk by summing results of Step 4.
6. Tentatively Identified Compounds (Section 6.6): Considers potential effects of TICs on overall site risk.
7. Compounds Without Toxicity Factors (Section 6.7): Considers potential effects on overall site risk of detected chemicals for which toxicity factors are not available.
8. Uncertainties (Section 6.8): Evaluates uncertainties in the analysis.
9. Summary and Conclusions (Section 6.9): Summarizes the results and conclusions of the HHRS.

6.1 EXPOSURE ASSESSMENT

Exposure assessment evaluates the potential for human beings (receptors) to be exposed to chemicals released from waste materials in Landfill No. 1. Steps in the exposure assessment are:

- Identification of current and potential future land use scenarios
- Identification of current and potential future receptors
- Evaluation of exposure pathways

Each of these is discussed below.

6.1.1 Current and Future Land Use

Current On-site Use: The site of former Landfill No. 1 is in the northwestern portion of Cannon AFB. The site has been developed as the Base golf course and, as such, has a maintained, grassy soil cover. The top of the landfill material lies generally between 6 inches and 3½ feet bgs. Current use is recreational (golfing).

Groundwater occurs in the unconfined Ogallala aquifer, which is the primary source of potable and irrigation water for eastern New Mexico. The depth to water beneath former

Landfill No. 1 is approximately 270 feet. This aquifer supplies irrigation and drinking water at the golf course and elsewhere at the Base; drinking water is treated before delivery.

Current Off-site Use: Land surrounding Cannon AFB is primarily irrigated farmland. The golf course is bounded on the north by the Atchison Topeka and Santa Fe Railroad and Interstate 60/84. A military housing area is located on the north side of the highway. East of the golf course is open space, and areas to the southeast, south, and west include the taxiways and other military facilities.

Future Use: Future use of the site is expected to be identical to current use, that is, a golf course. Cannon AFB is an operating military facility and is expected to remain active in the foreseeable future and the golf course is not slated for development for alternative military or non-military uses (W-C 1995b).

6.1.2 Potentially Exposed Populations

Current Receptors: Under current conditions, potential on-site receptors include golfers and golf course maintenance workers. However, they have no direct contact with landfill materials or chemicals in subsurface soil. Off-site receptors include military personnel and residents who could be exposed to landfill-related chemicals if the chemicals were transported to groundwater.

Future Receptors: Future land use at the site is expected to remain unchanged, that is, the Base is expected to continue its present operations, including maintenance of the golf course. However, for purposes of the HHRS, a future on-site resident is postulated as a receptor.

6.1.3 Exposure Pathways

A complete exposure pathway requires a chemical source, chemical release mechanism, environmental transport medium, human exposure point, and a human intake route. If one of these elements is lacking, the pathway is incomplete and no human exposure can occur. An exposure pathway flowchart for Landfill No. 1 is shown in Figure 6-1.

As shown in Figure 6-1, the primary source of potential chemical release from Landfill No. 1 is buried waste that may have mixed or leached into subsurface soil. Once released to subsurface soil, chemicals could migrate to groundwater (depending on hydrogeological and chemical characteristics). However, as indicated on Figure 6-1, pathways associated with groundwater are considered incomplete because no viable transport mechanism exists between subsurface soil and the regional aquifer. The depth to water table (over 200 feet), the low levels of precipitation, the absence of significant contaminant sources, and the absence of apparent contamination below 26 feet indicate that the groundwater pathway is incomplete.

In addition, as shown on Figure 6-1, pathways associated with surface soil (e.g., ingestion, inhalation of airborne contaminants, and dermal contact) are incomplete because surface soil is not contaminated (i.e., the landfill material occurs below the clean vegetated soil cover of the golf course).

Inhalation of particulate and volatile emissions from subsurface soil is also shown as an incomplete pathway for current receptors. This is because the vegetated soil cover prevents wind erosion of subsurface soil and because volatile contamination was insignificant: only one volatile compound was detected (toluene) and at very low concentrations (9 ug/kg or less) that are insufficient to provide a significant source of soil gas.

Direct contact with subsurface soil is also shown as an incomplete pathway for current receptors. Therefore, under current (and likely future) conditions, no exposure pathways are complete because of the absence of release and transport mechanisms and exposure points.

Other release and transport mechanisms from subsurface soil are relevant if it is assumed that the site is developed in the future and subsurface soil is exposed. In that case, hypothetical future on-site residents could be exposed to subsurface soil and chemical intake could occur via soil ingestion, inhalation of airborne contaminants, and dermal absorption.

Therefore, the following exposure pathways were evaluated in the HHRS for a hypothetical future on-site resident:

- Ingestion of soil
- Inhalation of contaminants released to air
- Dermal contact with soil

Although the HHRS is not site specific (e.g., residential development is not expected), the HHRS is a conservative screen that may be used to demonstrate the absence of significant health risk at the site. Risks to non-residential receptors will be lower than those estimated in the HHRS, because exposure potential and chemical intake for non-residential receptors will be lower or nonexistent.

6.2 IDENTIFICATION OF CHEMICALS OF INTEREST

Table 6-1 lists the 31 analytes that were detected in subsurface soil. COIs include metals detected above established background values and organic compounds not considered to be laboratory contaminants. In addition, chemicals were excluded as COIs if they did not have a Region III RBC (these chemicals do not have EPA-established toxicity values and cannot be evaluated quantitatively in risk assessment). The selection of COIs is discussed in more detail in the following sections. TICs and compounds without toxicity factors are evaluated qualitatively for potential hazard/risk in Sections 6.6 and 6.7.

6.2.1 Background Comparison for Metals

Metals detected in soil were evaluated to determine whether site concentrations exceeded background levels. The background ranges for metals were estimated as the arithmetic mean of 45 to 49 background sample results plus or minus two standard deviations (Woodward-Clyde 1994; see also Table 4-16). In a normally distributed population, the mean plus two standard deviations is equivalent to the 95 percent upper tolerance limit (UTL) of the data. The 95 percent UTL is the chemical concentration below which 95 percent of sample results are expected to occur. Statistically, 5 percent of the sample results in a normally distributed data set are expected to exceed the 95 percent UTL.

Analytes whose maximum detected site concentrations exceeded the estimated 95 percent UTL of background were retained for further evaluation. As shown in Table 4-17, these were

barium, beryllium, calcium, cobalt, magnesium, manganese, and vanadium. Of these, calcium and magnesium were eliminated from further evaluation because they are generally nontoxic, are essential nutrients, and do not have toxicity factors or RBCs.

The remaining metals were evaluated as to (1) the number of sample results that exceeded the estimated 95 percent UTL of the background data and (2) the comparability of site maximum concentrations to the estimated 95 percent UTL of background. In a normally distributed data set for background soil analyses, 5 percent of the results are expected to exceed the 95 percent UTL. If 5 percent or fewer site sample results exceeded the estimated 95 percent UTL of background and the site concentrations were similar to the established background values, then the site concentrations were not considered to differ appreciably from background and the metal was not retained as a COI in the risk assessment.

A table showing the number of sample results above the estimated 95 percent UTL of background and the site concentrations was included in the text of Section 4.3.2. For convenience, the table is repeated here in a slightly different format, and excluding calcium and magnesium:

Metal Results Above 95% UTL of Background [1]

Analyte	No. Results Above 95% UTL	Percent Above 95% UTL [1]	Range of Concentrations Above 95% UTL (mg/kg)	Estimated 95% UTL of Background[2] (mg/kg)
Barium	5 (1 boring)	12	559J - 1180J	548
Beryllium	1	2	0.67	0.6
Cobalt	2 (2 borings)	5	4.4 - 4.5	4.0
Manganese	1	2	188	151.8
Vanadium	1	2	25.7	25.0

[1] No. of results above 95% UTL. Total no. of samples (n=43).

[2] 95 percent tolerance limits were calculated as the mean plus or minus two standard deviations (Woodward-Clyde 1994). The tolerance limits were used to establish the estimated background range.

Review of the data indicates that (1) all metals except barium had 5 percent or fewer sample results above the estimated 95 percent UTL of background and (2) for all metals except

barium, the maximum site concentrations are very close to the estimated 95 percent UTL of background. Therefore, beryllium, cobalt, manganese, and vanadium were not retained as COIs for risk assessment.

6.2.2 Identification of Laboratory Contaminants

Several organic compounds listed in Table 6-1 were judged to be laboratory contaminants and were not retained as COIs. These were 2-butanone, acetone, bis(2-ethylhexyl)phthalate, di-n-octyl phthalate, and methylene chloride.

6.2.3 Availability of Toxicity Factors and RBCs

Phenanthrene, TRPH, calcium, and magnesium do not have toxicity factors and therefore RBCs are not available for these compounds. The potential contribution of these analytes to hazard/risk at the site is discussed qualitatively in Section 6.7.

6.2.4 Summary of COIs

Table 6-1 shows the results of the COI selection process. The 10 COIs identified for evaluation in the HHRS are listed in Table 6-2. These are barium, 4,4′-DDT, MCPP, PCP, pyrene, and toluene.

6.3 RISK SCREEN METHODOLOGY

Noncarcinogenic hazard and cancer risk were calculated by comparing the maximum concentrations of COIs to EPA Region III RBCs for long-term residential exposure (EPA 1995a). The RBCs are derived using EPA default exposure assumptions for residential exposure via soil ingestion. The meaning and use of RBCs in a screening-level risk assessment is discussed in Section 6.3.1. Exposure assumptions used in calculating the EPA Region III RBCs are discussed in Section 6.3.2. Potential effects of chemical intake by other exposure routes (dermal and inhalation) are addressed in detail in the uncertainties section (Section 6.8).

6.3.1 Use of RBCs in Risk Assessment

As stated in the EPA Region III document (EPA 1995a), "Simply put, RBCs are risk assessments run in reverse. For a single contaminant in a single medium, under default exposure assumptions, the RBC corresponds to the target risk or hazard quotient." For noncarcinogens, the ratio of the COI concentration to the RBC is equivalent to a chemical-specific Hazard Quotient (HQ). HQs of 1 or less indicate that adverse health effects are not expected. For carcinogens, the ratio of the COI concentration to the RBC multiplied by 10^{-6} is equivalent to the chemical-specific cancer risk. A cancer risk of 1×10^{-6} is equivalent to a 1 in 1,000,000 chance of getting cancer from the assumed intake of chemical.

Cumulative effects of multiple chemical exposure were calculated by summing the chemical-specific HQs to yield a total Hazard Index (HI) for noncancer effects and summing the chemical-specific cancer risk estimates to yield a total cancer risk for the site. The HI and total cancer risk estimates were then compared to EPA's guidelines (EPA 1989, 1990, 1991) for evaluating potentially significant risk. A HI of 1 or less indicates no concern for adverse noncancer health effects. The total cancer risk is compared to EPA's target risk range of 10^{-6} to 10^{-4} (1 in 1,000,000 to 1 in 10,000).

Region III cautions that the RBCs should not be viewed as a substitute for a site-specific risk assessment (if warranted for the site), but that when (a) a single medium is contaminated, (b) volatilization or leaching from soil is expected not to be significant, (c) the exposure scenarios used in the derivation of RBCs are appropriate for the site, (e) the fixed risk levels used in the derivation of the RBCs are appropriate for the site, and (f) risk to ecological receptors is expected not to be significant, then the RBCs can be considered protective as no-action levels. All of these conditions apply to assessment of risk for Landfill No. 1, except that the exposure scenario (residential) is overly conservative for the site use, which is recreational. However, this was considered acceptable for a conservative risk screen.

Because numerous conservative assumptions were used in calculating Region III RBCs, exceedance of RBCs by site concentrations does not necessarily indicate the presence of unacceptable risk at the site.

6.3.2 Exposure Assumptions Used in Calculating RBCs

EPA Region III RBCs for soil ingestion are calculated using EPA oral toxicity values, health protective target risk levels (HQ = 1 and cancer risk = 10^{-6}), and default exposure factors for residential soil ingestion.

For carcinogens, the exposure factors used to derive the RBCs are:

- Combined childhood (6 year) and adult (24 year) exposure duration
- Age-adjusted soil ingestion rate of 114 mg-year/kg-day (based on 200 mg/day for a 15 kg child and 100 mg/day for a 70-kg adult)
- Exposure frequency of 350 days/year
- Averaging time of 25,550 days (70 years)

For noncarcinogens, the exposure factors are:

- Childhood only exposure duration of 6 years
- Soil ingestion rate of 200 mg/day
- Body weight of 15 kg
- Exposure frequency of 350 days/year
- Averaging time of 2,190 days (6 years)

Region III RBCs were derived for soil ingestion only and do not include intake via inhalation or dermal absorption. Ingestion is usually the dominant exposure route, and, considering the conservative assumptions of exposure and toxicity used in the derivation of RBCs, RBCs based on ingestion only were considered adequate for screening purposes. However, to reduce uncertainty, the potential contribution to risk from chemical intake by inhalation and dermal absorption is evaluated in Section 6.8.

6.4 RBC COMPARISON (CHEMICAL-SPECIFIC RISK)

Maximum detected concentrations for COIs are compared to Region III RBCs in Table 6-3 (carcinogens) and Table 6-4 (noncarcinogens).

Maximum concentrations of carcinogens (DDT and PCP) did not exceed RBCs (Table 6-3). The chemical-specific cancer risks, assuming residential soil ingestion of the maximum concentration every day for 30 years, are 2×10^{-9} for DDT and 8×10^{-9} for PCP. These values are well below EPA's target risk range of 10^{-6} to 10^{-4}.

No noncarcinogenic COI exceeded its Region III RBC, indicating that the HQ for each chemical is less than 1 (Table 6-4) and that there is no cause for concern for noncancer effects from exposure to individual chemicals.

6.5 CUMULATIVE CANCER RISK AND HAZARD INDEX

Cumulative risk from exposure to multiple chemicals in soil was estimated by summing the chemical-specific cancer risk estimates and HQs. Results are shown in Tables 6-3 and 6-4.

The cumulative cancer risk assuming residential soil ingestion was 1×10^{-8} (Table 6-3). This cancer risk estimate is well below the cancer risk range of 10^{-6} to 10^{-4} generally accepted by EPA (EPA 1990).

The total noncancer HI was 0.4 (Table 6-4), indicating that noncarcinogenic health effects from exposure to multiple chemicals are not likely. If the total hazard index is less than or equal to 1, exposure to noncarcinogenic COIs at the site is judged unlikely to result in adverse noncarcinogenic health effects (EPA 1989).

