INSTALLATION RESTORATION PROGRAM

FINAL
ABBREVIATED SITE INVESTIGATION
SITES 3 AND 4

APPENDICES A - K

158th FIGHTER WING
VERMONT AIR NATIONAL GUARD
SOUTH BURLINGTON, VERMONT

NOVEMBER 1996

DISTRIBUTION STATEMENT A
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HAZARDOUS WASTE REMEDIAL ACTIONS PROGRAM
Environmental Restoration and Waste Management Programs
Oak Ridge, Tennessee 37831-7606
managed by LOCKHEED MARTIN ENERGY SYSTEMS, INC.
for the U.S. DEPARTMENT OF ENERGY under contract DE-AC05-84OR21400

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SITE INVESTIGATION REPORT, 158TH FIGHTER WING, VERMONT AIR NATIONAL GUARD, SOUTH BURLINGTON, VERMONT. THE FOLLOWING TWO SITES WERE INVESTIGATED UNDER THE INSTALLATION RESTORATION PROGRAM: SITE 3 - DRY WELL, SITE 4 - DRAINAGE DITCH AREA. SOIL AND GROUNDWATER SAMPLES WERE COLLECTED AND ANALYZED. BOTH SITES ARE RECOMMENDED FOR FURTHER INVESTIGATION.

VOL II - APPENDICES / OF TWO VOL

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Final

ABBREVIATED SITE INVESTIGATION REPORT
SITES 3 AND 4

158th Fighter Wing
Vermont Air National Wing
South Burlington, Vermont

Submitted to:

AIR NATIONAL GUARD READINESS CENTER
ANDREWS AIR FORCE BASE, MARYLAND

Submitted by:

HAZARDOUS WASTE REMEDIAL ACTIONS PROGRAM
LOCKHEED MARTIN ENERGY SYSTEMS, INC.
OAK RIDGE, TENNESSEE 37831

for the:

U.S. DEPARTMENT OF ENERGY

Prepared by:

EARTH TECH, INC.
800 Oak Ridge Turnpike, Suite C-100
Oak Ridge, Tennessee 37830

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NOVEMBER 1996

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APPENDIX A: FIELD CHANGE REQUEST FORMS

Revision Date: May 1990

7. FIELD CHANGE REQUEST FORM

Field change No. 1
Page 1 of 1

Project Vermont Air National Guard Base, Burlington, Vermont

Project No. 931802-08/10

Applicable Document: Final Supplemental Remedial Investigation Sampling and Analysis Plan (Earth Tech August 1994).

Description:
Page 2-52, Section 2.7.7 "Site Cleanup", states investigation derived wastewater will be analyzed for parameters identical to those implemented for groundwater samples.

Reason for change: To enable timely and cost efficient characterization of contained wastewater, the required analysis was reduced to VOCs 8010/8020 per VT HMMD approval. Analysis for additional parameters are required only if VOCs 8010/8020 analyte detections exceed VT Groundwater Enforcement Standards by 100X.

Recommended disposition: Modify the procedure stated on page 2-52. Considering ultimate disposal to the local Sanitary Sewer System, dilution at the nearest sewer system treatment facility (which processes approximately 1.5 million gallons of wastewater daily) minimizes the need for detailed analytical data on small (1,000-4,000 gal) volumes of wastewater.

Impact on present and completed work:
Modified procedure will enable more timely and cost efficient characterization of investigation derived wastewater

Final disposition:
Modification was approved verbally by HAZWRAP, ANGRC, and VT HMMD - October 1994.

Request by:
Field/Project Manager: Greg Mayer Earth Tech 11/22/94

Approvals:
HAZWRAP Project Manager: _____

Note: The HAZWRAP Project Manager is notified of the need for change in project cost, schedule direction, or scope. This form does NOT satisfy Sect. 3, "Changes," of contract Terms and Conditions.

Revision Date: May 1990

7. FIELD CHANGE REQUEST FORM

Field change No. 2 (TASK 8)
Page 1 of 1

Project Vermont Air National Guard Base, S. Burlington, VT

Project No. 931802-08

Applicable Document: Final Abbreviated Site Investigation Work Plan (Earth Tech August 1994).

Description:
Section 2.0 "FIELD INVESTIGATIONS" states that the field program at IRP Sites 3 and 4 will include aquifer slug testing and 2 rounds of groundwater sampling.

Reason for change: The primary objective of the SI at Sites 3 and 4 (confirmation of soil and groundwater contamination was achieved during Fall 1994 sampling and analysis activities; omission of slug testing and 2nd round of groundwater sampling will enable timely completion of SI Report.

Recommended disposition:
Approve removal of slug testing and 2nd round of groundwater sampling from SI tasks.

Impact on present and completed work:
Enable timely completion and submittal (June 1995) of Internal Draft SI Report. Otherwise, due to laboratory analysis and subsequent data validation, SI Report would not be available until July or August 1995.

Final disposition:
Modification was verbally approved by HAZWRAP prior to mobilization for Spring 1995 RI activities.

Request by:
Field/Project Manager: Greg Mayhew EARTH TECH 6/1/95

Approvals:
HAZWRAP Project Manager:

Note: The HAZWRAP Project Manager is notified of the need for change in project cost, schedule direction, or scope. This form does NOT satisfy Sect. 3, "Changes," of contract Terms and Conditions.

7. FIELD CHANGE REQUEST FORM

Field change No. 3
Page 1 of 1

Project: Vermont Air National Guard Base, Burlington, VT

Project No.: 93180Z-08

Applicable Document: Final Supplemental Remedial Investigation Sampling and Analysis Plan (Earth Tech August 1994)

Description: Page 2-40, Section 2.3.2 "Field PID Headspace Screening," states that "Headspace screening by PID will be employed on split-spoon samples." The headspace procedure included placing a portion of a soil sample in a teflon sheet capped glass jar, heating the sample to approximately 70°F, and noting the PID vapor reading after approximately 15 minutes.

Reason for change: Initial field sampling indicated more representative PID readings were obtained from scanning soil samples immediately upon opening the split spoon, therefore, these readings were used and the headspace method was discontinued.

Recommended disposition: Modify the accepted SAP procedure to allow utilization of initial PID scanning results to determine relative occurrence of hydrocarbon vapors and selection of soil samples submitted for laboratory analyses.

Impact on present and completed work: Modified procedure enabled timely and more accurate characterization of hydrocarbon contaminated soil samples.

Final disposition: Modification was approved verbally by HAZWRAP in the field (September 1994).

Request by:
Field/Project Manager: Greg Mayer Earth Tech 4/10/96

Approvals:
HAZWRAP Project Manager: _____

Note: The HAZWRAP Project Manager is notified of the need for change in project cost, schedule direction, or scope. This form does NOT satisfy Sect. 3, "Changes," of contract Terms and Conditions.

Revision Date: May '990

7. FIELD CHANGE REQUEST FORM

Field change No. 4
Page 1 of 1

Project: Vermont Air National Guard Base, Burlington, VT

Project No. 93802-08

Applicable Document: Final Supplemental Remedial Investigation Sampling and Analysis PLAN (EARTH TECH AUGUST 1994)

Description: Page 2-43, Section 2.4.2.1 "Monitoring Well Installation," states that "A bentonite/cement grout will be tremied into the annular space"... above the hydrated bentonite seal.

Reason for change: A high solids "Volclay®"-Type bentonite grout was used to seal the annular space above the hydrated bentonite seal in an effort to provide a competent annular seal with less risk of high-pH cement infiltration to the water bearing zone below. All bentonite grout reportedly does not experience shrinkage - common with cement mixtures.

Recommended disposition: Modify procedure to allow utilization of high solids "Volclay®"-Type bentonite grout in place of bentonite/cement mix grout

Impact on present and completed work: Modified procedure enabled timely and competent completion of well installation activities and eliminated the introduction of cement to the well annulus.

Final disposition: MoDification was approved verbally by HAZWRAP in the field (September 1994)

Request by:
Field/Project Manager: Greg Mayer EARTH TECH 4/10/96

Approvals:
HAZWRAP Project Manager: _____

Note: The HAZWRAP Project Manager is notified of the need for change in project cost, schedule direction, or scope. This form does NOT satisfy Sect. 3, "Changes," of contract Terms and Conditions.

APPENDIX B: FIELD SCREENING DATA

ENVIROSURV
INC.
Environmental Sampling and Analysis

September 29, 1994

Mr. Greg Maynor
EarthTech
683 Emory Valley Road
Oak Ridge, TN 37830
Ph: (615) 483-9404 • Fax: (615) 481-3834

Dear Greg:

Enclosed please find several revisions to the Burlington, VT report we mailed to you last week. The corrected figures reflect some minor discrepancies we discovered in the reporting of groundwater results; namely confusion in the data table as to whether quantitation was in ppb or ppm for "hot" samples. Accordingly, we modified the data table by reporting all results in ppm to avoid any further misunderstanding. Finally, several pages of text (e.g., discussion of groundwater results) were modified slightly to reflect changes in the contouring of results.

We apologize for not catching the discrepancy sooner. In the future we will attempt to report all results in consistent units. Please call if you have questions on this communication. We look forward to working with you again soon.

Sincerely,
ENVIROSURV, INC.

Jeffrey C. Tuttle, P.G.
V.P. - Environmental Services

cc: G. Hunt Chapman, EnviroSurv, Inc.
File Copy

2800-C Dorr Avenue, Fairfax, Virginia 22031
Phone 703-204-3580 FAX 703-204-3581

sampling bulbs. A sample was withdrawn through the septum using a syringe and injected directly into the GC. Water samples were received in the laboratory in completely filled 40 ml VOA vials. Ten mls were subsequently decanted and a headspace sample was taken using a gas-tight syringe. Water headspace was injected directly into the GC.

IV GENERAL INTERPRETATION OF FIELD SAMPLING AND MOBILE LABORATORY ANALYTICAL RESULTS

The following media were sampled to determine the nature and extent of possible contamination by target volatile constituents.

- 133 soil-gas samples (plus approximately 10% QA/QC data) collected from three sites.

- 18 groundwater samples collected from two of three sites.

Sampling locations and corresponding soil-gas and shallow groundwater results for the three sites are included in **Figures 5 through 9**. **Tables 1&2** contain all soil-gas and groundwater screening data, including QA/QC results.

• **Site 1 - Fire Department Training Area/Old Landfill (Figure 5)** - Petroleum hydrocarbons were detected in soil-gas at concentrations up to 21,000 ppm Total Volatiles. Significant "hits" for the most part appeared within and in close proximity to former burn pads. One additional anomaly in the 100 ppm range was detected in the center of the "old landfill."

Low-level chlorinated solvents (< 2 ppm TCA) were detected in soil-gas at several locations within and along the northwestern boundary of the "old landfill." DCE was detected at sample location SG-1, within the burn pad. Its presence indicates that solvents were likely burned along with petroleum hydrocarbons for fire training purposes.

No groundwater samples were collected at Site 1. Nonetheless, deep (> 10') soil-gas data, from sandy soils in close proximity to the shallow water table, suggest that groundwater has likely been impacted by historical burning and land disposal activities.

• **Site 3 - Dry Well (Figures 6&7)** - Petroleum hydrocarbons were detected in soil-gas at concentrations up to 27,000 ppm Total Volatiles. Significant "hits" for the most part were detected in close proximity to Building #205. There appears to be some association between sample concentration and the location of subsurface storm drains and old JP4 distribution pipelines. Total Volatile results from one sample in each of the "old tank pits" indicated the potential for residual soil and/or groundwater contamination in these areas.

Low-level chlorinated solvents (< 1 ppm TCE and PCE) were detected at several locations west of Building #205 (e.g., 3SG-1, 3SG-7 & 3SG-8). There presence may indicate some relationship between the numerous subsurface drains and utility trenches, and contaminant movement and distribution.

Significant groundwater results (up to 84,000 ppm Total FID volatiles) were detected throughout the entire Site 3 area. At every sample location, benzene was quantitated at one to several orders of magnitude above the Federal Safe Drinking Water Act (SDWA)

Maximum Concentration Level (MCL) of 5 ppb, a common health and regulatory corrective action benchmark. It appears that groundwater has been severely impacted at Site 3. The significant dissolved-phase concentrations detected indicate the strong likelihood for free product migration.

• <u>Site 4 - Drainage Ditch Area</u> **(Figures 8&9)** - Petroleum hydrocarbons were detected in soil-gas at concentrations up to 17,000 ppm Total Volatiles. Significant "hits" were found primarily west of the drainage ditch. Contamination appears to trend off-site in a northerly direction from 4SG-8, 4SG-9, 4SG-10 and 4SG-11. A second 100 ppm range anomaly occurs along the axis of the trench in an east/west direction.

No chlorinated solvents were detected in soil-gas at Site 4.

Significant groundwater results (up to 47,000 ppm Total FID volatiles) were detected throughout much of the Site 4 area. Maximum concentrations correlated well with soil-gas data, and were located in the area west of the drainage ditch. At six of ten locations, benzene was quantitated at levels from one to four orders of magnitude above the SDWA MCL of 5 ppb. Similar to Site 3, it appears that groundwater has been severely impacted at Site 4. The dissolved-phase concentrations detected also indicate the strong likelihood for free product migration beneath this portion of the base.

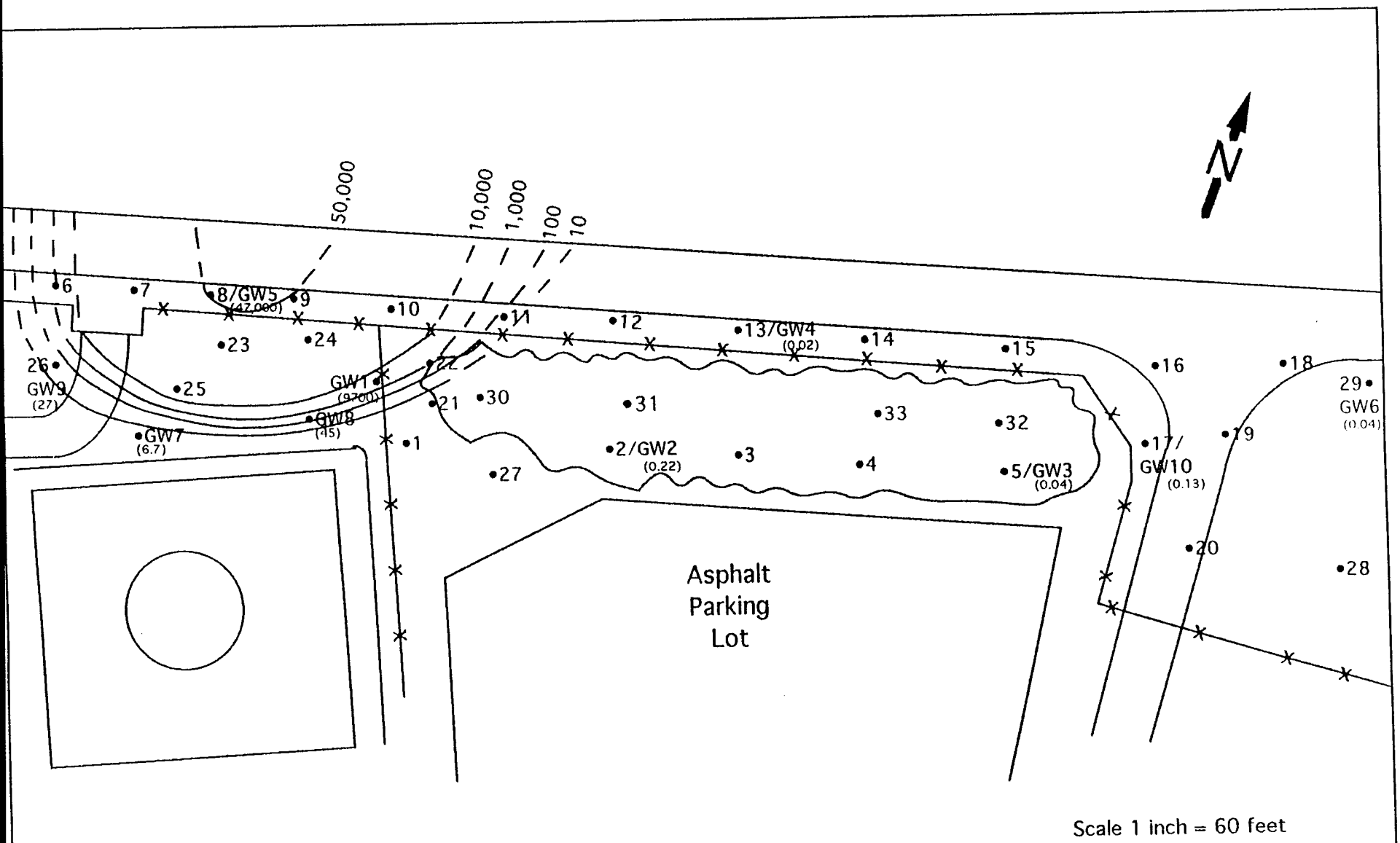

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Figure 9. Site 4 - Groundwater Results,
Total FID Volatiles, ppm

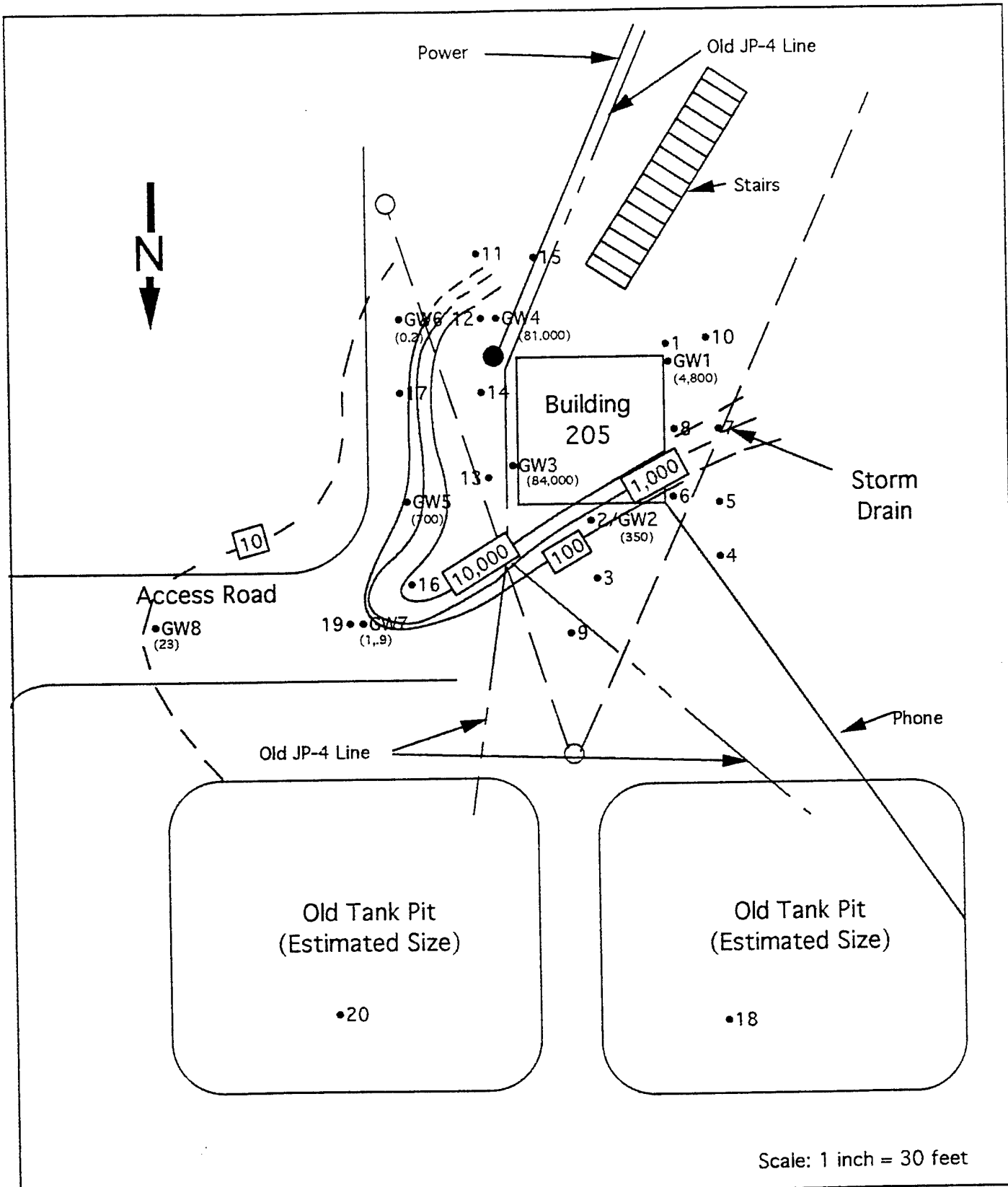

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Figure 7. Site 3-Groundwater Results
(Total FID Volatiles, ppm)

Table 2. Groundwater Data

Water results are expressed as ppm

Sample ID		1,1-DCE	t-1,2 DCE	c-1,2 DCE	1,1,1 TCA	TCE	PCE	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total Volatiles
Waters												
3GW 1	16.5	<2.0	<2.0	<2.0	<0.2	<0.2	<0.2	4000	4800	59	1800	4800
3GW 2	19	<2.0	<2.0	<2.0	<0.2	<0.2	<0.2	49	11	1.1	9.7	310
3GW 2 L	19	<2.0	<2.0	<2.0	<0.2	<0.2	<0.2	57	9	8.7	8.4	350
3GW 3	19	<2.0	<2.0	<2.0	<0.2	<0.2	<0.2	3000	1800	5000	500	84000
3GW 4	19	<2.0	<2.0	<2.0	<0.2	<0.2	<0.2	14000	18000	5000	340	81000
3GW 5	22	<2.0	<2.0	<2.0	<0.2	<0.2	<0.2	100	11	1.0	17	700
3GW 6	21	<0.002	<0.002	<0.002	<0.0002	<0.0002	<0.0002	0.23	0.048	0.023	0.037	0.2
3GW 7	24	<0.002	<0.002	<0.002	<0.0002	<0.0002	<0.0002	4.7	1.9	1.0	0.9	1.9
3GW 8	24	<2.0	<2.0	<2.0	<0.2	<0.2	<0.2	41	7.4	6.9	3.7	23
4GW 1	21	<2.0	<2.0	<2.0	<0.2	<0.2	<0.2	540	98	700	96	9700
4GW 2	30	<0.002	<0.002	<0.002	<0.0002	<0.0002	<0.0002	0.029	0.006	0.002	0.007	0.22
4GW 2 L	30	<0.002	<0.002	<0.002	<0.0002	<0.0002	<0.0002	0.040	0.010	0.002	0.009	0.28
4GW 3	30	<0.002	<0.002	<0.002	<0.0002	<0.0002	<0.0002	0.006	0.005	<0.002	<0.002	0.04
4GW 4	24	<0.002	<0.002	<0.002	<0.0002	<0.0002	<0.0002	0.002	0.002	<0.002	<0.002	0.023
4GW 5	24	<2.0	<2.0	<2.0	<0.2	<0.2	<0.2	9300	500	<2.0	660	47000
4GW 6	24	<0.002	<0.002	<0.002	<0.0002	<0.0002	<0.0002	<0.002	<0.002	<0.002	<0.002	0.036
4GW 6 L	24	<0.002	<0.002	<0.002	<0.0002	<0.0002	<0.0002	<0.002	<0.002	<0.002	<0.002	0.015
4GW 7	24	<0.002	<0.002	<0.002	<0.0002	<0.0002	<0.0002	0.77	0.33	0.26	0.62	6.7
4GW 8	21	<2.0	<2.0	<2.0	<0.2	<0.2	<0.2	56	19	53	11	45
4GW 9	21	<0.002	<0.002	<0.002	<0.0002	<0.0002	<0.0002	5.0	0.34	0.4	0.75	27
4GW10	21	<0.002	<0.002	<0.002	<0.0002	<0.0002	<0.0002	0.016	<0.002	0.006	0.005	0.13

L= Lab Duplicate
F= Field Duplicate

PRELIMINARY SITE INVESTIGATIONS REPORT: SOIL-GAS AND LIMITED SHALLOW GROUNDWATER SURVEY VERMONT AIR NATIONAL GUARD BASE BURLINGTON, VT

Prepared for:

The Earth Technology Corporation
1420 King Street, Suite 600
Alexandria, Virginia 22314

Prepared by:

EnviroSurv, Inc.
2800-C Dorr Avenue
Fairfax, Virginia 22031

September, 1994

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I PROJECT SUMMARY

The report findings presented herein, represent partial actions taken to identify problems with potentially contaminated sites at the Burlington, VT Air National Guard Base (ANGB). Prior to soil-gas and shallow groundwater sampling and analysis, The Earth Technology Corporation (TETC) performed a preliminary assessment of the subject Air National Guard facility. This effort included a surface reconnaissance and historical records survey for evidence of possible contamination. Three current or former "waste handling/disposal" sites were identified which had the potential for hazard-producing activity and/or environmental contamination. As a result, a preliminary soil-gas and shallow groundwater survey was recommended to evaluate and verify the existence of potential contamination at each site:

- **Figure 1.** Site 1 - Fire Department Training Area/Old Landfill
- **Figure 2.** Site 3 - Dry Well
- **Figure 3.** Site 4 - Drainage Ditch Area

These preliminary site investigations were a broad based screening effort to determine the general presence of target volatile organic compounds at each of the three subject sites. The Soil Vapor/Groundwater Screening Survey consisted of the following tasks:

- Development of a Field Sampling Plan (TETC)
- Field sampling of soil-gas and shallow groundwater for target VOCs (EnviroSurv, Inc.)
- Mobile laboratory analysis of soil-gas and shallow groundwater (EnviroSurv, Inc.)
- Validation, reduction and interpretation of mobile laboratory data (TETC and EnviroSurv, Inc.)
- Preparation of a Site Investigation Report (TETC and EnviroSurv, Inc.)

EnviroSurv, Inc. provided the following services in support of TETC's Preliminary Site Investigations at the Burlington, Vt ANGB:

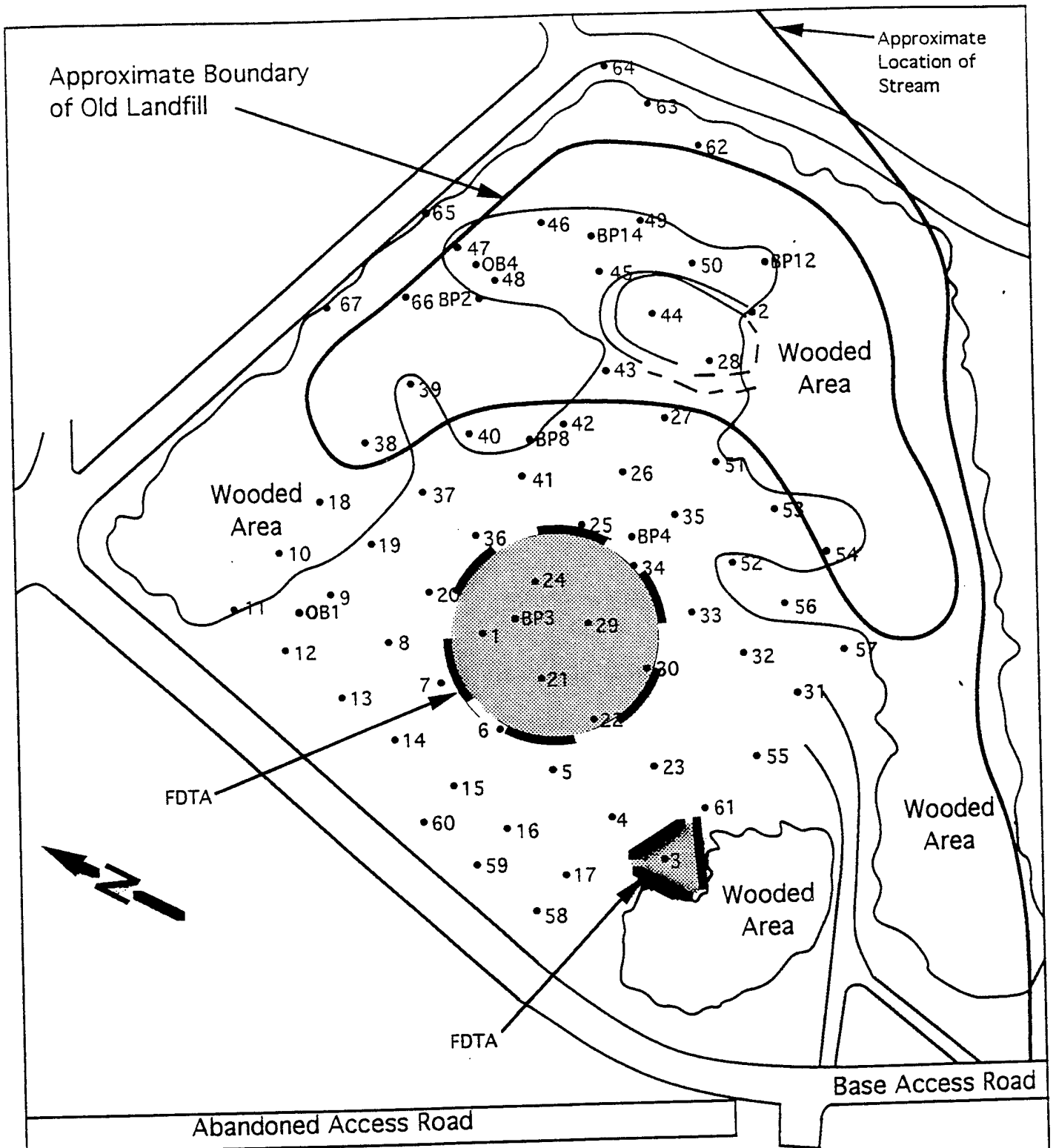
- Collection of 133 soil-gas samples and on-site analysis for BTEX and target chlorinated compounds at three different sites; 72 samples at Site 1, 21 samples at Site 3 and 40 samples at Site 4.

- Collection of 18 groundwater screening samples and on-site analysis for BTEX and target chlorinated compounds at two different sites; 8 samples at Site 3 and 10 samples at Site 4.

- Collection and analysis of approximately 10% QA/QC samples, including instrument and syringe blanks, and field and laboratory duplicates.

- Development and submittal of draft data tables and sample location maps for the three survey sites.

- Development and submittal of this Project Report which includes documentation of all field sampling and mobile laboratory procedures, and a general interpretation of data.



Scale: 1 inch = 100 feet

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Figure 1. Site 1-Vermont ANG Fire Department Training Area/Old Landfill

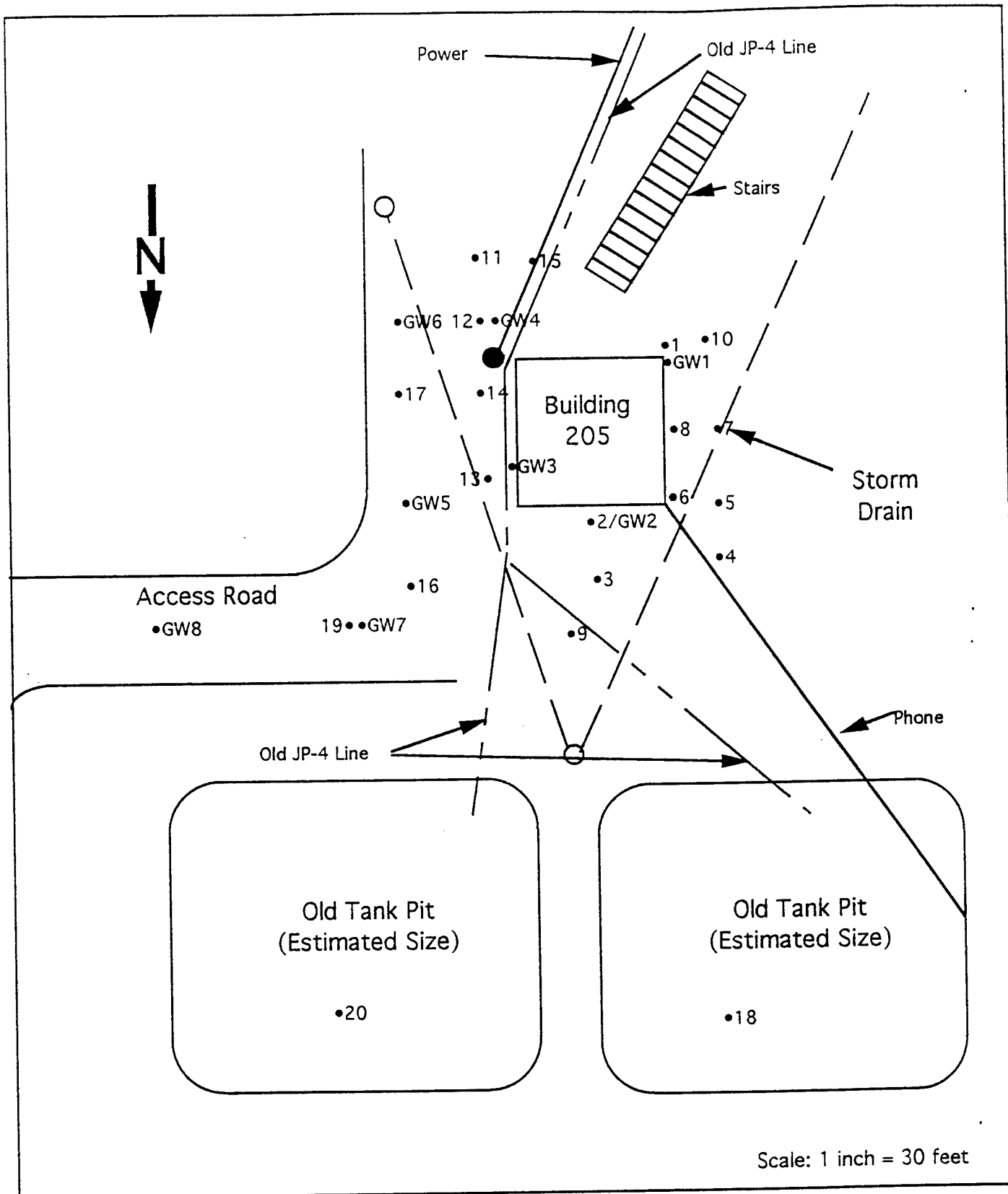

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Figure 2. Site 3-Vermont ANG Dry Well

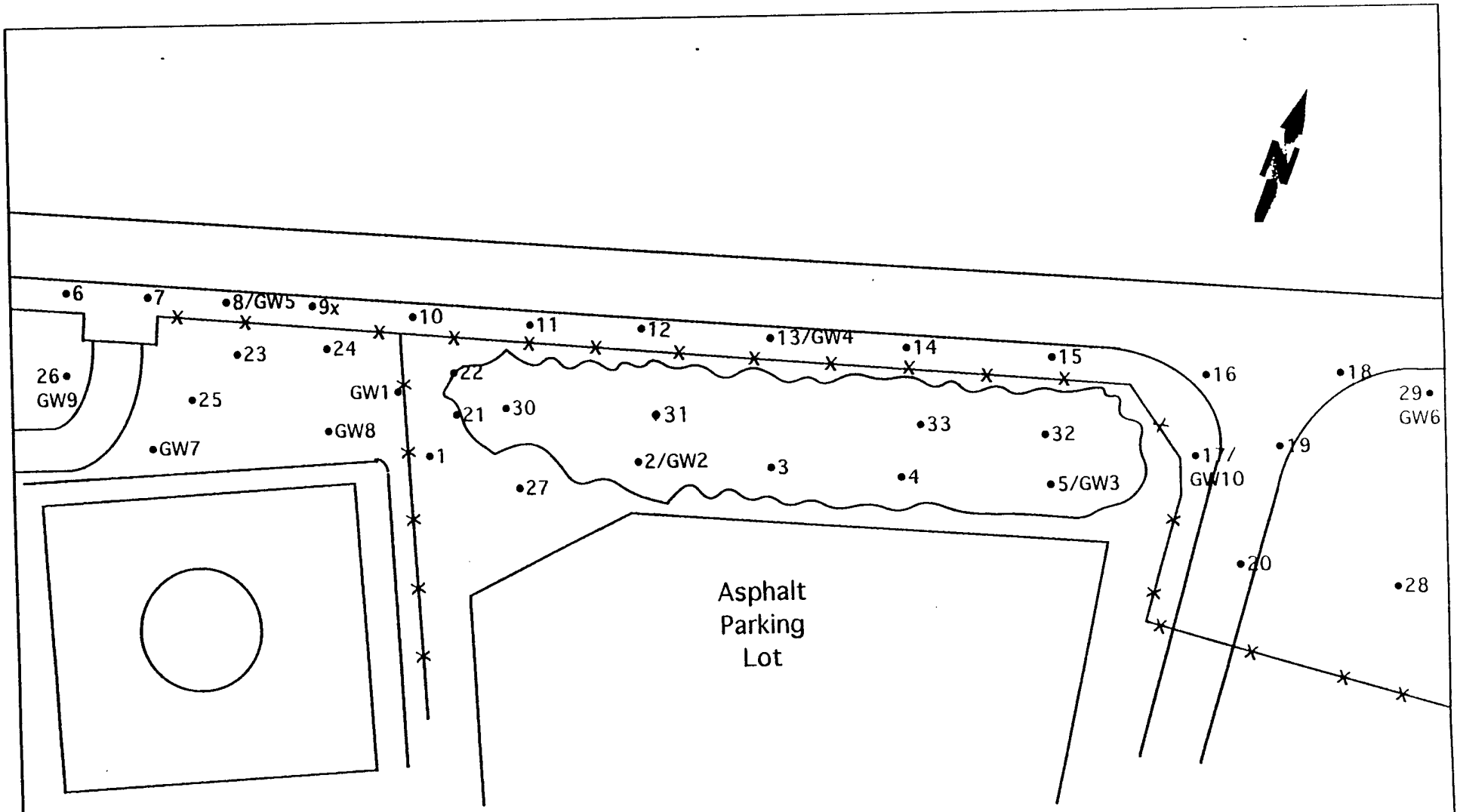

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Figure 3. Site 4-Vermont ANG Drainage Ditch Area

Major Findings

• Notable contamination by volatile petroleum hydrocarbon compounds, as indicated by soil-gas data, was found at all three sites investigated. Permeable sandy soil conditions were routinely encountered. As a result, soil-gas data should represent a "significant" radius of influence for collection. "Hot spot" areas were identified for further characterization during the groundwater screening phase of this investigation, and for future soil-boring and monitoring well installation work.

• Only extremely low (generally <1 ppm) levels of target chlorinated solvents were "sporadically" detected in soil-gas at two of the three sites investigated.

• Shallow groundwater was found to be "significantly" impacted at both sites investigated. As with soil-gas, the primary target compounds detected were petroleum hydrocarbons.

The soil-gas and limited groundwater screening results reported herein were utilized by TETC to select confirmatory soil boring and groundwater monitoring well locations during the next phase of investigation.

II PROJECT OBJECTIVES

Soil-gas sampling techniques are of two varieties: Passive and Active. Passive surveys which utilize a static trapping device implanted in the ground have the limitation that a long period of time is required for sample collection and analysis. Active surveys, on the other hand, provide results in near real-time and sampling plans can be modified as results become available from the on-site mobile laboratory. The "active" approach was employed during this investigation providing immediate field results for the detection of potentially "significant" target compound contamination.

All soil-gas and shallow groundwater samples were analyzed for the following target VOC compounds:

	Quantitation Limits	
	soil-gas, µg/L (ppm)	water, µg/L (ppb)
• Benzene	0.25 ppm	2.0 ppb
• Toluene	0.25 ppm	2.0 ppb
• Ethylbenzene	0.25 ppm	2.0 ppb
• Total Xylenes	0.25 ppm	2.0 ppb
• Total FID Volatiles	3.0 ppm	30 ppb
• 1,1-Dichloroethene (1,1-DCE)	0.1 ppm	2.0 ppb
• trans-1,2-Dichloroethene (t-1,2-DCE)	0.1 ppm	2.0 ppb
• cis-1,2-Dichloroethene (c-1,2-DCE)	0.1 ppm	2.0 ppb
• 1,1,1-Trichloroetnane (1,1,1-TCA)	0.01 ppm	0.2 ppb
• Trichloroethene (TCE)	0.01 ppm	0.2 ppb
• Tetrachloroethene (PCE)	0.01 ppm	0.2 ppb

III FIELD SAMPLING AND MOBILE LABORATORY PROCEDURES

Sampling Survey Design

TETC surface reconnaissance of the three "suspect" sites helped in the soil-gas and shallow groundwater sampling survey design. Factors which indicated possible environmental damage, such as stressed vegetation or other unnatural features related to anthropogenic sources (e.g., drainage ditches, drums, landfill areas, etc.) were identified. In general, soil-gas sample locations followed an evenly spaced grid. A lesser number of locations, however, were chosen according to specific site features as directed by TETC's on-site representative.

Field Activities

EnviroSurv, Inc.'s two-man probe sampling and mobile laboratory analysis team documented all field activities on both Field Sample Log Sheets and in Field Laboratory Notebooks. Information pertinent to sample collection (e.g., depth, volume, etc.) and analysis (e.g., QA /QC, target compounds identified, etc.) were recorded.

Field Sampling Procedures and QA/QC Protocols

Probe Placement: Soil-gas and groundwater sampling probes are constructed of 1/2-inch I.D. hardened steel in 3-foot lengths. The probe rods were driven into the soil by a hydraulic cylinder/percussion hammer unit mounted in the back of a 4-wheel-drive pickup truck. Probes were removed using the same hydraulic system. Asphalt and/or concrete penetration was required at some of the sample locations. A rotary drill attached to the hydraulic probe was used to auger a 1.5 inch pilot hole through up to 4-inches of pavement. The 3/4-inch outside diameter probe rod was then placed in the pilot hole and driven to depth.

Sample Collection: All information pertinent to the collection of field samples can be found on the Soil-Gas and Shallow Groundwater Sampling Log Sheets in **Appendix A**.

Soil-Gas Sample Collection: Once soil-gas probes were driven to the desired sampling depth (4 to 20' bgs), "post run" polypropylene tubing was attached to the lead rod via a threaded sample cap with o-ring (to prevent vacuum leakage). The dedicated sample line was then attached to the vacuum volume system located in the probe truck. A minimum of three tubing/sample container volumes (e.g., 2 liters) were purged before a sample was collected in a glass gas-sample bulb with Teflon stopcocks. Once filled, the sample bulbs were delivered immediately to the on-site laboratory for analysis. The estimated time from sample extraction to gas chromatograph injection was usually less than one to two hours. Collection of soil gas in glass bulbs permitted sample dilutions and laboratory duplicate analyses to be run from the same sample location, as required.

Groundwater Sample Collection: A pilot hole was driven to the desired sample depth using a 1-inch O.D. probe rod or 3-foot long slotted well point. At some locations water was sampled directly from the well point screen. At other locations probe rods were pulled and 1/2-inch I.D. PVC screen was temporarily installed for sampling. Once the well point or slotted screen was in place, "dedicated" polypropylene tubing. fitted with a small diameter foot-valve pump was inserted. Water samples were then containerized in 40 ml vials cleaned to EPA specifications, and were delivered immediately to EnviroSurv, Inc.'s on-site mobile laboratory for analysis.

Field Duplicates: Two glass gas-sample bulbs or 40 ml VOA vials were filled at approximately 10% of the sampling points and treated as field duplicates to check the precision of sample collection procedures.

Equipment Decontamination: Dedicated polypropylene sampling line was used at each individual soil-gas and/or groundwater sample location. Once used, the tubing was discarded. All non-expendable equipment which came in contact with extracted soil-vapor or shallow groundwater samples was thoroughly cleaned before re-use. Decontamination procedures included an initial scrub and wash using wire brushes and alconox detergent. After washing, equipment was rinsed with deionized water and allowed to air dry.

Field Laboratory Procedures and QA/QC Protocols

Instrumentation: All samples collected during the Burlington, VT ANGB Survey were analyzed on a Shimadzu 14A laboratory-grade GC equipped with both Flame Ionization and Electron Capture Detectors (FID/ECD). The analytical column used was a 105 meter x 0.53 mm Restek R_tx-volatiles megabore capillary column. The GC was controlled by a Shimadzu CR4-AX integrating computer equipped with a 20 MB hard disk for method and data storage, and a thermal transfer printer for hard-copy output.

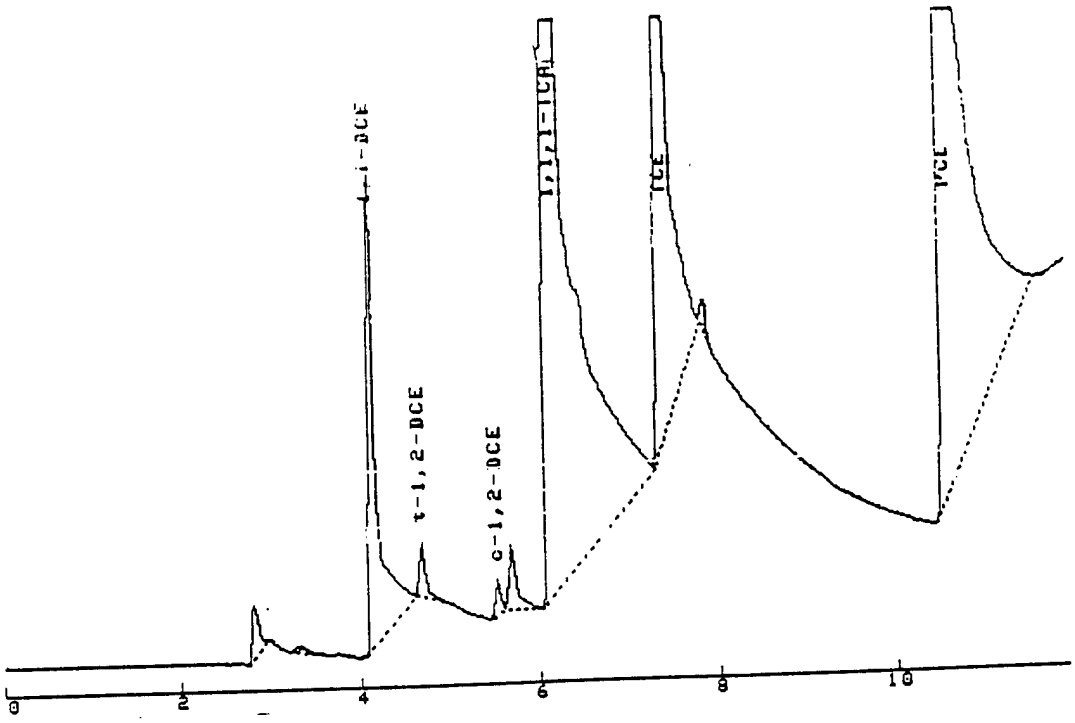
Sample Quantitation: The FID/ECD results for target aromatic and chlorinated volatiles were determined by calculating the areas of individual chromatogram peaks. Peaks resulting from injection disturbances (e.g., air peak) were carefully separated from the individual early eluting volatile peaks. The reported results for BTEX and chlorinated hydrocarbons in soil gas and water were quantitated using the response factors obtained from certified commercial standards. The total FID volatiles result was obtained by applying the response factor of toluene to all unknown peaks in the chromatogram. Because the response factors of all individual FID volatile compounds are unknown, the "total volatiles" result is semi-quantitative and is intended for use as a comparative technique among the samples.

Instrument Calibration: HAZWRAP level B QA/QC protocols were followed for both soil-gas and groundwater calibrations. The gas chromatograph was initially calibrated for soil-gas and water using a certified BTEX gas standard and/or field-prepared vapor or aqueous standards for the eleven target compounds of interest (See **Figure 4**. - Example Standards Chromatograms). All standards preparation was documented in the field laboratory log book and is traceable back to certified commercial standards. Retention times of standards were used to identify the chromatogram peaks and response factors were used to calculate concentrations for target compounds of interest.

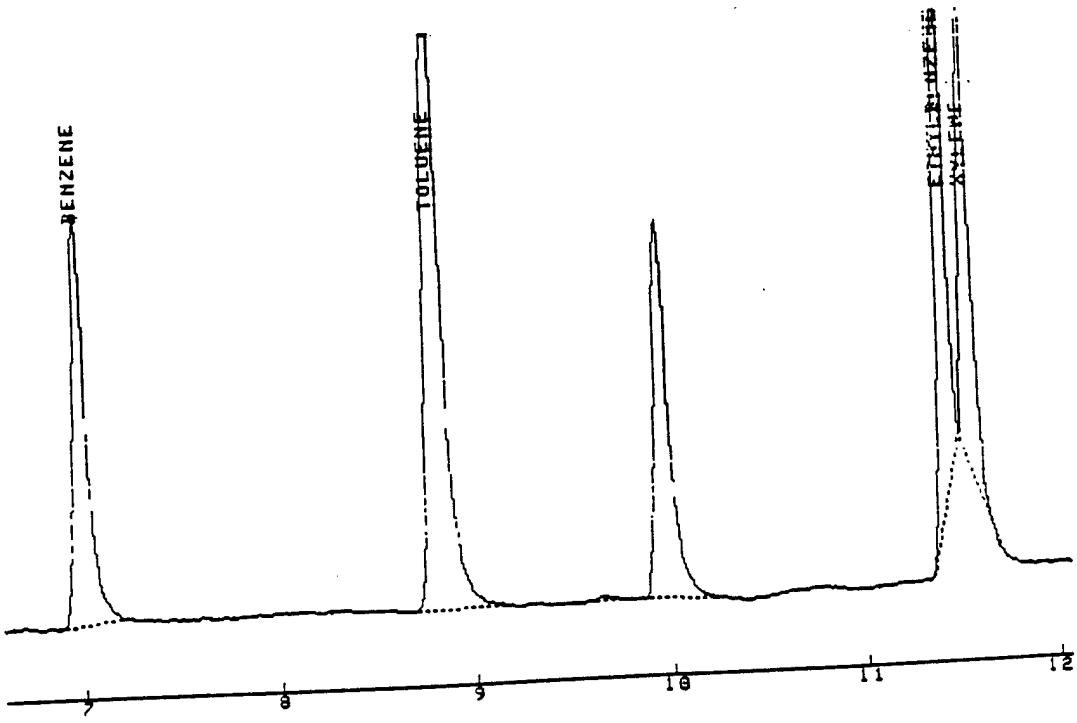
Laboratory Blanks: A method blank was run at the beginning of each day to check for potential contaminants in the analytical system. The blank was taken by withdrawing a headspace sample from an empty glass soil-gas bulb or 40 ml VOA vial containing deionized water. The blank was injected into the gas chromatograph in the same way as all other samples.

Laboratory Duplicates: Approximately 10% laboratory duplicate samples were injected to check the analytical precision of the method.

Sample Preparation: Soil-gas samples were received in the laboratory in 250 ml glass gas



Target Chlorinated Compound Standard



BTEX Standard

Figure 4. Example Standards Chromatograms

sampling bulbs. A sample was withdrawn through the septum using a syringe and injected directly into the GC. Water samples were received in the laboratory in completely filled 40 ml VOA vials. Ten mls were subsequently decanted, shaken for one minute, heated at 90° C for 30 minutes and a headspace sample was injected using a gas-tight syringe . See Appendix B for EnviroSurv SOP "Volatile Organics in Water by Manual Headspace".

IV GENERAL INTERPRETATION OF FIELD SAMPLING AND MOBILE LABORATORY ANALYTICAL RESULTS

The following media were sampled to determine the nature and extent of possible contamination by target volatile constituents.

- 133 soil-gas samples (plus approximately 10% QA/QC data) collected from three sites.

- 18 groundwater samples collected from two of three sites.

Sampling locations and corresponding soil-gas and shallow groundwater results for the three sites are included in **Figures 5 through 9**. **Tables 1&2** contain all soil-gas and groundwater screening data, including QA/QC results.

• **Site 1 - Fire Department Training Area/Old Landfill (Figure 5)** - Petroleum hydrocarbons were detected in soil-gas at concentrations up to 21,000 ppm Total Volatiles. Significant "hits" for the most part appeared within and in close proximity to former burn pads. One additional anomaly in the 100 ppm range was detected in the center of the "old landfill."

Low-level chlorinated solvents (< 2 ppm TCA) were detected in soil-gas at several locations within and along the northwestern boundary of the "old landfill." DCE was detected at sample location SG-1, within the burn pad. Its presence indicates that solvents were likely burned along with petroleum hydrocarbons for fire training purposes.

No groundwater samples were collected at Site 1. Nonetheless, deep (> 10') soil-gas data, from sandy soils in close proximity to the shallow water table, suggest that groundwater has likely been impacted by historical burning and land disposal activities.

• **Site 3 - Dry Well (Figures 6&7)** - Petroleum hydrocarbons were detected in soil-gas at concentrations up to 27,000 ppm Total Volatiles. Significant "hits" for the most part were detected in close proximity to Building #205. There appears to be some association between sample concentration and the location of subsurface storm drains and old JP-4 distribution pipelines. Total Volatile results from one sample in each of the "old tank pits" indicated the potential for residual soil and/or groundwater contamination in these areas.

Low-level chlorinated solvents (< 1 ppm TCE and PCE) were detected at several locations west of Building #205 (e.g., 3SG-1, 3SG-7 & 3SG-8). There presence may indicate some relationship between the numerous subsurface drains and utility trenches, and contaminant movement and distribution.

Significant groundwater results (up to 84,000 ppm Total FID volatiles) were detected throughout the entire Site 3 area. At every location, benzene was quantitated at orders of

magnitude above the Federal Safe Drinking Water Act (SDWA) Maximum Concentration Level (MCL) of 5 ppb, a common health and regulatory corrective action benchmark. It appears that groundwater has been severely impacted at Site 3. The significant dissolved-phase concentrations detected indicate the strong likelihood for free product migration.

• <u>Site 4 - Drainage Ditch Area</u> **(Figures 8&9)** - Petroleum hydrocarbons were detected in soil-gas at concentrations up to 17,000 ppm Total Volatiles. Significant "hits" were found primarily west of the drainage ditch. Contamination appears to trend off-site in a northerly direction from 4SG-8, 4SG-9, 4SG-10 and 4SG-11. A second 100 ppm range anomaly occurs along the axis of the trench in an east/west direction.

No chlorinated solvents were detected in soil-gas at Site 4.

Significant groundwater results (up to 47,000 ppm Total FID volatiles) were detected throughout much of the Site 4 area. Maximum concentrations correlated well with soil-gas data, and were located in the area west of the drainage ditch. At eight of ten locations, benzene was quantitated at levels from one to six orders of magnitude above the SDWA MCL of 5 ppb. Similar to Site 3, it appears that groundwater has been severely impacted at Site 4. The dissolved-phase concentrations detected also indicate the strong likelihood for free product migration beneath this portion of the base.

Table 1. Soil Gas Data

Soil gas results are expressed as ppm

Sample ID	Depth , ft.	1,1-DCE	t-1,2 DCE	c-1,2 DCE	1,1,1 TCA	TCE	PCE	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total Volatiles
Soil Gas												
1SG 1	5	31	<0.1	<0.1	<0.01	<0.01	<0.01	2100	1600	2700	3500	21000
1SG 1	9	38	<0.1	<0.1	<0.01	<0.01	<0.01	2000	1500	3000	3100	20000
1SG 1 F	9	39	<0.1	<0.1	<0.01	<0.01	<0.01	2100	1600	3000	3200	20000
1SG 2	5	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	5	4.1
1SG 2	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	4	1.1	0.65	3.1	120
1SG 2	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	2.4	<3.0
1SG 2 F	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 3	5	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	22	4.4	<0.25	9.5	160
1SG 3 L	5	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	29	5.6	<0.25	12	210
1SG 3	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	16	2.9	<0.25	9.2	130
1SG 4	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 4 L	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 5	7	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	5.8	2.9	4.8	3.4	50
1SG 6	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 7	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	630	480	470	370	9800
1SG 7 L	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	630	480	550	390	10000
1SG 8	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	340	380	500	400	6000
1SG 9	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.25	4	<0.25	6.6	45
1SG 10	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 11	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 12	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	0.53	<0.25	0.78	8.9
1SG 13	8	<0.1	<0.1	<0.1	<0.01	<0.01	0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 14	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 15	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	1.6	3.8	<0.25	19	170
1SG 16	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	4.2	31
1SG 17	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	1	2.4	<0.25	10
1SG 18	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 19	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	0.33	<0.25	0.65	11
1SG 20	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	420	490	410	360	11000
1SG 21	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	6.1	2.4	5.6	4.5	190
1SG 22	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.34	<0.25	0.79	<0.25	11
1SG 23	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 23 L	8	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	3.8
1SG 24	9	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	700	150	740	50	15000
1SG 25	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	100	52	340	40	2400

Table 1. Soil Gas Data (Con't.)

Soil gas results are expressed as ppm

Sample ID	Depth , ft.	1,1-DCE	t-1,2 DCE	c-1,2 DCE	1,1,1 TCA	TCE	PCE	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total Volatiles
1SG 26	10	<0.1	<0.1	<0.1	0.067	<0.01	<0.01	<0.25	<0.25	1	<0.25	7.7
1SG 27	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 27 F	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 28	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	44	2.6	30	27	440
1SG 29	9	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 30	9	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	16	1.5	17	22	170
1SG 31	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.29	<0.25	<0.25	1.4	9.8
1SG 32	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	1.1	0.42	6.2	7.0	29
1SG 33	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 34	9	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 35	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.85	<0.25	2.7	2.7	14
1SG 36	9	<0.1	<0.1	<0.1	<0.01	<0.01	0.01	770	250	1000	1300	15000
1SG 37	9	<0.1	<0.1	<0.1	0.051	<0.01	<0.01	<0.25	<0.25	1.7	1.4	6.6
1SG 38	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 39	10	<0.1	<0.1	<0.1	0.016	<0.01	<0.01	<0.25	<0.25	1.6	1	7.3
1SG 40	9	<0.1	<0.1	<0.1	0.52	<0.01	<0.01	<0.25	<0.25	1.9	1.4	7.8
1SG 41	10	<0.1	<0.1	<0.1	1.7	<0.01	<0.01	6.0	10	170	150	660
1SG 42	10	<0.1	<0.1	<0.1	0.91	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 43	10	<0.1	<0.1	<0.1	0.025	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 44	6	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	48	4.4	40	51	470
1SG 45	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 45 L	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 45 F	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 46	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 47	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	0.83	6.2
1SG 48	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 49	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 49 L	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 50	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	0.64	<0.25	3.5
1SG 51	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 51 L	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 52	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 52 F	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 52 L	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 53	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	0.71	3.1
1SG 54	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0

Table 1. Soil Gas Data (Con't.)

Soil gas results are expressed as ppm

Sample ID	Depth , ft.	1,1-DCE	t-1,2 DCE	c-1,2 DCE	1,1,1 TCA	TCE	PCE	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total Volatiles
1SG 55	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 55 L	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 56	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 57	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 57 L	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 58	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 58 F	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 59	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 60	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 61	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 62	5	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.36	<0.25	<0.25	0.33	4.6
1SG 63	5	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 64	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 64 F	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	4.3
1SG 65	14	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 66	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 66 F	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
1SG 67	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	1.7	<0.25	2.6	1.1	20
3 SG 1	5	<0.1	<0.1	<0.1	<0.01	<0.01	0.028	<0.25	<0.25	<0.25	<0.25	<3.0
3 SG 1 L	5	<0.1	<0.1	<0.1	<0.01	<0.01	0.040	<0.25	<0.25	<0.25	<0.25	<3.0
3 SG 1	10	<0.1	<0.1	<0.1	<0.01	0.17	0.06	2600	3700	1400	5300	27000
3 SG 1 L	10	<0.1	<0.1	<0.1	<0.01	0.17	0.048	1900	1900	1300	4700	26000
3SG 2	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	820	230	260	730	17000
3SG 3	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	2	1.4	3.4	3.4	63
3SG 3 L	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	1.8	1.4	2.4	3.0	61
3SG 4	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
3SG 5	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	33	1.1	13	2.0	680
3SG 6	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	620	98	320	300	12000
3SG 7	10	<0.1	<0.1	<0.1	<0.01	0.041	0.012	190	600	260	1000	18000
3SG 8	10	<0.1	<0.1	<0.1	<0.01	0.074	0.021	900	640	300	1100	19000
3SG 9	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	1.2	0.73	6.4	9.0	26
3SG 10	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	330	200	250	320	10000
3SG 11	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	1.1	0.69	4.3
3SG 12	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	770	430	800	900	1600
3SG 13	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	300	360	700	800	17000
3SG 14	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	800	420	730	680	17000

Table 1. Soil Gas Data (Con't.)

Soil gas results are expressed as ppm

Sample ID	Depth , ft.	1,1-DCE	t-1,2 DCE	c-1,2 DCE	1,1,1 TCA	TCE	PCE	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total Volatiles
3SG 15	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	50	21	19	8.0	540
3SG 16	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	4.2	<0.25	1.1	0.72	36
3SG 17	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
3SG 18	9	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	18	0.93	5.1	2.5	140
3SG 19	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	0.41	0.27	5.7
3SG 20	9	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	2.6	<0.25	0.44	0.67	20
4SG 1	5	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
4SG 1	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
4SG 1	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	750	150	180	20	15000
4SG 2	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	33	4.9	75	73	410
4SG 3	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	3.3	2.1	200	150	490
4SG 4	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
4SG 5	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	17	4.4	9.7	8.9	170
4SG 6	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.81	0.38	1.5	1.9	13
4SG 7	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	1.1	<0.25	2.5	1.6	15
4SG 8	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	850	140	260	260	16000
4SG 9	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	250	190	390	360	17000
4SG 10	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	820	170	95	280	15000
4SG 11	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	730	120	110	140	12000
4SG 12	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.44	<0.25	1.0	1.0	9.4
4SG 13	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
4SG 13 L	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	<3.0
4SG 14	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	7.8	0.45	2.9	2.7	62
4SG 15	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.38	<0.25	<0.25	<0.25	5.8
4SG 15 L	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.53	<0.25	<0.25	<0.25	7.1
4SG 16	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.70	<0.25	<0.25	0.38	7.1
4SG 16 F	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.76	<0.25	<0.25	0.43	8.2
4SG 16	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	19	1.1	1.5	2.5	150
4SG 17	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.65	<0.25	<0.25	0.35	<3.0
4SG 17	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	20	1.4	1.7	4.1	160
4SG 18	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	<0.25	<0.25	3.6
4SG 19	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	<0.25	<0.25	5.5	3.1	14
4SG 20	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.49	<0.25	0.31	<0.25	5.8
4SG 21	5	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.26	<0.25	0.33	<0.25	<3.0
4SG 21	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	330	70	46	81	7600
4SG 22	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	790	150	84	150	14000

Table 1. Soil Gas Data (Con't.)

Soil gas results are expressed as ppm

Sample ID	Depth , ft.	1,1-DCE	t-1,2 DCE	c-1,2 DCE	1,1,1 TCA	TCE	PCE	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total Volatiles
4SG 22	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	790	150	110	150	14000
4SG 23	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	890	180	180	100	16000
4SG 24	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	820	120	170	100	15000
4SG 25	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	240	170	300	220	17000
4SG 26	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	4.9	1.4	4.0	4.3	83
4SG 27	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	18	0.74	<0.25	2.7	140
4SG 27 L	10	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	30	1.2	0.28	5.0	230
4SG 28	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.27	<0.25	<0.25	0.34	3.3
4SG 28 L	15	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.43	<0.25	<0.25	0.39	4.7
4SG 28	20	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.65	<0.25	0.72	0.38	7.7
4SG 29	20	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.69	<0.25	0.26	0.39	7.1
4SG 30	5	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	230	96	110	210	8600
4SG 31	5	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.93	<0.25	1.9	1.3	22
4SG 32	5	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	0.34	<0.25	0.37	0.33	5.8
4SG 33	4	<0.1	<0.1	<0.1	<0.01	<0.01	<0.01	29	7.2	20	20	900

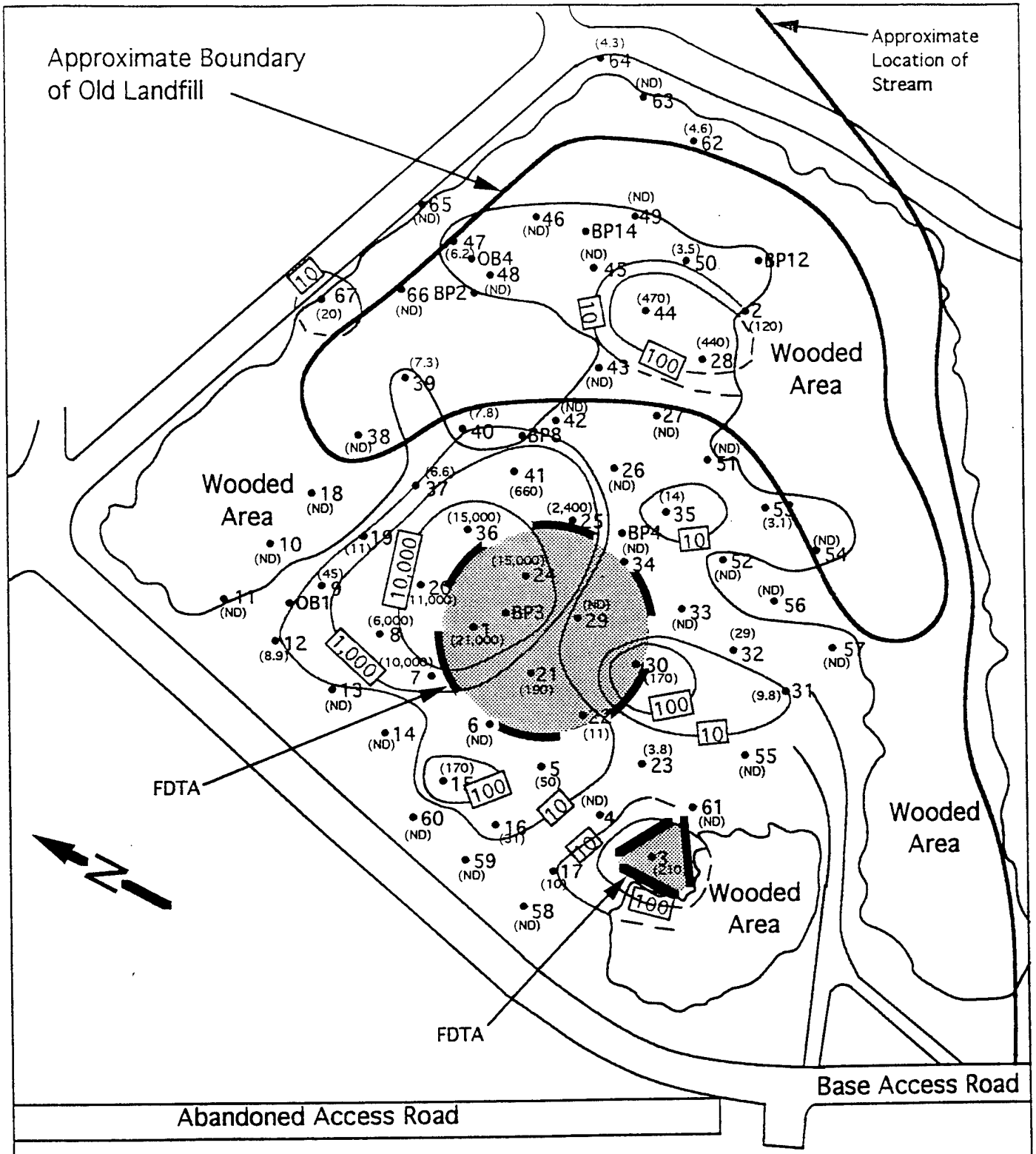
L= Lab Duplicate
F= Field Duplicate

Table 2. Groundwater Data

Water results are expressed as ppb except where indicated

Sample ID		1,1-DCE	t-1,2 DCE	c-1,2 DCE	1,1,1 TCA	TCE	PCE	Benzene	Toluene	Ethylbenzene	Total Xylenes	Total Volatiles
Waters												
3GW 1*	16.5	<2.0	<2.0	<2.0	<0.2	<0 .2	<0.2	4000	4800	59	1800	4800
3GW 2*	19	<2.0	<2.0	<2.0	<0.2	<0 .2	<0.2	49	11	1.1	9.7	310
3GW 2 L *	19	<2.0	<2.0	<2.0	<0.2	<0 .2	<0.2	57	9	8.7	8.4	350
3GW 3 *	19	<2.0	<2.0	<2.0	<0.2	<0 .2	<0.2	3000	1800	5000	500	84000
3GW 4*	19	<2.0	<2.0	<2.0	<0.2	<0 .2	<0.2	14000	18000	5000	340	81000
3GW 5 *	22	<2.0	<2.0	<2.0	<0.2	<0 .2	<0.2	100	11	1.0	17	700
3GW 6	21	<2.0	<2.0	<2.0	<0.2	<0 .2	<0.2	230	48	23	37	200
3GW 7	24	<2.0	<2.0	<2.0	<0.2	<0 .2	<0.2	4700	1900	1000	900	1900
3GW 8*	24	<2.0	<2.0	<2.0	<0.2	<0 .2	<0.2	41	7.4	6.9	3.7	23
4GW 1 *	21	<2.0	<2.0	<2.0	<0.2	<0 .2	<0.2	540	98	700	96	9700
4GW 2	30	<2.0	<2.0	<2.0	<0.2	<0 .2	<0.2	29	6.4	1.7	7.1	220
4GW 2 L	30	<2.0	<2.0	<2.0	<0.2	<0 .2	<0.2	40	9.6	2.3	9.3	280
4GW 3	30	<2.0	<2.0	<2.0	<0.2	<0 .2	<0.2	5.7	4.7	0.94	0.27	40
4GW 4	24	<2.0	<2.0	<2.0	<0.2	<0 .2	<0.2	1.9	2.2	1.5	1.8	23
4GW 5*	24	<2.0	<2.0	<2.0	<0.2	<0 .2	<0.2	9300	500	<2.0	660	47000
4GW 6	24	<2.0	<2.0	<2.0	<0.2	<0 .2	<0.2	<2.0	<2.0	<2.0	<2.0	36
4GW 6 L	24	<2.0	<2.0	<2.0	<0.2	<0 .2	<0.2	<2.0	<2.0	<2.0	<2.0	15
4GW 7	24	<2.0	<2.0	<2.0	<0.2	<0 .2	<0.2	770	330	260	620	6700
4GW 8*	21	<2.0	<2.0	<2.0	<0.2	<0 .2	<0.2	56	19	53	11	45
4GW 9	21	<2.0	<2.0	<2.0	<0.2	<0 .2	<0.2	5000	340	400	750	27000
4GW10	21	<2.0	<2.0	<2.0	<0.2	<0 .2	<0.2	16	0.95	5.8	4.7	130

L= Lab Duplicate
F= Field Duplicate
* VALUES ARE PPM



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2800-C Dorr Ave.
Fairfax, VA 22031

Figure 5. Site 1-Soil-Gas Results
(Total FID Volatiles, ppm)

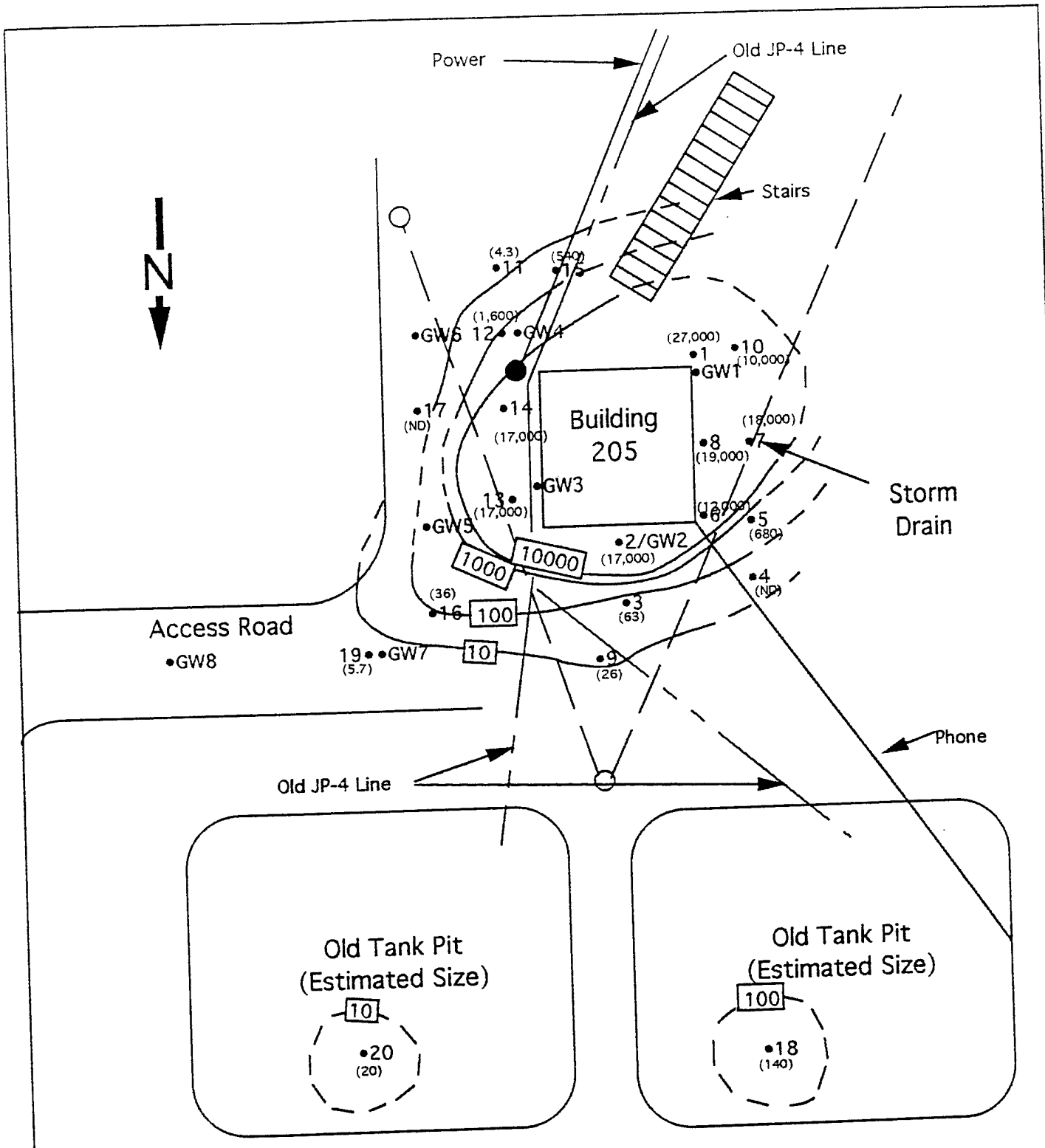

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Figure 6. Site 3-Soil Gas Results
(Total FID Volatiles, ppm)

