



May 12, 1995

Department of the Army
Corps of Engineers, Omaha District
Attn: CEMRO-ED-EC (Douglas Mellema, P.E.)
215 North 17th Street
Omaha, Nebraska 68102-4978

Subject: Recommended Soil Boring Locations,
Landfill No. 5, Phase I RCRA Facility Investigation,
Cannon Air Force Base, New Mexico
Contract DACW45-93-D-0005
Delivery Order 0012
Project No. C3M11M

Dear Mr. Mellema:

The purpose of this letter is to present recommended soil boring locations for the Landfill No. 5 Phase I RCRA Facility Investigation (RFI) at Cannon Air Force Base (CAFB). As described in Section 4.2 (Step 4) of the Phase I, RFI Work Plan (Work Plan), 30 soil borings will be located based on results of the geophysical and soil gas surveys. Locations of the borings require approval by the New Mexico Environment Department (NMED) and USEPA Region VI (EPA) before the borings are drilled. The location rationale presented in this letter (including Table 1 and Drawing 1) along with the Geophysical Survey and Soil Gas Survey reports provide the necessary information for NMED and EPA to review and approve the recommended locations.

As discussed in Section 4.2, RFI Decision Process, Step 3 of the Work Plan, soil sampling will be focused in areas that have the greatest potential for a release of hazardous constituents to the environment.

To meet this overall objective, the following three factors were considered in selecting boring locations:

1. Boundaries of landfill trenches previously mapped by CAFB
2. Geophysical anomalies identified during the surface geophysical survey (total magnetic field results appeared to be most useful in delineating probable landfill trenches).
3. Soil gas survey results.

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Attached Drawing 1 prepared for the Soil Gas Survey report presents the above information in a composite, overlay format along with recommended locations for 30 soil borings. Location rationale for each boring is shown in Table 1.

In addition, five evaluation criteria for selecting boring locations based on soil gas results were recommended in the Soil Gas Survey Report (Section 5.3). The criteria were developed to both evaluate areas with high photoionization detector (PID) readings and to assess whether the PID screening provided sufficient information to identify areas of potential release(s) of hazardous volatile organic compounds (VOCs). These criteria are:

- A. Evaluate areas with:
 - 1. elevated field PID readings within mapped trench boundaries/geophysical anomalies.
 - 2. low field PID readings but within mapped trench boundaries/geophysical anomalies to assess whether the PID screening may have missed potential releases of hazardous VOCs.
 - 3. elevated field PID readings outside of mapped trench boundaries/geophysical anomalies.
- B. Evaluate areas which exhibited low field PID readings but moderate chlorinated solvent concentrations in gas chromatograph (GC) samples to assess whether the PID screening adequately represented potential releases of chlorinated solvents.
- C. Evaluate areas which exhibited low or non-detect field PID readings but detectable petroleum related compounds (i.e., BTEX) in GC samples to assess whether the PID screening detection limit was sufficiently low to represent areas in which BTEX compounds might be present in soil at concentrations that are potentially hazardous.
- D. Evaluate areas where VOCs, which may pose a human health risk in soil if present at moderate to low concentrations, were found in GC analysis.

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- E. Evaluate and compare VOCs tentatively identified in soil gas samples to VOCs identified through GC analysis with mass spectral confirmation (GC/MS) of soil samples to be collected during the Phase I RFI, to verify their identity as potential chemicals of interest.

Evaluation of the above criteria in conjunction with analytical results from soil samples will provide information to assess whether soil gas results provided a good screening tool for locating areas of potential release of hazardous VOCs to the environment at Landfill No. 5.

It should be noted that the highest VOC concentrations detected in soil gas GC samples were tentatively identified as dichlorodifluoromethane (freon-12). This compound was a common refrigerant used at the time Landfill No. 5 was active, and would not likely be considered a chemical of concern in a human health risk evaluation if present in soil. The presence of this compound and trichlorofluoromethane (freon-11), another common refrigerant detected in soil gas, will be evaluated in soil by analysis of Appendix IX constituents in the deepest soil sample collected in each boring. However, these compounds are not included in the Method 8240 analyses for chemicals of interest which will be conducted on shallower soil samples.

Table 1 presents boring location rationale according to the three main factors (i.e., 1 - mapped trench boundary [23 borings]; 2 - geophysical anomaly [25 borings]; 3 - soil gas results [30 borings]) with a numeric/alphabetic/numeric notation for soil gas to represent soil gas criteria (i.e., 3A(1) - elevated field PID reading within trench boundary).