6.6 TENTATIVELY IDENTIFIED COMPOUNDS

Eight TICs were reported in soil samples collected at Landfill No. 1. They are listed along with detection frequency, maximum concentration, and chemical type and use in Table 6-5. A Region III RBC was available for only two TICs, ethylenediamine and hexanedioic acid, bis(2-ethylhexyl)ester (di-[2-ethylhexyl]adipate). The RBC for ethylenediamine for noncarcinogenic effects, based on a HQ of 1, is 1600 mg/kg and the HQ corresponding to the sample concentration is 0.000006. This value is well below 1 indicating that ethylenediamine at the site is not considered to pose an unacceptable risk to human health.

Di(2-ethylhexyl) adipate was detected in one sample at a depth of 8 feet and at a concentration of 0.67 mg/kg. The RBC for di(2-ethylhexyl) adipate for carcinogenic effects, based on cancer risk of 1×10^{-6}, is 530 mg/kg and the cancer risk corresponding to the sample concentration is 1×10^{-9}. This value is well below the cancer risk range of 10^{-6} to 10^{-4} generally accepted by EPA (EPA 1990) indicating that di(2-ethylhexyl) adipate at the site is not considered to pose an unacceptable risk to human health.

The remaining six TICs did not have Region III RBCs because they do not have toxicity factors. All TICs were detected at low concentrations (≤0.5 mg/kg) and all but two were detected infrequently (< 5 percent), indicating a low potential for human exposure. The two TICs with greater than 5 percent detection frequency (hexadecanoic acid, butyl ester; octadecanoic acid, butyl ester) are fatty acid esters with low potential for toxicity. Based on low potential for exposure and low toxicity, TICs at the site would not be expected to pose a risk to human health.

6.7 COMPOUNDS WITHOUT TOXICITY FACTORS

Two metals (calcium and magnesium) with maximum detected concentrations exceeding the background range did not have a Region III RBC (Table 6-1). Calcium and magnesium are relatively nontoxic and are essential dietary elements that are unlikely to pose a threat to human health at the levels detected in soil at the site.

Only one detected organic compound, phenanthrene, did not have an RBC. Phenanthrene does not have an EPA toxicity factor, so an RBC cannot be calculated for it. Phenanthrene was detected at a low concentrations (0.042 mg/kg) in 1 of 43 samples at a depth of 16 feet bgs (Table 6-1). Phenanthrene is a PAH and is a trace constituent in petroleum-based fuels. EPA states that information is inadequate to assess the toxicity of phenanthrene, and its cancer weight of evidence classification is D (not classifiable based on inadequate data from animal experiments and no data in humans) (EPA 1996). It is unlikely that phenanthrene would pose a risk to human health at the low concentrations detected at the site. For example, the maximum concentration of phenanthrene (0.042 mg/kg) is lower than the residential soil RBC for one of the most potent carcinogenic PAHs, benzo(a)pyrene (0.088 mg/kg, based on a 10^{-6} cancer risk).

TRPH was detected in 3 of 43 samples, with a maximum concentration of 62.9 mg/kg. TRPH does not have a Region III RBC because there are no accepted toxicity factors for petroleum mixtures. However, the State of New Mexico has action levels of 50 mg/kg for TRPH derived from gasoline and 100 mg/kg for TRPH derived from diesel or waste oil. The source of the TRPH at Landfill No. 1 is not known. However, because of the age of the landfill, it is likely that TRPH at the site is weathered and low-molecular-weight toxic constituents such as benzene have evaporated. The levels of TRPH detected in soil are not likely to pose a health threat because:

- Transport of contaminants to groundwater, a chief concern for fuel spills, has been shown to be incomplete.

- TRPH was detected at low frequency (3 of 43 samples) and the maximum concentration only slightly exceeds the State action level for fresh gasoline in soil and is below the State action level for diesel and oil in soil.

- Toxic fuel constituents such as benzene, toluene, ethylbenzene, xylene, and PAHs were analyzed for in soil samples. Only toluene and phenanthrene were detected. Toluene was included in the risk screen; no unacceptable health risk was found. Phenanthrene, which does not have a toxicity factor was discussed earlier in this section and is not likely to pose a risk to human health.

6.8 UNCERTAINTIES

The screening-level risk assessment includes several conservative assumptions that will overestimate site risk under current and future land use conditions. Other uncertainties exist that may underestimate site risk. These uncertainties are discussed below, along with a discussion of their likely impact on overall risk estimates for Landfill No. 1.

6.8.1 Factors that Overestimate Site Risk

The chief factors that result in an overestimate of site risk are:

- Assuming residential exposure to subsurface soil when current and probable future use of the site is recreational (golf course);

- Using maximum concentrations to estimate risk instead of a reasonable maximum concentration such as the 95 percent UCL on the mean.

- Assuming complete exposure pathways to subsurface soil when there are no viable transport mechanisms from contaminated subsurface soil to exposure points for receptors at the surface given current and likely future site use.

6.8.2 Factors that May Underestimate Risk

The chief factors that may result in an underestimate of site risk (assuming a residential exposure scenario is appropriate for site screening) are:

- Dermal and inhalation exposure to COIs in soil and to VOCs in outdoor air were not included in the quantitative estimate of risk.

- TICs and chemicals without toxicity factors were not included in the quantitative estimate of risk.

These factors are not likely to have a significant effect on the estimate of site risk, as the following analysis shows.

To evaluate whether excluding dermal and inhalation exposure routes has a significant effect on the estimates of risk for Landfill No. 1, maximum concentrations of COIs were also compared to (1) soil screening levels (SSLs) protective of the inhalation pathway published by EPA Region III (EPA 1995a) and (2) EPA Region IX preliminary remediation goals (PRGs) for residential exposure to soil via ingestion, inhalation, and dermal absorption (EPA 1995b).

The SSLs for transfer to air are chemical concentrations in soil that are estimated to be protective of residential inhalation of VOCs released from soil and inhalation of dust from wind erosion. SSLs are derived using conservative assumptions regarding size of source area, emission rates, dispersion, and source depletion (none). SSLs in the Region III RBC Tables were obtained directly from U.S. EPA's proposed OSWER Soil Screening Guidance (EPA 1994b) or were calculated by EPA Region III using the proposed SSL methodology. As shown in Table 6-6, maximum concentrations of COIs did not exceed SSLs, indicating that the inhalation route of exposure for soil at Cannon Landfill No. 1 does not pose excess hazard/risk to human health even assuming residential exposure to deep soil.

EPA Region IX PRGs are similar to Region III RBCs, but include the ingestion, dermal, and inhalation exposure routes. Metals are assumed to be dermally absorbed at a rate of 1 percent and organics at a rate of 10 percent. No COI exceeded its Region IX PRG. These results are similar to those obtained using the Region III RBCs for soil ingestion, indicating that excluding the dermal and inhalation routes of exposure for soil has an insignificant effect on the estimates of hazard/risk for this site.

As discussed in Sections 6.6 and 6.7, the contribution of TICs and compounds without toxicity factors to overall site risk is considered insignificant.

6.9 SUMMARY AND CONCLUSION

Based on the results of the HHRS, it is concluded that chemicals detected in subsurface soil at Landfill No. 1 do not pose an unacceptable risk to human health.

A HHRS was performed for Landfill No. 1 to determine whether chemicals detected in soils may pose an unacceptable risk to human health. Maximum site concentrations were compared to Region III RBCs for residential soil ingestion to estimate potential noncancer hazard and cancer risk. Conservative assumptions were used throughout the HHRS; therefore, the results overestimate actual hazard/risk at the site.

No COI had a maximum concentration exceeding its Region III RBC. The cumulative cancer risk from exposure to maximum concentrations of 4,4'-DDT and PCP was 1×10^{-8}, well below EPA's "point of departure" of 1×10^{-6} for evaluating cancer risk at contaminated sites. The cumulative HI for noncarcinogenic effects was less than 1 (HI=0.4), indicating that maximum concentrations of noncarcinogenic chemicals in soil at the site do not pose an unacceptable risk to human health.

Compounds without toxicity values and TICs were evaluated qualitatively and were not considered to pose a threat to human health based on low toxicity, low potential for human exposure (due to infrequent detection), and low detected concentrations.

Based on the results of the HHRS, it is concluded that chemicals in subsurface soil at Landfill No. 1 do not pose an unacceptable risk to human health.

TABLE 6-1
SELECTION OF CHEMICALS OF INTEREST
Landfill No. 1
Cannon AFB, New Mexico

Detected Constituents (1)	Detection Frequency	Site Maximum Concentration (mg/kg)	95% UTL of Background (mg/kg) (2)	Maximum Concentration > 95% UTL?	Frequency of Occurrence > 95% UTL (3)	Laboratory Contaminant?	Region III RBC Available?(4)	Chemical of Interest?(5)
Aluminum	43/43	9520	10796	No	0	-	Yes	No
Arsenic	43/43	3	10.50	No	0	-	Yes	No
Barium	43/43	1180	548	Yes	12	-	Yes	Yes
Beryllium	10/43	0.67	0.60	Yes	2	-	Yes	No
Calcium	43/43	309000	166119	Yes		-	No	No
Chromium	32/43	11.9	12.00	No	0	-	Yes	No
Cobalt	40/43	4.5	4.00	Yes	5	-	Yes	No
Copper	30/43	5.2	10.10	No	0	-	No	No
Iron	43/43	8420	8654	No	0	-	Yes	No
Lead	43/43	7.9	18.40	No	0	-	Yes	No
Magnesium	43/43	19100	9912	Yes	14	-	No	No
Manganese	43/43	188	151.8	Yes	2	-	Yes	No
Mercury	1/43	0.16	0.20	No	0	-	Yes	No
Nickel	37/43	7.2	9.70	No	0	-	Yes	No
Potassium	43/43	1710	2531	No	0	-	No	No
Sodium	11/43	267	834.00	No	0	-	No	No
Thallium	7/43	0.22	6.20	No	0	-	Yes	No
Vanadium	43/43	25.7	25.00	Yes	2	-	Yes	No
Zinc	43/43	18.8	20.70	No	0	-	Yes	No
2-Butanone (MEK)	2/43	0.0022	-	-		Yes	Yes	No
4,4'-DDT	1/43	0.0032	-	-		No	Yes	Yes
Acetone	8/43	0.011	-	-		Yes	Yes	No
bis(2-Ethylhexyl)phthalate	3/43	0.32	-	-		Yes	Yes	No
Di-n-octyl phthalate	1/43	0.072	-	-		Yes	Yes	No
MCPP	1/43	12	-	-		No	Yes	Yes
Methylene chloride	5/43	0.013	-	-		Yes	Yes	No
Pentachlorophenol	1/43	0.042	-	-		No	Yes	Yes
Phenanthrene	1/43	0.042	-	-		No	No	No
Pyrene	2/43	0.073	-	-		No	Yes	Yes
Toluene	3/43	0.0092	-	-		No	Yes	Yes
Total Petroleum Hydrocarbons	3/43	62.9	-	-		No	No	No

(1) Does not include tentatively identified compounds (TICs), which were evaluated separately in the assessment (see Table 6-6).
(2) 95% Upper Tolerance Limit (95%UTL) of background concentrations as estimated by the mean plus two standard deviations. Background concentrations of metals are discussed in Section 4.3 and shown in Table 4-16.
(3) In a normal population, it is expected that 5% of sample results will exceed the 95% UTL. Metals with 5% or fewer results above the 95% UTL were not retained as COIs (see text for further discussion).
(4) Region III risk-based concentration (RBC) for soil ingestion by residents, based on a 1E-06 cancer risk level for carcinogens or hazard quotient of 1 for noncarcinogens (EPA 1995a). Region III RBCs are not available for chemicals that do not have toxicity factors.

TABLE 6-1
SELECTION OF CHEMICALS OF INTEREST
Landfill No. 1
Cannon AFB, New Mexico

Detected Constituents (1)	Detection Frequency	Site Maximum Concentration (mg/kg)	95% UTL of Background (mg/kg) (2)	Maximum Concentration > 95% UTL?	Frequency of Occurrence > 95% UTL (3)	Laboratory Contaminant?	Region III RBC Available?(4)	Chemical of Interest?(5)

(5) Chemicals of interest were detected organic compounds (excluding those judged to be laboratory contaminants) and metals above background range that have Region III RBCs.

TABLE 6-2
CHEMICALS OF INTEREST
Landfill No. 1
Cannon AFB, New Mexico

Metals	Organic Compounds
Barium	4,4'-DDT (pesticide)
	MCPP (herbicide)
	Pentachlorophenol (SVOC)
	Pyrene (SVOC)
	Toluene (VOC)

VOC = volatile organic compound
SVOC = semivolatile organic compound

TABLE 6-3
RISK-BASED SCREENING
OF CARCINOGENIC CHEMICALS OF INTEREST
Landfill No. 1
Cannon AFB, New Mexico

Chemical of Interest	Maximum Concentration (mg/kg)	RBC (a) (mg/kg)	Ratio of Maximum Concentration to RBC	Cancer Risk (b)
4,4'-DDT	0.0032	1.9	2E-03	2E-09
Pentachlorophenol	0.042	5.3	8E-03	8E-09
Cumulative Cancer Risk				1E-08

[ ] = Maximum detected concentration exceeds Region III RBC

(a) Region III risk-based concentration (RBC) for soil ingestion by residents, based on 1E-06 (1 in 1 million) cancer risk level (EPA 1995a).

(b) Cancer risk = (Ratio of maximum concentration to RBC)* 1E-06.

TABLE 6-4
RISK-BASED SCREENING
OF NONCARCINOGENIC CHEMICALS OF INTEREST
Landfill No. 1
Cannon AFB, New Mexico

Chemical of Interest	Maximum Concentration (mg/kg)	RBC (a) (mg/kg)	Ratio of Maximum Concentration to RBC (Hazard Quotient)
Barium	1180	5500	2E-01
DDT	0.0032	39	8E-05
MCPP	12	78	2E-01
Pentachlorophenol	0.042	2300	2E-05
Pyrene	0.073	2300	3E-05
Toluene	0.0092	16000	6E-07
Total Hazard Index			4E-01

(a) Region III risk-based concentration (RBC) for soil ingestion by residents, based on hazard quotient of 1 (EPA 1995a).