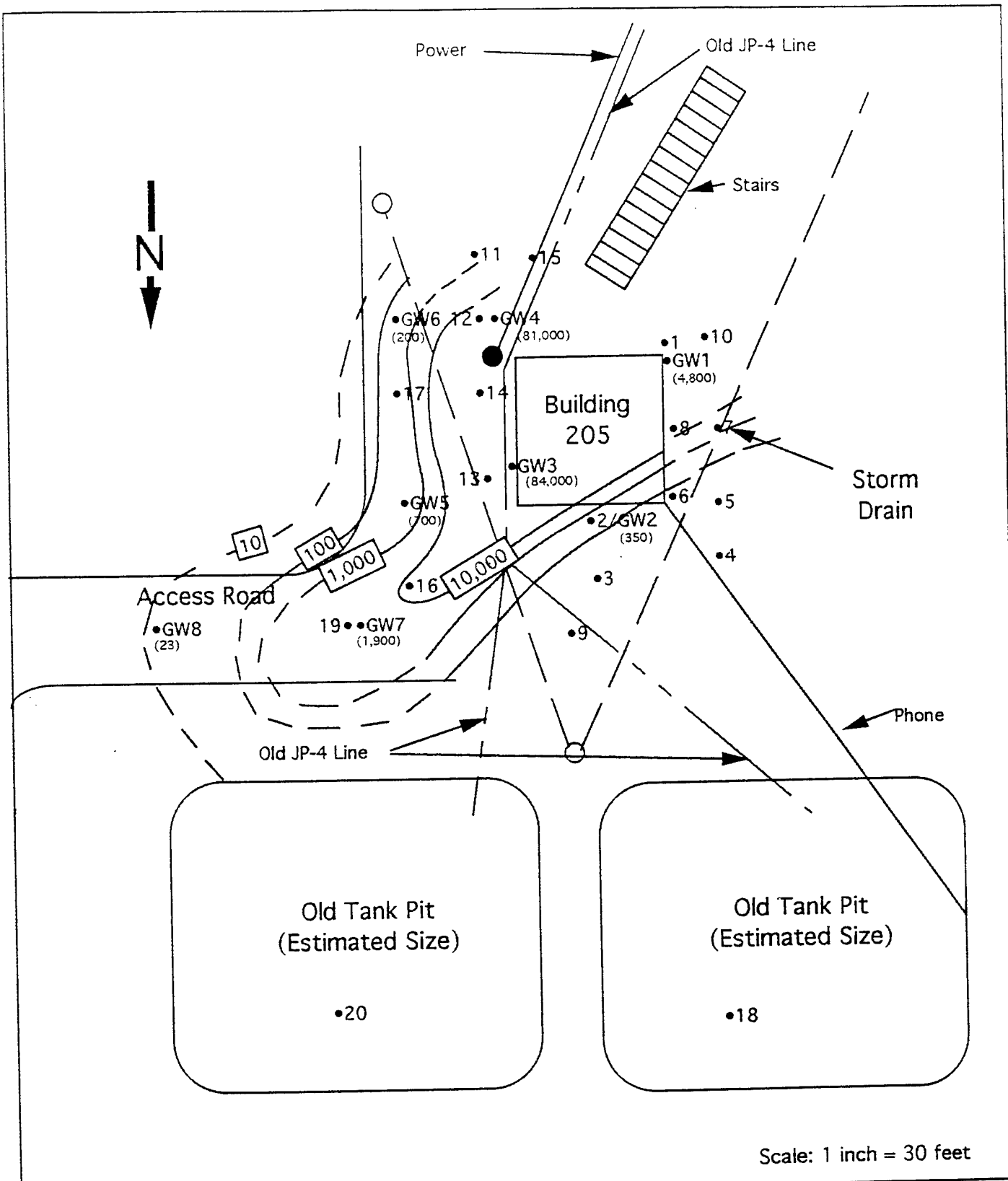

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Figure 7. Site 3-Groundwater Results
(Total FID Volatiles, ppm)

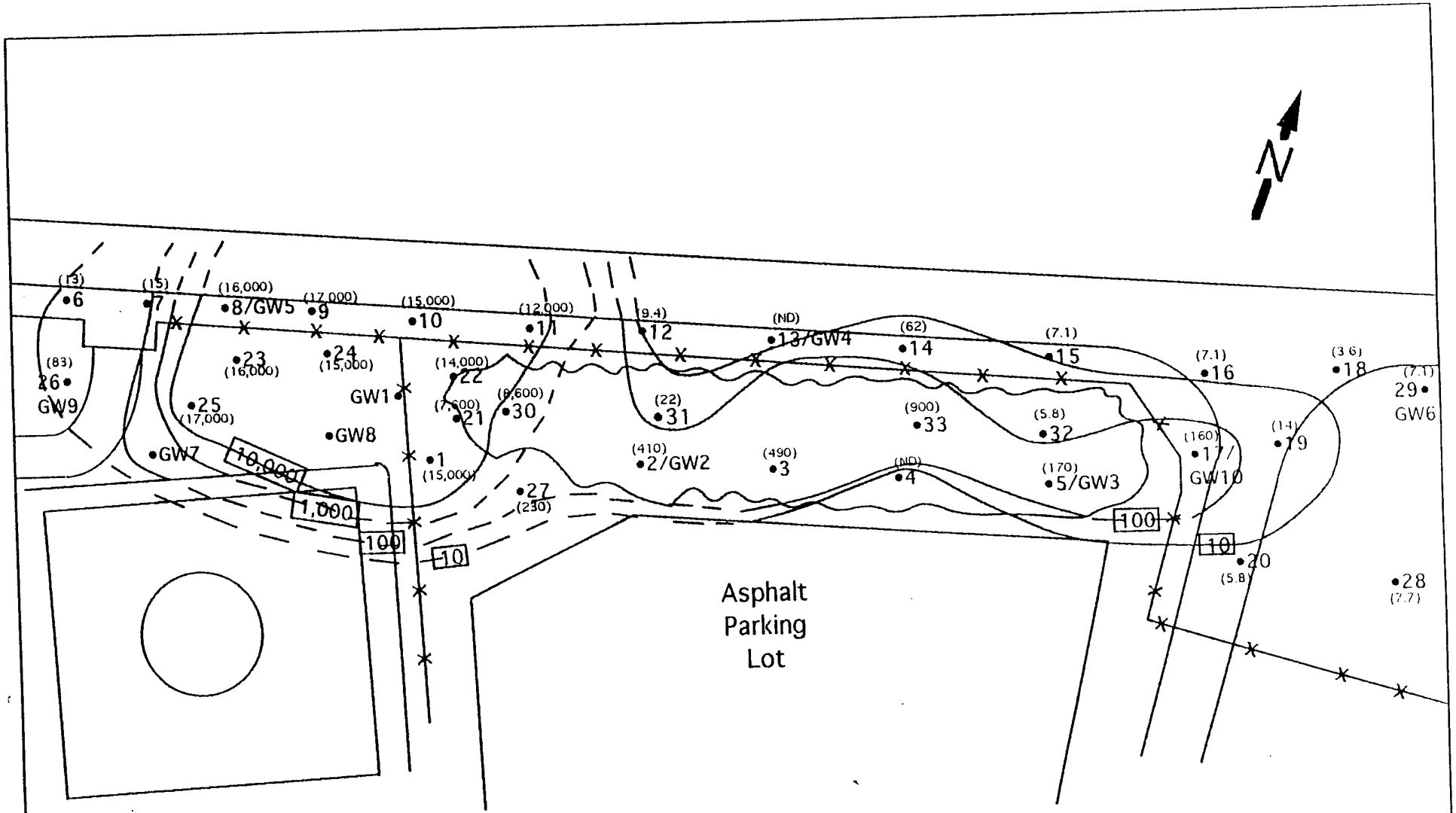

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Figure 8. Site 4-Soil Gas Results
(Total FID Volatiles, ppm)

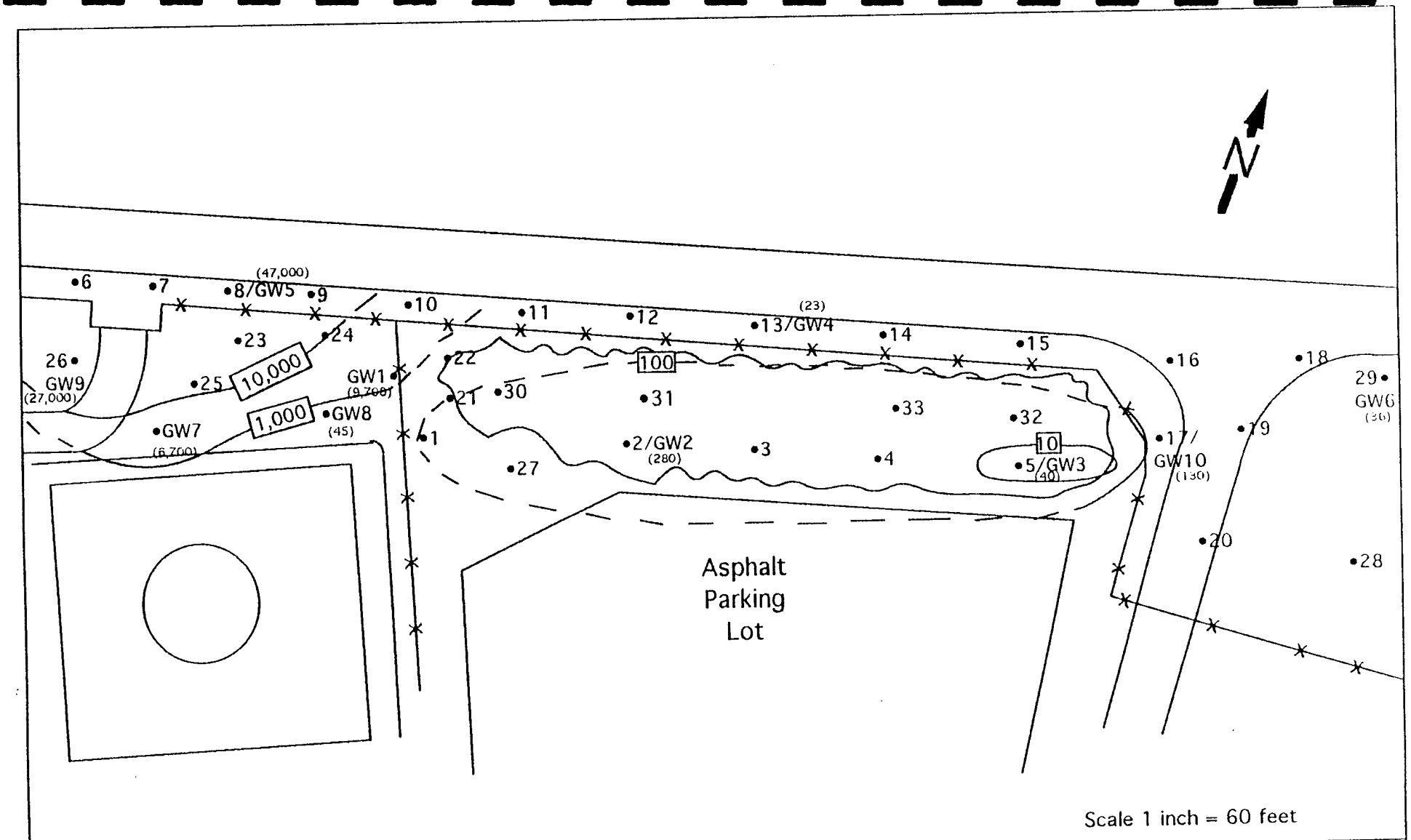

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Figure 9. Site 4-Groundwater Results
(Total FID Volatiles, ppm)

APPENDIX A

FIELD DATA LOG SHEETS

ENVIROSURV INC.
2800-C Dorr Avenue
Fairfax, Virginia 22031

Soil-Gas Sampling Field Log Sheet

CLIENT: TETC

LOCATION: Burlington, VT ANGB

Sheet 1 of 23
Crew Chief J. Olsen
Unit No. #2
Job No.

Probe Location I.D.	35G1-5	35G1-10	35G1-15	15G1-5	15G1-9	15G2-5
Date:	8/16/94	8/16/94	8/16/94	8/16/94	8/16/94	8/16/94
Time:	11:50	12:04	12:10	3:10	3:25	3:45
Sample Number:	#1	#2		#4	#5	#6
Depth	5ft	10ft	15ft	5ft	9ft	5ft
Purge Vacuum (in./Hg-H20)	15	15		15	15	15
Purge Volume (L.)	2L	2L		2L	2L	2L
Sample Vacuum (in./H2O)	9	9		9	9	9
Sample Volume	250ml	250ml		250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20 Sec. purge time	30-45 sec. purge time	Water in tubing Strong odor <No Sample Taken>	10-20 sec purge time strong odor from tubing	20-30 sec. purge time strong odor from tubing <FIELD DUP>	10-20 sec purge time

CHAIN OF CUSTODY

Samples Relinquished By: Date N/A Time		**Lab Comments:** On-site lab analysis
Samples Received By: Date N/A Time		**Sample Shipment:** Hand Delivered: yes no Shipped via: N/A Date Shipped: N/A Shipper's Signature: JEO

ENVIROSURV INC.
2800-C Dorr Avenue
Fairfax, Virginia 22031

Soil-Gas Sampling Field Log Sheet

CLIENT: TETC
LOCATION: Burlington, VT ANGB

Sheet 2 of 83
Crew Chief J. Olsen
Unit No. #2
Job No.

Probe Location I.D.	1SG2-10	1SG2-15	1-SG3-5	1-SG3-10	1-SG4-10	1-SG4-8
Date:	8/16/94	8/16/94	8/17/94	8/17/94	8/17/94	8/17/94
Time:	3:55	4:05	9:05	9:35	10:25	10:45
Sample Number:	#7	#8	#9	#10	#11	#12
Depth	10ft	15ft	5ft	10ft	~~10ft~~ 8ft	8ft
Purge Vacuum (in./Hg-H20)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20 Sec purge time	10-20 sec purge time (FIELD DUP)	10-20 sec. purge time	10-20 sec. purge time	~~4-5 min~~ purge time 10-20 sec water at 8ft	10-20 sec. purge time Water at 8ft

CHAIN OF CUSTODY

Samples Relinquished By: Date N/A Time		**Lab Comments:** On-site lab analysis
Samples Received By: Date N/A Time		

Sample Shipment:
Hand Delivered: (yes) no
Shipped via: N/A
Date Shipped: N/A
Shipper's Signature: JEO

ENVIROSURV INC.
2800-C Dorr Avenue
Fairfax, Virginia 22031

Soil-Gas Sampling Field Log Sheet

CLIENT: TETC
LOCATION: Burlington, VT ANGB

Sheet 3 of 23
Crew Chief J. Olsen
Unit No. #2
Job No.

Probe Location I.D.	1-SG8-8	1SG7-8	1SG5-7	1SG9-8	1-SG12-8	1-SG13-8
Date:	8/17/94	8/17/94	8/17/94	8/17/94	8/17/94	8/17/94
Time:	11:10	11:20	11:45	1:25	1:40	1:55
Sample Number:	#13	#14	#15	#16	#17	#18
Depth	8ft	8ft	7ft ~~8ft~~	8ft	8ft	8ft
Purge Vacuum (in./Hg-H20)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20 sec purge time	10-20 sec purge time	10-20 sec purge time <FIELD DUP>	10-20 sec purge time	" DITTO"	" DITTO"

CHAIN OF CUSTODY

Samples Relinquished By: Date N/A Time		**Lab Comments:** On-site lab analysis
Samples Received By: Date N/A Time		

Sample Shipment:
Hand Delivered: (yes) no
Shipped via: N/A
Date Shipped: N/A
Shipper's Signature: JEO

ENVIROSURV INC.
2800-C Dorr Avenue
Fairfax, Virginia 22031

Soil-Gas Sampling Field Log Sheet

CLIENT: TETC

LOCATION: Burlington, VT ANGB

Sheet 4 of 23
Crew Chief J. Olsen
Unit No. #2
Job No.

Probe Location I.D.	SG14-8	SG15-8	SG16-8	SG17-8	SG11-8	SG10-8 ~~SG18-8~~
Date:	8/17/94	8/17/94	8/17/94	8/17/94	8/17/94	8/17/94
Time:	2:20	2:35	2:50	3:30	4:00	~~4:10~~ 4:20
Sample Number:	#19	#20	#21	#22	#23	#24
Depth	8ft	8ft	8ft	8ft	8ft	8ft
Purge Vacuum (in./Hg-H20)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	125ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J Olsen	J Olsen	J. Olsen
COMMENT	10-30 sec purge time	"DITTO"	"DITTO"	"DITTO"	"DITTO"	"DITTO"

CHAIN OF CUSTODY

Samples Relinquished By: Date N/A Time	**Lab Comments:** On-site lab analysis	**Sample Shipment:** Hand Delivered: (yes) no; Shipped via: N/A; Date Shipped: N/A; Shipper's Signature: JEO
Samples Received By: Date N/A Time		

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Soil-Gas Sampling Field Log Sheet

CLIENT: TETC

LOCATION: Burlington, VT ANGB

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Crew Chief J. Olsen
Unit No. #2
Job No.

Probe Location I.D.	~~1SG18-8~~ ~~1SG18-18~~	1SG19-8	1-SG20-8	1-SG21-8	1-SG22-8	1-SG23-8
Date:	8/17/94	8/17/94	8/17/94	8/17/94	8/18/94	8/18/94
Time:	4:40	4:55	5:05	5:20	8:10	8:35
Sample Number:	~~#25~~	#26	~~#27~~	#28	#29	#30
Depth	8ft	8ft	8ft	8ft	8ft	8ft
Purge Vacuum (in./Hg-H20)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	125ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J Olsen	J. Olsen	J. Olsen
COMMENT	10-20 sec Purge time	"DITTO"	Purge time 10-20 sec slight odor in tubing	Purge time 10-20 sec	"DITTO"	"DITTO"

CHAIN OF CUSTODY

Samples Relinquished By: Date N/A Time		**Lab Comments:** On-site lab analysis
Samples Received By: Date N/A Time		**Sample Shipment:** Hand Delivered: yes no Shipped via: N/A Date Shipped: N/A Shipper's Signature: JEO

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Soil-Gas Sampling Field Log Sheet

CLIENT: TETC

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Crew Chief J. Olsen
Unit No. #2
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Probe Location I.D.	1-SG24-9	1-SG25-10	1SG26-10	1SG27-10	1SG28-10	1SG29-9 ~~1SG29-10~~
Date:	8/18/94	8/18/94	8/18/94	8/18/94	8/18/94	8/18/94
Time:	8:55	9:15	9:35	9:55	10:10	10:40
Sample Number:	#31	#32	#33	#34	#35	#36
Depth	9ft	10ft	10ft	10ft	10ft	9ft
Purge Vacuum (in./Hg-H20)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20 sec purge time	"DITTO"	"DITTO"	"DITTO" <FIELD DUP>	10-20 sec purge time	"DITTO"

CHAIN OF CUSTODY

Samples Relinquished By: Date N/A Time		**Lab Comments:** On-site lab analysis
Samples Received By: Date N/A Time		

Sample Shipment:
Hand Delivered: (yes) no
Shipped via: N/A
Date Shipped: N/A
Shipper's Signature: JEO

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LOCATION: Burlington, VT ANGB

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Unit No. #2
Job No.

Probe Location I.D.	SG30-9	SG31-10	SG32-10	SG33-10	SG34-10	SG44-10 ~~SG35-10~~
Date:	8/18/94	8/18/94	8/18/94	8/18/94	8/18/94	8/18/94
Time:	10:50	11:10	11:25	11:40	1:15	1:35
Sample Number:	#37	#38	#39	#40	#41	#42
Depth	9ft	10ft	10ft	10ft	10ft	10ft
Purge Vacuum (in./Hg-H20)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20 sec purge time	"DITTO"	"DITTO"	"DITTO"	"DITTO"	"DITTO"

CHAIN OF CUSTODY

Samples Relinquished By:		**Lab Comments:**	**Sample Shipment:**
Date N/A		On site lab analysis	Hand Delivered: ~~yes~~ no
Time			Shipped via: N/A
Samples Received By:			Date Shipped: N/A
Date N/A			Shipper's Signature: JEO
Time			

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Soil-Gas Sampling Field Log Sheet

CLIENT: TETC
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Probe Location I.D.	~~SG36-9~~ SG40-9	SG36-9	SG39-10	SG37-9	SG35-10	SG42-10
Date:	8/18/94	8/18/94	8/18/94	8/18/94	8/18/94	8/18/94
Time:	1:50	2:10	2:40	3:00	3:12	3:45
Sample Number:	# 43	#44	#45	#46	#47	#48
Depth	9ft	9ft	9ft	9 ft	10 ft	10ft
Purge Vacuum (in./Hg-H20)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20 sec. purge time	"DITTO"	"DITTO"	"DITTO"	"DITTO"	"DITTO"

CHAIN OF CUSTODY

Samples Relinquished By: Date N/A Time		**Lab Comments:** On-site lab analysis
Samples Received By: Date N/A Time		

Sample Shipment:
Hand Delivered: yes no
Shipped via: N/A
Date Shipped: N/A
Shipper's Signature: JEO

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Unit No. #2
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Probe Location I.D.	1S643-10	1-S644-10	1S645-10	1S652-10	1S650-10	1S649-10
Date:	8/18/94	8/18/94	8/19/94	8/19/94	8/19/94	8/19/94
Time:	4:00	4:24	8:15	10:20	10:45	11:00
Sample Number:	#49	#50	#51	#52	#53	#54
Depth	10ft	10ft	10ft	10ft	10ft	10ft
Purge Vacuum (in./Hg-H20)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20 sec purge time	10-20 sec purge time <FIELD DUP>	10-20 sec purge time <FIELD DUP>	10-20 purge time <FIELD DUP>	10-20 sec purge time	"DITTO"

CHAIN OF CUSTODY

Samples Relinquished By: Date N/A Time	**Lab Comments:** On-site lab analysis	**Sample Shipment:** Hand Delivered: yes no Shipped via: N/A Date Shipped: N/A Shipper's Signature: JEO
Samples Received By: Date N/A Time		

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Crew Chief J. Olsen
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CLIENT: TETC

LOCATION: Burlington, VT ANGB

Probe Location I.D.	1S648-10	1S647-10	1S646-10	1S651-10	1S653-10	1S655-10
Date:	8/19/94	8/19/94	8/19/94	8/19/94	8/19/94	8/19/94
Time:	11:15	11:30	11:55	12:15	12:30	2:20
Sample Number:	#55	#56	#57	#58	#59	#60
Depth	10-ft	10 ft	10 ft	10 ft	10 ft	10 ft
Purge Vacuum (in./Hg-H20)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250 ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	Purge time 10-20 sec	"DITTO"	"DITTO"	"DITTO"	"DITTO"	"DITTO"

CHAIN OF CUSTODY

Samples Relinquished By: Date N/A Time		**Lab Comments:** On-site lab analysis
Samples Received By: Date N/A Time		

Sample Shipment:
Hand Delivered (yes) no
Shipped via: N/A
Date Shipped: N/A
Shipper's Signature: JEO

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Probe Location I.D.	1SG54-10	1SG58-10	1SG59-10	1SG60-10	1SG56-10	1SG57-10
Date:	8/19/94	8/19/94	8/19/94	8/19/94	8/20/94	8/20/94
Time:	2:40	4:45	5:00	5:15	8:05	8:35
Sample Number:	#61	#62	#63	#64	#65	#66
Depth	10 ft	10 ft	10 ft	10 ft	10 ft	10 ft
Purge Vacuum (in./Hg-H20)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20 sec purge time	"DITTO"	"DITTO" (FIELD DUP?)	"DITTO"	"DITTO"	

CHAIN OF CUSTODY

Samples Relinquished By: Date N/A Time		**Lab Comments:** On-site lab analysis
Samples Received By: Date N/A Time		**Sample Shipment:** Hand Delivered: yes/no Shipped via: N/A Date Shipped: N/A Shipper's Signature: JEO

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Probe Location I.D.	1SG38-10	1SG61-10	4-SG1-5 ~~3-SG1-5~~	4-SG1-10 ~~3-SG1-10~~	4-SG1-15 ~~3-SG1-15~~	4-SG2-10
Date:	8/20/94	8/20/94	8/20/94	8/20/94	8/20/94	8/20/94
Time:	9:00	9:20	9:35	9:40	9:45	1010
Sample Number:	#67	#68	#69	#70	#71	#73
Depth	10ft	10ft	~~5ft~~ 10ft	10ft	15ft	10ft
Purge Vacuum (in./Hg-H20)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250 ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20 sec purge time	"DITTO"	"DITTO"	"DITTO"	"DITTO" slight odor in tubing	"DITTO" slight odor in tubing

CHAIN OF CUSTODY

Samples Relinquished By: Date N/A Time		Lab Comments: On-site lab analysis
Samples Received By: Date N/A Time		

Sample Shipment:
Hand Delivered: yes no
Shipped via: N/A
Date Shipped: N/A
Shipper's Signature: JEO

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Probe Location I.D.	3563-10	3564-10	3565-10	3566-10	3567-10	3568-10
Date:	8/20/94	8/20/94	8/20/94	8/20/94	8/20/94	8/20/94
Time:	11:40	11:55	12:15	12:25	12:45	1:45
Sample Number:	#75	#76	#77	#78	#79	#80
Depth	10 ft	10 ft	10 ft	10 ft	10 ft	10 ft
Purge Vacuum (in./Hg-H20)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20 sec purge time slight odor in tubing strong	10-20 Sec. purge time	10-20 Sec purge time	10-20 sec purge time	10-20 Sec purge time strong odor present on rods upon retrieval	10-20 sec purge time

CHAIN OF CUSTODY

Samples Relinquished By: Date N/A Time		**Lab Comments:** On-site lab analysis
Samples Received By: Date N/A Time		

Sample Shipment:
Hand Delivered: yes no
Shipped via: N/A
Date Shipped: N/A
Shipper's Signature: JEO

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Unit No. #2
Job No.

Probe Location I.D.	3569-10	3610-10	3611-10	3612-10	3613-10	3614-10
Date:	8/20/94	8/20/94	8/20/94	8/20/94	8/20/94	8/20/94
Time:	2:00	2:15	2:30	2:45	3:00	3:10
Sample Number:	#81	#82	#83	#84	#85	#86
Depth	10ft	10ft	10ft	10ft	10ft	10ft
Purge Vacuum (in./Hg-H20)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	~~J. Olsen~~ J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20sec purge time	"DITTO"	"DITTO"	"DITTO"	"DITTO"	"DITTO"

CHAIN OF CUSTODY

Samples Relinquished By: Date N/A Time		**Lab Comments:** Onsite lab analysis
Samples Received By: Date N/A Time		**Sample Shipment:** Hand Delivered: yes no; Shipped via: N/A; Date Shipped: N/A; Shipper's Signature: JEO

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Probe Location I.D.	35G15-10	4-562-10	4-563-10	4-565-10	4-564-15	4-566-15
Date:	8/20/94	8/21/94	8/21/94	8/21/94	8/21/94	8/21/94
Time:	3:20	10:30	10:50	11:30	11:50	12:15
Sample Number:	#87	#90	#91	#92	#93	#94
Depth	10ft	10ft	10ft	10ft	10ft	10ft
Purge Vacuum (in./Hg-H20)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20 sec purge time	10-20 sec Purge time	"DITTO"	"DITTO"	"DITTO"	"DITTO"

CHAIN OF CUSTODY

Samples Relinquished By: Date N/A Time		**Lab Comments:** On-site lab analysis
Samples Received By: Date N/A Time		

Sample Shipment:
Hand Delivered: yes no
Shipped via: N/A
Date Shipped: N/A
Shipper's Signature: JEO

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Soil-Gas Sampling
Field Log Sheet

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Probe Location I.D.	4-SG7-15	4SG8-15	4SG9-15	4SG10-15	4SG11-15	4SG12-15
Date:	8/21/94	8/21/94	8/21/94	8/21/94	8/21/94	8/21/94
Time:	12:35	12:50	1:05	3:50 ~~#98~~	4:10 ~~#99~~	4:25 ~~#100~~
Sample Number:	~~#95~~	~~#96~~	~~#97~~	~~#98~~	~~#99~~	~~#100~~
Depth	15ft ~~10ft~~	15ft ~~10ft~~	15ft ~~10ft~~	15ft ~~10ft~~	15ft	15ft
Purge Vacuum (in./Hg-H20)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J Olsen	J. Olsen	J. Olsen
COMMENT	~~1~~ 4 min purge time	10-20 sec purge time	"DITTO"	"DITTO"	"DITTO"	"DITTO"

CHAIN OF CUSTODY

Samples Relinquished By:		**Lab Comments:**	**Sample Shipment:**
Date N/A		On-site lab analysis	Hand Delivered: yes, no
Time			Shipped via: N/A
Samples Received By:			Date Shipped: N/A
Date N/A			Shipper's Signature: JEO
Time			

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Probe Location I.D.	45G13-15	45G14-15	45G15-10	45G16-10	45G17-10	45G18-10
Date:	8/21/94	8/21/94	8/22/94	8/22/94	8/22/94	8/22/94
Time:	4:40	5:30	7:55	8:15	8:30	8:50
Sample Number:	#103	#105	#107	#108	#109	#110
Depth	15ft	15ft	10ft	10ft	10ft	10ft
Purge Vacuum (in./Hg-H20)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20 sec purge time	"DITTO"	"DITTO"	"DITTO" <FIELD DUP>	"DITTO"	"DITTO"

CHAIN OF CUSTODY

Samples Relinquished By: Date N/A Time		**Lab Comments:** On-site lab analysis
Samples Received By: Date N/A Time		

Sample Shipment:
Hand Delivered: (yes) no
Shipped via: N/A
Date Shipped: N/A
Shipper's Signature: JEO

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Probe Location I.D.	4SG19-10	4SG20-10	4SG21-10	4SG21-5 ~~4SG22-10~~	4SG22-10	4SG22-15
Date:	8/22/94	8/22/94	8/22/94	8/22/94	8/22/94	8/22/94
Time:	9:15	9:30	10:00	10:10	10:30	10:45
Sample Number:	#111	#112	#113	#114	#115	#116
Depth	10-ft	10ft	10ft	5ft	10ft	15ft
Purge Vacuum (in./Hg-H20)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	~~25~~ 125ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20 sec purge time	"DITTO"	"DITTO"	"DITTO"	"DITTO"	"DITTO"

CHAIN OF CUSTODY

Samples Relinquished By: Date N/A Time		**Lab Comments:** On-site lab analysis	**Sample Shipment:** Hand Delivered: yes no; Shipped via: N/A; Date Shipped: N/A; Shipper's Signature: JEO
Samples Received By: Date N/A Time			

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Soil-Gas Sampling
Field Log Sheet

CLIENT: TETC

LOCATION: Burlington, VT ANGB

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Unit No. #2
Job No.

Probe Location I.D.	45G23-15	45G24-15	45G25-15	45G26-15	45G27-10	45G16-15
Date:	8/22/94	8/22/94	8/22/94	8/22/94	8/22/94	8/22/94
Time:	11:05	11:25	11:50	12:10	2:00	2:25
Sample Number:	#117	#118	#119	#120	#121	#122
Depth	15ft	15ft	15ft	15ft	10ft	15ft
Purge Vacuum (in./Hg-H20)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250mls	~~125ml~~	250ml	250mls	250ml	250ml
Sample Taken By:	J Olsen	J. Olsen	J. Olsen	J Olsen	J. Olsen	J. Olsen
COMMENT	10-20 sec purge time	"DITTO"	"DITTO"	10-20sec purge time. Initial Probe to 15ft, pulled tubing to Retracted probe and additional for a 15-13ft interval and sampled.	10-20 sec purge time	10-20 sec purge time

CHAIN OF CUSTODY

Samples Relinquished By: Date N/A Time		**Lab Comments:** On-site lab analysis
Samples Received By: Date N/A Time		**Sample Shipment:** Hand Delivered: (yes) no; Shipped via: N/A; Date Shipped: N/A; Shipper's Signature: JEO

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Soil-Gas Sampling Field Log Sheet

CLIENT: TETC

LOCATION: Burlington, VT ANGB

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Crew Chief J. Olsen
Unit No. #2
Job No.

Probe Location I.D.	3SG17-15	3SG16-10	3SG17-10	3SG18-9	3SG19-10	3SG20-9
Date:	8/22/94	8/22/94	8/22/94	8/22/94	8/22/94	8/22/94
Time:	2:40	3:40	3:55	4:20	4:35	4:52
Sample Number:	#123	#124	#125	#126	#127	#128
Depth	15ft	10ft	10ft	9ft	10ft	9ft
Purge Vacuum (in./Hg-H20)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20 sec purge time	10-20 sec purge time	10-20 Sec purge time	10-20 sec purge time Water at 9ft	10-20 sec purge time	10-20 Sec purge time

CHAIN OF CUSTODY

Samples Relinquished By: Date N/A Time		**Lab Comments:** On-Site lab analysis
Samples Received By: Date N/A Time		

Sample Shipment:
Hand Delivered: (yes) no
Shipped via: N/A
Date Shipped: N/A
Shipper's Signature: JEO

ENVIROSURV INC.
2800-C Dorr Avenue
Fairfax, Virginia 22031

Soil-Gas Sampling Field Log Sheet

CLIENT: TETC
LOCATION: Burlington, VT ANGB

Sheet 21 of 23
Crew Chief J. Olsen
Unit No. #2
Job No.

Probe Location I.D.	45628-15	45628-20	45629-20	1-5662-5	1-5663-5	1-5664-15
Date:	8/23/94	8/23/94	8/23/94	8/23/94	8/23/94	8/23/94
Time:	8:05	10:10	10:35	10:55	11:30	1205
Sample Number:	#130	#132	#133	#134	#135	#136
Depth	15ft	20ft	20ft	5ft	5ft	15ft
Purge Vacuum (in./Hg-H20)	15	15	15	15	15	15
Purge Volume (L.)	2L	2L	2L	2L	2L	2L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250ml	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20 sec purge time	"DITTO"	"DITTO"	10-20 sec purge time Ground water at 5.5 ft.	30-45 sec purge time Some water in tubing	10-20 sec purge time (Field Duplicate)

CHAIN OF CUSTODY

Samples Relinquished By: Date N/A Time		**Lab Comments:** On-Site lab analysis
Samples Received By: Date N/A Time		**Sample Shipment:** Hand Delivered: yes, no Shipped via: N/A Date Shipped: N/A Shipper's Signature: JEO

ENVIROSURV INC.
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Fairfax, Virginia 22031

Soil-Gas Sampling Field Log Sheet

CLIENT: TETC

LOCATION: Burlington, VT ANGB

Sheet 22 of 23
Crew Chief J. Olsen
Unit No. #2
Job No.

Probe Location I.D.	SG65-10 ~~SG65-14~~	SG66-10	SG67-10	SG30-5	SG31-5	SG32-5
Date:	8/23/94	8/23/94	8/23/94	8/23/94	8/23/94	8/23/94
Time:	12:30	1:41	1:55	2:15	2:25	2:35
Sample Number:	#137	#138	#139	#140	#141	#142
Depth	~~10ft~~	10ft	10ft	5ft	5ft	5ft
Purge Vacuum (in./Hg-H20)	15	15	15	20	20	20
Purge Volume (L.)	2L	2L	2L	4L	4L	4L
Sample Vacuum (in./H2O)	9	9	9	9	9	9
Sample Volume	250ml	250mls	250ml	250ml	250ml	250ml
Sample Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
COMMENT	10-20 sec purge time Water just below ~~10ft~~ 12ft	10-20 sec purge time	< FIELD DUP > 10-20 sec purge time	~~10-30~~ 45 sec purge time Sampling rod hand driven Extended tubing used, approx 60 ft.	"D.I. H2O"	"D.I. H2O"

CHAIN OF CUSTODY

Samples Relinquished By: Date N/A Time		**Lab Comments:** On-site lab analysis	**Sample Shipment:** Hand Delivered: yes no Shipped via: N/A Date Shipped: N/A Shipper's Signature: JEO
Samples Received By: Date N/A Time			

ENVIROSURV INC.
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Fairfax, Virginia 22031

Soil-Gas Sampling
Field Log Sheet

CLIENT: TETC

LOCATION: Burlington, VT ANGB

Sheet 23 of 23
Crew Chief J. Olsen
Unit No. #2
Job No.

Probe Location I.D.	45033-4
Date:	8/23/94
Time:	2:50
Sample Number:	#143
Depth	4ft
Purge Vacuum (in./Hg-H20)	20
Purge Volume (L.)	4L
Sample Vacuum (in./H2O)	9
Sample Volume	250ml
Sample Taken By:	J. Olsen

COMMENT: 30 45 sec purge time, Sampling rod hand driven, retrieved tubing used; approx 60 ft.

CHAIN OF CUSTODY

Samples Relinquished By: Date N/A Time		**Lab Comments:** On-Site lab analysis
Samples Received By: Date N/A Time		**Sample Shipment:** Hand Delivered: yes no Shipped via: N/A Date Shipped: N/A Shipper's Signature: JEO

ENVIROSURV INC.
2800-C Dorr Avenue
Fairfax, Virginia 22031

Groundwater Sampling Field Log Sheet

CLIENT: TETC

LOCATION: Burlington, VT ANGB

Sheet 1 of 4
Crew Chief J. Olsen
Unit No. #2
Job No.

Date	8/16/94	8/20/94	8/20/94	8/21/94	8/21/94	8/21/94
Well-Point Location I.D.	3GW1-16	4GW1-21	3GW2-19	3GW3-19	3GW4-19	4GW2-30
Well-Point Information:	colocated w/ 3SG1-	colocated w/ 4SG1	colocated w/ 3SG-2	colocated w/ 3SG-3	colocated w/ 3SG-4	colocated w/ 4SG-2
Length of Probe Rod (ft.)	18 ft	21 ft	19 ft	19 ft	19 ft	19 ft / ~~30 ft~~ 30 ft
Total Depth * (ft.)	18 ft	21 ft	19 ft	19 ft	19 ft	~~30 ft~~ 30 ft
Depth to Water * (ft.)	16.5 ft	18.5 ft	16.5 ft	17 ft	16.5 ft	23 ft
Volume in Well point (l.)						
Sampling Information:	product?			product	product	
Turbidity Before Purging	Low	Mod	Mod	Low	Low	Mod
Volume Purged	—	—	—	—	—	—
Turbidity After Purging	—	—	—	—	—	—
Purged Dry? (Y/N)	N	N	N	~~N~~ Y	N	N
Purging Method	F.V.	F.V.	F.V.	F.V.	F.V.	F.V.
Sampling Method	F.V.	F.V.	F.V.	F.V.	F.V.	F.V.
Time of Sampling	12:20	10:30	11:30	9:20	9:45	2:15
Samples Taken By:	J. Olsen	J. Olsen	J. Olsen	J Olsen	J. Olsen	J. Olsen
Sample Information:						
Sample No.	#3	#72	#74	#88	#89	#98
Number - Volume (mls.)	40ml	80ml	40ml	~~80~~ 40ml	40ml	40ml
Type of Container (G/P)	G	G	G	G	G	G
Field Filtered (Y/N)	N	N	N	N	N	N
ESI Field Duplicate (Y/N)	N	Y	N	N	N	N

* Measured from surface of ground

CHAIN OF CUSTODY

Samples Relinquished By:		**Lab Comments:** On-site lab analysis
Date N/A		
Time		
Samples Received By:		
Date N/A		
Time		

Sample Shipment:
Hand Delivered: yes no
Shipped via: N/A
Date Shipped: N/A
Shipper's Signature: JEO

ENVIROSURV INC.
2800-C Dorr Avenue
Fairfax, Virginia 22031

Groundwater Sampling Field Log Sheet

CLIENT: TETC

LOCATION: Burlington, UT ANGB

Sheet 2 of 4
Crew Chief J. Olsen
Unit No. #2
Job No.

Date	8/21/94	8/21/94	8/21/94	8/22/94	8/23/94	8/23/94
Well-Point Location I.D.	4GW3-30	4GW4-21	4GW5-24	3GW5-22	4GW6-24	3GW6-21
Well-Point Information:						
Length of Probe Rod (ft.)	30ft	21ft	24ft	22ft	24ft	21ft
Total Depth * (ft.)	26ft	20ft	24ft	22ft	24ft	21ft
Depth to Water * (ft.)	24ft	19ft	20ft	20ft	20ft	18.5ft
Volume in Well point (l.)						
Sampling Information:						
Turbidity Before Purging	Mod	Mod	Mod	Mod	Low	Mod
Volume Purged	—	—	—	—	—	—
Turbidity After Purging	—	—	—	—	—	—
Purged Dry? (Y/N)	N	N	N	N	N	N
Purging Method	F.V.	F.V.	F.V.	F.V.	F.V.	F.V.
Sampling Method	F.V.	F.V.	F.V.	F.V.	F.V.	F.V.
Time of Sampling	3:00	5:15	5:50	5:20	9:30	3:30
Samples Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
Sample Information:						
Sample No.	#99	#104	#106	#129	#131	#144
Number - Volume (mls.)	40ml	40ml	80ml	40ml	40ml	40ml
Type of Container (G/P)	G	G	G	G	G	G
Field Filtered (Y/N)	N	N	N	N	N	N
ESI Field Duplicate (Y/N)	N	N	Y	N	N	N

* Measured from surface of ground

CHAIN OF CUSTODY

Samples Relinquished By:		**Lab Comments:**
Date N/A		On-site lab analysis
Time		
Samples Received By:		
Date N/A		
Time		

Sample Shipment:
Hand Delivered: (Yes) no
Shipped via: N/A
Date Shipped: N/A
Shipper's Signature: JEO

ENVIROSURV INC.
2800-C Dorr Avenue
Fairfax, Virginia 22031

Groundwater Sampling Field Log Sheet

CLIENT: TETC
LOCATION: Burlington, VT ANGB

Sheet 3 of 4
Crew Chief J. Olsen
Unit No. #2
Job No.

Date	8/23/94	8/24/94	8/24/94	8/24/94	8/24/94	8/24/94
Well-Point Location I.D.	3GW7-24	4GW7-24	4GW8-21	3GW8-24	4GW9-21	4GW10-21
Well-Point Information:						
Length of Probe Rod (ft.)	24ft	24ft	21ft	24ft	21ft	21ft
Total Depth * (ft.)	24ft	24ft	21ft	24ft	21ft	21ft
Depth to Water * (ft.)	22ft	19.5ft	19.5ft	23ft	19ft	19ft
Volume in Well point (l.)						
Sampling Information:						
Turbidity Before Purging	High	Mod	Mod	Mod	Mod	Mod
Volume Purged	—	—	—	—	—	—
Turbidity After Purging	—	—	—	—	—	—
Purged Dry? (Y/N)	N	N	N	N	N	N
Purging Method	F.V.	F.V.	F.V.	F.V.	F.V.	F.V.
Sampling Method	F.V.	F.V.	F.V.	F.V.	F.V.	F.V.
Time of Sampling	4:05	~~9:25~~	9:10	9:40	10:10	10:40
Samples Taken By:	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen	J. Olsen
Sample Information:	8:45					
Sample No.	#145	#146 8:45	#147	#148	#149	#150
Number - Volume (mls.)	40ml	40ml	40ml	40ml	40ml	40ml
Type of Container (G/P)	G	G	G	G	G	G
Field Filtered (Y/N)	N	N	N	N	N	N
ESI Field Duplicate (Y/N)	N	N	N	N	N	N

* Measured from surface of ground

CHAIN OF CUSTODY

Samples Relinquished By: Date N/A Time		**Lab Comments:** On-Site lab analysis
Samples Received By: Date N/A Time		

Sample Shipment:
Hand Delivered: (yes) no
Shipped via: N/A
Date Shipped: N/A
Shipper's Signature: JEO

ENVIROSURV INC.
2800-C Dorr Avenue
Fairfax, Virginia 22031

Groundwater Sampling Field Log Sheet

CLIENT: TETC

LOCATION: Burlington, VT ANGB

Sheet 4 of 4
Crew Chief J Olsen
Unit No. #2
Job No.

Date	8/24/94	8/24/94	8/24/94
Well-Point Location I.D.	4PZ-1 colocated 4505-	4PZ-2 colocated 4515	4PZ-3 colocated 4508
Well-Point Information:			
Length of Probe Rod (ft.)			
Total Depth * (ft.)	26ft ~~30 ft~~	24 ft	22 ft
Depth to Water * (ft.)	24.2 ft	18.8	19.2
Volume in Well point (l.)			
Sampling Information:			
Turbidity Before Purging			
Volume Purged			
Turbidity After Purging			
Purged Dry? (Y/N)			
Purging Method			
Sampling Method			
Time of Sampling	10:45	11:00	11:15
Samples Taken By:	J. Olsen	J. Olsen	J. Olsen
Sample Information:			
Sample No.	#151	#152	#153
Number - Volume (mls.)			
Type of Container (G/P)			
Field Filtered (Y/N)			
ESI Field Duplicate (Y/N)			

* Measured from surface of ground

CHAIN OF CUSTODY

Samples Relinquished By:	**Lab Comments:**	**Sample Shipment:**
Date N/A	On-site lab analysis	Hand Delivered: (yes) no
Time		Shipped via: N/A
Samples Received By:		Date Shipped: N/A
Date N/A		Shipper's Signature: JEO
Time		

APPENDIX C: FIELD LOGS

Fieldbook: 931802-08/c BK 2 REV. DATE MAY '93

BORING LOG	BORING/WELL NO.: V3-BG1-	Page 1 of 2
Installation: VTANG		Site: 3 Dry Sump Background
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: Earth Tech	Drlg Contractor: Parrott Wolff INC	Driller: Joseph Berry
Drlg Started: 9/20/94 (7:25 A m)	Drlg Ended: 9/20/94 (2:55 p m)	Borehole dia(s): 8"
Drlg Method/Rig Type: HSA's (4.25" ID.) / CME-75		
Logged by: Patricia H Lay	E-Log (Y (N)) From ____ to ____	Protection Level: D

Depth (ft)	Sample No.	Sample Lab	Anal (Y/N)	Outlines Spoon Recovery	(ppm) Hnu (ppm) OVA (ppm) Pid	Lithologic Description	USCS	Blows/6 inch.	Graphic Log	Well data	Water depth & Remarks	Elev. (ft)
0						0- Grass						
						0-3' silt and sand (m to f.) with ~~roots~~ PID roots/fibrous 2.5 yr 6/4 Light yellow brown dry to Sl. moist no odor	SM					
						3-5' silty sand (f to v.f) with trace c. sand and f. gravel dry to Sl. moist no odor 2.5 yr 5/4 Lt. olive brown.	SM/ML	5 4 2 1		2 sleeves 3-5' Spoon		0730
5	V3-BG1 0305											
						8-9' as above						
	V3-BG1 0810					9-10' V.f. sand and silt Sl. moist to dry no odor 2.5 yr 6/4 Lt. yellowish brown	SM/ML	6 2 1 1		2 sleeves 8-10' Spoon		0740
10												
	V3-BG1 1315					13-15' As above no odor	SM/ML	1 2 2 3		2 sleeves 13-15' Spoon		0800
15												
						18-18.5' V.f. sand and silt Dry to Sl. moist 2.5 yr 6/4 light yllw brown no odor	SM/ML	3 4 4 4		3 sleeves 18-20' Spoon		0810
	V3-BG1 1820					18.5 to 20' f to V.f. sand w/ trace silt Sl. moist to dry 2.5 yr 6/3 light yellowish brown no odor						
20												
	V3-BG1 2325					23 to 25' same as no odor	SM/ML	2 3 4 5		2 sleeves 23-25' Spoon		0820
25												
	V3-BG1 2830					28-30' V.f. sand and silt Sl. moist no odor 2.5 y 6/3 light yellowish brown.	SM/ML	3 4 5 12		3 sleeves 28-30' Spoon		0830
30												
	V3-BG1 3335					33-35 As above Sl. moist no odor	SM/ML	5 11 13 15		33-35' Spoon 2 sleeves		0840
35												

U = Thin Wall Tube
S = Split spoon(tube)
C = Cuttings
R = Rock Coring ____ Field G/C(Make/Mod.) ____
O = Other ____ G/C Oper.: ____
Notes: ____

REV. DATE MAY 1990

BORING LOG	BORING/WELL NO.: V3-B61	Page 2 of 2
Installation: VTANG		Site: 3 Dry Sump-Background
Project No.: 931802-08	Client/Project: HAZWRAP / ANG	
HAZWRAP Contractor: Earth Tech	Drlg Contractor: Parrat Wolff	Driller: Joseph Perry
Drlg Started: 9/20/94 (7:25 AM)	Drlg Ended: 9/20/94 (2:55 PM)	Borehole dia(s): 8"
Drlg Method/Rig Type: HSAs (4.25" ID) / CME-75		
Logged by: Patrick HLang	E-Log (Y / (N)) From ____ to ____	Protection Level: D

Depth (ft)	Sample No.	Sample Lab	Anal. (Y/N)	Chem	Blow/6 inch	USCS	Graphic Log	Well data	Water depth & Remarks	Elev. (ft)	Lithologic Description
35											
	S	V3-B61 38-40	φ	2'	10 15 23 23	SM/ML			38-40' spoon 3 sleeves	0950	35-40' Sand V.F w/ silt traces to 15% 5Y 4/4 olive MOIST no odor
40	C		φ								
	S	n	φ	2'	7 11 15 17	SM/ML			43-45' spoon Litho only	1010	43-45' as above 5Y 4/2 olive grey wet at 43.5'
45									Augur to 48' WL=46.5 1030 =44.9 1040 =44.25 1050		
	S	n	φ	2'	8 11 15	SM/ML			Spoon 48-50 Lithology only	1100	48-50 as above wet no odor
50											
	S	n	φ	2'	12 17 24 28	SM/ML			Spoon 53-55 Litho only	1115	53-55 as above, wet, no odor
55											
	S	n	φ	2'	5 10 12 14	SM/ML			Spoon 58-60 Litho only	1135	58-60 as above, wet no odor
60											
	S	n	φ	2'	2 2 3 5	SM/ML			Spoon 63-65 Litho Only	1140	63-65 as above
65											as above to ~70'
	S	n	φ	2'	3 5 10 9	SM/ML			Spoon 68-70 Litho only	1200	@70' Clay low to med plasticity, m. stiff no odor moist to sl. moist no odor 10yr 4/1 Dark grey
68'											
70											

U = Thin Wall Tube
S = Split spoon(tube)
C = Cuttings

R = Rock Coring ____ Field G/C(Make/Mod.) ____
O = Other ____ G/C Oper.: ____
Notes: ____

Fieldbook: 931802-08/1C, BK#2, pp. 85-87 REV. DATE: MAY 1990

BORING LOG	BORING/WELL NO.: VB - SB - 1	Page 1 of 1
Installation: VTANG		Site: SI Site 3 SB-1
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: EarthTech	Drlg Contractor: Parratt-Wolff	Driller: R. Navatka
Drlg Started: 9/13/94 (10:24 Am)	Drlg Ended: 9/13/94 (11:40 Am)	Borehole dia(s): 8-inch
Drlg Method/Rig Type: HSAs (4.25" ID)/CME-75		
Logged by: G. Maynor	E-Log (Y/(N)) From ____ to ____	Protection Level: D

* Grass at surface

Depth (ft)	Sample No.	Sample Lab	Anal. (Y/N)	OVM PID (ppm) / Recovery (ft)	Blows/6 inch	Lithologic Description	USCS	Graphic Log	Well data	Water depth & Remarks	Elev. ft
0	C	—	—	0 / N/A		0-3' Silty Sand, Grayish Brown (5YR 3/2), fine grained, moist - sli. moist. (abundant fine mica)	SM				
	SB1-0306	Y		75 / 1.8	1 2 3	3-4.7' Silty Sand, As Above w/ Mod. Yel. Brn. (10YR 5/4), HC odor	SM			* Strong HC odor	* 1032
5				186		4.7-5' Sand, LT. Olive Gray (5Y 6/1), fine-coarse grn., loose, moist, HC odor	SW				2 sleeves
	C	—	—	258 / N/A		3-8' Silty Sand / Sandy Silt, LT. Olive Gray (5Y 6/1), very fine to fine grained, slightly moist, HC odor	SM/ML				
	SB1-0910	N		213 / 2	3 7 8 8	8-10' Silty Sand / Sandy Silt - As Above, Sli. moist., HC odor	SM/ML			w/ HC vapors / odor in BZ.	* 1117
10	C	—	—	↕ / N/A		8-11' As Above. HC odor	SM/ML				2 sleeves
	SB1-1113	Y		149 / 2	5 9 10 11	11-13' Silty Sand / Sandy Silt, As Above, Slightly moist to moist, HC odor	SM/ML			moist. incr.	* 1121
				218 / 224							Dup - 3 sleeves
	C	—	—	288 / N/A		11-15 As Above, HC odor	SM/ML				
15						Sampling TD 13' bgs. Drilling TD 15' bgs.				▽ ? = ?	est. water btw 15-17 ft bgs, SOV wtr level ~ 17' in vicinity. Spoon was wet on end of spoon to top; 13.2-15' bgs on SB-5. Gm 9/13/94.

* Anticipated water btw. 13-15'. Hydrocarbon (HC) vapors so strong opted not to drill further 2-3 feet to minimize vapors and limit volume of contaminated cuttings.
Gm 9/14/94

U = Thin Wall Tube
(S) = Split spoon(tube)
(C) = Cuttings
R = Rock Coring ____
O = Other ____
Field G/C (Make/Mod.) ____
G/C Oper.: ____
Notes: ____

Fieldbook: 931802-08/10, DK #2, Pg 84-85 REV. DATE: MAY 1990

BORING LOG	BORING/WELL NO.: V3-SB-2	Page 1 of 1
Installation: VTANG		Site: SI Site 3, SB-2
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: Earth Tech	Drlg Contractor: Parratt Wolff	Driller: Rick Navratka
Drlg Started: 9/13/94 9:11 Am	Drlg Ended: 9/13/94 (9:39 Am)	Borehole dia(s): 8-inch
Drlg Method/Rig Type: HSAs (4.25" ID)/CME-75		
Logged by: G. Maynor	E-Log (Y/N) From ___ to ___	Protection Level: D

* Grass AT surface

Depth (ft)	Sample Type	Sample No.	Lab	Anal. (Y/N)	OVM PID headsp (ppm)	Recovery (ft)	Lithologic Description	USCS	Blows/6 inch	Graphic Log	Well data	Water depth & Remarks	Elev. (ft)
0	C	—	—	N/A	0-1	N/A	0-3' Silty Sand, Grayish Brown (5YR 3/2), fine grained, moist to sli. moist.	SM					
	SS	V3-B2-0905		Y	1.2 0	1.8	3-5' Silty Sand, As Above, w/ Mod. yel. Brn. (10YR 5/4) and LT. olive Gray (5Y 6/1) at 4-5', moist,	SM	1 2 1				
5	C	—	—	N/A	0 85 259		3-8' As Above, w/ Hydrocarbon odor at ~ 7.5-8'.	SM				HC ODOR ↓	
	SS	V3-B2-0810		N	253 259 278	2	8-10' Sandy SILT/Silty Sand, LT. olive Gray, v. fine grained, slightly moist, HC odor	SM/ML	5 9 10				
10	C	—	—	N/A	↕		8-11' As Above,	SM/ML					
	SS	V3-B2-1113		Y	268 283	2	11-13' Sandy SILT/Silty Sand, As Above, sli. moist, HC odor.	SM/ML	8 10 10 11				
							DRILLING TD 11' bgs. Sample TD 13' bgs. Gm 9/13/94						
15							Gm 9/13/94					▽? = est. wtr. 14-16' Based on wet spoon in V3-SB-5. *SOV survey water level 17' bgs in vicinity. Gm 9/13/94	

* Strong HC vapors in BZ; intermittantly during drilling. Gm 9/13/94.

U = Thin Wall Tube
S = Split spoon(tube)
C = Cuttings
R = Rock Coring ___
O = Other ___
Field G/C (Make/Mod.) ___
G/C Oper.: ___
Notes: ___

Fieldbook: 93802-08/10, BK #2, pp 89-90 REV. DATE: MAY 1990

BORING LOG	BORING/WELL NO.: V3-SB-3	Page 1 of 1
Installation: VTANG		Site: SI Site 3, SB-3
Project No.: 93802-08	Client/Project: HAZWRAP/ANG	--
HAZWRAP Contractor: EarthTech	Drlg Contractor: Parratt Wolff	Driller: Rick Navatka
Drlg Started: 9/13/94 (13:09 ☐ pm)	Drlg Ended: 9/13/94 (13:37 ☐ pm)	Borehole dia(s): 8-inch
Drlg Method/Rig Type: HSAs (4.25" ID) / CME-75		
Logged by: G. Maynor	E-Log (Y (N)) From ____ to ____	Protection Level: D

* Grass at surface

Depth (ft)	Sample Type	Sample No.	Lab	Anal. (Y/N)	OVM PID Recovery (ft)	OVM PID Resp (ppm)	Lithologic Description	USCS	Blows/6 inch	Graphic Log	Well data	Water depth	Remarks	Elev. (ft)
0	C	—	—		0	N/A	0 – 3' Silty Sand, Brownish Gray (5Y 4/1). to Grayish Brn (5YR 3/2), fine grained, peaty loam ~0–1 Ft.	SM						
	A	V3-B3-0305		Y	166 234	1.6	3–5' S. Sand; As Above w/ Hydro carbon (HC) Odor.	SM	1 0 0				HC ODOR ↓	≈1315
5	C	—	—		222	N/A	3–8' Silty Sand, As Above to ~5', w/ Sandy Silt/Silty Sand, LT. Olive Gray (5Y 6/1), v. Fine grn., sli. moist + HC odor 5–8'.	SM/ML						2 sleeve
	A	V3-B3-0810		N	165 198	19	8–10' Silty Sand/Sandy Silt, LT. olive Gray, v. fine grained, sli. moist, HC odor (strong)	SM/ML	5 6 7					≈1325 3 sleeve
10	C	—	—		220	N/A	8–13' As Above, strong HC ODOR, slightly moist.	SM/ML						
	A	V3-B3-1315		Y	191 271	1.8	13–15' Silty Sand/Sandy Silt. As above ~13–14.5', w/ increase in fine grained Sand ~14.5–15'. Strong HC ODOR, slightly moist.	SM/ML	5 8					≈1337 2 sleeve
15							Drilling TD 13' bgs. Sampling TD 15' bgs.					▽ =	est. ~ 17' bgs.	

U = Thin Wall Tube
(S) = Split spoon(tube)
(C) = Cuttings
R = Rock Coring ____
O = Other ____
Notes: ____
Field G/C(Make/Mod.) ____
G/C Oper.: ____

Fieldbook #: 931802-08/10, BKA2, pp 90-93 REV. DATE: MAY 1990

BORING LOG	BORING/WELL NO.: V3-SB-4	Page 1 of 1
Installation: VTANG		Site: SI Site 3, SB-4
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: Earth Tech	Drlg Contractor: Parratt Wolff	Driller: Rick Navatka
Drlg Started: 9/13/94 (14:50 ± m)	Drlg Ended: 9/13/94 (15:44 ± m)	Borehole dia(s): 8-inch
Drlg Method/Rig Type: HSAs (4.25" ID) / CME-75		
Logged by: G. Maynor	E-Log (Y / N) From ____ to ____	Protection Level: D

* GRASS AT SURFACE

Depth (ft)	Sample No.	Sample Lab	Anal. (Y/N)	SVM PID headsp (ppm)	Recovery (ft)	Lithologic Description	USCS	Blows/6 inch.	Graphic Log	Well data	Water depth	Remarks	Elev.
0													
	C	-	-	242	N/A	0-3' Silty Sand, Grayish Brn (5YR 3/2) to Mod. Yel. Brn. (10YR 5/4), fine grained, sli. moist to moist, V. strong HC odor - 1 to 2 Ft, HC? DK(N3)	SM					HC odors	
	S	V3-SB-0305	Y	240 220	2	3-5' Silty Sand, Olive Brown (2.5Y 4/3), fine grn., moist, HC DK Gray stain ~ 3.5' gray stain 2-3 Ft	SM	1 0 1 2				↓ Strong odors	* 1450 2 sleeves
5													
	C	-	-	268	N/A	3-8' 3-7'? As Above, Silty Sd, Olive Brn. 7-8? Silty Sand/Sandy Silt, L. olive Gray (5Y 4/1), v. Fn. grn., sli. moist to moist, HC odor - strong.	SM / ML						
	S	V3-SB-0810	N	215 225	2	8-10' Silty Sand/Sandy Silt, L. olive Gray, v. Fn. grn, sli. moist to moist, strong HC odor.	ML / SM	4 7 9 10				MS / MSD	* 1500 5 sleeves
10													
	C	-	-	236 240	N/A	8-13' Silt/Sand, As above. Strong HC odors	ML / SM						
	S	V3-SB-1315	Y	205 215 233 276	2	13-15' Silt/Sand, As Above, L. olive. Gray, Strong HC odors.	ML / SM	6 9 12 13					* 1544 Dup 3 sleeves
15						* cuttings 13-15' 253 ppm ±. Drilling/Sampling TD 15' bgs.					▽ =	wtr est ~17' bgs.	

U = Thin Wall Tube
S = Split spoon(tube)
C = Cuttings
R = Rock Coring ____
O = Other ____
Field G/C (Make/Mod.) ____
G/C Oper.: ____
Notes: ____

Fieldbook: 931802-08/10, Bk 42, pp. 82-83 REV. DATE: MAY 1990

BORING LOG	BORING/WELL NO.: V3 - SB-5	Page 1 of 1
Installation: VTANG	Site: SI Site 3, SB-5	
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: Earth Tech	Drlg Contractor: Parratt Wolff	Driller: Rick Navatka
Drlg Started: 9/13/94 (7:58 Am)	Drlg Ended: 9/13/94 (8:33 Am)	Borehole dia(s): 8-inch
Drlg Method/Rig Type: HSAs (4.25" ID) / CME-75		
Logged by: G. Maynor	E-Log (Y/(N)) From ____ to ____	Protection Level: D

* Gross at surface

Depth (ft)	Sample	Sample No.	Lab	Anal. (Y/N)	SVM PID (ppm) / Recovery (ft)	Lithologic Description	USCS	Blows/6 inch	Graphic Log	Well data	Water depth	Remarks	Elev. (ft)
0	C	—	—		185 / N/A	0-3' Silty Sand, Olive Gray (5Y 4/1), fine grained, w/ peaty loam ~0-1 ft, moist, Hydrocarbon odor at ~2'?	SM					HC odor ↓	
	SS	V3-SB5-0305		Y	159, 185, 259 / 2	3-5' Silty Sand, Olive Gray to Brn. Gray (5YR 4/1), Fine grn., moist, HC odor	SM	1, 0, 1				VT. Sleeves	*0807, 4 sleeves
5	C	—	—		196, 237, 343 / N/A	3-8' Sandy Silt / Silty Sand, As Above, w/ increase in Silt ~ 5-8' & V. Fn. grn. sd.	SM/ML						
	SS	V3-SB5-0810		N	284, 326, 296 / 1.8	8-9.8? Silt/Sand, Lt. Olive Gray (5Y 7/1) V. fine grained, moist, HC odor	SM/ML	5, 7, 10, 11					*0819, 2 sleeves
10	C	—	—		305 / N/A	8-13' Silt/Sand, As Above, moist, HC odor.	SM/ML						
	SS	V3-SB5-1315		Y	199, 324, 284, 304 / 1.5	13-14.5(?) Silt/Sand, As Above, wet(?) on spoon ~ 13.2'?? HC odor	SM/ML	3, 4, 5, 6			▽ C	wet/v. moist spoon ~13.2 ft.	*0833, 2 sleeves
15						* Drilling TD 13' bgs. Sampling TD 15' bgs.						wtr ? ~17' based on SOV data. GM 9/13/94	

U = Thin Wall Tube
S = Split spoon(tube)
C = Cuttings
R = Rock Coring ____
O = Other ____
Field G/C(Make/Mod.) ____
G/C Oper.: ____
Notes: ____

Fieldbook: 931802-08/10, BK#2 PP. 94-95 REV. DATE: MAY 1990

BORING LOG	BORING/WELL NO.: V3-MW-1	Page 1 of 1
Installation: VTANG		Site: SI Site 3, MW-1
Project No.: 931802-08	Client/Project: HAZWRAP	
HAZWRAP Contractor: Earth Tech	Drlg Contractor: Perratt Wolff	Driller: Rick Navatka
Drlg Started: 9/13/94 (16:14 PM)	Drlg Ended: 9/13/94 (16:47 PM)	Borehole dia(s): 8-inch
Drlg Method/Rig Type: HSAs (4.25" ID)/CME-75		
Logged by: G. Maynor	E-Log (Y / N) From ____ to ____	Protection Level: D

* Gravel/soil at surface

① Depth (ft)	Sample	Sample No.	Lab	Anal. (Y/N)	OVM Read (ppm)	Recovery (ft)	Lithologic Description	USCS	Blows/6 inch	Graphic Log	Well data	Water depth & Remarks	Elev. ft
0	C	—	—	N/A	0		0-5' Silty Sand, Mod. Yel. Brn. (10YR 5/4), very fine grn., tr. moisture. Gravel fine to coarse from 0-1 ft Road surface.	SM				Fining Downward	
5	C	—	—	N/A	0		5-10' Silty Sand, As above to Sandy Silt.	SM/ML					
10	C	—	—	N/A	0-1		10-15' Silty Sand, As Above, w/ Olive Brown (2.5Y4/3), v. fn. grn, sli. moist. to Sandy Silt.	SM/ML					
							15-18' Silty Sand, olive Brown, to Sandy Silt.	SM/ML					
15	C	—	—	N/A	0							Wtr ~19' bgs.	
20	$	N/A	N		269	1.7	18-19.7'(?) Silt/Sand, Olive Gray (5Y4/1), v. fine grained, moist, wet ~19'. HC odor	SM/ML	2 4 5 4		▽ 2	HC odor	
	C	—	—	N/A	—		18-23' Silt/Sand, As above.	SM/ML					
25	$	N/A	N		20 101	1.8	23-24.8? Silty Sand/Sandy Silt, Brn. Gray (5YR 4/1), v. fine grn., wet	SM/ML	3 3 7 7				
	C	—	—		↑	N/A	23-26' TD. As Above	↓					
30							Drilling TD 26' bgs. Sampling TD 25' bgs.						

* Split-spoon for Lithology only. For Detailed lithology 0-15' see Borings for SB-1 thru SB-5. Gen 9/13/94.

U = Thin Wall Tube
$ = Split spoon(tube)
C = Cuttings

R = Rock Coring ____ Field G/C (Make/Mod.) ____
O = Other ____ G/C Oper.: ____
Notes: ____

* Added ~25 gallons potable wtr. during drilling.

V3-MW2 Fieldbook: 93i802-08/1c, BK#2 PP. 106-107 REV. DATE: MAY 1990

BORING LOG	BORING/WELL NO.: V3-MW-2	Page 1 of 1
Installation: VTANG		Site: SI SITE 3, MW-2
Project No.: 93i802-08	Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: EarthTech	Drlg Contractor: Parratt Wolff	Driller: Rick Navatka
Drlg Started: 9/14/94 (14:33 ± 2 m)	Drlg Ended: 9/14/94 (15:02 ± 2 m)	Borehole dia(s): 8-inch
Drlg Method/Rig Type: HSAs (4.25"ID) / CME-75		
Logged by: G. Maynor	E-Log (Y / N) From ____ to ____	Protection Level: D

* Grass at surface

Depth (ft)	Sample No.	Sample Lab	Anal. (Y/N)	OVM PID ndsp (ppm) / Recovery (ft)	Lithologic Description	USCS	Blows/6 inch	Graphic Log	Well data	Water depth	Remarks	Elev. (ft)
0												
	C		N	N/A	0.-5' Silty Sand, Mod. Yel. Brn. (10YR 5/3); v. fine grained, w/ Lt. olive Brown (2.5 Y 5/4), loose, tr. moist.	SM/ML						
5												
	C		O	N/A	5-10' As Above, Silty Sand/ Sandy Silt, v. fn. grn., Olive Gray (5Y 4/1).	SM/ML						
10												
	C		O	N/A	10-13' As Above.	SM/ML						
	C		? 200	N/A	13-15' As Above.						HC odor on cuttings ↓	
15												
	C		17½ to 334 ↓	N/A	15-20' As Above	SM/ML				▽ C	wtr-18' bgs	
20												
	C		990 1190 to 266	N/A	20-25' As Above; Silt/sand, Olive Gray, v. fine grn. 9/14/94	SM/ML						
25												

* Drilling TD 25' bgs.

* added ~ 10-15 gal wtr during drilling (to keep sands down at Total Depth = Heaves into annulus)

U = Thin Wall Tube
S = Split spoon(tube)
C = Cuttings
R = Rock Coring ____ Field G/C(Make/Mod.) ____
O = Other ____ G/C Oper.: ____
Notes: ____

V3-MW3 Field book: 931802-08/10 BK#2 pp 102-104 REV. DATE: MAY 1990

BORING LOG	BORING/WELL NO.: V3-MW-Z3	Page 1 of 1
Installation: VTANG	Gw 9/14/94	Site: SI Site 3, MW-3
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: Earth Tech	Drlg Contractor: Perrett Wolff	Driller: Rick Navatka
Drlg Started: 9/14/94 (10:50 AM)	Drlg Ended: 9/14/94 (11:23 AM)	Borehole dia(s): 8-inch
Drlg Method/Rig Type: HSAs (4.25"ID)/CME-75		
Logged by: G. Maynor	E-Log (Y/(N)) From ____ to ____	Protection Level: D

*Grass at surface.

Depth (ft)	Sample	Sample No.	Lab	Anal. (Y/N)	OVM PID (ppm)	Recovery (ft)	Lithologic Description	USCS	Blows/6 inch.	Graphic Log	Well data	Water depth	Remarks	Elev
0	C	--			0	N/A	0-4' Silty Sand, Brown (10YR 5/3), v. fine grained, abundant v. fine mica, tr. moist.	SM/ML						
	C	--			0	N/A		SM/ML	1/2				Gw 9/14/94	
5	S	N/A	N		0	2	4-6' Silty Sand, As Above to Mod Yel. Brown (10YR 5/4), incr. in fn. Sand 5-6'	SM	1/1				Gw 9/14/94	
	C	--			0	N/A	4-9' Silty Sand/Sandy Silt, Brown, As Above.	SM/ML						
10	S	N/A	N		0	2	9-9.7' Sand, Pale Yel. Brn. (10YR 6/2), fn to coarse grn. 9.7-11' Silty Sand/Sandy Silt, Lt. olive Gray (5Y 6/1), sli. moist, w/fine mica.	SW/SM	3/3/9					
	C	--			0	N/A	9-14' Silt/Sand, Olive Brown (2.5Y 4/3) to Lt. olive Gray (5Y 6/1), sli. moist, v fine grn.	ML/SM/ML						
15	S	N/A	N		KGG 201	2	14-16' As Above, moist, HC odor; olive Gray (5Y 4/1)., v. fn. grn., soft, no plasticity.	SM/ML	4/4/6				HC odor ↓	
	C	--			179 to 344	N/A	14-19' Silt/Sand, olive Gray, v. fine grn.	SM/ML					wtr 18.45' bgs 9/14/94	
20	S	N/A	N		3	1.5	19-20.5' (?) Silt/Sand, v. fine to Fine grn, wet.	SM/ML	3/8/8					
	C	--			↑	N/A	19-21' As Above	↓						
	C	--			N/A	N/A	19-25' TD As Above.	SM/ML						
							*Drilling TD 25' bgs.							
25							* Sample TD 21' bgs.						TD 25'	
							**Added 10-15 gal wtr during drilling							
							⇒ Split-spooned for lithology only.							

U = Thin Wall Tube
(S) = Split spoon(tube)
(C) = Cuttings
R = Rock Coring ____ Field G/C(Make/Mod.) ____
O = Other ____ G/C Oper.: ____
Notes: ____

Feedbook: 931802-08/10, Bk #2, pp. 53-59 REV. DATE MAY 1990

BORING LOG	BORING/WELL NO.: V4-BG-1	Page 1 of 3
Installation: VTANG		Site: SI Site 34, Background
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	Gm 9/10/94
HAZWRAP Contractor: Earth Tech	Drlg Contractor: Parratt Wolff	Driller: Ron Bush
Drlg Started: 9/10/94 (8:35 A m)	Drlg Ended: 9/10/94 (14:30 P m)	Borehole dia(s): 8-inch
Drlg Method/Rig Type: HSA's (4.25" ID)/CME-75		
Logged by: G. Maynor	E-Log (Y) (N) From ____ to ____	Protection Level: D

*spudded boring 9/9/94 1645-1650

*Asphalt at surface 0-0.7', old/weathered.