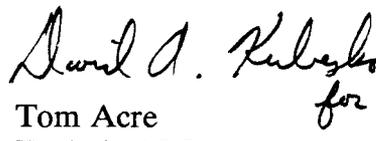
It is important to refer to the geophysical and soil gas technical reports while reviewing the recommended soil boring locations. Information contained in those reports, particularly electromagnetic geophysical anomalies and soil gas GC results, provides additional support for our selection.

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If you have questions regarding the recommended boring locations, please contact us at your earliest convenience.

Sincerely,


Jeffrey Ehrenzeller
Project Manager


Tom Acre
Technical Manager

JLE:jlt
Attachments

(2 copies sent)
2c: Mr. John Constantine, Cannon AFB
1c: File C3M11M-008

TABLE 1
RECOMMENDED SOIL BORINGS FOR LANDFILL NO. 5
INCLUDING LOCATION RATIONALE

Boring Number	Location	
	Field Coordinates (Grid Point)	Location Rationale ⁽¹⁾
B-1	N-1400, E-2250 (R46)	1, 2, 3A(1), 3E
B-2	N-1800, E-2200 (Z45)	1, 2, 3A(2)
B-3	N-1550, E-2100 (U43)	1, 2, 3A(1), 3E
B-4	N-1200, E-2150 (N44)	1, 2, 3A(1), 3E
B-5	N-1150, E-2100 (M43)	1, 2, 3A(1), 3D, 3E
B-6	N-1850, E-2025 (SB54)	1, 3A(1), 3E
B-7	N-1750, E-1975 (SB52)	1, 3A(1)
B-8	N-1450, E-2025 (SB46)	1, 3A(1)
B-9	N-700, E-1950 (D40)	1, 2, 3A(2)
B-10	N-1000, E-1950 (J40)	1, 2, 3A(1), 3D, 3E
B-11	N-1250, E-1900 (O39)	1, 2, 3A(1), 3E
B-12	N-1450, E-1775 (SB57)	1, 2, 3A(1), 3E
B-13	N-850, E-1900 (G39)	1, 2, 3A(1), 3E
B-14	N-1000, E-1800 (J37)	1, 2, 3A(2)
B-15	N-800, E-1700 (F35)	1, 2, 3A(1), 3E
B-16	N-1500, E-1500 (T31)	1, 2, 3A(2)
B-17	N-1250, E-1650 (O34)	1, 2, 3A(1)
B-18	N-1500, E-1625 (SB65)	1, 2, 3A(1), 3D, 3E
B-19	N-1850, E-1600 (AA33)	1, 3A(1)
B-20	N-1650, E-1420 (SB73)	3A(3), 3E
B-21	N-700, E-1550 (D32)	2, 3A(2), 3C, 3E
B-22	N-950, E-1350 (I28)	1, 2, 3A(2), 3B, 3D, 3E
B-23	N-1150, E-1350 (M28)	1, 2, 3A(1), 3E
B-24	N-900, E-1500 (H31)	2, 3, 3E
B-25	N-900, E-1200 (H25)	1, 2, 3A(2), 3E

TABLE 1
(Concluded)

Boring Number	Location	
	Field Coordinates (Grid Point)	Location Rationale ⁽¹⁾
B-26	N-835, E-1000 (SB33)	2, 3A(1)
B-27	N-1250, E-1175 (SB81)	2, 3A(1)
B-28	N-1400, E-1075 (SB87)	2, 3A(1)
B-29	N-1200, E-725 (SG10)	2, 3A(2)
B-30	N-1550, E-550 (U12)	2, 3A(2)

Notes:

⁽¹⁾ Location rationale designations correspond to the following:

- 1 - Within trench boundary previously mapped by CAFB.
 - 2 - Mapped geophysical anomaly (total magnetics primary consideration; electromagnetic results secondary).
 - 3 - Soil gas results.
- A(1) elevated field PID reading within mapped trench boundary/geophysical anomaly.
 - A(2) low field PID reading within mapped trench boundary/geophysical anomaly.
 - A(3) elevated field PID reading outside of mapped trench boundary/geophysical anomaly.
 - B low field PID, moderate GC concentration of chlorinated solvents.
 - C low or non-detect field PID readings, detectable petroleum related compounds in GC.
 - D Volatile Organic Compounds (VOCs) in GC samples. VOCs could pose human health risk if found at moderate to low concentrations in soil.
 - E Compare VOCs identified in soil gas by GC to those identified by GC/MS in soil samples to be collected in Phase I RFI.

**TO VIEW THE MAP AND/OR
MAPS WITH THIS DOCUMENT,
PLEASE CALL THE
HAZARDOUS WASTE BUREAU
AT 505-476-6000 TO MAKE AN
APPOINTMENT**