TABLE 6-5
TENTATIVELY IDENTIFIED COMPOUNDS (TICs)
Landfill No. 1
Cannon AFB, New Mexico

Tentatively Identified Compound (TIC)	Detection Frequency	Maximum Concentration (mg/kg)	Chemical Type and Uses
1,3-Propanediol, 2,2-dimethyl-	1/43	0.2000	Neopentyl glycol: polyester foams, insect repellent, plasticizers, urethanes
Ethylenediamine	1/43	0.0065	Fungicide, resins, emulsifying agent
Hexadecanoic acid, butyl ester	6/43	0.5000	Fatty acid ester
Hexanedioic acid, bis(2-ethylhexyl)ester	1/43	0.6700	Fatty acid ester
Nonanal	2/43	0.0073	Aldehyde: perfume, flavoring agent
Octadecanoic acid, butyl ester	7/43	0.3300	Fatty acid ester
Saturate Hydrocarbon: C10-C20	1/43	0.2000	Possibly petroleum
Unknown	1/43	0.0072	?

(a) No. of detections/ no. of samples.

TABLE 6-6
EVALUATION OF INHALATION AND DERMAL EXPOSURE ROUTES: COMPARISON OF MAXIMUM CONCENTRATIONS TO RBCs, PRGs, AND SSLs
Landfill No. 1
Cannon AFB, New Mexico

Chemical of Concern	Maximum (mg/kg)	Region III RBC (mg/kg) (a)	Industrial RBC (mg/kg)	Soil-to-air SSL (mg/kg) (b)	Region IX PRG (mg/kg) (c)
Barium	1180	5500	140000	350000	5300
4,4'-DDT	0.0032	1.9	17	80	1.3
Ethylenediamine	0.0065	1600	41000	-	1300
MCPP	12	78	2000	-	65
Pentachlorophenol	0.042	5.3	48	7.9	2.5
Phenanthrene	0.042	-	-	-	-
Pyrene	0.073	2300	61000	180	800
Toluene	0.0092	16000	410000	520	1900
Total Petroleum Hydrocarbons	62.9	-	-	-	-

(a) Region III RBC for residential soil ingestion (EPA 1995a).

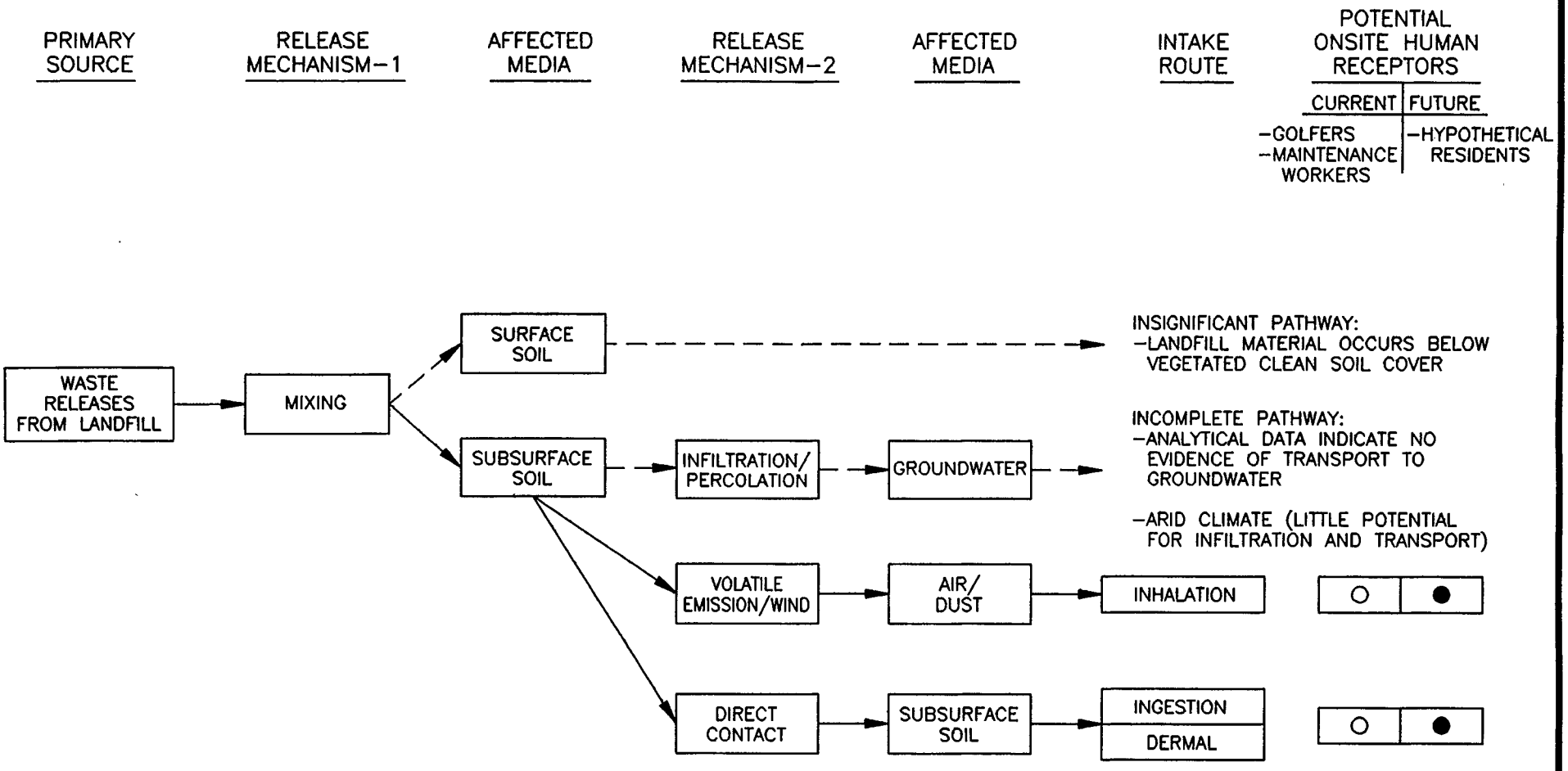
(b) Soil screening levels for transfer to air published in EPA Region III RBC tables (EPA 1995a).

(c) EPA Region IX Preliminary Remediation Goal for residential soil (ingestion, inhalation, and dermal) (EPA 1995b).

RBC = Risk-Based Concentration (EPA Region III)

SSL = Soil Screening Level

PRG = Preliminary Remediation Goal (EPA Region IX)



NOTES:

——— ● POTENTIALLY COMPLETE PATHWAY

- - - - ○ INCOMPLETE OR INSIGNIFICANT PATHWAY

Job No. :	9C114LL1
Prepared by :	P.A.W.
Date :	5/20/96

EXPOSURE PATHWAY FLOW CHART
LANDFILL NO. 1
(SWMU NO. 74/IRP NO. LF-1)
CANNON AFB, NEW MEXICO

114LL001

FIG. 6-1

7.0
RELEVANT AND APPROPRIATE STANDARDS

Both RCRA and CERCLA requirements for evaluating the nature and extent of hazardous wastes potentially occurring in subsurface soil at Landfill No. 1 was addressed in investigations at Cannon AFB. Through discussions with the New Mexico Environment Department, Relevant and Appropriate Standards (RASs) would be the basis for meeting the regulatory permit requirements under RCRA.

Cannon AFB must evaluate the SWMUs identified by the USEPA during the RFA as a condition of their RCRA Part B permit. The Phase I RFI was designed to satisfy the RFI guidance for characterizing the SWMUs and developing and implementing corrective action measures, if necessary.

As part of future CERCLA FS (CMS under RCRA), alternative remedial or corrective action measures may be evaluated to assess the degree to which they attain or exceed relevant federal and state public health and environmental standards. A preliminary identification and discussion of RASs applicable to the RFI at Cannon AFB is presented below. Review of these RASs will highlight any site-specific regulatory conditions that might either limit the choice of alternatives or which place limits on contaminant concentrations present at the site.

Cannon AFB also conducted the Phase I investigation under the Air Force's IRP. The IRP requires that the investigation follow the regulatory requirements of CERCLA which is the basis for assessment and response actions on USAF installations. Additionally, the Superfund Authorization and Responsibility Act (SARA) augmented the scope and requirements of CERCLA and gave specific directives to federal facilities regarding investigation of waste disposal sites. Under SARA, determination of applicable or relevant and appropriate requirements (ARARs), which in this section is synonymous with RASs, is required.

The RASs presented in this section are chemical-specific and location-specific. Identification of action-specific RASs can only be addressed once detailed remedial alternatives are developed.

7.1 DEFINITION OF RASs

Remedial actions must attain a general standard of cleanup that assures protection of human health and the environment, is cost-effective, and uses permanent solutions and alternative treatment technologies or resource recovery technologies to the maximum extent practicable. In addition, SARA requires that any hazardous substance or pollutant remaining on site meet levels or specific standards which have been established under federal environmental law, or state environmental statutes which are more stringent than federal.

A requirement may be either applicable or relevant and appropriate to remedial activities at a site, but not necessarily both. Applicable requirements are those cleanup standards, standards of control, and other substantive environmental protection requirements, criteria, or limitations promulgated under federal or state law that specifically address a hazardous substance, pollutant, contaminant, remedial action, location, or other circumstances at a site.

If a regulation is not applicable, it may still be relevant and appropriate. The basic considerations are whether the requirement (1) regulates or addresses problems or situations sufficiently similar to those encountered at the subject site (i.e., relevant), and (2) is appropriate to the circumstances of the release or threatened release, such that its use is well suited to the particular site. Determining whether a requirement is relevant and appropriate is site-specific and must be based on best professional judgment. The judgment is based on a number of factors, including the characteristics of the remedial action, the hazardous substances present on site, and the physical circumstances of the site and of the release, as compared to the statutory or regulatory requirement. Compliance with all requirements found to be applicable or relevant and appropriate is mandatory under SARA unless a waiver is obtained from the EPA.

"To be considered" guidance (TBCs) are nonpromulgated advisories, proposed rules, criteria, or guidance documents issued by federal or state governments that do not have the status of

potential RASs. However, these advisories and guidance documents should be considered when determining protective cleanup levels where no RAS exists, or where RASs are not sufficiently protective of human health and the environment. In these circumstances, TBC values are used to establish cleanup targets.

7.2 CHEMICAL-SPECIFIC RASs

A summary of federal and state regulations, standards, and guidance is presented in Tables 7-1 and 7-2. The chemical-specific RASs are included in Table 7-1. The location-specific RASs are included in Table 7-2 and discussed in Section 7.4. This information is based on standards, guidelines, and criteria found in relevant literature, discussions with appropriate state regulatory agency personnel, and past project experience.

Chemical-specific requirements are based on health or risk-based concentration limits of discharge limitations in environmental media (i.e., water, soil) for specific hazardous chemicals. These requirements may be used to set cleanup levels for the chemicals of concern in the designated media, or to set a safe level of discharge where a discharge occurs as part of the remedial activity.

Sources for potential target cleanup levels included selected standards, criteria, and guidelines that are typically considered as RASs for remedial actions conducted under CERCLA, as well as some guidance and proposed action levels developed under RCRA that should be regarded as TBCs. In addition, New Mexico has developed cleanup levels for underground storage tank-related remediation, as well as standards for groundwater.

For groundwater, maximum contamination levels (MCLs) or non-zero maximum contaminant goals (MCGLs) established under the Safe Drinking Water Act (SDWA) are often accepted by regulatory agencies as cleanup levels for groundwater remedial activities, especially if the groundwater is or could be a drinking water source. Also included are hazardous constituent concentration limits under RCRA Subpart F, which are applicable to releases from RCRA-regulated units. Secondary maximum contamination levels (SMCLs) established under SDWA are also presented in Table 7-3 although they are not federally enforceable and should be regarded as TBCs. If no values are shown for possible

contaminants in Table 7-3, there are currently no standards for that contaminant. Under this Phase I investigation, groundwater was not sampled; therefore, no comparative study was conducted; however, the MCLs and MCGLs were updated as appropriate according to standards passed in June, 1995.

State and federal standards and criteria for surface water quality are not considered applicable or relevant and appropriate as long as there is no possibility of remedial activities impacting surface water bodies. However, should any remediation of the landfill involve discharge of contaminated groundwater to a surface water body, both the state and federal surface water quality standards and criteria would need to be complied with.

7.3 TBCs

In general, very few cleanup standards exist for soil contamination. Often cleanup levels are based on guidance developed from Underground Storage Tank (UST) investigations or, if non-petroleum wastes are involved, levels are based on site-specific risk assessment, hazardous waste definition, or background levels. However, some human health-based criteria for soil and water contaminant levels have been published, including the RFI Guidance and proposed RCRA-related action levels. Although, these criteria were developed specifically for application in RCRA-related activities, it appears they are being used as proposed RASs, where no other standards exist. These proposed RCRA-related action levels and guidelines are presented, therefore, as TBCs rather than as chemical-specific RASs and represent "potential" cleanup levels only. Actual cleanup levels that may be applied to a particular area will depend on site-specific conditions and are subject to final approval by the appropriate regulatory agency or agencies. The RCRA levels are presented and used for the purposes of this RASs evaluation because there are no other sources of standards or guidance for contaminated soil cleanup levels.

7.4 LOCATION-SPECIFIC RASs

Although the universe of location-specific RASs is identified in Table 7-2, only those regulations that are deemed RASs for the Cannon site are discussed below. Potential location-specific RASs for Cannon AFB are presented in Table 7-2 with an explanation as to

whether the regulation is relevant and appropriate and why. Location-specific RASs are restrictions placed on the types of activities that may occur in particular locations. The location of a site may be an important characteristic in determining its impact on human health and the environment; thus, individual states may establish location-specific RASs. These RASs may restrict or preclude certain remedial actions or may apply only to certain portions of a site. Examples of location-specific RASs include federal and state requirements for preservation of historic landmarks, endangered species and wetlands protection, and the restrictions on management of hazardous waste in floodplain areas.

Due to the possible presence of both federal and state listed threatened/endangered species at the site, the federal and state Endangered Species Act are both considered potentially relevant and appropriate. If threatened and endangered species are found at the site, these acts would be relevant and appropriate.

Section 106 of the National Historic Preservation Act is also considered "potentially" relevant and appropriate due to a federal agency having authority over any actions that could impact historically significant objects, buildings, or structures at the site. Although no buildings, objects, or structures at Cannon AFB have been placed on the register, the evaluation process is still ongoing at the base. Due to both architectural and archaeological surveys being conducted on-site, the State Cultural Properties Act is also considered "potentially" relevant and appropriate, and negotiations with the State Historic Preservation Office should be renewed prior to any remedial activity.