Depth (ft)	Sample No.	Sample Log	Anal. (Y/N)	OVM PID 0-3' / Recovery (ft)	Lithologic Description	USCS	Blows/6 inch	Graphic Log	Well data	Water depth & Remarks	Elev. (ft)
0		C	-	-	0 N/A	0-4' Sandy Silt/Silty Sand, Brown (10YR 5/3) to Mod. Yel. Brn (10YR 5/4), very fine to fine grn. tr moisture, fill gravel gravel upper 2' mixed in.	SM/ML					
5	V4-BG-0040	SS	-	0	2 4-6	Sand/Silt, AS Above	SM/ML	3 WH WH			X842
		C	-	-	0 N/A	4-9' Sand/Silt, AS Above, dom. Brown in color.	SM/ML				
10	V4-BG-0041	SS	Y	-	0 2	9-11' Sand/Silt, AS Above	ML/SM	3 4 4		MS/MSD	X085 3 sleeve
		C	-	-	0 N/A	9-14 Sand/Silt AS Above	SM/ML				
15	V4-BG-0042	SS	Y	-	0 2	14-16' Sand/Silt, AS Above, w/ minor med. grn. sand and fine gravel at 14.5'.	SM	3 WH WH		Dup	X093 3 sleeve
		C	-	-	0 N/A	14-19' Sand/Silt	SM				
20	V4-BG-0043	SS	-	-	0 2	19-21' Sand/Silt, Sand dom. Fine grained, moist at 21'	SM	6 10 11 12		VT: Split	X095 4 sleeve
		C	-	-	0 N/A	19-22' Sand/Silt, AS Above, moist to wet.	SM		▼	*wtr -22.55' 1004 9/10/94	
25						22-35' Sand/Silt, Olive Gray (5Y 4/1), wet.	SM				
30						* Drl not split-spoon 22-95' TD due to heaving sands - locking up on augers and entering auger ID tripping in/out w/ sample rods. NearBy V4-MW-3 was sampled to 51'. * Tagging loced bedrock surface was the objective. Gm 9/10/94					

U = Thin Wall Tube
(S) Split spoon(tube)
(C) Cuttings

R = Rock Coring ____ Field G/C(Make/Mod.) ____
O = Other ____ G/C Oper.: ____
Notes: ____

Fieldbook: 931802-08/10, BK#2, pp 53-59 REV. DATE MAY '990

BORING LOG	BORING/WELL NO.: V4-BG-1	Page 2 of 3
Installation: VTANG		Site: SI Site 4, Background
Project No.: 931802-08	Client/Project: HAZWRAP / ANG	--
HAZWRAP Contractor: Earth Tech	Drlg Contractor: Perratt Wolff	Driller: Ron Bush
Drlg Started: 9/10/94 (8:35 Am)	Drlg Ended: 9/10/94 (14:30 pm)	Borehole dia(s): 8 inch
Drlg Method/Rig Type: HSA's (4.25" ID) / CME-75		
Logged by: G. Maynor	E-Log (Y/(N)) From ____ to ____	Protection Level: D

Depth (ft)	Sample No.	Sample Lab	Anal. (Y/N)	OVA PID ppm / Recovery (ft)	Lithologic Description	USCS	Blows/6 inch	Graphic Log	Well data	Water depth	Remarks	Elev.
35	C	N/A	N	0	N/A	35 - 70?' Sand/Silt, olive Gray (5Y 4/1), very fine to fine grained (Gm 9/10/94)	SM	N/A					
40				0								
45				0								
50	C	N/A	N	0	N/A		SM	N/A			Downward fining	
55												
60				0		*60??- 70' (?) Sandy Silt, Gray (N6), w/ tr. of medium grained sand, and partly clayey (sticky), cohesive, saturated, no plasticity,	? ML ? ML		?			
65						* AT 55' auger flights increased in width, possible impeding upward movement of cuttings, therefore the 55-60' limit is interpretative. * During drilling, from 22-95' cuttings were sand/silt, olive Gray (5Y), 60-70' lithology from auger flights.							
70	C	N/A	N	0	N/A		ML	N/A					

U = Thin Wall Tube
S = Split spoon(type)
C = Cuttings
R = Rock Coring ____ Field G/C(Make/Mod.) ____
O = Other ____ G/C Oper.: ____
Notes: ____

* Added 80 gallons of potable wtr during drilling. Gm 9/10/94

Fieldbook 931802-08/10, BK # 2, pp 53-59 REV. DATE: MAY '93

BORING LOG	BORING/WELL NO.: V4-BG-1	Page 3 of 3
Installation: VTANG		Site: SI Site 4, Background
Project No.: 931802-08	Client/Project: HAZWRAP / ANG	--
HAZWRAP Contractor: EarthTech	Drlg Contractor: Parratt Wolff	Driller: Ron Bush
Drlg Started: 9/10/94 (8:35 AM)	Drlg Ended: 9/10/94 (: m)	Borehole dia(s): 8-inch
Drlg Method/Rig Type: HSAs (4.25" ID) / CME-75		
Logged by: G. Maynor	E-Log (Y / (N)) From ____ to ____	Protection Level: D

Depth (ft)	Sample	Sample No.	Lab Anal. (Y/N)	OVM PID (ppm)	Recovery (ft)	Lithologic Description	USCS	Blows/6 inch.	Graphic Log	Well data	Water depth & Remarks	Elev. (ft)
70	C	N/A	N	0	N/A	70 - 95 '(?) TD · Clayey SILT, Gray (NG), saturated, cohesive, no plasticity, soft	ML ↓ ?					
75				0								
						* Drillers noted no change in drill rate from intervals of sandy SILT / Clayey SILT. No indication of competent aquitard layer. No dry clays noted on lead auger. All sediments stuck between auger flights were completely saturated, and soft. Gm 9/10/94	ML					
80												
85	C	N/A	N	0	N/A		ML					
90				0			ML					
95	C	N/A	N	0	N/A	(Drill) TD 95' (No Bedrock) Drillers - out of augers, and possibly the limit of the equipment w/ ~73 ft of heaving fine grn Sand / SILT collapsing against augers. Gm 9/10/94						

U = Thin Wall Tube
S = Split spoon(tube)
C = Cuttings
R = Rock Coring ____ Field G/C(Make/Mod.) ____
O = Other ____ G/C Oper.: ____
Notes: ____

Fieldbook: 931802-08/10, BK #2, pp. 27-28 REV. DATE MAY 1990

BORING LOG	BORING/WELL NO.: V4 – SB-1	Page 1 of 1
Installation: VTANG		Site: SI Site 4, SB-1
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: EarthTech	Drlg Contractor: Parratt Wolff	Driller: Ron Bush
Drlg Started: 9/8/94 (11:20 A m)	Drlg Ended: 9/8/94 (11:52 A m)	Borehole dia(s): 8-inch
Drlg Method/Rig Type: HSAs (4.25"ID)/CME-75		
Logged by: G. Maynor	E-Log (Y / (N)) From ____ to ____	Protection Level: D

* Grass at surface

Depth (ft)	Sample No.	Sample Log	Anal. (Y/N)	OVM PID Recovery (ft)	OVM PID Resp (ppm)	Lithologic Description	USCS	Blows/6 inch.	Graphic Log	Well data	Water depth & Remarks	Elev. (ft)
0	C	–	–	0	N/A	0-4' Silty Sand/Sandy Silt, Brown (10 YR 5/3), v. fine to fine grained, slightly moist.	SM/ML					~1120
5	U	V4-SB1-04-06	N	0	2	4-6' As Above w/ Mod. Yel. Brn. (10YR 5/4).	SM/ML	3 3 2			9/8/94	
	C	–	–	0	N/A	4-9' As Above.	SM/ML					~1115
10	U	V4-SB1-09-11	Y	0	2	9-11' Silty Sand/Sandy Silt, As Above	SM/ML	4 6 6				
	C	–	–	0	N/A	10-15'? As Above	SM/ML					~1110
15	C	–	–	125 287		15-18 Increase in OVM Readings from 0 to 125-287 ppm, Hydrocarbon odor.	SM/ML ? !					
	U	V4-SB1-17-19	Y	3.4 3.4 3.4	2	17-19' Sand, "Speckled" Brn./Gray*, Fine to medium grained, sub-angular to sub rounded, minor Fine gravel, wet, Hc odor	SP/SW	1 2 5			* wtr at 18.1 9/8/94	
20						* "Speckled" Brn/Gray - combination of Dark Gray (N3) shale/mineral frags. and Lt Olive Gray (5Y 6/1) and Olive Gray (5Y 4/1) sand.						
						Drilling TD 17'						
						Sample TD 19'						

U = Thin Wall Tube
($) = Split spoon(tube)
C = Cuttings

R = Rock Coring ____ Field G/C(Make/Mod.) ____
O = Other ____ G/C Oper.: ____
Notes: ____

Fieldbook: 931802-08/10, BK#2, pg. 19-21 REV. DATE: MAY 1990

BORING LOG	BORING/WELL NO.: V4-SB-2	Page 1 of 1
Installation: VTANG		Site: SI Site 4, SB-2
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: Earth Tech	Drlg Contractor: Parratt-Wolff	Driller: Rick Navatka
Drlg Started: 9/7/94 (16:19 PM)	Drlg Ended: 9/7/94 (16:55 PM)	Borehole dia(s): 8-inch
Drlg Method/Rig Type: HSAs (4.25" ID)/CME-75		
Logged by: G. Maynor	E-Log (Y/N) From ____ to ____	Protection Level: D

*Grass at Surface

Depth (ft)	Sample	Sample No.	Anal. (Y/N)	OVM PID (ppm) / Recovery (ft)	Lithologic Description	USCS	Blows/6 inch	Graphic Log	Well data	Water depth & Remarks	Elev. (ft)
0	C	—	—	0 / N/A	0-4' Silty Sand/Sandy Silt, Brown (10YR 5/3) to Mod. Yel. Brn. (10YR 5/4), very fine to fine grained, tr. coarse gravel, tr. moisture	SM/ML					
5	S	V4-SB-02-0406	N	0 / 2	4-6' As Above.	SM/ML	2 1 2 3			15 min. Headsp. 4.9 ppm	*1628
	C	—	—	0 / N/A	4-9' Silt/sand, As Above	SM/ML					
10	S	V4-SB-02-0911	N	0 / 2	9-11' Silt/Sand, As Above	SM/ML	2 4 3 5			15 min. Headsp. 0.8 ppm	*1636
	C	—	—	*N/A / N/A	9-14 As Above, w/ incr. in fine to medium grained sand at depth	SM/ML SP					
15	S	V4-SB-02-1416	Y	*N/A	14-16' Sand, Gray (N4) and Med. Yel. Brn. (10YR 5/4), dominantly medium grained, w/ fine gravel	SP	2 2 2 5			15 min. Hdsp. 22 ppm	*1642
	C	—	—	*N/A / N/A	14-19 As above, w/ return to Silty Sand/Sandy Silt, as above, Olive Gray (5Y 4/1)	-?- SM/ML				* wtr 19.1 9/7/94	
20	S	V4-SB-02-1921	Y	*N/A / 2	19-21' Silty Sand/Sandy Silt, olive Gray (5Y 4/1), v. fine grained, wet Hydrocarbon odor.	SM/ML	3 4 5 6			15 min. Hdsp. 133 ppm	*1655

w/ other OVM, cuttings indicated HC vapors of 28-197 from ~16-19 Ft bgs.

*N/A - OVM readings - OVM malfunction (wet), switched to other unit.

TD 21'

U = Thin Wall Tube
(S) = Split spoon(tube)
(C) = Cuttings
R = Rock Coring ____ Field G/C (Make/Mod.) ____
O = Other ____ G/C Oper.: ____
Notes: ____

Fieldbook: 931802-08/10, BK#2, pp 17-19 REV. DATE MAY 1990

Page 1 of 1

BORING LOG	BORING/WELL NO.: V4-SB-3	Site: SI Site 4, SB-3
Installation: VTANG		
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	Driller: Rick Navratka
HAZWRAP Contractor: Earth Tech	Drlg Contractor: Parratt Wolff	Borehole dia(s): 8-inch
Drlg Started: 9/7/94 (14:48 ☐ m)	Drlg Ended: 9/7/94 (15:19 ☐ m)	
Drlg Method/Rig Type: HSAs (4.25" ID)/CME-75		
Logged by: G. Mayor	E-Log (Y / (N) From ____ to ____	Protection Level: D

* Gress at surface

Depth (ft)	Sample	Sample No. Lab	Anal. (Y/N)	OVM PID Headsp (ppm) Recovery (ft)	Lithologic Description	USCS	Blows/6 inch	Graphic Log	Well data	Water depth & Remarks	Elev.
0	C	—	—	0 N/A	0-4' Silty Sand/Sandy Silt, Brown (10YR 5/3) to Mod. Yel. Brn. (10 YR 5/4), v. Fn. to Fn. grn., tr. to sli. moist.	SM/ML					
5	$	—	N	0 2	4-6' Sand/Silt, AS above	SM/ML	2 2 3 2			15 min. Hdsp 0 ppm	
	C	—	—	N/A	4-9' AS above.	SM/ML					
10	$	—	N	0 .6 2	9-11' Sand, Olive Gray (5Y4/1). Fine to medium grained, sub-ang to sub-rnd., moist, tr. of iron staining/layering.	SP	3 3 4			15 min Hdsp. 0 ppm * coarsen down	
	C	—	—	N/A	9-14' Sand, AS above.	SP					
15	$	W-83-1416	Y	3 10 32 2	14-16 Sand, Gray (N4) and Mod. Yel. Brn. (10 YR 5/4), dom. medium grained, w/ minor Fine gravel to coarse gravel, wet. Clayey Silt, Gray (N4), wet at 15.9-16'	SP/ML	3 4 4			15 min. Hdsp. 0.5 ppm	
	C	—	—	0 N/A	14-19' Sand, AS above, mixed. (Silt?)	SP/ML?	Grn 9/7/94		▽ 2	* wtr @ 19' on spoon	
20	$	W-83-1421	Y	0 2	19-21' Silty Sand/Sandy Silt, Olive Gray (5Y 4/1), v. Fn. to Fn. grn., wet.	SM/ML	4 4 6			15 min Hdsp. 2.2 ppm	

Drilling TD 19'
Sample TD 21'

U = Thin Wall Tube
$ = Split spoon(tube)
C = Cuttings
R = Rock Coring
O = Other
Notes:

Field G/C (Make/Mod.)
G/C Oper.:

Fieldbook: 931802-08/10, pk #2, pp 24-26 REV. DATE MAY '93

BORING LOG	BORING/WELL NO.: V4-SB-4 / MW-2	Page 1 of 1
Installation: VTANG		Site: SI Site 4 - SB-4
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: Earth Tech	Drlg Contractor: Parratt Wolff	Driller: Ron Bush
Drlg Started: 9/8/94 (9:29 A m)	Drlg Ended: 9/8/94 (10:19 A m)	Borehole dia(s): 8-inch
Drlg Method/Rig Type: HSAs (4.25" ID) / CME-75		
Logged by: G. Maynor	E-Log (Y / (N)) From ____ to ____	Protection Level: D

*Grass at surface

Depth (ft)	Sample No.	Sample Lab	Anal. (Y/N)	OVM PID Headsp (ppm) / Recovery (ft)		Lithologic Description	USCS	Blows/6 inch.	Graphic Log	Well data	Water depth & Remarks	Elev. (ft)
0												
	c	-	-	/	c	N/A	0-4' Silty Sand / Sandy Silt, Brown (10YR 5/3) to Mod. Yel. Brn (10YR 5/4), very fine to fine, sli. moist.	SM/ML					
5	t	V4-SB-4-0406	N	0	2		4-6' As Above w/ Olive Gray (5Y 3/2)	SM/ML				15 min. Hdsp. 0 ppm	0937
	c	-	-	0	N/A		4-9' Silt/Sand, As Above.	SM/ML					
10	t	V4-SB-4-0810	Y	0	2		9-11' Silt/Sand, As Above, w/ dominantly fine grained sand	SM/ML	4 5 5			15 min. Hdsp 0 ppm.	0945
	t	-	-	0	N/A		9-17' Silt/Sand, As Above.	SM/ML?					
15													
	t	V4-SB-4-1719	Y	0 22 225	2		17-19' Sand, Gray (N5) & Mod Yel. Brn. (10YR 5/4), Fine to medium grn., sub-ang. to sub-round, moist, HC odor.	SP	4 4 4			15 min Hdsp 125 ppm (see spoon readings)	0958
20	c	-	-		N/A		17-24 As above, Sand consists of fine to medium grn. silica, w/ dk. gray weathered shale and mineral (hornblende?) frags. Gives a speckled appearance w/ tones of olive gray (5Y 6/1-4/1).	SP				* wtr 19.2' bgs 0920 9/14/94.	
25	t	V4-SB-4-2426	N	25	1.6		24-26' Sand, Olive Gray (5Y 4/1), Fine grained w/ silt, w/ tr. medium grained, wet.	SP/SM	10 10 11 11				1017
	c	-	-	12 8	N/A		24-29' Sand, Olive Gray, As Above. wet cuttings picking up HC vapors as they pass through water table.	SP/SM					Emp 1814 1014
30	t	V4-SB-4-2931	N	0	2		29-31' Sand, as above, wet.) No odor	SP/SM	5 5 5				1031
							Drilling TD 29' Sample TD 31' * Added 25 gal potable wtr during drilling due to heaving sand.						
35													

U = Thin Wall Tube
(S) = Split spoon(tube)
G = Cuttings

R = Rock Coring ____ Field G/C (Make/Mod.) ____
O = Other ____ G/C Oper.: ____
Notes: ____

Fieldbook: 931802-08/10, BK#2, pp 160-161 REV. DATE MAY 1990

Page 1 of 1

BORING LOG	BORING/WELL NO.: V4-SB-5	Site: SI Site 4, SB-5
Installation: VTANG		
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: EarthTech	Drlg Contractor: Parratt Wolff	Driller: Joe Perry
Drlg Started: 9/14/94 (9:25 Am)	Drlg Ended: 9/14/94 (9:53 Am)	Borehole dia(s): 8-inch
Drlg Method/Rig Type: HSAs (4.25" ID) / CME-75		
Logged by: G. Maynor	E-Log (Y/(N)) From ____ to ____	Protection Level: D

Depth (ft)	Sample	Sample No.	Lab	Anal. (Y/N)	OVM PID (ppm) / Recovery (ft)	Lithologic Description	USCS	Blows/6 inch	Graphic Log	Well data	Water depth	Remarks	Elev. (ft)
0	C	—	—	—	0 / N/A	0-4' Silty Sand/Sandy Silt, Brown (10 YR 5/3) to Mod. Yel. Brn. (10 YR 5/4), very fine to fine grn., micaceous, sli. moist	SM/ML?						
5	S	SB-5-04		Y	0 / 1.9	4-6' As Above.	SM/ML	3 1 1					*0932 2 sleeves
	C	—	—	—	0 / N/A	4-9' Sand/Silt, As Above	SM/ML						
10	S	SB-5-11		Y	6 / 2	9-11' Sand/Silt As Above, w/ olive Brown (2.5Y 4/3) & olive Gray (5Y 3/2)	SM/ML	3 4 3 4					2 sleeves
	C	—	—	—	0 / N/A	9-17 Sand/Silt, olive Brown, As Above, sli. moist, abundant mica flakes (common in all samples across the site.)	SM/ML						
15	S	SB-5-17		Y	218 305 346 / 16	17-17.6' Sand/Silt, As Above 17.6-19' Sand, "speckled" Brn/Gray(**), fine to coarse grn, wet ~18.3'	SM/SW	MK1 2 3			▽	*wtr estimated ~18.3 ± ft	*0933 2 sleeves
20						contains fine to coarse frags of dk gray shale & minerals(?). ⇒ HC odor and DK Gray HC staining evident. ** DK Gray (N4) w/ Lt. olive Gray (5Y 6/1) and olive Gray (5Y 4/1). Drilling TD 17' Sample TD 19'							

H = Thin Wall Tube
($) = Split spoon(tube)
(C) = Cuttings
R = Rock Coring ____
O = Other ____
Field G/C(Make/Mod.) ____
G/C Oper.: ____
Notes: ____

Fieldbook: 931802-08/10, DK #2, pp. 14-17 REV. DATE MAY 1990

BORING LOG	BORING/WELL NO.: V4 - SB-6	Page 1 of 1
Installation: VTANG		Site: SI Site 4, SB-6
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: Earth Tech	Drlg Contractor: Parratt Wolff	Driller: Ron Bush
Drlg Started: 9/7/94 (13:05 PM)	Drlg Ended: 9/7/94 (14:15 PM)	Borehole dia(s): 8-inch
Drlg Method/Rig Type: Hollow-Stem Augers (HSAs) (4.25" ID) / CME-75		
Logged by: G. Maynor	E-Log (Y/N) From ____ to ____	Protection Level: D

* Grass At Surface

Depth (ft)	Sample No.	Sample Type	Lab Anal. (Y/N)	OVM PID Headsp (ppm)	Recovery (ft)	Lithologic Description	USCS	Blows/6 inch.	Graphic Log	Well data	Water depth & Remarks	Elev. (ft)
0	V4-SB-6-0-4	C	-	-	0	N/A	0-4' Silty Sand/Sandy Silt, Brown (10YR 5/3) to Mod. Yel. Brn. (10YR 5/4 when wet), very fn. to fn. grn., tr. to slight moisture	SM/ML	6 cm 9 11 14				
5	V4-SB-6-4-6	S	N	0	2		4-6' Sand/Silt, As Above	SM/ML	24 6 12			15 min. Hdsp. 0 ppm	1318
		C	-	-	0	N/A	4-9' As Above, tr. moisture	SM/ML	6 cm 9 11 14				
10	V4-SB-6-9-11	S	N	0	2		9-11' Sand, Lt. olive Gray (5Y 6/1), fine to medium grained, sub-angular to sub-rounded, slightly moist	SP	4 6 7			15 min. Hdsp 0 ppm	1336
		C	-	-	0	N/A	9-14' As Above	SP					
15	V4-SB-6-14-16	S	N	0	2		14-16' Sand, As Above, w/ Sandy Silt, olive Gray, moist.	SP/SM	3 5 7			15 min. Hdsp. 0 ppm	1344
		C	-	-	0	N/A	14-19' As Above. silt/SAND	SP/SM					
20	V4-SB-6-19-21	S	Y	0	2		19-21' Sand, DK yel. Brn. (10YR 4/2), dominantly medium grained w/ minor coarse gravel, loose, moist.	SP	4 5 6			15 min. Hdsp. 0 ppm	1355
		C	-	-	0	N/A	19-24' As Above.	SP ?				wtr ~24' bgs 1415 9/7/94.	
25	V4-SB-6-24-26	S	N	0	2		24-26 Sand & Silt, olive gray, fn to med. grn sand w/ silt, wet	SM	3 4 6 9			15 min. Hdsp. 0 ppm	1408

* olive Gray (5Y 4/1)

Drilling TD 24'

Sample TD 26'

U = Thin Wall Tube
(S) = Split spoon (tube)
(C) = Cuttings

R = Rock Coring ____ Field G/C (Make/Mod.) ____

O = Other ____ G/C Oper.: ____

Notes: ____

Fieldbook: 93802-08/10, BK #2, pg

REV. DATE MAY 1990

BORING LOG	BORING/WELL NO.: V4 - MW-1	Page 1 of 1
Installation: VTANG		Site: SI Site
Project No.: 93802-08	Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: Earth Tech	Drlg Contractor: Parratt Wolff	Driller: Ron Bush
Drlg Started: 9/8/94 (13:17 PM)	Drlg Ended: 9/8/94 (13:45 PM)	Borehole dia(s): 8-inch
Drlg Method/Rig Type: HSAs (4.25" ID) / CME-75		
Logged by: G. Maynor	E-Log (Y / N) From ____ to ____	Protection Level: D

* Gress at surface
** cuttings only.

Depth (ft)	Sample No.	Sample Lab	Anal. (Y/N)	Over Recovery (ft)	Head Space (ppm)	Lithologic Description	USCS	Blows/6 inch	Graphic Log	Well data	Water depth	Remarks	Elev. (ft)
0	C	N/A	N	0	N/A	0-5' Silty Sand/Sandy Silt, Brown (10YR 5/3), sli. moist, v. fine to fine grn., trace of wood and plant matter.	SM/ML	N/A					
5				0		5-10' Silt/Sand w/ Mod Yel. Brown (10YR 5/4), sli. moist, loose.	SM/ML						
10				1									
				0-1		10-15' As Above w/ medium to coarse grains of weathered dk gray shale (N3) ~ 15'	SM						
15				0-1		15-20' As above w/ shale frags + fine to coarse sand: Sand, "speckled" Brn/ to Gray, fine to med. w/ minor coarse and fine gravel, HC odor ~ 17'.	? SM/SP/SW	9/8/94 6m ?				∞ wtr 17.55' MWS 9/8/94 * Hydrocarbon odor ~ 17'	
20				115			SP/SW	?					
				344			SM/SP	?					
25						20-25 Sand (Silt?) As Above.							
						Drilling TD 25 ft.							
						* Added ~10 gal potable wtr during drilling (heaving sands).							

U = Thin Wall Tube
S = Split spoon(tube)
C = Cuttings

R = Rock Coring ____ Field G/C(Make/Mod.) ____
O = Other ____ G/C Oper.: ____
Notes: ____

Fieldbook: 931802-08/10, BK#2, pp. 42-49 REV. DATE MAY '93D

BORING LOG	BORING/WELL NO.: V4-MW-3	Page 1 of 2
Installation: VTANG		Site: SI Site 4, MW-3
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: Earth Tech	Drlg Contractor: Parratt Wolff	Driller: R. Navatka
Drlg Started: 9/9/94 (10:00 A m)	Drlg Ended: 9/9/94 (12:25 P m)	Borehole dia(s): 8-inch
Drlg Method/Rig Type: HSAs (4.25" ID)/CME-75		
Logged by: G. Maynor	E-Log (Y (N)) From ____ to ____	Protection Level: D

* Gross at surface

Depth (ft)	Sample No.	Lab	Anal. (Y/N)	OVA PID ppm / Recovery (ft)	USCS	Blows/6 inch	Graphic Log	Well data	Water depth & Remarks	Elev. (ft)	Lithologic Description
0	C	-	-	0 / N/A	SM/ML ?						0-4' Silty Sand/Sandy Silt, Brown (10YR 5/3) to Mod. Yel. Brn. (10YR 5/4), very fine grained, tr. moist.
5	SS	N/A	N	0 / 2	SM/ML	3 3 4 5					4-6' Sand & Silt, as above
	C	-	-	0 / N/A	SM/ML						4-9' Sand/Silt, as above
10	SS	N/A	N	0 / 1.3	SP/SW	1 3 5					9-11' Sand, Speckled "Brn/Gray (N6) w/ Lt. olive Gray (5Y6/1) and olive Gray (5Y4/1), dom. fn. to medium grained w/ minor coarse sd & fine gravel (quartz & shale frags), sli moist.
	C	-	-	0 / N/A	SW/SP ?						9-14' As Above.
15	SS	N/A	N	0 / 1.2	SP/SW	2 3 4					14-16' Sand, As Above, dom. fine to medium grained sand.
	C	-	-	0 / N/A	SP/SW						14-19' Sand, As Above, dom. fine to medium grn. sand.
20	SS	N/A	N	0 / 1.5/2 on 9/9/94	SM/SP	1 2 2			*wtr 18.95' 1040 9/9/94		19-21' Sand, *olive Gray fine grained, w/ Silt minor, wet loose
	C	-	-	0 / N/A	SP/SM						19-24' Sand/Silt, As Above
25	SS	N/A	N	0 / 4/2 on 9/9/94	SM	1 2 4					24-26' As Above Sand w/ Silt,
	C	-	-	0 / N/A	SM						24-29' As Above.
30	SS	N/A	N	0 / 2	SM	3 4 5					29-31' As Above, sand contains flakes of mica (evident in all samples).
	C	-	-	0 / N/A	SM						29-34 As Above
35	SS	N/A	N	0 / 2	SM	3 3					34-36' As Above

U = Thin Wall Tube
(SS) = Split spoon(tube)
(C) = Cuttings
R = Rock Coring ____
O = Other ____
Field G/C (Make/Mod.) ____
G/C Oper.: ____
Notes: ____

Fieldbook: 931802-08/10, BK#2, pp 42-49 REV. DATE MAY 1990

BORING LOG	BORING/WELL NO.: V4-MW-3	Page 2 of 2
Installation: VTANG		Site: SI Site 4, MW-3
Project No.: 93180	Client/Project: HAZWRAP/ANG.	
HAZWRAP Contractor: EarthTech	Drlg Contractor: Parratt Wolff	Driller: R. Navatka
Drlg Started: 9/9/94 (10:00 AM)	Drlg Ended: 9/9/94 (12:25 PM)	Borehole dia(s): 8-inch
Drlg Method/Rig Type: HSAs (4.25" ID) / CME-75		
Logged by: G. Maynor	E-Log (Y / (N)) From ____ to ____	Protection Level: D

* Grass at surface

Depth (ft)	Sample No.	Sample Lab	Anal. (Y/(N))	OVM PID (ppm) / Recovery (ft) / Rqd (ft)	USCS	Blows/6 inch	Graphic Log	Well data	Water depth & Remarks	Elev. (ft)
35	$	N/A	N	O 2		34-36' Sand w/ silt, olive gray (5Y4/1)	SM	4 6			
	C	–	–	N/A		34-39' Sand w/ silt, As Above	SM				
40	$	N/A	N	2		39-41' Sand w/ silt, as above.	SM	4 4 4			
	C	–	–	O N/A		39-44' As Above	SM				
45	$	N/A	N	O 2		44-46 As Above 44-45.9' * 45.9-46' clayey silt, Gray (N6) w/ fine grn. sand, low plasticity, soft, wet.	SM ML	4 4 5			
	C	–	–	O N/A		44-49' Sand w/ silt, Olive Gray.	SM				
50	$	N/A	N	O 2		49-51' Sand w/ silt, NO clayey silt	SM	1 2 3			
	C	–	–	O ? N/A		*49-53' Silt/Sand, Gray (N6), v. fn. grn, wet, no plasticity, soft, w/ minor fragments of Lt. Brownish Gray (5YR 6/1) claystone fragments, layered, planar frags. * Coff of lead auger)	SM ML				
55						Drilling TD 53' Sample TD 51'					

* NO ANALYTICAL SAMPLES, LITHOLOGIC SAMPLING ONLY

** Added 100 gal of potable wtr during drilling and sampling, most below 40+ ft.

*** Augers Locked up ~ 53' unable to drill deeper due to heaving fine grained sediments. Unable to determine depth to bedrock.

U = Thin Wall Tube
($) Split spoon(tube)
(C) Cuttings
R = Rock Coring
O = Other
Notes:
Field G/C (Make/Mod.)
G/C Oper.:

Fieldbook: 931802-08 BK#2 REV. DATE: MAY 1990

MONITORING WELL CONSTRUCTION LOG -- Standard Flush Mount

WELL NO.: 3-BG1	Installation: VTANG	Site: 3 Sump
Project No.: 931802-08	Client/Project: HAZWRAP / ANG	
HAZWRAP Contractor: Earth Tech	Drlg Contractor: Parrat Wolff	
Comp. Start: 9/20/94 (12:50 PM)	Comp. End: 9/21/94 (9:00 AM)	
Built By: Rick Navotka, Jo Perry, Ron Bush	Well Coord.:	

Elev. _____
Height 0.00
GS Elev. _____
GS Height 0.00'
Depth BGS

Elev. _____
Depth BGS 3" (0.25')

WL=44.25 1050 (9/20/94)

Added 50 gal wtr drilling 0Km 11/16/94

35
2.9
37.1
40 ~~43~~ Gm 11/16/94
12.4
12.4
50
Gm 11/16/94
50.3 ~~50.8~~
50.3
17.7'
TD: 68'

8"
Borehole dia.

PROTECTIVE CSG
Material / Type Sheet metal flush mount w/Iron
Diameter 8"
Depth BGS 8"
Watertight O-Ring (Y) N)

SURFACE PAD
Composition & Size Concrete 2' Diameter
Breathes With Vadose Zone (Y) N)

RISER PIPE
Type Schedule 40 PVC
Diameter 2" ID
Total Length (TOC to TOS) 40'
Ventilated Cap (Y / N)

GROUT
Composition & Proportions Bentonite (granular) ~~Powder~~ and water
Tremied (Y) N) PVC
Interval BGS 35-37.9

CENTRALIZERS (Y / N)
Depth(s) _____

SEAL
Type Hole plug (medium chips) Gm 11/16/94
Source Wyoben-Wyoming Bentonite chips
Setup/Hydration time 30 min Vol. Fluid Added 5 gals
Tremied (Y) N)

FILTER PACK
Type Silica Sand
Amt. Used 8½ 50lb bags
Tremied (Y / N)
Source Morie Filter Pack
Gr. Size Dist. #0

SCREEN
Type Schedule 40 PVC
Diameter 2" ~~OD~~ ID
Slot Size & Type 0.010" Slotted PVC
Interval BGS ~~40.3 50.3'~~ 40-50 Gm 11/16/94

SUMP (Y / N)
Interval BSG _____ Length _____
Bottom Cap (Y) N) (Big) (0.3') Gm 11/16/94

BACKFILL PLUG
Material natural cuttings in hole-caving
Setup/Hydration time N/A
Tremied (Y / N)

V3-MW-1

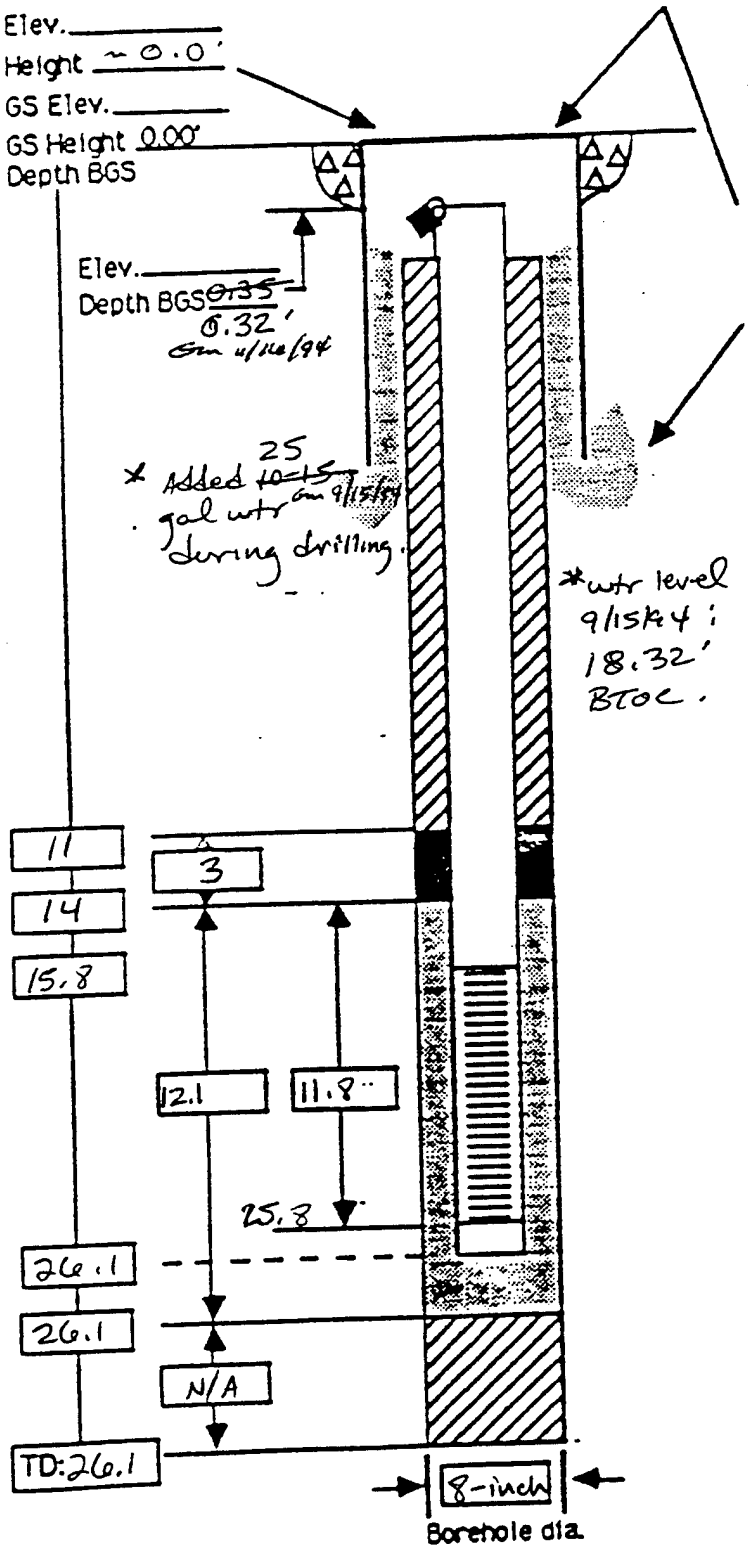
Gm 9/14/94

Fieldbook: 931802-08/10, BK#2 PP 95-97

REV. DATE: MAY 1990

MONITORING WELL CONSTRUCTION LOG -- Standard Flush Mount

WELL NO.: V4-MW-1	Installation: VTANG
	Site: SI Site 3, MW-1
Project No.: 931802-08	Client/Project: HAZWRAP/ANG
HAZWRAP Contractor: EARTH TECH	Drlg Contractor: Parratt Wolff
Comp. Start: 9/13/94 (16:47 PM)	Comp. End: 9/13/94 (18:15 PM)
Built By: G. Maynor (ET), R. Navratka (PW)	Well Coord.:



PROTECTIVE CSG
Material / Type: circular Metal flush "box", bolted
Diameter: 8-inches (0.67')
Depth BGS: 8-inches (0.67')
Watertight O-Ring (Y/N)

SURFACE PAD concrete
Composition & Size: 2 ft diameter x 0.5 ft deep
Breathes With Vadose Zone (Y/N)

RISER PIPE
Type: Diedrich Schedule 40 PVC w/ o-rings
Diameter: 2-inch
Total Length (TOC to TOS): 15.45'
Ventilated Cap (Y/N) Locking/expandable cap.

GROUT 3-11'
Composition & Proportions: Volday-Equivalent mix 4/5 Bag (50lbs/bag) W/O-Ben Bentonite Mix w/
Tremied (Y/N) Hole open. 15-20 gal. wtr.
Interval BGS: 3-11' bgs.

CENTRALIZERS (Y/N)
Depth(s): N/A

SEAL 11-14'
Type: Enviroplug Medium Bentonite Chips
Source: Parratt Wolff 2 bags (50lbs/bag)
Setup/Hydration time: 20 min Vol. Fluid Added: 6 gal
Tremied (Y/N) Hole open.

FILTER PACK 14-26.1'
Type: Morie O mesh Silica Sand
Amt. Used: 8 2/3 bags (50lbs/bag)
Tremied (Y/N)
Source: Parratt Wolff
Gr. Size Dist.: medium grain ("Fine" medium)

SCREEN 15.8-25.8'
Type: Diedrich Schedule 40 PVC w/ o-rings
Diameter: 2-inch
Slot Size & Type: 0.01-inch slot (machine cut)
Interval BGS: 15.8-25.8' Gm 9/15/94
* screen slots offset approx 0.1' from each side to 0.25'

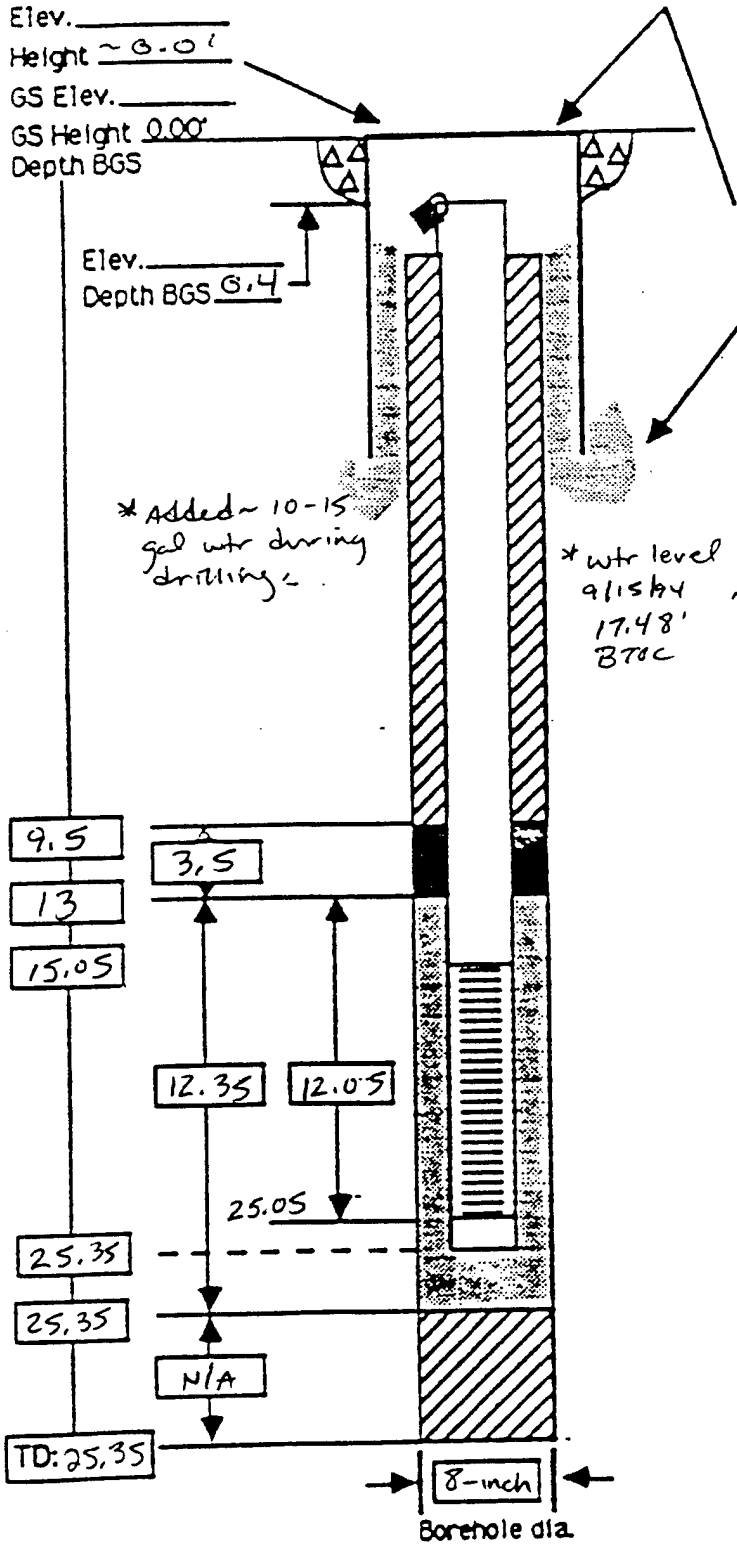
SUMP (Y/N) see cap Length: see cap
Interval BSG: see cap
Bottom Cap (Y/N) 25.8-26.1'

BACKFILL PLUG
Material: N/A
Setup/Hydration time: N/A
Tremied (Y/N) N/A

V3-MW-2 Fieldbook: 931802-08/10, BK#2, pp. 107-107. REV. DATE: MAY 1990

MONITORING WELL CONSTRUCTION LOG -- Standard Flush Mount

WELL NO.: V3-MW-2	Installation: VTANG	Site: SI Site 3, MW-2
Project No.: 931802-08	Client/Project: HAZWRAP / ANG	
HAZWRAP Contractor: Earth Tech	Drlg Contractor: Parratt Wolff	
Comm. Start: 9/14/94 (15:10 PM)	Comm. End: 9/14/94 (16:30 PM)	
Built By: G. Maynor (ET), R. Navatke (PW)	Well Coord.:	



PROTECTIVE CSG
Material / Type: circular Metal Flush "box", bolted
Diameter: 8-inches (0.67')
Depth BGS: 8-inches (0.67')
Watertight O-Ring (Y) N

SURFACE PAD Concrete
Composition & Size: 2 ft diameter x 0.5 ft deep
Breathes With Vadose Zone (Y) N

RISER PIPE
Type: Diedrich Schedule 40 PVC w/ orings
Diameter: 2-inch
Total Length (TOC to TOS): 14.65'
Ventilated Cap (Y / (N) Locking/Expandable cap

GROUT
Composition & Proportions: Volclay Equivalent Mix: ~3/5 Bag (50lbs/bag) Wyo-Ben Bentonite mix w/ 15+ gal wtr.
Tremied (Y / (N) Hole open
Interval BGS: 2.5 - 9.5

CENTRALIZERS (Y / (N)
Depth(s): N/A

SEAL 9.5-13'
Type: Enviroplug Medium Bentonite Chips
Source: Parratt Wolff 2 bags (50lbs/bag)
Setup/Hydration time: 20 min Vol. Fluid Added: 6 gal wtr
Tremied (Y / (N) Hole open

FILTER PACK 13-25.35'
Type: Morie 0 mesh Silica Sand
Amt. Used: 7 bags (50lbs/bag)
Tremied (Y / (N)
Source: Parratt Wolff
Gr. Size Dist.: medium grained ("fine" med.)

SCREEN
Type: Diedrich Schedule 40 PVC w/ o-rings
Diameter: 2-inch
Slot Size & Type: 0.01-inch slot (machine cut)
Interval BGS: 15.05 - 25.05

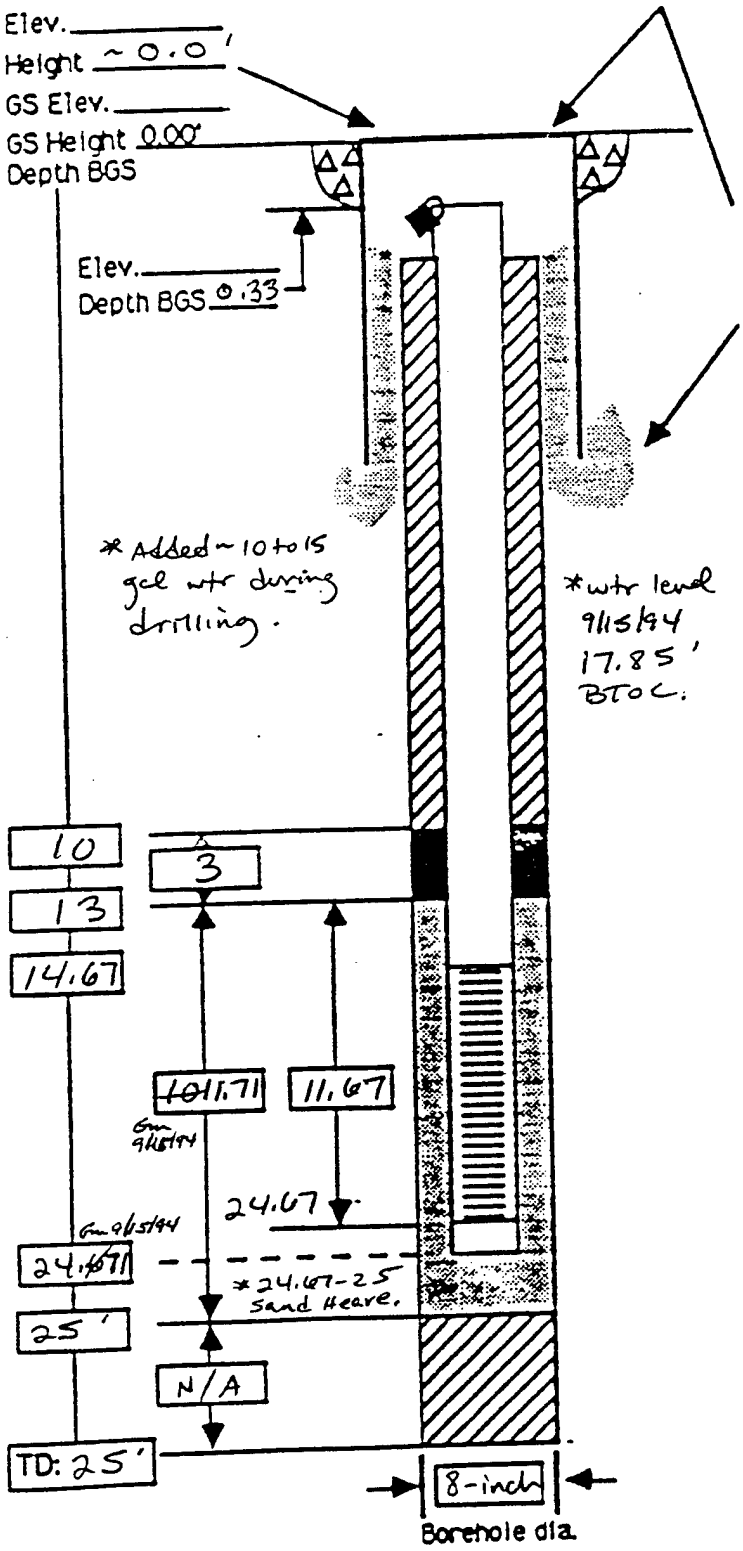
SUMP (Y (N) Interval BSG: see cap Length: see cap
Bottom Cap (Y) N 25.05 - 25.35 (0.3')

BACKFILL PLUG
Material: N/A
Setup/Hydration time: N/A
Tremied (Y / N) N/A

V3-MW-3 Fieldbook: 931802-08/10, BK#2, pp 104/105 REV. DATE: MAY 1990

MONITORING WELL CONSTRUCTION LOG -- Standard Flush Mount

WELL NO.: V3-MW-3	Installation: VTANG — Site: SI Site 3, MW-3
Project No.: 931802-08	Client/Project: HAZWRAP / ANG
HAZWRAP Contractor: Earth Tech	Drlg Contractor: Parratt Wolff
Comp. Start: 9/14/94 (13:00 pm)	Comp. End: 9/14/94 (14:30 pm)
Built By: G. Maynor (ET), R. Navatka (PW)	Well Coord.:



PROTECTIVE CSG
Material / Type circular Metal flush "box", bolted
Diameter 8-inches (0.67')
Depth BGS 8-inches (0.67')
Watertight O-Ring (Y) N

SURFACE PAD concrete/cement
Composition & Size 2 Ft diameter x 0.5 Ft deep
Breathes With Vadose Zone (Y) N

RISER PIPE
Type Diedrich Schedule 40 PVC w/ orings
Diameter 2-inch
Total Length (TOC to TOS) 14.37'
Ventilated Cap (Y) (N) Locking/expandable cap

GROUT 2.3-10'
Composition & Proportions Volclay Equivalent Mix: ~3/5 Bag (50lbs/bag) Wyo-Ben Bentonite mix w/ 15+ gal wtr
Tremied (Y/N)
Interval BGS 2.3-10' bgs

CENTRALIZERS (Y) (N) N/A
Depth(s)

SEAL 10-13'
Type Enviroplug Medium Bentonite Chips
Source Parratt Wolff
Setup/Hydration time 20 min Vol. Fluid Added ~6 gal wtr.
Tremied (Y) (N) Hole open

FILTER PACK 13-24.71'
Type Morie 0 Mesh Silica Sand
Amt. Used 5 2/3 bags (50lbs/bag)
Tremied (Y/N)
Source Parratt Wolff
Gr. Size Dist. medium grain ("fine" medium)

SCREEN 14.67-24.67
Type Diedrich Schedule 40 PVC w/ O-Rings
Diameter 2-inch
Slot Size & Type 0.01-inch slot (machine cut)
Interval BGS 14.67-24.67

SUMP (Y) (N) N/A Length N/A
Interval BSG
Bottom Cap (Y) N 24.67-24.71' (0.

BACKFILL PLUG
Material N/A
Setup/Hydration time N/A
Tremied (Y/N) N/A

Fieldbook: 931802-08/10, BK # 2, pp. 56-63 REV. DATE: MAY 1990

MONITORING WELL CONSTRUCTION LOG -- Standard Flush Mount

WELL NO.: V4-BG-1	Installation: VTANG	Site: SI Site 4, Background
Project No.: 931802-08	Client/Project: HAZWRAP / ANG	
HAZWRAP Contractor: EARTH TECH	Drlg Contractor: PARRATT WOLFE	
Comm. Start: 9/10/94 (15:30 PM)	Comm. End: 9/10/94 (08:00 AM)	
Built By: G. Maynor (EarthTech) R. Bush (Parratt Wolff)	Well Coord.:	

Elev. ____
Height ~ surface 0'
GS Elev. ____
GS Height 0.00'
Depth BGS

Elev. ____
Depth BGS 0.5'

* ENLARGED Borehole from ~17.8 to 22.5' (wtr. table) of ~2.2 ft due to reverse spin on augers during auger removal.

* Added ~80 gallons potable wtr during drilling, most below depth of well.

* wtr level 22.55' bgs 9/10/94

14.3
17.8
19.14
18.1
29.18
35.9
TD: 41

2.5
19.44
11.34
29.14
5.1

** slots begin at ~19.3 [19.44] - 17.8 thus effective distance below bent. is ~ 1.64 [1.45]' Gm 9/11/94

* Augered to 95' bgs. Pulled augers up to 29-30 ft. Hole collapse/heaving sand/silt 40 cft to 95' bgs. Gm 9/10/94.

8-inch Borehole dia.

PROTECTIVE CSG
Material / Type circular Metal Flush "box", bolted
Diameter 8 inches (0.67')
Depth BGS 8 inches (0.67')
Watertight O-Ring (Y) N)

SURFACE PAD concrete
Composition & Size 2 ft diameter x 0.5 ft deep
Breathes With Vadose Zone (Y) N)

RISER PIPE
Type Diedrich Schedule 40 PVC w/ o-rings
Diameter 2-inch
Total Length (TOC to TOS) 28.68
Ventilated Cap (Y / N) Locking/expandable cap

GROUT
Composition & Proportions Volclay - Equivelent Mix: 1 Bag (50 lbs/bag) w/ 40-Ben Bentonite mix w/ 2 gal wtr
Tremied (Y / N) Hole open to surface.
Interval BGS 2.5 - 14.3'

CENTRALIZERS (Y / N)
Depth(s) N/A

SEAL 14.3 - 17.8 (2.5')
Type ENVIROPLUG Medium Bentonite Chips
Source Parratt Wolff 1.5 bags (50 lbs/bag)
Setup/Hydration time 13+ Hrs. Vol. Fluid Added 7 gal wtr
Tremied (Y / N) Hole open below augers.

FILTER PACK 17.8 - 35.9
Type Morie 0 Mesh Silica Sand
Amt. Used 34 (50) lb bags
Tremied (Y / N) (7 bags from 22.5 to 35.9')
Source Parratt Wolff
Gr. Size Dist. medium grain ("fine" medium)

SCREEN
Type Diedrich Schedule 40 PVC w/ o-rings
Diameter 2-inch
Slot Size & Type 0.01-inch slot (machine cut)
Interval BGS 19.14 - 29.14, Gm 9/11/94
* Screen slots offset approx 0.11 to 0.25 ft from each end.

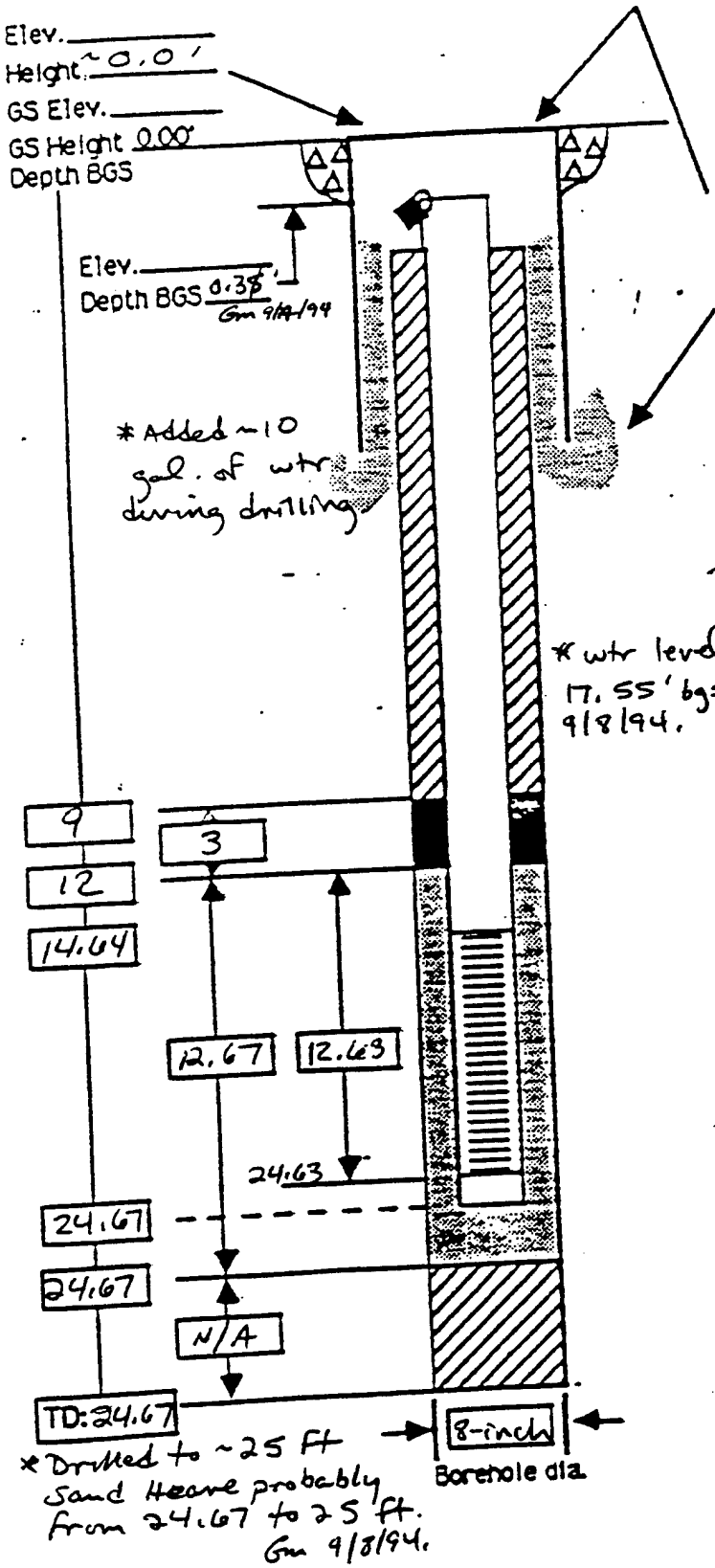
SUMP (Y / N) N/A Length N/A
Interval BSG
Bottom Cap (Y) N) 29.14 - 29.18' (0.04')

BACKFILL PLUG
Material Enviroplug Medium Bentonite Chips
Setup/Hydration time 20 minutes
Tremied (Y / N)

Fieldbook: 931802-08/10, BK #2, PP. 29-32 REV. DATE: MAY 1990

MONITORING WELL CONSTRUCTION LOG -- Standard Flush Mount

WELL NO.: V4-MW-1	Installation: VTANG	Site: SI Site 4, MW-1
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: Earth Tech	Drlg Contractor: Parratt Wolfe	
Comm. Start: 9/8/94 (13:45 PM)	Comm. End: 9/8/94 (15:45 PM)	
Built By: G. Maynor (Earth Tech), R. Bush (Parratt Wolff)	Well Coord.:	



PROTECTIVE CSG
Material / Type circular metal flush "box", bolted
Diameter 8-inches (0.67')
Depth BGS 8 inches (0.67')
Watertight O-Ring (Y) N)

SURFACE PAD concrete
Composition & Size 2 ft diameter x 0.5 ft deep
Breathes With Vadose Zone (Y) N)

RISER PIPE
Type Diedrich Schedule 40 PVC w/ o-rings
Diameter 2-inch
Total Length (TOC to TOS) ~~14.29'~~ Gm 9/8/94 14.34'
Ventilated Cap (Y / N) Locking/expandable cap

GROUT 3-9'
Composition & Proportions Volclay-Equivalent mix ~ 1/2 Bag (50lb/bag) W40-Ben Bentonite Mix w/ 5 gal. wtr.
Tremied (Y / N) open hole.
Interval BGS 3-9' bgs.

CENTRALIZERS (Y (N)
Depth(s) N/A

SEAL 9-12'
Type ENVIROPLUG Medium Bentonite Chips
Source Parratt Wolfe 1 1/3 bags (50lbs/bag)
Setup/Hydration time 30 min. Vol. Fluid Added 5-6 gal
Tremied (Y / N) Hole open below augers.

FILTER PACK 12-24.67'
Type Morie 0 Mesh Silica Sand
Amt. Used 7 bags (50lbs/bag)
Tremied (Y / N)
Source Parratt Wolff
Gr. Size Dist. medium grain ("finer medium")

SCREEN 14.64-24.63' (9.99')
Type Diedrich Schedule 40 PVC w/ o-rings
Diameter 2-inch
Slot Size & Type 0.01-inch slot (machine cut)
Interval BGS 14.64-24.63
* screen slots ~~0.24~~ 0.11-0.25' from each end of screen Gm 9/8/94

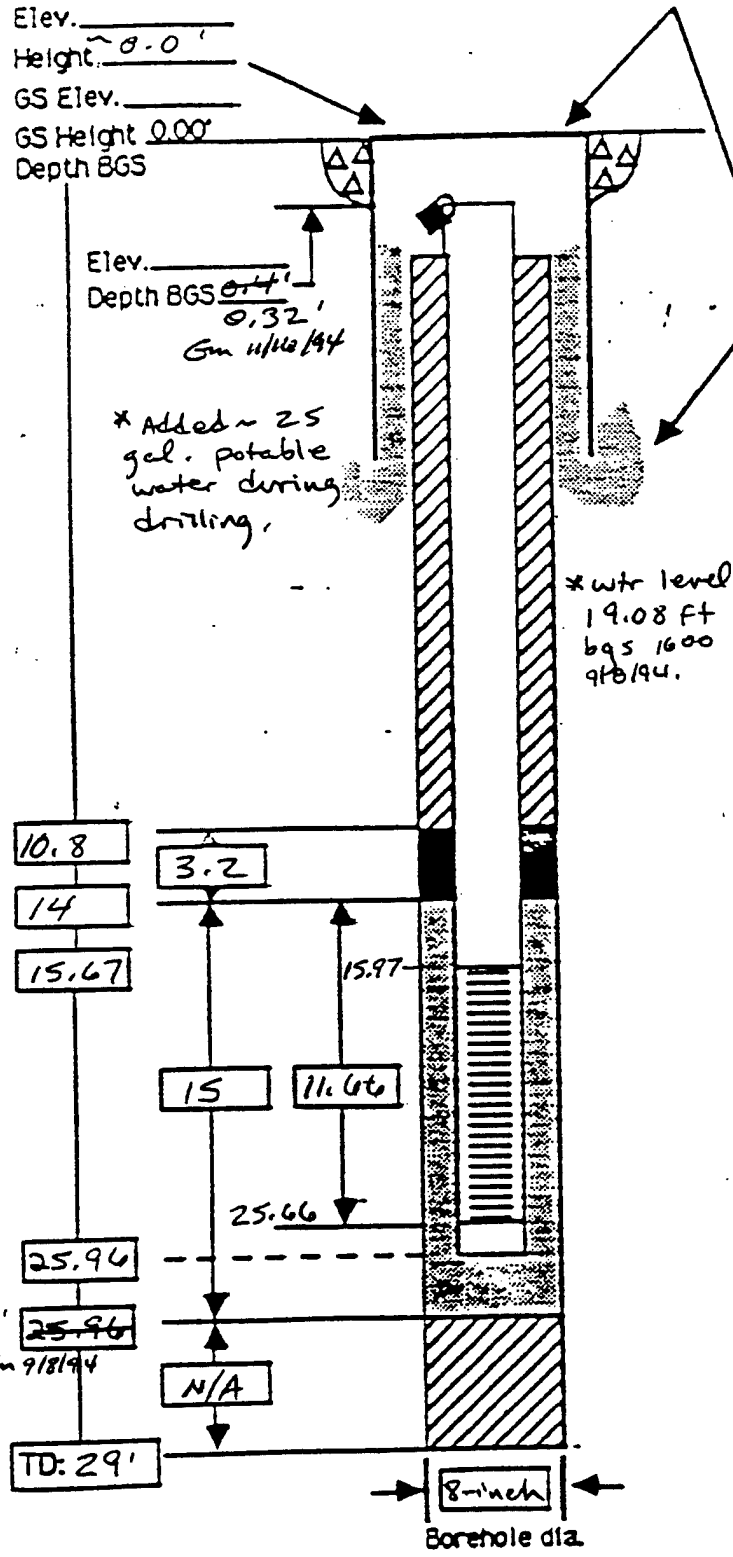
SUMP (Y / N) N/A Length N/A
Interval BSG N/A
Bottom Cap (Y) N) 24.67-24.63' (0.04

BACKFILL PLUG N/A
Material
Setup/Hydration time N/A
Tremied (Y / N) N/A

Fieldbook: 93802-08/10, BK#2, pg 32-37 REV. DATE: MAY 1990

MONITORING WELL CONSTRUCTION LOG -- Standard Flush Mount

WELL NO.: V4-MW-2	Installation: VTANG	Site: SI Site 4, MW-2
Project No.: 93802-08	Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: Earth Tech	Drlg Contractor: Parratt Wolff	
Comm. Start: 9/8/94 (16:00 p m)	Comm. End: 9/8/94 (17:30 p m)	
Built By: G. Maynor (Earth Tech), Ron Bush (Parratt Wolff)	Well Coord.:	



PROTECTIVE CSG
Material / Type: circular metal flush "box", bolted
Diameter: 8-inches (0.67')
Depth BGS: 8-inches (0.67')
Watertight O-Ring: (Y) / N

SURFACE PAD concrete
Composition & Size: 2 ft diameter x 0.5 ft deep
Breathes With Vadose Zone: (Y) / N

RISER PIPE
Type: Diedrich Schedule 40 PVC w/ o-rings
Diameter: 2-inch
Total Length (TOC to TOS): 15.27'
Ventilated Cap: (Y) / N Locking/Expandable Cap

GROUT
Composition & Proportions: Volclay-Equivalent Mix: 1/2 ~~1/3~~ Bag (50 lbs/bag) W40-Ben Bentonite Mix w/ 15 gal wtr
Tremied: (Y) / N Hole open.
Interval BGS: 2.5-10.8' bgs

CENTRALIZERS (Y) / N
Depth(s): N/A

SEAL 10.8-14'
Type: ENVIROPLUG-Medium Bentonite chips
Source: Parratt Wolff 1 1/3 bags (50 lbs/bag)
Setup/Hydration time: 30 min. Vol. Fluid Added: 6 gal.
Tremied: (Y) / N hole open below augers.

FILTER PACK 14-29'
Type: Morie 0 Mesh Silica Sand
Amt. Used: 6 bags (50 lbs/bag)
Tremied: (Y / N)
Source: Parratt Wolff
Gr. Size Dist.: medium (4" fine medium)

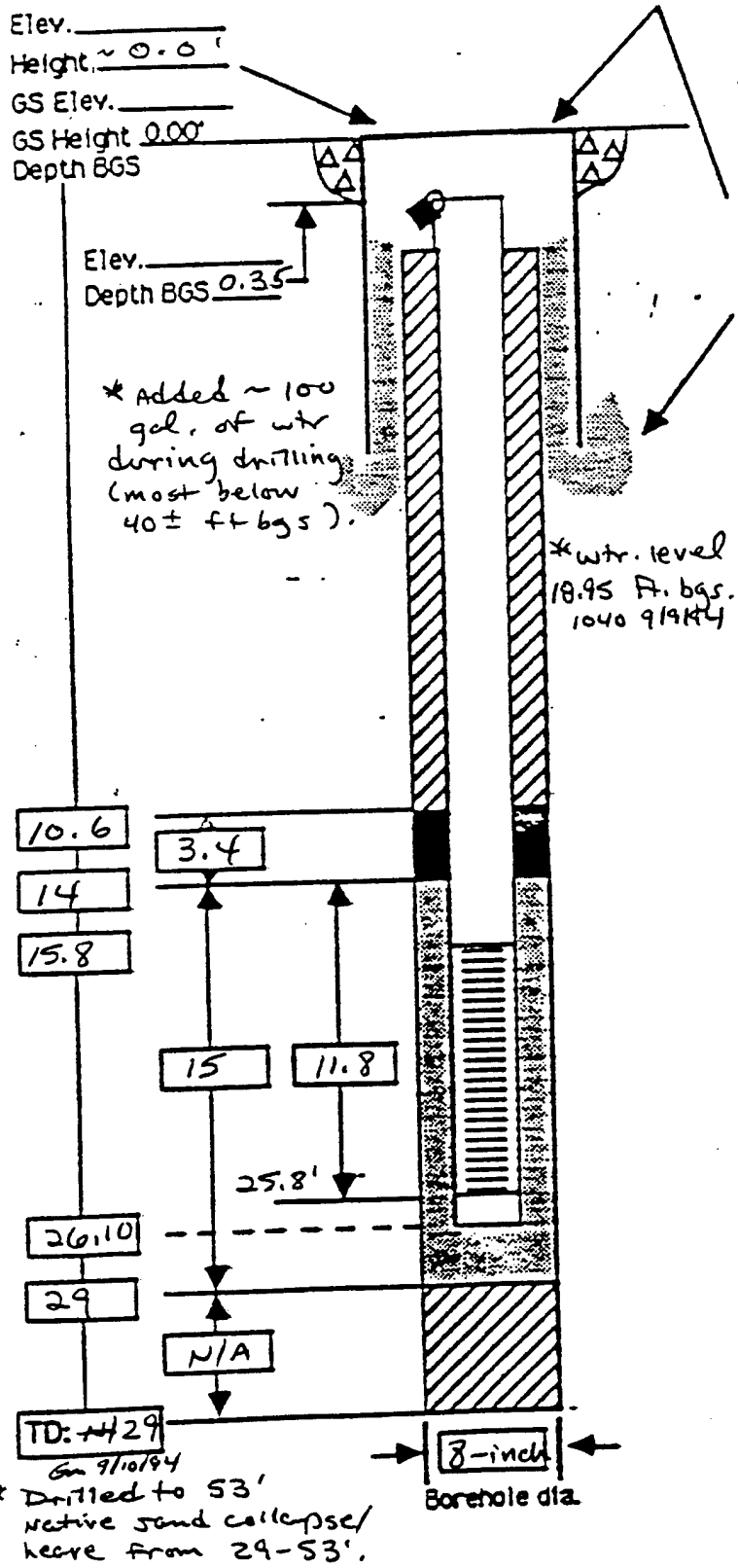
SCREEN
Type: Diedrich Schedule 40 PVC w/ o-rings
Diameter: 2-inch
Slot Size & Type: 0.01-inch slot (machine cut)
Interval BGS: 15.67 - 25.66 (9.99')
screen slots offset approx. ~~avg~~ 0.11' to 0.25' from each other Gm 9/14/94
SUMP (Y) / N
Interval BSG: see cap Length: see cap
Bottom Cap: (Y) / N 25.66 - 25.96 (0.3')

BACKFILL PLUG
Material: N/A
Setup/Hydration time: N/A
Tremied: (Y / N) N/A

Fieldbook: 931802-08/10, Bk #2, pp 45-49 REV. DATE: MAY 1990

MONITORING WELL CONSTRUCTION LOG -- Standard Flush Mount

WELL NO.: V4-MW-3	Installation: VTANG
Site: SI Srte 4, MW-3	
Project No.: 931802-08	Client/Project: HAZWRAP / ANG
HAZWRAP Contractor: Earth Tech	Drlg Contractor: Parratt Wolff
Comm. Start: 9/9/94 (12:45 PM)	Comm. End: 9/9/94 (15:57 PM)
Built By: G. Maynor (Earth Tech), R. Navratka (Parratt Wolff)	Well Coord.:



PROTECTIVE CSG
Material / Type circular flush "box", bolted
Diameter 8-inches (0.67')
Depth BGS 8-inches (0.67')
Watertight O-Ring (Y) N)

SURFACE PAD concrete
Composition & Size 1.5 ft diameter x 0.5ft deep
Breathes With Vadose Zone (Y) N)

RISER PIPE
Type Diedrich Schedule 40 PVC w/o-rings
Diameter 2-inch
Total Length (TOC to TOS) 15.45'
Ventilated Cap (Y / N) Locking / Expandable Cap

GROUT
Composition & Proportions Volday - Equivalent Mix 4/5 Bag (50 lbs/bag) w/o-Ben Bentonite Mix w/20 gal. wtr.
Tremied (Y / N) Hole open.
Interval BGS 3 - 10.6' bgs.

CENTRALIZERS (Y / N)
Depth(s) N/A

SEAL 10.6 - 14'
Type Enviroplug medium Bentonite Chips
Source Parratt Wolff 3.5
Setup/Hydration time 25 min. Vol. Fluid Added ~6 gal wtr
Tremied (Y / N)

FILTER PACK 14-29
Type Morie #0 mesh Silica Sand
Amt. Used 13 bags (50 lbs/bag)
Tremied (Y / N)
Source Parratt Wolff
Gr. Size Dist. medium ("fine" medium)

SCREEN
Type Diedrich Schedule 40 PVC w/o-rings
Diameter 2-inch
Slot Size & Type 0.01-inch slot (machine cut)
Interval BGS 15.8 - 25.8'

SUMP (Y / N) see cap Length see cap
Interval BSG 25.8 - 26.10' TD
Bottom Cap (Y / N) 0.3'

BACKFILL PLUG
Material N/A
Setup/Hydration time N/A
Tremied (Y / N) N/A

Book # 4
Fieldbook: 931802-08/10 REV. DATE: MAY 1990

WELL DEVELOPMENT LOG	Well No.: V3-BG-1	Page 1 of 1
Installation: VTANG	Site: 3	
Project No.: 931802-08	Client/Project: HAZWRAP	
HAZWRAP Contractor: EARTH TECH	Dev. Contractor: Parratt Wolff	
Dev. Start (9: 20am) 10/5/94	Dev. End: (12: 35 pm) 10/5/94	Csg Dia.: 2"
Developed by: Ron Bush (Parratt Wolff), Paulo Amado (ET)		Dev. Rig (Y (N))

OVM Reading
On 10/11/94

Dev. Method Surge and Pump

Well Vol. = TD − DTW = 50.30 − 41.39 × 0.16 gal/ft (2" casing) = 1.426', Borehole Vol. = 50.30 − 41.39 × 1.3 (8" Borehole) − 1.426 × .30 (filter pack porosity) = 3.05', Total Vol. = Well Vol. + Borehole Vol. ≅ 4.50 gallons (Whales)*.

Equipment Electric Submersible Pump, ~~Teflon~~ Polyethylene Tubing (A.B.) and Bailer

Pre-Dev. SWL 41.39' Maximum drawdown during pumping ____ ft at ____ gpm

Range and Average Discharge rate 0.5 gpm. gpm

Total quantity of material bailed 39 gallons

Total quantity of water discharged by pumping 35 gallons

Disposition of discharge water ____

WDAD = 40.95

Time	Volume Removed (gals)	Water Level ft. BTOC	Turbidity	Clarity/ Color	Temp °C	pH	Conductivity	Remarks
1155	35	49.3	slight Turbid	Brown				Electric Submersible Pump
1650								Restart
1758	64		Turbid	Light. Brn	53.8	7.13	423	Bailer
1813	69		Turbid	Light Brn	51.4	7.24	456	
1835	74	49.55	Turbid	Light Brn	52.0	7.31	440	

50 gallons added during drilling

Fieldbook 931802-08/10 #4 REV. DATE: MAY 1990

WELL DEVELOPMENT LOG	Well No.: V3 - MW - 1	Page 1 of 1
Installation: VTANG	Site: 3	
Project No.: 931802 - 08 | Client/Project: HAZWRAP / ANG		
HAZWRAP Contractor: EARTH TECH | Dev. Contractor: Parrott Wolff		
Dev. Start (10: 37am) 10/6/94 Dev. End: (11: 30m) 10/6/94	Csg Dia.: 2"	
Developed by: Ron Bush (~~Parrott~~ Wolff), Paulo Amedo (ET)	Dev. Rig (Y / (N))	

OVM Reading = 63 ppm WOAD = 19.97 Gw 10/4/94

Dev. Method Surge and Pump

Well Volume = 1.21 Borehole Volume = 2.59 Total Volume 3.80

Equipment (Whales) Electric Submersible Pump, ~~Teflon~~ Polyethylene (A.B.) Tubing and Bailer

Pre-Dev. SWL 18.52 Maximum drawdown during pumping — ft at — gpm

Range and Average Discharge rate 1 gpm

Total quantity of material bailed 5 gallons

Total quantity of water discharged by pumping 40 gallons

Disposition of discharge water —

Time	Volume Removed (gals)	Water Level ft. BTOC	Turbidity	Clarity/ Color	Temp °C	pH	Conductivity	Remarks
1122	37.0	23.70	—	Clear	54.6	6.79	1130	ODOR
1126	41.0		—	Clear	54.2	6.58	1110	
1130	45.0	25.64	—	Clear	54.0	6.60	1110	

25 gallons add during drilling

Fieldbook: 931802-08/10 #4 REV. DATE: MAY 1990

WELL DEVELOPMENT LOG	Well No.: V3-MW-2	Page 1 of 1
Installation: VTANG	Site: 3	
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: EARTH TECH	Dev. Contractor: Parrott Wolff	
Dev. Start (: m) 10/6/94	Dev. End: (: m) 10/6/94	Csg Dia.: 2"
Developed by: Paris Amado (EarthTech)/Ron Bush (PW)		Dev. Rig (Y/N)

OVM Reading = 59.3 ppm * 2.58' of Product Gm 10/11/94

Dev. Method Surge and Pump / NOT Developed due to product per HAZWRAP Instruction. Gm 10/11/94

Equipment (Whales)* Electric Submersible Pump, ~~Teflon~~ Polyethylene ft-B- Tubing and Bailer (N/A - Not Developed.)

Pre-Dev. SWL 19.89' BTOC (B. Hedberg) Gm 6/12/95 Maximum drawdown during pumping N/A ft at N/A gpm
17.20' BTOC Free Product (B. Hedberg) Gm 6/12/95

Range and Average Discharge rate N/A gpm

Total quantity of material bailed N/A

Total quantity of water discharged by pumping N/A

Disposition of discharge water Free product at the surface - not purged.

Gm 6/12/95 * Notes from B. Hedberg (HAZWRAP) - measured Free-Product w/ P. Amado 10/6/94

Time	Volume Removed (gals)	Water Level ft. BTOC	Turbidity	Clarity/ Color	Temp °C	pH	Conductivity	Remarks
	N/A	23.93 Gm 6/12/95	(?)					

Fieldbook: 931802-08/10 # 4 REV. DATE: MAY 1990

WELL DEVELOPMENT LOG	Well No.: V3-MW-3	Page 1 of 1
Installation: VTANG	Site: 3	
Project No.: 931802-08	Client/Project: HAZWRAP / ANG	
HAZWRAP Contractor: EARTH TECH	Dev. Contractor: Parratt Wolff	
Dev. Start (8: 38am) 10/6/94	Dev. End: (9: 51m) 10/6/94	Csg Dia.: 2"
Developed by: Paulo Amedo (Earth Tech) / Ron Bush (Parratt Wolff)		Dev. Rig (Y) (N)

OVM Reading = 79.0 ppm WDAD = 18.25' 10/11/94

Dev. Method Surge and Pump

Well Volume = 1.01 Borehole Volume = 2.27 Total Volume = 3.28

Equipment (whales) Electric Submersible Pump, ~~Teflon~~ Polyethylene A.D. Tubing and Bailer

Pre-Dev. SWL 18.40 Maximum drawdown during pumping — ft at — gpm

Range and Average Discharge rate 1 g.p.m. gpm

Total quantity of material bailed 5 gallons

Total quantity of water discharged by pumping 28 gallons

Disposition of discharge water —

Time	Volume Removed (gals)	Water Level ft. BTOC	Turbidity	Clarity/ Color	Temp °C	pH	Conductivity	Remarks
0943	25.0	23.50	—	Clear	51.2	6.13	897	
0947	29.0		—	Clear	51.5	6.26	903	
0951	33.0	24.37	—	Clear	51.5	6.72	900	

15 gallons add during drilling

Fieldbook 1931802-08/10 *4 REV. DATE: MAY 1990

WELL DEVELOPMENT LOG		Well No.: V4-BG-1	Page 1 of 1
Installation: VTANG		Site: 4	
Project No.: 931802-08	Client/Project: HAZWRAP / ANG		
HAZWRAP Contractor: EARTH TECH	Dev. Contractor: Parratt Wolff		
Dev. Start (12:46 pm) 10/5/94	Dev. End (15: 31 pm) 10/5/94	Csg Dia.: 2"	
Developed by: RON Bush (Parratt Wolff), Paulo Amado (ET)		Dev. Rig (Y/N)	

OVH Reading = 0 ppm

Gw 10/11/94

Dev. Method Surge and Pump

Well Volume 1.23, Borehole Volume 13.63, Total for 1 Volume 14.86'

Also remove 80 gallons of water add during drilling.

Equipment Electric Submersible Pump, ~~Teflon~~ Polyethylene (wheels) (2) Tubing and Bailer A.B.

Pre-Dev. SWL 21.52 Maximum drawdown during pumping ——— ft at ——— gpm

Range and Average Discharge rate 1 gpm gpm

Total quantity of material bailed 5 gallon

Total quantity of water discharged by pumping 169.5

Disposition of discharge water ———

WDAD = 21.25

Time	Volume Removed (gals)	Water Level ft. BTOC	Turbidity	Clarity/ Color	Temp °C	pH	Conductivity	Remarks
1446	124.50	28.29	—	Clear	53.4	6.54	835	No ODOR
1501	139.50		—	Clear	51.3	6.42	673	↓ ↓
1516	154.50		—	Clear	51.1	6.60	652	
1531	169.50	28.74	—	Clear	50.4	6.59	653	

80 gallons added during drilling

Fieldbook: 931802-08/10 * 4 REV. DATE: MAY 1990

WELL DEVELOPMENT LOG	Well No.: V4 - MW-1	Page 1 of 1
Installation: VTANG	Site: 4	
Project No.: 931802-08	Client/Project: HAZWRAP / ANG	
HAZWRAP Contractor: EARTH TECH	Dev. Contractor: Parratt Wolff	
Dev. Start (13: 02 m) 10/6/94	Dev. End (13: 36 m) 10/6/94	Csg Dia.: 2"
Developed by: Ron Bush (Parratt Wolff), Paulo Amado (ET)		Dev. Rig (Y/(N))

OVH Reading = 55.0 ppm WDAD = 17.10' Gm 10/11/94

Dev. Method Surge and Pump

Well Volume = 1.13 Borehole Volume 2.42 Total Volume = 3.55

Equipment (whales) Electric Submersible Pump, ~~Teflon~~ Polyethylene N.S. Tubing and Bailer

Pre-Dev. SWL 17.60 Maximum drawdown during pumping — ft at — gpm

Range and Average Discharge rate 1 g.p.m. gpm

Total quantity of material bailed 10 gallons

Total quantity of water discharged by pumping 29 gallons

Disposition of discharge water —

Time	Volume Removed (gals)	Water Level ft. BTOC	Turbidity	Clarity/ Color	Temp °C	pH	Conductivity	Remarks
1327	21.0	23.34	—	Clear	55.8	6.63	1600	ODOR / Sheen
1332	25.0		—	Clear	55.4	6.68	1560	
1336	29.0	24.26	—	Clear	53.7	6.68	1540	

10 gallons add during drilling

field book: 931802-08/10 # 4 REV. DATE: MAY 1990

WELL DEVELOPMENT LOG	Well No.: V4-MW-2	Page 1 of 1
Installation: VTANG	Site: 4	
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: EARTH TECH	Dev. Contractor: Parratt Wolff	
Dev. Start (15: 41 pm) 10/6/94	Dev. End: (15: 21 m) 10/6/94	Csg Dia.: 2"
Developed by: Ron Bush (Parratt Wolff), Paulo Amado (ET)		Dev. Rig (Y/N)

OVM Reading = 84.0 ppm WOAD = 19.70' GW 10/11/94

Dev. Method Surge and Pump

Well Volume = 1.11 Borehole Volume = 3.56 Total Volume = 4.68

Equipment (Whales) Electric Submersible Pump, ~~Teflon~~ Polyethylene Tubing and Bailer (A.B.)

Pre-Dev. SWL 19.01 Maximum drawdown during pumping — ft at — gpm

Range and Average Discharge rate 1 g.p.m. gpm

Total quantity of material bailed 5 gallons

Total quantity of water discharged by pumping ~~44 gal~~ N/A 44 gallons

Disposition of discharge water —

Time	Volume Removed (gals)	Water Level ft. BTOC	Turbidity	Clarity/ Color	Temp °C	pH	Conductivity	Remarks
1511	39.0	25.48	—	Clear	54.4	6.48	773	
1516	44.0		—	—	53.7	6.31	764	
1521	49.0	25.53	—	—	53.2	6.26	768	

25 gallons add during drilling

Fieldbook (931802-08/10 *4 REV. DATE: MAY 1990

WELL DEVELOPMENT LOG	Well No.: V4-MW-3	Page 1 of 1
Installation: VTANG	Site: 4	
Project No.: 931802-08	Client/Project: HAZWRAP/ANG	
HAZWRAP Contractor: EARTH TECH	Dev. Contractor: Parratt Wolff	
Dev. Start (14: 00) 10/6/94	Dev. End: (16: 35) 10/6/94	Csg Dia.: 2"
Developed by: RON Bush (Parratt Wolff) & Paulo Amado (ET)		Dev. Rig (Y / N)

OVH Reading = 0 ppm

Dev. Method Surge and Pump

Well Volume = 1.07 Borehole Volume = 3.42 Total for 1 Volume = 4.49

Equipment (Whales SB) Electric Submersible Pump, ~~Teflon~~ Polyethylene Tubing and Bailer

Pre-Dev. SWL 19.42 Maximum drawdown during pumping —— ft at —— gpm

Range and Average Discharge rate 1 g.p.m. gpm

Total quantity of material bailed 5 gallons

Total quantity of water discharged by pumping 124

Disposition of discharge water ——

WOAD = 18.95

Time	Volume Removed (gals)	Water Level ft. BTOC	Turbidity	Clarity/ Color	Temp °C	pH	Conductivity	Remarks
1620	114	25.83	——	Clear	51.4	7.21	2390	NO ODOR
1625	119		——	Clear	51.3	7.34	1790	↓ ↓
1630	124		——	Clear	51.2	7.32	1710	
1635	129	25.83	——	Clear	51.0	7.33	1710	

100 gallons added during drilling

REV. DATE: MAY 1990

Field Logbook #4 (931802-08/10) pp 99-

Sample ID No.: V3-BG1-1094+(D)

MONITORING WELL PURGING LOG

WELL NO.: V3-BG1

Site: 3 Dry Sump / AST area

Installation: VTANG

Project No.:

HAZWRAP Contractor: EARTH TECH

Purge Start: (Date) 10/23/93 (Time) 1630 Purge End: (Date) 10/23/94 (Time) 1710

Purged by: PH Lay & G. Maynor

Depth Measurement Ref. Point*: TOC 2" PVC Well Csg ID: (2") 4" 6" Other PHC

Well Hdspace/Odor: NONE LNAPL Check (Y)/(N) & DNAPL Check (Y/(N)) Gm 10/23/94

Equipment Used To Measure Thickness ~~and Sample~~ PHC Free Product (Make, Model, etc)

ORS Interface probe SN 06-02228 (P.I.D. no 1068013)

Depth to Top and Bottom of Screen interval stickdown 0.25' 40.3 - 50.3' bgs

Depth to LNAPL: NA (NONE) Depth to DNPL: NA Orig. DTW: 41.59 Final DTW: 43.32

LNAPL/DNAPL Thickness NA LNAPL/DNAPL Sample and Volume: NA

Measured Well TD: 49.65

(-) Orig. DTW: 41.59

& Filter PACK in 8-inch Borehole holds 5.8 gal (est. 30% porosity). Begin parameters 1 on casing volume after 5.8gal

(=) Wtr Col. Thick.: 8.06 (x) 2" - 0.16, 4" - 0.65, 6" - 1.47 ~~(1.30)~~ Gm, 8" - 2.6 Gals/ft (=) 1.3 Gals/Csg Vol. (x) 2 3 4 5 Csg Vol. (=) 3.9 Total Purge Gals.

Purge Method:
Submersible Pump ☐ Dedicated Bladder Pump ☐ Bladder Pump ☐ Bailer ☒ SS ☒ Tef ☐ PVC ☐ Centrifugal Pump ☐

Peristaltic Pump ☐ Hand Pump ☐ Gas Lift/ Displacement Pump ☐ Other

Purging Equipment (Make, Model, etc.) Purge Equipment Decon'd? (Y)/ N

DECONNED by ① Potable water w/ liquinox wash ② potable RINSE ③ DI Rinse ④ methanol rinse ⑤ Air dry

Purge Wtr Containerized? (Y)/ N Avge Purge Rate: N/A gpm

Weather: ~60±F cool Breeze / Partly Sunny (60+ °F)

Actual Time	Elapsed Time (minutes)	Vols. Purged (Gals)	Depth To Wtr (ft)	Depth Of Pump Intake(ft)	Temp (°C)	pH (s.a)	Cond. (umhos/cm)	Turbidity (NTa)	Other	Comment
1636	0	.75	41.59	N/A	12.9°	7.31	1125	N/A		cloudy/turbid — Initial
1648	12	5.8	N/A	N/A	N/A	N/A	N/A	N/A		cloudy/turbid — sandpack volume.
1652	16	7.10	N/A	N/A	12.3°	7.23	765	N/A		" / " — 1 well vol.
1658	22	8.40	N/A	N/A	12.1	7.29	765	N/A (yes)		cloudy - lt. brown — 2 " "
1702	26	9.70	~~N/A~~ Gm	N/A	11.9	7.35	817	"		" — 3 " "
END			43.32							WL

* All Depths in Feet Below Ref. Point on Wellhead - generally Top of Casing (TOC)

DTW = Depth To Water LNAPL/DNAPL = Light or Dense Non-Aqeous Phase Liquid

REV. DATE: MAY 1990

Fieldbook: 931802-08/10 BK#5

Sample ID No.: V3-MW1-1094

MONITORING WELL PURGING LOG

WELL NO.: V3-MW1

Site: Site 3

Installation: VTANG

Project No.: 931802-08

HAZWRAP Contractor: Earth Tech

Purge Start: (Date) 10/31/94 (Time) 1616 Purge End: (Date) 10/31/94 (Time) 1639

Purged by: B. Maynor

Depth Measurement Ref. Point* TOC Well Csg ID (2") 4" 6" Other _____

Well Hdspace/Odor: 473 ppm/odor (HC) w/ probe L NAPL Check (Y/N) DNAPL Check (Y/N)

Equipment Used To Measure Thickness and Sample Free Product (Make, Model, etc)

ORS o/w/wtr probe SN 1906

Depth to Top and Bottom of Screen interval 15.8 - 25.8' bgs ~ 15.48 - 25.48' TOC Stickup ~ 0.32'

Depth to LNAPL: N/A Depth to DNPL: N/A Orig. DTW: _____ Final DTW: _____

LNAPL/DNAPL Thickness N/A LNAPL/DNAPL Sample and Volume: N/A

Measured Well TD: 25.7

(-) Orig. DTW: 18.81'

(=) Wtr Col. Thick.: 6.89 (x) (2" - 0.16, 4" - 0.65, 6" - 1.47, 8" - 2.6) Gals/ft (=) 1.1 Gals/Csg Vol. (x) (1, 2, 3, 4, 5) Csg Vol. (=) 3.3 Total Purge 5.0 Gals.

* Filter pack volume = 5 gal (at 30% porosity)

8.3 Total min. purge

Purge Method:
Submersible Pump ☐ Dedicated Bladder Pump ☐ Bladder Pump ☐ Bailer ☒ (SS ☐ Tef ☒ PVC ☐) Centrifugal Pump ☐

Peristaltic Pump ☐ Hand Pump ☐ Gas Lift/ Displacement Pump ☐ Other _____

Purging Equipment (Make, Model, etc.) Taflon Bailer w/ polypropylene cord Purge Equipment Decon'd? (Y/N) per SAP (August 1994)

Purge Wtr Containerized? (Y/N) Avge Purge Rate: _____ gpm

Weather: _____ (°F)

Actual Time	Elapsed Time	Vols. Purged (Gals)	Depth To Wtr (ft)	Depth Of Pump Intake(ft)	Temp (°C)	pH (s.a)	Cond. (umhos/m)	Turbidity (NTa)	Other	Comment
1616	Ø	0.25	18.81	N/A	11.8	6.89	2.14 ms/cm	NONE	slight	Hc odor — Initial Bailer
1629	15	5.0	N/A	N/A	11.8	6.99	2.27	Turbid	olive Brn.	Hc odor — Filter pac volume
1633	19	6.1	"	"	11.9	6.97	2.25	"	"	" — 1st casing vol.
1636	22	7.2	"	"	11.8	7.93 (7.23 min/pH)	2.21	"	"	" — 2nd " "
1639	25	8.3	"	"	11.8	7.08	2.24	"	"	" — 3rd " "
1641								"	"	" — End / Begin Sample
1656		~10.5	18.89					"	"	" — End Sample

Begin

* All Depths in Feet Below Ref. Point on Wellhead - generally Top of Casing (TOC)

DTW = Depth To Water LNAPL/DNAPL = Light or Dense Non-Aqeous Phase Liquid

* All parameters w/ 4 min 10% for (3) consecutive casing volumes. See GW sampling Log 10/31/94.

REV. DATE: MAY 1990

Fieldbook: 931802-08/10 Bk #5 | Sample ID No.: V3-MW3-1094

MONITORING WELL PURGING LOG

WELL NO.: V3-MW3

Installation: VTANG | Site: Site 3

HAZWRAP Contractor: Earth Tech | Project No.: 931802-08

Purge Start: (Date) 10/31/94 (Time) 1435 Purge End: (Date) 10/31/94 (Time) 1459

Purged by: G. Maynor

Depth Measurement Ref. Point*: TOC Well Csg ID: (2") 4" 6" Other

Well Hdspace/Odor: 398 ppm/HC odor on probe L NAPL Check (Y/N) DNAPL Check (Y (N))

Equipment Used To Measure Thickness and Sample Free Product (Make, Model, etc)

ORS oil/wtr Interface Probe SN 1906

Depth to Top and Bottom of Screen interval: 14.67 - 24.67 bgs ~14.34 - 24.34 BTOC w/ ~0.33' slackdown

Depth to LNAPL: N/A (NONE) Depth to DNPL: N/A Orig. DTW: 18.48' Final DTW: 20.1/rising

LNAPL/DNAPL Thickness: N/A LNAPL/DNAPL Sample and Volume: N/A

Measured Well TD: 24.43' BTOC

(-) Orig. DTW: 18.48' BTOC

(=) Wtr Col. Thick.: 5.95 (x) (2") 0.16, 4" - 0.65, 6" - 1.47, 8" - 2.6 Gals/ft (=) 0.95 Gals/Csg Vol. (x) 1, 2, (3), 4, 5 Csg Vol. (=) 2.85 Total Purge (~3) + 4.3 Gals. = 7.3 Total min. purge

* Filter Pack in 8-inch borehole over 5.95' wtr column (at 30% porosity) holds ~4.3 gal.

Purge Method:
Submersible Pump ☐ Dedicated Bladder Pump ☐ Bladder Pump ☐ Bailer ☒ SS ☐ Tef ☒ PVC ☐ Centrifugal Pump ☐

Peristaltic Pump ☐ Hand Pump ☐ Gas Lift/ Displacement Pump ☐ Other

Purging Equipment (Make, Model, etc.): Teflon Bailer w/ polypropylene cord Purge Equipment Decon'd? (Y/N) per SAP (August 94)

Purge Wtr Containerized? (Y/N) Avge Purge Rate: 0.28 gpm

Weather: overcast, 55 °F, sli. breeze (55 °F)

Actual Time	Elapsed Time	Vols. Purged (Gals)	Depth To Wtr (ft)	Depth Of Pump Intake(ft)	Temp (°C)	pH (s.a)	Cond. (umhos/m)	Turbidity (NTa)	Other	Comment	
1435	Ø	0.25	18.48	N/A	11.9	7.07	1794	NONE	V. Sli. tint	HC odor	Initial Bailer
1446	11	4.5	N/A	"	10.9	6.96	1797	V. turbid	olive Brn.	HC odor	Filter pack volume
1451	16	5.5	"	"	10.9	6.99	1766	"	"	"	1st casing volumes.
1455	20	6.5	"	"	10.9	6.99	1748	"	"	tr. sheen	2nd "
1459	24	7.5	"	"	10.8	6.97	1789	"		"	3rd
1500	25	N/A	20.1+ rising	N/A	N/A	N/A	N/A	N/A	N/A		End purge
1505											Begin Sample
1530		~9.5	18.69	N/A							End sample

* All Depths in Feet Below Ref. Point on Wellhead - generally Top of Casing (TOC)

DTW = Depth To Water LNAPL/DNAPL = Light or Dense Non-Aqueous Phase Liquid

* All parameters within 10% for (3) consecutive casing volumes. See GW sampling LOG 10/31/94.

REV. DATE: MAY 1990

MONITORING WELL PURGING LOG

Sample ID No.: V4-BG1-01
WELL NO.: V4-BG1
Site: 4 Drainage Ditch
Installation: VTANG
Project No.:
HAZWRAP Contractor: Earth Tech
Purge Start: (Date) 10/23/94 (Time) 1740 Purge End: (Date) 10/23/94 (Time) 1812
Purged by: PHLang - GM >Bailer

Depth Measurement Ref. Point* TOC 2" PVC Well Csg ID: (2") 4" 6" Other
Well Hdspace/Odor: none L NAPL Check (Y) N) DNAPL Check (Y / (N)
Equipment Used To Measure Thickness and Sample Free Product (Make, Model, etc)
ORS Interface Probe sn 06-02228 (PID. no. 1068013)

Depth to Top and Bottom of Screen interval 19.14 29.14' BGS
Depth to LNAPL: none Depth to DNPL: NA Orig. DTW: 21.69 Final DTW: 24.01
LNAPL/DNAPL Thickness NA LNAPL/DNAPL Sample and Volume: NA
Measured Well TD: 28.8
(-) Orig. DTW: 21.69

*filter pack in 8-inch Borehole = 5.2 gallons @ 30% porosity
Begin parameters on casing volume after 5.2 gallons.

(=) Wtr Col. Thick.: 7.11 (x) (2") - 0.16, 4" - 0.65, 6" - 1.47 Gals/ft (=) 1.14 Gals/Csg Vol. (x) (3) 4 5 Csg Vol. (=) 3.42 Total Purge Gals.

Purge Method:
Submersible Pump ☐ Dedicated Bladder Pump ☐ Bladder Pump ☐ Bailer ☒ SS ☒ Tef ☐ PVC ☐ Centrifugal Pump ☐
Peristaltic Pump ☐ Hand Pump ☐ Gas Lift/ Displacement Pump ☐ Other
Purging Equipment (Make, Model, etc.) Purge Equipment Decon'd? (Y) N
(1) Potable water Liquinox wash (2) Potable RINSE (3) DI RINSE (4) methanol RINSE (5) Air dry

Purge Wtr Containerized? ((Y) N) Avge Purge Rate: ____ gpm
Weather: Cool Cloudy - cooling toward sunset @ 1800 (60 °F)

Actual Time	Elapsed Time (minutes)	Vols. Purged (Gals)	Depth To Wtr (ft)	Depth Of Pump Intake(ft)	Temp (°C)	pH (s.a)	Cond. (µmhos/cm)	Turbidity (NTU)	Other	Comment
1740	ϕ	0.5	21.69	N/A	11.7	7.16	772	NA very		no odor
1750	10	5.2	-	N/A	—	—	—	NA		cloudy/turbid
1752	12	6.3	—	N/A	10.8	7.44	708	N/A		cloudy/turbid
1754	14	7.5	—	N/A	10.7	7.31	1141	N/A		cloudy Olivebrown
1756	16	8.75	-	N/A	10.5	7.31	1015	N/A		turbid - Olivebrown
1758	18	10	—	N/A	10.5	7.30	1142	N/A		" "
1800	20	11	—	N/A	10.8	7.36	1020	N/A		" "
1805	25	12.25	—	N/A	10.6	7.30	1172	N/A		" "
1808	28	13.5	—	N/A	10.5	7.28	1198	N/A		
1812	32	15	—	N/A	10.5	7.28	1197	N/A		
END	—	—	24.01	—	—	—	—	—	—	

Initial
Sand pack Volume
1 well vol.
2 well v
3 well
4 well
5 well
6 well vol.
7. well
8 well vol.

* All Depths in Feet Below Ref. Point on Wellhead - generally Top of Casing (TOC)
DTW = Depth To Water LNAPL/DNAPL = Light or Dense Non-Aqeous Phase Liquid

REV. DATE: MAY 1990

Fieldbook 931802-08/10 BK#5

Sample ID No.: V4-BG1-1094

MONITORING WELL PURGING LOG

WELL NO.: V4-BG1

Site: Site 4

Installation: VTANG

Project No.: 931802-08

HAZWRAP Contractor: Earth Tech

Purge Start: (Date) 10/25/94 (Time) 1831 Purge End: (Date) 10/25/94 (Time) 1910

Purged by: G. Maynor

Depth Measurement Ref. Point* TOC 2" PVC Well Csg ID: (2") 4" 6" Other

Well Hdspace/Odor: 0 ppm OVM L NAPL Check (Y) N) DNAPL Check (Y (N)

Equipment Used To Measure Thickness and Sample Free Product (Make, Model, etc)

HAZCO Interface Meter Model 121 SN#2800 (malfunctioned)

ORS Interface Probe HAZCO SN 1906

Depth to Top and Bottom of Screen interval 19.14 - 29.14' bgs

Depth to LNAPL: N/A Depth to DNPL: N/A Orig. DTW: 21.77' Final DTW: 21.80'

LNAPL/DNAPL Thickness N/A LNAPL/DNAPL Sample and Volume: N/A

Measured Well TD: 28.8'

(-) Orig. DTW: 21.77

(=) Wtr Col. Thick.: 7.03 (x) (2") - 0.16, 4" - 0.65, 6" - 1.47, 8" - 2.6 Gals/ft (=) 1.12 Gals/Csg Vol. (x) (3) Csg Vol. (=) 3.37 Total Purge

+ 5.20 Gals.

8.57 gal

* Filter Pack in 8-inch borehole = 5.2 gallons, assuming ~30% porosity. This volume will be removed initially-

Purge Method:
Submersible Pump ☐ Dedicated Bladder Pump ☐ Bladder Pump ☐ Bailer ☒ SS ☐ Tef ☒ PVC ☐ Centrifugal Pump ☐

Peristaltic Pump ☐ Hand Pump ☐ Gas Lift/ Displacement Pump ☐ Other

Purging Equipment (Make, Model, etc.) Teflon Bailer w/ polypropylene cord Purge Equipment Decon'd? (Y) N

See fieldbook #5 and #4. and SAP (August 19c

Purge Wtr Containerized? (Y)N) Avge Purge Rate: 0.302 gpm

Weather: partly cloudy, dusk to dark, no breeze. (50 °F)

Actual Time	Elapsed Time	Vols. Purged (Gals)	Depth To Wtr (ft)	Depth Of Pump Intake(ft)	Temp (°C)	pH (s.u)	Cond. (umhos/m)	Turbidity (NTa)	Other	Comment
1831	N/A	0.25	21.77	N/A	10.6 ±0.1	6.78	434	Sli. Turbid	LT Gray LT BRN.	cloudy
1847	16	5.2	N/A	N/A	10.1	6.99	828	"	LT BRN	"
1852	21	6.3	N/A	N/A	10.1	7.07	805	"	"	"
1855	24	7.4	"	"	10.1	7.07	847	"	"	"
1859	28	8.5	"	"	10.1	7.04	992	"	"	"
1902	31	9.6	"	"	10.1	7.12	856	"	"	"
1906	35	10.7	"	"	10.1	7.09	863	"	"	"
1910	39	11.8	N/A	N/A	10.1	@ 7.06	940	"	"	"
1913	42	N/A	N/A			6m readings/9-1				sample
1945	74	~14	21.8							end sample

Begin

Filter pack volume
1st casing vol.
2nd "
3rd "
4th "
5th "
6th "
Begin Sampling

* All Depths in Feet Below Ref. Point on Wellhead - generally Top of Casing (TOC)

DTW = Depth To Water LNAPL/DNAPL = Light or Dense Non-Aqeous Phase Liquid

*All parameters within 10% for three consecutive casing volumes. See Sampling LOG 10/25/94.

REV. DATE: MAY 1990

Fieldbook: 931802-08/10 BK #5

Sample ID No.: V4-MW2-1014 (MS/MSD) V4-MW2-1094 (QA/QC)

MONITORING WELL PURGING LOG

WELL NO.: V4 - MW2

Site: Site 4

Installation: VTANG

Project No.: 931802-08

HAZWRAP Contractor: Earth Tech

Purge Start: (Date) 10/27/94 (Time) 1614 Purge End: (Date) 10/27/94 (Time) 1644

Purged by: G. Maynor

Depth Measurement Ref. Point* TOC Well Csg ID: (2") 4" 6" Other

Well Hdspace/Odor: 49 ppm/none L NAPL Check (Y/N) DNAPL Check (Y/(N))

Equipment Used To Measure Thickness and Sample Free Product (Make, Model, etc)

ORS o/w/wtr. Interface Probe HAZCO SN 1906

Depth to Top and Bottom of Screen interval 15.35 - 25.34 BTOC .Stickdown ~ 0.32 15.67 - 25.66, 6g5

Depth to LNAPL: N/A Depth to DNPL: N/A Orig. DTW: 19.37' Final DTW: 19.39

LNAPL/DNAPL Thickness N/A LNAPL/DNAPL Sample and Volume: N/A

Measured Well TD: 25.6' BTOC

(-) Orig. DTW: 19.37' BTOC

(=) Wtr Col. Thick.: 6.23 (x) (2") 0.16, 4" - 0.65, 6" - 1.47, 8" - 2.6 Gals/ft (=) 1.0 Gals/Csg Vol. (x) (3) Csg Vol. (=) 3.0 + 4.6 Total Purge Gals. 7.6 Total min. purge

* Filter Pack in 8-inch Borehole over 6.23' wtr. column in casing holds approx 4.6 gal (30% por

1 2 (3) 4 5

Purge Method:
Submersible Pump ☐ Dedicated Bladder Pump ☐ Bladder Pump ☐ Bailer ☒ SS ☐ Tef ☒ PVC ☐ Centrifugal Pump ☐

Peristaltic Pump ☐ Hand Pump ☐ Gas Lift/ Displacement Pump ☐ Other

Purging Equipment (Make, Model, etc.) Teflon bailer w/ polypropylene cord Purge Equipment Decon'd? (Y)N per SAP (August 199

Purge Wtr Containerized? (Y / N) Avge Purge Rate: gpm

Weather: overcast, sli breeze (53 °F)

Actual Time	Elapsed Time	Vols. Purged (Gals)	Depth To Wtr (ft)	Depth Of Pump Intake(ft)	Temp (°C)	pH (s.a)	Cond. (umhos/m)	Turbidity (NTa)	Other	Comment	
1616	Ø	0.25	19.37	N/A	11.3	6.69	991	NONE	odor	Hydrocarbon odor clear - sample	Begin
1627	11	5.0	N/A	N/A	10.7	6.8	1449	Sli. Turbid	Lt. Brn. cloudy	HC odor	Filter pk volume
1633	17	6.0	N/A	N/A	10.8	6.8	1337	"	"	"	1st casing volume
1639	23	7.0	N/A	N/A	10.7	6.81	1447	Lt. Brn. Tint	Less Turbid	HC odor	2nd "
1644	28	8.0	N/A	N/A	10.8	6.79	1348	"	"	"	3rd "
1645	29	N/A	19.39	N/A	N/A	N/A	N/A	N/A	N/A	N/A	End purge
1648	32	N/A	N/A	"	"	"	"	"	"	* sheen visible on purge wtr	
1810	114	14+	19.39	"	"	"	"	"	"	"	Begin Sample
											End Sample

* All Depths in Feet Below Ref. Point on Wellhead - generally Top of Casing (TOC)

DTW = Depth To Water LNAPL/DNAPL = Light or Dense Non-Aqueous Phase Liquid

* All parameters within 10% for (3) consecutive casing volumes - see sampling log 10/26/94.

REV. DATE: MAY 1990

Fieldbook: 931802-08/10 #5

Sample ID No.: V4-MW3-1094

MONITORING WELL PURGING LOG

WELL NO.: V4-MW3

Installation: VTANG

Site: Site 4

HAZWRAP Contractor: Earth Tech

Project No.: 931802-08

Purge Start: (Date) 10/26/94 (Time) 1724

Purge End: (Date) 10/26/94 (Time) 1747

Purged by: G. Maynor

Depth Measurement Ref. Point* TOC Well Csg ID: (2") 4" 6" Other _____

Well Hdspace/Odor: Open/NONE L NAPL Check (Y)/N) DNAPL Check (Y (N)

Equipment Used To Measure Thickness and Sample Free Product (Make, Model, etc)

ORS oil/wtr Interface Probe Hazco SN 1906

Stickdown - 0.35' 15.8 - 25.8' bgs

Depth to Top and Bottom of Screen interval 15.45 - 25.45' BTOC

Depth to LNAPL: N/A Depth to DNPL: N/A Orig. DTW: 19.57' Final DTW: 19.57' BTOC

LNAPL/DNAPL Thickness N/A LNAPL/DNAPL Sample and Volume: N/A

Measured Well TD: 25.8' BTOC

(-) Orig. DTW: 19.57

(=) Wtr Col. Thick.: 6.23 (x) (2") - 0.16, 4 - 0.65, 6" - 1.47, 8" - 2.6 Gals/ft (=) 1.0 Gals/Csg Vol. (x) (3) Csg Vol. (=) 3.0 Total Purge Gals.

(1, 2, 3, 4, 5)

+ 4.6

7.6 gal Total

* Filter pack in 8-inch Borehole over 6.23' wtr column in casing = 4.6 gal

Purge Method:

Submersible Pump ☐ Dedicated Bladder Pump ☐ Bladder Pump ☐ Bailer ☒ SS ☐ Tef ☒ PVC ☐ Centrifugal Pump ☐

Peristaltic Pump ☐ Hand Pump ☐ Gas Lift/ Displacement Pump ☐ Other _____

Purging Equipment (Make, Model, etc.) Teflon Bailer w/ polypropylene cord Purge Equipment Decon'd? (Y)/N see SAP (August 199

Purge Wtr Containerized? (Y)/N) Avge Purge Rate: 0.35 gpm

Weather: partly cloudy, ~50°F, trace breeze (50 °F)

Actual Time	Elapsed Time	Vols. Purged (Gals)	Depth To Wtr (ft)	Depth Of Pump Intake(ft)	Temp (°C)	pH (s.a)	Cond. (umhos/m)	Turbidity (NTa)	Other	Comment	
1724	Ø	0.25	19.57	N/A	10.9	7.47	4.42 mS/cm	very low	v. slt. cloudy	fairly clear wtr.	Begin
1735	11	5.0	N/A	N/A	10.7	7.40	4.47	Turbid	LT. brown	V. cloudy	Filter pack volum
1739	15	6.0	"	"	10.7	7.49	4.75	"	"	"	1st casin
1743	19	7.0	"	"	10.8	7.54	4.71	"	"	"	2nd "
1747	23	8.0	"	"	10.8	7.53	4.71	"	"	"	3rd
1750	26	↓	"	"	N/A	N/A	N/A	"	"	"	Begin Sample
1816	52	10±	19.57	"	N/A	N/A	N/A	"	"	"	End Samp

End purge.

* All Depths in Feet Below Ref. Point on Wellhead - generally Top of Casing (TOC)

DTW = Depth To Water LNAPL/DNAPL = Light or Dense Non-Aqeous Phase Liquid

* All parameters within 10% for (3) consecutive casing volumes. See Sampling Log 10/26/94.

REV. DATE: MAY 1990

MONITORING WELL SAMPLING LOG

Sample ID No.: V3-BG1-1094+(D)
WELL NO.: V3-BG1
Site: Site 3
Installation: VTANG.
Project No. 931802-08
HAZWRAP Contractor: EARTH TECH
Sample Start: (Date) 10/24/94 (Time) 1135
Sample End: (Date) 10/24/94 (Time) 1425
Sampled by: PATRICK HLAY

Orig. SWL: 41.62 ft BTOC* Final SWL: 41.76 ft. BTOC
Screen Interval: 40.3 - 50.3 ft BTOC

Temp	pH	Cond. mS/cm	Turbidity
12.8	7.89	838	Clear

Are parameters 20% of purge values? (Y) N

Repurge Y (N)

No. repurge volumes: N/A

Sampling Method:
Submersible Pump ☐ Dedicated Bladder Pump ☐ Bladder Pump ☐ Bailer ☒ SS ☐ Tef ☒ PVC ☐ Centrifugal Pump ☐

Peristaltic Pump ☐ Hand Pump ☐ Gas Lift/ Displacement Pump ☐ Other

Sampling Equipment (Make, Model, etc.) N/A

Sample Equipment Decon'd? (Y) N ① Potable water w/Liquinox wash ② Potable rinse ③ DI rinse ④ methanol Rinse ⑤ Air dry

If pump or discrete bailer; Depth(s) where pump set: N/A ft. BTOC

Weather: Pretty day Sunny breezy (65 °F)

Lab Analyses: (Circle)
VOA 8010 8020 SVOA w/w/WW CLP 3/90 10/92 METALS TAL PEST/PCBS TPH 8015 CATIONS ANIONS TDS
Others:

Metals: (Circle) Filtered Unfiltered (Both)

Field Dups.: (Y) N Referee Dups.: Y (N)

Comments:
Collect Rinsate for sample QA/QC (ER-102494-1)
Sample time on Label (1315) when sampler first began
-Sampled VOCs (1st), then TPHs (w/HCL), TPH w/no pres,
SVOCs, unfiltered metals, then filtered metals
placed on ice packs temp
All bottles Labeled. PHL

*BTOC = Below Top of Casing (or other measurement reference point)
SWL = Static Water Level

REV. DATE: MAY 1990

Fieldbook: 931802-08/10, BK #5

MONITORING WELL SAMPLING LOG

Sample ID No.: V3-MW1-1094

WELL NO.: V3-MW1

Site: Site 3

Installation: VTANG

Project No.: 931802-08

HAZWRAP Contractor: Earth Tech

Sample Start: (Date) 10/31/94 (Time) 1641 Sample End: (Date) 10/31/94 (Time) 1656

Sampled by: G. Maynor

Orig. SWL: 18.81 ft BTOC* Final SWL: 18.89 ft. BTOC

Screen Interval: 15.48 - 25.48 ft BTOC

Temp	pH	Cond.	Turbidity
11.8	7.08	2.24 mS/cm	Turbid olive brn

HC odor

Are parameters 20% of purge values? (Y) / N

Repurge Y / (N)

No. repurge volumes: N/A

Sampling Method:
Submersible Pump ☐ Dedicated Bladder Pump ☐ Bladder Pump ☐ Bailer ☒ SS ☐ Tef ☒ PVC ☐ Centrifugal Pump ☐

Peristaltic Pump ☐ Hand Pump ☐ Gas Lift/ Displacement Pump ☐ Other _____

Sampling Equipment (Make, Model, etc.) Teflon bailer w/ teflon check valve for VOCs and filter attachments for metals

Sample Equipment Decon'd? (Y) N per SAP (August 1994)

If pump or discrete bailer; Depth(s) where pump set: N/A ft. BTOC

Weather: overcast @ light rain (~55 °F)

Lab Analyses: (Circle)

(VOA) 8010/8020 (SVOA) (METALS) CLP 10/92 TAL PEST/PCBS (TPH) 8015 CATIONS ANIONS TDS

Others: _____

Metals: (Circle) Filtered Unfiltered (Both)

Field Dups.: Y (N) Referee Dups.: Y (N)

Comments:

*BTOC = Below Top of Casing (or other measurement reference point)
SWL = Static Water Level

REV. DATE: MAY 1990

field book: 931802-08/10, BK #5

MONITORING WELL SAMPLING LOG	Sample ID No.: V3-MW3-1094
	WELL NO.: V3-MW3
Installation: VTANG	Site: Site 3
HAZWRAP Contractor: Earth Tech	Project No.: 931802-08
Sample Start: (Date) 10/31/94 (Time) 1505	Sample End: (Date) 10/31/94 (Time) 1530
Sampled by: G. Maynor	

Orig. SWL: 20.1 rising ft BTOC* Final SWL: 18.69' ft. BTOC

Screen Interval: 14.34 - 24.34 ft BTOC

Temp	pH	Cond. (µS/cm)	Turbidity
10.8	6.97	1789	Turbid olive brn.

HC odor fr. sheen?

Are parameters 20% of purge values? (Y) N

Repurge Y / (N)

No. repurge volumes: N/A

Sampling Method:
Submersible Pump ☐ Dedicated Bladder Pump ☐ Bladder Pump ☐ Bailer ☒ SS ☐ Tef ☒ PVC ☐ Centrifugal Pump ☐

Peristaltic Pump ☐ Hand Pump ☐ Gas Lift/ Displacement Pump ☐ Other ____

Sampling Equipment (Make, Model, etc.) Teflon bailer w/ teflon check valve for VOCs and attachments for filtered metals

Sample Equipment Decon'd? (Y) N per SAP (August 1994)

If pump or discrete bailer; Depth(s) where pump set: N/A ft. BTOC

Weather: overcast, sli. breeze (55 °F)

Lab Analyses: (Circle)

(VOA) 8010/8020 (SVOA) CLP 1/92 (METALS) TAL PEST/PCBS (TPH) 8015 CATIONS ANIONS TDS

Others: ____

Metals: (Circle) Filtered Unfiltered (Both)

Field Dups.: Y / (N) Referee Dups.: Y / (N)

Comments:

*BTOC = Below Top of Casing (or other measurement reference point)
SWL = Static Water Level

REV. DATE: MAY 1990

MONITORING WELL SAMPLING LOG	Sample ID No.:
	WELL NO.: V4-BG-1
Installation: VTANG	Site: Site 4
HAZWRAP Contractor: Earth Tech	Project No.: 931802-08
Sample Start: (Date) 10/24/94 (Time) 1700	Sample End: (Date) 10/24/94 (Time)
Sampled by: Greg Maynor	

Orig. SWL: 21.71 ft BTOC* Final SWL: _____ ft. BTOC

Screen Interval: 19.4 - 29.14 ft BTOC

GM 10/24/94

Temp	pH	Cond.	Turbidity	pH	Cond.	Temp	
11.7	7.03	590	sli. lt. gray	7.44	761	10.6	
10.7	7.24	753	"				
10.6	7.33	690	sli.-lt. brn.				
10.4	7.35	787	"	—			
10.4	7.35	789					

Are parameters 20% of purge values? Y / N

Repurge Y / N

No. repurge volumes: _____

Sampling Method:
Submersible Pump ☐ Dedicated Bladder Pump ☐ Bladder Pump ☐ Bailer ☒ SS ☐ Tef ☒ PVC ☐ Centrifugal Pump ☐

Peristaltic Pump ☐ Hand Pump ☐ Gas Lift/ Displacement Pump ☐ Other _____

Sampling Equipment (Make, Model, etc.) N/A

Sample Equipment Decon'd? (Y) N (1) Alconox/potable wtr wash (2) potable wtr. rinse (3) Deionized wtr rinse (Lot # 4189) (4) Methanol Rinse (5) Air Dry

If pump or discrete bailer; Depth(s) where pump set: N/A ft. BTOC

Weather: Partly sunny/sunny, lt. breeze (65± °F)

Lab Analyses: (Circle)
(VOA) 8010/8020 (SVOA) CLP 10/92 (METALS) CLP PEST/PCBS (TPH) 8015 CATIONS ANIONS TDS

Others: _____

Metals: (Circle) Filtered Unfiltered (Both)

Field Dups.: Y / (N) Referee Dups.: Y / (N)

Comments:
*Due to unstable parameters - will repurge and sample. See 10/25/94 logs. GM 10/24/94

*BTOC = Below Top of Casing (or other measurement reference point)
SWL = Static Water Level

REV. DATE: MAY 1990

Fieldbook 931802-08/10

MONITORING WELL SAMPLING LOG	Sample ID No.: V4-BG-1-1094
	WELL NO.: V4-BG-1
Installation: VTANG	Site: Site 4
HAZWRAP Contractor: Earth Tech	Project No.: 931802-08
Sample Start: (Date) 10/25/94 (Time) 1913	Sample End: (Date) 10/25/94 (Time) 1945
Sampled by: G. Maynor	

Orig. SWL: 21.77 ft BTOC* Final SWL: 21.8 ft. BTOC

Screen Interval: 19.4 - 29.4 ft BTOC GS (Approx. 18.9 - 28.9 BTOC).

Temp	pH	Cond.	Turbidity
10.1	7.06		Slight, LT. Brn cloudy

9:10

Are parameters 20% of purge values? (Y)/N

Repurge Y (N)

No. repurge volumes: N/A

Sampling Method:
Submersible Pump ☐ Dedicated Bladder Pump ☐ Bladder Pump ☐ Bailer ☒ SS ☐ Tef ☒ PVC ☐ Centrifugal Pump ☐

Peristaltic Pump ☐ Hand Pump ☐ Gas Lift/ Displacement Pump ☐ Other

Sampling Equipment (Make, Model, etc.) w/ polypropylene cord (dedicated) w/ Teflon bailer and teflon check valve for VOCs and attachment for 45 micron filters for metals.

Sample Equipment Decon'd? (Y)/ N per SAP (August 1994)

If pump or discrete bailer; Depth(s) where pump set: N/A ft. BTOC

Weather: partly cloudy, dusk to dark, no breeze (50 °F)

Lab Analyses: (Circle)

(VOA) 8010/8020 (SVOA) CLP 10/92 (METALS) TAL CLP Total + Dissolved PEST/PCBS (TPH) 8015 CATIONS ANIONS TDS

Others:

Metals: (Circle) Filtered Unfiltered (Both)

Field Dups.: Y/(N) Referee Dups.: Y/(N)

Comments:

Held samples with TB-102594-1 until 10/26/94 shipment to Lab via Fed Ex (closed 2000 10/25/94).

Gem 10/25/94

*BTOC = Below Top of Casing (or other measurement reference point)
SWL = Static Water Level

BK #5

REV. DATE: MAY 1990

Fieldbook: 931802-08/10

Sample ID No.: V4-MW2-1044QA/QC

MONITORING WELL SAMPLING LOG

WELL NO.: V4-MW2 ~~1044~~ 10/27/94

Site: Site 4

Installation: VTANG

Project No.: 931802-08

HAZWRAP Contractor: Earth Tech

Sample Start: (Date) 10/27/94 (Time) 1648 Sample End: (Date) 10/27/94 (Time) 1810

Sampled by: G. Maynor

Orig. SWL: 19.39 ft BTOC* Final SWL: 19.39' ft. BTOC

Screen Interval: 15.35 - 25.34 ft BTOC

Temp	pH	Cond.	Turbidity
10.8	6.79	1348	V. Sli. Lt. Brn. Tint

HC odor

Are parameters 20% of purge values? (Y)/N

Repurge Y/(N)

No. repurge volumes: N/A

Sampling Method:
Submersible Pump ☐ Dedicated Bladder Pump ☐ Bladder Pump ☐ Bailer ☒ SS ☐ Tef ☒ PVC ☐ Centrifugal Pump ☐

Peristaltic Pump ☐ Hand Pump ☐ Gas Lift/ Displacement Pump ☐ Other ____

Sampling Equipment (Make, Model, etc.) Teflon bailer w/ teflon check valve for volatiles and filter attachments for metals.

Sample Equipment Decon'd? (Y)/N per SAP (August 1994)

If pump or discrete bailer; Depth(s) where pump set: N/A ft. BTOC

Weather: overcast, sli. breeze (53 °F)

Lab Analyses: (Circle)

(VOA) 8010/8020 (SVOA) CLP 10/92 (METALS) TAL PEST/PCBS (TPH) 8015 CATIONS ANIONS TDS

Others: ____

Metals: (Circle) Filtered Unfiltered (Both)

Field Dups.: Y/(N) Referee Dups.: (Y)/N ✓MS/MSD - QA/QC Split of VT HMMD

Comments:

- Extra volume for MS/MSD - noted as "QA/QC".
- Split volumes/sample for VT HMMD.

*BTOC = Below Top of Casing (or other measurement reference point)
SWL = Static Water Level

REV. DATE: MAY 1990

Fieldbook : 931802-08/10 BK#5

MONITORING WELL SAMPLING LOG

Sample ID No.: V4-MW3-1094

WELL NO.: V4-MW3

Site: Site 4

Installation: VTANG

Project No.: 931802-08

HAZWRAP Contractor: Earth Tech

Sample Start: (Date) 10/26/94 (Time) 1750 Sample End: (Date) 10/26/94 (Time) 1816

Sampled by: G. Maynor

Orig. SWL: 19.57 ft BTOC* Final SWL: 19.57 ft. BTOC

Screen Interval: 15.45 - 25.45 ft BTOC

Temp	pH	Cond.	Turbidity
10.8	7.53	4.71 mS/cm	Sli. Turbid to Turbid
			Lt. Brn. cloudy

End purge parameters

Are parameters 20% of purge values? (Y/N)

Repurge Y/(N)

No. repurge volumes: N/A

Sampling Method:

Submersible Pump ☐ Dedicated Bladder Pump ☐ Bladder Pump ☒ Bailer ☐ SS ☐ Tef ☒ PVC ☐ Centrifugal Pump ☐

Peristaltic Pump ☐ Hand Pump ☐ Gas Lift/ Displacement Pump ☐ Other

Sampling Equipment (Make, Model, etc.) Teflon bailer w/ teflon check valve for volatiles and attachment for 45 micron filter-mat. and polypropylene cord.

Sample Equipment Decon'd? (Y)/N per SAP (August 1994)

If pump or discrete bailer; Depth(s) where pump set: N/A ft. BTOC

Weather: partly cloudy, dusk, tr. breeze (50 °F)

Lab Analyses: (Circle)

(VOA) 8010/8020 (SVOA) (METALS) CLP 10/82 TAL PEST/PCBS (TPH) 8015 CATIONS ANIONS TDS

Others:

Metals: (Circle) Filtered Unfiltered (Both)

Field Dups.: Y (N) Referee Dups.: (Y)/N

Comments:

*BTOC = Below Top of Casing (or other measurement reference point)
SWL = Static Water Level

The Earth Technology Corporation

Surface Water Sampling Record

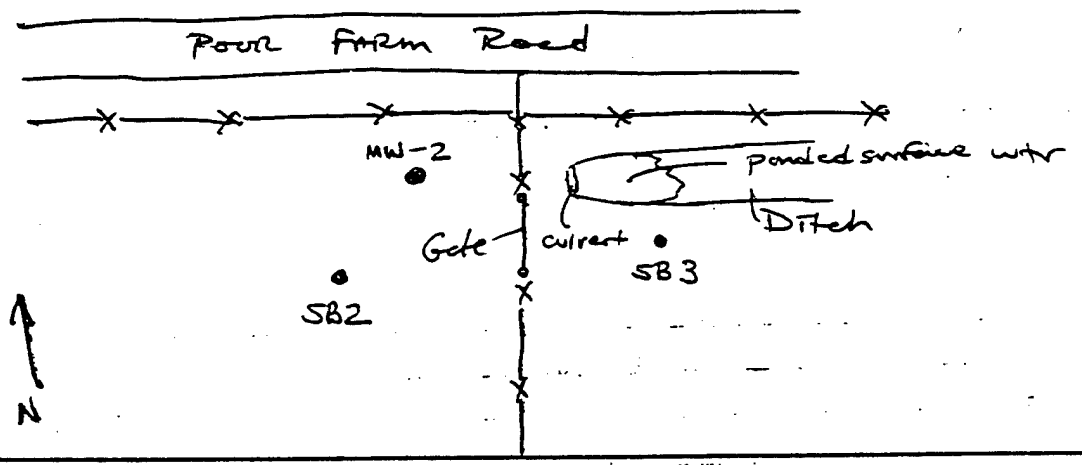
Fieldbook: 931802-08/10 Book #5

Project Name VTANG Burlington, VT
Location V4-SW3
Site Site 4 Drainage Ditch - west end (near site)
Recorded By G. Maynor
Checked By GKM

Project Number 931802-08
Sample Number * V4-SW3-1094
Duplicate Number V4-SW3-1094-D
Date 10/28/94 *1345-1506
Date 10/28/94 1858 / 11/15/94

* Extra volumes collected for MS/MSD QA/QC.

Sampling Point Location (sketch)



Water Parameters

* clear, w/ very light cloudy tint

Before Sampling: pH 7.98 EC 183 µS/cm Temperature 10.7°C

After Sampling: pH 7.28 EC 174 µS/cm Temperature 10.2°C

* wtr had slight stagnant or fowl odor (almost like turpentine) Numerous frogs living in culvert surface water.

* culvert is underlain by concrete.

Sampling Information

* collected with stainless steel ladle.

Analytical Parameter	Sampling Depth	√ If Field Filtered	Preservation Method	Volume Required/Sample	Sample Bottle I.D.s
VOCs 8010/8020	Surface		HCL/4°C	(2) 40 ml	V4-SW3-1094
SVOCs CLP 10/92	"		4°C	(2) 1 liter	V4-SW3-1094D
TPH 8015	"		HCL / 4°C	(3) 40 Milliter GKM	
TOTAL TAL metals	"		HNO_3 / 4°C	(1) 1 liter	
TPH 8015	"		4°C	(2) 1 liter GKM	

Form F-1025
3/15/92

The Earth Technology Corporation®

Soil / Sediment Sampling Record

Field book: 931802-08/10 BK#5

V4-D1

Project Name VTANG
Location Site 4 Sediment Location D1
Recorded By G. Maynor
Date 10/28/94 1600
Site Site 4, Drainage Ditch, D1

Project Number 931802-08
Sample Number V4-D1-00.5 and V4-D1-00.5-D
Duplicate Number
Checked by GKM
Date 10/28/94 / 11/15/94

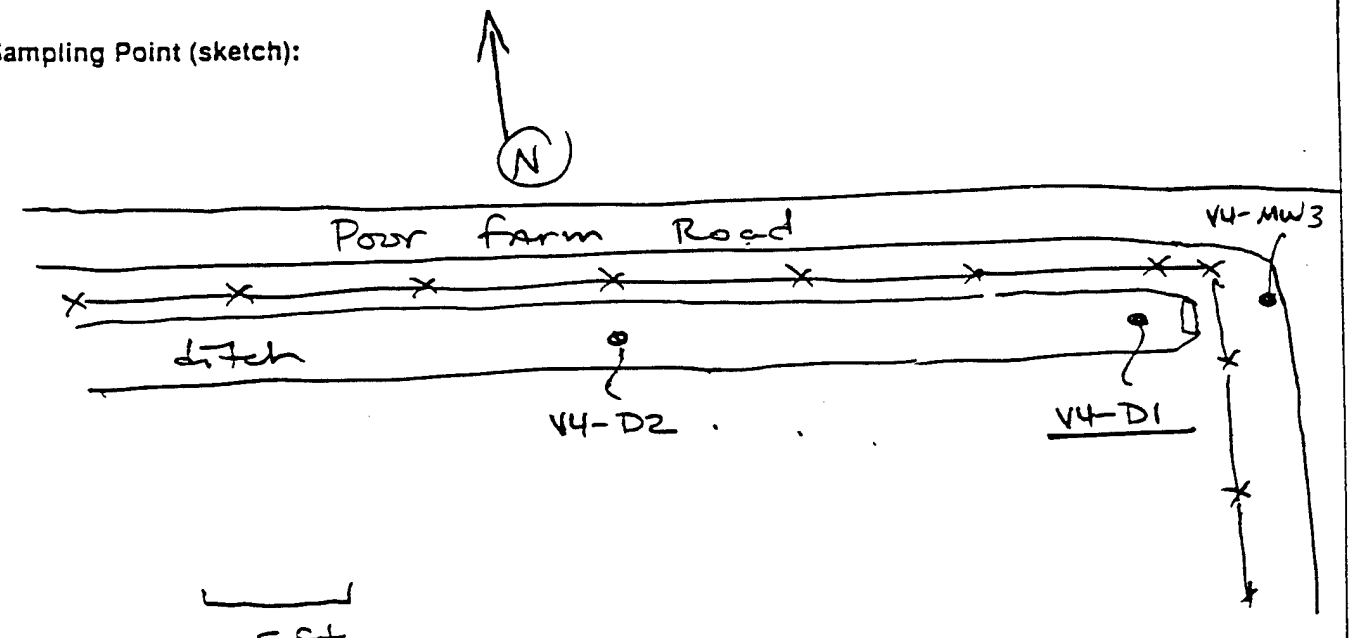
Sampling Equipment 6 inch x 1 7/16 Diameter Stainless steel Sleeve

Sample Type: ☐ Soil ☒ Sediment ☐ Rock

Sample Type Description

USCS Soil Type SM/SW, Sand/Silt, fn to v. fn., + fn to coarse Sand, loose, v. moist.
Color D. Olive Brn (2.5Y 3/3)
Odor none, 0 ppm OVM
Depth 0-0.5' bgs
Number of Samples (2): 3 sleeves
Comments Sampled for VOCs, SVOCs, TPH, and TAL Metals. GKM 11/15/94

Sampling Point (sketch):



Form F-1026
9/1/91

Figure 3-5

The Earth Technology Corporation

V4-D2

Soil / Sediment Sampling Record

field book ! 931802-08/10 BK #5

Project Name VTANG
Location Site 4 Sediment location D2
Recorded By G. Maynor
Date 10/28/94 1545
Site Site 4, (Drainage Ditch) D2

Project Number 931802-08
Sample Number V4-D2-00.5
Duplicate Number N/A / * Extra volume for QA/QC - MS/MSD
Checked by GKM
Date 10/28/94 / 11/16/94

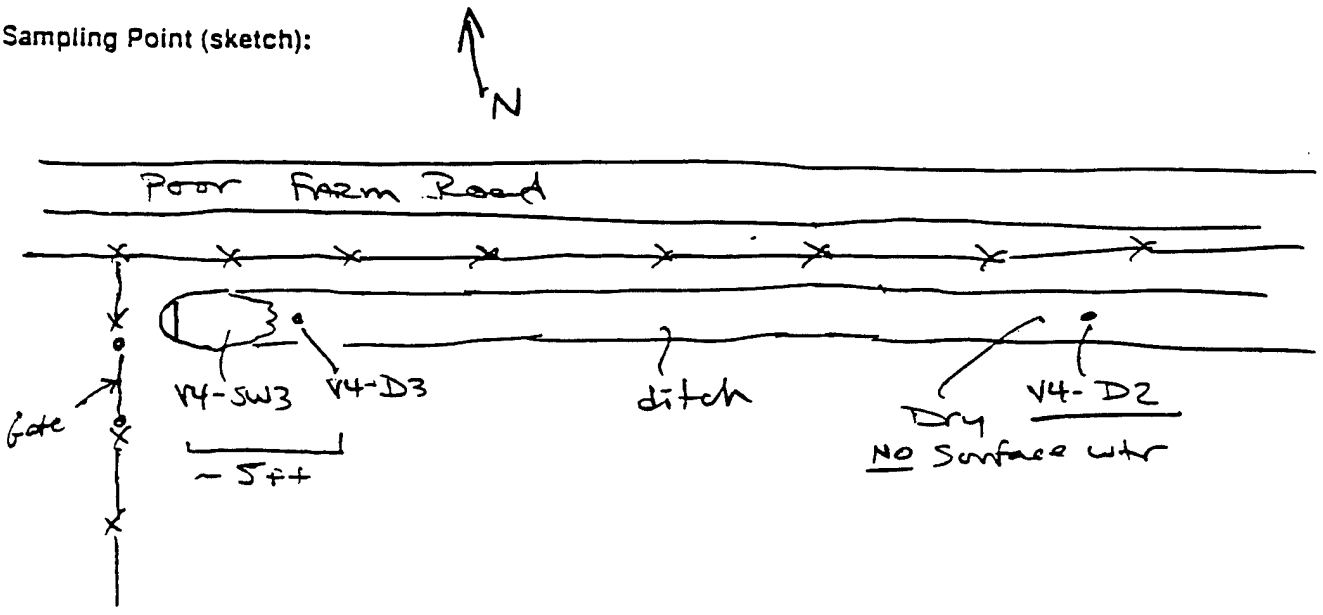
Sampling Equipment 6" stainless Steel Liner (1 7/16 inch Diameter)

Sample Type: ☐ Soil ☒ Sediment ☐ Rock

Sample Type Description

USCS Soil Type SM, Sand/Silt, fn to v. fn, w/ much vegetative/root material
Color D. Olive Brown (2.5Y 3/3) somewhat peaty, v. moist.
Odor NONE, 0 ppm OVM
Depth 0-0.5' bgs
Number of Samples (1) 3 sleeves w/ extra sleeve for MS/MSD
Comments Dry - NO surface wtr.
Analyses - VOCs 8010/8020, TPH 8015, SVOCs CLP 3/90 & TAL metals

Sampling Point (sketch):



Form F-1026
9/1/91

The Earth Technology Corporation®

Soil / Sediment Sampling Record

Fieldbook: 931802-08/W BK#5

V4-D3

Project Name VTANG
Location Site 4 Sediment Location D3
Recorded By G. Maynor
Date 10/28/94 1520 Hrs
Site Site 4 D3

Project Number 931802-08
Sample Number V4-D3-00.5
Duplicate Number N/A
Checked by G. Maynor
Date 10/28/94

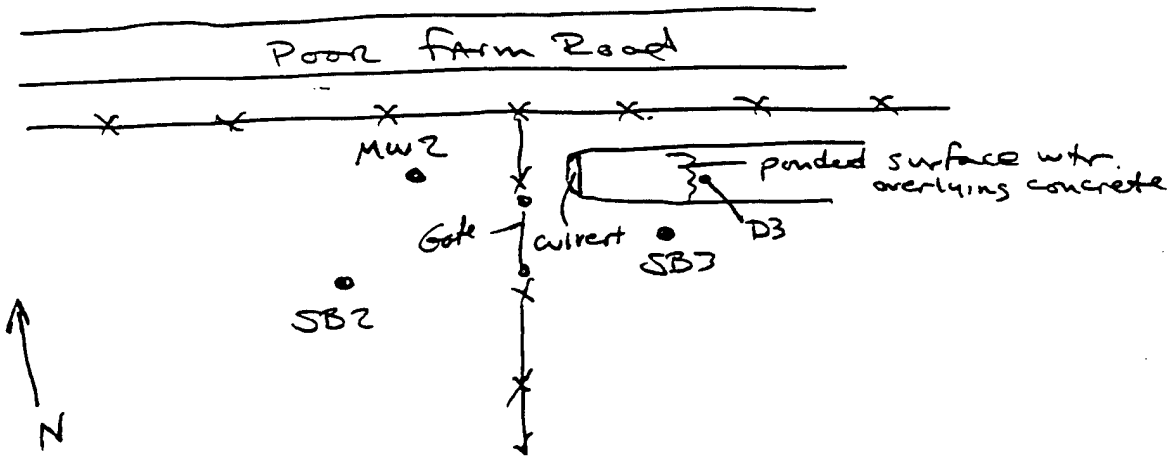
Sampling Equipment Stainless steel liner 1 7/10-inch Diameter x 6-inches long

Sample Type: ☐ Soil ☒ Sediment ☐ Rock

Sample Type Description

USCS Soil Type SW/SP: fine to coarse sand, Olive Brn, w/ some dominently fine grained.
Color D. Olive Brn. (2.5Y 3/3) v. moist, loose.
Odor NONE, 0ppm - OVM.
Depth 0 - 0.5' bgs
Number of Samples (1) V4-D3-00.5 w/ split for VT HMMD (2) 6" sleeves/sample
Comments OVM reading on sediment: 0ppm
Analyses: VOCs 8010/8020, SVOCs CLP 3/90, TPH 8015 and TAL Metals

Sampling Point (sketch):



Form F-1026
9/1/91

Figure 3-

TETCB150 dist236

APPENDIX D: SURVEY DATA

PINKHAM ENGINEERING ASSOCIATES, INC.

Engineers ❖ Planners ❖ Landscape Architects ❖ Surveyors

November 17, 1994

Mr. Greg Maynor
The Earth Technology Corporation
683 Emory Valley Road
Oak Ridge, TN 37830

RE: VTANG - P.O. No. 95P-G001-DC4

Dear Greg:

The following is a list of the borings at the referenced with coordinates and elevations. Also included for your use are coordinates of our traverse stations. Also attached are a hard copy of the field notes and of the CAD drawing and an AutoCad .DWG file on disk.

The elevations are referenced to an VTANG reference Bench Mark which is a paint mark on the northwest tower footing being the westerly tower south of the fire station presently under construction, elevation 325.41'. A second Bench Mark is located in the concrete pad southerly of the Taxiway "F" & "D" intersection and being the top of a brass disk set about 3" below the surface, elevation 335.71'. The coordinates are based upon NAD 27 and tied into station "Calibration Point (RR Spk)" located in the Army National Guard Apron south of Taxiway "C" and are to third order accuracy.

Our traverse had an accuracy of better than 1:30000. The data was adjusted to about 1:50000.

Please call if you have any questions.

Sincerely,

Larry D. Young, L.S.
Chief of Survey
Licence No. 568

cc: Kathleen D. Burden

The Maltex Building ❖ 431 Pine St.. Burlington, VT 05401 ❖ Bus. (802) 658-5588 ❖ Fax (802) 658-3629

POINT	NORTH	SOUTH	ELEV	DESCRIPTION
TRAVERSE POINTS				
1	721008.1	329816.5	325.71	TR 1
3	720712.2	330505.0	324.71	TR 3
4	721207.0	329927.7	323.52	TR 4
5	721481.6	329852.0	317.86	TR 5
6	721832.3	329999.2	308.94	TR 6
7	721888.4	330136.4	310.10	TR 7
8	721702.7	330320.9	310.58	TR 8
9	721775.2	330529.2	275.31	TR 9
10	721919.1	330435.7	279.19	TR 10
11	720895.8	330869.4	289.77	TR 11
12	721539.8	330470.5	302.00	TR 12
13	720898.9	331568.2	279.26	PK 13
14	719949.0	331544.8	326.26	TR 14
15	720439.7	330841.8	324.63	TR 15
16	720520.9	330914.2	323.88	TR 16
17	720584.4	330798.1	326.79	TR 17
18	720712.2	330505.0	324.71	TR 3
20	719421.9	332133.8	333.91	TR 20
21	718736.4	332108.5	334.79	TR 21
22	718472.5	332035.5	334.36	TR 22
23,	718835.4	332331.3	244.19	TR 23
53,	718472.5	332035.5	334.36	TR 22
54,	718736.4	332108.5	334.77	TR 21
V1-TEST PIT ?				
100	721237.9	329907.7	323.46	GRD
101	721251.8	329900.5	323.24	GRD
102	721259.6	329913.4	322.95	GRD
103	721245.0	329923.5	323.30	GRD
V1-BR-4				
104			323.43	GS
105			324.77	TOP CASE
106	721270.7	329972.8	323.60	MARK
V1-RFW-1				
107			323.05	GS
108	721289.5	329946.7	325.24	MARK
V1-RFW-1A				
109	721287.8	329942.6	325.83	MARK
110			323.13	GS

POINT	NORTH	SOUTH	ELEV	DESCRIPTION
111	721476.0	329810.6	315.80	CL RD
112	721444.3	329898.0	320.70	V1-SG-58
113	721496.2	329889.6	314.63	V1-SG-59
114	721504.9	329937.6	312.54	V1-SG-16
V1-MW-2I				
115			312.04	GS
116	721590.3	329895.2	313.85	MARK
V1-MW-2				
117			312.17	GS
118	721582.6	329891.9	314.26	MARK
120	721658.2	329904.6	311.34	V1-B-22
V1-MW-1				
121			309.97	GS
122	721762.7	329877.3	311.71	MARK
123			311.94	TOP CASE
124	721760.1	329907.2	309.46	V1-SG-11
125	721980.5	329738.9	298.19	CL INT
128	721716.9	330005.0	311.35	VI-B-23
129	721665.2	329977.3	311.45	VI-B-5
V1-BP-2				
130			311.08	GS
131	721619.9	329960.2	313.41	MARK
132			313.60	TOP CASE
133	721592.8	329989.7	311.38	VI-B-4
134	721525.6	329981.0	311.89	VI-B-21

POINT	NORTH	SOUTH	ELEV	DESCRIPTION
135	721453.8	329965.4	312.98	VI-B-3
136	721447.0	329999.1	313.87	VI-B-2
V1-MW-6				
139			312.25	GS
140	721529.3	330054.0	314.28	MARK
141			314.47	TOP CASE
V1-MW-7				
142			313.74	GS
143	721514.8	330103.2	315.88	MARK
144			316.06	TOP CASE
V1-MW-7I				
145			314.11	GS
146	721505.0	330110.1	315.58	MARK
147	721503.7	330194.4	313.23	V1-BP-18
V1-MW-3				
148			313.54	GS
149	721494.5	330193.7	315.05	MARK
150	721582.1	330033.6	312.28	VI-B-8
151	721564.8	330091.1	312.58	VI-B-20
152	721623.4	330076.5	311.82	VI-B-7
V1-BP-3				
153			312.10	GS
154	721623.9	330053.1	314.37	MARK
155	721665.0	330039.0	311.86	VI-B6
157	721737.3	330048.8	310.55	GS
159	721553.0	330187.0	311.83	V1-SG-52

POINT	NORTH	SOUTH	ELEV	DESCRIPTION
TEST PIT SRI-3				
160	721565.0	330220.1	311.36	TP-SRI-3
161	721561.6	330217.0	311.36	TP-SRI-3
162	721574.2	330209.2	310.97	TP-SRI-3
163	721571.0	330206.7	311.04	TP-SRI-3
164	721604.3	330228.7	311.81	V1-SG-51
BP-8				
165			310.83	GS
166	721732.3	330141.7	313.26	MARK
167	721416.2	329972.5	315.10	VI-B-1
168	721786.3	330070.0	309.65	V1-SG-38
169	721734.0	330071.8	310.14	V1-SG-37
170	721771.0	330020.8	310.10	V1-SG-18
171	721865.0	329966.1	308.86	VI-B-14
172	721770.3	329958.1	310.91	V1-SG-10
174	721791.7	330114.6	309.92	V1-SG-9
175	721740.9	330118.8	310.39	V1-SG-40
176	721846.6	330100.7	309.94	V1-SG
177	721879.0	330075.9	308.92	V1-SG
V1-MW-12				
178	721926.6	330124.8	312.08	MARK
179			310.32	GS
180	721889.9	330104.2	310.39	V1-SG-66
181	721859.5	330162.2	311.84	VI-B-16
V1-OB-4				
182	721839.4	330212.2	315.36	MARK
183			312.86	GS

POINT	NORTH	SOUTH	ELEV	DESCRIPTION
V1-BR-2 184 185	721815.8	330215.4	315.46 312.43	MARK GS
V1-MW-9 186 187	721797.3	330261.5	312.81 310.90	MARK GS
V1-OB-3 188 189	721803.4	330087.1	310.54 309.72	MARK GS
191	721889.6	330148.6	310.52	V1-SG-67
192	721848.4	330200.6	313.23	V1-SG-47
V1-OB-2 193 194	721737.3	330049.0	312.46 310.60	MARK GS
V1-0B-1 195 196	721733.2	329945.7	313.19 310.79	MARK GS
V1-BR-1 197 198	721892.5	329977.8	310.05 307.14	MARK GS
V1-RFW-2 199 200	721925.7	329984.3	308.15 305.48	MARK GS
V1-MW-11 201 202	721739.0	330203.0	312.84 311.05	MARK GS
203	721695.3	330122.9	310.75	V1-SG-41
204	721668.9	330124.6	311.30	VI-B-19
V1-BP-4 205 206	721622.4	330141.3	313.96 311.94	MARK GS

POINT	NORTH	SOUTH	ELEV	DESCRIPTION
V1-MW-13				
207	721639.1	330172.6	313.19	MARK
208			311.27	GS
V1-MW-5				
209	721649.2	330227.6	313.18	MARK
210			310.91	GS
TEST PIT SRI-4				
211	721677.1	330307.6	308.48	TP-SRI-4
212	721661.2	330313.2	308.51	TP-SRI-4
213	721659.7	330307.7	309.04	TP-SRI-4
214	721675.1	330303.3	308.90	TP-SRI-4
215	721668.2	330308.0	308.84	TP-SRI-4
TEST PIT SRI-1				
216	721698.5	330302.0	310.57	TP-SRI-1
217	721702.9	330302.1	310.33	TP-SRI-1
218	721701.5	330320.2	310.38	TP-SRI-1
219	721696.5	330319.6	310.24	TP-SRI-1
220	721700.5	330310.3	310.67	TP-SRI-1
V1-BP-13				
221	721684.4	330321.3	311.21	MARK
222			308.37	GS
V1-MW-4				
223	721709.3	330306.4	312.02	MARK
224			310.02	GS
V1-BP-12				
225	721714.7	330340.1	311.49	MARK
226			308.95	GS
227	721789.0	330279.8	309.52	V1-BP-14
TEST PIT SRI-5				
228	721762.2	330348.0	307.33	TP-SRI-5
229	721766.4	330348.2	307.28	TP-SRI-5
230	721758.3	330360.5	306.67	TP-SRI-5
231	721762.8	330354.8	306.70	TP-SRI-5

POINT	NORTH	SOUTH	ELEV	DESCRIPTION
V1-MW-8				
232	721778.7	330362.7	309.48	MARK
233			307.68	GS
234	721765.1	330261.2	310.53	V1-SG-45
235	721711.8	330458.1	273.04	VI-SW-1
V1-RFW-4				
236	721667.5	330520.2	279.77	MARK
237			277.53	GS
238	721678.2	330525.7	278.07	CM
239	721687.2	330549.2	275.65	CL RD
V1-MW-10				
240	721806.6	330453.0	280.45	MARK
241			278.21	GS
242	721428.2	330313.2	283.17	VI-SW-2-D2
TEST PIT SRI-6				
243	721419.2	330239.6	309.79	TP-SRI-6
244	721434.0	330248.4	310.23	TP-SRI-6
245	721435.2	330244.0	310.51	TP-SRI-6
246	721426.1	330243.5	309.95	TP-SRI-6
TEST PIT SRI-2				
247	721482.4	330243.7	309.70	TP-SRI-2
248	721477.3	330243.9	309.82	TP-SRI-2
249	721479.3	330227.3	312.02	TP-SRI-2
250	721483.5	330227.8	311.95	TP-SRI-2
251	721479.6	330237.1	310.38	TP-SRI-2
V1-RFW-3				
252	721877.8	330386.0	284.08	MARK
253			281.86	GS
254	721876.3	330361.3	282.99	VI-B-15
V1-BR-3				
255	721889.9	330381.4	284.95	MARK
256			282.11	GS

POINT	NORTH	SOUTH	ELEV	DESCRIPTION
257	721873.4	330406.5	279.50	V1-SG-62
258	721918.0	330383.9	280.92	V1-SG-63
259	721873.8	330356.1	284.25	V1-SG
260	721894.7	330398.6	280.17	V1-SG
261	721976.6	330341.6	284.82	CL INT
V1-MW-14 262 263	721971.0	330463.9	277.68 276.64	MARK GS
V1-BR-5 264 265	721968.7	330474.4	276.65 275.20	MARK GS
266	720853.0	331174.4	284.18	V4-B5
267	720857.4	331167.6	284.30	V4-SG-23
268	720818.0	331131.2	284.48	V4-B1
269	720819.2	331134.1	284.46	V4-SG-25
V4-MW-1 270 271	720791.4	331109.9	284.11 284.51	MARK GS
272	720762.4	331110.3	286.17	V4SG-4GW7
V4-MW-2 273 274	720854.6	331219.6	283.51 283.81	MARK GS
275	720823.8	331214.0	284.06	V4-B-2
276	720850.0	331237.7	283.29	4SG-1
277	720855.1	331203.4	283.83	4SG-2

POINT	NORTH	SOUTH	ELEV	DESCRIPTION
V4-BG-1				
278			288.31	GS
279	720639.3	331326.6	287.93	MARK
280	720826.8	331288.2	282.71	V4-B3
281	720847.0	331256.3	281.37	4SG-22
282	720842.7	331273.8	281.10	V4-SW3-D3
283	720829.9	331291.3	282.06	4SG-21
284	720823.5	331439.6	287.49	V4-B6
285	720826.2	331420.8	287.39	4SG-3
286	720856.8	331436.3	277.32	V4-SW2-D2
287	720834.6	331467.8	285.99	4SG-4
288	720836.9	331514.0	286.32	4SG-5 4G
289	720866.4	331524.1	275.94	V4-SW1-D1
290	720864.2	331546.2	281.37	4SG-17 4
291	720847.5	331623.1	283.64	4SG-28
V4-MW-3				
292			281.23	GS
293	720850.5	331551.3	280.81	MARK
294	720923.3	331569.8	278.34	CL INT
295	720897.1	331490.7	280.69	4SG-15
296	720894.0	331441.1	281.71	4SG-14
297	720889.9	331391.9	282.11	4SG-13
298	720885.3	331341.1	282.62	4SG-12
299	720880.4	331290.8	282.86	4SG-11

POINT	NORTH	SOUTH	ELEV	DESCRIPTION
300	720877.3	331241.7	283.54	4SG-10
301	720872.7	331192.4	284.08	4SG-9
302	720869.0	331142.2	284.62	4SG-8
303	720863.2	331045.8	286.03	4SG-6
304	720866.6	331092.5	285.15	4SG-7
V3-MW-2				
305			297.65	GS
306	720620.3	330938.7	297.28	MARK
307	720621.9	330932.7	298.03	3SG-17
308	720603.7	330944.9	297.54	3GW-6
V3-MW-3				
309			298.97	GS
310	720582.5	330960.1	298.60	MARK
311	720589.8	330923.9	299.31	3SG11
312	720599.1	330916.7	297.36	3SG-12
313	720597.9	330918.9	297.34	V3-B-5
314	720592.3	330907.9	298.08	3SG-15
315	720608.1	330910.2	297.37	3SG-14
316	720619.6	330905.0	297.60	3SG-13
317	720619.2	330903.4	297.54	V3-B4
318	720763.9	330907.6	292.73	3SG-20
V3-MW-1				
319			297.97	GS
320	720655.1	330905.8	297.65	MARK
321	720639.7	330878.3	297.90	3SG-9

POINT	NORTH	SOUTH	ELEV	DESCRIPTION
322	720626.8	330874.9	297.30	3SG-3
323	720617.9	330884.1	297.66	3SG-2 3GW-2
324	720617.3	330881.5	297.61	V3-B3
325	720614.3	330875.9	297.26	3SG-6
326	720607.3	330879.2	297.60	V3-B1
327	720622.0	330861.0	297.85	3SG-4
328	720610.5	330869.0	297.34	3SG-3
329	720600.9	330876.5	298.22	3SG-7
330	720591.1	330882.8	299.15	3SG-10
331	720594.6	330887.8	297.81	3SG-1 3GW-1
332	720593.5	330893.5	297.89	V3-B2
V3-BG-1 333 335	720564.2	330826.6	325.90 325.38	GS MARK
336	721085.9	330092.7	322.38	NAIL SET
337	721185.6	330163.1	296.97	VI-SW3-D3
V2-BG-1 338 339	718935.4	332100.4	333.99 335.96	GS MARK
V2-MW-1 340 341	718987.7	332333.1	252.38 254.05	GS MARK
V2-OB-5 342 343	718928.4	332309.1	253.76 256.11	GS MARK

POINT	NORTH	SOUTH	ELEV	DESCRIPTION
V2-MW-2				
344			249.93	GS
345	718881.1	332316.0	251.54	MARK
V2-MW-3				
346			245.89	GS
347	718832.4	332324.8	247.71	MARK
348	718791.1	332479.0	227.25	V2-SW3-D
349	718923.5	332554.9	223.28	V2-SW2-D
350	719044.4	332536.0	223.29	V2-SW1-D

\PEA\PROJ\7166\POINT

APPENDIX E: STATE OF VERMONT SPLIT ANALYTICAL DATA

State of Vermont

AGENCY OF NATURAL RESOURCES
Department of Environmental Conservation
Hazardous Materials Management Division
103 South Main Street / West Building
Waterbury, Vermont 05671-0404
802-241-3888
FAX 802-241-3296

Department of Fish and Wildlife
Department of Forests, Parks and Recreation
Department of Environmental Conservation
State Geologist
Natural Resources Conservation Council
RELAY SERVICE FOR THE HEARING IMPAIRED
1-800-253-0191 TDD>Voice
1-800-253-0195 Voice>TDD

February 6, 1995

Greg Maynor
Earth Tech
683 Emory Valley Road
Oak Ridge, Tennessee 37830

RE: Vermont Air National Guard Base, Burlington - Site #77-0043

Dear Mr. Maynor;

Enclosed with this letter are the analytical results from the split samples you collected during the supplemental investigation at the Vermont Air National Guard Base. I will forward a summary table of these results once I have prepared one.