While there is uncertainty concerning the future definition of wetlands, it is the opinion of the U.S. Fish and Wildlife Service that the playas at the base fall under the current definition of wetland areas under federal wetland delineation guidance (Hagenbuck 1991). The federal regulations governing wetlands, however, are not considered RASs as long as the project does not impact the wetlands areas. If the playa lakes on base continue to be considered wetlands and if the remedial activities should impact these wetland areas, then the regulations would be considered relevant and appropriate and coordination with the U.S. Fish and Wildlife Service would need to be initiated prior to any remedial activity. The State of New Mexico does not have its own wetlands regulations at this time.

7.5 COMPARISON OF LABORATORY RESULTS TO TBCs

The laboratory analytical values for chemicals detected at Landfill No. 1 were compared to the applicable chemical-specific TBCs for soil presented in Tables 7-4 and 7-5 to determine which, if any, results exceeded the listed guidelines.

All detected target compounds were evaluated for this report and compared with the TBCs for soil. Background levels for three metals exceeded the action levels for soil. These include arsenic, barium, and beryllium. In addition, no RCRA action levels or RFI criteria levels are available for the nonorganics comparison of values for calcium, iron, lead, magnesium, potassium, and sodium in soil. However, each of these is discussed under Section 4.3 and therefore are not analyzed under this section. RCRA action levels and RFI criteria are also not available for phenanthrene.

Soil sample results were compared against the TBCs for the RFI criteria and proposed RCRA action levels. These levels are not cleanup standards, but are considered screening levels used to assess whether a health risk evaluation is warranted. Only the metals discussed below exceeded RCRA action levels and/or RFI Guidance.

Arsenic

Levels of arsenic in soil samples exceeded the proposed RCRA action level, which is 0.4 mg/kg. Laboratory results indicated that the maximum concentration detected for arsenic in subsurface soil at Landfill No. 1 was 3 mg/kg. However, the estimated background range of arsenic at Cannon AFB is 10.5 mg/kg; therefore, arsenic should not be considered as a contaminant at Landfill No. 1.

Beryllium

A majority of the samples collected and analyzed during the Phase I RFI exceeded the RCRA action level of 0.2 mg/kg, and the RFI Guidance TBC in soil of 0.14 mg/kg. The estimated background range for beryllium at Cannon AFB is 0.6 mg/kg. Only one soil sample collected from boring 74-23 at a depth of 4 to 6 feet bgs exhibited a concentration slightly

above background, and this was at a concentration of 0.67 mg/kg. It seems, therefore, that for the most part, exceedances of beryllium detected at Landfill No. 1 are likely caused from naturally occurring levels of beryllium.

TABLE 7-1

SUMMARY OF
POTENTIAL CHEMICAL-SPECIFIC RASs/TBCs
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

Standard, Requirement, or Criteria	Description	Comment
FEDERAL		
Safe Drinking Water Act (40 USC Sect. 300)		
National Primary Drinking Water Standards [40 CFR Parts 141, 142, (1995)	Establishes maximum contaminant levels (MCLs) for specific contaminants that are health-based standards for public drinking water systems.	MCLs are applicable for drinking water at the tap. MCLs are relevant and appropriate for organic and inorganic contamination of groundwater that is or may be used for drinking.
National Secondary Drinking Water Standards (40 CFR Part 143) (1994)	Establishes secondary maximum contaminant levels (SMCLs) that are nonenforceable guidelines for public drinking water systems to protect the aesthetic quality of the water.	SMCLs may be "to be considered" if groundwater is used as a drinking water source.
Maximum Contaminants Level Goals (MCLGs) [PL No. 99-339, 100 Stat. 642 (1986), (1995); 40 CFR 141,142]	Establishes drinking water quality goals at a level at which no adverse health effects may occur with an adequate margin of safety.	MCLGs set above zero levels are relevant and appropriate for existing or potential sources of drinking water. MCLGs may be relevant and appropriate if the risk posed by multiple contaminants or pathways is in excess of 10^{-4}.
Resource, Conservation, and Recovery Act (RCRA)		
Releases from Solid Waste Management Units (40 CFR Part 264)	Subpart F (264.94) gives concentration limits in groundwater for hazardous constituents from a regulated unit.	Applicable if organic and inorganic contamination of groundwater is found at a RCRA regulated unit.
RCRA Facility Investigation Guidance (EPA 1989a)	Guidance levels for cleanup of contaminated soils based on EPA-derived chronic exposure assumptions; intended as screening levels at RCRA facilities to determine if a more detailed health-risk evaluation is warranted.	To be considered if contaminated soils are found.
Proposed RCRA Action Levels (55 FR 30798, 27 July 1990)	Risk-based action levels for contaminants in soil which, if exceeded, would trigger the need for a Corrective Measures Study.	To be considered if contaminated soils are found.

TABLE 7-1

SUMMARY OF
POTENTIAL CHEMICAL-SPECIFIC RASs/ TBCs
Landfill No. 1 (SWMU No. 74)
Cannon AFB, New Mexico

Standard, Requirement, or Criteria	Description	Comment
STATE		
New Mexico Water Quality Act, 1978		
New Mexico Drinking Water Regulations (4/16/91)(New Mexico Water Supply Regulations, Sections 202 to 203)	Establishes MCLs and standards for sources of drinking water.	State MCLs are applicable or relevant and appropriate to contaminated water if the state MCL is more stringent than federal requirements.
New Mexico Water Quality Regulations, amended through August 17, 1991 (WQCCR Part 3, Sections 100 through 103)	Establishes human health, domestic water supply, and irrigation use standards for ground water protection.	Applicable if remedial activities include discharges onto or below the surface of the ground.
New Mexico Water Quality Regulations, amended through August, 1991 (WQCCR Part 1, Section 101.UU)	Establishes definition of toxic pollutant based on effects to human health and the environment. Requires a determination of health and environmental risk due to the presence of the contaminant.	Applicable if groundwater related to the source area contains any of the contaminants listed in the definition of toxic pollutants.
New Mexico Hazardous Waste Act 1978		
New Mexico Underground Storage Tank Regulations, amended through July 18, 1991, Section 1209	Sets cleanup levels for soils contaminated with benzene, aromatic hydrocarbons, or petroleum products.	May be "to be considered" if soils are contaminated with benzene, aromatic hydrocarbons, or petroleum products.

TABLE 7-1

SUMMARY OF
POTENTIAL CHEMICAL-SPECIFIC RASs/ TBCs
Landfill No. 1 (SWMU No. 74)
Cannon AFB, New Mexico

Standard, Requirement, or Criteria	Description	Comment
New Mexico Solid Waste Regulations		
New Mexico Special Waste Requirements Regulations, adopted effective January 30, 1992, Part VII	Sets disposal levels for soils contaminated with BTEX compounds and total petroleum hydrocarbons. Also sets disposal standards for asbestos waste.	May be "to be considered" if soils are contaminated with petroleum hydrocarbons. Asbestos requirements may be applicable if asbestos waste continues to be disposed in Landfill 5 or is removed and placed elsewhere.

TABLE 7-2

SUMMARY OF POTENTIAL LOCATION-SPECIFIC RASs
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

Requirement	Potentially Applicable?	Potentially Relevant and Appropriate?	Comments
Resource Conservation and Recovery Act (RCRA)			
1. New facilities where treatment, storage or disposal of hazardous waste will be conducted is prohibited within 61 meters (200 feet) of a fault displaced in Holocene time [40 CFR 264.18(a)]*	No	No	Treatment, storage, and disposal of waste will not be conducted within 61 meters of a fault displaced in Holocene time.
2. New facilities where treatment, storage or disposal of hazardous waste will be conducted is prohibited within the 100-year floodplain. [40 CFR 264.18(b)]*	No	No	Treatment, storage, and disposal of waste will not be conducted within the 100-year floodplain of adjacent rivers.
3. Prohibits noncontainerized or bulk liquid hazardous waste placement in salt domes, salt bed formations, and underground mines or caves. [40 CFR 264.18(c)]*	No	No	No action that would place waste in a salt dome or salt bed formation, underground mine, or cave is anticipated at this site.
E.O. 11988 Protection of Floodplains			
4. Limits activities in floodplain. Floodplain is defined as "the lowland and relatively flat areas adjoining inland and coastal waters including flood prone areas of off-shore islands, including at a minimum, that area subject to a one percent or greater chance of flooding in any given year." [40 CFR 6, Appendix A and 40 CRF 6.302]	No	No	Remedial activities will not be conducted within any floodplains.

*Adopted by the State of New Mexico and incorporated within Part V of the New Mexico Hazardous Waste Management Regulations.

TABLE 7-2
SUMMARY OF POTENTIAL LOCATION-SPECIFIC RASs
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

Requirement	Potentially Applicable?	Potentially Relevant and Appropriate?	Comments
E.O. 11990 Protection of Wetlands			
5. Minimizes impacts on areas designated as wetlands. [40 CRF 6, Appendix A]	No	No	Although playas are considered wetlands by the U.S. Fish and Wildlife Service, regulations are applicable only if the remedial activities impact the wetland areas. No impacts to the wetland areas are anticipated at this time.
Clean Water Act Section 404			
6. Action to prohibit discharge of dredged or fill material into waters of U.S. without permit. [33 USC 1251; 40 CFR 230; 33 CFR 320-330]	No	No	Dredge and fill permit requirements will not apply because no waters of the U.S. will be impacted by remedial activities on the site.
7. Requires Federal agencies to avoid, to the extent possible, adverse impacts associated with destruction or loss of wetlands	No	No	As described above, although wetlands are considered by the U.S. Fish and Wildlife Service to occur on the base in the form of playas, regulations are applicable only if the remedial activities impact the wetland area.
Endangered Species Act			
8. Protects endangered species and threatened species and preserves their habitat. [16 USC 1531 et seq.; 50 CFR 200, 50 CFR 402]	Yes	---	Although Walk, Haydel & Associates report in their Remedial Investigation that there are no critical habitats in the immediate vicinity of the site (according to the Wildlife Management Plan for the base), two federally listed endangered species, the bald eagle and peregrine falcon, are known to inhabit the area within a 50-mile radius of the site, but have never been observed on Cannon AFB (Lee Wan & Associates, Inc. 1990).

TABLE 7-2
SUMMARY OF POTENTIAL LOCATION-SPECIFIC RASs
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

Requirement	Potentially Applicable?	Potentially Relevant and Appropriate?	Comments
Bald Eagle Protection Act			
9. Protects all eagle species and restricts activities that may threaten or adversely affect their habitat (16 USC Section 688 et seq.)	Yes	---	If eagle species are found to occur on the base, special protection provisions will need to be coordinated with US Fish and Wildlife Service. Bald eagles are known to inhabit the area within a 50-mile radius of the site (Lee Wan & Associates, Inc., 1990).
Migratory Bird Treaty Act			
10. Protects migratory, resident, or range habitat of migratory birds including raptors and waterfowl. (16 USC Section 703 et seq.).	Yes	--	Remedial actions cannot threaten or adversely affect the habitats of migratory waterfowl or raptors.
Wilderness Act			
11. Limits activities within an area designed as a wilderness area. [16 USC 1311 et seq.; 50CFR 53.1 et seq.]	No	No	The site is not within a federally owned area designated as a wilderness area.
12. Limits the type of activities permitted in an area designated as a National Wildlife Refuge system [16 USC 668 et seq.; 50 CFR Part 27]	No	No	The site is not in an area designated as part of the National Wildlife Refuge System. (The closest NWRS are over 25 miles from the site.)
Fish and Wildlife Coordination Act			
13. Prohibits activities affecting/modifying streams or bodies of water if the activity has a negative impact on fish or wildlife. [16 USC 661 et seq.; 33 CFR Parts 320-330; 40 CFR 6.302]	No	No	As described above, no streams, rivers, or playas will be impacted by remedial activities.

TABLE 7-2
SUMMARY OF POTENTIAL LOCATION-SPECIFIC RASs
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

Requirement	Potentially Applicable?	Potentially Relevant and Appropriate?	Comments
Wild and Scenic Rivers Act			
14. Protects rivers that are designated as wild, scenic, or recreational. [16 USC 1271; 40 CFR 6.302(e)]	No	No	No rivers designated as wild, scenic or recreational will be affected by remedial activities.
National Historic Preservation Act (NHPA)			
15. Requires the preservation of historic properties included in or eligible for the National Register of Historic Places and to minimize harm to National Historic Landmarks. [16 USC 470 et seq.; 7 CFR 650; 36 CFR Part 65, Part 800]	Yes	---	Pursuant to Section 106 of NHPA, proposed federal undertaking in any state shall take into consideration the effect of the undertaking on any site, building, structure, or object that is included or eligible for inclusion in the National Register; nothing has been placed on the register to date, but surveys are ongoing. Also applicable if historical sites are discovered during a remedial action or if known historical sites exist near a remedial action site.
The Historic and Archaeological Data Preservation Act of 1974			
16. Establishes procedures to provide for preservation of historical and archaeological data which might be destroyed through alteration of terrain as a result of a federal construction project or a federally licensed activity program (16 USC 469, 40 CFR 6.301(c))	Yes	---	May be available if remedial activities affect historical and/or undiscovered archaeological data of the site.
The Archaeological Resource Protection Act of 1979			
17. Requires a permit for any excavation or removal of archaeological resources from public or Indian lands (16 USC 470aa-47011)	Yes	---	May be applicable if any remedial activity involves removal of archaeological resources; substantive requirements need to be met.

TABLE 7-2
SUMMARY OF POTENTIAL LOCATION-SPECIFIC RASs
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

Requirement	Potentially Applicable?	Potentially Relevant and Appropriate?	Comments
Coastal Zone Management Act			
18. Limits activities affecting the coastal zone, including lands thereunder and adjacent shorelands. [16 USC Section 1451 et seq.]	No	No	The site is not located in the coastal zone management area.
State Regulations			
Endangered Species Act (New Mexico Regulation Title 19 Chapter 33 Part 1)			
19. Requires coordination with the Department of Game and Fish if activities impact on endangered/ threatened species or their habitat.	Yes	---	As stated above, although Walk, Haydel & Associates report in their Remedial Investigation that there are no significant habitats in the immediate vicinity of the site, state listed threatened/endangered species have been identified at or near the base.
1978 New Mexico State Cultural Properties Act (Sections 18-6-1 through 18-6-17 NMSA 1978)			
20. Provides for the preservation, protection, and enhancement of structures, sites, and objects of historical significance within the State.	Yes	--	Although the Cannon AFB site including its properties/buildings are not listed on the State Register of Historic Places, coordination with the State Historic Preservation Office is ongoing with respect to the historical and archaeological surveys that have been conducted at the base; State laws closely follow the federal laws.