I'm looking forward to your report, and to seeing you again up here in the Green Mountains.

Sincerely,

Brian Woods, Hydrogeologist
Sites Management Section

Enclosure

BW:/.../vtang/splits.let

OCT 2 0 1994

10/19/94 Department of Environmental Conservation Laboratory
Method 8240 - Volatile Organics in Solids GJD

Lab Id: 11660 Report To: BRIAN WOODS Phone: 241-3888 Date Collected: 9/13/94
Location: V3-B5-0305 Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG SPLITS

Date Analyzed: 9/21/94 Over hold? No
Methanol Extraction Sample wt.: 1.1 g Percent moisture: 11.4

Parameter	Units are ug/kg dw PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
Vinyl chloride	1000	N.D.				
Chloromethane	1000	N.D.				
Bromomethane	1000	N.D.				
Chloroethane	1000	N.D.				
Trichlorofluoromethane	1000	N.D.				
Acetone	10000	N.D.				
1,1-Dichloroethene	700	N.D.				
Carbon disulfide	10000	N.D.				
Methylene chloride	700	N.D.				
Methyl-t-butylether (MTBE)	1000	N.D.				
1,2-Dichloroethene	700	N.D.				
1,1-Dichloroethane	700	N.D.				
Vinyl acetate	7000	N.D.				
2-Butanone	10000	N.D.				
Chloroform	700	N.D.				
1,1,1-Trichloroethane	700	N.D.				
Carbon tetrachloride	700	N.D.				
Benzene	700	N.D.				
1,2-Dichloroethane	700	N.D.				
Trichloroethene	700	N.D.				
1,2-Dichloropropane	700	N.D.				
Bromodichloromethane	700	N.D.				
4-Methyl-2-pentanone	7000	N.D.				
cis-1,2-Dichloropropene	700	N.D.				
Toluene	700	N.D.				
trans-1,3-Dichloropropene	700	N.D.				
1,1,2-Trichloroethane	700	N.D.				
2-Hexanone	7000	N.D.				
Tetrachloroethene	700	N.D.				
Dibromochloromethane	700	N.D.				
Chlorobenzene	700	N.D.				
Ethylbenzene	700	N.D.				
Xylenes	700	N.D.				
Styrene	700	N.D.				
Bromoform	700	N.D.				
1,1,2,2-Tetrachloroethane	700	N.D.				
Total Volatile Hydrocarbons	10000	5040000	E	13		

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

1,2-Dichloroethane-D4 93% D8-Toluene . . . . . 107% 4-Bromofluorobenzene . 134%

Notes: Capillary column used with EPA approval. TVH based on xylene.

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

OCT 2 0 1994

10/19/94 Department of Environmental Conservation Laboratory
Method 8270 - Semivolatile Organics in Solids GJD

Lab Id: 11660 Report To: BRIAN WOODS Phone: 241-3888 Date Collected: 9/13/94
Location: V3-B5-0305 Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG SPLITS

Date Analyzed: 9/21/94 Over hold? No Dilution factor: 1 Date extracted: 9/16/94
Sample wt.: 11.1 g Percent moisture: 36

Parameter	Units are ug/kg dw PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
N-Nitrosodimethylamine	700	N.D.				
Aniline	700	N.D.				
Phenol	700	N.D.				
Bis(2-chloroethyl)ether	700	N.D.				
2-Chlorophenol	1000	N.D.				
1,3-Dichlorobenzene	700	N.D.				
1,4-Dichlorobenzene	700	N.D.				
1,2-Dichlorobenzene	700	N.D.				
Benzylalcohol	1000	N.D.				
2-Methylphenol	700	N.D.				
Bis(2-chloroisopropyl)ether	700	N.D.				
Hexachloroethane	700	N.D.				
4-Methylphenol	700	N.D.				
N-Nitroso-di-n-propylamine	700	N.D.				
Nitrobenzene	700	N.D.				
Isophorone	700	N.D.				
2-Nitrophenol	1000	N.D.				
2,4-Dimethylphenol	700	N.D.				
Bis(2-chloroethoxy)methane	700	N.D.				
2,4-Dichlorophenol	1000	N.D.				
1,2,4-Trichlorobenzene	700	N.D.				
Naphthalene	700	4800				
Benzoic acid	7000	N.D.				
4-Chloroaniline	700	N.D.				
Hexachlorobutadiene	700	N.D.				
4-Chloro-3-methylphenol	1000	N.D.				
2-Methylnaphthalene	700	3900				
Hexachlorocyclopentadiene	700	N.D.				
2,4,6-Trichlorophenol	1000	N.D.				
2,4,5-Trichlorophenol	1000	N.D.				
2-Chloronaphthalene	700	N.D.				
2-Nitroaniline	3000	N.D.				
Acenaphthylene	700	N.D.				
Dimethylphthalate	1000	N.D.				
2,6-Dinitrotoluene	1000	N.D.				
Acenaphthene	700	N.D.				
3-Nitroaniline	7000	N.D.				
2,4-Dinitrophenol	7000	N.D.				
Dibenzofuran	700	N.D.				
2,4-Dinitrotoluene	1000	N.D.				
4-Nitrophenol	7000	N.D.				
Fluorene	700	N.D.				
4-Chlorophenyl phenyl ether	700	N.D.				
Diethylphthalate	1000	N.D.				
4-Nitroaniline	7000	N.D.				
4,6-Dinitro-2-methylphenol	7000	N.D.				
N-Nitrosodiphenylamine	700	N.D.				
Azobenzene	700	N.D.				
4-Bromophenyl phenyl ether	700	N.D.				

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

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10/19/94 Department of Environmental Conservation Laboratory
Method 8270 - Semivolatile Organics in Solids GJ

Lab Id: 11660 Report To: BRIAN WOODS Phone: 241-3888 Date Collected: 9/13/94
Location: V3-B5-0305 Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG SPLITS

Date Analyzed: 9/21/94 Over hold? No Dilution factor: 1 Date extracted: 9/16/9
Sample wt.: 11.1 g Percent moisture: 36

Parameter	Units are ug/kg dw PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
Hexachlorobenzene	700	N.D.				
Pentachlorophenol	3000	N.D.				
Phenanthrene	700	N.D.				
Anthracene	700	N.D.				
Di-n-butylphthalate	1000	N.D.				
Fluoranthene	700	N.D.				
Pyrene	700	N.D.				
Butyl benzyl phthalate	1000	N.D.				
Benzo[a]anthracene	700	N.D.				
Chrysene	700	N.D.				
3,3'-Dichlorobenzidine	7000	N.D.				
Bis(2-ethylhexyl)phthalate	1000	N.D.				
Benzo[b]fluoranthene	700	N.D.				
Benzo[k]fluoranthene	700	N.D.				
Di-n-octylphthalate	700	N.D.				
Benzo[a]pyrene	700	N.D.				
Indeno[1,2,3,cd]pyrene	700	N.D.				
Dibenz[a,h]anthracene	700	N.D.				
Benzo[g,h,i]perylene	700	N.D.				
C-3 Alkylbenzene isomers	700	N.D.				
C-4 Alkylbenzene isomers	700	2100				
1-Methylnaphthalene	700	2500				
Dimethylnaphthalene isomers	700	3100				
Trimethylnaphthalene isomers	700	980				

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

Fluorophenol	60%	Phenol-D6.	94%	Nitrobenzene-D5. . . .	74%
2-Fluorobiphenyl . . .	88%	2,3,6-Tribromophenol .	93%	4-Terphenyl-D14. . . .	105%

Notes: GC/MS also detected xylenes, and C3 alkyl substituted benzenes. Also large number of alkanes in the boiling range of decane and tetradecane.

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

11/02/94 Department of Environmental Conservation Laboratory NOV 8 2 1994
Method 8080 - PCB's/Pesticides in Solids SRL

Lab Id: 12042 Report To: B/Woods Phone: 241-3888 Date Collected: 9/10/94
Location: V3-B5-0305 Program: 59 7043 Chain of Custody? Yes

Notes: samples logged on by David Clemens after completion of S8270 test.

Date Analyzed: 10/24/94 Over hold? No Dilution factor: 1 Date extracted: 10/17/94
Sample wt.: 13.7 g Percent moisture: 11.5

Parameter	Units are ug/kg dw PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
Aldrin	2	N.D.				
α-BHC	2	N.D.				
β-BHC	2	N.D.				
δ-BHC	2	N.D.				
Lindane	2	N.D.				
Chlordane	10	N.D.				
4,4'-DDD	2	N.D.				
4,4'-DDE	2	N.D.				
4,4'-DDT	2	12				
Dieldrin	2	N.D.				
Endosulfan I	2	N.D.				
Endosulfan II	2	N.D.				
Endosulfan sulfate	2	N.D.				
Endrin	2	N.D.				
Endrin aldehyde	2	N.D.				
Heptachlor	2	N.D.				
Heptachlor epoxide	2	N.D.				
Methoxychlor	2	N.D.				
Toxaphene	40	N.D.				
PCB's	50	N.D.				

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

TMX Surrogate #1 . . . 75% DCB Surrogate #2 . . . 107%

Notes: DDT confirmed with GC/MS 10-24-94.

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

10/19/94 Department of Environmental Conservation Laboratory GJD
Analytical Results

Lab Id: 11660 Report To: BRIAN WOODS Phone: 241-3888 Date Collected: 9/13/94
Location: V3-B5-0305 Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG SPLITS

Test Name		Result	Units	Remark Code	Over Hold?	Rel. % Diff.	Spiked Dups ?	Recovery Percent
Aluminum - Solid		6,160.	mg/kg dw			24		98
Antimony - Solid	<	5.00	mg/kg dw					
Arsenic - Solid		2.60	mg/kg dw			14		
Barium - Solid		46.0	mg/kg dw			5		
Beryllium - Solid	<	.50	mg/kg dw					
Cadmium - Solid	<	5.00	mg/kg dw					
Calcium - Solid		601.	mg/kg dw			15		
Chromium - Solid	<	25.0	mg/kg dw					
Cobalt - Solid	<	25.0	mg/kg dw					
Copper - Solid	<	25.0	mg/kg dw					
Iron - Solid		10,500.	mg/kg dw			4		
Lead - Solid	<	25.0	mg/kg dw					
Magnesium - Solid		1,580.	mg/kg dw			11		102
Manganese - Solid		287.	mg/kg dw			12		
Mercury - Solid	<	.100	mg/kg dw					
Nickel - Solid	<	25.0	mg/kg dw					
Selenium - Solid	<	2.50	mg/kg dw					
Silver - Solid	<	.50	mg/kg dw					
Thallium - Solid	<	1.00	mg/kg dw					
Vanadium -Solid		8.00	mg/kg dw			0		
Zinc - Solid		37.0	mg/kg dw			3		

Remarks: E = Estimated Value
P = Present, not Quantitated
J = Value may be in Error
Q = Insufficient Quantity
M = Sample Matrix Problem
R = Results not Reported
N = Sample not Processed
W = Sample Warm on Arrival

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10/19/94 Department of Environmental Conservation Laboratory
Method 8240 - Volatile Organics in Solids GJD

Lab Id: 11636 Report To: BRIAN WOODS Phone: 241-3888 Date Collected: 9/10/94
Location: V4-BG-1921 Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG SPLITS

Date Analyzed: 9/20/94 Over hold? No
Heated Purge Sample wt.: 5.0 g Percent moisture: 20.4

Parameter	Units are ug/kg dw PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
Vinyl chloride	10	N.D.				
Chloromethane	10	N.D.				
Bromomethane	10	N.D.				
Chloroethane	10	N.D.				
Trichlorofluoromethane	10	N.D.				
Acetone	100	N.D.				
1,1-Dichloroethene	6	N.D.				
Carbon disulfide	100	N.D.				
Methylene chloride	6	N.D.				
Methyl-t-butylether (MTBE)	10	N.D.				
1,2-Dichloroethene	6	N.D.				
1,1-Dichloroethane	6	N.D.				
Vinyl acetate	60	N.D.				
2-Butanone	100	N.D.				
Chloroform	6	N.D.				
1,1,1-Trichloroethane	6	N.D.				
Carbon tetrachloride	6	N.D.				
Benzene	6	N.D.				
1,2-Dichloroethane	6	N.D.				
Trichloroethene	6	N.D.				
1,2-Dichloropropane	6	N.D.				
Bromodichloromethane	6	N.D.				
4-Methyl-2-pentanone	60	N.D.				
cis-1,2-Dichloropropene	6	N.D.				
Toluene	6	N.D.				
trans-1,3-Dichloropropene	6	N.D.				
1,1,2-Trichloroethane	6	N.D.				
2-Hexanone	60	N.D.				
Tetrachloroethene	6	N.D.				
Dibromochloromethane	6	N.D.				
Chlorobenzene	6	N.D.				
Ethylbenzene	6	N.D.				
Xylenes	6	N.D.				
Styrene	6	N.D.				
Bromoform	6	N.D.				
1,1,2,2-Tetrachloroethane	6	N.D.				
Total Volatile Hydrocarbons	100	N.D.				

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

1,2-Dichloroethane-D4 110% D8-Toluene . . . . . 106% 4-Bromofluorobenzene . 100%

Notes: Capillary column used with EPA approval.

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

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10/19/94 Department of Environmental Conservation Laboratory
Method 8270 - Semivolatile Organics in Solids GJD

Lab Id: 11636 Report To: BRIAN WOODS Phone: 241-3888 Date Collected: 9/10/94
Location: V4-BG-1921 Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG SPLITS

Date Analyzed: 9/20/94 Over hold? No Dilution factor: 1 Date extracted: 9/14/94
Sample wt.: 12.2 g Percent moisture: 19

Parameter	Units are ug/kg dw PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
N-Nitrosodimethylamine	500	N.D.				
Aniline	500	N.D.				
Phenol	500	N.D.				
Bis(2-chloroethyl)ether	500	N.D.				
2-Chlorophenol	1000	N.D.				
1,3-Dichlorobenzene	500	N.D.				
1,4-Dichlorobenzene	500	N.D.				
1,2-Dichlorobenzene	500	N.D.				
Benzylalcohol	1000	N.D.				
2-Methylphenol	500	N.D.				
Bis(2-chloroisopropyl)ether	500	N.D.				
Hexachloroethane	500	N.D.				
4-Methylphenol	500	N.D.				
N-Nitroso-di-n-propylamine	500	N.D.				
Nitrobenzene	500	N.D.				
Isophorone	500	N.D.				
2-Nitrophenol	1000	N.D.				
2,4-Dimethylphenol	500	N.D.				
Bis(2-chloroethoxy)methane	500	N.D.				
2,4-Dichlorophenol	1000	N.D.				
1,2,4-Trichlorobenzene	500	N.D.				
Naphthalene	500	N.D.				
Benzoic acid	5000	N.D.				
4-Chloroaniline	500	N.D.				
Hexachlorobutadiene	500	N.D.				
4-Chloro-3-methylphenol	1000	N.D.				
2-Methylnaphthalene	500	N.D.				
Hexachlorocyclopentadiene	500	N.D.				
2,4,6-Trichlorophenol	1000	N.D.				
2,4,5-Trichlorophenol	1000	N.D.				
2-Chloronaphthalene	500	N.D.				
2-Nitroaniline	2000	N.D.				
Acenaphthylene	500	N.D.				
Dimethylphthalate	1000	N.D.				
2,6-Dinitrotoluene	1000	N.D.				
Acenaphthene	500	N.D.				
3-Nitroaniline	5000	N.D.				
2,4-Dinitrophenol	5000	N.D.				
Dibenzofuran	500	N.D.				
2,4-Dinitrotoluene	1000	N.D.				
4-Nitrophenol	5000	N.D.				
Fluorene	500	N.D.				
4-Chlorophenyl phenyl ether	500	N.D.				
Diethylphthalate	1000	N.D.				
4-Nitroaniline	5000	N.D.				
4,6-Dinitro-2-methylphenol	5000	N.D.				
N-Nitrosodiphenylamine	500	N.D.				
Azobenzene	500	N.D.				
4-Bromophenyl phenyl ether	500	N.D.				

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

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10/19/94 Department of Environmental Conservation Laboratory
Method 8270 - Semivolatile Organics in Solids GJD

Lab Id: 11636 Report To: BRIAN WOODS Phone: 241-3888 Date Collected: 9/10/94
Location: V4-BG-1921 Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG SPLITS

Date Analyzed: 9/20/94 Over hold? No Dilution factor: 1 Date extracted: 9/14/94
Sample wt.: 12.2 g Percent moisture: 19

Parameter	Units are ug/kg dw PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
Hexachlorobenzene	500	N.D.				
Pentachlorophenol	2000	N.D.				
Phenanthrene	500	N.D.				
Anthracene	500	N.D.				
Di-n-butylphthalate	1000	N.D.				
Fluoranthene	500	N.D.				
Pyrene	500	N.D.				
Butyl benzyl phthalate	1000	N.D.				
Benzo[a]anthracene	500	N.D.				
Chrysene	500	N.D.				
3,3'-Dichlorobenzidine	5000	N.D.				
Bis(2-ethylhexyl)phthalate	1000	N.D.				
Benzo[b]fluoranthene	500	N.D.				
Benzo[k]fluoranthene	500	N.D.				
Di-n-octylphthalate	500	N.D.				
Benzo[a]pyrene	500	N.D.				
Indeno[1,2,3,cd]pyrene	500	N.D.				
Dibenz[a,h]anthracene	500	N.D.				
Benzo[g,h,i]perylene	500	N.D.				
C-3 Alkylbenzene isomers	500	N.D.				
C-4 Alkylbenzene isomers	500	N.D.				
1-Methylnaphthalene	500	N.D.				
Dimethylnaphthalene isomers	500	N.D.				
Trimethylnaphthalene isomers	500	N.D.				

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

Fluorophenol	43%	Phenol-D6.	75%	Nitrobenzene-D5. . . .	72%
2-Fluorobiphenyl . . .	78%	2,3,6-Tribromophenol .	96%	4-Terphenyl-D14. . . .	114%

Notes:

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

11/02/94 Department of Environmental Conservation Laboratory SRL
Method 8080 - PCB's/Pesticides in Solids

Lab Id: 12041 Report To: B/Woods Phone: 241-3888 Date Collected: 9/10/94
Location: V4-BG-1921 Program: 59 7043 Chain of Custody? Yes

Notes: samples logged on by David Clemens after completion of S8270 test.

Date Analyzed: 10/18/94 Over hold? No Dilution factor: 1 Date extracted: 10/14/94
Sample wt.: 10.3 g Percent moisture: 17.9

Parameter	Units are ug/kg dw PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
Aldrin	2	N.D.				
α-BHC	2	N.D.				
β-BHC	2	N.D.				
δ-BHC	2	N.D.				
Lindane	2	N.D.				
Chlordane	10	N.D.				
4,4'-DDD	2	N.D.				
4,4'-DDE	2	N.D.				
4,4'-DDT	2	N.D.				
Dieldrin	2	N.D.				
Endosulfan I	2	N.D.				
Endosulfan II	2	N.D.				
Endosulfan sulfate	2	N.D.				
Endrin	2	N.D.				
Endrin aldehyde	2	N.D.				
Heptachlor	2	N.D.				
Heptachlor epoxide	2	N.D.				
Methoxychlor	2	N.D.				
Toxaphene	60	N.D.				
PCB's	70	N.D.				

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

TMX Surrogate #1 . . . 66% DCB Surrogate #2 . . . 123%

Notes:

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

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10/19/94 Department of Environmental Conservation Laboratory
Analytical Results GJD

Lab Id: 11636 Report To: BRIAN WOODS Phone: 241-3888 Date Collected: 9/10/94
Location: V4-BG-1921 Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG SPLITS

Test Name		Result	Units	Remark Code	Over Hold?	Rel. % Diff.	Spiked Dups ?	Recovery Percent
Aluminum - Solid		4,760.	mg/kg dw			18		95
Antimony - Solid	<	5.00	mg/kg dw			10		91
Arsenic - Solid		2.80	mg/kg dw			1		87
Barium - Solid		9.00	mg/kg dw			2	Y	86
Beryllium - Solid	<	.50	mg/kg dw			7	Y	96
Cadmium - Solid	<	5.00	mg/kg dw			26	Y	97
Calcium - Solid		1,560.	mg/kg dw			2		
Chromium - Solid	<	25.0	mg/kg dw			2	Y	91
Cobalt - Solid	<	50.0	mg/kg dw			22	Y	100
Copper - Solid	<	25.0	mg/kg dw			23	Y	97
Iron - Solid		12,600.	mg/kg dw			3		
Lead - Solid	<	25.0	mg/kg dw			26	Y	98
Magnesium - Solid		2,870.	mg/kg dw			4		
Manganese - Solid		322.	mg/kg dw			10		105
Mercury - Solid	<	.100	mg/kg dw			4	Y	98
Nickel - Solid	<	25.0	mg/kg dw			20	Y	98
Selenium - Solid	<	2.50	mg/kg dw			1	Y	95
Silver - Solid	<	.50	mg/kg dw			4	Y	90
Thallium - Solid	<	1.00	mg/kg dw			14	Y	94
Vanadium -Solid		10.0	mg/kg dw			17		95
Zinc - Solid		31.0	mg/kg dw			9		101

Remarks: E = Estimated Value J = Value may be in Error M = Sample Matrix Problem N = Sample not Processed
P = Present, not Quantitated Q = Insufficient Quantity R = Results not Reported W = Sample Warm on Arrival

12/06/94 Department of Environmental Conservation Laboratory GJD
Method 8240 - Volatile Organics in Solids

Lab Id: 12266 Report To: BRIAN WOODS Phone: 241-3888 Date Collected: 10/28/94
Location: V4-D3-00.5 Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG

Date Analyzed: 11/08/94 Over hold? No
Heated Purge Sample wt.: 4.9 g Percent moisture: 12.5

Parameter	Units are ug/kg dw PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
Vinyl chloride	10	N.D.				
Chloromethane	10	N.D.				
Bromomethane	10	N.D.				
Chloroethane	10	N.D.				
Trichlorofluoromethane	10	N.D.				
Acetone	100	N.D.				
1,1-Dichloroethene	6	N.D.				
Carbon disulfide	100	N.D.				
Methylene chloride	6	N.D.				
Methyl-t-butylether (MTBE)	10	N.D.				
1,2-Dichloroethene	6	N.D.				
1,1-Dichloroethane	6	N.D.				
Vinyl acetate	60	N.D.				
2-Butanone	100	N.D.				
Chloroform	6	N.D.				
1,1,1-Trichloroethane	6	N.D.				
Carbon tetrachloride	6	N.D.				
Benzene	6	N.D.				
1,2-Dichloroethane	6	N.D.				
Trichloroethene	6	N.D.				
1,2-Dichloropropane	6	N.D.				
Bromodichloromethane	6	N.D.				
4-Methyl-2-pentanone	60	N.D.				
cis-1,2-Dichloropropene	6	N.D.				
Toluene	6	N.D.				
trans-1,3-Dichloropropene	6	N.D.				
1,1,2-Trichloroethane	6	N.D.				
2-Hexanone	60	N.D.				
Tetrachloroethene	6	N.D.				
Dibromochloromethane	6	N.D.				
Chlorobenzene	6	N.D.				
Ethylbenzene	6	N.D.				
Xylenes	6	N.D.				
Styrene	6	N.D.				
Bromoform	6	N.D.				
1,1,2,2-Tetrachloroethane	6	N.D.				
Total Volatile Hydrocarbons	100	N.D.				

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

1,2-Dichloroethane-D4 96% D8-Toluene . . . . . 116% 4-Bromofluorobenzene . 82

Notes: Capillary column used with EPA approval. Sample contained a compound tentatively identified as methyl naphthalene.

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

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12/06/94 Department of Environmental Conservation Laboratory
Method 8270 - Semivolatile Organics in Solids GJD

Lab Id: 12266 Report To: BRIAN WOODS Phone: 241-3888 Date Collected: 10/28/94
Location: V4-D3-00.5 Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG

Date Analyzed: 11/29/94 Over hold? No Dilution: 1 Date extracted: 10/31/94
Sample wt.: 13.9 g Percent moisture: 13

Parameter	Units are ug/kg dw PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
N-Nitrosodimethylamine	400	N.D.				
Aniline	400	N.D.				
Phenol	400	N.D.				
Bis(2-chloroethyl)ether	400	N.D.				
2-Chlorophenol	800	N.D.				
1,3-Dichlorobenzene	400	N.D.				
1,4-Dichlorobenzene	400	N.D.				
1,2-Dichlorobenzene	400	N.D.				
Benzylalcohol	800	N.D.				
2-Methylphenol	400	N.D.				
Bis(2-chloroisopropyl)ether	400	N.D.				
Hexachloroethane	400	N.D.				
4-Methylphenol	400	N.D.				
N-Nitroso-di-n-propylamine	400	N.D.				
Nitrobenzene	400	N.D.				
Isophorone	400	N.D.				
2-Nitrophenol	800	N.D.				
2,4-Dimethylphenol	400	N.D.				
Bis(2-chloroethoxy)methane	400	N.D.				
2,4-Dichlorophenol	800	N.D.				
1,2,4-Trichlorobenzene	400	N.D.				
Naphthalene	400	N.D.				
Benzoic acid	4000	N.D.				
4-Chloroaniline	400	N.D.				
Hexachlorobutadiene	400	N.D.				
4-Chloro-3-methylphenol	800	N.D.				
2-Methylnaphthalene	400	N.D.				
Hexachlorocyclopentadiene	400	N.D.				
2,4,6-Trichlorophenol	800	N.D.				
2,4,5-Trichlorophenol	800	N.D.				
2-Chloronaphthalene	400	N.D.				
2-Nitroaniline	2000	N.D.				
Acenaphthylene	400	N.D.				
Dimethylphthalate	800	N.D.				
2,6-Dinitrotoluene	800	N.D.				
Acenaphthene	400	N.D.				
3-Nitroaniline	4000	N.D.				
2,4-Dinitrophenol	4000	N.D.				
Dibenzofuran	400	N.D.				
2,4-Dinitrotoluene	800	N.D.				
4-Nitrophenol	4000	N.D.				
Fluorene	400	N.D.				
4-Chlorophenyl phenyl ether	400	N.D.				
Diethylphthalate	800	N.D.				
4-Nitroaniline	4000	N.D.				
4,6-Dinitro-2-methylphenol	4000	N.D.				
N-Nitrosodiphenylamine	400	N.D.				
Azobenzene	400	N.D.				
4-Bromophenyl phenyl ether	400	N.D.				

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

12/06/94 Department of Environmental Conservation Laboratory GJD
Method 8270 - Semivolatile Organics in Solids

Lab Id: 12266 Report To: BRIAN WOODS Phone: 241-3888 Date Collected: 10/28/94
Location: V4-D3-00.5 Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG

Date Analyzed: 11/29/94 Over hold? No Dilution: 1 Date extracted: 10/31/94
Sample wt.: 13.9 g Percent moisture: 13

Parameter	Units are ug/kg dw PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
Hexachlorobenzene	400	N.D.				
Pentachlorophenol	2000	N.D.				
Phenanthrene	400	N.D.				
Anthracene	400	N.D.				
Di-n-butylphthalate	800	N.D.				
Fluoranthene	400	N.D.				
Pyrene	400	N.D.				
Butyl benzyl phthalate	800	N.D.				
Benzo[a]anthracene	400	N.D.				
Chrysene	400	N.D.				
3,3'-Dichlorobenzidine	4000	N.D.				
Bis(2-ethylhexyl)phthalate	800	N.D.				
Benzo[b]fluoranthene	400	N.D.				
Benzo[k]fluoranthene	400	N.D.				
Di-n-octylphthalate	400	N.D.				
Benzo[a]pyrene	400	N.D.				
Indeno[1,2,3,cd]pyrene	400	N.D.				
Dibenz[a,h]anthracene	400	N.D.				
Benzo[g,h,i]perylene	400	N.D.				
C-3 Alkylbenzene isomers	400	N.D.				
C-4 Alkylbenzene isomers	400	N.D.				
1-Methylnaphthalene	400	N.D.				
Dimethylnaphthalene isomers	400	N.D.				
Trimethylnaphthalene isomers	400	N.D.				

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

Fluorophenol	47%	Phenol-D6.	54%	Nitrobenzene-D5. . . .	59
2-Fluorobiphenyl	56%	2,3,6-Tribromophenol .	78%	4-Terphenyl-D14. . . .	46%

Notes: Detected several unknown compounds.

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

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12/06/94 Department of Environmental Conservation Laboratory
Method 8080 - PCB's/Pesticides in Solids GJD

Lab Id: 12266 Report To: BRIAN WOODS Phone: 241-3888 Date Collected: 10/28/94
Location: V4-D3-00.5 Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG

Date Analyzed: 11/30/94 Over hold? No Dilution: 2 Date extracted: 11/15/94
Sample wt.: 12.0 g Percent moisture: 13

Parameter	Units are ug/kg dw PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
Aldrin	4	N.D.		20	Y	50
α-BHC	4	N.D.				
β-BHC	4	N.D.				
δ-BHC	4	N.D.				
Lindane	4	N.D.		17	Y	54
Chlordane	20	N.D.				
4,4'-DDD	4	N.D.				
4,4'-DDE	4	N.D.				
4,4'-DDT	4	N.D.		18	Y	66
Dieldrin	4	N.D.		19	Y	59
Endosulfan I	4	N.D.				
Endosulfan II	4	N.D.				
Endosulfan sulfate	4	N.D.				
Endrin	4	N.D.		23	Y	76
Endrin aldehyde	4	N.D.				
Heptachlor	4	N.D.		26	Y	67
Heptachlor epoxide	4	N.D.				
Methoxychlor	4	N.D.				
Toxaphene	100	N.D.				
PCB's	100	N.D.				

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

TMX Surrogate #1 . . . 55% DCB Surrogate #2 . . . 81%

Notes:

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

12/06/94 Department of Environmental Conservation Laboratory GJD
Analytical Results

Lab Id: 12266 Report To: BRIAN WOODS Phone: 241-3888 Date Collected: 10/28/94
Location: V4-D3-00.5 Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG

Test Name		Result	Units	Remark Code	Over Hold?	Rel. % Diff.	Spiked Dups ?	Recovery Percent
Aluminum - Solid		5,010.	mg/kg dw			8		
Antimony - Solid	<	5.00	mg/kg dw			1		86
Arsenic - Solid		3.60	mg/kg dw			8		
Barium - Solid		9.30	mg/kg dw			7		96
Beryllium - Solid	<	.05	mg/kg dw			14	Y	96
Cadmium - Solid	<	5.00	mg/kg dw			9	Y	97
Calcium - Solid		1,480.	mg/kg dw			22		
Chromium - Solid	<	25.0	mg/kg dw			9	Y	90
Cobalt - Solid	<	25.0	mg/kg dw			9	Y	96
Copper - Solid	<	25.0	mg/kg dw			10	Y	97
Iron - Solid		10,200.	mg/kg dw			5		
Lead - Solid	<	25.0	mg/kg dw			4	Y	97
Magnesium - Solid		2,680.	mg/kg dw			5		
Manganese - Solid		233.	mg/kg dw			7		
Mercury - Solid	<	.100	mg/kg dw			10	Y	99
Nickel - Solid	<	25.0	mg/kg dw			7	Y	100
Selenium - Solid	<	2.50	mg/kg dw			0	Y	70
Silver - Solid	<	.50	mg/kg dw			0	Y	98
Thallium - Solid	<	1.00	mg/kg dw			3		
Vanadium -Solid		7.00	mg/kg dw			15		96
Zinc - Solid		85.0	mg/kg dw					

Remarks: E = Estimated Value J = Value may be in Error M = Sample Matrix Problem N = Sample not Processed
P = Present, not Quantitated Q = Insufficient Quantity R = Results not Reported W = Sample Warm on Arrival

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12/06/94 Department of Environmental Conservation Laboratory GJD
Method 8240 - Volatile Organics in Water

Lab Id: 12263 Report To: BRIAN WOODS Phone: 241-3888 Date Collected: 10/27/94
Location: V4-MW2-1094 Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG

Date Analyzed: 11/09/94 Over hold? No Dilution: 5

Parameter	Units are ug/l PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
Vinyl chloride	50	N.D.				
Chloromethane	50	N.D.				
Bromomethane	50	N.D.				
Chloroethane	50	N.D.				
Trichlorofluoromethane	50	N.D.				
Acetone	500	N.D.				
1,1-Dichloroethene	25	N.D.				
Carbon disulfide	500	N.D.				
Methylene chloride	25	N.D.				
Methyl-t-butylether (MTBE)	25	N.D.				
1,2-Dichloroethene	25	N.D.				
1,1-Dichloroethane	25	N.D.				
Vinyl acetate	250	N.D.				
2-Butanone	500	N.D.				
Chloroform	25	N.D.				
1,1,1-Trichloroethane	25	N.D.				
Carbon tetrachloride	25	N.D.				
Benzene	25	225				
1,2-Dichloroethane	25	N.D.				
Trichloroethene	25	N.D.				
1,2-Dichloropropane	25	N.D.				
Bromodichloromethane	25	N.D.				
4-Methyl-2-pentanone	250	N.D.				
cis-1,2-Dichloropropene	25	N.D.				
Toluene	25	40				
trans-1,3-Dichloropropene	25	N.D.				
1,1,2-Trichloroethane	25	N.D.				
2-Hexanone	250	N.D.				
Tetrachloroethene	25	N.D.				
Dibromochloromethane	25	N.D.				
Chlorobenzene	25	N.D.				
Ethylbenzene	25	443				
Xylenes	25	1340				
Styrene	25	N.D.				
Bromoform	25	N.D.				
1,1,2,2-Tetrachloroethane	25	N.D.				
Total Volatile Hydrocarbons	500	22600	E			

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

1,2-Dichloroethane-D4 102% D8-Toluene . . . . . 84% 4-Bromofluorobenzene . 94%

Notes: Capillary column used with EPA approval. Sample contains compounds tentatively identified as C3 and C4 alkyl benzenes and naphthalene.

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

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12/06/94 Department of Environmental Conservation Laboratory GJD
Method 8270 - Semivolatile Organics in Water

Lab Id: 12263 Report To: BRIAN WOODS Phone: 241-3888 Date Collected: 10/27/94
Location: V4-MW2-1094 Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG

Date Analyzed: 11/29/94 Over hold? No Dilution: 1 Date extracted: 11/10/94

Parameter	Units are ug/l PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
N-Nitrosodimethylamine	5	N.D.				
Aniline	5	N.D.				
Phenol	5	N.D.				
Bis(2-chloroethyl)ether	5	N.D.				
2-Chlorophenol	10	N.D.				
1,3-Dichlorobenzene	5	N.D.				
1,4-Dichlorobenzene	5	N.D.				
1,2-Dichlorobenzene	5	N.D.				
Benzylalcohol	10	N.D.				
2-Methylphenol	5	N.D.				
Bis(2-chloroisopropyl)ether	5	N.D.				
Hexachloroethane	5	N.D.				
4-Methylphenol	5	N.D.				
N-Nitroso-di-n-propylamine	5	N.D.				
Nitrobenzene	5	N.D.				
Isophorone	5	N.D.				
2-Nitrophenol	10	N.D.				
2,4-Dimethylphenol	5	N.D.				
Bis(2-chloroethoxy)methane	5	N.D.				
2,4-Dichlorophenol	10	N.D.				
1,2,4-Trichlorobenzene	5	N.D.				
Naphthalene	5	74				
Benzoic acid	50	N.D.				
4-Chloroaniline	5	N.D.				
Hexachlorobutadiene	5	N.D.				
4-Chloro-3-methylphenol	10	N.D.				
2-Methylnaphthalene	5	28				
Hexachlorocyclopentadiene	5	N.D.				
2,4,6-Trichlorophenol	10	N.D.				
2,4,5-Trichlorophenol	10	N.D.				
2-Chloronaphthalene	5	N.D.				
2-Nitroaniline	20	N.D.				
Acenaphthylene	5	N.D.				
Dimethylphthalate	10	N.D.				
2,6-Dinitrotoluene	10	N.D.				
Acenaphthene	5	N.D.				
3-Nitroaniline	50	N.D.				
2,4-Dinitrophenol	50	N.D.				
Dibenzofuran	5	N.D.				
2,4-Dinitrotoluene	10	N.D.				
4-Nitrophenol	50	N.D.				
Fluorene	5	N.D.				
4-Chlorophenyl phenyl ether	5	N.D.				
Diethylphthalate	10	N.D.				
4-Nitroaniline	50	N.D.				
4,6-Dinitro-2-methylphenol	50	N.D.				
N-Nitrosodiphenylamine	5	N.D.				
Azobenzene	5	N.D.				
4-Bromophenyl phenyl ether	5	N.D.				

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

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12/06/94 Department of Environmental Conservation Laboratory
Method 8270 - Semivolatile Organics in Water GJD

Lab Id: 12263 Report To: BRIAN WOODS Phone: 241-3888 Date Collected: 10/27/94
Location: V4-MW2-1094 Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG

Date Analyzed: 11/29/94 Over hold? No Dilution: 1 Date extracted: 11/10/94

Parameter	Units are ug/l PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
Hexachlorobenzene	5	N.D.				
Pentachlorophenol	20	N.D.				
Phenanthrene	5	N.D.				
Anthracene	5	N.D.				
Di-n-butylphthalate	10	N.D.				
Fluoranthene	5	N.D.				
Pyrene	5	N.D.				
Butyl benzyl phthalate	10	N.D.				
Benzo[a]anthracene	5	N.D.				
Chrysene	5	N.D.				
3,3'-Dichlorobenzidine	50	N.D.				
Bis(2-ethylhexyl)phthalate	10	N.D.				
Benzo[b]fluoranthene	5	N.D.				
Benzo[k]fluoranthene	5	N.D.				
Di-n-octylphthalate	5	N.D.				
Benzo[a]pyrene	5	N.D.				
Indeno[1,2,3,cd]pyrene	5	N.D.				
Dibenz[a,h]anthracene	5	N.D.				
Benzo[g,h,i]perylene	5	N.D.				
C-3 Alkylbenzene isomers	5	440				
C-4 Alkylbenzene isomers	5	140				
1-Methylnaphthalene	5	22				
Dimethylnaphthalene isomers	5	13				
Trimethylnaphthalene isomers	5	5				

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

Fluorophenol	0%	Phenol-D6.	0%	Nitrobenzene-D5. . . .	66%
2-Fluorobiphenyl . . .	78%	2,3,6-Tribromophenol .	21%	4-Terphenyl-D14. . . .	81%

Notes: Poor recovery of phenol surrogate.

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

12/06/94 Department of Environmental Conservation Laboratory GJD
Method 8080 - PCB's/Pesticides in Water

Lab Id: 12263 Report To: BRIAN WOODS Phone: 241-3888 Date Collected: 10/27/94
Location: V4-MW2-1094 Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG

Date Analyzed: 11/30/94 Over hold? No Dilution: 1 Date extracted: 11/14/94

Parameter	Units are ug/l PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
Aldrin	.02	N.D.		0	Y	43
α-BHC	.02	N.D.				
β-BHC	.02	N.D.				
δ-BHC	.02	N.D.				
Lindane	.02	N.D.		2	Y	61
Chlordane	.12	N.D.				
4,4'-DDD	.02	N.D.				
4,4'-DDE	.02	N.D.				
4,4'-DDT	.02	N.D.		8	Y	61
Dieldrin	.02	N.D.		2	Y	64
Endosulfan I	.02	N.D.				
Endosulfan II	.02	N.D.				
Endosulfan sulfate	.02	N.D.				
Endrin	.02	N.D.		3	Y	80
Endrin aldehyde	.02	N.D.				
Heptachlor	.02	N.D.		2	Y	85
Heptachlor epoxide	.02	N.D.				
Methoxychlor	.02	N.D.				
Toxaphene	.5	N.D.				
PCB's	.6	N.D.				

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

TMX Surrogate #1 . . . 28% DCB Surrogate #2 . . . 36%

Notes: Sample extract cleaned on florisil 11-29-94. Note: Heptachlor epoxide not detectable due to unknown interference.

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

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Department of Environmental Conservation Laboratory
Analytical Results

GJD

Lab Id: 12263 Report To: BRIAN WOODS
Location: V4-MW2-1094

Phone: 241-3888 Date Collected: 10/27/94
Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG

Test Name		Result	Units	Remark Code	Over Hold?	Rel. % Diff.	Spiked Dups ?	Recovery Percent
						3		105
Aluminum - Water		5,010.	ug/l					
Antimony - Water	<	10.0	ug/l					
Arsenic - Water		95.0	ug/l					
Barium - Water		87.0	ug/l					
Beryllium - Water	<	1.0	ug/l					
Cadmium - Water	<	2.0	ug/l					
Calcium - Water		106.	mg/l					
Chromium - Water		11.0	ug/l					
Cobalt - Water		34.0	ug/l					
Copper - Water	<	50.0	ug/l					
Iron - Water		70,700.	ug/l					
Lead - Water		15.0	ug/l					
Magnesium - Water		17.4	mg/l					
Manganese - Water		5,770.	ug/l					
Mercury - Water	<	.2	ug/l					
Nickel - Water	<	50.0	ug/l					
Selenium - Water	<	5.0	ug/l					
Silver - Water	<	5.0	ug/l					
Thallium - Water	<	2.0	ug/l					
Vanadium - Water	<	10.0	ug/l					
Zinc - Water	<	50.0	ug/l					

Remarks: E = Estimated Value
P = Present, not Quantitated
J = Value may be in Error
Q = Insufficient Quantity
M = Sample Matrix Problem
R = Results not Reported
N = Sample not Processed
W = Sample Warm on Arrival

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11/22/94 Department of Environmental Conservation Laboratory
Analytical Results GJD

Lab Id: 12264 Report To: BRIAN WOODS Phone: 241-3888 Date Collected: 10/27/94
Location: V4-MW2-1094-F Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG

Test Name		Result	Units	Remark Code	Over Hold?	Rel. % Diff.	Spiked Recovery Dups ? Percent
Aluminum - Water		12.0	ug/l				
Antimony - Water	<	10.0	ug/l				
Arsenic - Water		69.0	ug/l				
Barium - Water		71.0	ug/l				
Beryllium - Water	<	1.0	ug/l				
Cadmium - Water	<	2.0	ug/l				
Calcium - Water		103.	mg/l				
Chromium - Water	<	10.0	ug/l				
Cobalt - Water		29.0	ug/l				
Copper - Water	<	50.0	ug/l				
Iron - Water		43,000.	ug/l				
Lead - Water	<	5.0	ug/l				
Magnesium - Water		15.4	mg/l				
Manganese - Water		5,340.	ug/l				
Mercury - Water	<	.2	ug/l				
Nickel - Water	<	50.0	ug/l				
Selenium - Water	<	5.0	ug/l				
Silver - Water	<	5.0	ug/l				
Thallium - Water	<	2.0	ug/l				
Vanadium - Water	<	10.0	ug/l				
Zinc - Water	<	50.0	ug/l				

Remarks: E = Estimated Value
P = Present, not Quantitated
J = Value may be in Error
Q = Insufficient Quantity
M = Sample Matrix Problem
R = Results not Reported
N = Sample not Processed
W = Sample Warm on Arrival

12/06/94 Department of Environmental Conservation Laboratory GJD
Method 8240 - Volatile Organics in Water

Lab Id: 12265 Report To: BRIAN WOODS Phone: 241-3888 Date Collected: 10/28/94
Location: V4-SW3-1094 Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG

Date Analyzed: 11/09/94 Over hold? No Dilution: 1

Parameter	Units are ug/l PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
Vinyl chloride	10	N.D.				
Chloromethane	10	N.D.				
Bromomethane	10	N.D.				
Chloroethane	10	N.D.				
Trichlorofluoromethane	10	N.D.				
Acetone	100	285	J			
1,1-Dichloroethene	5	N.D.				
Carbon disulfide	100	N.D.				
Methylene chloride	5	N.D.				
Methyl-t-butylether (MTBE)	5	N.D.				
1,2-Dichloroethene	5	N.D.				
1,1-Dichloroethane	5	N.D.				
Vinyl acetate	50	N.D.				
2-Butanone	100	N.D.				
Chloroform	5	N.D.				
1,1,1-Trichloroethane	5	N.D.				
Carbon tetrachloride	5	N.D.				
Benzene	5	N.D.				
1,2-Dichloroethane	5	N.D.				
Trichloroethene	5	N.D.				
1,2-Dichloropropane	5	N.D.				
Bromodichloromethane	5	N.D.				
4-Methyl-2-pentanone	50	N.D.				
cis-1,2-Dichloropropene	5	N.D.				
Toluene	5	N.D.				
trans-1,3-Dichloropropene	5	N.D.				
1,1,2-Trichloroethane	5	N.D.				
2-Hexanone	50	N.D.				
Tetrachloroethene	5	N.D.				
Dibromochloromethane	5	N.D.				
Chlorobenzene	5	N.D.				
Ethylbenzene	5	N.D.				
Xylenes	5	N.D.				
Styrene	5	N.D.				
Bromoform	5	N.D.				
1,1,2,2-Tetrachloroethane	5	N.D.				
Total Volatile Hydrocarbons	100	3320	E			

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

1,2-Dichloroethane-D4 106% D8-Toluene . . . . . 92% 4-Bromofluorobenzene . 92%

Notes: Capillary column used with EPA approval. Sample contains compounds tentatively identified as C3 and C4 alkyl benzenes.

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

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12/06/94 Department of Environmental Conservation Laboratory GJD
Method 8270 - Semivolatile Organics in Water

Lab Id: 12265 Report To: BRIAN WOODS Phone: 241-3888 Date Collected: 10/28/94
Location: V4-SW3-1094 Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG

Date Analyzed: 11/29/94 Over hold? No Dilution: 1 Date extracted: 11/10/94

Parameter	Units are ug/l PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
N-Nitrosodimethylamine	5	N.D.				
Aniline	5	N.D.				
Phenol	5	N.D.		8	Y	37
Bis(2-chloroethyl)ether	5	N.D.				
2-Chlorophenol	10	N.D.		16	Y	63
1,3-Dichlorobenzene	5	N.D.				
1,4-Dichlorobenzene	5	N.D.		16	Y	67
1,2-Dichlorobenzene	5	N.D.				
Benzylalcohol	10	N.D.				
2-Methylphenol	5	N.D.				
Bis(2-chloroisopropyl)ether	5	N.D.				
Hexachloroethane	5	N.D.				
4-Methylphenol	5	N.D.				
N-Nitroso-di-n-propylamine	5	N.D.		11	Y	70
Nitrobenzene	5	N.D.				
Isophorone	5	N.D.				
2-Nitrophenol	10	N.D.				
2,4-Dimethylphenol	5	N.D.				
Bis(2-chloroethoxy)methane	5	N.D.				
2,4-Dichlorophenol	10	N.D.				
1,2,4-Trichlorobenzene	5	N.D.		15	Y	62
Naphthalene	5	N.D.				
Benzoic acid	50	N.D.				
4-Chloroaniline	5	N.D.				
Hexachlorobutadiene	5	N.D.				
4-Chloro-3-methylphenol	10	N.D.		12	Y	82
2-Methylnaphthalene	5	N.D.				
Hexachlorocyclopentadiene	5	N.D.				
2,4,6-Trichlorophenol	10	N.D.				
2,4,5-Trichlorophenol	10	N.D.				
2-Chloronaphthalene	5	N.D.				
2-Nitroaniline	20	N.D.				
Acenaphthylene	5	N.D.				
Dimethylphthalate	10	N.D.				
2,6-Dinitrotoluene	10	N.D.				
Acenaphthene	5	N.D.		0	Y	69
3-Nitroaniline	50	N.D.				
2,4-Dinitrophenol	50	N.D.				
Dibenzofuran	5	N.D.				
2,4-Dinitrotoluene	10	N.D.		17	Y	65
4-Nitrophenol	50	N.D.		34	Y	35
Fluorene	5	N.D.				
4-Chlorophenyl phenyl ether	5	N.D.				
Diethylphthalate	10	N.D.				
4-Nitroaniline	50	N.D.				
4,6-Dinitro-2-methylphenol	50	N.D.				
N-Nitrosodiphenylamine	5	N.D.				
Azobenzene	5	N.D.				
4-Bromophenyl phenyl ether	5	N.D.				

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

DEC 0 7 1994

12/06/94 Department of Environmental Conservation Laboratory
Method 8270 - Semivolatile Organics in Water GJD

Lab Id: 12265 Report To: BRIAN WOODS Phone: 241-3888 Date Collected: 10/28/94
Location: V4-SW3-1094 Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG

Date Analyzed: 11/29/94 Over hold? No Dilution: 1 Date extracted: 11/10/94

Parameter	Units are ug/l PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
Hexachlorobenzene	5	N.D.				
Pentachlorophenol	20	N.D.		65	Y	83
Phenanthrene	5	N.D.				
Anthracene	5	N.D.				
Di-n-butylphthalate	10	N.D.				
Fluoranthene	5	N.D.				
Pyrene	5	N.D.		10	Y	72
Butyl benzyl phthalate	10	N.D.				
Benzo[a]anthracene	5	N.D.				
Chrysene	5	N.D.				
3,3'-Dichlorobenzidine	50	N.D.				
Bis(2-ethylhexyl)phthalate	10	N.D.				
Benzo[b]fluoranthene	5	N.D.				
Benzo[k]fluoranthene	5	N.D.				
Di-n-octylphthalate	5	N.D.				
Benzo[a]pyrene	5	N.D.				
Indeno[1,2,3,cd]pyrene	5	N.D.				
Dibenz[a,h]anthracene	5	N.D.				
Benzo[g,h,i]perylene	5	N.D.				
C-3 Alkylbenzene isomers	5	N.D.				
C-4 Alkylbenzene isomers	5	N.D.				
1-Methylnaphthalene	5	N.D.				
Dimethylnaphthalene isomers	5	N.D.				
Trimethylnaphthalene isomers	5	N.D.				

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

Fluorophenol	45%	Phenol-D6.	24%	Nitrobenzene-D5. . . .	64%
2-Fluorobiphenyl . . .	78%	2,3,6-Tribromophenol .	109%	4-Terphenyl-D14. . . .	69%

Notes: Detected compounds identified as terpineol and 2-(1-phenylethoxyl)-ethanol CAS#4799-66-0.

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

12/06/94 Department of Environmental Conservation Laboratory
Method 8080 - PCB's/Pesticides in Water GJD

Lab Id: 12265 Report To: BRIAN WOODS Phone: 241-3888 Date Collected: 10/28/94
Location: V4-SW3-1094 Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG

Date Analyzed: 11/30/94 Over hold? No Dilution: 1 Date extracted: 11/14/94

Parameter	Units are ug/l PQL	Result	Remark Code	Rel % Diff.	Spiked Dups ?	Percent Recovery
Aldrin	.02	N.D.				
α-BHC	.02	N.D.				
β-BHC	.02	N.D.				
δ-BHC	.02	N.D.				
Lindane	.02	N.D.				
Chlordane	.12	N.D.				
4,4'-DDD	.02	N.D.				
4,4'-DDE	.02	N.D.				
4,4'-DDT	.02	N.D.				
Dieldrin	.02	N.D.				
Endosulfan I	.02	N.D.				
Endosulfan II	.02	N.D.				
Endosulfan sulfate	.02	N.D.				
Endrin	.02	N.D.				
Endrin aldehyde	.02	N.D.				
Heptachlor	.02	N.D.				
Heptachlor epoxide	.02	N.D.				
Methoxychlor	.02	N.D.				
Toxaphene	.5	N.D.				
PCB's	.6	N.D.				

Surrogate Percent Recoveries (S=Surrogate recovery out of range)

TMX Surrogate #1 . . . 30% DCB Surrogate #2 . . . 14%

Notes: Poor surrogate recovery. Sample extract cleaned on florisil 11-29-94.

Remarks: E=Estimated Value J=Value may be in Error O=Value outside Standard Curve

12/06/94

Department of Environmental Conservation Laboratory
Analytical Results

GJD

Lab Id: 12265 Report To: BRIAN WOODS
Location: V4-SW3-1094

Phone: 241-3888 Date Collected: 10/28/94
Program: 59 7043 Chain of Custody? Yes

Notes: VT ANG

Test Name		Result	Units	Remark Code	Over Hold?	Rel. % Diff.	Spiked Dups ?	Recovery Percent
Aluminum - Water		120.	ug/l					
Antimony - Water	<	10.0	ug/l					
Arsenic - Water	<	5.0	ug/l					
Barium - Water		19.0	ug/l					
Beryllium - Water		2.0	ug/l					
Cadmium - Water	<	2.0	ug/l					
Calcium - Water		15.1	mg/l					
Chromium - Water	<	10.0	ug/l					
Cobalt - Water	<	25.0	ug/l					
Copper - Water	<	50.0	ug/l					
Iron - Water		1,200.	ug/l					
Lead - Water		11.0	ug/l					
Magnesium - Water		1.27	mg/l					
Manganese - Water		94.5	ug/l					
Mercury - Water	<	.2	ug/l					
Nickel - Water	<	50.0	ug/l					
Selenium - Water	<	5.0	ug/l					
Silver - Water	<	5.0	ug/l					
Thallium - Water	<	2.0	ug/l					
Vanadium - Water	<	10.0	ug/l					
Zinc - Water		2,140.	ug/l					

Remarks: E = Estimated Value
P = Present, not Quantitated
J = Value may be in Error
Q = Insufficient Quantity
M = Sample Matrix Problem
R = Results not Reported
N = Sample not Processed
W = Sample Warm on Arrival

State of Vermont Department of Environmental Conservation
R. A. LaRosa Environmental Laboratory

Page 1 of 1

CHAIN OF CUSTODY RECORD Refer to Earth Tech COC # V-091294-1

Project Name/Number: VTANG SI Site 4 931802-08	Sampler(s) Signature: Greg Maynard	Laboratory: Waterbury

Samples sealed at collection: Y or N — Initial: GM

Seals broken and remade for addition of preservation: Y or (N) — Initial: GM

Samples sealed on receipt by Laboratory: Y or N — Initial: _____

Sample Location	Collection Date	Collection Time	Comp/Grab	DESCRIPTION AND NUMBER OF CONTAINERS: VOCs 8010/8020 1 Encore sampler	SVOCs 3540C TPH 8015 Mod 1 Amber glass 8 oz Gm 9/12/94							TOTAL #	REMARKS
V4-BG-1921	9/10/94	0950	SOIL	1	1							2	Sample from marked ends of liners

Gm 9/12/94

Relinquished by: Earth Tech 1708 Greg Maynard (Signature) Greg Maynard	9/12/94 (date/time)	Relinquished by: (Signature)	(date/time)	Relinquished by: (Signature)	(date/time)
Received by: (Signature)	9/12/94 (date/time)	Received by: (Signature)	(date/time)	Received at Laboratory by: (Signature)	(date/time)
Remarks:		Remarks:		Remarks:	

State of Vermont Department of Environmental Conservation
R. A. LaRosa Environmental Laboratory

CHAIN OF CUSTODY RECORD

Project Name/Number: VTANG 931802-08	Sampler(s) Signature: Greg Maynor	Laboratory: VT HMMD

Samples sealed at collection: (Y) or N — Initial: GM

Seals broken and remade for addition of preservation: Y or (N) — Initial: GM

DESCRIPTION AND NUMBER OF CONTAINERS

Samples sealed on receipt by Laboratory: Y or N — Initial:

Sample Location	Collection Date	Collection Time	Comp/ Grab	VOCs 8010/8020 6" steel sleeve	SVOCs 3/90 TAL metals 6" steel sleeve							TOTAL #	REMARKS
Site 3 SB-3													
V3-BS-0305	9/13/94	0807	Soil Grab	1	1							2	split of V3-BS-0305 on COC # V-091394-1
													Please collect sample from marked end of sleeve (marked with an "X")

Relinquished by:	Received by:	Remarks:
Earth Tech 0750 9/15/94 Greg Maynor (Signature) ~~9/15/94~~ GM 9/15/94 (date/time)	Timothy J. Cropley (Signature) 0750 9/15/94 (date/time)	
Relinquished by: (Signature) (date/time)	Received by: (Signature) (date/time)	Remarks:
Relinquished by: (Signature) (date/time)	Received at Laboratory by: (Signature) (date/time)	Remarks:

State of Vermont Department of Environmental Conservation
R. A. LaRosa Environmental Laboratory

CHAIN OF CUSTODY RECORD

Project Name/Number: VTANG · 931802-08

Sampler(s) Signature: Greg Maynor

Laboratory: VT HMMD

Samples sealed at collection: (Y) or N — Initial: Gm

Seals broken and remade for addition of preservation: Y or (N) — Initial: GM

Sample Location	Collection Date	Collection Time	Comp/ Grab	40 ml. cl. s. w/HCl VOCs 8010/8020	1 qal. am b. gl. SVOCs clp 10/92	500 mL pl. w/HNO3 TOTAL TAL metals	500 ml pl. w/HNO3 Dissolved TAL metals	6" stainless steel liner VOCs 8010/8020	6" stainless steel liner SVOCs CLP 3/90, Target TAL metals 10/28/94				TOTAL #	REMARKS
V4-MW2-1094	10/27/94	1648	GW Grab	2	1	2	~~2~~ GW 10/27/94						5	split of V4-MW2-1094 from Site 4 MW2, COC # 102194-1
V4-MW2-1094-F	"	"	"				2						2	" (filtered)
V4-SW3-1094	10/28/94	1345	Grab GW	2	1	2							5	
V4-D3-00.5	10/28/94	1520	Grab surf. sed. 0-0.5'					1	1				2	

Samples sealed on receipt by Laboratory: Y or N — Initial: _____

Relinquished by: Earth Tech Greg Maynor (Signature) Greg Maynor — 1717 10/28/94 (date/time)	Relinquished by: (Signature) (date/time)	Relinquished by: (Signature) (date/time)
Received by: (Signature) — 1717 10/28/94 (date/time)	Received by: (Signature) (date/time)	Received at Laboratory by: (Signature) (date/time)
Remarks:	Remarks:	Remarks:

APPENDIX F: INVESTIGATION DERIVED WASTE CHARACTERIZATION DATA

WASTEWATER ANALYTICAL RESULTS

CompuChem Environmental Corporation

DATA REPORTING QUALIFIERS

On the Form I, under the column labeled "Q" for qualifier, flag each result with the specific data reporting qualifiers listed below. Up to five qualifiers may be reported on Form I for each compound. The qualifiers to be used are:

U – This flag indicates the compound was analyzed for but not detected. The CRQL shall be adjusted to reflect any dilution and/or percent moisture.

J – This flag indicates an estimated value. This flag is used (1) when estimating a concentration for tentatively identified compounds where a 1:1 response is assumed, (2) when the mass spectral and retention time data indicate the presence of a compound that meets the volatile and semivolatile GC/MS identification criteria, and the result is less than the CRQL but greater than zero, and (3) when the retention time data indicate the presence of a compound that meets the pesticide/Aroclor identification criteria, and the result is less than the CRQL but greater than zero. For example, if the sample quantitation limit is 10 ug/L, but a concentration of 3 ug/L is calculated, report it as 3J.

N – This flag indicates presumptive evidence of a compound. This flag is only used for tentatively identified compounds (TICs), where the identification is based on a mass spectral library search. It is applied to all TIC results. For generic characterization of a TIC, such as chlorinated hydrocarbon, the N flag is not used.

P – This flag is used for a pesticide/Aroclor target analyte when there is greater than 25% difference for detected concentrations between the two GC columns. The lower of the two values is reported on Form I and flagged with a P.

C – This flag applies to pesticide results where the identification has been confirmed by GC/MS. If GC/MS confirmation was attempted but was unsuccessful, do not apply this flag; use a laboratory–defined flag instead (see the X qualifier).

B – This flag is used when the analyte is found in the associated blank as well as in the sample. It indicates probable blank contamination and warns the data user to take appropriate action. This flag shall be used for a tentatively identified compound as well as for a positively identified target compound.

The combination of flags BU or UB is expressly prohibited. Blank contaminants are flagged B only when they are detected in the sample.

E – This flag identifies compounds whose concentrations exceed the upper level of the calibration range of the instrument for that specific analysis. If one or more compounds have a response greater than the upper level of the calibration range, the sample or extract shall be diluted and reanalyzed. All such compounds with a response greater than the upper level of the calibration range shall have the

DATA REPORTING QUALIFIERS

concentration flagged with an E on Form I for the original analysis. If the dilution of the extract causes any compounds identified in the first analysis to be below the calibration range in the second analysis, then the results of both analyses shall be reported on separate copies of Form I. The Form I for the diluted sample shall have the DL suffix appended to the sample number.

D – This flag is used for all compounds identified in an analysis at a secondary dilution factor. If a sample or extract is reanalyzed at a higher dilution factor, as in the E flag, the DL suffix is appended to the sample number on Form I for the diluted sample, and all concentration values reported on that Form I are flagged with the D flag. This flag alerts data users that any discrepancies between the reported concentrations may be due to dilution of the sample or extract.

A – This flag indicates that a tentatively identified compound is a suspected aldol–condensation product.

X – Other specific flags may be required to properly define the results. If used, the flags shall be fully described, with the description attached to the sample data summary package and the SDG Narrative. Begin by using X. If more than one flag is required, use Y and Z as needed. If more than five qualifiers are required for a sample result, use the X flag to represent a combination of several flags. For instance, the X flag might combine the A, B, and D flags for some samples. The laboratory–defined flags are limited to X, Y, and Z.

1D

HALOGENATED VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

T10101294

Lab Name: COMPUCHEM, RTP Contract:

PT10 Oct. 199

Lab Code: COMPU Case No.: 29274 SAS No.: SDG No.: 00353

Matrix: (soil/water) WATER Lab Sample ID: 647652

Sample wt/vol: 5.0 (g/ml) ML Date Received: 10/12/94

% Moisture: decanted: (Y/N) Date Analyzed: 10/17/94

Dilution Factor: 1 pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.50	U
75-01-4	VinylChloride	0.55	U
74-83-9	Bromomethane	0.45	U
75-00-3	Chloroethane	0.50	U
75-35-4	1,1-Dichloroethene	0.35	U
75-09-2	Methylene Chloride	1.0	B
156-60-5	t-1,2-Dichloroethene	0.31	
75-34-3	1,1-Dichloroethane	1.5	
67-66-3	Chloroform	5.8	
74-97-5	Bromochloromethane	0.25	U
71-55-6	1,1,1-Trichloroethane	22	E
56-23-5	Carbon Tetrachloride	0.35	U
107-06-2	1,2-Dichloroethane	0.25	U
79-01-6	Trichloroethene	0.16	J
78-87-5	1,2-Dichloropropane	0.30	U
75-27-4	Bromodichloromethane	0.34	J
74-95-3	Dibromomethane	0.40	U
110-75-8	2-CEVE	0.40	U
10061-01-5	c-1,3-Dichloropropene	0.30	U
10061-02-6	t-1,3-Dichloropropene	0.25	U
79-00-5	1,1,2-Trichloroethane	0.25	U
127-18-4	Tetrachloroethene	0.30	U
124-48-1	Dibromochloromethane	0.30	U
106-93-4	1,2-Dibromoethane	0.35	U
108-90-7	Chlorobenzene	0.35	U
630-20-6	1,1,1,2-Tetrachloroethane	0.35	U
75-25-2	Bromoform	0.50	U
79-34-5	1,1,2,2-TCA	0.40	U
96-18-4	1,2,3-Trichloropropane	0.35	U
108-86-1	Bromobenzene	0.85	U
95-49-8	2-Chlorotoluene	0.25	U
106-43-4	4-Chlorotoluene	0.35	U
541-73-1	1,3-Dichlorobenzene	0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	U
95-50-1	1,2-Dichlorobenzene	0.31	

1D

HALOGENATED VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

T10101294DL

Lab Name: COMPUCHEM, RTP Contract:

Lab Code: COMPU Case No.: 29274 SAS No.: SDG No.: 00353

PTIC Oct. 1994

Matrix: (soil/water) WATER Lab Sample ID: 647652 R1

Sample wt/vol: 2.5 (g/ml) ML Date Received: 10/12/94

% Moisture: decanted: (Y/N) Date Analyzed: 10/20/94

Dilution Factor: 2 pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	1.0	U
75-01-4	VinylChloride	0.051	JD
74-83-9	Bromomethane	0.90	U
75-00-3	Chloroethane	1.0	U
75-35-4	1,1-Dichloroethene	0.41	JD
75-09-2	Methylene Chloride	9.3	BD
156-60-5	t-1,2-Dichloroethene	0.12	JD
75-34-3	1,1-Dichloroethane	0.67	JD
67-66-3	Chloroform	0.15	JDB
74-97-5	Bromochloromethane	0.27	J
71-55-6	1,1,1-Trichloroethane	21	D
56-23-5	Carbon Tetrachloride	0.70	U
107-06-2	1,2-Dichloroethane	0.032	JD
79-01-6	Trichloroethene	0.13	JD
78-87-5	1,2-Dichloropropane	0.60	U
75-27-4	Bromodichloromethane	0.21	JD
74-95-3	Dibromomethane	0.80	U
110-75-8	2-CEVE	0.80	U
10061-01-5	c-1,3-Dichloropropene	0.45	JD
10061-02-6	t-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.061	JD
124-48-1	Dibromochloromethane	0.60	U
106-93-4	1,2-Dibromoethane	0.70	U
108-90-7	Chlorobenzene	0.70	U
630-20-6	1,1,1,2-Tetrachloroethane	0.70	U
75-25-2	Bromoform	1.0	U
79-34-5	1,1,2,2-TCA	0.80	U
96-18-4	1,2,3-Trichloropropane	0.70	U
108-86-1	Bromobenzene	0.16	JD
95-49-8	2-Chlorotoluene	0.50	U
106-43-4	4-Chlorotoluene	0.70	U
541-73-1	1,3-Dichlorobenzene	0.40	U
106-46-7	1,4-Dichlorobenzene	0.40	U
95-50-1	1,2-Dichlorobenzene	0.42	JBD

1D

AROMATIC VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

T10101294

PT10 Oct. 199

Lab Name: COMPUCHEM, RTP Contract:

Lab Code: COMPU Case No.: 29274 SAS No.: SDG No.: 00353

Matrix: (soil/water) WATER Lab Sample ID: 647652

Sample wt/vol: 5.0 (g/ml) ML Date Received: 10/12/94

% Moisture: decanted: (Y/N) Date Analyzed: 10/17/94

Dilution Factor: 1 pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Methyl-t-butyl ether	5.0	U
71-43-2	Benzene	15	B
108-88-3	Toluene	3.3	
108-90-7	Chlorobenzene	3.5	Z
100-41-4	Ethylbenzene	4.3	
106-42-3	1,4-Dimethylbenzene	22	BE
108-38-3	1,3-Dimethylbenzene	22	BE
95-47-6	1,2-Dimethylbenzene	41	E
100-42-5	Styrene	2.2	
541-73-1	1,3-Dichlorobenzene	0.94	Z
106-46-7	1,4-Dichlorobenzene	15	BZ
95-50-1	1,2-Dichlorobenzene	11	B

FORM I 8020

1D

AROMATIC VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

T10101294DL

Lab Name: COMPUCHEM, RTP Contract:

Lab Code: COMPU Case No.: 29274 SAS No.: SDG No.: 00353

PT10 Oct. 1994

Matrix: (soil/water) WATER Lab Sample ID: 647652 R2

Sample wt/vol: 1.0 (g/ml) ML Date Received: 10/12/94

% Moisture: decanted: (Y/N) Date Analyzed: 10/20/94

Dilution Factor: 5 pH:

CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L

CAS NO.	COMPOUND		Q
74-87-3	Methyl-t-butyl ether	25	U
71-43-2	Benzene	11	BD
108-88-3	Toluene	6.4	BD
108-90-7	Chlorobenzene	1.2	U
100-41-4	Ethylbenzene	1.7	D
106-42-3	1,4-Dimethylbenzene	13	D
108-38-3	1,3-Dimethylbenzene	17	D
95-47-6	1,2-Dimethylbenzene	39	D
100-42-5	Styrene	3.9	D
541-73-1	1,3-Dichlorobenzene	0.60	JBD
106-46-7	1,4-Dichlorobenzene	1.9	BDZ
95-50-1	1,2-Dichlorobenzene	3.2	BD

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

EPA SAMPLE NO.

PT-092994

Lab Name: COMPUCHEM ENV. CORP. Contract: (3-90)-REVS

Lab Code: COMPU Case No.: 29377 SAS No.: SDG No.: 00001

PT13 Oct. 94

Matrix: (soil/water) WATER Lab Sample ID: 643678

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: CN043678A54.D

Level: (low/med) LOW Date Received: 09/30/94

% Moisture: not dec. _____ Date Analyzed: 10/03/94

GC Column:DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	10	U
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	10	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	4	J
67-66-3	Chloroform	10	U
107-06-2	1,2-Dichloroethane	10	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	10	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	10	U
1330-20-7	Xylene (Total)	10	U

1D

HALOGENATED VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

T15101294

PT15
Oct. 1994

Lab Name: COMPUCHEM, RTP Contract:

Lab Code: COMPU Case No.: 29274 SAS No.: SDG No.: 00353

Matrix: (soil/water) WATER Lab Sample ID: 647650

Sample wt/vol: 5.0 (g/ml) ML Date Received: 10/12/94

% Moisture: decanted: (Y/N) Date Analyzed: 10/17/94

Dilution Factor: 1 pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.50	U
75-01-4	VinylChloride	0.55	U
74-83-9	Bromomethane	0.26	J
75-00-3	Chloroethane	0.090	J
75-35-4	1,1-Dichloroethene	0.35	U
75-09-2	Methylene Chloride	1.3	B
156-60-5	t-1,2-Dichloroethene	0.30	U
75-34-3	1,1-Dichloroethane	0.35	U
67-66-3	Chloroform	18	E
74-97-5	Bromochloromethane	0.25	U
71-55-6	1,1,1-Trichloroethane	1.2	
56-23-5	Carbon Tetrachloride	0.35	U
107-06-2	1,2-Dichloroethane	0.25	U
79-01-6	Trichloroethene	0.30	U
78-87-5	1,2-Dichloropropane	0.30	U
75-27-4	Bromodichloromethane	0.40	U
74-95-3	Dibromomethane	0.40	U
110-75-8	2-CEVE	0.40	U
10061-01-5	c-1,3-Dichloropropene	0.30	U
10061-02-6	t-1,3-Dichloropropene	0.25	U
79-00-5	1,1,2-Trichloroethane	0.25	U
127-18-4	Tetrachloroethene	2.3	
124-48-1	Dibromochloromethane	0.30	U
106-93-4	1,2-Dibromoethane	0.35	U
108-90-7	Chlorobenzene	0.35	U
630-20-6	1,1,1,2-Tetrachloroethane	0.35	U
75-25-2	Bromoform	0.50	U
79-34-5	1,1,2,2-TCA	0.40	U
96-18-4	1,2,3-Trichloropropane	0.35	U
108-86-1	Bromobenzene	0.85	U
95-49-8	2-Chlorotoluene	0.25	U
106-43-4	4-Chlorotoluene	0.35	U
541-73-1	1,3-Dichlorobenzene	0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	U
95-50-1	1,2-Dichlorobenzene	0.30	U

1D

HALOGENATED VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

T15101294DL

Lab Name: COMPUCHEM, RTP Contract:

Lab Code: COMPU Case No.: 29274 SAS No.: SDG No.: 00353

PT15 Oct. 199

Matrix: (soil/water) WATER Lab Sample ID: 647650 R1

Sample wt/vol: 2.5 (g/ml) ML Date Received: 10/12/94

% Moisture: decanted: (Y/N) Date Analyzed: 10/20/94

Dilution Factor: 2 pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	1.0	U
75-01-4	VinylChloride	1.1	U
74-83-9	Bromomethane	0.90	U
75-00-3	Chloroethane	1.0	U
75-35-4	1,1-Dichloroethene	0.70	U
75-09-2	Methylene Chloride	6.9	BD
156-60-5	t-1,2-Dichloroethene	0.60	U
75-34-3	1,1-Dichloroethane	0.027	JD
67-66-3	Chloroform	14	BD
74-97-5	Bromochloromethane	0.87	D
71-55-6	1,1,1-Trichloroethane	0.020	JD
56-23-5	Carbon Tetrachloride	0.70	U
107-06-2	1,2-Dichloroethane	0.50	U
79-01-6	Trichloroethene	0.026	JD
78-87-5	1,2-Dichloropropane	0.60	U
75-27-4	Bromodichloromethane	0.80	U
74-95-3	Dibromomethane	0.80	U
110-75-8	2-CEVE	0.80	U
10061-01-5	c-1,3-Dichloropropene	0.60	U
10061-02-6	t-1,3-Dichloropropene	0.50	U
79-00-5	1,1,2-Trichloroethane	0.50	U
127-18-4	Tetrachloroethene	0.16	JD
124-48-1	Dibromochloromethane	0.60	U
106-93-4	1,2-Dibromoethane	0.70	U
108-90-7	Chlorobenzene	0.70	U
630-20-6	1,1,1,2-Tetrachloroethane	0.70	U
75-25-2	Bromoform	1.0	U
79-34-5	1,1,2,2-TCA	0.80	U
96-18-4	1,2,3-Trichloropropane	0.70	U
108-86-1	Bromobenzene	1.7	U
95-49-8	2-Chlorotoluene	0.50	U
106-43-4	4-Chlorotoluene	0.70	U
541-73-1	1,3-Dichlorobenzene	0.40	U
106-46-7	1,4-Dichlorobenzene	0.40	U
95-50-1	1,2-Dichlorobenzene	0.085	JBD

1D

AROMATIC VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

T15101294

Lab Name: COMPUCHEM, RTP Contract:

Lab Code: COMPU Case No.: 29274 SAS No.: SDG No.: 00353

PT15 Oct. 1994

Matrix: (soil/water) WATER Lab Sample ID: 647650

Sample wt/vol: 5.0 (g/ml) ML Date Received: 10/12/94

% Moisture: decanted: (Y/N) Date Analyzed: 10/17/94

Dilution Factor: 1 pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Methyl-t-butyl ether	5.0	U
71-43-2	Benzene	0.11	JPB
108-88-3	Toluene	0.37	PB
108-90-7	Chlorobenzene	0.25	U
100-41-4	Ethylbenzene	0.12	JP
106-42-3	1,4-Dimethylbenzene	0.090	JPB
108-38-3	1,3-Dimethylbenzene	0.21	JPB
95-47-6	1,2-Dimethylbenzene	0.24	PB
100-42-5	Styrene	0.25	U
541-73-1	1,3-Dichlorobenzene	0.20	U
106-46-7	1,4-Dichlorobenzene	0.15	U
95-50-1	1,2-Dichlorobenzene	0.086	JPB

Vgml 11-16-

FORM I 8020

1D

HALOGENATED VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

PT150595

Lab Name: COMPUCHEM, RTP Contract:

Lab Code: COMPU Case No.: 30674 SAS No.: SDG No.: 00147

PT15 June 1995

Matrix: (soil/water) WATER Lab Sample ID: 723241

Sample wt/vol: 5.0 (g/ml) ML Date Received: 05/25/95

% Moisture: decanted: (Y/N) Date Analyzed: 06/01/95

Dilution Factor: 1 pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	0.50	U
75-01-4	Vinyl Chloride	0.55	U
74-83-9	Bromomethane	0.45	U
75-00-3	Chloroethane	0.50	U
75-35-4	1,1-Dichloroethene	0.35	U
75-09-2	Methylene Chloride	1.0	U
156-60-5	t-1,2-Dichloroethene	0.30	U
75-34-3	1,1-Dichloroethane	0.35	U
67-66-3	Chloroform	2.1	P
74-97-5	Bromochloromethane	0.25	U
71-55-6	1,1,1-Trichloroethane	0.35	U
56-23-5	Carbon Tetrachloride	0.35	U
107-06-2	1,2-Dichloroethane	0.25	U
79-01-6	Trichloroethene	0.33	P
78-87-5	1,2-Dichloropropane	0.30	U
75-27-4	Bromodichloromethane	0.40	U
74-95-3	Dibromomethane	0.40	U
110-75-8	2-CEVE	0.40	U
10061-01-5	c-1,3-Dichloropropene	0.30	U
10061-02-6	t-1,3-Dichloropropene	0.25	U
79-00-5	1,1,2-Trichloroethane	0.25	U
127-18-4	Tetrachloroethene	0.30	U
124-48-1	Dibromochloromethane	0.30	U
106-93-4	1,2-Dibromoethane	0.35	U
108-90-7	Chlorobenzene	0.35	U
630-20-6	1,1,1,2-Tetrachloroethane	0.35	U
75-25-2	Bromoform	0.50	U
79-34-5	1,1,2,2-TCA	0.40	U
96-18-4	1,2,3-Trichloropropane	0.35	U
108-86-1	Bromobenzene	0.85	U
95-49-8	2-Chlorotoluene	0.25	U
106-43-4	4-Chlorotoluene	0.35	U
541-73-1	1,3-Dichlorobenzene	0.20	U
106-46-7	1,4-Dichlorobenzene	0.20	U
95-50-1	1,2-Dichlorobenzene	0.30	U

1D

AROMATIC VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

PT150595

Lab Name: COMPUCHEM, RTP Contract:

Lab Code: COMPU Case No.: 30674 SAS No.: SDG No.: 00147

PT15 June 1995

Matrix: (soil/water) WATER Lab Sample ID: 723241

Sample wt/vol: 5.0 (g/ml) ML Date Received: 05/25/95

% Moisture: decanted: (Y/N) Date Analyzed: 06/02/95

Dilution Factor: 1 pH:

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Methyl-t-butyl ether	5.0	U
71-43-2	Benzene	0.35	U
108-88-3	Toluene	0.25	U
108-90-7	Chlorobenzene	0.25	U
100-41-4	Ethylbenzene	0.20	U
99-99-9	1,3/1,4-Dimethylbenzene	0.50	U
95-47-6	1,2-Dimethylbenzene	0.20	U
100-42-5	Styrene	0.25	U
541-73-1	1,3-Dichlorobenzene	0.20	U
106-46-7	1,4-Dichlorobenzene	0.15	U
95-50-1	1,2-Dichlorobenzene	0.15	U

SOIL TCLP ANALYTICAL

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

V3-TCLP

Lab Name: COMPUCHEM ENV. CORP. Contract: 500712

Lab Code: COMPU Case No.: 30674 SAS No.: SDG No.: 00138

Matrix: (soil/water) WATER Lab Sample ID: 719145

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: CN019145B52.D

Level: (low/med) LOW Date Received: 05/17/95

% Moisture: not dec. _____ Date Analyzed: 06/03/95

GC Column:DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	15	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	8	J
67-64-1	Acetone	43	
75-15-0	Carbon Disulfide	10	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	5	U
540-59-0	1,2-Dichloroethene (total)	10	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	5	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	10	U
10061-01-5	cis-1,3-Dichloropropene	15	U
79-01-6	Trichloroethene	5	U
124-48-1	Dibromochloromethane	10	U
79-00-5	1,1,2-Trichloroethane	5	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	10	U
591-78-6	2-Hexanone	15	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	10	U
108-88-3	Toluene	5	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	10	U
100-42-5	Styrene	5	U
1330-20-7	Xylene (total)	15	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

V4-TCLP

Lab Name: COMPUCHEM ENV. CORP. Contract: 500712

Lab Code: COMPU Case No.: 30674 SAS No.: SDG No.: 00138

Matrix: (soil/water) WATER Lab Sample ID: 719151

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: CN019151B52.D

Level: (low/med) LOW Date Received: 05/17/95

% Moisture: not dec. _____ Date Analyzed: 06/03/95

GC Column:DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
107-02-8	Acrolein	90	U
354-58-5	1,1,1-trichloro-2,2,2-triflu	15	U
75-69-4	Trichlorofluormethane	10	U
76-13-1	1,1,2-Trichloro-1,2,2-triflu	25	U
74-88-4	Iodomethane	5	U
107-05-1	3-Chloropropene	15	U
75-05-8	Acetonitrile	60	U
107-13-1	Acrylonitrile	95	U
108-05-4	Vinyl Acetate	10	U
107-12-0	Propionitrile (Ethyl Cyanide	220	U
126-98-7	Methacrylonitrile	20	U
4170-30-3	Crotonaldehyde	300	U
78-83-1	Isobutyl Alcohol	2800	U
74-95-3	Dibromomethane	10	U
80-62-6	Methyl Methacrylate	20	U
123-91-1	1,4-Dioxane	3700	U
110-75-8	2-Chloroethyl Vinyl Ether	10	U
97-63-2	Ethyl Methacrylate	10	U
106-93-4	1,2-Dibromoethane	10	U
630-20-6	1,1,1,2-Tetrachloroethane	10	U
1476-11-5	Cis-1,4-Dichloro-2-Butene	5	U
96-18-4	1,2,3-Trichloropropane	10	U
110-57-6	Trans-1,4-Dichloro-2-Butene	10	U
96-12-8	1,2-Dibromo-3-Chloropropane	10	U
541-73-1	1,3-Dichlorobenzene	10	U
106-46-7	1,4-Dichlorobenzene	10	U
95-50-1	1,2-Dichlorobenzene	10	U

1A

VOLATILE ORGANICS ANALYSIS DATA SHEET

SAMPLE NO.

V4-TCLP

Lab Name: COMPUCHEM ENV. CORP. Contract: 500712

Lab Code: COMPU Case No.: 30674 SAS No.: SDG No.: 00138

Matrix: (soil/water) WATER Lab Sample ID: 719151

Sample wt/vol: 5.0 (g/mL) ML Lab File ID: CN019151B52.D

Level: (low/med) LOW Date Received: 05/17/95

% Moisture: not dec. _____ Date Analyzed: 06/03/95

GC Column:DB624 ID: 0.53 (mm) Dilution Factor: 1.0

Soil Extract Volume: _____(uL) Soil Aliquot Volume: _____(uL)

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/Kg) UG/L	Q
74-87-3	Chloromethane	15	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl Chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene Chloride	45	
67-64-1	Acetone	10	U
75-15-0	Carbon Disulfide	5	U
75-35-4	1,1-Dichloroethene	5	U
75-34-3	1,1-Dichloroethane	10	U
540-59-0	1,2-Dichloroethene (total)	5	U
67-66-3	Chloroform	5	U
107-06-2	1,2-Dichloroethane	20	U
78-93-3	2-Butanone	10	U
71-55-6	1,1,1-Trichloroethane	10	U
56-23-5	Carbon Tetrachloride	10	U
75-27-4	Bromodichloromethane	10	U
78-87-5	1,2-Dichloropropane	15	U
10061-01-5	cis-1,3-Dichloropropene	5	U
79-01-6	Trichloroethene	10	U
124-48-1	Dibromochloromethane	5	U
79-00-5	1,1,2-Trichloroethane	10	U
71-43-2	Benzene	10	U
10061-02-6	trans-1,3-Dichloropropene	10	U
75-25-2	Bromoform	10	U
108-10-1	4-Methyl-2-Pentanone	15	U
591-78-6	2-Hexanone	10	U
127-18-4	Tetrachloroethene	10	U
79-34-5	1,1,2,2-Tetrachloroethane	5	U
108-88-3	Toluene	10	U
108-90-7	Chlorobenzene	10	U
100-41-4	Ethylbenzene	5	U
100-42-5	Styrene	15	U
1330-20-7	Xylene (total)		

APPENDIX G: APPLICABLE OR RELEVANT AND APPROPRIATE REQUIREMENTS

STATE OF VERMONT

- 1988 GROUNDWATER QUALITY STANDARDS
- 1992 RESIDUAL SOIL VALUES
  (Equal to Groundwater Quality Enforcement Standards for Organics times 20)

STATE OF VERMONT
Agency of Natural Resources
Department of Environmental Conservation

Chapter 12
GROUND WATER PROTECTION RULE AND STRATEGY

Rule Number: 88-37 Effective Date: September 29, 1988

Adopted: Jonathan Lash, Secretary Date: 9/8/88

099/1100/GW2

TABLE 1

Primary Ground Water Quality Standards

Substance	Enforcement Standard (micrograms per liter, except as noted)	Preventive Action Limit (micrograms per liter, except as noted)
Acifluorfen	9.0	0.9 (10%)
Acrylamide	0.01	0.001 (10%)
Alachlor	0.50	0.05 (10%)
Aldicarb	10.0	5.0 (50%)
Aldicarb Sulfoxide	10.0	5.0 (50%)
Aldicarb Sulfone	10.0	5.0 (50%)
Aldicarb Sulfone*	42.0	21.0 (50%)
Ametryn	60.0	30.0 (50%)
Arsenic	50.0	25.0 (50%)
Ammonium Sulfamate	1.5 milligrams/liter (mg/l)	0.75 mg/l (50%)
Atrazine	3.0	0.3 (10%)
Bacteria Total Coliform	Less than one in 100 ml for membrane filter method or not present in any 10 ml portion by fermentation tube method for both preventive action limit and enforcement standard	
Barium	1.0 mg/l	0.50 mg/l (50%)
Baygon	3.0	0.30 (10%)
Bentazon	17.5	8.75 (50%)
Benzene	5.0	0.5 (10%)
Bromacil	80.0	8.0 (10%)
Butylate	50.0	5.0 (10%)
Cadmium	5.0	2.5 (50%)
Carbaryl	700.0	350.0 (50%)

*Value to be used in cases where other Aldicarb substances are not detected.

TABLE 1 (Cont'd)

Primary Ground Water Quality Standards

Substance	Enforcement Standard (micrograms per liter, except as noted)	Preventive Action Limit (micrograms per liter, except as noted)
Carbofuran	36.0	18.0 (50%)
Carbon Tetrachloride	5.0	0.5 (10%)
Carboxin	700.0	350.0 (50%)
Chloramben	105.0	52.5 (50%)
Chlordane	0.027	0.0027 (10%)
Chlorobenzene	100.0	50.0 (50%)
Chlorothalonil	1.5	0.15 (10%)
Chromium	50.0	25.0 (50%)
Cyanazine	9.0	4.5 (50%)
Cyanide	154.0	77.0 (50%)
Dacthal	3.5 mg/l	1.75 mg/l (50%)
Dalapon	560.0	280.0 (50%)
Diazinon	0.63	0.31 (50%)
1,2-Dibromoethane	0.01	0.001 (10%)
1,2-Dibromo-3-Chloropropane	0.025	0.0025 (10%)
Dicamba	9.0	4.5 (50%)
o-,m-Dichlorobenzene	620.0	310.0 (50%)
p-Dichlorobenzene	75.0	7.5 (10%)
1,2-Dichlorethane	5.0	0.5 (10%)
1,1-Dichloroethene	7.0	0.7 (10%)
Cis-1,2-Dichloroethene	70.0	35.0 (50%)
Trans-1,2-Dichloroethene	70.0	35.0 (50%)
Dichloromethane	5.0	0.5 (10%)

TABLE 1 (Cont'd)

Primary Ground Water Quality Standards

Substance	Enforcement Standard (micrograms per liter, except as noted)	Preventive Action Limit (micrograms per liter, except as noted)
2,4 D	70.0	35.0 (50%)
1,2-Dichloropropane	0.56	0.056 (10%)
1,3-Dichloropropene	0.2	0.02 (10%)
Dieldrin	0.002	0.0002 (10%)
Dimethrin	2.1 mg/l	1.05 mg/l (50%)
Dinoseb	7.0	3.5 (50%)
p-Dioxane	7.0	0.7 (10%)
2,3,7,8-TCDD	2.2E-7	2.2E-8 (10%)
Diphenamid	200.0	100.0 (50%)
Disulfoton	0.30	0.15 (50%)
Diuron	14.0	7.0 (50%)
Endothall	140.0	70.0 (50%)
Endrin	0.32	0.16 (50%)
Epichlorohydrin	0.28	0.028 (10%)
Ethylbenzene	680.0	340.0 (50%)
Ethylene Glycol	7.0 mg/l	3.5 mg/l (50%)
Ethylene Dibromide	0.0005	0.00005 (10%)
Ethylene thiourea	0.25	0.025 (10%)
Fenamiphos	1.8	0.9 (50%)
Fluometuron	90.0	45.0 (50%)
Fonofos	14.0	7.0 (50%)
Glyphosate	700.0	350.0 (50%)
Heptachlor	0.076	0.0076 (10%)

TABLE 1 (Cont'd)

Primary Ground Water Quality Standards

Substance	Enforcement Standard (micrograms per liter, except as noted)	Preventive Action Limit (micrograms per liter, except as noted)
Heptachlor expoxide	0.038	0.0038 (10%)
Hexachlorobenzene	0.02	0.002 (10%)
n-Hexane	4.0 mg/l	2.0 mg/l (50%)
Hexazinone	210.0	105.0 (50%)
Lead	20.0	10.0 (50%)
Lindane	0.2	0.02 (10%)
Maleic Hydrazide	3.5 mg/l	1.75 mg/l (50%)
MCPA	3.6	1.8 (50%)
Mercury	2.0	1.0 (50%)
Methomyl	175.0	87.5 (50%)
Methoxychlor	340.0	170.0 (50%)
Methylene Chloride	5.0	2.5 (50%)
Methyl Ethyl Ketone	170.0	85.0 (50%)
Methyl Parathion	2.0	1.0 (50%)
Metolachlor	10.0	1.0 (10%)
Metribuzin	175.0	87.5 (50%)
Nickel	350.0	175.0 (50%)
Nitrate/Nitrite	10 mg/l / 1 mg/l	5 mg/l / 0.5 mg/l (50%)
Oxamyl	175.0	87.5 (50%)
Paraquat	3.0	0.3 (10%)
Pentachlorophenol	220.0	110.0 (50%)
PCBs	0.008	0.0008 (10%)
Picloram	490.0	245.0 (50%)
Prometon	100.0	50.0 (50%)

TABLE 1 (Cont'd)

Primary Ground Water Quality Standards

Substance	Enforcement Standard (micrograms per liter- except as noted)	Preventive Action Limit (micrograms per liter- except as noted)
Pronamide	52.0	5.2 (10%)
Propachlor	92.0	46.0 (50%)
Propazine	14.0	7.0 (50%)
Propham	120.0	60.0 (50%)
Silver	50.0	25.0 (50%)
Simazine	35.0	17.5 (50%)
Styrene	5.0	0.5 (10%)
Tebuthiuron	35.0	3.5 (10%)
Terbacil	90.0	45.0 (50%)
Terbufos	0.18	0.09 (50%)
Tetrachloroethene	0.70	0.07 (10%)
Toluene	2.42 mg/l	1.21 mg/l (50%)
Toxaphene	0.031	0.0031 (10%)
1,1,1-Trichloroethane	200.0	100.0 (50%)
Trichloroethene	5.0	0.5 (10%)
Trifluralin	1.7	0.17 (10%)
2,4,5-T	21.0	10.5 (50%)
2,4,5-TP	10.0	5.0 (50%)
Vinyl chloride	2.0	0.2 (10%)
Xylenes	400.0	200.0 (50%)

§12-703 Secondary Ground Water Quality Standards

(1) The Secretary, in cooperation with the Commissioners of Agriculture and Health, hereby adopts and may make additions or changes by rule to, the Secondary Ground Water Quality Standards upon consideration of available water quality standards information as published by the USEPA or the Vermont Department of Health.

TABLE 2

Note: For each substance in Table 2 the preventive action limit is 50% of the enforcement standard.

Substance	Enforcement Standard (milligrams per liter-except as noted)	Preventive Action Limit (milligrams per liter-except as noted)
Chloride	250	125
Color	15 color units	7.5 color units
Copper	1.0	.5
Foaming Agents MBAS (Methylene-Blue Active Substances)	.5	.25
Iron	.3	.15
Manganese	.05	.025
Odor	3 (Threshold Odor No.)	1.5 (Threshold Odor No.)
Sulfate	250	125
Total Dissolved Solids (TDS)	500	250
Zinc	5	2.5

DRAFT

Revised: June 29, 1992

Vermont Department of Environmental Conservation
Hazardous Materials Management Division

Interim Soil Cleanup Guidance

Objective

This guidance is intended to provide cleanup levels for contaminated soils below which residual contaminants are deemed not to pose a threat to groundwater quality. These concentrations are currently being used by the Sites Management Section to establish target levels for soil remediation at sites contaminated with hazardous substances from a source other than virgin petroleum products from an underground storage tank (UST). Guidance for soils contaminated with virgin petroleum products from an UST is covered by the attached "Interim Soil Guideline Levels and Treatment Options".

Contaminated soils pose a risk through several avenues as summarized below:

- they may leach contaminants into groundwater resulting in groundwater contamination;
- contaminated groundwater may in turn discharge to surface water;
- they may be carried by surface runoff into surface waters;
- they may present a risk to human health through direct contact with the contaminated soil or ingestion of the soil;
- contaminants may volatilize from the soil, or particles of contaminated soil may be carried into the air, resulting in air pollution.

It is difficult to determine allowable levels of contaminants in soils that are protective of human health and the environment considering each of the possible exposure routes listed above. Of the exposure routes cited above, one of the most significant is the contamination of groundwater through leaching of contaminants from contaminated soils. This guidance will develop cleanup levels for contamination in soil that are protective of groundwater quality. Other exposure routes will be addressed on a site specific basis.

Background

A number of different regulations, and operating procedures influence the development of soils cleanup guidance. One of the major determining factors is the source of the contamination. The source can determine whether the contaminated soil would be classified as a hazardous waste. A soil could be classified as a hazardous waste under either the Federal Resource Conservation and Recovery Act regulations (RCRA) or the Vermont Hazardous Waste Management regulations.

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Determination of Hazardous Waste:

To be defined as a hazardous waste, contaminated soil must exhibit one of the following characteristics which define a waste as hazardous or meet one of the following criteria:

1) Ignitability Characteristic;
2) Corrosivity Characteristic;
3) Reactivity Characteristic;
4) Toxicity Characteristic (as determined by analytical results of Toxicity Characteristic Leaching Procedure analysis of a soil sample)
5) Soil contamination is due to a release of a chemical product, discarded chemical product or off specification chemical product which is considered to be an acute hazardous waste or toxic waste;
6) Soil contamination is due to a release of a specifically listed waste.

Land Disposal Restrictions:

The Land Disposal Restrictions (Land Ban) apply only to wastes that are classified as hazardous waste by RCRA definition as described above. Hazardous substances can be present in a waste or contaminated soil without that waste or soil meeting the RCRA definition of hazardous.

The Land Ban establishes contaminant concentrations in waste or in a waste extract above which land disposal is not allowed. These numbers apply only to RCRA hazardous wastes or soils contaminated with a RCRA hazardous waste. Regardless of the concentration of a given constituent, Land Ban does not apply to wastes not meeting the RCRA definition of hazardous. The key to knowing whether Land Ban applies in a given instance is whether the contaminated soil would be classified as hazardous waste under RCRA.

If Land Ban applies in a particular case, the soil in question cannot be land disposed unless the soil is treated so that contaminants are reduced to less than the regulatory level. Following treatment, this soil could be disposed at a RCRA Subtitle D facility.

Two different types of analyses are available for determining the levels of contaminants in a soil. One type measures the total concentration of contaminants present in a soil. The other type of test is a leaching test designed to measure the amount of a given contaminant that could be expected to be leached out of a soil and contribute to groundwater contamination. The most common test of this type currently in use in the Toxicity Characteristic Leaching Procedure or TCLP. One of the uses for this test is to determine if a particular waste meets the definition of a hazardous waste for the toxicity characteristic. This guidance provides for the use of either of these tests.

Potential for Groundwater Contamination:

When assessing the potential for soil contamination to impact groundwater, cleanup levels will be based upon the Enforcement Standards in the Groundwater Protection Rule and Strategy. There are two methods of

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analysis which can be used to determine the appropriate cleanup level:

1) TCLP Analysis

Analyzing soils by TCLP analysis provides results with the greatest degree of confidence. In this case, if a TCLP analysis indicates the presence of any compound at a level in excess of the Enforcement Standard in the Groundwater Protection Rule and Strategy, the cleanup level will be considered to be exceeded.

2) Total Dry Weight Analysis

In a typical site assessment, soils analyses will often be done for total contaminant concentration (based on either dry weight or wet weight). In order to be able to use this type of data to assess whether a cleanup level is exceeded, a second option is to use total contaminant concentration by dry weight to calculate the highest possible TCLP results that could be obtained from that sample. To do this, make the conservative assumption that 100% of the total dry weight concentration of a contaminant will leach out of the soil and divide that concentration by 20 to simulate the 20 times dilution factor in the TCLP method.

Example:

A soil is analyzed for total volatile organic chemicals and results in a dry weight concentration of 800 ppb of trichloroethene (TCE). Assuming that 100% of the TCE leaches from the soil, the result is 800 ppb divided by 20 for a final result of 40 ppb. Since the Enforcement Standard for TCE is 5 ppb the cleanup level would be assumed to be exceeded.

This method is conservative by assuming 100% of the contaminant will leach, so it provides maximum protection. There is always the option to actually do a TCLP analysis and determine the actual concentration in the extract.

These cleanup levels are meant to be a guide to help determine whether soil remediation is necessary and to provide target levels for soil treatment actions. The need for further investigation and remediation, and the decision of what further work is appropriate will be determined on a site specific basis.

Note:

Option (2) is a reasonable approach when applied to non-naturally occurring organic contaminants. Problems may be encountered when applying this option to contaminants that are naturally occurring inorganic elements. Therefore, in general, option (1) should be used when dealing with these naturally occurring inorganics.

Direct Contact, Inhalation and Ingestion Threats:

Soil contamination may pose a threat through one of the above avenues regardless of whether it presents a threat to groundwater. These threats will be assessed by comparing the total amount of contaminant on a dry weight basis to numerical guidelines for levels of contaminants deemed to pose a risk

through these pathways. Assessment will be on a site specific basis and will take into account both contaminant concentrations and the likelihood of exposure.

Implementation

The guidance outlined above will be used to assess the significance of data from soil sampling at sites in Vermont. Levels of contaminants in soil will be compared to cleanup levels to aid in determining the need for remediation at a particular site and to provide target levels for soil treatment actions.

Contaminated soil that meets the definition of hazardous waste must be handled according to the Vermont Hazardous Waste Management Regulations. These soils may also be subject to the Land Disposal Regulations. Such soils may be shipped as hazardous waste to an appropriate treatment or disposal facility or they may be treated on-site prior to shipment to an appropriate facility. In the case of soils that are subject to the Land Disposal Regulations, on-site treatment may increase options for final disposition of the soil. Any on-site treatment of soils defined as hazardous waste must be in accordance with Federal and State regulations and with Hazardous Materials Management Division policy for on-site remediation of soils and groundwater.

If a soil does not meet the definition of a hazardous waste but does exceed the cleanup level for groundwater protection, or is deemed to present a potential direct contact threat, soil remediation may be required. Remedial measures for a threat to groundwater quality could include soil removal or on-site treatment of soil to a level where a threat to groundwater no longer exists. A direct contact threat could be addressed by capping or other means to minimize the direct contact potential. In addition to these measures, institutional controls may also be required.

Several options exist for contaminated soils that exceed a cleanup level, but are not classified as hazardous waste: on-site treatment and disposal, removal and disposal at a certified solid waste landfill that will accept such soils or disposal at a certified hazardous waste disposal facility. If remedial efforts result in residual contamination below action levels present in the soil, final disposition of the soil on-site must be carried out so that potential for direct contact with the soils is minimized. In situations where contaminated soils remain onsite, institutional controls may be required.

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APPENDIX H: LABORATORY ANALYTICAL DATA QUALITY

APPENDIX H: DATA QUALITY ASSESSMENT

H.1 INTRODUCTION

A standardized Quality Assurance/Quality Control (QA/QC) program was followed during the Abbreviated Site Investigation (ASI) at the 158th Fighter Wing, Vermont Air National Guard (ANG) to ensure that analytical results accurately represent the environmental conditions at the sites. The ASI was conducted using the Hazardous Waste Remedial Actions Program (HAZWRAP) Level C (i.e., U.S. Environmental Protection Agency (EPA) Level III) QC requirements described in Requirements For Quality Control Of Analytical Data (DOE/HWP-65/R2, 1995) and the guidelines and specifications described in the ASI Work Plan.

The number of environmental and field QC samples (i.e., trip blanks, field blanks, equipment rinseates, and field replicates) collected and analyzed are summarized in Table H-1. The QC checks and results are summarized below.

H.2 DATA QUALITY OBJECTIVES

Data Quality Objectives (DQOs) are qualitative and quantitative statements developed by data users to specify the quality of data obtained from field and laboratory data collection activities to support specific decisions or regulatory actions. DQOs also establish numeric limits for the data to allow the data user to determine if the data collected are of sufficient quality for use in their intended application. The data collected during the ASI field effort will be used to (1) confirm the presence or absence of suspected contamination at the identified sites and (2) evaluate the human health or environmental implications. DQOs were established for precision, accuracy, representativeness, completeness, and comparability (PARCC). The following sections summarize the DQOs established for the PARCC parameters and the levels of agreement obtained during the ASI.

Table H-1 Summary of Analytical Program
158th Fighter Wing, Vermont ANG, Burlington Vermont

Sample Source	VOC	SVOC	CLP Metals[2]	TPH
Soil	30	30	30	30
Sediment	3	3	3	3
Surface Water	1	1	2	1
Groundwater	6	6	12	6
Total	40	40	47	30
Field Duplicates	4_{Soil}	4	4	4
	$1_{Sediment}$	1	1	1
	$1_{Surface\ Water}$	1	2	1
	$1_{Groundwater}$	1	2	1
Equipment Rinseates	7	7	7	7
Field Blanks	4	4	4	4
Trip Blanks	12			

NOTES:
1. VOC analyses performed using SW-846 8010/8020. Second column confirmation was performed for those samples containing compounds greater than quanitation level.
2. Filtered and unfiltered water samples were collected.

H.2.1 Precision

Precision measures the reproducibility of measurements under a given set of conditions. Precision is expressed quantitatively as the measure of the variability of a group of measurements compared to their average value. The closer the numerical value the measurements are to each other, the more precise the measurement. Precision was defined as the reproducibility, or degree of agreement, among replicate measurements of the same quantity. Precision was expressed as the percentage of the difference between results of duplicate samples for a given compound or element. Relative percent difference (RPD) was calculated as:

$$RPD = \frac{Abs(C_1 - C_2)}{\frac{C_1 + C_2}{2}} \times 100$$

Where; C_1 = Concentration of the analyte in the sample

C_2 = Concentration of the analyte in the duplicate/replicate.

The RPD was then compared to established limits to determine the level of precision achieved. For this project overall precision was comprised of analytical and sampling precision. The objectives for analytical precision, sampling precision, and overall precision are to have 90% of the values calculated within the specified RPD range.

Analytical precision refers to the ability of the laboratory to reproduce measurements of a sample concentration. Analytical precision was assessed through the use of analytical replicate samples. Precision was determined using Matrix Spike/Matrix Spike Duplicate (MS/MSD) and duplicate sample analyses conducted on samples collected for volatile organic compound (VOC), semi-volatile organic compound (SVOC), target analyte list (TAL) metals, and total petroleum hydrocarbons (TPH) analysis during the ASI. The laboratory selected one sample in 20 and split the sample into two aliquots, to be used for MS/MSD analysis. MS/MSD samples were prepared by routinely screening the first aliquot for the parameters of interest before analysis, while the remaining aliquot was spiked with known quantities of parameters of interest and analyzed twice. The RPD between the spike results was calculated and used as an indication of the analytical precision for the VOC, SVOC, and TPH analyses performed. Duplicate samples for TAL metals analyses were prepared by subdividing one sample of every 20 samples received and analyzing both samples of the duplicate pair. The RPD between the two sample concentrations was calculated and used as an indication of the analytical precision for the analyses performed.

Fourteen of the 94 water, and three of the 188 soil RPD values calculated from the VOC analyses exceeded control limits for analytical precision. Control limits for VOC MS/MSD are detailed in Tables H-2 and H-3. Two of the 30 water, and eight of the 44 soil RPD values calculated for the SVOC analyses exceeded control limits for analytical precision. Control limits for SVOC MS/MSD are detailed in Tables H-4 and H-5. Nine of 76 water, and 12 of 93 soil RPD values calculated from the TAL metals analyses were outside advisory control limits of ±20%. Control limits for metals MS/MSD are detailed in Tables H-6 and H-7. None of the four water, and two of the 10 soil RPD values calculated from the TPH analyses exceeded

TABLE H-2 LABORATORY QUALITY CONTROL SUMMARY: WATER MS/MSD VOLATILE ORGANIC COMPOUNDS

158th Fighter Wing, Vermont ANG, Burlington Vermont

	Accuracy					Precision				
	Total No. Analyses	Percent Recovery Ranges	Percent Recovery Limits	Number Within Control Limits	Number Outside Control Limits	MSD Total No. Analyses	Range RPD	RPD Limits	Number Within Limits	Number Outside Limits
8010										
Bromodichloromethane	4	88-110	42-172	4	0	2	8-20	20	2	0
Bromobenzene	4	81-109	8-184	4	0	2	4-9	20	2	0
Bromoform	4	106-138	13-159	4	0	2	5-14	20	2	0
Bromomethane	4	94-106	1-144	4	0	2	0-12	20	2	0
Bromochloromethane	4	84-111	49-133	4	0	2	7-8	20	2	0
Carbon tetrachloride	4	84-138	43-143	4	0	2	17-24	20	1	1
2-Chloroethlyvinyl eter	4	0	14-186	0	4	2	0	20	2	0
Chloroethane	4	113-131	46-137	4	0	2	10-15	20	2	0
Chloroform	4	90-114	49-133	4	0	2	11-15	20	2	0
Cholorbenzene	4	91-125	38-150	4	0	2	12-31	20	1	1
Chloromethane	4	94-138	1-193	4	0	2	18-32	20	1	1
2-Chlorotoluene	4	90-115	8-184	4	0	2	7-8	20	2	0
4-Chlorotoluene	4	85-118	8-184	4	0	2	5-11	20	2	0
1,2-Dibromoethane	4	104-110	24-191	4	0	2	1-6	20	2	0
Dibromochloromethane	4	86-111	24-191	4	0	2	1-19	20	2	0

TABLE H-2 LABORATORY QUALITY CONTROL SUMMARY: WATER MS/MSD VOLATILE ORGANIC COMPOUNDS

158th Fighter Wing, Vermont ANG, Burlington Vermont

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	Accuracy					Precision				
	Total No. Analyses	Percent Recovery Ranges	Percent Recovery Limits	Number Within Control Limits	Number Outside Control Limits	MSD Total No. Analyses	Range RPD	RPD Limits	Number Within Limits	Number Outside Limits
8010										
Dibromomethane	4	86-116	42-172	4	0	2	9-11	20	2	0
1,2-Dichlorobenzene	4	90-118	1-208	4	0	2	12-14	20	2	0
1,3-Dichlorobenzene	4	91-113	7-187	4	0	2	11-14	20	2	0
1,4-Dichlorobenzene	4	86-118	42-143	4	0	2	11-12	20	2	0
1,1-Dichloroethane	4	83-119	47-132	4	0	2	23-26	20	0	2
1,2-Dichloroethane	4	85-115	51-147	4	0	2	9-17	20	2	0
1,1-Dichloroethene	4	57-138	28-167	4	0	2	15-19	20	2	0
trans-1,2-Dichloroethene	4	83-125	38-155	4	0	2	17-22	20	1	1
1,2-Dichloropropane	4	84-118	44-156	4	0	2	12-17	20	2	0
cis-1,3,Dichloropropene	4	86-105	22-178	4	0	2	5-16	20	2	0
trans-1,3,-Dichloropropene	4	92-109	22-178	4	0	2	3-17	20	2	0
Methylene Chloride	4	40-143	25-162	4	0	2	0-60	20	1	1
1,1,2,2-Trichloroethane	4	91-115	8-184	4	0	2	3-23	20	1	1

TABLE H-2 LABORATORY QUALITY CONTROL SUMMARY: WATER MS/MSD VOLATILE ORGANIC COMPOUNDS

158th Fighter Wing, Vermont ANG, Burlington Vermont

	Accuracy					Precision				
	Total No. Analyses	Percent Recovery Ranges	Percent Recovery Limits	Number Within Control Limits	Number Outside Control Limits	MSD Total No. Analyses	Range RPD	RPD Limits	Number Within Limits	Number Outside Limits
1,1,1,2-Tetrachloroethane	4	90-108	38-150	4	0	2	5-8	20	2	0
8010										
Tetrachloroethene	4	88-125	26-162	4	0	2	0-18	20	2	0
1,1,1-Trichloroethane	4	86-138	41-138	4	0	2	15-19	20	2	0
1,1,2-Trichloroethane	4	86-108	39-136	4	0	2	4-19	20	2	0
Trichloroethene	4	85-125	35-146	4	0	2	16-17	20	2	0
1,2,3,-Trichloropropane	4	91-111	8-184	4	0	2	0-9	20	2	0
Vi nyl Chloride	4	106-150	26-163	4	0	2	16-34	20	2	0
8020										
Benzene	4	66-120	39-150	4	0	2	1-32	20	1	1
Ethyl benzene	4	50-89	32-160	4	0	2	12-40	20	1	1
Chlorobenzene	4	88-104	55-135	4	0	2	0-16	20	2	0
Methyl-tert-butyl-ether	4	65-84	39-150	4	0	2	6-21	20	1	1
Styrene	4	81-95	32-160	4	0	2	8	20	2	0
Toluene	4	83-104	46-148	4	0	2	7-11	20	2	0

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TABLE H-2 LABORATORY QUALITY CONTROL SUMMARY: WATER MS/MSD VOLATILE ORGANIC COMPOUNDS

158th Fighter Wing, Vermont ANG, Burlington Vermont

	Accuracy					Precision				
	Total No. Analyses	Percent Recovery Ranges	Percent Recovery Limits	Number Within Control Limits	Number Outside Control Limits	MSD Total No. Analyses	Range RPD	RPD Limits	Number Within Limits	Number Outside Limits
1,4-Dimethylbenzene	4	38-93	32-160	4	0	2	6-58	20	1	1
1,3-Dimethylbenzene	4	38-93	32-160	4	0	2	6-58	20	1	1
8020										
1,2-Dimethylbenzene	4	71-96	32-160	4	0	2	5-23	20	1	1
1,2-Dichlorobenzene	4	72-84	37-154	4	0	2	8-15	20	2	0
1,3-Dichlorobenzene	4	77-84	42-143	4	0	2	1-9	20	2	0
1,4-Dichlorobenzene	4	86-135	42-143	4	0	2	9-15	20	2	0

TABLE H-3 LABORATORY QUALITY CONTROL SUMMARY: SOIL MS/MSD VOLATILE ORGANIC COMPOUNDS

158th Fighter Wing, Vermont ANG, Burlington Vermont

	Accuracy					Precision				
	Total No. Analyses	Percent Recovery Ranges	Percent Recovery Limits	Number Within Control Limits	Number Outside Control Limits	MSD Total No. Analyses	Range RPD	RPD Limits	Number Within Limits	Number Outside Limits
8010										
Bromodichloromethane	8	73-107	42-172	8	0	4		30	4	0
Bromobenzene	8		8-184	8	0	4	0-29	30	4	0
Bromoform	8	87-146	13-159	8	0	4	0-24	30	4	0
Bromomethane	8	61-112	1-144	8	0	4	4-29	30	4	0
Bromochloromethane	8	79-114	49-133	8	0	4	0-27	30	4	0
Carbon tetrachloride	8	80-104	43-143	8	0	4	0-26	30	4	0
2-Chloroethlyvinyl eter	8	99-146	14-186	8	0	4	0-21	30	4	0
Chloroethane	8	80-106	46-137	8	0	4	0-26	30	4	0
Chloroform	8	80-99	49-133	8	0	4	0-18	30	4	0
Cholorbenzene	8	75-114	38-150	8	0	4	0-25	30	4	0
Chloromethane	8	57-121	1-193	8	0	4	12-72	30	3	1
2-Chlorotoluene	8	64-107	8-184	8	0	4	0-29	30	4	0
4-Chlorotoluene	8	60-115	8-184	8	0	4	7-22	30	4	0
1,2-Dibromoethane	8	88-146	24-191	8	0	4	0-24	30	4	0
Dibromochloromethane	8	79-123	24-191	8	0	4	0-27	30	4	0

TABLE H-3 LABORATORY QUALITY CONTROL SUMMARY: SOIL MS/MSD VOLATILE ORGANIC COMPOUNDS

158th Fighter Wing, Vermont ANG, Burlington Vermont

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	Accuracy					Precision				
	Total No. Analyses	Percent Recovery Ranges	Percent Recovery Limits	Number Within Control Limits	Number Outside Control Limits	MSD Total No. Analyses	Range RPD	RPD Limits	Number Within Limits	Number Outside Limits
8010										0
Dibromomethane	8	88-138	42-172	8	0	4	0-31	30	3	1
1,2-Dichlorobenzene	8	64-100	1-208	8	0	4	0-18	30	4	0
1,3-Dichlorobenzene	8	63-100	7-187	8	0	4	0-18	30	4	0
1,4-Dichlorobenzene	8	61-107	42-143	8	0	4	0-26	30	4	0
1,1-Dichloroethane	8	79-106	47-132	8	0	4	9-19	30	4	0
1,2-Dichloroethane	8	80-115	51-147	8	0	4	0-26	30	4	0
1,1-Dichloroethene	8	76-104	28-167	8	0	4	0-26	30	4	0
trans-1,2-Dichloroethene	8	76-96	38-155	8	0	4	0-18	30	4	0
1,2-Dichloropropane	8	79-107	44-156	8	0	4	0-19	30	4	0
cis-1,3,Dichloropropene	8	72-107	22-178	8	0	4	7-27	30	4	0
trans1,3, Dichloropropene	8	81-113	22-178	8	0	4	7-29	30	4	0
Methylene Chloride	8	51-148	25-162	8	0	4	0-41	30	3	1
1,1,2,2-Trichloroethane	8	104-159	8-184	8	0	4	0-21	30	4	0

TABLE H-3 LABORATORY QUALITY CONTROL SUMMARY: SOIL MS/MSD VOLATILE ORGANIC COMPOUNDS

158th Fighter Wing, Vermont ANG, Burlington Vermont

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	Accuracy					Precision				
	Total No. Analyses	Percent Recovery Ranges	Percent Recovery Limits	Number Within Control Limits	Number Outside Control Limits	MSD Total No. Analyses	Range RPD	RPD Limits	Number Within Limits	Number Outside Limits
1,1,1,2-Tetrachloroethane	8	75-106	38-150	8	0	4	0-25	30	4	0
8010										
Tetrachloroethene	8	74-104	26-162	8	0	4	3-29	30	4	0
1,1,1-Trichloroethane	8	71-106	41-138	8	0	4	0-21	30	4	0
1,1,2-Trichloroethane	8	88-123	39-136	8	0	4	0-24	30	4	0
Trichloroethene	8	80-104	35-146	8	0	4	0-26	30	4	0
1,2,3,-Trichloropropane	8	72-169	8-184	8	0	4	0-19	30	4	0
Vi nyl Chloride	8	83-112	26-163	8	0	4	0-15	30	4	0
8020										
Benzene	8	76-100	39-150	8	0	4	0-18	30	4	0
Ethyl benzene	8	73-100	32-160	8	0	4	0-19	30	4	0
Chlorobenzene	8	71-100	55-135	8	0	4	7-18	30	4	0
Methyl-tert-butyl-ether	8	79-112	39-150	8	0	4	4-14	30	4	0
Styrene	8	72-100	32-160	8	0	4	4-9	30	4	0
Toluene	8	81-97	46-148	8	0	4	0-9	30	4	0

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TABLE H-3 LABORATORY QUALITY CONTROL SUMMARY: SOIL MS/MSD VOLATILE ORGANIC COMPOUNDS

158th Fighter Wing, Vermont ANG, Burlington Vermont

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	Accuracy					Precision				
	Total No. Analyses	Percent Recovery Ranges	Percent Recovery Limits	Number Within Control Limits	Number Outside Control Limits	MSD Total No. Analyses	Range RPD	RPD Limits	Number Within Limits	Number Outside Limits
1,4-Dimethylbenzene	8	78-100	32-160	8	0	4	8-9	30	4	0
1,3-Dimethylbenzene	8	78-100	32-160	8	0	4	8-9	30	4	0
8020										
1,2-Dimethylbenzene	8	87-100	32-160	8	0	4	0-9	30	4	0
1,2-Dichlorobenzene	8	61-100	37-154	8	0	4	0-9	30	4	0
1,3-Dichlorobenzene	8	63-100	42-143	8	0	4	0-9	30	4	0
1,4-Dichlorobenzene	8	63-100	42-143	8	0	4	0-17	30	4	0

TABLE H-4 LABORATORY QUALITY CONTROL SUMMARY: WATER MS/MSD SEMIVOLATILE ORGANIC COMPOUNDS

158th Fighter Wing, Vermont ANG, Burlington Vermont

	Accuracy					Precision				
	Total No. Analyses	Percent Recovery Ranges	Percent Recovery Limits	Number Within Control Limits	Number Outside Control Limits	MSD Total No. Analyses	Range RPD	RPD Limits	Number Within Limits	Number Outside Limits
Phenol	4	64-84	40-120	4	0	2	2-24	40	2	0
bis(2-Chloroethyl)ether	4	81-98	50-110	4	0	2	8-18	40	2	0
2-Chlorophenol	4	72-89	50-110	4	0	2	1-19	40	2	0
n-Nitroso-di-n-propylamine	4	94-113	30-110	3	1	2	0-18	40	2	0
Hexachloroethane	4	88-208	20-110	2	2	2	11-14	40	2	0
Isophorone	4	91-300	50-110	2	2	2	0-15	40	2	0
1,2,4-Trichlorobenzene	4	70-127	40-100	2	2	2	1-13	40	2	0
Naphthalene	4	23-143	30-110	1	3	2	1-68	40	1	1
4-Chloroaniline	4	11-26	10-120	4	0	2	4-48	40	1	1
2,4,6-Trichlorophenol	4	81-93	40-120	4	0	2	3-7	40	2	0
2,4-Dinitrotoluene	4	66-78	30-120	4	0	2	9-7	40	2	0
Diethylphthalate	4	82-97	50-120	4	0	2	0-6	40	2	0
N-Nitrosodiphenylamine	4	86-101	30-110	4	0	2	3-6	40	2	0
Hexachlorobenzene	4	70-76	40-120	4	0	2	5-6	40	2	0
Benzo(a)pyrene	4	60-87	50-120	4	0	2	2-12	40	2	0

TABLE H-5 LABORATORY QUALITY CONTROL SUMMARY: SOIL MS/MSD SEMIVOLATILE ORGANIC COMPOUNDS

158th Fighter Wing, Vermont ANG, Burlington Vermont

	Accuracy					Precision				
	Total No. Analyses	Percent Recovery Ranges	Percent Recovery Limits	Number Within Control Limits	Number Outside Control Limits	MSD Total No. Analyses	Range RPD	RPD Limits	Number Within Limits	Number Outside Limits
Phenol	8	0-93	26-90	5	3	4	6-200	35	3	1
2-Chlorophenol	8	0-92	25-102	7	1	4	7-200	50	3	1
1,4-Dichlorobenzene	8	45-89	28-104	8	0	4	4-33	27	3	1
n-Nitroso-di-n-propylamine	8	0-105	41-126	6	2	4	0-22	38	4	0
1,2,4-Trichlorobenzene	8	0-99	38-107	6	2	4	0-28	23	3	1
4-Chloro-3-methylphenol	8	0-102	26-103	6	2	4	0-22	33	4	0
Ancenapthene	8	-52-106	31-137	6	2	4	0-542	19	2	2
4-Nitrophenol	8	0-110	11-114	6	2	4	0-62	50	3	1
2,4-Dinitrotoluene	8	0-97	28-89	6	2	4	0-200	47	4	0
Pentachlorophenol	8	0-108	17-109	6	2	4	0-35	47	4	0
Pyrene	8	-99-114	35-142	7	1	4	3-669	36	3	1

TABLE H-6 LABORATORY QUALITY CONTROL SUMMARY: WATER MS/MSD METALS

158th Fighter Wing, Vermont ANG, Burlington Vermont

	Accuracy					Precision				
	Total No. Analyses	Percent Recovery Ranges	Percent Recovery Limits	Number Within Control Limits	Number Outside Control Limits	MSD Total No. Analyses	Range RPD	RPD Limits	Number Within Limits	Number Outside Limits
Aluminum	4	47.9-113.4	75-125	3	1	4	2.1-25.2	20	4	0
Antimony	4	93.5-121.2	75-125	4	0	4	0	20	4	0
Arsenic	4	131.8-169.3	75-125	0	4	4	0-32.3	20	2	2
Barium	4	86.1-114.1	75-125	4	0	4	5.5-14.1	20	4	0
Beryllium	4	100-130.7	75-125	3	1	4	0	20	4	0
Cadmium	4	64.0-77.1	75-125	1	3	4	0	20	4	0
Chromium	4	81.7-112	75-125	4	0	4	0-27.4	20	3	1
Cobalt	4	84.5-111.1	75-125	4	0	4	0-200	20	2	2
Copper	4	85.8-114.4	75-125	4	0	4	0-18.2	20	4	0
Iron	4	-631.3-151.3	75-125	2	2	4	5.9-22.2	20	3	1
Lead	4	57.1-101.4	75-125	3	1	4	0-10.8	20	4	0
Manganese	4	77.4-113.6	75-125	4	0	4	0.3-16.9	20	4	0
Mercury	4	96.8-115	75-125	4	0	4	0	20	4	0
Nickel	4	87.7-112.1	75-125	4	0	4	0-21.4	20	3	1
Selenium	4	38.1-119.8	75-125	1	3	4	0	20	4	0
Silver	4	79.5-87.2	75-125	4	0	4	0	20	4	0
Thallium	4	0-31.8	75-125	0	4	4	0	20	4	0
Vanadium	4	85.6-112.1	75-125	4	0	4	0-20.2	20	4	0
Zinc	4	40.4-95.4	75-125	3	1	4	15.4-200	20	2	2

TABLE H-7 LABORATORY QUALITY CONTROL SUMMARY: SOIL MS/MSD METALS
158th Fighter Wing, Vermont ANG, Burlington Vermont

1 of 2

	Accuracy					Precision				
	Total No. Analyses	Percent Recovery Ranges	Percent Recovery Limits	Number Within Control Limits	Number Outside Control Limits	MSD Total No. Analyses	Range RPD	RPD Limits	Number Within Limits	Number Outside Limits
Aluminum						4	1.8-10.7	35	4	0
Antimony	4	49.8-66.3	75-125	0	4	4	0	35	4	0
Arsenic	4	81.7-125.1	75-125	4	0	4	1.9-22.3	35	4	0
Barium	4	87-96.3	75-125	4	0	4	0.1-6.1	35	4	0
Beryllium	4	86.3-99.9	75-125	4	0	4	0-200	35	2	2
Cadmium	4	53.3-91.5	75-125	3	1	4	0-11.4	35	4	0
Calcium						4	0-93.1	35	3	1
Chromium	4	82.3-95.5	75-125	4	0	4	0-59.6	35	3	1
Cobalt	4	84.2-94.7	75-125	4	0	4	0-24	35	4	0
Copper	4	84.6-97	75-125	4	0	4	0-5.1	35	4	0
Iron						4	0.9-15.1	35	4	0
Lead	4	90-9999.9	75-125	3	1	4	2.4-98	35	3	1
Magnesium						4	0.5-14.1	35	4	0
Manganese	4	-123.5-103.1	75-125	3	1	4	2.3-63.2	35	3	1
Mercury	4	84.6-102.6	75-125	4	0	4	0-200	35	3	1
Nickel	4	84.8-94.2	75-125	4	0	4	1.8-16.2	35	4	0
Potassium						4	0.6-200	35	1	3
Selenium	4	59.9-80.9	75-125	3	1	4	0	35	4	1
Silver	4	81.7-122	75-125	4	0	4	0-91.4	35	3	1
Sodium						4	1.1-32.6	35	4	0
Thallium	4	86.9-94.2	75-125	4	0	4	0	35	4	0
Vanadium	4	84-95.4	75-125	4	0	4	3.7-15.5	35	4	0

TABLE H-7 LABORATORY QUALITY CONTROL SUMMARY: SOIL MS/MSD METALS
158th Fighter Wing, Vermont ANG, Burlington Vermont

2 of 2

	Accuracy					Precision				
	Total No. Analyses	Percent Recovery Ranges	Percent Recovery Limits	Number Within Control Limits	Number Outside Control Limits	MSD Total No. Analyses	Range RPD	RPD Limits	Number Within Limits	Number Outside Limits
Aluminum						4	1.8-10.7	35	4	0
Antimony	4	49.8-66.3	75-125	0	4	4	0	35	4	0
Zinc	4	81.8-111.4	75-125	4	0	4	0.6-29.1	35	4	0

control limits of ±20% for analytical precision. Control limits for TPH MS/MSD are detailed in Tables H-8 and H-9.

The results for soil are considered to have little impact on the environmental data quality and considered more likely to be the result of the regional matrix variability that could not be overcome by the sample mixing prior to the analyses of the samples. Water RPD values which exceeded control limits are most likely due to the unequal distribution of suspended minute particulates that could not be evenly distributed by well development procedures and mixing procedures since the analytical QC results do not indicate a systemic laboratory problem. Based on 489 of the 539 RPD values calculated, 90.7% of the data met control limits and the acceptable laboratory QC, therefore, the DQO for analytical precision has been met.

Sampling precision refers to the ability of the sampling procedure to reproduce the conditions at the site. Sampling precision was assessed through the collection of field replicates. Duplicate samples were collected at a rate of one in 20 and submitted with the environmental samples for VOC, SVOC, TAL metals, and TPH analyses. RPD values were calculated for all sample/duplicate pairs. The RPDs were then used to measure the sampling precision. Four soil, one sediment, one surface water, and one groundwater duplicates were collected during the ASI field effort. The duplicate samples were collected using the same procedures used to collect the environmental samples. The overall project objective for sampling precision outlined in the Sampling and Analysis Plan is to have 90% of the values calculated for the sampling program within the specified RPD range of ± 20%, for water samples, and ± 35% for soil samples. Based on the RPD values calculated, 873 of the 965 RPD values calculated met the associated RPD criteria. This represents a sampling precision of 91%. As a result, the DQO for analytical precision has been met. A complete discussion of all replicate samples is presented in Section H.3.

Based on the results of the laboratory and sampling precision, 1362 of 1504 RPD values met the associated RPD criteria. These results represent an overall precision of 91%. As a result, the DQO for overall precision has been met.

TABLE H-8 LABORATORY QUALITY CONTROL SUMMARY: WATER MS/MSD TPH

158th Fighter Wing, Vermont ANG, Burlington Vermont

	Accuracy					Precision				
	Total No. Analyses	Percent Recovery Ranges	Percent Recovery Limits	Number Within Control Limits	Number Outside Control Limits	MSD Total No. Analyses	Range RPD	RPD Limits	Number Within Limits	Number Outside Limits
TPH As Gasoline	4	104-111	75-125	4	0	2	2-4	20	2	0
TPH As Diesel	4	100-304	50-150	2	2	2	18-22	25	2	0

TABLE H-9 LABORATORY QUALITY CONTROL SUMMARY: SOIL MS/MSD TPH

158th Fighter Wing, Vermont ANG, Burlington Vermont

	Accuracy					Precision				
	Total No. Analyses	Percent Recovery Ranges	Percent Recovery Limits	Number Within Control Limits	Number Outside Control Limits	MSD Total No. Analyses	Range RPD	RPD Limits	Number Within Limits	Number Outside Limits
TPH As Gasoline	12	40-102	75-125	10	2	6	0-15	20	6	0
TPH As Diesel	8	28-541	50-150	5	3	4	5-104	25	2	2

H.2.2 ACCURACY

Accuracy measures the bias in a measurement system. Accuracy was defined as the degree of difference between measured or calculated values and the true value. The closer the numerical value of the measurement is to the true value, or actual concentration, the more accurate the measurement. Overall project accuracy consists of both analytical and sampling accuracy.

Analytical accuracy is expressed as the percent recovery of a compound or element that has been added to the environmental sample at a known concentration before analysis. Analytical accuracy was determined using MS/MSD and surrogate recovery data. The following equation was used to calculate percent recovery:

$$\%R = \frac{A_r - A_0}{A_f} X\ 100$$

Where: A_r = Total analyte concentration detected in the spiked sample

A_o = Analyte concentration detected in the unspiked sample

A_f = Analyte concentration added to the sample

Objectives for accuracy were to have 90% of the data within the specified percent recovery levels for that compound or element. Analytical accuracy was qualitatively assessed by evaluating the following laboratory QC information: sample holding times, method blanks, tuning and mass calibrations, gas chromatography/mass spectroscopy (GC/MS only), internal standards (GC/MS only), laboratory control samples and method blank spike recoveries, and initial and continuing calibration results calculated from all analyses conducted on environmental samples. Analytical accuracy was quantitatively assessed by evaluating the percent recoveries of spikes and surrogates.

Percent Recoveries

Four of the 188 water, and none of the 376 soil percent recoveries were outside the control limits for MS/MSD analyses conducted on the samples collected and analyzed for VOCs. Established control limits for VOC percent recovery values are presented in Table H-2 and H-3. Four of the 125 water and 29 of the 44 soil surrogate percent recoveries were outside the control limits for surrogate analysis. All supporting VOC QC information cited above was also qualitatively evaluated with respect to the analytical accuracy DQOs.

Ten of the 60 water, and 19 of the 88 soil percent recovery values calculated were outside the control limits for the MS/MSD analyses conducted on the samples collected and analyzed for SVOCs. Established control limits for SVOC percent recovery values are presented in Tables H-4 and H-5. One of the 84 water, and 2 of the 320 soil percent recovery values calculated were outside the control limits for the surrogate analysis conducted on the samples collected and analyzed for SVOCs. All supporting SVOC QC information cited above were also qualitatively evaluated with respect to the analytical accuracy DQOs.

Twenty of the 76 water, and 8 of the 68 soil TAL metals percent recovery values from the matrix spike analysis conducted on the samples exceeded recovery limits of 75- to 125%. Established control limits for metals percent recovery values are presented in Tables H-6 and H-7. All supporting TAL QC information cited above were also qualitatively evaluated with respect to the analytical accuracy DQO. These results are not considered to have any adverse impact on the environmental data quality.

Two of the 8 water, and 5 of the 20 soil percent recovery values for MS/MSD values obtained for TPH analysis were outside control limits listed in Table H-8 and H-9. One of the 26 water, and 15 of the 78 soil percent recovery values calculated were outside the control limits for the surrogate analysis conducted on the samples collected and analyzed for TPH. All supporting TPH QA information cited above also were qualitatively evaluated with respect to the analytical accuracy DQO. All other QC criteria for TPH analysis were met.

A total of 120 of all 1561 calculated percent recovery values exceeded control limits indicating that 92.3% accuracy was achieved. As a result of 92.3% of all percent recoveries meeting control limits, the DQO for analytical accuracy has been met.

Sampling accuracy was maximized by adherence to the strict QA program presented in the ASI Quality Assurance Project Plan (QAPP). All procedures (i.e., soil boring installation, soil samples collection procedures, and health monitoring equipment calibration and operation) used during the ASI were documented as Standard Operating Procedures (SOPs). Field QA samples (i.e., trip blanks, field blanks, and equipment rinseates) were prepared such that all samples represented the particular site from which they were collected, and assessed any cross-contamination that may have occurred. The environmental samples associated with the appropriate field QA samples were qualified based on the contaminants detected in the field QA samples. Compounds and elements detected in associated environmental samples with concentrations less than five times (ten times for common laboratory contaminants) that detected in the blank were considered as estimates and were qualified "B" accordingly.

Trip blanks

Twelve trip blanks were shipped and analyzed with the environmental samples analyzed for VOCs. Chloroform, chloromethane, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, methyl-tert-butyl ether, 1,1,1-trichloroethane, tetrachloroethane, toluene, and xylenes were detected in the trip blanks. These concentrations could not be attributed to the laboratory environment, and as a result, samples were qualified for cross-contamination. Trip blanks with detectable concentrations of contaminants are detailed in Section H.3.

Field Blanks

Four field blanks were collected and analyzed with the environmental samples. The field blanks consisted of potable water sources used in the steam cleaner for decontamination of equipment, and the American Society for Testing and Materials (ASTM) Type I water. Aluminum, barium, benzene, bis(2-ethylhexyl)phthalate, bromodichloromethane, calcium, chloroform, chloromethane, copper, diethyl phthalate, di-n-butyl phthalate, ethylbenzene, iron,

lead, magnesium, manganese, methylene chloride, phenol, potassium, sodium, styrene, toluene, 1,1,1-trichloroethane, TPH-gasoline, xylenes, and zinc were detected in the selected field blanks collected during the ASI. The low levels detected in the field blanks are not considered to have contributed to any levels in the associated environmental samples. Detected compounds for the field blanks are detailed in Section H.3.

Equipment Rinseates

Seven equipment rinseates were collected by pouring ASTM Type I water through decontaminated sampling equipment and were analyzed with the environmental sample to document the effectiveness of the decontamination efforts. VOCs including benzene, chloroform, chloromethane, ethylbenzene, methylene chloride, styrene, and 1,1,1-trichloroethane were detected in the equipment rinseates. SVOCs including bis(2-ethylhexyl)phthalate and diethylphthalate were detected in equipment rinseates. Metals such as aluminum, barium, calcium, iron, lead, manganese, sodium, and zinc were detected in the equipment rinseates. TPH-gasoline was detected in several of the equipment rinseates. The majority of the compounds and elements detected in the equipment rinseates were below the CRQL. All compounds and elements detected in the equipment rinseates are detailed in Section H.3.

Based on an evaluation of the compounds detected in the field QC blanks, overall field accuracy is deemed acceptable, except where noted. A complete discussion of field QC results is presented in Section H.3.

H.2.3 Representativeness

Representativeness expresses the degree to which the data accurately and precisely represent a characteristic of a population, parameter variations at a sampling point, a process condition, or an environmental condition. Sample representativeness was ensured, during the ASI, by collecting sufficient samples of a population medium, properly distributed with respect to location and time. Representativeness was assessed by reviewing the drilling and sample collection methods used during the ASI at the base. The reproducibility of a representative

set of samples reflects the degree of heterogeneity of the sampled medium, as well as the effectiveness of the sampling techniques.

Soil samples were collected from Sites 3 and 4. Soil samples were submitted for laboratory analyses from all sites sampled. Surface soil samples collected between 0 to 1 ft and 1 to 2 ft were collected using a stainless steel hand auger equipped with a 1 ft removable stainless steel liner. All other soil samples were collected from borings. All borings were advanced with a truck-mounted drilling rig using continuous-flight hollow stem augers. Soil samples were collected, from each boring, using a 2 ft split-spoon sampler equipped with four 6 in. removable stainless steel liners. Samples were collected continuously from the surface to 10 ft and at 5 ft centers to the water table for all borings not converted to monitoring wells. Samples were collected continuously from the surface to the water table and at 5 ft centers to final depth for all borings used as monitoring wells. Split-spoon samples were logged according to the Unified Soils Classification System and field-screened with a photo ionization detector (PID) meter and field GC for VOC concentrations. Blow counts were recorded as a measure of the relative soil density. All borings, not used as monitoring wells, were backfilled with a cement/bentonite slurry to the surface. All borings were marked at the surface and surveyed. A minimum of two soil samples, from each boring, were submitted for laboratory analyses. The sample collected from just below the ground surface and the sample collected from unsaturated soils just above the water table were submitted for laboratory analyses. A third and fourth sample were sometimes collected based on PID results and/or lithology. No samples collected from monitoring well borings were submitted for laboratory analyses. Filtered groundwater samples, for metals analyses, were collected using a decontaminated Teflon® bailer and a disposable, 0.45 μm filter. Groundwater samples were obtained after development of each well. After well installation, all wells were allowed to recharge, were then purged, and sampled. The volume of water in each well casing was calculated prior to purging and 4 to 5 casing volumes were removed. A decontaminated Teflon® bailer was used to remove the stagnant groundwater from each well. Color, degree of turbidity, odor and other physical properties of the water were recorded during development. In addition, pH, temperature, and conductivity of the groundwater were obtained before and after purging, and prior to sampling. These data were collected to ensure a representative groundwater sample was collected.

Based on the evaluation of the factors described above and summarized in Section H.3 the samples collected during the ASI are considered to be representative of the environmental conditions at the base.

H.2.4 Comparability

Comparability is a qualitative parameter expressing the confidence with which one data set can be compared to another and is limited to the other PARCC parameters, because only when precision and accuracy are known can one data set be compared to another. To optimize comparability, only the specific methods and protocols that were specified in the ASI QAPP were used to collect and analyze samples during the ASI. By using consistent sampling and analysis procedures, all data sets are comparable within the two sites at the base, between the two sites, or among ANG facilities nationwide. This consistency ensures that remedial action decision and priorities are based on a consistent database.

All samples collected for VOC and SVOC analyses were analyzed using SW-846 Method 8010/8020 and 3/90 CLP, respectively. All samples collected for TPH and TAL metals were analyzed using SW-846 Method 8015 and EPA Methods 6010/7000, respectively.

Based on the precision and accuracy assessment presented above, the data collected during the ASI are considered to be comparable with the data collected during previous investigations.

H.2.5 Completeness

Completeness was defined as the percentage of usable data obtained from a measurement system. Usable data are those data not rejected during the data validation process. Values and concentrations qualified "R" or "B" are excluded from use in the ASI report due to increased risk of indicating false positives or omitting compounds or elements that are present. Project completeness was defined as the percentage of data points used to prepare the risk characterization and recommendations for site remediation. The objective for project completeness was set at 90%.

Based on the evaluation of the laboratory QC results for the 6507 data points presented in Appendix I, these data were considered equal to 96% complete, and as such, were used as the basis of all recommendations presented in this report. A total of 259 data points were rejected for use because the data were qualified "R" indicating unreliable results or "B" indicating possible contamination from an outside source.

H.3 FIELD QUALITY CONTROL ASSESSMENT

In an effort to assess field QC, field QC samples were collected. These samples include trip blanks, field blanks, equipment rinseates, and field duplicate samples. The number of field QC samples collected was in accordance with HAZWRAP guidance as presented in DOE/HWP-69/R2. All field QC samples were collected and analyzed by the same SOPs and methods used for the 40 environmental samples. Table H-10 contains a cross-reference of the associated field QC blanks.

Trip Blanks

Trip blanks were used to check for cross-contamination during sample handling and shipping of samples to be analyzed for VOCs. A trip blank was shipped with each cooler containing samples to be analyzed for VOCs. Trip blanks, for the two rounds of sampling, were supplied by CompuChem Environmental Corporation in North Carolina. Trip blanks were prepared using ASTM Type I water. The trip blanks were stored with unused sample bottles prior to being packed and shipped with the samples.

A total of 12 trip blanks were shipped with samples and analyzed for VOCs. Table H-11 summarizes the concentrations of the VOCs detected in the trip blanks used during the ASI field effort. Chloroform, chloromethane, 1,2-dichlorobenzene, 1,3-dichlorobenzene, 1,4-dichlorobenzene, methyl-tert-butyl ether, 1,1,1-trichloroethane, tetrachloroethane, toluene, and xylenes were detected in the trip blanks collected during the Vermont ANG ASI. The contamination detected in the trip blanks can be attributed to several possible causes.

H-10 Quality Control Cross-reference

Sample ID	Sample Date	Trip Blank	Field Blank	Equipment Rinseate
V3-B1-0305	09/13/94	TB-091394-1	FB-090894-P, FB-090894-D	ER-091294-1
V3-B1-1113	09/13/94	TB-091394-1	FB-090894-P, FB-090894-D	ER-091394-1
V3-B1-1113D	09/13/94	TB-091394-1	FB-090894-P, FB-090894-D	ER-091394-1
V3-B2-0305	09/13/94	TB-091394-1	FB-090894-P, FB-090894-D	ER-091294-1
V3-B2-1113	09/13/94	TB-091394-1	FB-090894-P, FB-090894-D	ER-091294-1
V3-B3-0305	09/13/94	TB-091394-1	FB-090894-P, FB-090894-D	ER-091294-1
V3-B3-1315	09/13/94	TB-091394-1	FB-090894-P, FB-090894-D	ER-091294-1
V3-B4-0305	09/13/94	TB-091394-1	FB-090894-P, FB-090894-D	ER-091394-1
V3-B4-0810	09/13/94	TB-091394-1	FB-090894-P, FB-090894-D	ER-091394-1
V3-B4-1315	09/13/94	TB-091394-1	FB-090894-P, FB-090894-D	ER-091394-1
V3-B4-1315D	09/13/94	TB-091394-1	FB-090894-P, FB-090894-D	ER-091394-1
V3-B5-0305	09/13/94	TB-091394-1	FB-090894-P, FB-090894-D	ER-091294-1
V3-B5-1315	09/13/94	TB-091394-1	FB-090894-P, FB-090894-D	ER-091294-1
V3-BG1-0305	09/20/94	TB-092094-1	FB-092194-1, FB-090894-D	ER-092094-1
V3-BG1-1094	10/24/94	TB-102494-2	FB-092494-P	ER-102494-1
V3-BG1-1094D	10/24/94	TB-102494-2	FB-092494-P	ER-102494-1
V3-BG1-1820	09/20/94	TB-092094-1	FB-092194-1, FB-090894-D	ER-092094-1
V3-BG1-3840	09/20/94	TB-092094-1	FB-092194-1, FB-090894-D	ER-092094-1
V3-BG1-3840D	09/20/94	TB-092094-1	FB-092194-1, FB-090894-D	ER-092094-1
V3-MW1-1094	10/31/94	TB-103194-1	FB-092494-P	ER-102494-1
V3-MW3-1094	10/31/94	TB-103194-1	FB-092494-P	ER-102494-1
V4-B1-0911	09/08/94	TB-090894-1	FB-090894-P, FB-090894-D	ER-090894-1
V4-B1-1719	09/08/94	TB-090894-1	FB-090894-P, FB-090894-D	ER-090894-1
V4-B2-1416	09/07/94	TB-090794-1	FB-090894-P, FB-090894-D	ER-090894-1
V4-B2-1921	09/07/94	TB-090794-1	FB-090894-P, FB-090894-D	ER-090894-1
V4-B3-1416	09/07/94	TB-090794-1	FB-090894-P, FB-090894-D	ER-090894-1
V4-B3-1921	09/07/94	TB-090794-1	FB-090894-P, FB-090894-D	ER-090894-1
V4-B4-0911	09/08/94	TB-090894-1	FB-090894-P, FB-090894-D	ER-090894-1
V4-B4-1719	09/08/94	TB-090894-1	FB-090894-P, FB-090894-D	ER-090894-1
V4-B5-0406	09/14/94	TB-091494-1	FB-090894-P, FB-090894-D	ER-091394-1
V4-B5-0911	09/14/94	TB-091494-1	FB-090894-P, FB-090894-D	ER-091394-1
V4-B5-1719	09/14/94	TB-091494-1	FB-090894-P, FB-090894-D	ER-091394-1
V4-B6-1921	09/07/94	TB-090794-1	FB-090894-P, FB-090894-D	ER-090894-1
V4-B6-2426	09/07/94	TB-090794-1	FB-090894-P, FB-090894-D	ER-090894-1
V4-BG-0911	09/10/94	TB-091094-1	FB-090894-P, FB-090894-D	
V4-BG-1416	09/10/94	TB-091094-1	FB-090894-P, FB-090894-D	
V4-BG-1416D	09/10/94	TB-091094-1	FB-090894-P, FB-090894-D	
V4-BG-1921	09/10/94	TB-091094-1	FB-090894-P, FB-090894-D	
V4-BG1-1094	10/25/94	TB-102594-1	FB-092494-P	ER-102494-1
V4-D1-0050	10/28/94	TB-102894-2	FB-092494-P	ER-102894-2
V4-D1-0050D	10/28/94	TB-102894-2	FB-092494-P	ER-102894-2
V4-D2-0050	10/28/94	TB-102894-2	FB-092494-P	ER-102894-2
V4-D3-0050	10/28/94	TB-102894-2	FB-092494-P	ER-102894-2
V4-MW2-1094	10/27/94	TB-102794-1	FB-092494-P	ER-102494-1
V4-MW3-1094	10/26/94	TB-102694-1	FB-092494-P	ER-102494-1
V4-SW3-1094	10/28/94	TB-102894-2	FB-092494-P	ER-102894-1
V4-SW3-1094D	10/28/94	TB-102894-2	FB-092494-P	ER-102894-1

H-11 Analytes Detected in Trip Blanks

Sample ID	Analyte	Result	Qualifier	Units
TB090794-1	1,2-Dichlorobenzene	0.19	()	µg/l
TB090794-1	1,3-Dichlorobenzene	0.12	()	µg/l
TB090794-1	1,4-Dichlorobenzene	0.12	()	µg/l
TB090794-1	Toluene	0.10	()	µg/l
TB090894-1	1,1,1-Trichloroethane	0.47	()	µg/l
TB090894-1	1,2-Dichlorobenzene	0.19	()	µg/l
TB090894-1	1,3-Dichlorobenzene	0.12	()	µg/l
TB090894-1	1,4-Dichlorobenzene	0.12	()	µg/l
TB090894-1	Chloroform	0.02	()	µg/l
TB090894-1	Chloromethane	0.03	()J	µg/l
TB090894-1	1,3-Dichlorobenzene	0.05	()	µg/l
TB090894-1	1,4-Dichlorobenzene	0.07	()	µg/l
TB090894-1	Toluene	0.19	()	µg/l
TB090894-1	m-Xylene	0.06	()	µg/l
TB090894-1	o-Xylene	0.14	()	µg/l
TB090894-1	p-Xylene	0.04	()	µg/l
TB091094-1	Methyl-tert-butyl ether	1.40	()	µg/l
TB091394-1	m-Xylene	0.43	()	µg/l
TB091394-1	p-Xylene	0.43	()	µg/l
TB092094-1	1,1,1-Trichloroethane	0.05	()J	µg/l
TB092094-1	Chloroform	0.11	()	µg/l
TB092094-1	Chloromethane	0.27	()	µg/l
TB102594-1	m-Xylene	0.15	()J	µg/l
TB102594-1	p-Xylene	0.15	()J	µg/l
TB102894-2	1,1,1-Trichloroethane	0.02	()	µg/l
TB102894-2	Chloromethane	0.14	()	µg/l
TB102894-2	Tetrachloroethene	0.03	()	µg/l
TB103194-1	Toluene	0.12	()	µg/l

Chloroform is a common laboratory contaminant and is frequently detected. The other contamination could be attributed to contamination from samples stored with the trip blanks at the laboratory.