TABLE 7-3

POTENTIAL SITE-WIDE CHEMICAL-SPECIFIC RASs/TBCs
GROUNDWATER QUALITY STANDARDS
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

		FEDERAL STANDARDS			STATE STANDARDS NMWQCC Groundwater Quality Standards (g)			
Parameter	Type	SDWA Maximum Contaminant Level (a)	SDWA Maximum Contaminant Level Goal (a) ARARs/TBCs	RCRA Subpart F Concentration Limit (40 CFR 264.94) (b)	Community Water Supply System (h)	Human Health	Other Standards for Domestic Water Supply	Irrigation Use
pH	Field Parameter	6.5-8.5*					6.0-9.0	6.0-9.0
Total Dissolved Solids	Indicator	500,000 µg/L*					1,000,000 µg/L	1,000,000 µg/L
Carbonate	Anion							
Chloride	Anion	250,000 µg/L*					250,000 µg/L	250,000 µg/L
Fluoride	Anion	4,000 µg/L, 2,000 µg/L*	4,000 µg/L		4,000 µg/L	1,600 µg/L		1,600 µg/L
N as Nitrate	Anion	10,000 µg/L	10,000 µg/L(c)		10,000 µg/L	10,000 µg/L		10,000 µg/L
N as Nitrate+Nitrite	Anion	10,000 µg/L(c)	10,000 µg/L(c)					
N as Nitrite	Anion	1,000 µg/L(c)	1,000 µg/L(c)					
Potassium	Anion							
Sulfate	Anion	250,000 µg/L*					600,000 µg/L	600,000 µg/L
Aluminum	Metal	0.5 to 200 µg/L*(c)						5,000 µg/L
Antimony	Metal	6 µg/L(d)	6 µg/L(d)					
Arsenic	Metal	50 µg/L		50 µg/L	50 µg/L	100 µg/L		100 µg/L
Barium	Metal	2,000 µg/L(e)	2,000 µg/L(e)	1,000 µg/L	1,000 µg/L	1,000 µg/L		1,000 µg/L
Beryllium	Metal	4.0 µg/L(d)	4 µg/L(d)					
Boron	Metal							750 µg/L
Cadmium	Metal	5 µg/L(c)	5 µg/L(c)	10 µg/L	10 µg/L	10 µg/L		10 µg/L
Calcium	Metal							
Chromium	Metal	100 µg/L(c)	100 µg/L(c)	50 µg/L	50 µg/L	50 µg/L		50 µg/L
Cobalt	Metal							50 µg/L
Copper	Metal	1,000 µg/L* 1,300 µg/L**	1,300 µg/L(f)				1,000 µg/L	1,000 µg/L
Cyanide	Metal	200 µg/L(d)	200 µg/L(d)			200 µg/L		200 µg/L
Iron	Metal	300 µg/L*					1,000 µg/L	1,000 µg/L
Lead	Metal	15 µg/L***	0(f)	50 µg/L	50 µg/L	50 µg/L		50 µg/L
Magnesium	Metal							

TABLE 7-3

POTENTIAL SITE-WIDE CHEMICAL-SPECIFIC RASs/TBCs
GROUNDWATER QUALITY STANDARDS
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

		FEDERAL STANDARDS			STATE STANDARDS NMWQCC Groundwater Quality Standards (g)			
Parameter	Type	SDWA Maximum Contaminant Level (a)	SDWA Maximum Contaminant Level Goal (a) ARARs/TBCs	RCRA Subpart F Concentration Limit (40 CFR 264.94) (b)	Community Water Supply System (h)	Human Health	Other Standards for Domestic Water Supply	Irrigation Use
Manganese	Metal	50 µg/L*					200 µg/L	200 µg/L
Mercury	Metal	2 µg/L	2 µg/L(c)	2 µg/L	2 µg/L	2 µg/L		2 µg/L
Molybdenum	Metal							1,000 µg/L
Nickel	Metal	100 µg/L(d)	100 µg/L(d)					200 µg/L
Selenium	Metal	50 µg/L(c)	50 µg/L(c)	10 µg/L	10 µg/L	50 µg/L		50 µg/L
Silver	Metal	100 µg/L*(c)		50 µg/L	50 µg/L	50 µg/L		50 µg/L
Sodium	Metal							
Thallium	Metal	2 µg/L(d)	0.5 µg/L(d)					
Tin	Metal							
Titanium	Metal							
Tungsten	Metal							
Vanadium	Metal							
Zinc	Metal	5,000 µg/L*					10,000 µg/L	10,000 µg/L
Gross Alpha	Radionuclide	15 pCi/L			15 pCi/L			
Gross Beta	Radionuclide	4 mrem/yr						
Radium 226+228	Radionuclide	5 pCi/L			5 pCi/L	30 pCi/L		30 pCi/L
Strontium 90	Radionuclide	8 pCi/L			8 pCi/L			
Tritium	Radionuclide	20,000 pCi/L			20,000 pCi/L			
Uranium (total)	Radionuclide					5,000 µg/L		5,000 µg/L
1,1-Dichloroethane	Volatile					25 µg/L		25 µg/L
1,1-Dichloroethene	Volatile	7 µg/L	7 µg/L		7 µg/L	5 µg/L		5 µg/L
1,1,1-Trichloroethane	Volatile	200 µg/L	200 µg/L		200 µg/L	60 µg/L		60 µg/L
1,1,2,2-Tetrachloroethane	Volatile					10 µg/L		10 µg/L
1,1,2,2-Tetrachloroethene	Volatile					20 µg/L		20 µg/L
1,1,2-Trichloroethane	Volatile	5 µg/L(d)	3 µg/L(d)			10 µg/L		10 µg/L
1,1,2-Trichloroethene	Volatile					100 µg/L		100 µg/L

TABLE 7-3

POTENTIAL SITE-WIDE CHEMICAL-SPECIFIC RASs/TBCs
GROUNDWATER QUALITY STANDARDS
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

		FEDERAL STANDARDS			STATE STANDARDS NMWQCC Groundwater Quality Standards (g)			
Parameter	Type	SDWA Maximum Contaminant Level (a)	SDWA Maximum Contaminant Level Goal (a) ARARs/TBCs	RCRA Subpart F Concentration Limit (40 CFR 264.94) (b)	Community Water Supply System (h)	Human Health	Other Standards for Domestic Water Supply	Irrigation Use
1,2-Dichloroethane	Volatile	5 µg/L	0 µg/L		5 µg/L	10 µg/L		10 µg/L
1,2-Dichloroethene	Volatile							
1,2-Dichloropropane	Volatile	5 µg/L(c)	0 µg/L(c)					
4-Methyl-2-pentanone	Volatile							
Acetone	Volatile							
Benzene	Volatile	5 µg/L	0 µg/L	5 µg/L	5 µg/L	10 µg/L		10 µg/L
Bromodichloromethane	Volatile							
Bromoform	Volatile	Tot THM* <100 µg/L						
Bromomethane	Volatile							
Carbon Tetrachloride	Volatile	5 µg/L	0 µg/L		5 µg/L	10 µg/L		10 µg/L
Chlorobenzene (mono)	Volatile	100 µg/L(c)	100 µg/L(c)					
Chlorobenzilate	Volatile							
Chloroethane	Volatile							
Chloroform	Volatile	Tot THM** <100 µg/L			Tot THM** 100 µg/L	100 µg/L		100 µg/L
Chloroprene	Volatile							
Chloromethane	Volatile							
Cis-1,2-Dichloroethene	Volatile	70 µg/L(c)	70 µg/L(c)					
Cis-1,3-Dichloropropene	Volatile							
Dibromochloromethane	Volatile	Tot THM** <100 µg/L						
Ethyl Benzene	Volatile	700 µg/L(c)	700 µg/L(c)			750 µg/L		750 µg/L
Methylene Chloride	Volatile	5 µg/L(d)	0 µg/L(d)			100 µg/L		100 µg/L
Styrene	Volatile	100 µg/L(c)	100 µg/L(c)					
Tetrachloroethanes	Volatile							
Tetrachloroethene	Volatile	5 µg/L(c)	0 µg/L(c)					

TABLE 7-3

POTENTIAL SITE-WIDE CHEMICAL-SPECIFIC RASs/TBCs
GROUNDWATER QUALITY STANDARDS
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

		FEDERAL STANDARDS			STATE STANDARDS NMWQCC Groundwater Quality Standards (g)			
Parameter	Type	SDWA Maximum Contaminant Level (a)	SDWA Maximum Contaminant Level Goal (a) ARARs/TBCs	RCRA Subpart F Concentration Limit (40 CFR 264.94) (b)	Community Water Supply System (h)	Human Health	Other Standards for Domestic Water Supply	Irrigation Use
Toluene	Volatile	1,000 µg/L(c)	1,000 µg/L(c)			750 µg/L		
Total Trihalomethanes	Volatile	100 µg/L						
Total Xylenes	Volatile	10,000 µg/L(c)	10,000 µg/L(c)			620 µg/L		620 µg/L
Trans-1,2-Dichloroethene	Volatile	100 µg/L(c)	100 µg/L(c)					
Trans-1,3-Dichloropropene	Volatile							
Trichloroethanes	Volatile							
Trichloroethene	Volatile	5 µg/L	0 µg/L		5 µg/L			
Vinyl Acetate	Volatile							
Vinyl Chloride	Volatile	2 µg/L	0 µg/L		2 µg/L	1µg/L		1 µg/L
1,2-Dichlorobenzene (ortho)	Semivolatile	600 µg/L(c)	600 µg/L(c)					
1,3-Dichlorobenzene (meta)	Semivolatile	600 µg/L						
1,4-Dichlorobenzene (para)	Semivolatile	75 µg/L			75 µg/L			
1,2,4-Trichlorobenzene	Semivolatile	70 µg/L(d)	70 µg/L(d)					
2-Chloronaphthalene	Semivolatile							
2-Chlorophenol	Semivolatile							
2-Methylnaphthalene	Semivolatile							
2-Nitroaniline	Semivolatile							
2-Nitrophenol	Semivolatile							
2,3,7,8-Tetrachlorodibenzo-p-dioxin	Semivolatile	$3x10^{-8}$(d)	0 µg/L(d)					
2,4-Dichlorophenol	Semivolatile							
2,4-Dichlorophenoxyacetic Acid (2,4-D)	Semivolatile (H)	70 µg/L(c)	70 µg/L(c)	100 µg/L	100 µg/L			
2,4-Dimethylphenol	Semivolatile							
2,4-Dinitrophenol	Semivolatile							
2,4-Dinitrotoluene	Semivolatile							

TABLE 7-3

POTENTIAL SITE-WIDE CHEMICAL-SPECIFIC RASs/TBCs
GROUNDWATER QUALITY STANDARDS
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

		FEDERAL STANDARDS			STATE STANDARDS NMWQCC Groundwater Quality Standards (g)			
Parameter	Type	SDWA Maximum Contaminant Level (a)	SDWA Maximum Contaminant Level Goal (a) ARARs/TBCs	RCRA Subpart F Concentration Limit (40 CFR 264.94) (b)	Community Water Supply System (h)	Human Health	Other Standards for Domestic Water Supply	Irrigation Use
2,4,5-TP Silvex	Semivolatile (H)	50 µg/L(c)	50 µg/L(c)	10 µg/L	10 µg/L			
2,4,6-Trichlorophenol	Semivolatile							
3-Nitroaniline	Semivolatile							
4-Bromophenyl Phenylether	Semivolatile							
4-Chloroaniline	Semivolatile							
4-Chlorophenyl Phenyl Ether	Semivolatile							
4-Chloro-3-methylphenol	Semivolatile							
4-Nitroaniline	Semivolatile							
4,6-Dinitro-2-methylphenol	Semivolatile							
Acenaphthalene	Semivolatile							
Acrylonitrile	Semivolatile							
Alachlor	Semivolatile	2 µg/L	0 µg/L					
Aldicarb	Semivolatile (P)	3 µg/L(e)	1 µg/L(e)					
Aldicarb Sulfone	Semivolatile (P)	2 µg/L	1 µg/L					
Aldicarb Sulfoxide	Semivolatile (P)	4 µg/L	1 µg/L					
Aldrin	Semivolatile (P)							
Aniline	Semivolatile							
Anthracene	Semivolatile							
Atrazine	Semivolatile	3 µg/L(c)	3 µg/L(c)					
Benzo(a)anthracene	Semivolatile							
Benzo(a)pyrene	Semivolatile	0.2 µg/L(d)	0 µg/L(d)			0.7 µg/L		0.7 µg/L
Benzo(b)fluoranthene	Semivolatile							
Benzo(g,h,i)perylene	Semivolatile							
Benzo(k)fluoranthene	Semivolatile							
Benzyl Alcohol	Semivolatile							
Bis(2-Chloroethoxy)methane	Semivolatile							

TABLE 7-3

POTENTIAL SITE-WIDE CHEMICAL-SPECIFIC RASs/TBCs
GROUNDWATER QUALITY STANDARDS
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