Field Blanks

Field blanks were collected to provide baseline analytical data for the water used for equipment decontamination. A total of four field blanks were collected, including blanks for the ASTM Type I water and the potable water used in the steam cleaner and as decontamination water. Field blanks were collected by randomly selecting sample containers, filling them with water from the sample source, and then preserving, as appropriate, for the required analysis. The blanks were analyzed in the same manner as the associated environmental samples. Aluminum, barium, benzene, bis(2-ethylhexyl)phthalate, bromodichloromethane, calcium, chloroform, chloromethane, copper, diethyl phthalate, di-n-butyl phthalate, ethylbenzene, iron, lead, magnesium, manganese, methylene chloride, phenol, potassium, sodium, styrene, toluene, 1,1,1-trichloroethane, TPH-gasoline, xylenes, and zinc were detected in selected field blanks prepared during the ASI. Table H-12 summarizes the concentrations of elements detected in the field blanks collected at the base. The Vermont ANG ASI was conducted in two sampling events, separate field blanks were obtained for each sampling event. The low levels of compounds and elements detected in the field blanks are not considered to have contributed to any levels seen in the associated environmental samples.

Equipment Rinseates

Equipment rinseates were collected to check for cross-contamination introduced from sample to sample through the sampling equipment. All equipment rinseates were prepared by pouring ASTM Type I water through or over sampling equipment which had been decontaminated. The equipment rinseates were preserved, as appropriate, for the required analysis and analyzed using the same methods as the associated environmental samples. Seventeen equipment rinseates were prepared from the equipment used to obtain environmental samples. Table H-13 summarizes the concentrations of elements detected in the equipment blanks

H-12 Analytes Detected in Field Blanks

Sample ID	Analyte	Result	Qualifier	Units
FB090894-D	1,1,1-Trichloroethane	0.58		µg/l
FB090894-D	Chloroform	0.22	()	µg/l
FB090894-D	Methylene chloride	8.70		µg/l
FB090894-D	Benzene	0.14	()	µg/l
FB090894-D	Ethylbenzene	0.11	()	µg/l
FB090894-D	Styrene	0.13	()	µg/l
FB090894-D	Di-n-butyl phthalate	1.00	()	µg/l
FB090894-D	bis(2-Ethylhexyl)phthalate	2.00	()	µg/l
FB090894-P	Bromodichloromethane	4.00		µg/l
FB090894-P	Chloroform	46.00		µg/l
FB090894-P	Benzene	0.09	()	µg/l
FB090894-P	Toluene	0.20	()	µg/l
FB090894-P	m-Xylene	0.07	()	µg/l
FB090894-P	o-Xylene	0.18	()	µg/l
FB090894-P	Di-n-butyl phthalate	0.90	()	µg/l
FB090894-P	Diethyl phthalate	0.60	()	µg/l
FB090894-P	Phenol	1.00	()	µg/l
FB090894-P	Aluminum	1500.00		µg/l
FB090894-P	Barium	30.20	()	µg/l
FB090894-P	Calcium	30800.00		µg/l
FB090894-P	Copper	33.70		µg/l
FB090894-P	Iron	1740.00		µg/l
FB090894-P	Lead	3.20		µg/l
FB090894-P	Magnesium	3940.00	()	µg/l
FB090894-P	Manganese	69.20		µg/l
FB090894-P	Potassium	1740.00	()	µg/l
FB090894-P	Sodium	9220.00		µg/l
FB090894-P	Zinc	125.00		µg/l
FB092194-1	4,4'-DDE	0.00	()	µg/l
FB092194-1	Endosulfan sulfate	0.00	()	µg/l
FB092194-1	Endrin	0.00	()	µg/l
FB092194-1	1,1,1-Trichloroethane	0.32	()	µg/l
FB092194-1	Benzene	0.23	()J	µg/l
FB092194-1	Toluene	0.87		µg/l
FB092194-1	Aluminum	784.00		µg/l
FB092194-1	Barium	14.50	()	µg/l
FB092194-1	Calcium	26000.00		µg/l
FB092194-1	Copper	9.30	()	µg/l
FB092194-1	Iron	1000.00		µg/l
FB092194-1	Lead	2.60	()	µg/l
FB092194-1	Magnesium	3780.00	()	µg/l
FB092194-1	Manganese	15.90		µg/l
FB092194-1	Potassium	1160.00	()	µg/l
FB092194-1	Sodium	8430.00		µg/l
FB092194-1	Zinc	90.50		µg/l
FB092194-1	TPH-Purgeable as Gasoline	0.03		mg/kg
FB102494-P	1,1,1-Trichloroethane	0.09	()	µg/l
FB102494-P	Chloroform	45.00		µg/l
FB102494-P	Chloromethane	0.03	()	µg/l
FB102494-P	Dibromomethane	0.38	()J	µg/l
FB102494-P	Ethylbenzene	0.28		µg/l
FB102494-P	Barium	6.90	()	µg/l
FB102494-P	Calcium	20000.00	()	µg/l
FB102494-P	Copper	597.00	J	µg/l
FB102494-P	Iron	399.00		µg/l
FB102494-P	Lead	2.80		µg/l
FB102494-P	Magnesium	3520.00		µg/l
FB102494-P	Manganese	4.80	()	µg/l
FB102494-P	Potassium	1470.00	()	µg/l

H-12 Analytes Detected in Field Blanks

FB102494-P	Sodium	7860.00	µg/l
FB102494-P	Zinc	140.00	µg/l
FB102494-P	TPH-Purgeable as Gasoline	0.06	

H-13 Analyte Detected in Equipment Rinseates

Sample ID	Analyte	Result	Qualifier	Units
ER090894-1	1,1,1-Trichloroethane	0.39		µg/l
ER090894-1	Chloroform	0.18	()	µg/l
ER090894-1	Chloromethane	0.04	()	µg/l
ER090894-1	Methylene chloride	9.00		µg/l
ER090894-1	Benzene	0.11	()	µg/l
ER090894-1	Ethylbenzene	0.13	()	µg/l
ER090894-1	Styrene	0.13	()	µg/l
ER090894-1	Di-n-butyl phthalate	0.60	()	µg/l
ER091294-1	1,1,1-Trichloroethane	0.20	()	µg/l
ER091294-1	Chloroform	0.23	()	µg/l
ER091294-1	bis(2-Ethylhexyl)phthalate	0.60	()	µg/l
ER091294-1	Barium	1.00	()	µg/l
ER091294-1	Lead	2.50	()	µg/l
ER091294-1	Zinc	10.40	()	µg/l
ER091394-1	1,1,1-Trichloroethane	0.16	()	µg/l
ER091394-1	Chloroform	0.20		µg/l
ER091394-1	Methylene chloride	9.10	J	µg/l
ER091394-1	Calcium	56.10	()	µg/l
ER091394-1	Zinc	13.30	()	µg/l
ER102494-1	Methylene chloride	3.30		µg/l
ER102494-1	Barium	0.76	()	µg/l
ER102494-1	Calcium	89.20	()	µg/l
ER102494-1	Iron	63.00	()	µg/l
ER102494-1	Manganese	2.70	()	µg/l
ER102494-1	TPH-Purgeable as Gasoline	0.08		
ER102894-1	Aluminum	61.30	()	µg/l
ER102894-1	Barium	0.72	()	µg/l
ER102894-1	TPH-Purgeable as Gasoline	0.11		MG/L
ER102894-2	bis(2-Ethylhexyl)phthalate	4.00	()	µg/l
ER102894-2	Aluminum	65.50	()	µg/l
ER102894-2	Sodium	422.00	()	µg/l
ER102894-2	Zinc	5.70	()J	µg/l
ER102894-2	TPH-Purgeable as Gasoline	0.05		mg/l

collected at the base. VOCs including benzene, chloroform, chloromethane, ethylbenzene, methylene chloride, styrene, and 1,1,1-trichloroethane were detected in the equipment rinseates. SVOCs including bis(2-ethylhexyl)phthalate and diethylphthalate were detected in equipment rinseates. Metals such as aluminum, barium, calcium, iron, lead, manganese, sodium, and zinc were detected in the equipment rinseates. TPH-gasoline was detected in several of the equipment rinseates.

Field Replicates

Field replicates were used as a measure of sampling precision, samples collection reproducibility, and media variability during the ASI at the base. Field RPD values were calculated sample/duplicate pairs. The RPD value of the detected compound or parameter was reviewed to assess the sample collection reproducibility and matrix variability. A total of 30 soil samples, 3 sediment samples, 1 surface water sample, 6 groundwater samples, 4 soil replicate samples, 1 sediment replicate sample, 1 surface water replicate sample, and 1 groundwater replicate sample were collected. Increased percent differences were expected for all analytes detected in soil samples, since all samples remained in stainless steel sleeves (i.e., not mixed) after the sampling equipment was retrieved from the borehole. The field replicate for each soil analyses were obtained from the adjacent sleeve, water samples were split into different sample containers on sampling. Nine hundred sixty five RPDs were calculated for the sample/duplicate pairs. Of these 873 met the associated QC requirements,

Average values for field replicates were obtained using the following guidelines;

(1) If the analyte was detected in both samples the results were averaged.

(2) If the analyte was detected in one sample, and was qualified "B" or "R" in the other sample, the good value, not qualified "B" or "R", was used.

(3) If the analyte was detected in only one sample and the detected value was greater than 1/2 the quanitation limit, the detected value was averaged with 1/2 the quanitation limit.

(4) If the analyte was detected in only one sample and the detected value was less than 1/2 the quanitation limit, the detected value was used.

H.4 LABORATORY QUALITY CONTROL ASSESSMENT

All environmental samples collected at the Vermont ANG base were analyzed using the 3/90 EPA CLP Statement Of Work (SOW) for GC/MS analyses and EPA solid waste test methods and general chemical methodology from the following references:

- ***Statement of Work For Organic Analysis, Multi-Media, Multi-Concentration***, EPA Contract Laboratory Program, 3/90 (VOC, SVOC)

- ***Test Methods for Evaluating Solid Waste, Physical/ Chemical Methods***, SW-846, Third Edition, September 1986, with 1989 revisions (VOC and TPH)

- ***Methods for Chemical Analyses of Water and Wastes***, EPA 600/4-79-020, EPA 1983, with revisions (TPH)

- ***Requirements for Quality Control of Analytical Data***, HAZWRAP, DOE/HWP-65/R1 6/90 (VOC, SVOC, priority pollutant metals, and TPH)

- **Statement of Work for Inorganic Analyses, Multi-Media, Multi-Concentration,** EPA Contract Laboratory Program, 9/91 (TAL metals)

HAZWRAP Level C documentation was required and submitted by the laboratory for all analyses. All data were validated and qualified using the guidelines and specifications described in the following documents:

- ***National Functional Guidelines for Organic Data Review; Multi-Media, Multi-Concentration (OLMO1.0-OLMO1.6)***, EPA CLP, June 1992 (SVOC analyses)

- ***Requirements for Quality Control of Analytical Data,*** Hazardous Waste Remedial Actions Program (DOE/HWP-65/R2), July 1990 (VOC and TPH analyses)

- ***Laboratory Data Validation Functional Guidelines for Evaluating Inorganic Analyses,*** EPA Contract Laboratory Program, June 1988, (TAL metals analyses)

In addition to the above guidelines, additional steps were taken to make the data validation process clearer to the data user. The laboratory "J" qualifier, "B" qualifier for metals, was removed from detects below the quanitation limit and was replaced with a "( )" qualifier prior to validation. In addition, a "B" qualifier was used to indicate possible blank contamination. In these cases the 5x and 10x rule was applied.

All data validation qualifiers used were applied to the data as required by the aforementioned guidelines. A complete summary of all data obtained and the qualifiers applied to that data are presented in Appendix I.

APPENDIX I: DATA VALIDATION SUMMARIES

DATA VALIDATION REPORT
SEMIVOLATILE ORGANIC COMPOUND ANALYSES
EPA CLP SOW 3/90 OLM01.9
Case#: 29383 SDG#: 00007
Burlington, Vermont

Samples:

V3B11113	V3B11113D	V3B21113	V3B41315	V3B41315D	V3B50305
V4B10911	V4B11719	V4B21416	V4B21921	V4B31416	V4B31921
V4B40911	V4B41719	V4B61921	V4B62426	V4BG0911	V4BG1416
V4BG1416D	V4BG1921				

I. **Sample Holding Times:** Acceptable/All criteria met.

All samples were extracted within the required holding time of 14 days, and analyzed within the required holding time of 40 days. No action taken.

II. **GC/MS Instrument Performance Check:** Acceptable/All criteria met.

DFTPP was analyzed at the beginning of each 12-hour analytical sequence, as required. All DFTPP ion abundance data were provided, and all results were within specified control limits.

III. **Initial and Continuing Calibration:**

Discussion:

All relative response factors (RRF) in the initial calibrations were above the 0.05 lower control limit. All %RSD (Percent Relative Standard Deviations) in initial calibrations were technically acceptable (< 30%) and were calculated correctly.

Continuing calibrations were performed at the proper frequency, and all RRF were technically acceptable (> 0.05). The following compounds exhibited percent difference (%D) values greater than the required value of (+/-) 25% in the corresponding samples' analyses:

Samples V3B11113, V3B11113D, V3B21113, V3B41315, V3B41315D, V3B50305, V3B11113DL; 2,4,6-tribromophenol. Sample V4B11719; 2,2'-oxybis (1-Chloropropane), n-nitroso-di-n-propylamine, 2-nitroaniline.

Samples V4B10911, V4B21416, V4B21921, V4B31416, V4B31921, V4B40911, V4B41719, V4B61921, V4B62426; 4-nitrophenol, 3,3'-dichlorobenzidine, 2-fluorophenol. Samples V4BG0911, V4BG1416, V4BG1416D, V4BG1921; 2,2'-oxybis (1-Chloropropane),

Hexachlorobutadiene, hexachlorocyclopentadiene, 2-nitroaniline, 3-nitroaniline, hexachlorobenzene, butylbenzylphthalate, bis (2-ethylhexyl) phthalate, di-n-Octylphthalate.

None of the samples were found to contain concentrations of these compounds above CRDL, and no qualifiers were added to the data.

IV. **Blank Analyses:** Acceptable.

Discussion:

Method blanks were analyzed at the required frequency. No target analytes were detected in the associated method blanks. Qualifiers were not added to the data.

V. **Surrogate Recovery:**

All surrogate spiking compound recoveries were within control limits. No qualifiers were added to the data.

VI. **Matrix Spike / Matrix Spike Duplicate:**

All matrix spike analyses were within control limits, with one exception: Recovery for phenol in the matrix spike duplicate was 93%, outside QC limits of 26-90%. No detects were reported for phenol, and no qualifiers were added due to MS/MSD results alone

VII. **Internal Standards Performance:** Acceptable.

All criteria were met. No qualifiers added.

Discussion:

Analysis of areas and retention times for internal standards was conducted. All internal standard areas within the technical acceptance window of >100% or <50% of the continuing calibration internal standard area, and all internal retention times were within (+/-) 30 seconds of the associated continuing calibration internal standard retention time.

VIII. **System Performance:** Acceptable.

No signs of degraded instrument performance were noted. The analytical system was determined to be in tune, within control limits, and stable during the course of these analyses.

IX. Overall Assessment of the Data:

Based on the evaluation presented, the laboratory adhered to the specified analytical method, no data were qualified, and the data are acceptable for use.

DATA VALIDATION REPORT
SEMIVOLATILE ORGANIC COMPOUND ANALYSES
EPA CLP SOW 3/90 OLM01.9
Case#: 29249 SDG#: 00109
BURLINGTON, VERMONT

Samples: (Soil)

3BG13840D	V3B10305	V3B20305	V3B30305	V3B31315
V3B40305	V3B40810	V3B51315	V3BG10305	V3BG13840
V4B50406	V4B50911	V4B51719		

I. **Sample Holding Times:** Acceptable/All criteria met.

All samples were extracted within the required holding time of 14 days, and were analyzed within the required holding time of 40 days. No qualifiers were added to the data.

II. **GC/MS Instrument Performance Check:** Acceptable/All criteria met.

DFTPP was analyzed at the beginning of each 12-hour analytical sequence, as required. All DFTPP ion abundance data were provided, and all results were within specified control limits.

III. **Initial and Continuing Calibration:**

Discussion:

All relative response factors (RRF) in the initial calibrations were above the 0.05 lower control limit. All %RSD (Percent Relative Standard Deviations) in initial calibrations were technically acceptable (< 30%) and were calculated correctly, with one exception: 4-chloroaniline was found to have %RSD > 30%, but was not detected in any sample in concentration above CRDL. No qualifiers were added to the data.

Continuing calibrations were performed at the proper frequency, and all RRF were technically acceptable (> 0.05). Many compounds were found to have %D > 25% in many of the samples:

3BG13840D, V3BG10305, V3BG13840: 3,3'-dichlorobenzidine, Indeno-(1,2,3-cd)-pyrene, dibenzo-(a,h)-anthracene, and benzo-(g,h,i)-perylene.

V3B10305, V3B20305, V3B31315, V3B51315, V4B50406, V4B50911, V4B51719: bis-(2-chlorphenol) ether, 4-chloroaniline, 4,6-dinitro-2-methylphenol, N-nitroso-diphenylamine, 3,3'-dichlorobenzidine.

V3B30305, V3B40810, V4B51719DL: bis-(2-Chlorethyl)-ether, 2-Nitrophenol, 4-chloroaniline, 2,4-Dinitrophenol, 4,6-dinitro-2-methylphenol, N-nitrosodiphenylamine, 3,3'-dichlorobenzidine

V3B40305: 2,4-Dinitrophenol, 4,6-dinitro-2-methylphenol.

None of these compounds were detected in any sample at a concentration above CRDL, and no qualifiers were added to the data.

IV. Blank Analyses: Acceptable.

Discussion:

Method blanks were analyzed at the required frequency. Method blank results were reviewed, and compounds detected at concentrations which fell under the 5x/10x rule were qualified "B", blank contamination:

Sample ID #	Compound	Qualifier
3BG13840D	di-n-butylphthalate	B
V3B10305	di-n-butylphthalate	B
V3B20305	di-n-butylphthalate	B
V3B31315	di-n-butylphthalate	B
V3B51315	di-n-butylphthalate	B
V3BG10305	di-n-butylphthalate	B
V3BG13840	di-n-butylphthalate	B
V4B50406	di-n-butylphthalate	B
V4B51719	di-n-butylphthalate	B
V4B50911	di-n-butylphthalate	B

V. Surrogate Recovery:

All surrogate spiking compound recoveries were within control limits. No qualifiers were added to the data.

VI. Matrix Spike / Matrix Spike Duplicate:

Matrix Spike analysis indicated many compounds were outside of spike recovery requirements. Fourteen of 22 compounds were outside control limits, and 4 of 11 relative percent differences were outside of control limits.

No compounds outside control limits were detected in any of the samples, and no qualifiers were added to the data for MS/MSD results.

VII. **Internal Standards Performance:** Acceptable.

All criteria were met. No qualifiers were required.

Discussion:

Analysis of areas and retention times for internal standards was conducted. All internal standard areas were within the technical acceptance window of >100% or <50% of the continuing calibration internal standard area, All internal retention times were within (+/-) 30 seconds of the associated continuing calibration internal standard retention time.

VIII. **System Performance:** Acceptable.

No signs of degraded instrument performance were noted. The analytical system was determined to be in tune, within control limits, and stable during the course of these analyses.

IX. **Overall Assessment of the Data:**

Based on the evaluation presented, the laboratory adhered to the specified analytical method, no data were qualified, and the data are acceptable for use.

DATA VALIDATION REPORT
SEMIVOLATILE ORGANIC COMPOUND ANALYSES
EPA CLP SOW 3/90 OLM01.9
Case#: 29249 SDG#: 00196
BURLINGTON, VERMONT

Sample:

V3BG11820

I. **Sample Holding Times:** Acceptable/All criteria met.

The sample was extracted within the required holding time of 14 days, and analyzed within the required holding time of 40 days. No action taken.

II. **GC/MS Instrument Performance Check:** Acceptable/All criteria met.

DFTPP was analyzed at the beginning of each 12-hour analytical sequence, as required. All DFTPP ion abundance data were provided, and all results were within specified control limits.

III. **Initial and Continuing Calibration:**

Discussion:

All relative response factors (RRF) in the initial calibrations were above the 0.05 lower control limit. All %RSD (Percent Relative Standard Deviations) in initial calibrations were technically acceptable (< 30%) and were calculated correctly.

Continuing calibrations were performed at the proper frequency, and all RRF were technically acceptable (> 0.05). Three compounds were found to be outside control limits for %D: indeno (1,2,3-cd) pyrene, dibenzo (a,h) anthracene, and benzo (g,h,i) perylene. None of these compounds were detected in the sample. No qualifiers were added to the data.

IV. **Blank Analyses:** Acceptable.

Discussion:

A method blank was analyzed at the required frequency. Di-n-butylphthalate was detected in the associated method blank. The concentration detected in the sample was less than 10 times the

concentration of the compound in the method blank, and as a result was qualified "B", blank contamination.

Sample ID #	Compound	Qualifier
V3BG11820	di-n-butylphthalate	B

V. Surrogate Recovery:

All surrogate spiking compound recoveries were within control limits. No qualifiers were added to the data.

VI. Matrix Spike / Matrix Spike Duplicate:

Matrix Spike analysis indicated that all compounds were within control limits for both %recovery and RPD. No qualifiers were added to the data based on MS/MSD results.

VII. Internal Standards Performance: Acceptable.

All criteria were met. No qualifiers were required.

Discussion:

Analysis of areas and retention times for internal standards was conducted. All internal standard areas within the technical acceptance window of >100% or <50% of the continuing calibration internal standard area, and all internal retention times were within (+/-) 30 seconds of the associated continuing calibration internal standard retention time.

VIII. System Performance: Acceptable.

No signs of degraded instrument performance were noted. The analytical system was determined to be in tune, within control limits, and stable during the course of these analyses.

IX. Overall Assessment of the Data:

Based on the evaluation presented, the laboratory adhered to the specified analytical method, and as qualified, and the data are acceptable for use.

DATA VALIDATION REPORT
SEMIVOLATILE ORGANIC COMPOUND ANALYSES
EPA CLP SOW 3/90 OLM01.9
Case#: 29249 SDG#: 00230
BURLINGTON, VERMONT

Samples:

3BG11094D ER1024941 FB102494P V3BG11094 V4BG11094 V4MW21094
V4MW21094DL V4MW31094

I. **Sample Holding Times:** Acceptable/All criteria met.

All samples were extracted within the required holding time of 14 days, and all samples were analyzed within the required holding time of 40 days. No action taken.

II. **GC/MS Instrument Performance Check:** Acceptable/All criteria met.

DFTPP was analyzed at the beginning of each 12-hour analytical sequence, as required. All DFTPP ion abundance data were provided, and all results were within specified control limits.

III. **Initial and Continuing Calibration:**

Discussion:

All relative response factors (RRF) in the initial calibrations were above the 0.05 lower control limit. All %RSD (Percent Relative Standard Deviations) in initial calibrations were technically acceptable (< 30%) and were calculated correctly, with one exception: dibenzo (a,h) anthracene. Dibenzo (a,h) anthracene was not detected in any of the samples. No qualifiers were added to the data.

Continuing calibrations were performed at the proper frequency, and all RRF were technically acceptable (> 0.05). Four compounds exhibited a percent difference (%D) greater than the required value of (+/-) 25%: 3,3'-dichlorobenzidine, indeno (1,2,3-cd) pyrene, dibenzo (a,h) anthracene, and benzo (g,h,i) perylene. Detected concentrations of these compounds were qualified "J", estimated, and non-detects were not qualified.

IV. **Blank Analyses:** Acceptable.

Discussion:

No analytes were detected in the associated method blanks. No qualifiers were added due to method blank results.

V. **Surrogate Recovery:**

All surrogate spiking compound recoveries were within control limits. No qualifiers were added to the data.

VI. **Matrix Spike / Matrix Spike Duplicate:**

Two compounds (naphthalene and 4-chloroaniline) were outside of control limits for relative percent difference in matrix spike/matrix spike duplicate analysis. In addition, spike recoveries were outside control limits for four compounds: hexachloroethane, N-nitroso-di-n-propylamine, naphthalene, and 4-chloroaniline. Detected concentrations for compounds with low spike recoveries (naphthalene and 4-chloroaniline) were qualified "J", estimated. Non-detects were qualified "UJ", not detected, estimated.

Sample ID #	Compound	Qualifier
V4MW21094	naphthalene	J
V4MW21094DL	naphthalene	J

VII. **Internal Standards Performance:** Acceptable.

All criteria were met. No qualifiers were required.

Discussion:

Analysis of areas and retention times for internal standards was conducted. All internal standard areas within the technical acceptance window of >100% or <50% of the continuing calibration internal standard area, and all internal retention times were within (+/-) 30 seconds of the associated continuing calibration internal standard retention time.

VIII. **System Performance:** Acceptable.

No signs of degraded instrument performance were noted. The analytical system was determined to be in tune, within control limits, and stable during the course of these analyses.

IX. **Overall Assessment of the Data:**

Based on the evaluation presented, the laboratory adhered to the specified analytical method, no data were qualified, and the data are acceptable for use.

DATA VALIDATION REPORT
SEMIVOLATILE ORGANIC COMPOUND ANALYSES
EPA CLP SOW 3/90 OLM01.9
Case#: 29249 SDG#: 00268
BURLINGTON, VERMONT

Samples: (soil)

V4D1005 V4D1005D V4D2005 V4D3005

I. **Sample Holding Times:** Acceptable/All criteria met.

All samples were extracted within the required holding time of 14 days, and all samples were analyzed within the required holding time of 40 days. No action taken.

II. **GC/MS Instrument Performance Check:** Acceptable/All criteria met.

DFTPP was analyzed at the beginning of each 12-hour analytical sequence, as required. All DFTPP ion abundance data were provided, and all results were within specified control limits.

III. **Initial and Continuing Calibration:**

Discussion:

All relative response factors (RRF) in the initial calibrations were above the 0.05 lower control limit. All %RSD (Percent Relative Standard Deviations) in initial calibrations were technically acceptable (< 30%) and were calculated correctly, with one exception: 2,4-Dinitrophenol. No detects were reported for 2,4-Dinitrophenol, and no qualifiers were added to the data.

Continuing calibrations were performed at the proper frequency, and all RRF were technically acceptable (> 0.05). % Difference results for the analysis of sample V4D2005 were outside control limits for seven compounds: 4-chloroaniline, 2,4-dinitrophenol, 2,4-dinitrotoluene, 4,6-dinitro-2-methylphenol, n-nitrosodiphenylamine, 3,3'-dichlorobenzidine, and 2,4,6-tribromophenol. Detected concentrations of these compounds were qualified "J", estimated. Samples V4D1005, V4D1005D, and V4D3005 were found to have %D results outside control limits for eight compounds: 4-chloroaniline, hexacyclopentadiene, 2,4-dinitrotoluene, N-nitrosodiphenylamine, butylbenzylphthalate, 3,3'-dichlorobenzidine, bis-(2-ethylhexyl) phthalate, and di-n-octylphthalate. Non-detects for these compounds were not qualified. Detected concentrations for these compounds were qualified "J", estimated, as detailed below:

Sample ID #	Compound	Qualifier
V4D1005D	butylbenzylphthalate	J
V4D1005D	Di-n-octylphthalate	J

IV. **Blank Analyses:** Acceptable.

Discussion:

A method blank was analyzed at the required frequency. No compounds were detected in the method blank, and no qualifiers were added to the data.

V. **Surrogate Recovery:**

All surrogate spiking compound recoveries were within control limits. No qualifiers were added to the data.

VI. **Matrix Spike / Matrix Spike Duplicate:**

Matrix spike and matrix spike duplicate analysis indicated acenaphthene, 1,4-dichlorobenzene, amd 1,2,4-trichlorobenzene outside of control limits for RPD, Pyrene and acenaphthene indicated low spike recoveries. No data were qualified on the basis of MS/MSD data alone.

Matrix spikes and duplicate matrix spikes were performed at a frequency of 5%.

VII. **Internal Standards Performance:** Acceptable.

All criteria were met. No qualifiers were required.

Discussion:

Analysis of areas and retention times for internal standards was conducted. All internal standard areas within the technical acceptance window of >100% or <50% of the continuing calibration internal standard area, and all internal retention times were within (+/-) 30 seconds of the associated continuing calibration internal standard retention time.

VIII. **System Performance:** Acceptable.

No signs of degraded instrument performance were noted. The analytical system was determined to be in tune, within control limits, and stable during the course of these analyses.

IX. Overall Assessment of the Data:

Based on the evaluation presented, the laboratory adhered to the specified analytical method, no data were qualified, and the data are acceptable for use.

DATA VALIDATION REPORT
SEMIVOLATILE ORGANIC COMPOUND ANALYSES
EPA CLP SOW 3/90 OLM01.9
Case#: 29249 SDG#: 00297
BURLINGTON, VERMONT

Samples:

4SW31094D ER1028941 ER0128942 V3MW11094 V3MW31094
V4SW31094

I. **Sample Holding Times:** Acceptable/All criteria met.

All samples were extracted within the required holding time of 14 days, and all samples were analyzed within the required holding time of 40 days. No action taken.

II. **GC/MS Instrument Performance Check:** Acceptable/All criteria met.

DFTPP was analyzed at the beginning of each 12-hour analytical sequence, as required. All DFTPP ion abundance data were provided, and all results were within specified control limits.

III. **Initial and Continuing Calibration:**

Discussion:

All relative response factors (RRF) in the initial calibrations were above the 0.05 lower control limit. All %RSD (Percent Relative Standard Deviations) in initial calibrations were technically acceptable (< 30%) and were calculated correctly, with the following exception: dibenzo-(a,h)-anthracene was found to have a %D > 30%. No sample contained the compound, and no qualifiers were added to the data due to initial calibration results.

Continuing calibrations were performed at the proper frequency, and all RRF were technically acceptable (> 0.05). % Difference results for the analysis of samples V3MW11094, V3MW31094, and V4SW31094 were outside control limits for three compounds: indeno-(1,2,3-cd)-pyrene, dibenzo-(a,h)-anthracene, and benzo-(g,h,i)-perylene. None of the compounds were detected in the associated samples. No qualifiers were added to the data.

IV. **Blank Analyses:** Acceptable.

Discussion:

A method blank was analyzed at the required frequency. No compounds were detected in any associated method blank. No qualifiers were added to the data due to method blank contamination.

V. **Surrogate Recovery:**

All surrogate spiking compound recoveries were within control limits. No qualifiers were added to the data.

VI. **Matrix Spike / Matrix Spike Duplicate:**

Matrix spike and matrix spike duplicate analysis indicated no compounds outside control limits for RPD, but three compounds outside control limits for spike recoveries: isophorone, 1,2,4-trichlorobenzene, and naphthalene. Detected concentrations of these compounds were qualified "J", estimated, as detailed below:

Sample ID #	Compound	Qualifier
V3MW11094	naphthalene	J

VII. **Internal Standards Performance:** Acceptable.

Discussion:

Analysis of areas and retention times for internal standards was conducted. All internal standard areas within the technical acceptance window of >100% or <50% of the continuing calibration internal standard area, and all internal retention times were within (+/-) 30 seconds of the associated continuing calibration internal standard retention time.

VIII. **System Performance:** Acceptable.

No signs of degraded instrument performance were noted. The analytical system was determined to be in tune, within control limits, and stable during the course of these analyses.

IX. **Overall Assessment of the Data:**

Based on the evaluation presented, the laboratory adhered to the specified analytical method, no data were qualified, and the data are acceptable for use.

DATA VALIDATION REPORT
VOLATILE ORGANIC COMPOUND ANALYSES
EPA SW-846 / 8010/8020
CASE#: 29274 SDG#: 00001
BURLINGTON, VERMONT

Samples: (water)

V3B1113	V3B1113D	V3B21113	V3B41315	V3B41315D	V3B50305
V4B11719	V4BG0911	V4BG1416	V4BG1416D	V4BG1921	V4B10911
V4B21416	V4B21921	V4B31416	V4B31921	V4B40911	V4B41719
V4B61921	V4B62426				

I. **Sample Holding Times:** Acceptable/All criteria were met.

All samples were initially analyzed within the required holding time of 14 days for preserved water samples and soil samples. All samples were analyzed within 14 days of sampling. No action taken.

II. **GC/MS Instrument Performance Check:** Acceptable/All criteria were met.

Bromofluorobenzene (BFB) was analyzed at the beginning of each 12-hour analytical sequence, as required. All BFB ion abundance data were provided, and all results fell within required limits.

III. **Initial and Continuing Calibration:** Acceptable/All criteria were met with the following exceptions:

Relative response factors (RRF)and percent relative standard deviations (%RSD) in initial calibrations were technically acceptable and calculated correctly. Continuing calibrations were performed at the proper frequency, and all RRF were technically acceptable.

"J" qualifiers were added due to %D results in continuing calibrations for the following compounds:

Sample ID #	Compound	Qualifier
V4B21921	toluene	J (confirmation run)
V4B41719	toluene	J (confirmation run)
V4B11719	1,4-dichlorobenzene	J

Non-detects were not qualified.

IV. **Blank Analyses:** Acceptable/With the following exception

Discussion:

Method blank analysis indicated several compounds were present in the method blanks associated with the samples. Compounds detected in the samples were qualified "B", blank contamination, according to the 5x / 10x rule, as detailed below:

Sample ID #	Compound	Qualifier
V4B61921	methylene chloride	B
	toluene	B
	ethylbenzene	B
	p-xylene	B
	m-xylene	B
	1,3-dichlorobenzene	B
	1,4-dichlorobenzene	B
	1,2-dichlorobenzene	B
V4B62426	methylene chloride	B
	toluene	B
	p-xylene	B
	m-xylene	B
	1,3-dichlorobenzene	B
	1,4-dichlorobenzene	B
	1,2-dichlorobenzene	B
V4B31416	methylene chloride	B
	toluene	B
	ethylbenzene	B
	p-xylene	B
	m-xylene	B
	styrene	B
	1,3-dichlorobenzene	B

	1,4-dichlorobenzene	B
	1,2-dichlorobenzene	B
V4B31921	methylene chloride	B
	ethylbenzene	B
	1,4-dichlorobenzene	B
	1,2-dichlorobenzene	B
V4B21416	methylene chloride	B
	styrene	B
	1,2-dichlorobenzene	B
V4B21921	methylene chloride	B
V4B40911	methylene chloride	B
	ethylbenzene	B
	p-xylene	B
	m-xylene	B
	o-xylene	B
	1,3-dichlorobenzene	B
	1,4-dichlorobenzene	B
	1,2-dichlorobenzene	B
V4B10911	methylene chloride	B
	toluene	B
	ethylbenzene	B
	p-xylene	B
	m-xylene	B
	1,4-dichlorobenzene	B
	1,2-dichlorobenzene	B
V4BG0911	methylene chloride	B
	toluene	B
	ethylbenzene	B
	p-xylene	B

	m-xylene	B
	o-xylene	B
	1,3-dichlorobenzene	B
	1,4-dichlorobenzene	B
	1,2-dichlorobenzene	B
V4BG1416	methylene chloride	B
	toluene	B
	ethylbenzene	B
	p-xylene	B
	m-xylene	B
	o-xylene	B
	1,3-dichlorobenzene	B
	1,4-dichlorobenzene	B
	1,2-dichlorobenzene	B
V4BG1416D	methylene chloride	B
V4BG1921	methylene chloride	B
	toluene	B
	ethylbenzene	B
	p-xylene	B
	m-xylene	B
	o-xylene	B
	1,3-dichlorobenzene	B
	1,4-dichlorobenzene	B
	1,2-dichlorobenzene	B
	Chlorobenzene	B
V3B50305	methylene chloride	B
	chloroform	B
	1,1,1-trichloroethane	B
V3B41315D	methylene chloride	B

	chloroform	B
	1,1,1-trichloroethane	B
V3B21113	methylene chloride	B
	chloroform	B
	1,1,1-trichloroethane	B
V3B1113	methylene chloride	B
	chloroform	B
	1,1,1-trichloroethane	B
V3B1113D	methylene chloride	B
	1,1,1-trichloroethane	B
V3B41315	methylene chloride	B
	chloroform	B

V. Surrogate Recovery:

All surrogate spiking compounds recoveries were within control limits. No qualifiers were required.

VI. Matrix Spike/Matrix Spike Duplicate:

All Matrix Spike/Matrix Spike Duplicate results were acceptable. No qualifiers required.

VII. Internal Standards Performance: Acceptable / All criteria met. No qualifiers required,

Discussion:

All internal standard area counts were within the technical acceptance window of + 100% or -50%, and all internal retention times were within plus or minus 30 seconds of the associated continuing calibration internal standard retention time.

X. System Performance: Acceptable.

No signs of degraded instrument performance were noted. The analytical system was determined to be in tune, within control, and stable during the course of these analyses.

XI. Overall Assessment of The Data:

Based on the evaluation presented, the laboratory adhered to the specified analytical method and no data were qualified and the data are acceptable for use.

DATA VALIDATION REPORT
VOLATILE ORGANIC COMPOUND ANALYSES
EPA SW-846 / 8010/8020
CASE#: 29249 SDG#: 00122
BURLINGTON, VERMONT

Samples:

V3B40810	V3B30305	V3B20305	V3B31315	V3B10305	V3B40305
V3B51315	V4B50406	V4B50911	V4B51719	V3BG10305	
V3BG13840	3BG13840D	V3B40305DL			

I. **Sample Holding Times:**

Acceptable/All criteria were met.

All samples were initially analyzed within the required holding time of 14 days for soil samples. Confirmation analyses of halogenated compounds for samples V4B50406, V4B50911, and V4B51719 took place outside of holding time (>33d.), and "R", unusable, qualifiers were added to nondetected results. Detected compounds in these samples were judged to agree in magnitude (comparing results from dual column analyses) such that the detected compounds were qualified "J", estimated.

II. **GC/MS Instrument Performance Check:** Acceptable/All criteria were met.

Bromoflurobenzene (BFB) was analyzed at the beginning of each 12-hour analytical sequence, as required. All BFB ion abundance data were provided, and all results fell within required limits.

III. **Initial and Continuing Calibration:** Acceptable/All criteria were met with the following exceptions:

Relative response factors (RRF)and percent relative standard deviations (%RSD) in initial calibrations were technically acceptable and calculated correctly. All initial calibrations were within control limits, and no qualifiers were added to the data based on initial calibrations.

Continuing calibrations were performed at the proper frequency, and all RRF were technically acceptable. Two columns indicated compounds outside of control limits for %difference, but neither column analyzed environmental samples on the dates of calibration, and no qualifiers were added to data.

IV. **Blank Analyses:** Acceptable/With the following exception:

Discussion:

Method blanks were analyzed at the required frequency. Method blanks results were reviewed, and it was determined that common contaminants existed in many of the method blanks. Sample concentrations less than 5 x (10 x for common contaminants) concentrations found in corresponding method blanks were qualified "B", blank contamination:

Sample ID #	Compound	Qualifier
V3B40810	methylene chloride	B
V3B20305	methylene chloride	B
	toluene	B
	p-xylene	B
	m-xylene	B
	o-xylene	B
	1,4-dichlorobenzene	B
V3B10305	methylene chloride	B
	chloroform	B
	1,1,1-trichloroethane	B
	Benzene	B
	toluene	B
	ethylbenzene	B
	p-xylene	B
	m-xylene	B
	o-xylene	B
	1,3-dichlorobenzene	B
	1,4-dichlorobenzene	B
	1,2-dichlorobenzene	B
V3B40305	methylene chloride	B
	chloroform	B
V4B50406	methylene chloride	B
V4B50911	methylene chloride	B
V3BG10305	methylene chloride	B

	toluene	B
	p-xylene	B
	m-xylene	B
V3BG13840	toluene	B
	p-xylene	B
	m-xylene	B
3BG13840D	methylene chloride	B
	toluene	B
	p-xylene	B
	m-xylene	B
	o-xylene	B
V3B40305DL	toluene	B

V. Surrogate Recovery:

Surrogate recoveries were below control limits for three samples in halogenated compound analysis: V3B30305, V4B50406, and V4B51719. All halogenated organic compounds detected in these samples were qualified "J", estimated. Non-detected halogenated organic compounds were qualified "UJ", not detected, estimated. Surrogate recoveries were also found to be outside control limits in several aromatic organic compound analyses: Samples V3B40810, V3B51315, V4B51719, and V3B30305 all had surrogate recoveries > 125%. No qualifiers were added to the data based on the high surrogate recoveries of these samples.

VI. Matrix Spike/Matrix Spike Duplicate:

All Matrix Spike/Matrix Spike Duplicate results were acceptable. No qualifiers were added to the data.

VII. Internal Standards Performance: Acceptable/All criteria were met. No qualifiers required.

Discussion:

All internal standard area counts were within the technical acceptance window of + 100% or -50%, and all internal retention times were within plus or minus 30 seconds of the associated continuing calibration internal standard retention time.

VIII. **Compound Identification: Acceptable.**

Compound identification was found to be acceptable.

IX. **System Performance: Acceptable.**

No signs of degraded instrument performance were noted. The analytical system was determined to be in tune, within control, and stable during the course of these analyses.

X. **Overall Assessment of The Data:**

Based on the evaluation presented, the laboratory adhered to the specified analytical method and no data were qualified and the data are acceptable for use.

DATA VALIDATION REPORT
VOLATILE ORGANIC COMPOUND ANALYSES
EPA SW-846 / 8010/8020
CASE#: 29249 SDG#: 00200
BURLINGTON, VERMONT

Sample:

V3BG11820

I. **Sample Holding Times:**

Acceptable/All criteria were met.

The sample was initially analyzed within the required holding time of 14 days for soil samples. No confirmation analysis was performed on the sample.

II. **GC/MS Instrument Performance Check:** Acceptable/All criteria were met.

Bromoflurobenzene (BFB) was analyzed at the beginning of the analytical sequence, as required. All BFB ion abundance data were provided, and all results fell within required limits.

III. **Initial and Continuing Calibration:** Acceptable/All criteria were met with the following exceptions:

Relative response factors (RRF)and percent relative standard deviations (%RSD) in initial calibration were technically acceptable and calculated correctly. Continuing calibrations were not required, as the initial calibration took place within the 12 hour window between initial calibration and sample analysis. No qualifiers were added to the data for calibration anomalies.

IV. **Blank Analyses:** Acceptable/With the following exception

Discussion:

Method blank analysis indicated the presence of several common laboratory solvents in the method blank associated with the sample. Sample concentrations lower than 5 times the blank concentration (or ten times blank concentration in the cases of Methylene chloride, acetone, toluene, and 2-butanone) were qualified "B", blank contamination. As a result of method blank contamination, all detected concentrations of target analytes were qualified "B":

Sample ID #	Compound	Qualifier
V3BG11820	methylene chloride	B
	chloroform	B
	1,1,1-trichloroethane	B
	toluene	B

V. Surrogate Recovery:

All surrogate spiking compounds recoveries were within control limits. No qualifiers were required.

VI. Matrix Spike/Matrix Spike Duplicate:

All Matrix Spike/Matrix Spike Duplicate results were acceptable. No qualifiers required.

VIII. Internal Standards Performance:

Acceptable/All criteria were met. No qualifiers required.

Discussion:

All internal standard area counts were within the technical acceptance window of + 100% or -50%, and all internal retention times were within plus or minus 30 seconds of the associated continuing calibration internal standard retention time.

IX. System Performance: Acceptable.

No signs of degraded instrument performance were noted. The analytical system was determined to be in tune, within control, and stable during the course of these analyses.

X. Overall Assessment of The Data:

Based on the evaluation presented, the sample contained no target analyte above the CRQL. Several compounds were detected and qualified "B" due to method blank contamination. As qualified, these data are acceptable for use.

DATA VALIDATION REPORT
VOLATILE ORGANIC COMPOUND ANALYSES
EPA SW-846 / 8010/8020
SDG#: 00228
BURLINGTON, VERMONT

Samples:

ER1024941 FB102494P TB1024941 V3BG11094 V3BG11094D
TB1024942 V4MW31094 TB1026941 V4BG11094 TB1025941
TB1027941 V4MW21094

I. **Sample Holding Times:**

Acceptable/All criteria were met.

All samples were initially analyzed within the required holding time of 14 days for preserved water samples. Confirmation analyses for samples FB102494P, TB1024941, V3BG11094, V3BG11094D, TB1024942, V4MW31094, TB1026941, V4BG11094, TB1025941, TB1027941, and V4MW21094 took place outside of holding time (ranging from 15 to 28 days.) "J", estimated, and "UJ", not detected, estimated, qualifiers were added to the data.

II. **GC/MS Instrument Performance Check:** Acceptable/All criteria were met.

Bromoflurobenzene (BFB) was analyzed at the beginning of each 12-hour analytical sequence, as required. All BFB ion abundance data were provided, and all results fell within required limits.

III. **Initial and Continuing Calibration:** Acceptable/All criteria were met with the following exceptions:

Relative response factors (RRF)and percent relative standard deviations (%RSD) in initial calibrations were technically acceptable and calculated correctly. Continuing calibrations were performed at the proper frequency, and all RRF were technically acceptable.

"J", estimated, qualifiers were added due to %D results in continuing calibrations for the following compounds in the following samples: V4MW31094; toluene. TB1025941; p-xylene, m-xylene. ER 1024941; 1,3-dichlorobenzene (by method 8020). FB102494P; chloromethane, 1,1,1-trichloroethane, dibromomethane. V3BG11094; 1,1,1-trichloroethane, trichloroethene. V3BG11094D; 1,1,1-trichloroethane. TB1024942; toluene.

Sample ID #	Compound	Qualifier
V4MW31094	toluene	J
TB1025941	p-xylene	J
	m-xylene	J
ER 1024941	1,3-dichlorobenzene	J
FB102494P	chloromethane	J
	1,1,1-trichloroethane	J
	dibromomethane	J
V3BG11094	1,1,1-trichloroethane	J
	trichloroethene	J
V3BG11094D	1,1,1-trichloroethane	J
TB1024942	toluene	J

IV. Blank Analyses: Acceptable/With the following exception

Discussion:

Method blanks were analyzed at the required frequency. Method blanks results were reviewed, and it was determined that low levels of common laboratory contaminants were found in many of the method blanks. "B", blank contamination, qualifiers were added to detected concentrations of these contaminants in the samples which were not >5 x (10 x for common contaminants) the concentrations found in the method blanks:

Sample ID #	Compound	Qualifier
ER1024941	p-xylene	B
	m-xylene	B
FB102494P	methylene chloride	B
	toluene	B
	p-xylene	B
	m-xylene	B
	o-xylene	B
TB1024941	methylene chloride	B

	p-xylene	B
	m-xylene	B
V3BG11094	methylene chloride	B
	p-xylene	B
	m-xylene	B
3BG11094D	methylene chloride	B
	p-xylene	B
	m-xylene	B
TB1024942	methylene chloride	B
	p-xylene	B
	toluene	B
	m-xylene	B
V4MW31094	methylene chloride	B
TB1026941	methylene chloride	B
V4BG11094	methylene chloride	B
TB1025941	methylene chloride	B
TB1027941	methylene chloride	B
V4MW21094	methylene chloride	B

V. Surrogate Recovery:

All surrogate spiking compounds recoveries were within control limits. No qualifiers were required.

VI. Matrix Spike/Matrix Spike Duplicate:

Matrix Spike and Matrix Spike Duplicate Analysis results indicated several compounds slightly outside control limits in both halogenated (8010) and aromatic (8020) compound analyses. In the halogenated analyses, the compounds outside control limits were chloromethane, vinyl chloride, 1,1-dichloroethene, and carbon tetrachloride. In the aromatic compound analyses, compounds outside control limits were Benzene, ethylbenzene, o-xylene, m-xylene, and p-xylene.

No qualifiers were added to the data based on MS/MSD results.

VII. Internal Standards Performance:

Acceptable/All criteria were met. No qualifiers required.

Discussion:

All internal standard area counts were within the technical acceptance window of + 100% or -50%, and all internal retention times were within plus or minus 30 seconds of the associated continuing calibration internal standard retention time.

VIII. **System Performance:** Acceptable.

No signs of degraded instrument performance were noted. The analytical system was determined to be in tune, within control, and stable during the course of these analyses.

IX. **Overall Assessment of The Data:**

Based on the evaluation presented, the laboratory adhered to the specified analytical method and no data were qualified and the data are acceptable for use.

DATA VALIDATION REPORT
VOLATILE ORGANIC COMPOUND ANALYSES
EPA SW-846 / 8010/8020
CASE#: 29249 SDG#: 00271
BURLINGTON, VERMONT

Samples:

V4D1005D V4D1005 V4D2005 V4D2005DL V4D3005

I. **Sample Holding Times:**

Acceptable/All criteria were met.

All samples were initially analyzed within the required holding time of 14 days for soil samples.

No qualifiers were added to the data for exceeding holding times.

II. **GC/MS Instrument Performance Check:** Acceptable/All criteria were met.

Bromoflurobenzene (BFB) was analyzed at the beginning of each 12-hour analytical sequence, as required. All BFB ion abundance data were provided, and all results fell within required limits.

III. **Initial and Continuing Calibration:** Acceptable/All criteria were met with the following exceptions:

"J", estimated, qualifiers were added due to %D results in continuing calibrations for the following compounds in the listed samples:

V4D2005DL: methylene chloride

Discussion:

Relative response factors (RRF)and percent relative standard deviations (%RSD) in initial calibrations were technically acceptable and calculated correctly. Continuing calibrations were performed at the proper frequency, and all RRF were technically acceptable. No qualifiers were added to the data for undetected compounds for which calibration verification results exceeded control limits.

IV. **Blank Analyses:** Acceptable/With the following exceptions:

Discussion:

Method blanks were analyzed at the required frequency. Method blank results were reviewed, and it was determined that some method blank contamination existed. methylene chloride was detected in three method blanks, resulting in that compound being qualified "B", for blank contamination. Aromatic method blank VBLK7B contained toluene, xylenes, and Dichlorobenzenes, and detects for these compounds in sample V4D3005 less than 5 x (10 x for common contaminants) blank concentration were qualified "B", blank contamination:

Sample ID #	Compound	Qualifier
V4D1005	methylene chloride	B
V4D4005	methylene chloride	B
V4D3005	methylene chloride	B
	toluene	B
	ethylbenzene	B
	p-xylene	B
	m-xylene	B
	1,2-dichlorobenzene	B

V. Surrogate Recovery:

Low surrogate recoveries were noted for several samples. The detected compounds in each of these samples were qualified "B", blank contamination, and no further qualification of any of the detected compounds in any sample was required.

VI. Matrix Spike/Matrix Spike Duplicate:

All Matrix Spike/Matrix Spike Duplicate results were acceptable. No qualifiers required, except as noted below:

Discussion:

All %recoveries for the matrix spike were found to be within control limits. No qualifiers were added to the data based on the results from the matrix spike analysis. MS duplicate results indicated two compounds with RPD results outside control limits, chloromethane and methylene chloride. In sample V4D2005, methylene chloride concentration was qualified "J", estimated. No other compounds were detected (which were not blanked out) in any of the samples.

VII. **Internal Standards Performance:**

Acceptable/All criteria were met. No qualifiers required.

Discussion:

All internal standard area counts were within the technical acceptance window of + 100% or -50%, and all internal retention times were within plus or minus 30 seconds of the associated continuing calibration internal standard retention time.

VIII. **System Performance:** Acceptable.

No signs of degraded instrument performance were noted. The analytical system was determined to be in tune, within control, and stable during the course of these analyses.

IX. **Overall Assessment of The Data:**

Based on the evaluation presented, the laboratory adhered to the specified analytical method and no data were qualified and the data are acceptable for use.

DATA VALIDATION REPORT
VOLATILE ORGANIC COMPOUND ANALYSES
EPA SW-846 / 8010/8020
SDG#: 00296
BURLINGTON, VERMONT

Samples:

TB1028942 TB1028941 TB1028943 ER1028941 ER1028942 V4SW31094 4SW31094D TB103194 V3MW11094 V3MW31094 V3MW11094DL

I. **Sample Holding Times:**

Acceptable/All criteria were met.

All samples were initially analyzed within the required holding time of 14 days for preserved water samples, with four exceptions: Samples TB103194, V3MW11094, V3MW31094, and V3MW11094DL were initially analyzed for aromatic organics (method 8020) outside of holding time limits, by a maximum of two days. Confirmation analyses for all samples, in both halogenated and aromatic organic analyses took place outside of holding time limits (ranging from one day out to eleven days out). "J", estimated, and "UJ", not detected, estimated, qualifiers were added to the data.

II. **GC/MS Instrument Performance Check:** Acceptable/All criteria were met.

Bromoflurobenzene (BFB) was analyzed at the beginning of each 12-hour analytical sequence, as required. All BFB ion abundance data were provided, and all results fell within required limits.

III. **Initial and Continuing Calibration:** Acceptable/All criteria were met with the following exceptions:

Relative response factors (RRF)and percent relative standard deviations (%RSD) in initial calibrations were technically acceptable and calculated correctly. No qualifiers were added to the data for initial calibrations.

Calibration Verifications were performed at the proper frequency, and all RRF were technically acceptable. Several instruments were found to have %D outside control limits for various compounds. Detected concentrations of these compounds were qualified "J", estimated. Non-detects for these compounds were not qualified.

Sample ID #	Compound	Qualifier
TB1028942	chloromethane	J
V4SW31094	1,3-dichlorobenzene	J
	1,2-dichlorobenzene	J
4SW31094D	1,3-dichlorobenzene	J (confirmation)
	1,2-dichlorobenzene	J (confirmation)
V3MW31094	1,2-dichlorobenzene	J (confirmation)

IV. Blank Analyses: Acceptable/With the following exceptions:

Discussion:

Method blanks were analyzed at the required frequency. All of the method blanks for the halogenated analyses were found to contain the common solvent methylene chloride in small concentrations, and samples containing less that 10 times the concentration found in the associated method blank were qualified "B", blank contamination. Aromatic blank results indicated blank contamination with a variety of compounds in several of the method blanks at low concentrations. Detects for these compounds in the samples which fell under the 5x/10x rule were qualified "B", blank contamination:

Sample ID #	Compound	Qualifier
TB1028942	methylene chloride	B
	chloroform	B
	toluene	B
TB1028941	methylene chloride	B
TB1028943	methylene chloride	B
	toluene	B
ER1028941	methylene chloride	B
	toluene	B
ER1028942	methylene chloride	B
	toluene	B
V4SW31094	methylene chloride	B
	toluene	B

4SW31094D	methylene chloride	B
	toluene	B
	1,4-dichlorobenzene	B
	1,2-dichlorobenzene	B
TB103194	methylene chloride	B
	p-xylene	B
	m-xylene	B
	1,4-dichlorobenzene	B
	1,2-dichlorobenzene	B
V3MW11094	methylene chloride	B
	1,3-dichlorobenzene	B
V3MW31094	methylene chloride	B
	p-xylene	B
	m-xylene	B

V. Surrogate Recovery:

Four samples were found to have aromatic surrogate recoveries outside of control limits: TB1028941, TB1028943, ER1028942, and V4SW31094. All of these samples had slightly low surrogate recoveries for BFB2. Accordingly, all non-detects for these samples were qualified "UJ", not detected, estimated, and detects were qualified "J", estimated.

VI. Matrix Spike/Matrix Spike Duplicate:

A number of compounds were found to have RPDs outside control limits in matrix spike duplicate analysis: 1,1-dichloroethene, methylene chloride, trans-1,2-Dichloroethene, Chlorobenzene, 1,1,2,2-TCA, p-xylene, m-xylene, and Methyl-t-butyl ether. No qualifiers were added to the data on the basis of MS/MSD analysis alone.

VIII. Internal Standards Performance:

Acceptable/All criteria were met. No qualifiers required.

Discussion:

All internal standard area counts were within the technical acceptance window of + 100% or -50%, and all internal retention times were within plus or minus 30 seconds of the associated continuing calibration internal standard retention time.

IX. Compound Identification: Acceptable.

Compound identification was found to be acceptable.

X. System Performance: Acceptable.

No signs of degraded instrument performance were noted. The analytical system was determined to be in tune, within control, and stable during the course of these analyses.

XI. Overall Assessment of The Data:

Based on the evaluation presented, the laboratory adhered to the specified analytical method and no data were qualified and the data are acceptable for use.

DATA VALIDATION REPORT
SEMIVOLATILE ORGANIC COMPOUND ANALYSES
EPA CLP SOW 3/90 OLM01.9
Case#: 29249 SDG#: 00230
BURLINGTON, VERMONT

Samples:

3BG11094D ER1024941 FB102494P V3BG11094 V4BG11094 V4MW21094 V4MW21094DL V4MW31094

I. **Sample Holding Times:** Acceptable/All criteria met.

All samples were analyzed within the required holding time of 40 days. No action taken.

II. **GC/MS Instrument Performance Check:** Acceptable/All criteria met.

DFTPP was analyzed at the beginning of each 12-hour analytical sequence, as required. All DFTPP ion abundance data were provided, and all results were within specified control limits.

III. **Initial and Continuing Calibration:**

Discussion:

All relative response factors (RRF) in the initial calibrations were above the 0.05 lower control limit. All Percent Relative Standard Deviations (%RSD) in initial calibrations were technically acceptable (< 30%), with one exception: The initial calibration check for samples V4BG11094, V4MW21094, V4MW21094DL, and V4MW31094 indicated one compound with %RSD > 30, dibenzo (a,h) anthracene. Dibenzo (a,h) anthracene was not detected in any sample. Non-detects were not qualified.

Continuing calibrations were performed at the proper frequency, and all RRF were technically acceptable (> 0.05). Continuing calibrations for V4BG11094, V4MW21094, V4MW21094DL, and V4MW31094 indicated 4 compounds with a percent difference (%D) greater than the required value of (+/-) 25%: 3,3'-dichlorobenzidine, indeno (1,2,3-cd) pyrene, dibenzo (a,h) anthracene, and benzo (g,h,i) perylene. As no concentrations of these compounds were found in any of the associated samples, no qualifiers were added to the data.

IV. **Blank Analyses:** Acceptable.

Discussion:

No analytes were detected in the associated method blanks. No qualifiers were added to the data.

V. **Surrogate Recovery:**

All surrogate spiking compound recoveries were within control limits. No qualifiers were added to the data.

VI. **Matrix Spike / Matrix Spike Duplicate:**

Spike Recoveries were outside of control limits for four compounds, and RPD for two compounds were also outside of control limits. The compounds naphthalene and 4-chloroaniline had low percent recoveries, and were qualified "J", estimated, or "UJ", not detected, estimated. The other compounds, hexachloroethane and n-nitroso-di-n-propylamine, indicated high recoveries of spiking compounds, and therefore were not qualified on the basis of MS/MSD data.

VII. **Field Duplicates:** N/A

VIII. **Internal Standards Performance:** Acceptable.

All criteria were met. No qualifiers were required.

Discussion:

Analysis of areas and retention times for internal standards was conducted. All internal standard areas within the technical acceptance window of >100% or <50% of the continuing calibration internal standard area, and all internal retention times were within (+/-) 30 seconds of the associated continuing calibration internal standard retention time.

IX. **System Performance:** Acceptable.

No signs of degraded instrument performance were noted. The analytical system was determined to be in tune, within control limits, and stable during the course of these analyses.

X. **Overall Assessment of the Data:**

Based on the evaluation presented, the laboratory adhered to the specified analytical method, no data were qualified, and the data are acceptable for use.

DATA VALIDATION REPORT
INORGANIC TOTAL METALS ANALYSES
EPA CLP SOW 3/90 OLM03.0: Priority Pollutants
Case#: 50071 SDG#: 49238D
BURLINGTON, VERMONT

Samples:

3BG11094F BG11094F 4MW31094F 4BG11094F 4MW21094F

I. **Sample Holding Times:** Acceptable/All criteria were met.

All samples were analyzed within the required holding time of 180 days from the date of sampling to the date of metals analysis . The samples were analyzed for mercury within the required holding time of 28 days.

II. **Calibration:** Acceptable/All criteria were met.

The required number of standards for the initial calibration were analyzed. All correlation coefficients were equal to or greater than 0.995.

The laboratory analyzed a continuing calibration verification (CCV) standard at the required frequency of one every ten samples. The percent recoveries of the CCV associated with the environmental sample results were within control limits of 90-110% for ICP and GFAA. No qualifiers were added to the data due to calibration error.

III. **Blank Analyses:** Acceptable/With the following exceptions:

Method and Preparation blank analysis indicated six compounds were detected: aluminum (50.0 ug/l), calcium (11.8 ug/l), iron (42.0 ug/l), silver (3.6 ug/l), sodium (233 ug/l), and arsenic (2.2 ug/l). Results greater than IDL and less than 5 times blank concentration were qualified "B", blank contamination.

Sample ID #	Compound	Qualifier
3BG11094F	Al	B
	Cr	B
	Fe	B
BG11094DF	Al	B
	Fe	B
4MW31094F	Al	B
	Fe	B
4BG11094F	Al	B
4MW21094F	Al	B

IV. ICP Interference Check Sample (ICS) Analyses:

Interference check samples were analyzed at the beginning and end of each ICP analytical run. The percent recoveries were within the 80-120% recovery range. No qualifiers were added to the data.

V. Laboratory Control Sample (LCS) Analyses:

LCS analysis was performed, and all %recoveries were found to be within control limits of 75-125%. No qualifiers were added to the data.

VI. Spike Sample Analyses (Percent Recovery):

Spike results for soil samples were acceptable with the exception of four compounds: arsenic (158.8%), iron (151.3%), selenium (46.8%), and cadmium (53.1%). Compounds with high spike recoveries were not qualified, and compounds with low spike recoveries were qualified "UJ", not detected, estimated.

VII. Duplicate Sample Analyses: Acceptable.

Relative percent differences for soil samples were within the required control limits, with two exceptions: arsenic (30.0%D) and zinc (200.0%D). Detected concentrations of these compounds were qualified "J", estimated.

Sample ID #	Compound	Qualifier
4MW21094F	As	J
	Zn	J

IX. ICP Serial Dilution:

Serial dilution was performed on sample 4MW21094FL for ICP analysis. Adjusted sample concentrations were within control limits for all analytes, with three exceptions: aluminum (397%D), potassium (100.0%D), and zinc (100.0%D). No qualifiers were added to the data based on serial dilution results.

XIII. Overall Assessment of The Data:

Based on the evaluation presented the laboratory adhered to the specified analytical method. The data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
INORGANIC TOTAL METALS ANALYSES
EPA CLP SOW 3/90 OLM03.0: Priority Pollutants
Case#: 50071 SDG#: 49317D
BURLINGTON, VERMONT

Samples:

3MW11094F 3MW31094F

I. **Sample Holding Times:** Acceptable/All criteria were met.

All samples were analyzed within the required holding time of 180 days from the date of sampling to the date of metals analysis. The samples were analyzed for mercury within the required holding time of 28 days.

II. **Calibration:** Acceptable/All criteria were met.

The required number of standards for the initial calibration were analyzed. All correlation coefficients were equal to or greater than 0.995. All percent recoveries were within control limits for all initial calibrations, and no qualifiers were added to the data based on intial calibration data.

The laboratory analyzed a continuing calibration verification (CCV) standard at the required frequency of one every ten samples. The percent recoveries of the CCV associated with the environmental sample results were within control limits of 90-110% for ICP and GFAA. No qualifiers were added to the data due to calibration error.

III. **Blank Analyses:** Acceptable/With the following exceptions:

Method and Preparation blank analysis indicated four compounds were detected: aluminum (62.1 ug/l), calcium (11.8 ug/l), iron (42.0 ug/l), and sodium (309.1 ug/l). Results greater than IDL and less than 5 times blank concentration were qualified "B", blank contamination.

Sample ID #	Compound	Qualifier
3MW11094F	Al	B
	Fe	B
3MW31094F	Al	B

IV. **ICP Interference Check Sample (ICS) Analyses:**

Interference check samples were analyzed at the beginning and end of each ICP analytical run. The percent recoveries were within the 80-120% recovery range. No qualifiers were added to the data.

V. **Laboratory Control Sample (LCS) Analyses:**

LCS analysis was performed, and produced %recoveries within control limits for all analytes. No qualifiers were added to the data.

VI. **Spike Sample Analyses (Percent Recovery):**

Spike results for soil samples were acceptable with the exception of four compounds: arsenic, cadmium, selenium, and thallium. In the case of cadmium and selenium, which had low recoveries, detects (>IDL) were qualified "J", estimated, and non-detects (<IDL) were qualified "UJ", undetected, estimated. In the case of aluminum, high recovery required no qualifiers added to aluminum data. thallium had %recovery of 15.5%, necessitating attachment of "R", unusable, qualifiers to the data for thallium.

Sample ID #	Compound	Qualifier
3MW11094F	Cd	UJ
	Se	UJ
	thallium	R
3MW31094F	Cd	UJ
	Se	UJ
	thallium	R

VII. **Duplicate Sample Analyses:** Acceptable.

Relative percent differences for soil samples were within the required control limits, with four exceptions: cobalt (200.0%RPD), iron (22.2%RPD), nickel (21.4% RPD), and zinc (200.0%RPD). Detected concentrations of these elements were qualified "J", estimated.

Sample ID #	Compound	Qualifier
3MW11094F	Co	J
	Ni	J

VIII. ICP Serial Dilution:

Serial dilution was performed on sample 3MW11094FL for ICP analysis. Adjusted sample concentrations were within control limits for all analytes. No qualifiers were added to the data.

IX. Overall Assessment of The Data:

Based on the evaluation presented the laboratory adhered to the specified analytical method. The data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
INORGANIC TOTAL METALS ANALYSES
EPA CLP SOW 3/90 OLM03.0: Priority Pollutants
Case#: 50071 SDG#: 924913
BURLINGTON, VERMONT

Samples:

V3B11113	V3B11113D	V3B21113	V3B41315D	V3B41315	V3B50305
V4B10911	V4B11719	V4B21416	V4B21921	V4B31416	V4B31921
V4B40911	V4B41719	V4B61921	V4B61921	V4B62426	V4BG0911
V4BG1416	V4BG1416D	V4BG1921			

I. **Sample Holding Times:** Acceptable/All criteria were met.

All samples were analyzed within the required holding time of 180 days from the date of sampling to the date of metals analysis. The samples were analyzed for mercury within the required holding time of 28 days.

II. **Calibration:** Acceptable/All criteria were met.

The required number of standards for the initial calibration were analyzed. All correlation coefficients were equal to or greater than 0.995. All initial calibrations were within control limits, and no qualifiers were added to the data for initial calibration error.

The laboratory analyzed a continuing calibration verification (CCV) standard at the required frequency of one every ten samples. The percent recoveries of the CCV associated with the environmental sample results were within control limits of 90-110% for ICP and GFAA. No qualifiers were added to the data due to calibration error.

III. **Blank Analyses:** Acceptable/With the following exceptions:

Method and Preparation blank analysis indicated one compound was detected: sodium. All samples contained detects for sodium, and all concentrations less than 5x blank concentration were qualified "B", blank contamination. No other qualifiers were added to the data for blank contamination.

IV. **ICP Interference Check Sample (ICS) Analyses:**

Interference check samples were analyzed at the beginning and end of each ICP analytical run. The percent recoveries were within the 80-120% recovery range.

V. Laboratory Control Sample (LCS) Analyses:

LCS analysis was performed, and produced %recoveries outside of the 75-125% control limits for one element, potassium. All potassium concentrations in the samples were qualified "J", estimated.

VI. Spike Sample Analyses (Percent Recovery):

Spike results for soil samples were acceptable with the exception of antimony, which had %R < 75%. No detects for antimony were reported in any sample, and all data for antimony was qualified "UJ", not detected, estimated.

VII. Duplicate Sample Analyses: Acceptable.

Relative percent differences for soil samples were within the required control limits. No qualifiers were added to the data.

VIII. Furnace AA Quality Control Analyses (GFAA): Acceptable.

The laboratory performed GFAA analyses using an analytical post-digestion spike for each sample. The laboratory control limits for the post-digestion spike recovery were 80-120%, and all results were within control limits. No qualifiers were added to the data.

IX. ICP Serial Dilution:

Serial dilution was performed on sample V4BG0911L for ICP analysis. Adjusted sample concentrations were within control limits for all analytes, with the exception of six compounds. None of these compounds were detected in any sample at >50 times IDL. No qualifiers were added to the data.

X. Overall Assessment of The Data:

Based on the evaluation presented the laboratory adhered to the specified analytical method. The data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
INORGANIC TOTAL METALS ANALYSES
EPA CLP SOW 3/90 OLM03.0: Priority Pollutants
Case#: 50071 SDG#: 924913
BURLINGTON, VERMONT

Samples:

V4D1005 V41005D V4D2005 V4D3005

I. **Sample Holding Times:** Acceptable/All criteria were met.

All samples were analyzed within the required holding time of 180 days from the date of sampling to the date of metals analysis. The samples were analyzed for mercury within the required holding time of 28 days.

II. **Calibration:** Acceptable/All criteria were met.

The required number of standards for the initial calibration were analyzed. All correlation coefficients were equal to or greater than 0.995. All initial calibrations were within control limits, and no qualifiers were added to the data for initial calibrations.

The laboratory analyzed a continuing calibration verification (CCV) standard at the required frequency of one every ten samples. The percent recoveries of the CCV associated with the environmental sample results were within control limits of 90-110% for ICP and GFAA. No qualifiers were added to the data due to continuing calibration error.

III. **Blank Analyses:** Acceptable/With the following exceptions:

Method and Preparation blank analysis indicated eight compounds were detected: calcium (96.6 ug/l), iron (20.6 ug/l), aluminum (53.9 ug/l), potassium ((2945.6 ug/l), silver (7.3 ug/l), beryllium (2.1 ug/l), chromium (7.7 ug/l), and copper (18.0 ug/l). Results greater than IDL and less than 5 times blank concentration were qualified "B", blank contamination.

IV. **ICP Interference Check Sample (ICS) Analyses:**

Interference check samples were analyzed at the beginning and end of each ICP analytical run. The percent recoveries were within the 80-120% recovery range. No qualifiers were added to the data.

V. **Laboratory Control Sample (LCS) Analyses:**

LCS analysis was performed, and all %recoveries were within control limits. No qualifiers were added to the data.

VI. **Spike Sample Analyses (Percent Recovery):**

Spike results for soil samples were acceptable with the exception of four elements: antimony (59.5%R), arsenic (125.1%R), lead (9999.9%R), and manganese (123.5%R). antimony data were qualified "UJ", not detected, estimated. Data for lead, arsenic, and manganese were qualified "J", estimated, where the element was detected, and "UJ", not detected, estimated, where not detected.

VII. **Duplicate Sample Analyses:** Acceptable.

Relative percent differences for soil samples were within the required control limits for all but eight elements: beryllium (200.0%), chromium (59.6%), manganese 63.2%, mercury (200.0%), potassium (200.0%), calcium (93.1%), lead (98.0%), and silver (91.4%). Detected concentrations of these elements were qualified "J", estimated.

VIII. **Furnace AA Quality Control Analyses (GFAA):** Acceptable.

The laboratory performed GFAA analyses using an analytical post-digestion spike for each sample. The laboratory control limits for the post-digestion spike recovery were 80-120%. antimony and cadmium exceeded control limits for the post-digestion spike recovery.

IX. **ICP Serial Dilution:**

Serial dilution was performed on sample V4D2005L for ICP analysis. Adjusted sample concentrations were within control limits for all analytes.

X. **Overall Assessment of The Data:**

Based on the evaluation presented the laboratory adhered to the specified analytical method. The data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
INORGANIC TOTAL METALS ANALYSES
EPA CLP SOW 3/90 OLM03.0: Priority Pollutants
Case#: 50071 SDG#: 924913
BURLINGTON, VERMONT

Samples:

V4D1005 V41005D V4D2005 V4D3005

I. **Sample Holding Times:** Acceptable/All criteria were met.

All samples were analyzed within the required holding time of 180 days from the date of sampling to the date of metals analysis. The samples were analyzed for mercury within the required holding time of 28 days.

II. **Calibration:** Acceptable/All criteria were met.

The required number of standards for the initial calibration were analyzed. All correlation coefficients were equal to or greater than 0.995. All initial calibrations were within control limits, and no qualifiers were added to the data for initial calibrations.

The laboratory analyzed a continuing calibration verification (CCV) standard at the required frequency of one every ten samples. The percent recoveries of the CCV associated with the environmental sample results were within control limits of 90-110% for ICP and GFAA. No qualifiers were added to the data due to continuing calibration error.

III. **Blank Analyses:** Acceptable/With the following exceptions:

Method and Preparation blank analysis indicated eight compounds were detected: calcium (96.6 ug/l), iron (20.6 ug/l), aluminum (53.9 ug/l), potassium ((2945.6 ug/l), silver (7.3 ug/l), beryllium (2.1 ug/l), chromium (7.7 ug/l), and copper (18.0 ug/l). Results greater than the IDL and less than 5 times blank concentration were qualified "B".

IV. **ICP Interference Check Sample (ICS) Analyses:**

Interference check samples were analyzed at the beginning and end of each ICP analytical run. The percent recoveries were within the 80-120% recovery range. No qualifiers were added to the data.

V. **Laboratory Control Sample (LCS) Analyses:**

LCS analysis was performed, and all %recoveries were within control limits. No qualifiers were added to the data.

VI. **Spike Sample Analyses (Percent Recovery):**

Spike results for soil samples were acceptable with the exception of four elements: antimony (59.5%R), arsenic (125.1%R), lead (9999.9%R), and manganese (123.5%R). antimony data were qualified "UJ", not detected, estimated. Data for lead, arsenic, and manganese were qualified "J", estimated, where the element was detected, and "UJ", not detected, estimated, where not detected.