		FEDERAL STANDARDS			STATE STANDARDS NMWQCC Groundwater Quality Standards (g)			
Parameter	Type	SDWA Maximum Contaminant Level (a)	SDWA Maximum Contaminant Level Goal (a) ARARs/TBCs	RCRA Subpart F Concentration Limit (40 CFR 264.94) (b)	Community Water Supply System (h)	Human Health	Other Standards for Domestic Water Supply	Irrigation Use
Bis(2-Chloroethyl)ether	Semivolatile							
Bis(2-Chloroisopropyl)ether	Semivolatile							
Bis(2-Ethylhexyl)phthalate	Semivolatile							
Butyl Benzylphthalate	Semivolatile							
Carbofuran	Semivolatile (P)	40 µg/L(c)	40 µg/L(c)					
Carbon Disulfide	Semivolatile							
Chlordane	Semivolatile (P)	2 µg/L(c)	0 µg/L(c)					
Chlorophenol	Semivolatile							
DDT	Semivolatile (P)							
DDT metabolite (DDE)	Semivolatile (P)							
DDT metabolite (DDD)	Semivolatile (P)							
Dalapon	Semivolatile (P)	200 µg/L(d)	200 µg/L(d)					
Diallite	Semivolatile							
Dibenzofuran	Semivolatile							
Dibenz(a,h)anthracene	Semivolatile							
Dibromochloropropane	Semivolatile (P)	0.2 µg/L	0 µg/L					
Dichlorobenzene	Semivolatile							
Dichlorobenzene, o	Semivolatile		600 µg/L					
Dichlorobenzidine	Semivolatile							
Dieldrin	Semivolatile (P)							
Di(2-ethylhexyl)adipate	Semivolatile (P)	400 µg/L(d)	400 µg/L(d)					
Diethylphthalate	Semivolatile							
Di(2-ethylhexyl)phthalate	Semivolatile	6.0 µg/L(d)	0 µg/L(d)					
Dimethoate	Semivolatile							
Dimethylphthalate	Semivolatile							
Dinitrotoluene	Semivolatile							

TABLE 7-3

POTENTIAL SITE-WIDE CHEMICAL-SPECIFIC RASs/TBCs
GROUNDWATER QUALITY STANDARDS
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

		FEDERAL STANDARDS			STATE STANDARDS NMWQCC Groundwater Quality Standards (g)			
Parameter	Type	SDWA Maximum Contaminant Level (a)	SDWA Maximum Contaminant Level Goal (a) ARARs/TBCs	RCRA Subpart F Concentration Limit (40 CFR 264.94) (b)	Community Water Supply System (h)	Human Health	Other Standards for Domestic Water Supply	Irrigation Use
Dinoseb	Semivolatile(H)	7 µg/L(d)	7 µg/L(d)					
Di-n-octylphthalate	Semivolatile							
Diquat	Semivolatile(P)	20 µg/L(d)	20 µg/L(d)					
Endosulfan I	Semivolatile (P)							
Endosulfan II	Semivolatile (P)							
Endosulfan Sulfate	Semivolatile (P)							
Endothall	Semivolatile (P)	100 µg/L	100 µg/L(d)					
Endrin	Semivolatile (P)	2.0 µg/L(d)	2.0 µg/L(d)	0.2 µg/L	0.2 µg/L			
Ethylene Dibromide	Semivolatile	0.05 µg/L(c)	0 µg/L(c)			0.1 µg/L		0.1 µg/L
Fluoranthene	Semivolatile							
Fluorene	Semivolatile							
Glyphosate	Semivolatile(P)	700 µg/L(d)	700 µg/L(d)					
Heptachlor	Semivolatile (P)	0.4 µg/L(c)	0 µg/L(c)					
Heptachlor Epoxide	Semivolatile (P)	0.2 µg/L(c)	0 µg/L(c)					
Hexachlorobenzene	Semivolatile	1.0 µg/L(d)	0 µg/L(d)					
Hexachlorobutadiene	Semivolatile							
Hexachlorocyclohexane, Alpha	Semivolatile (P)							
Hexachlorocyclohexane, Beta	Semivolatile (P)							
Hexachlorocyclohexane, (Lindane)	Semivolatile (P)	0.2 µg/L(c)	0.2 µg/L(c)	4 µg/L	4 µg/L			
Hexachlorocyclohexane, Technical	Semivolatile (P)							
Hexachlorocyclopentadiene	Semivolatile	50 µg/L(d)	50 µg/L(d)					
Hexachloroethane	Semivolatile							
Indeno(1,2,3-cd)pyrene	Semivolatile							
Methoxychlor	Semivolatile (P)	40 µg/L	40 µg/L(c)	100 µg/L	100 µg/L			

TABLE 7-3

POTENTIAL SITE-WIDE CHEMICAL-SPECIFIC RASs/TBCs GROUNDWATER QUALITY STANDARDS
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

		FEDERAL STANDARDS			STATE STANDARDS NMWQCC Groundwater Quality Standards (g)			
Parameter	Type	SDWA Maximum Contaminant Level (a)	SDWA Maximum Contaminant Level Goal (a) ARARs/TBCs	RCRA Subpart F Concentration Limit (40 CFR 264.94) (b)	Community Water Supply System (h)	Human Health	Other Standards for Domestic Water Supply	Irrigation Use
Naphthalene	Semivolatile							
Nitrobenzene	Semivolatile							
Nitrophenols	Semivolatile							
Nitrosodibutylamine	Semivolatile							
Nitrosodiethylamine	Semivolatile							
Nitrosodimethylamine	Semivolatile							
Nitrosopyrrolidine	Semivolatile							
N-Nitrosodiphenylamine	Semivolatile							
N-Nitroso-di-n-dipropylamine	Semivolatile							
Oxamyl	Semivolatile(P)	200 µg/L(d)	200 µg/L(d)					
PCBs	PCBs	0.5 µg/L(c)	0 µg/L(c)			1 µg/L		1 µg/L
Pentachlorinated Ethanes	Semivolatile							
Pentachlorophenol	Semivolatile	1 µg/L(c)	0 µg/L(e)					
Phenanthrene	Semivolatile							
Phenol	Semivolatile				5 µg/L		5 µg/L	5 µg/L
Picloram	Semivolatile (H)	500 µg/L	500 µg/L					
Polynuclear Aromatic Hydrocarbons (total PAH)	Semivolatile				30 µg/L	30 µg/L		30 µg/L
Pyrene	Semivolatile							
Simazine	Semivolatile(P)	4 µg/L(d)	4 µg/L(d)					
Trans-1,2-Dichloroethene	Semivolatile	100 µg/L	100 µg/L					
Toxaphene	Semivolatile (P)	3 µg/L(c)	0 µg/L(c)	5 µg/L	5 µg/L			

TABLE 7-3

POTENTIAL SITE-WIDE CHEMICAL-SPECIFIC RASs/TBCs
GROUNDWATER QUALITY STANDARDS
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

EXPLANATION OF TABLE

(P) Pesticide (H) Herbicide

* = secondary maximum contaminant level (TBCs)
** = total trihalomethanes: chloroform, bromoform, bromodichloromethane, dibromochloromethane
*** = action levels in no more than 10% of tap samples, 56 FR 26460, 6/7/91, effective 12/7/92

NMWQCC = New Mexico Water Quality Control Commission
RCRA = Resource Conservation and Recovery Act
SDWA = Safe Drinking Water Act
(a) EPA National Primary and Secondary Drinking Water Regulations, 40 CFR 141 and 40 CFR 143 (as of 6/95 and 12/94)
(b) RCRA Subpart F, 40 CFR 264.94 (July, 1992)
(c) EPA National Primary and Secondary Drinking Water Regulations, 40 CFR Parts 141, 142, 143, Final Rule, Effective July 30, 1992 (56 Federal Register 3526; 1/30/91)
(d) EPA National Primary Drinking Water Regulations, 40 CFR 141 and 40 CFR 142, Final Rule (57FR 31776, 7/17/92); Effective date is January 17, 1994, (therefore TBCs) except for endrin, which is effective 8/17/92.
(e) EPA National Primary and Secondary Drinking Water Regulations, 40 CFR Parts 141, 142, 143, Final Rule, Effective January 1, 1993 (56 FR 30266, 7/01/91)
(f) EPA Maximum Contaminant Level Goals and National Primary Drinking Water Regulations for Lead and Copper, 40 CFR 141 and 142; effective December 7, 1992 (56 FR 26460, 6/7/91)
(g) NM Water Quality Control Commission, NM Water Quality Regulations, Part 3, Section 3-103, 11/16/1967 amended through August 17, 1991
(h) New Mexico Drinking Water/Water Supply Regulations, adopted April 16, 1991

If no values are shown for a possible contaminant, there are no standards at this time.

TABLE 7-4

POTENTIAL SCREENING CONCENTRATIONS FOR INORGANIC COMPOUNDS IN SOIL (TO BE CONSIDERED)
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

Compound	RFI Guidance TBCs[a] (mg/kg)	Proposed RCRA Action Level TBCs[b] (mg/kg)	Other TBCs[c] (mg/kg)
aluminum	-	200,000[f]	-
antimony	30	30[d]	-
arsenic*	-	0.4[d]	-
barium	4,000	6,000	-
beryllium*	0.14	0.2[d]	-
cadmium	-	40[d]	-
calcium	-	-	-
chromium III	80,000	80,000[d]	-
chromium VI	400	400[d]	-
cobalt	-	5000[f]	-
copper	-	3000[e]	-
cyanide	2,000	2000[d]	-
iron	-	-	-
lead	-	-	500 - 1000
magnesium	-	-	-
manganese	-	4000[d]	-
mercury	-	20[e]	-
nickel	2,000	2000[d]	-
potassium	-	-	-
selenium	-	400[d]	-
silver	200	400[d]	-
sodium	-	-	-
thallium	-	6[e]	-
vanadium	-	600[e]	-
zinc	-	20,000[d]	-

TABLE 7-4

POTENTIAL SCREENING CONCENTRATIONS FOR INORGANIC COMPOUNDS IN SOIL (TO BE CONSIDERED)
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico
(Concluded)

[a] RCRA Facility Investigation Guidance (EPA 1989a); human health-based criteria for systemic toxicants representing an estimate of the daily exposure an individual can experience without appreciable risk of health effects during a lifetime.

[b] Human Health proposed action levels using calculations in 55 FR 30798, Corrective Action for SWMUs at Hazardous Waste Management Facilities (27 July 1990). Sources of toxicity factors used in calculations include: (1) Integrated Risk Information System (IRIS), (2) Health Effects Assessment Summary Tables (HEAST) FY1992, and (3) USEPA Environmental Criteria and Assessment Office in Cincinnati (ECAO-CIN).

[c] Source: OSWER Directive 9355.4-02.

[d] IRIS April, 1994

[e] HEAST 1994

[f] Calculated from provisional toxicity values for aluminum and cobalt provided by USEPA (ECAO) 1994.

[*] Carcinogen

TABLE 7-5

POTENTIAL SCREENING CONCENTRATIONS FOR ORGANIC COMPOUNDS IN SOIL
(To Be Considered)
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

	RFI Guidance(a) TBCs (mg/kg)	Proposed RCRA Action Level(b) TBCs (mg/kg)	Other TBCs (mg/kg)
Herbicides			
2,4,5-T	200	800 (c)	-
2,4,5-TP (Silvex)	600	600 (c)	-
2,4-D	800	800 (c)	-
2,4-DB	-	600(c)	-
Dalaphon	-	2,000 (c)	-
Dicamba	-	2,000 (c)	-
Dichlorprop	-	-	-
Dinoseb	80	80 (c)	-
MCPA	-	40 (c)	-
MCPP	-	80 (c)	-
Pesticides/PCBs			
4,4'-DDD*	2.9	3.0 (c)	
4,4'-DDT*	2.1	2.0(c)	-
4,4'-DDE*	2.1	2.0(c)	-
Aldrin*	0.04	0.04(c)	-
alpha-BHC*	-	0.1(c)	-
alpha-Chlordane*	0.54	0.5(c)	-
Aroclor-1016*	0.09	0.09(c)	(e)
Aroclor-1221*	0.09	0.09(c)	(e)
Aroclor-1232*	0.09	0.09(c)	(e)
Aroclor-1242*	0.09	0.09(c)	(e)
Aroclor-1248*	0.09	0.09(c)	(e)
Aroclor-1254*	0.09	0.09(c)	(e)
Aroclor-1260*	0.09	0.09(c)	(e)

TABLE 7-5

POTENTIAL SCREENING CONCENTRATIONS FOR ORGANIC COMPOUNDS IN SOIL
(To Be Considered)
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

	RFI Guidance(a) TBCs (mg/kg)	Proposed RCRA Action Level(b) TBCs (mg/kg)	Other TBCs (mg/kg)
Pesticides/PCBs (cont'd)			
beta-BHC*	-	0.4(c)	-
Chlordane*	0.54	0.5(k)	
delta-BHC	-	-	-
Diallate*	-	12(f)	
Dieldrin*	0.04	0.04(c)	-
Dimethoate	2,000	16(c)	
Disulfoton	3	3(c)	
Endosulfan I**	4	500(e,g)	-
Endosulfan II**	-	500(g)	-
Endosulfan sulfate	-	500(g)	
Endrin	20	20(c)	-
Endrin ketone	-	-	-
Famphur	-	-	
gamma-BHC	20	0.5(f)	-
gamma-Chlordane*	0.54	0.5(c)	-
Heptachlor	0.16	0.2(c)	-
Heptachlor epoxide*	0.077	0.08(c)	-
Isodrin	-	-	
Kepone	-	-	
Methoxychlor	-	400(c)	-
Methyl parathion	20	20(c)	
Parathion	20	500(f)	
Phorate	-	20(f)	
Toxaphene*	0.64	0.6(c)	-

TABLE 7-5

POTENTIAL SCREENING CONCENTRATIONS FOR ORGANIC COMPOUNDS IN SOIL
(To Be Considered)
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

	RFI Guidance(a) TBCs (mg/kg)	Proposed RCRA Action Level(b) TBCs (mg/kg)	Other TBCs (mg/kg)
Semivolatiles			
1,2,4,5-tetrachlorobenzene	20	20(c)	
1,2,4-trichlorobenzene	2,000	800(c)	-
1,2-dichlorobenzene	-	7,000(c)	-
1,3,5-trinitrobenzene	-	4(c)	
1,3-dichlorobenzene	-	8(c)	-
1,3-dinitrobenzene	-	8(c)	
1,4-dichlorobenzene*	-	29(f)	
1,4-naphthoquinone	-	-	
1-naphthylamine	-	-	
2,3,4,6-tetrachlorophenol	2,000	2,000(c)	
2,4,5-trichlorophenol	8,000	8,000(c)	-
2,4,6-trichlorophenol*	35	6(c)	-
2,2'-oxybis(1-chloropropane)	-	-	-
2,4-dichlorophenol	200	200(c)	-
2,4-dimethylphenol	-	2,000(c)	-
2,4-dinitrophenol	200	200(c)	-
2,4-dinitrotoluene	2.27	200(c)	-
2,6-dichlorophenol	-	-	
2,6-dinitrotoluene*	-	80(f)	-
2-acetylaminefluorone	-	-	
2-chloronaphthalene	-	6,000(c)	-
2-chlorophenol	-	400(c)	-
2-methylnaphthalene	-	-	0.3-220(i)
2-methylphenol	4,000	4,000(c)	-
2-naphthylamine	-	-	

TABLE 7-5

POTENTIAL SCREENING CONCENTRATIONS FOR ORGANIC COMPOUNDS IN SOIL
(To Be Considered)
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

	RFI Guidance(a) TBCs (mg/kg)	Proposed RCRA Action Level(b) TBCs (mg/kg)	Other TBCs (mg/kg)
Semivolatiles (cont'd)			
2-nitroaniline	-	-	-
2-nitrophenol	-	-	-
2-picoline	-	-	
3-3'-dichlorobenzidine*	-	2(c)	-
3,3'-dimethylbenzidine	-	-	
3-methyl cholanthrene	0.074	-	
3-methylphenol	4,000	4,000(c)	
3-nitroaniline	-	-	-
4,6-dinitro-2-methylphenol	-	-	-
4-aminobiphenyl	-	-	
4-bromophenylphenyl ether	-	-	-
4-chloro-3-methylphenol	-	-	-
4-chloroaniline	-	300(c)	-
4-chlorophenylphenyl ether	-	-	-
4-methylphenol	4,000	400(f)	-
4-nitroaniline	-	-	-
4-nitro-1-oxide-quinoline	-	-	
4-nitrophenol	-	-	-
5-nitro-o-toluidine	-	-	
acenaphthene	-	5,000(c)	-
acenaphthylene	-	-	-
acetophenone	8,000	8,000(c)	
aniline	270	-	
anthracene	-	20,000(c)	-
aramite*	-	30(c)	

TABLE 7-5

POTENTIAL SCREENING CONCENTRATIONS FOR ORGANIC COMPOUNDS IN SOIL
(To Be Considered)
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

	RFI Guidance(a) TBCs (mg/kg)	Proposed RCRA Action Level(b) TBCs (mg/kg)	Other TBCs (mg/kg)
Semivolatiles (cont'd)			
benzo(a)anthracene*	0.22	1.0(j)	0.3-220(i)
benzo(a)pyrene*	0.06	0.1(c)	0.3-220(i)
benzo(b)fluoranthene*	-	1.0(j)	0.3-220(i)
benzo(g,h,i)perylene	-	-	0.3-220(i)
benzo(k)fluoranthene*	-	9.6(j)	0.3-220(i)
benzoic acid	-	300,000(c)	-
benzyl alcohol	-	20,000(f)	-
bis(2-chloroethoxy)methane	-	-	
bis(2-chloroethyl)ether*	0.64	0.6(c)	-
bis(2-ethylhexyl)phthalate*	83	50(c)	0.3-220(i)
butyl benzyl phthalate	-	16,000(c)	0.3-220(i)
carbazole*	-	40(f)	-
chlorobenzilate*	-	2.6(f)	
p-chloro-m-cresol	-	-	
chrysene*	-	9.6(j)	0.3-220(i)
dibenzo(a,h)anthracene	0.0143	0.1(j)	0.3-220(i)
dibenzofuran	-	-	0.3-220(i)
dichlorodifluoromethane	20,000	20,000(c)	
dichlorodiisopropyl ether	-	-	
diethylphthalate	60,000	60,000(c)	-
o,o-diethyl o-pyrazinyl phosphoro-thioate	-	-	
p-dimethylaminoazobenzene	-	-	
7,12-dimethylbenz(a)anthracene	-	-	
alpha,alpha-dimethylphenethylamine	-	-	

TABLE 7-5

POTENTIAL SCREENING CONCENTRATIONS FOR ORGANIC COMPOUNDS IN SOIL
(To Be Considered)
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

dimethylphthalate	-	800,000(f)	-

	RFI Guidance(a) TBCs (mg/kg)	Proposed RCRA Action Level(b) TBCs (mg/kg)	Other TBCs (mg/kg)
Semivolatiles (cont'd)			
di-n-butylphthalate	8,000	8,000(c)	-
di-n-octylphthalate	-	20,000(f)	-
diphenylamine	2,000	2,000(c)	
ethyl methanesulfonate	-	-	
fluoranthene	-	3,000(c)	0.3-220(i)
fluorene	-	3,000(c)	0.3-220(i)
hexachlorobenzene*	0.41	0.4(c)	-
hexachlorobutadiene	90	9(c)	-
hexachlorocyclopentadiene	600	600(c)	-
hexachloroethane*	80	50(c)	-
hexachlorophene	-	20(c)	
hexachloropropene	-	-	
indeno(1,2,3-cd)pyrene*	-	1.0(j)	0.3-220(i)
isosafrole	-	-	
isophorone*	2,000	700(c)	-
methacrylonitrile	8	8(c)	
methapyrilene	-	-	
methyl methane sulfonate	-	-	
n-nitrosodiethylamine*	-	0.005(c)	
n-nitrosodimethylamine*	0.014	0.01(c)	
n-nitrosomethylethylamine*	0.032	0.03(c)	
n-nitrosomorpholine	-	-	
n-nitroso-di-n-butylamine*	-	0.1(c)	
n-nitroso-di-n-propylamine*	0.10	0.1(c)	-

TABLE 7-5

POTENTIAL SCREENING CONCENTRATIONS FOR ORGANIC COMPOUNDS IN SOIL
(To Be Considered)
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

n-nitrosodiphenylamine*	-	100(c)	-

TABLE 7-5

POTENTIAL SCREENING CONCENTRATIONS FOR ORGANIC COMPOUNDS IN SOIL
(To Be Considered)
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

	RFI Guidance(a) TBCs (mg/kg)	Proposed RCRA Action Level(b) TBCs (mg/kg)	Other TBCs (mg/kg)
Semivolatiles (cont'd)			
n-nitrosopiperidine	-	-	
n-nitrosopyrrolidine*	0.33	0.3(c)	
naphthalene	-	-	0.3-220(i)
nitrobenzene	40	40(c)	-
pentachlorobenzene	60	60(c)	
pentachloroethane	-	-	
pentachloronitrobenzene*	27.3	2.7(f)	
pentachlorophenol*	2,000	6(c)	-
phenacetin	-	-	
phenanthrene	-	-	-
phenol	3,000	50,000(c)	-
p-phenylenediamine	-	20,000(f)	
pronamide	6,000	6,000(c)	
pyrene	-	2,000(c)	0.3-220(i)
pyridine	80	80(c)	
safrole	-	-	
tetraethyldithiopyrophosphate	-	40(c)	
trans-1,4-dichloro-2-butene	-	-	
o-toluidine	-	-	
o,o,o-triethyl phosphorothioate	-	-	

TABLE 7-5

POTENTIAL SCREENING CONCENTRATIONS FOR ORGANIC COMPOUNDS IN SOIL
(To Be Considered)
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

	RFI Guidance(a) TBCs (mg/kg)	Proposed RCRA Action Level(b) TBCs (mg/kg)	Other TBCs (mg/kg)
Volatiles			
1,1,1-trichloroethane	7,000	-	-
1,1,1,2-tetrachloroethane*	-	30(c)	
1,1,2,2-tetrachloroethane*	35	3.5(c)	-
1,1,2-trichloroethane	120	1.2(c)	-
1,1-dichlorethane*	-	8,000(f)	-
1,1-dichloroethene	12	1.2(c)	-
1,2-dibromo-3-chloropropane*	0.032	0.5(f)	
1,2-dibromoethane*	-	0.008(c)	
1,2-dichloroethane*	7.7	7.7(c)	
1,2-dichloroethene (total)	-	700(f)	-
1,2-dichloropropane	-	-	
1,2,3-trichloropropane	80	500(c)	
1,4-dioxane*	143	60(c)	
2-butanone (MEK)	4,000	50,000(c)	-
2-hexanone (MnBK)	-	-	-
4-methyl-2-pentanone (MIBK)	4,000	6,000(f)	-
acetone	8,000	8,000(c)	-
acetonitrile	500	500(c)	
acrolein	-	2,000(f)	
acrylonitrile*	1.30	1.3(c)	
allyl chloride	-	-	
benzene*	24	20(c)	<100(k)
bromodichloromethane*	2,000	10(c)	-
bromoform*	2,000	90(c)	-

TABLE 7-5

POTENTIAL SCREENING CONCENTRATIONS FOR ORGANIC COMPOUNDS IN SOIL
(To Be Considered)
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

	RFI Guidance(a) TBCs (mg/kg)	Proposed RCRA Action Level(b) TBCs (mg/kg)	Other TBCs (mg/kg)
Volatiles (cont'd)			
bromomethane	30	100(c)	-
carbon disulfide	8,000	8,000(c)	-
carbon tetrachloride*	5.4	5.4(c)	-
chlorobenzene	2,000	2,000(c)	-
chloroethane	-	-	-
chloroform*	110	100(c)	-
chloromethane	-	50(f)	-
chloroprene	-	-	
cis-1,3-dichloropropene	3.9	3.9(f)	-
dibromochloromethane*	-	8.3(c)	-
ethylbenzene	8,000	8,000(c)	<500 (k)
ethyl cyanide	-	-	
ethyl methacrylate	-	7,000(f)	
isobutyl alcohol	20,000	20,000(c)	
methyl bromide	-	100(c)	
methylene bromide	-	-	
methylene chloride*	93	90(c)	-
methyl iodide	-	-	
methyl methacrylate	-	6,000(f)	
styrene	20,000	20,000(c)	-
tetrachloroethene*	140	800(c)	-
toluene	20,000	20,000(c)	<500 (k)
trans-1,2-dichloroethene	-	2,000(c)	
trans-1,3-dichloropropene	20	3.9(f)	-
trichloroethene*	64	-	-

TABLE 7-5

POTENTIAL SCREENING CONCENTRATIONS FOR ORGANIC COMPOUNDS IN SOIL
(To Be Considered)
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

	RFI Guidance(a) TBCs (mg/kg)	Proposed RCRA Action Level(b) TBCs (mg/kg)	Other TBCs (mg/kg)
Volatiles (cont'd)			
trichlorofluoromethane	20,000	20,000(c)	
vinyl acetate	-	-	
vinyl chloride*	-	0.4(f)	-
xylenes (total)	200,000	200,000(c)	<500 (k)
Hydrocarbons			
Polycyclic Aromatic	-	-	<50 ppm(l)
Hydrocarbons (PAHs)	-	-	-
Total Petroleum Hydrocarbons (TPH)	-	-	<1000 ppm(m)
Dioxins and Furans			
2,3,7,8,(x,y)-hexachlorodibenzodioxin*	1.10E-04	5E-05(n)	
2,3,7,8,(x)-pentachlorodibenzodioxin*	-	9E-06(n)	
2,3,7,8-tetrachlorodibenzodioxin*	-	5E-06(n)	
1,2,3,7,8-pentachlorodibenzofuran*	-	9E-05(n)	
2,3,4,7,8-pentachlorodibenzofuran*	-	9E-06(n)	
2,3,7,8,(x,y)-hexachlorodibenzofuran*	-	5E-05(n)	
2,3,7,8-tetrachlorodibenzofuran*	-	5E-05(n)	

(a) RCRA Facility Investigation Guidance (EPA 1989a); human health-based criteria for systemic toxicants representing an estimate of the daily exposure an individual can experience without appreciable risk of health effects during a lifetime.

(b) Human health proposed action levels calculated using guidance in 55 FR 30798

(c) Calculated from toxicity values provided in IRIS April, 1994.

(d) 55 FR 30798. EPA has already established standards for cleanup of PCBs under TSCA. The agency has determined that the TSCA cleanup standards are relevant to RCRA corrective action.

TABLE 7-5

POTENTIAL SCREENING CONCENTRATIONS FOR ORGANIC COMPOUNDS IN SOIL
(To Be Considered)
Landfill No. 1 (SWMU No. 74) Phase I RFI
Cannon AFB, New Mexico

(e) Cleanup levels for PCB spills occuring before May 4, 1987 are at the discretion of the EPA regional administrator. 40 CFR 761 (Subpart G).

(f) Calculated from toxicity values provided in HEAST 1994.

(g) Toxicity values for Endosulfan adopted for Endosulfan I, Endosulfan II, and Endosulfan sulfate

(h) Value for mixture of dinitrotoluene isomers

(i) Range of anthropogenic and naturally occurring PAH concentrations (Blumer et al. 1977)

(j) EPA 1993. Provisional Guidance for Quantitative Risk Assessment of Polycyclic Aromatic Hydrocarbons. EPA/625/3-89/016. March 1989.

(k) The sum of benzene, toluene, ethylbenzene, and xylene isomer concentrations is less than 500 mg/kg, with benzene individually less than 100 mg/kg. New Mexico Environmental Improvement Board, New Mexico Special Waste Requirement Regulations. Adopted effective January 30, 1992.

(l) New Mexico Department of Environmental Improvement New Mexico UST Regulations, amended through July 18, 1991.

(m) New Mexico Environmental Improvement Board, New Mexico Special Waste Requirement Regulations, Adopted effective January 30, 1992

(n) EPA 1989. Interim Procedures for Estimating risks Associated with Exposures to Mixtures of Chlorinated Dibenzo-p-dioxins and -Dibenzofurans (CDDs and CDFs). EPA/625/3-89/016. March 1989.

* Carcinogens

8.0
CONCLUSIONS AND RECOMMENDATIONS

The Phase I RFI for Landfill No. 1 (SWMU No. 74) and subsequent data reduction and evaluation took place during the time period of September 1995 to May 1996. The work was performed in accordance with the Phase I RFI Work Plan documents for Landfill No. 1.

The primary objective of the Phase I RFI was to evaluate whether a release of hazardous constituents had occurred to subsurface soil beneath Landfill No. 1. If a release had occurred, a secondary objective was to evaluate the nature and extent of contamination and assess potential risks to human health by performing a screening level risk assessment. The ultimate goal of the work described above was to reach either a recommendation of "No Further Action," if appropriate, or additional investigations, if warranted. Important conclusions from the Phase I study are presented below, followed by recommendations for the site.

Surface geophysical surveys (EM-31 and EM-61) were performed in the fall of 1995 to identify individual landfill cells, if present and assist in selecting soil boring locations most likely to intercept contamination (if present) in subsurface soil at Landfill No. 1. The geophysical surveys using both EM methods did not reveal significant landfill cell anomalies typically seen at other landfills (i.e., Landfill No. 2 and Landfill No. 5) investigated at Cannon AFB and most of the anomalies appeared to be due to underground piping, and possibly soil moisture and near-surface geologic conditions. There were several isolated EM-61 anomalies that were consistent with minor amounts of metal, but not necessarily indicative of landfill cells. Ten boring locations were selected to evaluate various EM-31 and EM-61 anomalous areas and investigate two areas identified by Cannon AFB as containing trash and debris during installation of the golf course irrigation system. Isolated amounts of landfill debris were discovered in three of the ten planned borings.

Based on results of the original 10 borings and refined geophysical interpretations, thirteen additional borings were drilled to further assess the extent of landfill debris. Of the 23 drilled borings, 8 encountered thin intervals (up to 5 feet) of landfill material which typically

consisted of minor amounts of burned wood, charcoal, cinders and construction debris (i.e., nails, brick and sheet rock fragments, roofing material, insulation, ceramic tile and wood).

Forty-three subsurface soil samples (plus QA/QC samples) were collected and analyzed for the following:

- TCL VOC
- TCL SVOC
- TAL metals (including cyanide)
- Pesticides/PCB
- Herbicides
- TRPH

In addition, seven samples were analyzed for TOC and seven for grain size analyses.

The following conclusions regarding nature and extent of contamination in subsurface soil at Landfill No. 1 are based upon; an evaluation of analytical results from the 43 field samples analyzed; subtle EM-61 anomalies and field observations noted while drilling. Results for subsurface sample analyses are discussed below in evaluating potential releases of hazardous constituents beneath Landfill No. 1.

Metals

Seven metals (i.e., barium, beryllium, calcium, cobalt, magnesium, manganese, and vanadium) were detected in at least one subsurface soil sample above the upper estimated background values for the area (W-C 1994). Out of forty-three samples collected for chemical analysis, 23 samples detected one or more metals above estimated background ranges. Given the isolated and random occurrence of these metals above the estimated background range within individual borings across Landfill No. 1, it appears that site-specific geologic factors probably account for the majority of exceedances of metals and are not likely due to contamination from landfill materials. Typically the metal exceeding the estimated background range was not detected above the estimated background range in samples collected above or below the interval where the exceedance occurred within the

same boring. In all borings but one (boring 74-23), the metals listed above did not exceed the estimated background range in the samples collected immediately beneath the landfill debris. In boring 74-23 three metals (beryllium, cobalt, and manganese) were found slightly above the estimated background range in the first sample (4 to 6 feet bgs) collected below the landfill debris. Concentrations of beryllium, cobalt and manganese were above the estimated background range by 0.07 mg/kg, 0.4 mg/kg and 36.2 mg/kg, respectively. These three metals were not, however, found in the two samples collected below this sample interval at boring 74-23.

Volatile Organic Compounds

Toluene was the only volatile organic compound (VOC) detected at Landfill No. 1, aside from the identified laboratory contaminants. Toluene occurred in three subsurface samples from three borings (74-07, 74-14, and 74-15). Concentrations of toluene ranged from 1.3J µg/kg to 9.2 µg/kg. Two of the three detections (1.3J µg/kg and 1.9J µg/kg) were below the laboratory reporting limit and were, therefore, in the range for which quantitation is considered uncertain and were qualified as estimated. Toluene was detected at a concentration of 9.2 µg/kg in the bottom soil collected from 18 to 20 feet bgs from boring 74-07. Toluene was not detected in the two samples collected above this sample interval.

Semivolatile Organic Compounds

Phenanthrene, pyrene, and PCP were the only SVOCs detected in soil from Landfill No. 1, aside from identified laboratory contaminants. One or more of these three SVOCs were detected in only three subsurface soil samples collected from boring 74-10. The concentrations detected were all well below the laboratory reporting limit for each occurrence. As such, the concentrations were in the range for which quantitation of sample results is uncertain and were qualified as estimated. It should be noted that these three chemicals were not found below a depth of 22 feet bgs at boring 74-10.

Other Analytes

Only one pesticide was detected, 4,4′-DDT, at a concentration of 3.2J µg/kg in one sample during the Phase I RFI at Landfill No. 1. This concentration was below the laboratory reporting limit and was qualified as estimated. This result does not indicate a significant release had occurred to subsurface soil at Landfill No. 1 for this compound. Only one herbicide, MCPP, was found in one sample at a concentration of 12,000 µg/kg in soil collected immediately below the landfill debris in boring 74-18. This result is the only potential release of a herbicide to subsurface soil at Landfill No. 1 but this compound typically has a very high biodegradation rate in soil.

Cyanide was not detected in any of the soil samples collected for chemical analyses. TRPH was detected in four subsurface soil samples at concentrations ranging from 42.2 mg/kg to 62.9 mg/kg. These results indicate the presence of only minor contamination. Several VOC-TICs and SVOC-TICs were reported by the laboratory; however, the majority of these compounds appeared to be potentially non-toxic alcohols, aldehydes, fatty acids and esters, saturated hydrocarbons and unknowns. Only two TICs, ethylenediamine and hexanedioic acid, bis(2-ethylhexyl)ester, were compounds that had a toxicity factor and were further evaluated in the human health risk screen.

In conclusion, it appears that if a release of hazardous constituents has occurred at Landfill No. 1, it has been insignificant. Additionally, based on the fact that free liquids or soil saturated with liquid wastes were not observed within the landfill wastes while drilling, the potential for a release to occur at Landfill No. 1 in the future is minimal.

Human Health Risk Screen

A Human Health Risk Screen (HHRS) was performed as part of the Phase I RFI evaluation for Landfill No. 1. The purpose of the HHRS was to evaluate whether chemicals of interest (COIs) were detected in soils at levels that may pose an unacceptable risk to human health. The chemicals identified in the description of nature and extent of contamination were evaluated for selection of COIs for the Human Health Screen.

The HHRS evaluation was screening level because it compared maximum detected chemical concentrations regardless of sample depth to Region III risk-based concentrations (RBCs) for residential soil ingestion to estimate potential noncancer hazard and cancer risk. The HHRS, therefore, likely overestimated actual hazard/risk at Landfill No. 1 and will be protective of human health.

COIs evaluated during the HHRS included:

Inorganic Compounds	Organic Compounds
Barium	Toluene
	Pyrene
	PCP
	MCPP
	4,4'-DDT

No COI had a maximum concentration exceeding its Region III RBC. The cumulative cancer risk from exposure to maximum concentrations of 4,4'-DDT and PCP was 1×10^{-8}, well below EPA's "point of departure" of 1×10^{-6} for evaluating cancer risk at contaminated sites. The cumulative HI for noncarcinogenic effects was less than 1 (HI=0.4), indicating that maximum concentrations of noncarcinogenic chemicals in soil at the site do not pose an unacceptable risk to human health.

Compounds without toxicity values and TICs were evaluated qualitatively and were not considered to pose a threat to human health based on low toxicity, low potential for human exposure (due to infrequent detection), and low detected concentrations.

Based on the results of the HHRS, it was concluded that COIs in subsurface soil at Landfill No. 1 do not pose an unacceptable risk to human health.

Recommendations

Based on the results and conclusions of the Phase I RFI, "**No Further Action**" is recommended for this SWMU. This recommendation is supported by lack of a significant release of hazardous constituents into subsurface soil and a human health risk screen that

indicated that COIs in subsurface soil at Landfill No. 1 do not pose an unacceptable risk to human health.

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REFERENCES

Adams, R.S. Jr. 1972. "Effect of Soil Organic Matter on the Movement and Activity of Pesticides in the Environment." In Traces in Environmental Health-V, Proceedings of the Conference at the University of Missouri. D.D. Hemphill (ed.). University of Missouri.

Anderson, M.K., R.L. Johnson, and J.F. Pankow. 1992. "Dissolution of Dense Chlorinated Solvents into Groundwater: Dissolution from a Well-Defined Residual Source." Groundwater. Vol. 30, No. 2.

Dragun, J. 1988. The Soil Chemistry of Hazardous Materials. Hazardous Materials Control Research Institute. Silver Spring, Maryland.

Freeze, R.A. and J.A. Cherry. 1979. Groundwater. Prentice-Hall, Inc., Englewood Cliffs, NJ. Page 29.

Gutentag, E.D., et al. 1984. Geohydrology of the High Plains Aquifer in Parts of Colorado, Kansas, Nebraska, New Mexico, Oklahoma, South Dakota, Texas, and Wyoming. USGS Professional Paper 1400-B.

Hale, Bruce. 1992. Personal communication between Bruce Hale and Woodward-Clyde Consultants on May 11, 1992.

Hawley, J.W., et al. 1976. Quaternary Stratigraphy in the Basin and Range and Great Plains Provinces, New Mexico and Western Texas. Dowden, Hutchinson & Ross, Inc. Stroudsburg, Pennsylvania.

Howard, P.H., R.S. Boethling, W.F. Jarvis, W.M. Meylan, E.M. Michalenko. 1991. Handbook of Environmental Degradation Rates. Lewis Publishers, Inc. Chelsea, Michigan.

Kearney, A.T. 1987. Preliminary Review/VSI Report, RCRA Facility Assessment Cannon Air Force Base. U.S. Environmental Protection Agency, Region VI by A.T. Kearney, Inc., Chicago, Illinois. 1987.

Lee Wan & Associates, Inc. 1990. RCRA Facility Investigation Work Plan, Volumes I and II - Cannon AFB, New Mexico. Prepared for 27 CSG/DEC Cannon AFB, New Mexico. June.

Lindsay, W.C. 1979. Chemical Equilibria in Soils. John Wiley and Sons. N.Y, N.Y.

Luckey, R.R., et al. 1981. Water-level and Saturated Thickness Changes, Predevelopment to 1980, in the High Plains Aquifer in Parts of Colorado, Kansas, Nebraska, New Mexico, Oklahoma, South Dakota, Texas, and Wyoming. Hydrologic Investigation Atlas HA-652. U.S. Geological Survey.

Lyman, W.L., W.F. Reehl, and D.H. Rosenblatt. 1990. Handbook of Chemical Property Estimation Methods. American Chemical Society. Washington, D.C. 2nd Edition.

McCarthy, J.F. and J.M. Zachara. 1989. "Subsurface Transport of Contaminants." Environ. Sci. Technol. Vol. 23, No. 5. pp. 496-502.

Montgomery, J.H. and L.M. Welkom. 1991. Groundwater Chemicals Desk Reference. Lewis Publishers, Inc. Chelsea, Michigan.

New Mexico Department of Game and Fish. 1995. New Mexico Wildlife of Special Concern in Curry County. Query (fax) from the Biota Information System of New Mexico, Sept. 6, 1995. Conservation Services Division, Santa Fe, NM (fax from John Klingel).

Ney , R.E. 1990. Where Did That Chemical Go? Van Nostrand Reinhold. New York.

Olsen, R.L. and A. Davis. 1990. "Predicting the Fate and Transport of Organic Compounds in Groundwater, Part I." Hazardous Material Control. May-June. pp. 39-64.

Radian Corporation. 1986. Installation Restoration Program Phase II - Confirmation/ Quantification Stage I, Cannon AFB, N.M. Vols. I (text) & II (Appendixes A-M). September. Final Report for period 9/84-4/85.

Sivinski, R. and K. Lightfoot. 1992. Inventory of Rare and Endangered Plants of New Mexico. New Mexico Forestry and Resources Conservation Division; Energy, Minerals and Natural Resources Department, Santa Fe, NM.

U.S. Air Force (USAF). 1990. Final Environmental Impact Statement, Realignment of Cannon AFB, Curry County, New Mexico. May.

U.S. Department of Agriculture (USDA) Soil Conservation Service. 1958. Soil Survey of Curry County, New Mexico. Soil Survey Series 1953, No. 4. U.S. Government Printing Office.

U.S. Environmental Protection Agency (EPA). 1989. Risk Assessment Guidance for Superfund-Volume I, Human Health Evaluation Manual (Part A). EPA/540/1-89/002. December.

U.S. Environmental Protection Agency (EPA). 1990. National Oil and Hazardous Substance Pollution Contingency Plan. 40 CFR 300. 55FR 8666. March 8.

U.S. Environmental Protection Agency (EPA). 1991. Role of Baseline Risk Assessment in Superfund Remedy Selection Decisions. OSWER Directive 09355.0-30. April 22

U.S. Environmental Protection Agency (EPA). 1994a. Calculating the Concentration Term for Risk Assessment: Use of one "C" Term to Estimate a Lower Average and an Upper RME Risk Range. Region 8 Superfund Technical Guidance. September.

U.S. Environmental Protection Agency (EPA). 1994b. Soil Screening Guidance. Review Draft. OSWER 9355.4-14FS. December.

U.S. Environmental Protection Agency (EPA). 1995a. Regional III Risk-Based Concentration Table, July-December 1995. USEPA Region III. Philadelphia, October 20.

U.S. Environmental Protection Agency (EPA). 1995b. Region IX Preliminary Remediation Goals (PRGs), Second Half 1995. USEPA Region IX. San Francisco, CA. September 1.

U.S. Environmental Protection Agency (EPA). 1996. Integrated Risk Information System (IRIS). On-line database.

U.S. Fish and Wildlife Service (USFWS). 1995. List of Federal Threatened and Endangered Species for Curry County, New Mexico. Fax from New Mexico Ecological Services State Office, Albuquerque, NM. Fax from David Leal, October 24, 1995.

Weeks, J.B., and E.D. Gutentag. 1981. Bedrock Geology, Altitude of Base and 1980 Saturated Thickness of the High Plains Aquifer in Parts of Colorado, Kansas, Nebraska, New Mexico, Oklahoma, South Dakota, Texas, Wyoming: Hydrologic Investigation Atlas. HA-648, U.S. Geological Survey.

William Matotan and Associates Inc. 1985. Water Well Master Plan Survey. Prepared for Department of the Air Force, Cannon Air Force Base, New Mexico.

Woodward-Clyde. 1994. Concentrations of Selected Naturally Occurring Chemical Constituents in Soil and Groundwater at Cannon Air Force Base, New Mexico. March.

Woodward-Clyde. 1995a. Field Sampling Plan Supplement. RCRA Facility Investigation Phase I Work Plan for Landfill No. 1 (SWMU No. 74). Cannon Air Force Base, Clovis, New Mexico.

Woodward-Clyde. 1995b. Management Action Plan. Cannon Air Force Base, Clovis, New Mexico. Final. October 1994.

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