VII. **Duplicate Sample Analyses:** Acceptable.

Relative percent differences for soil samples were within the required control limits for all but eight elements: beryllium (200.0%), chromium (59.6%), manganese 63.2%, mercury (200.0%), potassium (200.0%), calcium (93.1%), lead (98.0%), and silver (91.4%). Detected concentrations of these elements were qualified "J", estimated.

VIII. **Furnace AA Quality Control Analyses (GFAA):** Acceptable.

The laboratory performed GFAA analyses using an analytical post-digestion spike for each sample. The laboratory control limits for the post-digestion spike recovery were 80-120%. antimony and cadmium exceeded control limits for the post-digestion spike recovery.

IX. **ICP Serial Dilution:**

Serial dilution was performed on sample V4D2005L for ICP analysis. Adjusted sample concentrations were within control limits for all analytes.

X. **Overall Assessment of The Data:**

Based on the evaluation presented the laboratory adhered to the specified analytical method. The data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
INORGANIC TOTAL METALS ANALYSES
EPA CLP SOW 3/90 OLM03.0: Priority Pollutants
Case#: 50071 SDG#: 249161
BURLINGTON, VERMONT

Samples:

V4B40810	V3B30305	V3B20305	V3B31315	V3B10305
V3B40305	V3B51315	V4B50406	V4B50911	V4B51719
V3BG10305	V3BG13840	3BG13840D		

I. **Sample Holding Times:** Acceptable/All criteria were met.

All samples were analyzed within the required holding time of 180 days from the date of sampling to the date of metals analysis. The samples were analyzed for mercury within the required holding time of 28 days.

II. **Calibration:** Acceptable/All criteria were met.

The required number of standards for the initial calibration were analyzed. All correlation coefficients were equal to or greater than 0.995. All initial calibrations were within control limits, and no qualifiers were added to the data for initial calibrations.

The laboratory analyzed a continuing calibration verification (CCV) standard at the required frequency of one every ten samples. The percent recoveries of the CCV associated with the environmental sample results were within control limits of 90-110% for ICP and GFAA. No qualifiers were added to the data due to continuing calibration error.

III. **Blank Analyses:** Acceptable/With the following exceptions:

Method and Preparation blank analysis indicated two compounds were detected: calcium (47.7 ug/l) and cobalt (4.6 mg/Kg). Results greater than IDL and less than 5 times blank concentration were qualified "B", blank contamination. Results < 50 x IDL were not qualified. No detects for calcium were qualified. The following samples were qualified "B" for cobalt:V4B40810, V3B30305, V3B20305, V3B31315, V3B10305, V3B40305, V3B51315, V4B50406, V4B50911, V4B51719, V3BG10305, V3BG13840, 3BG13840D.

IV. **ICP Interference Check Sample (ICS) Analyses:**

Interference check samples were analyzed at the beginning and end of each ICP analytical run. The percent recoveries were within the 80-120% recovery range. No qualifiers were added to the data.

V. **Laboratory Control Sample (LCS) Analyses:**

LCS analysis was performed, and all %recoveries were found to be within control limits. No qualifiers were added to the data.

VI. **Spike Sample Analyses (Percent Recovery):**

Spike results for soil samples were acceptable with the exception of antimony (66.3%R), lead (125.5%R), and selenium (59.9%R). Sample detects (>IDL) were qualified "J", estimated, and non-detects (<IDL) were qualified "UJ", undetected, estimated.

VII. **Duplicate Sample Analyses:** Acceptable.

Relative percent differences for soil samples were within the required control limits, with one exception: sodium had RPD of 200%. No detects for sodium were reported, and no qualifiers were added to the data.

VIII. **Furnace AA Quality Control Analyses (GFAA):** Acceptable.

The laboratory performed GFAA analyses using an analytical post-digestion spike for each sample. The laboratory control limits for the post-digestion spike recovery were 80-120%.

IX. **ICP Serial Dilution:**

Serial dilution was performed on sample V3B40810L for ICP analysis. Adjusted sample concentrations were within control limits for all analytes. No qualifiers were added to the data.

X. **Overall Assessment of The Data:**

Based on the evaluation presented the laboratory adhered to the specified analytical method. The data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
INORGANIC TOTAL METALS ANALYSES
EPA CLP SOW 3/90 OLM03.0: Priority Pollutants
Case#: 50071 SDG#: 249212
BURLINGTON, VERMONT

Sample: (soil)

V3BG11820

I. **Sample Holding Times:** Acceptable/All criteria were met.

The sample was analyzed within the required holding time of 180 days from the date of sampling to the date of metals analysis. The samples were analyzed for mercury within the required holding time of 28 days.

II. **Calibration:** Acceptable/All criteria were met.

The required number of standards for the initial calibration were analyzed. All correlation coefficients were equal to or greater than 0.995. All initial calibrations were within control limits, and no qualifiers were added to the data for initial calibrations.

The laboratory analyzed a continuing calibration verification (CCV) standard at the required frequency of one every ten samples. The percent recoveries of the CCV associated with the environmental sample results were within control limits of 90-110% for ICP and GFAA. No qualifiers were added to the data due to continuing calibration error.

III. **Blank Analyses:** Acceptable/With the following exceptions:

Method and Preparation blank analysis indicated one compound was detected: cobalt (8.6 ug/l). Results greater than IDL and less than 5 times blank concentration were qualified "B", blank contamination.

IV. **ICP Interference Check Sample (ICS) Analyses:**

Interference check samples were analyzed at the beginning and end of each ICP analytical run. The percent recoveries were within the 80-120% recovery range. No qualifiers were added to the data.

V. **Laboratory Control Sample (LCS) Analyses:**

LCS analysis was performed, and produced %recoveries outside of the 80-120% control limits for five elements: silver (77.0%), selenium (74.7%), arsenic (79.7%), sodium (315.2%), and thallium (75.6%). No qualifiers were added to the data.

VI. **Spike Sample Analyses:**

Spike results for soil samples were acceptable with the exception of antimony and cadmium, both of which had %R < 75%. Sample detects (>IDL) were qualified "J", estimated, and non-detects (<IDL) were qualified "UJ", undetected, estimated.

VII. **Duplicate Sample Analyses:** Acceptable.

Relative percent differences for soil samples were within the required control limits, with one exception: potassium indicated %RPD of 44.8%, and the detected concentration was qualified "J", estimated.

VIII. **Furnace AA Quality Control Analyses (GFAA):** Acceptable.

The laboratory performed GFAA analyses using an analytical post-digestion spike for each sample. The laboratory control limits for the post-digestion spike recovery were 80-120%. cadmium was outside of control limits in post-digestion spike analysis, with %R of 61.2%. Data for cadmium was qualified "UJ", not detected, estimated.

IX. **ICP Serial Dilution:**

Serial dilution was performed on sample V3BG11820L for ICP analysis. Adjusted sample concentrations were within control limits for all analytes, with the following exceptions: Barium (15.0%D), chromium (100.0%D), copper (24.2%D), nickel (100.0%D), potassium (100.0%D), sodium (473.3%D), and zinc (55.7%D). Data for these elements were qualified "J", estimated.

X. **Overall Assessment of The Data:**

Based on the evaluation presented the laboratory adhered to the specified analytical method. The data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
INORGANIC TOTAL METALS ANALYSES
EPA CLP SOW 3/90 OLM03.0: Priority Pollutants
Case#: 50071 SDG#: 293773
BURLINGTON, VERMONT

Sample:

PT-092994

I. **Sample Holding Times:** Acceptable/All criteria were met.

The sample was analyzed within the required holding time of 180 days from the date of sampling to the date of metals analysis. The sample was analyzed for mercury within the required holding time of 28 days.

II. **Calibration:** Acceptable/All criteria were met.

The required number of standards for the initial calibration were analyzed. All correlation coefficients were equal to or greater than 0.995. All initial calibrations were within control limits, and no qualifiers were added to the data for initial calibrations.

The laboratory analyzed a continuing calibration verification (CCV) standard at the required frequency of one every ten samples. The percent recoveries of the CCV associated with the environmental sample results were within control limits of 90-110% for ICP and GFAA. No qualifiers were added to the data due to continuing calibration error.

III. **Blank Analyses:** Acceptable/With the following exceptions:

Method and Preparation blank analysis indicated fourteen compounds were detected: calcium (51.4 ug/l), iron (17.99 ug/l), aluminum (61.35 ug/l), barium (0.3 ug/l), arsenic (2.1 ug/l), beryllium (0.1 ug/l), copper (0.8 ug/l), lead (1.65 ug/l), magnesium (28.3 ug/l), manganese (0.433 ug/l), potassium (25.9 ug/l), thallium (3.7 ug/l), zinc (1.82 ug/l), and sodium (256.5 ug/l). Results greater than IDL and less than 5 times blank concentration were qualified "B", blank contamination:

Sample ID #	Compound	Qualifier
PT092994	As	B
	Cd	B
	Cr	B
	Co	B
	Pb	B
	Ni	B
	Vanadium	B

IV. ICP Interference Check Sample (ICS) Analyses:

Interference check samples were analyzed at the beginning and end of each ICP analytical run. The percent recoveries were within the 80-120% recovery range. No qualifiers were added to the data.

V. Laboratory Control Sample (LCS) Analyses:

LCS analysis was performed, and produced %recoveries within control limits for all compounds. No qualifiers were added to the data.

VI. ICP Serial Dilution:

Serial dilution was performed on sample PT-092994L for ICP analysis. Adjusted sample concentrations were within control limits for all analytes, with the exception of four: arsenic (114.4%), cadmium (100.0%), lead (100.0%), and chromium (49.8%). All of these compounds were qualified "B", blank contamination, making further qualification unnecessary.

VII. Overall Assessment of The Data:

Based on the evaluation presented the laboratory adhered to the specified analytical method. The data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
INORGANIC TOTAL METALS ANALYSES
EPA CLP SOW 3/90 OLM03.0: Priority Pollutants
Case#: 50071 SDG#: 274324
BURLINGTON, VERMONT

Samples:

FB1011941 ER1008941 ER1009942 ER1009943 ER1009944

I. **Sample Holding Times:** Acceptable/All criteria were met.

All samples were analyzed within the required holding time of 180 days from the date of sampling to the date of metals analysis. The samples were analyzed for mercury within the required holding time of 28 days.

II. **Calibration:** Acceptable/All criteria were met.

The required number of standards for the initial calibration were analyzed. All correlation coefficients were equal to or greater than 0.995. All initial calibrations were within control limits, and no qualifiers were added to the data for initial calibrations.

The laboratory analyzed a continuing calibration verification (CCV) standard at the required frequency of one every ten samples. The percent recoveries of the CCV associated with the environmental sample results were within control limits of 90-110% for ICP and GFAA. No qualifiers were added to the data due to continuing calibration error.

III. **Blank Analyses:** Acceptable/With the following exceptions:

Method and Preparation blank analysis indicated seven compounds were detected: calcium (11.1 ug/l), iron (20.18 ug/l), aluminum (57.9 ug/l), barium (0.6 ug/l), silver (6.3 ug/l), beryllium (0.6 ug/l), and sodium (184.62 ug/l). Results greater than IDL and less than 5 times blank concentration were qualified "B", blank contamination:

Sample ID #	Compound	Qualifier
FB1011941	Al	B
ER1008941	Al	B
	Ba	B
	Ca	B

	Na	B
ER1009942	Al	B
	Ba	B
	Ca	B
	Na	B
ER1009943	Al	B
	Ba	B
	Ca	B
	Na	B
ER1009944	Al	B
	Ba	B
	Ca	B
	Na	B

IV. ICP Interference Check Sample (ICS) Analyses:

Interference check samples were analyzed at the beginning and end of each ICP analytical run. The percent recoveries were within the 90-110% recovery range. No qualifiers were added to the data.

V. Laboratory Control Sample (LCS) Analyses:

LCS analysis was performed, and produced %recoveries within control limits for all analytes. No qualifiers were added to the data.

VIII. Furnace AA Quality Control Analyses (GFAA): Acceptable.

The laboratory performed GFAA analyses using an analytical post-digestion spike for each sample. The laboratory control limits for the post-digestion spike recovery were 80-120%. antimony and cadmium exceeded control limits for the post-digestion spike recovery.

IX. ICP Serial Dilution:

Serial dilution was performed on sample FB1011941L for ICP analysis. Adjusted sample concentrations were within control limits for all analytes, with two exceptions: aluminum (235.2%D) and potassium (100.0%D). Non-detected results for potassium were qualified "UJ", not detected, estimated.

X. Overall Assessment of The Data:

Based on the evaluation presented the laboratory adhered to the specified analytical method. The data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
INORGANIC TOTAL METALS ANALYSES
EPA CLP SOW 3/90 OLM03.0: Priority Pollutants
Case#: 50071 SDG#: 927495
BURLINGTON, VERMONT

Samples:

ER0912941 ER0912942 ER0921941 FB092194

I. **Sample Holding Times:** Acceptable/All criteria were met.

All samples were analyzed within the required holding time of 180 days from the date of sampling to the date of metals analysis. The samples were analyzed for mercury within the required holding time of 28 days.

II. **Calibration:** Acceptable/All criteria were met.

The required number of standards for the initial calibration were analyzed. All correlation coefficients were equal to or greater than 0.995. All initial calibrations were within control limits, and no qualifiers were added to the data for initial calibrations.

The laboratory analyzed a continuing calibration verification (CCV) standard at the required frequency of one every ten samples. The percent recoveries of the CCV associated with the environmental sample results were within control limits of 90-110% for ICP and GFAA. No qualifiers were added to the data due to continuing calibration error.

III. **Blank Analyses:** Acceptable/With the following exceptions:

Method and Preparation blank analysis indicated five compounds were detected: aluminum (100.7 ug/l), beryllium (1.0 ug/l), cobalt (8.3 ug/l), magnesium (43.7 ug/l), and sodium (315.5 ug/l). Results greater than IDL and less than 5 times blank concentration were qualified "B", blank contamination:

Sample ID #	Compound	Qualifier
ER0912941	Al	B
	Na	B
ER0912942	Al	B
	Na	B
ER0921941	Al	B
	Na	B

IV. ICP Interference Check Sample (ICS) Analyses:

Interference check samples were analyzed at the beginning and end of each ICP analytical run. The percent recoveries were within the 80-120% recovery range. No qualifiers were added to the data.

V. Laboratory Control Sample (LCS) Analyses:

All compounds were within control limits in LCS analysis. No qualifiers were added to the data.

VI. Duplicate Sample Analyses: Acceptable.

Relative percent differences for soil samples were within the required control limits. No qualifiers were added to the data.

VII. Overall Assessment of The Data:

Based on the evaluation presented the laboratory adhered to the specified analytical method. The data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
INORGANIC TOTAL METALS ANALYSES
EPA CLP SOW 3/90 OLM03.0: Priority Pollutants
Case#: 50071 SDG#: 924968
BURLINGTON, VERMONT

Samples:

FB090894R FB090894D ER0908941* ER0913941 ER0913942 ER0920941

* = no data for this sample was found in the data package

I. **Sample Holding Times:** Acceptable/All criteria were met.

All samples were analyzed within the required holding time of 180 days from the date of sampling to the date of metals analysis. The samples were analyzed for mercury within the required holding time of 28 days.

II. **Calibration:** Acceptable/All criteria were met.

The required number of standards for the initial calibration were analyzed. All correlation coefficients were equal to or greater than 0.995. All initial calibrations were within control limits, and no qualifiers were added to the data for initial calibrations.

The laboratory analyzed a continuing calibration verification (CCV) standard at the required frequency of one every ten samples. The percent recoveries of the CCV associated with the environmental sample results were within control limits of 90-110% for ICP and GFAA. No qualifiers were added to the data due to continuing calibration error.

III. **Blank Analyses:** Acceptable/With the following exceptions:

Method and Preparation blank analysis indicated five compounds were detected: aluminum (108.9 ug/l), beryllium (1.0 ug/l), cobalt (8.3 ug/l), magnesium (43.7 ug/l), and sodium (375.7 ug/l). Results greater than IDL and less than 5 times blank concentration were qualified "B", blank contamination:

Sample ID #	Compound	Qualifier
FB090894D	Al	B
	Na	B
ER0913941	Al	B
	Na	B
ER0913942	Al	B
	Na	B
ER0920941	Al	B
	Na	B

IV. ICP Interference Check Sample (ICS) Analyses:

Interference check samples were analyzed at the beginning and end of each ICP analytical run. The percent recoveries were within the 80-120% recovery range. No qualifiers were added to the data.

V. Laboratory Control Sample (LCS) Analyses:

All LCS results were within control limits. No qualifiers were added to the data.

VI. Overall Assessment of The Data:

Based on the evaluation presented the laboratory adhered to the specified analytical method. The data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
INORGANIC TOTAL METALS ANALYSES
EPA CLP SOW 3/90 OLM03.0: Priority Pollutants
Case#: 50071 SDG#: 274105
BURLINGTON, VERMONT

Sample:

ER0926941

I. **Sample Holding Times:** Acceptable/All criteria were met.

All samples were analyzed within the required holding time of 180 days from the date of sampling to the date of metals analysis. The samples were analyzed for mercury within the required holding time of 28 days.

II. **Calibration:** Acceptable/All criteria were met.

The required number of standards for the initial calibration were analyzed. All correlation coefficients were equal to or greater than 0.995. All initial calibrations were within control limits, and no qualifiers were added to the data for initial calibrations.

The laboratory analyzed a continuing calibration verification (CCV) standard at the required frequency of one every ten samples. The percent recoveries of the CCV associated with the environmental sample results were within control limits of 90-110% for ICP and GFAA. No qualifiers were added to the data due to continuing calibration error.

III. **Blank Analyses:** Acceptable/With the following exceptions:

Method and Preparation blank analysis indicated three compounds were detected: aluminum (48.5 ug/l), cobalt (9.5 ug/l), and sodium (197.2 ug/l). Results greater than IDL and less than 5 times blank concentration were qualified "B", blank contamination:

Sample ID #	Compound	Qualifier
ER0926941	Al	B
	Na	B

IV. ICP Interference Check Sample (ICS) Analyses:

Interference check samples were analyzed at the beginning and end of each ICP analytical run. The percent recoveries were within the 80-120% recovery range. No qualifiers were added to the data.

V. Laboratory Control Sample (LCS) Analyses:

All results of LCS analysis were within control limits. No qualifiers were added to the data.

VI. Overall Assessment of The Data:

Based on the evaluation presented the laboratory adhered to the specified analytical method. The data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
INORGANIC TOTAL METALS ANALYSES
EPA CLP SOW 3/90 OLM03.0: Priority Pollutants
Case#: 50071 SDG#: 249300
BURLINGTON, VERMONT

Samples:

4SW31093D ER1028941 ER1028942 V3MW11094 V3MW31094
V4SW31094 V4SW31094D V4SW31094S

I. **Sample Holding Times:** Acceptable/All criteria were met.

All samples were analyzed within the required holding time of 180 days from the date of sampling to the date of metals analysis. The samples were analyzed for mercury within the required holding time of 28 days.

II. **Calibration:** Acceptable/All criteria were met.

The required number of standards for the initial calibration were analyzed. All correlation coefficients were equal to or greater than 0.995. All initial calibrations were within control limits, and no qualifiers were added to the data for initial calibrations.

The laboratory analyzed a continuing calibration verification (CCV) standard at the required frequency of one every ten samples. The percent recoveries of the CCV associated with the environmental sample results were within control limits of 90-110% for ICP and GFAA. No qualifiers were added to the data due to continuing calibration error.

III. **Blank Analyses:** Acceptable/With the following exceptions:

Method and Preparation blank analysis indicated three compounds were detected: calcium (11.8 ug/l), iron (92.0 ug/l), and sodium (197.2 ug/l). Results greater than IDL and less than 5 times blank concentration were qualified "B", blank contamination:

Sample ID #	Compound	Qualifier
ER1028941	Ca	B
	Na	B
ER1028942	Ca	B
	Fe	B

IV. ICP Interference Check Sample (ICS) Analyses:

Interference check samples were analyzed at the beginning and end of each ICP analytical run. The percent recoveries were within the 80-120% recovery range. No qualifiers were added to the data.

V. Laboratory Control Sample (LCS) Analyses:

LCS analysis was performed, and all %recoveries were within control limits. No qualifiers were added to the data.

VI. Spike Sample Analyses:

Spike results for water samples were acceptable with the exception of four compounds: arsenic (133.2%), beryllium (130.7%), thallium (31.8%), and zinc (40.4%). For low spike recoveries (Th, Zn) sample detects (>IDL) were qualified "J", estimated, and non-detects (<IDL) were qualified "UJ", undetected, estimated. For high spike recoveries (As, Be), no qualifiers were added to the data:

Sample ID #	Compound	Qualifier
4SW31094D	As	J
	Zn	J
	Th	UJ
ER1028942	Zn	J
	Th	UJ
ER1028942	Zn	J
	Th	UJ
V3MW11094	Zn	J
	Th	UJ
V3MW31094	Zn	J
	Th	UJ
V4SW31094	Zn	J
	Th	UJ
V4SW31094D	Zn	J
	Th	UJ
V4SW31094S	Zn	J

	Th	J

VII. Duplicate Sample Analyses: Acceptable.

Relative percent differences for soil samples were within the required control limits. No qualifiers were added to the data.

IX. ICP Serial Dilution:

Serial dilution was performed on sample V4SW31094L for ICP analysis. Adjusted sample concentrations were within control limits for all analytes, with two exceptions: aluminum (150.4%D) and copper (100.0%D). No detects for copper > 50 x IDL were found and no qualifiers were added to the data for copper. Detected concentrations of aluminum > 50 times IDL were qualified "J", estimated, in samples V3MW11094, V3MW31094, and V4SW31094S.

X. Overall Assessment of The Data:

Based on the evaluation presented the laboratory adhered to the specified analytical method. The data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
INORGANIC TOTAL METALS ANALYSES
EPA CLP SOW 3/90 OLM03.0: Priority Pollutants
Case#: 50071 SDG#: 249280
BURLINGTON, VERMONT

Samples:

V4D1005 V41005D V4D2005 V4D3005

I. **Sample Holding Times:** Acceptable/All criteria were met.

All samples were analyzed within the required holding time of 180 days from sampling to metals analysis. The samples were analyzed for mercury within the required holding time of 28 days.

II. **Calibration:** Acceptable/All criteria were met.

The required number of standards for the initial calibration were analyzed. All correlation coefficients were equal to or greater than 0.995. All initial calibrations were within control limits, and no qualifiers were added to the data for initial calibrations.

The laboratory analyzed a continuing calibration verification (CCV) standard at the required frequency of one every ten samples. The percent recoveries of the CCV associated with the environmental sample results were within control limits of 90-110% for ICP and GFAA. No qualifiers were added to the data due to continuing calibration error.

III. **Blank Analyses:** Acceptable/With the following exceptions:

Eight compounds were detected in method and preparation blank analysis: calcium (96.6 ug/l), iron (20.6 ug/l), aluminum (53.9 ug/l), potassium ((2945.6 ug/l), silver (7.3 ug/l), beryllium (2.1 ug/l), chromium (7.7 ug/l), and copper (18.0 ug/l). Results greater than IDL and less than 5 times the blank concentration were qualified "B", blank contamination:

Sample ID #	Compound	Qualifier
V4D1005	Co	B
	Cu	B
	Ag	B
	Na	B

V4D1005D	Co	B
	Cu	B
	Ag	B
	Na	B
V4D2005	Be	B
	Cr	B
	Cu	B
	Ag	B
	Na	B
	Cu	B
	K	B
V4D3005	Cr	B
	Co	B
	Pb	B
	Na	B
	Cu	B

IV. ICP Interference Check Sample (ICS) Analyses:

Interference check samples were analyzed at the beginning and end of each ICP analytical run. The percent recoveries were within the 80-120% recovery range. No qualifiers were added to the data.

V. Laboratory Control Sample (LCS) Analyses:

LCS analysis was performed, and all %recoveries were within control limits. No qualifiers were added to the data.

VI. Spike Sample Analyses:

Spike results for soil samples were acceptable with the following exceptions: antimony (59.5%R), arsenic (125.1%R), lead (9999.9%R), and manganese (123.5%R). Antimony data were qualified "UJ", not detected, estimated. Detects for lead, arsenic, and manganese were qualified "J", estimated. Non-detects were not qualified.

Sample ID #	Compound	Qualifier
V4D1005	Pb	J
	Mn	J
	Sb	UJ
	As	UJ
	As	UJ
V4D1005D	Pb	J
	Mn	J
	Sb	UJ
	As	UJ
V4D2005	Pb	J
	Mn	J
	Sb	UJ
	As	UJ
V4D3005	Pb	J
	Mn	J
	As	UJ
	Sb	UJ

VII. **Duplicate Sample Analyses:** Acceptable.

Relative percent differences for soil samples were within the required control limits for all but eight elements: beryllium (200.0%), chromium (59.6%), manganese 63.2%, mercury (200.0%), potassium (200.0%), calcium (93.1%), lead (98.0%), and silver (91.4%). Detects for these elements were qualified "J", estimated.

Sample ID #	Compound	Qualifier
V4D1005D	Cr	J
	Ca	J
	Pb	J
V4D2005	Hg	J

	Ca	J
	Pb	J
V4D1005	Ca	J
	Pb	J
V4D3005	Ca	J
	Pb	J

VIII. Furnace AA Quality Control Analyses (GFAA): Acceptable.

The laboratory performed GFAA analyses using an analytical post-digestion spike for each sample. The laboratory control limits for the post-digestion spike recovery were 80-120%. All results were within control limits for the post-digestion spike recovery.

IX. ICP Serial Dilution:

A serial dilution was performed on sample V4D2005L for ICP analysis. Adjusted sample concentrations were within control limits for all analytes.

X. Overall Assessment of The Data:

Based on the evaluation presented the laboratory adhered to the specified analytical method. The data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
INORGANIC TOTAL METALS ANALYSES
EPA CLP SOW 3/90 OLM03.0: Priority Pollutants
Case#: 50071 SDG#: 249236
BURLINGTON, VERMONT

Samples:

ER1024941 FB102494P V3BG11094 3BG11094D V4MW31094 V4BG11094

V4MW21094

I. **Sample Holding Times:** Acceptable/All criteria were met.

All samples were analyzed within the required holding time of 180 days from the date of sampling to the date of metals analysis. The samples were analyzed for mercury within the required holding time of 28 days.

II. **Calibration:** Acceptable/All criteria were met.

The required number of standards for the initial calibration were analyzed. All correlation coefficients were equal to or greater than 0.995. All initial calibrations were within control limits, and no qualifiers were added to the data for initial calibrations.

The laboratory analyzed a continuing calibration verification (CCV) standard at the required frequency of one every ten samples. The percent recoveries of the CCV associated with the environmental sample results were within control limits of 90-110% for ICP and GFAA. No qualifiers were added to the data due to continuing calibration error.

III. **Blank Analyses:** Acceptable/With the following exceptions:

Method and Preparation blank analysis indicated four compounds were detected: calcium (14.0 ug/l), iron (42.0 ug/l), arsenic (2.2 ug/l) and sodium (215.7 ug/l). Results greater than IDL and less than 5 times blank concentration were qualified "B", blank contamination:

Sample ID	Compound	Qualifier
ER1024941	Al	B
	Fe	B
	Na	B
FB102494P	Al	B
V3BG11094	As	B
3BG11094D	As	B
V4BG11094	As	B

IV. ICP Interference Check Sample (ICS) Analyses:

Interference check samples were analyzed at the beginning and end of each ICP analytical run. The percent recoveries were within the 80-120% recovery range. No qualifiers were added to the data.

V. Laboratory Control Sample (LCS) Analyses:

LCS analysis indicated all recoveries within control limits. No qualifiers were added to the data.

VI. Spike Sample Analyses (Percent Recovery):

Spike results for soil samples were acceptable with the following exceptions: aluminum (47.9%), cadmium (64.0%), selenium (38.1%) lead (57.1%), thallium (0.0%). Sample detects (>IDL) were qualified "J", estimated, and non-detects (<IDL) were qualified "UJ", undetected, estimated for these five elements. Iron and arsenic reported high spike recoveries. Qualifiers were not added for these elements.

Sample ID #	Compound	Qualifier
ER1024941	Cd	UJ
	Pb	UJ
	Se	UJ
	Th	R
FB102494P	Cd	UJ
	Pb	J

	Se	UJ
	Th	R
V3BG11094	Al	J
	Cd	UJ
	Pb	J
	Se	UJ
	Th	R
3BG11094D	Al	J
	Cd	UJ
	Pb	J
	Se	UJ
	Th	R
V4MW31094	Al	J
	Cd	UJ
	Pb	J
	Se	UJ
	Th	R
V4BG11094	Al	J
	Cd	UJ
	Pb	J
	Se	UJ
	Th	R
V4MW21094	Al	J
	Cd	UJ
	Pb	J
	Se	UJ
	Th	R

VII. **Duplicate Sample Analyses:** Acceptable.

Relative percent differences for soil samples were within the required control limits. No qualifiers were added to the data.

VIII. **Furnace AA Quality Control Analyses (GFAA):** Acceptable.

The laboratory performed GFAA analyses using an analytical post-digestion spike for each sample. The laboratory control limits for the post-digestion spike recovery were 80-120%. cadmium exceeded control limits for the post-digestion spike recovery. No qualifiers were added to the data.

IX. **ICP Serial Dilution:**

Serial dilution was performed on sample V4MW21094L for ICP analysis. Adjusted sample concentrations were within control limits for all analytes.

X. **Overall Assessment of The Data:**

Based on the evaluation presented the laboratory adhered to the specified analytical method. The data, as qualified, are acceptable for use.

DATA VALIDATION REPORT
TOTAL PETROLEUM HYDROCARBONS
CALIFORNIA L.U.F.T. MODIFIED 8015
CASE # 29249
SDG #S: 00135, 00019, 00232, 00277, 00234, 0148M, 00148, 00025, 00208, 00274, 00204, 00299, 00298, 0025M, 00135
BURLINGTON, VERMONT

Samples

SDG 00135
V3B40810 V3B30305 V3B20305 V3B31315 V3B10305
V3B40305 V3B51315 V3B50406 V4B50911 V4B51719
V3BG10305 V3BG13840 3BG13840D

SDG 0025M
V4B11719 V3B41315 V3B41315D V3B21113 V3B11113 V3B11113D

SDG 00298
ER1028941 ER1028942 V4SW31094 4SW31094D V3MW11094 V3MW31094

SDG 00299
ER1028941 ER1028942 V4SW31094 4SW31094D V3MW11094 V3MW31094

SDG 00204
V3BG11820

SDG 00274
V4D3005 V4D2005 V4D1005 V4D1005D

SDG 00208
V3BG11320

SDG 00025
V4B61921 V4B62426 V4B31416 V4B31921 V4B21416 V4B21921
V4B40911 V4B41719 V4B10911 V4BG0911 V4BG1416 V4BG1416D
V4BG1921 V3B50305

SDG 00148
V3B20305 V3B10305 V3B40305 V4B50406 V4B50911 V3BG10305
V3BG13840 3BG13840D

SDG 0148M
V3B40810 V3B30305 V3B31315 V3B51315 V4B51719

SDG 00234
ER1024941 FB102494P V3BG11094 3BG11094D V4MW31094
V4BG11094 V4MW21094

SDG 00277
V4D3005 V4D2005 V4D1005 V4D1005D

SDG 00232
ER1024941 FB102494P V3BG11094 3BG11094D V4MW31094
V4BG11094 V4MW421094

SDG 00019
V4B61921 V4B62426 V4B31416 V4B31921 V4B21416 V4B21921
V4B40911 V4B41719 V4B10911 V4BG0911 V4BG1416 V4BG1416D
V4BG1921 V3B50305

I. **Sample Holding Times:** Acceptable/All criteria met

All water samples were analyzed within therequired holding time of 28 days. All soil samples were analyzed within 28 days of sampling.

II. **Calibration:** Acceptable/All criteria met

A five point standard calibration bracketed the samples of each SDG analyzed. The correlation coefficient in each package was verified to be greater than the required coefficient of 0.995.

III. **Surrogate Recovery:** Acceptable/With the following exceptions

Surrogate recoveries were outside control limits for the following samples:

SDG 0148M
V3B40810 V3B30305 V3B31315 V3B51315 V4B51719

SDG 00274
V4D2005 V4D1005 V4D1005D

SDG 00299
4SW31029D

SDG 0025M
V4B11719 V3B41315 V3B41315D V3B21113 V3B11113
V3B11113D

Detected concentrations of TPH in these samples were quaified "J".

V. **Blank Anlysis:** Acceptable/With the following exceptions

Method, trip, and field blanks were anlayzed at the required frequency. Field blanks and equipment rinseates associated with the water and soil samples did not report detects for TPH. TPH was detected in the method blanks associated with one water and one soil SDG. The following samples were qualified "B".

SDG 00234 - Diesel in the method blank
ER1024941 FB102494 V4MW21094

SDG 00135
V3B20305 V3B10305 V4B50406 V4B50911 V3BG10305
V3BG13840 V3BG13840D

APPENDIX J: LABORATORY ANALYTICAL DATA AND CHAIN OF CUSTODY FORMS

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:		V3-B1		V3-B1		V3-B1		V3-B2		V3-B2		V3-B3					
SAMPLE ID:		V3-B1-0305		V3-B1-1113		V3-B1-1113D		V3-B2-0305		V3-B2-1113		V3-B3-0305					
COLLECTION DATE:		09/13/94		09/13/94		09/13/94		09/13/94		09/13/94		09/13/94					
ASSOCIATED QC:		TB-091394-1,ER-091294-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091394-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091394-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091294-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091294-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091294-1 FB-090894-P, FB-090894-D					
CRITERIA UNITS:		RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL				
Halogenated Volatile Organic Compounds by 8010																	
1,1,1,2-Tetrachloroethane	µg/kg	0.98	U	5.10	U	5.40	U	0.99	U	5.20	U	5.20	UJ				
1,1,1-Trichloroethane	µg/kg	0.07	()B	0.32	()B	0.35	()B	3	U	0.38	()B	16	UJ				
1,1,2,2-Tetrachloroethane	µg/kg	0.65	U	3.40	U	3.60	U	0.66	U	3.50	U	3.40	UJ				
1,1,2-Trichloroethane	µg/kg	0.92	U	4.80	U	5.10	U	0.93	U	4.90	U	4.90	UJ				
1,1-Dichloroethane	µg/kg	0.82	U	4.30	U	4.50	U	0.82	U	4.40	U	4.30	UJ				
1,1-Dichloroethene	µg/kg	0.92	U	4.80	U	5.10	U	0.93	U	4.90	U	4.90	UJ				
1,2,3-Trichloropropane	µg/kg	0.98	U	5.10	U	5.40	U	0.99	U	5.20	U	5.20	UJ				
1,2-Dibromoethane (Ethylene di	µg/kg	1.40	U	7.40	U	7.70	U	1.40	U	7.60	U	7.50	UJ				
1,2-Dichlorobenzene	µg/kg	1.50	U	8	U	8.30	U	1.50	U	8.10	U	8	UJ				
1,2-Dichloroethane	µg/kg	0.71	U	3.70	U	3.90	U	0.71	U	3.80	U	3.70	UJ				
1,2-Dichloropropane	µg/kg	0.71	U	3.70	U	3.90	U	0.71	U	3.80	U	3.70	UJ				
1,3-Dichlorobenzene	µg/kg	1.20	U	6.20	U	6.50	U	1.20	U	6.40	U	6.30	UJ				
1,4-Dichlorobenzene	µg/kg	1.50	U	8	U	8.30	U	1.50	U	8.10	U	8	UJ				
2-Chloroethyl vinyl ether	µg/kg	1.20	U	6.20	U	6.50	U	1.20	U	6.40	U	6.30	UJ				
2-Chlorotoluene	µg/kg	1.10	U	5.70	U	6	U	1.10	U	5.80	U	5.70	UJ				
4-Chlorotoluene	µg/kg	1.20	U	6.20	U	6.50	U	1.20	U	6.40	U	6.30	UJ				
Bromobenzene	µg/kg	0.82	U	4.30	U	4.50	U	0.82	U	4.40	U	4.30	UJ				
Bromochloromethane	µg/kg	0.98	U	5.10	U	5.40	U	0.99	U	5.20	U	5.20	UJ				
Bromodichloromethane	µg/kg	1.10	U	5.70	U	6	U	1.10	U	5.80	U	5.70	UJ				
Bromoform	µg/kg	0.98	U	5.10	U	5.40	U	0.99	U	5.20	U	5.20	UJ				
Bromomethane	µg/kg	3	U	16	U	17	U	3.10	U	16	U	16	UJ				
Carbon tetrachloride	µg/kg	0.71	U	3.70	U	3.90	U	0.71	U	3.80	U	3.70	UJ				
Chlorobenzene	µg/kg	0.98	U	5.10	U	5.40	U	2	U	5.20	U	5.20	UJ				
Chloroethane	µg/kg	2.80	U	15	U	15	U	2.90	U	15	U	15	UJ				
Chloroform	µg/kg	0.16	()B	1.20	()B	1.40	()	1.10	U	0.95	()B	5.70	UJ				
Chloromethane	µg/kg	2.70	U	14	U	15	U	2.70	U	15	U	14	UJ				
Cis-1,3-Dichloropropene	µg/kg	1	U	5.40	U	5.70	U	1	U	5.50	U	5.50	UJ				
Dibromochloromethane	µg/kg	0.87	U	4.50	U	4.80	U	0.88	U	4.70	U	4.60	UJ				
Dibromomethane	µg/kg	0.98	U	5.10	U	5.40	U	0.99	U	5.20	U	5.20	UJ				
Methylene chloride	µg/kg	2.90	()B	11	()B	13	()B	1.50	()B	10	()B	18	J				
Tetrachloroethene	µg/kg	0.87	U	4.50	U	4.80	U	0.88	U	4.70	U	4.60	UJ				
Trans-1,2-Dichloroethene	µg/kg	1.20	U	6.20	U	6.50	U	1.20	U	6.40	U	6.30	UJ				
Trans-1,3-Dichloropropene	µg/kg	0.92	U	4.80	U	5.10	U	0.93	U	4.90	U	4.90	UJ				
Trichloroethene	µg/kg	0.87	U	4.50	U	4.80	U	0.88	U	4.70	U	4.60	UJ				
Vinyl chloride	µg/kg	2.80	U	15	U	15	U	2.90	U	15	U	15	UJ				

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:	V3-B1	V3-B1	V3-B1	V3-B2	V3-B2	V3-B3
SAMPLE ID:	V3-B1-0305	V3-B1-1113	V3-B1-1113D	V3-B2-0305	V3-B2-1113	V3-B3-0305
COLLECTION DATE:	09/13/94	09/13/94	09/13/94	09/13/94	09/13/94	09/13/94
ASSOCIATED QC:	TB-091394-1,ER-091294-1 FB-090894-P, FB-090894-D	TB-091394-1,ER-091394-1 FB-090894-P, FB-090894-D	TB-091394-1,ER-091394-1 FB-090894-P, FB-090894-D	TB-091394-1,ER-091294-1 FB-090894-P, FB-090894-D	TB-091394-1,ER-091294-1 FB-090894-P, FB-090894-D	TB-091394-1,ER-091294-1 FB-090894-P, FB-090894-D

CRITERIA UNITS:		RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Aromatic Volatile Organic Compounds by 8020													
1,2-Dichlorobenzene	µg/kg	0.25	()B	110		260		0.53	()	160		3840	
1,3-Dichlorobenzene	µg/kg	0.10	()B	210		150		0.24	()	130		8900	
1,4-Dichlorobenzene	µg/kg	0.19	()B	200		210		0.25	()B	220		1600	
Benzene	µg/kg	0.10	()B	8	U	32		1.50	U	8.10	U	500	U
Chlorobenzene	µg/kg	0.04	()	48		44		0.99	U	14		5200	
Ethylbenzene	µg/kg	0.19	()B	46		190		0.34	()B	130		2700	
Methyl-tert-butyl ether	µg/kg	12	U	81		1.10	()	12	U	64	U	7200	U
Styrene	µg/kg	1.60	U	28		33		1.60	U	30		5500	
Toluene	µg/kg	0.13	()B	34		64		0.27	()B	14	()	360	U
m+p-Xylene	µg/kg	-		-		-		-		-		-	
m-Xylene	µg/kg	0.34	()B	69		8.60	()	0.74	()B	8.70	()	1900	
o-Xylene	µg/kg	0.28	()B	63		210		0.11	()B	210		4600	
p-Xylene	µg/kg	0.34	()B	69		8.60	()	0.74	()B	8.70	()	1900	
Semivolatile Organic Compounds by CLP 3/90													
1,2,4-Trichlorobenzene	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
1,2-Dichlorobenzene	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
1,3-Dichlorobenzene	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
1,4-Dichlorobenzene	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
2,2'-Oxybis(1-chloropropane)	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
2,4,5-Trichlorophenol	µg/kg	860	U	2700	U	2800	U	870	U	2800	U	2700	U
2,4,6-Trichlorophenol	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
2,4-Dichlorophenol	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
2,4-Dimethylphenol	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
2,4-Dinitrophenol	µg/kg	860	U	2700	U	2800	U	870	U	2800	U	2700	U
2,4-Dinitrotoluene	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
2,6-Dinitrotoluene	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
2-Chloronaphthalene	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
2-Chlorophenol	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
2-Methylnaphthalene	µg/kg	76	()	11000		5300		360	U	4300		1100	U
2-Methylphenol	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
2-Nitroaniline	µg/kg	860	U	2700	U	2800	U	870	U	2800	U	2700	U
2-Nitrophenol	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
3,3'-Dichlorobenzidine	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
3-Nitroaniline	µg/kg	860	U	2700	U	2800	U	870	U	2800	U	2700	U

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:		V3-B1		V3-B1		V3-B1		V3-B2		V3-B2		V3-B3	
SAMPLE ID:		V3-B1-0305		V3-B1-1113		V3-B1-1113D		V3-B2-0305		V3-B2-1113		V3-B3-0305	
COLLECTION DATE:		09/13/94		09/13/94		09/13/94		09/13/94		09/13/94		09/13/94	
ASSOCIATED QC:		TB-091394-1,ER-091294-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091394-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091394-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091294-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091294-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091294-1 FB-090894-P, FB-090894-D	
CRITERIA	UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
4,6-Dinitro-2-methylphenol	µg/kg	860	U	2700	U	2800	U	870	U	2800	U	2700	U
4-Bromophenyl phenyl ether	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
4-Chloro-3-methylphenol	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
4-Chloroaniline	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
4-Chlorophenyl phenyl ether	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
4-Methylphenol	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
4-Nitroaniline	µg/kg	860	U	2700	U	2800	U	870	U	2800	U	2700	U
4-Nitrophenol	µg/kg	860	U	2700	U	2800	U	870	U	2800	U	2700	U
Acenaphthene	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
Acenaphthylene	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
Anthracene	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
Benzo(a)anthracene	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
Benzo(a)pyrene	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
Benzo(b)fluoranthene	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
Benzo(g,h,i)perylene	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
Benzo(k)fluoranthene	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
Butyl benzyl phthalate	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
Carbazole	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
Chrysene	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
Di-n-butyl phthalate	µg/kg	46	()B	1100	U	1200	U	51	()B	1100	U	1100	U
Di-n-octyl phthalate	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
Dibenzo(a,h)anthracene	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
Dibenzofuran	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
Diethyl phthalate	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
Dimethyl phthalate	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
Fluoranthene	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
Fluorene	µg/kg	360	U	200	()	1200	U	360	U	1100	U	120	()
Hexachlorobenzene	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
Hexachlorobutadiene	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
Hexachlorocyclopentadiene	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
Hexachloroethane	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
Indeno(1,2,3-cd)pyrene	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
Isophorone	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
N-Nitroso-di-n-propylamine	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
N-Nitrosodiphenylamine(1)	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
Naphthalene	µg/kg	56	()	5400		2900		360	U	2400		1100	U

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:		V3-B1		V3-B1		V3-B1		V3-B2		V3-B2		V3-B3	
SAMPLE ID:		V3-B1-0305		V3-B1-1113		V3-B1-1113D		V3-B2-0305		V3-B2-1113		V3-B3-0305	
COLLECTION DATE:		09/13/94		09/13/94		09/13/94		09/13/94		09/13/94		09/13/94	
ASSOCIATED QC:		TB-091394-1,ER-091294-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091394-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091394-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091294-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091294-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091294-1 FB-090894-P, FB-090894-D	
	CRITERIA UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Nitrobenzene	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
Pentachlorophenol	µg/kg	860	U	2700	U	2800	U	870	U	2800	U	2700	U
Phenanthrene	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
Phenol	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
Pyrene	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
bis(2-Chloroethoxy)methane	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
bis(2-Chloroethyl)ether	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
bis(2-Ethylhexyl)phthalate	µg/kg	360	U	1100	U	1200	U	360	U	1100	U	1100	U
TAL Metals by CLP 3/90													
Aluminum	µg/ℓ	7070		5570		7580		7530		7190		10200	
Antimony	µg/ℓ	6.60	U	12.70	UJ	13.40	UJ	6.60	U	13	UJ	6.90	U
Arsenic	µg/ℓ	4		3.20		3.60		4.30		3.80		3.10	
Barium	µg/ℓ	15.80	()	15.90	()	20.40	()	15.30	()	21.20	()	47.40	
Beryllium	µg/ℓ	0.24	U	0.17	()	0.24	()	0.24	U	0.23	()	0.25	U
Cadmium	µg/ℓ	0.74	U	1	U	1.10	U	0.75	U	1.10	U	0.78	U
Calcium	µg/ℓ	735	()	1640		1840		634	()	1740		841	()
Chromium	µg/ℓ	13.50		9.80		13		14.10		12.60		13.70	
Cobalt	µg/ℓ	6	()B	6	()	9.90	()	5.60	()B	9.60	()	6.60	()B
Copper	µg/ℓ	8.30		17.40		17.20		7.60		15.30		5.40	()
Iron	µg/ℓ	13300		11700		15400		13900		14600		13300	
Lead	µg/ℓ	5.20	B	4.50		5.10		5.40	J	5		8	J
Magnesium	µg/ℓ	2670		2830		4000		2740		3770		1900	
Manganese	µg/ℓ	145		160		206		142		194		217	
Mercury	µg/ℓ	0.11	U	0.11	U	0.12	U	0.11	U	0.12	U	0.11	U
Nickel	µg/ℓ	17.50		17.30		20.10		18.30		19.80		13.80	
Potassium	µg/ℓ	556	U	453	()J	646	()J	560	U	615	()J	585	U
Selenium	µg/ℓ	0.85	UJ	0.89	U	0.93	U	0.86	UJ	0.91	U	0.89	UJ
Silver	µg/ℓ	0.87	U	0.82	U	0.86	U	0.88	U	0.84	U	0.92	U
Sodium	µg/ℓ	100	()	144	()B	119	()B	114	()	164	()	119	()
Thallium	µg/ℓ	0.78	U	0.82	U	0.86	U	0.79	U	0.84	U	0.82	U
Vanadium	µg/ℓ	13		10.80	()	14.90		11.60		14.40		17	
Zinc	µg/ℓ	26.50		33.60		38.20		30.70		36.70		34.50	
TPH by 8015 Modified California Luft													
TPH-Extractable as Diesel	mg/kg	1.40	()B	900		1200		3.30	()B	2600		2500	

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

TPH-Purgeable as Gasoline	mg/kg	0.50	U	2100	J	3100	J	0.50	U	2100	J	2800	J
	LOCATOR:	V3-B3		V3-B4		V3-B4		V3-B4		V3-B4		V3-B5	
	SAMPLE ID:	V3-B3-1315		V3-B4-0305		V3-B4-0810		V3-B4-1315		V3-B4-1315D		V3-B5-0305	
	COLLECTION DATE:	09/13/94		09/13/94		09/13/94		09/13/94		09/13/94		09/13/94	
	ASSOCIATED QC:	TB-091394-1,ER-091294-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091394-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091394-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091394-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091394-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091294-1 FB-090894-P, FB-090894-D	
	CRITERIA UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Halogenated Volatile Organic Compounds by 8010													
1,1,1,2-Tetrachloroethane	µg/kg	5.10	U	1	U	4.80	U	4.90	U	4.90	U	0.99	U
1,1,1-Trichloroethane	µg/kg	15	U	0.07	()B	15	U	2.40	()B	0.60	()B	0.16	()B
1,1,2,2-Tetrachloroethane	µg/kg	3.40	U	0.68	U	3.20	U	3.30	U	3.30	U	0.66	U
1,1,2-Trichloroethane	µg/kg	4.80	U	0.97	U	4.60	U	4.70	U	4.70	U	0.93	U
1,1-Dichloroethane	µg/kg	4.30	U	0.85	U	4	U	4.10	U	4.10	U	0.82	U
1,1-Dichloroethene	µg/kg	4.80	U	0.97	U	4.60	U	4.70	U	4.70	U	0.93	U
1,2,3-Trichloropropane	µg/kg	5.10	U	1	U	4.80	U	4.90	U	4.90	U	0.99	U
1,2-Dibromoethane (Ethylene di	µg/kg	7.40	U	1.50	U	7	U	7.10	U	7.10	U	1.40	U
1,2-Dichlorobenzene	µg/kg	8	U	1.60	U	7.50	U	2.30	()	2.80	()	1.50	U
1,2-Dichloroethane	µg/kg	3.70	U	0.74	U	3.50	U	3.60	U	3.60	U	0.71	U
1,2-Dichloropropane	µg/kg	3.70	U	0.74	U	3.50	U	3.60	U	3.60	U	0.71	U
1,3-Dichlorobenzene	µg/kg	6.20	U	2	U	5.90	U	6	U	6	U	1.20	U
1,4-Dichlorobenzene	µg/kg	8	U	2	U	7.50	U	7.70	U	7.70	U	1.50	U
2-Chloroethyl vinyl ether	µg/kg	6.20	U	1.20	U	5.90	U	6	U	6	U	1.20	U
2-Chlorotoluene	µg/kg	5.70	U	1.10	U	5.40	U	5.50	U	5.50	U	1.10	U
4-Chlorotoluene	µg/kg	6.20	U	1.20	U	5.90	U	6	U	6	U	1.20	U
Bromobenzene	µg/kg	4.30	U	0.85	U	4	U	4.10	U	4.10	U	0.82	U
Bromochloromethane	µg/kg	5.10	U	1	U	4.80	U	4.90	U	4.90	U	0.99	U
Bromodichloromethane	µg/kg	5.70	U	1.10	U	5.40	U	5.50	U	5.50	U	1.10	U
Bromoform	µg/kg	5.10	U	1	U	4.80	U	4.90	U	4.90	U	0.99	U
Bromomethane	µg/kg	16	U	3.20	U	15	U	15	U	15	U	3.10	U
Carbon tetrachloride	µg/kg	3.70	U	0.74	U	3.50	U	3.60	U	3.60	U	0.71	U
Chlorobenzene	µg/kg	5.10	U	2	U	4.80	U	4.90	U	4.90	U	0.10	()
Chloroethane	µg/kg	15	U	3	U	14	U	14	U	14	U	2.90	U
Chloroform	µg/kg	5.70	U	0.31	()B	5.40	U	0.97	()B	1.30	()B	0.37	()B
Chloromethane	µg/kg	14	U	2.80	U	13	U	14	U	14	U	2.70	U
Cis-1,3-Dichloropropene	µg/kg	5.40	U	1.10	U	5.10	U	5.20	U	5.20	U	1	U
Dibromochloromethane	µg/kg	4.50	U	0.91	U	4.30	U	4.40	U	4.40	U	0.88	U
Dibromomethane	µg/kg	5.10	U	1	U	4.80	U	4.90	U	4.90	U	0.99	U
Methylene chloride	µg/kg	9.30	()B	3.30	()B	4.70	()B	9.70	()B	13	()B	3.10	()B
Tetrachloroethene	µg/kg	4.50	U	0.91	U	4.30	U	0.76	()	0.84	()	0.88	U
Trans-1,2-Dichloroethene	µg/kg	6.20	U	1.20	U	5.90	U	6	U	6	U	1.20	U
Trans-1,3-Dichloropropene	µg/kg	4.80	U	0.97	U	4.60	U	4.70	U	4.70	U	0.93	U
Trichloroethene	µg/kg	4.50	U	0.91	U	4.30	U	4.40	U	4.40	U	0.88	U

TABLE J-1 LABORATORY ANALYTICAL DATA
Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

Vinyl chloride	µg/kg	15	U	3	U	14	U	14	U	14	U	2.90	U										
	LOCATOR:	V3-B3		V3-B4		V3-B4		V3-B4		V3-B4		V3-B5											
	SAMPLE ID:	V3-B3-1315		V3-B4-0305		V3-B4-0810		V3-B4-1315		V3-B4-1315D		V3-B5-0305											
	COLLECTION DATE:	09/13/94		09/13/94		09/13/94		09/13/94		09/13/94		09/13/94											
	ASSOCIATED QC:	TB-091394-1,ER-091294-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091394-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091394-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091394-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091394-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091294-1 FB-090894-P, FB-090894-D											
	CRITERIA UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL										
Aromatic Volatile Organic Compounds by 8020																							
1,2-Dichlorobenzene	µg/kg	2000		9		16000		30000		26000		11											
1,3-Dichlorobenzene	µg/kg	1600		13		12000		2200	()	20000	()	9											
1,4-Dichlorobenzene	µg/kg	1000		11		1300		3300		13000		11											
Benzene	µg/kg	250	U	1.60	U	940	U	3700	()	160	U	1.50	U										
Chlorobenzene	µg/kg	880		5.40		7900		11000		18000		2	U										
Ethylbenzene	µg/kg	1100		17		18000		120000		140000		5.40											
Methyl-tert-butyl ether	µg/kg	3600	U	-		13000	U	69000	U	69000	U	12	U										
Styrene	µg/kg	1200		4.80		6300		36000		40000		2.80											
Toluene	µg/kg	870		6	U	6800		170000		180000		5.80	U										
m+p-Xylene	µg/kg	-		-		-		-		-		-											
m-Xylene	µg/kg	4600		3.40	()	39000		260000		210000		0.57	()B										
o-Xylene	µg/kg	4000		16		26000		160000		200000		17											
p-Xylene	µg/kg	1800		3.40	()	18000		93000		110000		0.57	()B										
Semivolatile Organic Compounds by CLP 3/90																							
1,2,4-Trichlorobenzene	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U										
1,2-Dichlorobenzene	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U										
1,3-Dichlorobenzene	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U										
1,4-Dichlorobenzene	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U										
2,2'-Oxybis(1-chloropropane)	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U										
2,4,5-Trichlorophenol	µg/kg	900	U	9000	U	17000	U	18000	U	19000	U	1800	U										
2,4,6-Trichlorophenol	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U										
2,4-Dichlorophenol	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U										
2,4-Dimethylphenol	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U										
2,4-Dinitrophenol	µg/kg	900	U	9000	U	17000	U	18000	U	19000	U	1800	U										
2,4-Dinitrotoluene	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U										
2,6-Dinitrotoluene	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U										
2-Chloronaphthalene	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U										
2-Chlorophenol	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U										
2-Methylnaphthalene	µg/kg	910		8100		27000		46000		17000		2900											
2-Methylphenol	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U										
2-Nitroaniline	µg/kg	900	U	9000	U	17000	U	18000	U	19000	U	1800	U										
2-Nitrophenol	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U										
3,3'-Dichlorobenzidine	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U										

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4

Vermont Air National Guard Base

3-Nitroaniline	µg/kg	900	U	9000	U	17000	U	18000	U	19000	U	1800	U
	LOCATOR:	V3-B3		V3-B4		V3-B4		V3-B4		V3-B4		V3-B5	
	SAMPLE ID:	V3-B3-1315		V3-B4-0305		V3-B4-0810		V3-B4-1315		V3-B4-1315D		V3-B5-0305	
	COLLECTION DATE:	09/13/94		09/13/94		09/13/94		09/13/94		09/13/94		09/13/94	
	ASSOCIATED QC:	TB-091394-1,ER-091294-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091394-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091394-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091394-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091394-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091294-1 FB-090894-P, FB-090894-D	
	CRITERIA UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
4,6-Dinitro-2-methylphenol	µg/kg	900	U	9000	U	17000	U	18000	U	19000	U	1800	U
4-Bromophenyl phenyl ether	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
4-Chloro-3-methylphenol	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
4-Chloroaniline	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
4-Chlorophenyl phenyl ether	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
4-Methylphenol	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
4-Nitroaniline	µg/kg	900	U	9000	U	17000	U	18000	U	19000	U	1800	U
4-Nitrophenol	µg/kg	900	U	9000	U	17000	U	18000	U	19000	U	1800	U
Acenaphthene	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Acenaphthylene	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Anthracene	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Benzo(a)anthracene	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Benzo(a)pyrene	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Benzo(b)fluoranthene	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Benzo(g,h,i)perylene	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Benzo(k)fluoranthene	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Butyl benzyl phthalate	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Carbazole	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Chrysene	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Di-n-butyl phthalate	µg/kg	67	()B	3700	U	7100	U	7200	U	8000	U	720	U
Di-n-octyl phthalate	µg/kg	370	U	620	()	7100	U	7200	U	8000	U	720	U
Dibenzo(a,h)anthracene	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Dibenzofuran	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Diethyl phthalate	µg/kg	370	U	1500	()	7100	U	7200	U	8000	U	720	U
Dimethyl phthalate	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Fluoranthene	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Fluorene	µg/kg	370	U	3700	U	7100	U	1100	()	8000	U	720	U
Hexachlorobenzene	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Hexachlorobutadiene	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Hexachlorocyclopentadiene	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Hexachloroethane	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Indeno(1,2,3-cd)pyrene	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
Isophorone	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
N-Nitroso-di-n-propylamine	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U
N-Nitrosodiphenylamine(1)	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

Naphthalene	µg/kg	340	()	6100		12000		21000		11000		1400											
	LOCATOR:	V3-B3		V3-B4		V3-B4		V3-B4		V3-B4		V3-B5											
	SAMPLE ID:	V3-B3-1315		V3-B4-0305		V3-B4-0810		V3-B4-1315		V3-B4-1315D		V3-B5-0305											
	COLLECTION DATE:	09/13/94		09/13/94		09/13/94		09/13/94		09/13/94		09/13/94											
	ASSOCIATED QC:	TB-091394-1,ER-091294-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091394-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091394-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091394-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091394-1 FB-090894-P, FB-090894-D		TB-091394-1,ER-091294-1 FB-090894-P, FB-090894-D											
	CRITERIA UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL										
Nitrobenzene	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U										
Pentachlorophenol	µg/kg	900	U	9000	U	17000	U	18000	U	19000	U	1800	U										
Phenanthrene	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U										
Phenol	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U										
Pyrene	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U										
bis(2-Chloroethoxy)methane	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U										
bis(2-Chloroethyl)ether	µg/kg	370	U	3700	U	7100	U	7200	U	8000	U	720	U										
bis(2-Ethylhexyl)phthalate	µg/kg	370	U	9500		7100	U	7200	U	8000	U	720	U										
TAL Metals by CLP 3/90																							
Aluminum	µg/ℓ	5200		8680		9440		4310		6910		7420											
Antimony	µg/ℓ	6.80	U	6.90	U	6.50	U	12.30	UJ	13.60	U	12.30	UJ										
Arsenic	µg/ℓ	2.70		2.60		3.80		3.40		3.20		2.30											
Barium	µg/ℓ	14.70	()	49.50		27.90	()	10.60	()	16.40	()	29.10	()										
Beryllium	µg/ℓ	0.25	U	0.25	U	0.24	U	0.18	()	0.20	()	0.25	()										
Cadmium	µg/ℓ	0.77	U	0.77	U	0.73	U	1.10	U	1.10	U	1.10	U										
Calcium	µg/ℓ	1820		641	()	2180		1540		1750		248	()										
Chromium	µg/ℓ	9.10		9.20		17		9.60		12.20		11.20											
Cobalt	µg/ℓ	6.10	()B	5.80	()B	8.80	()B	7.60	()	9.40	()	7.40	()										
Copper	µg/ℓ	13.20		5	()	17.60		12.50		16.20		8.40											
Iron	µg/ℓ	11900		12200		18600		10300		14400		11900											
Lead	µg/ℓ	3.70	J	5.90	J	5.20	J	3.20		5		5.40											
Magnesium	µg/ℓ	2760		2310		4790		2390		3640		1980											
Manganese	µg/ℓ	147		257		417		153		197		437											
Mercury	µg/ℓ	0.11	U	0.11	U	0.11	U	0.11	U	0.12	U	0.11	U										
Nickel	µg/ℓ	21.30		18.60		26.40		15.80		23.60		12.10											
Potassium	µg/ℓ	578	U	582	U	549	U	355	()J	486	()J	300	()J										
Selenium	µg/ℓ	0.88	UJ	0.89	UJ	0.84	UJ	0.86	U	0.95	U	0.86	U										
Silver	µg/ℓ	0.90	U	0.91	U	0.86	U	0.79	U	0.88	U	0.79	U										
Sodium	µg/ℓ	127	()	109	()	125	()	103	()B	115	()B	130	()B										
Thallium	µg/ℓ	0.81	U	0.82	U	0.77	U	0.79	U	0.88	U	0.79	U										
Vanadium	µg/ℓ	10.20	()	12.20		15.60		10.10	()	13.50		14.10											
Zinc	µg/ℓ	27		31.30		43.20		25.20		35.90		30.10											
TPH by 8015 Modified California Luft																							
TPH-Extractable as Diesel	mg/kg	590		28		5200		19000		26000		130											

TABLE J-1 LABORATORY ANALYTICAL DATA
Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

TPH-Purgeable as Gasoline	mg/kg	1200	J	11	4300	J	15000	J	7400	J	44

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4

Vermont Air National Guard Base

LOCATOR:	V3-B5			V3-BG1			V3-BG1			V3-BG1			V3-BG1			V4-B1						
SAMPLE ID:	V3-B5-1315			V3-BG1-0305			V3-BG1-1820			V3-BG1-3840			V3-BG1-3840D			V4-B1-0911						
COLLECTION DATE:	09/13/94			09/20/94			09/20/94			09/20/94			09/20/94			09/08/94						
ASSOCIATED QC:	TB-091394-1,ER-091294-1 FB-090894-P, FB-090894-D			TB-092094-1,ER-092094-1 FB-092194-1, FB-090894-D			TB-092094-1,ER-092094-1 FB-092194-1, FB-090894-D			TB-092094-1,ER-092094-1 FB-092194-1, FB-090894-D			TB-092094-1,ER-092094-1 FB-092194-1, FB-090894-D			TB-090894-1,ER-090894-1 FB-090894-P, FB-090894-D								
CRITERIA UNITS:		RESULT	QUAL		RESULT	QUAL		RESULT	QUAL		RESULT	QUAL		RESULT	QUAL		RESULT	QUAL					
Halogenated Volatile Organic Compounds by 8010																							
1,1,1,2-Tetrachloroethane	µg/kg	5.70	U		1	U		0.98	U		1.10	U		1.20	U		1.10	U					
1,1,1-Trichloroethane	µg/kg	0.56	()		0.11	()B		0.12	()B		3.30	U		3.60	U		3.30	U					
1,1,2,2-Tetrachloroethane	µg/kg	3.80	U		0.68	U		0.65	U		0.74	U		0.79	U		0.72	U					
1,1,2-Trichloroethane	µg/kg	5.40	U		0.97	U		0.92	U		1	U		1.10	U		1	U					
1,1-Dichloroethane	µg/kg	4.70	U		0.85	U		0.82	U		0.93	U		0.99	U		0.90	U					
1,1-Dichloroethene	µg/kg	5.40	U		0.97	U		0.92	U		1	U		1.10	U		1	U					
1,2,3-Trichloropropane	µg/kg	5.70	U		1	U		0.98	U		1.10	U		1.20	U		1.10	U					
1,2-Dibromoethane (Ethylene di	µg/kg	8.20	U		1.50	U		1.40	U		1.60	U		1.70	U		1.60	U					
1,2-Dichlorobenzene	µg/kg	8.90	U		1.60	U		1.50	U		1.70	U		1.80	U		1.70	U					
1,2-Dichloroethane	µg/kg	4.10	U		0.74	U		0.71	U		0.80	U		0.86	U		0.78	U					
1,2-Dichloropropane	µg/kg	4.10	U		0.74	U		0.71	U		0.80	U		0.86	U		0.78	U					
1,3-Dichlorobenzene	µg/kg	7	U		2	U		1.20	U		2.20	U		2.40	U		2.20	U					
1,4-Dichlorobenzene	µg/kg	8.90	U		2	U		1.50	U		2.20	U		2.40	U		1.70	U					
2-Chloroethyl vinyl ether	µg/kg	7	U		1.20	U		1.20	U		1.40	U		1.40	U		1.30	U					
2-Chlorotoluene	µg/kg	6.30	U		1.10	U		1.10	U		1.20	U		1.30	U		1.20	U					
4-Chlorotoluene	µg/kg	7	U		1.20	U		1.20	U		1.40	U		1.40	U		1.30	U					
Bromobenzene	µg/kg	4.70	U		0.85	U		0.82	U		0.93	U		0.99	U		0.90	U					
Bromochloromethane	µg/kg	5.70	U		1	U		0.98	U		1.10	U		1.20	U		0.29	()					
Bromodichloromethane	µg/kg	6.30	U		1.10	U		1.10	U		1.20	U		1.30	U		1.20	U					
Bromoform	µg/kg	5.70	U		1	U		0.98	U		1.10	U		1.20	U		1.10	U					
Bromomethane	µg/kg	18	U		3.20	U		3	U		3.50	U		3.70	U		3.40	U					
Carbon tetrachloride	µg/kg	4.10	U		0.74	U		0.71	U		0.80	U		0.86	U		0.78	U					
Chlorobenzene	µg/kg	5.70	U		2	U		0.98	U		2.20	U		2.40	U		1.10	U					
Chloroethane	µg/kg	16	U		3	U		2.80	U		3.20	U		3.40	U		3.10	U					
Chloroform	µg/kg	1	()		0.18	()B		0.13	()B		1.20	U		1.30	U		1.20	U					
Chloromethane	µg/kg	16	U		2.80	U		12	U		3.10	U		3.30	U		3	U					
Cis-1,3-Dichloropropene	µg/kg	6	U		1.10	U		1	U		1.20	U		1.20	U		1.10	U					
Dibromochloromethane	µg/kg	5.10	U		0.91	U		0.87	U		0.99	U		1.10	U		0.96	U					
Dibromomethane	µg/kg	5.70	U		1	U		0.98	U		1.10	U		1.20	U		1.10	U					
Methylene chloride	µg/kg	14	()B		2.60	()		2.20	()B		2.30	()		2.20	()B		2.40	()B					
Tetrachloroethene	µg/kg	5.10	U		0.91	U		0.87	U		0.99	U		1.10	U		0.96	U					
Trans-1,2-Dichloroethene	µg/kg	7	U		1.20	U		1.20	U		1.40	U		1.40	U		0.20	()					
Trans-1,3-Dichloropropene	µg/kg	5.40	U		0.97	U		0.92	U		1	U		1.10	U		1	U					
Trichloroethene	µg/kg	5.10	U		0.91	U		0.87	U		0.99	U		1.10	U		0.96	U					
Vinyl chloride	µg/kg	16	U		3	U		2.80	U		3.20	U		3.40	U		3.10	U					

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:	V3-B5	V3-BG1	V3-BG1	V3-BG1	V3-BG1	V4-B1
SAMPLE ID:	V3-B5-1315	V3-BG1-0305	V3-BG1-1820	V3-BG1-3840	V3-BG1-3840D	V4-B1-0911
COLLECTION DATE:	09/13/94	09/20/94	09/20/94	09/20/94	09/20/94	09/08/94
ASSOCIATED QC:	TB-091394-1,ER-091294-1 FB-090894-P, FB-090894-D	TB-092094-1,ER-092094-1 FB-092194-1, FB-090894-D	TB-092094-1,ER-092094-1 FB-092194-1, FB-090894-D	TB-092094-1,ER-092094-1 FB-092194-1, FB-090894-D	TB-092094-1,ER-092094-1 FB-092194-1, FB-090894-D	TB-090894-1,ER-090894-1 FB-090894-P, FB-090894-D

CRITERIA UNITS:		RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Aromatic Volatile Organic Compounds by 8020													
1,2-Dichlorobenzene	µg/kg	5300		1.60	U	-		1.70	U	1.80	U	1.20	()B
1,3-Dichlorobenzene	µg/kg	6100		1.20	U	-		1.40	U	1.40	U	1.30	U
1,4-Dichlorobenzene	µg/kg	490		1.60	U	-		1.70	U	1.80	U	0.34	()B
Benzene	µg/kg	1100	U	1.60	U	1.50	U	1.70	U	1.80	U	1.70	U
Chlorobenzene	µg/kg	2700		1	U	-		1.10	U	1.20	U	0.14	()
Ethylbenzene	µg/kg	9900		2	U	2	U	2.20	U	2.40	U	0.07	()B
Methyl-tert-butyl ether	µg/kg	3500		13	U	-		14	U	14	U	0.31	()
Styrene	µg/kg	5500		1.70	U	1.60	U	1.90	U	2	U	1.80	U
Toluene	µg/kg	10000		0.39	()B	0.35	()B	0.44	()B	0.43	()B	1.70	()B
m+p-Xylene	µg/kg	-		-		3.50	U	-		-		-	
m-Xylene	µg/kg	22000		0.20	()B	-		0.29	()B	0.39	()B	0.16	()B
o-Xylene	µg/kg	16000		1.40	U	1.30	U	1.50	U	0.34	()B	1.40	U
p-Xylene	µg/kg	9600		0.20	()B	-		0.29	()B	0.39	()B	0.16	()B
Semivolatile Organic Compounds by CLP 3/90													
1,2,4-Trichlorobenzene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
1,2-Dichlorobenzene	µg/kg	5200	U	380	U	360	U	410	U	430	U	400	U
1,3-Dichlorobenzene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
1,4-Dichlorobenzene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
2,2'-Oxybis(1-chloropropane)	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
2,4,5-Trichlorophenol	µg/kg	1000	U	910	U	870	U	990	U	1100	U	960	U
2,4,6-Trichlorophenol	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
2,4-Dichlorophenol	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
2,4-Dimethylphenol	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
2,4-Dinitrophenol	µg/kg	1000	U	910	U	870	U	990	U	1100	U	960	U
2,4-Dinitrotoluene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
2,6-Dinitrotoluene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
2-Chloronaphthalene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
2-Chlorophenol	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
2-Methylnaphthalene	µg/kg	110	()	380	U	360	U	410	U	430	U	400	U
2-Methylphenol	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
2-Nitroaniline	µg/kg	1000	U	910	U	870	U	990	U	1100	U	960	U
2-Nitrophenol	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
3,3'-Dichlorobenzidine	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
3-Nitroaniline	µg/kg	1000	U	910	U	870	U	990	U	1100	U	960	U

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:		V3-B5		V3-BG1		V3-BG1		V3-BG1		V3-BG1	V4-B1
SAMPLE ID:		V3-B5-1315		V3-BG1-0305		V3-BG1-1820		V3-BG1-3840		V3-BG1-3840D	V4-B1-0911
COLLECTION DATE:		09/13/94		09/20/94		09/20/94		09/20/94		09/20/94	09/08/94
ASSOCIATED QC:		TB-091394-1,ER-091294-1 FB-090894-P, FB-090894-D		TB-092094-1,ER-092094-1 FB-092194-1, FB-090894-D		TB-092094-1,ER-092094-1 FB-092194-1, FB-090894-D		TB-092094-1,ER-092094-1 FB-092194-1, FB-090894-D		TB-092094-1,ER-092094-1 FB-092194-1, FB-090894-D	TB-090894-1,ER-090894-1 FB-090894-P, FB-090894-D
CRITERIA	UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
4,6-Dinitro-2-methylphenol	µg/kg	1000	U	910	U	870	U	990	U	1100	U	960	U
4-Bromophenyl phenyl ether	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
4-Chloro-3-methylphenol	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
4-Chloroaniline	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
4-Chlorophenyl phenyl ether	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
4-Methylphenol	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
4-Nitroaniline	µg/kg	1000	U	910	U	870	U	990	U	1100	U	960	U
4-Nitrophenol	µg/kg	1000	U	910	U	870	U	990	U	1100	U	960	U
Acenaphthene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
Acenaphthylene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
Anthracene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
Benzo(a)anthracene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
Benzo(a)pyrene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
Benzo(b)fluoranthene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
Benzo(g,h,i)perylene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
Benzo(k)fluoranthene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
Butyl benzyl phthalate	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
Carbazole	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
Chrysene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
Di-n-butyl phthalate	µg/kg	72	()B	90	()B	100	()B	100	()B	120	()B	400	U
Di-n-octyl phthalate	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
Dibenzo(a,h)anthracene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
Dibenzofuran	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
Diethyl phthalate	µg/kg	420	U	130	()	360	U	410	U	430	U	400	U
Dimethyl phthalate	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
Fluoranthene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
Fluorene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
Hexachlorobenzene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
Hexachlorobutadiene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
Hexachlorocyclopentadiene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
Hexachloroethane	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
Indeno(1,2,3-cd)pyrene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
Isophorone	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
N-Nitroso-di-n-propylamine	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
N-Nitrosodiphenylamine(1)	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
Naphthalene	µg/kg	86	()	380	U	360	U	410	U	430	U	400	U

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:		V3-B5		V3-BG1		V3-BG1		V3-BG1		V3-BG1		V4-B1	
SAMPLE ID:		V3-B5-1315		V3-BG1-0305		V3-BG1-1820		V3-BG1-3840		V3-BG1-3840D		V4-B1-0911	
COLLECTION DATE:		09/13/94		09/20/94		09/20/94		09/20/94		09/20/94		09/08/94	
ASSOCIATED QC:		TB-091394-1,ER-091294-1 FB-090894-P, FB-090894-D		TB-092094-1,ER-092094-1 FB-092194-1, FB-090894-D		TB-092094-1,ER-092094-1 FB-092194-1, FB-090894-D		TB-092094-1,ER-092094-1 FB-092194-1, FB-090894-D		TB-092094-1,ER-092094-1 FB-092194-1, FB-090894-D		TB-090894-1,ER-090894-1 FB-090894-P, FB-090894-D	
CRITERIA	UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Nitrobenzene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
Pentachlorophenol	µg/kg	1000	U	910	U	870	U	990	U	1100	U	960	U
Phenanthrene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
Phenol	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
Pyrene	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
bis(2-Chloroethoxy)methane	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
bis(2-Chloroethyl)ether	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
bis(2-Ethylhexyl)phthalate	µg/kg	420	U	380	U	360	U	410	U	430	U	400	U
TAL Metals by CLP 3/90													
Aluminum	µg/ℓ	10200		5950		2270		6660		6980		4320	
Antimony	µg/ℓ	7.60	U	6.90	U	11.50	U	7.50	U	8	U	13.50	UJ
Arsenic	µg/ℓ	4.90		5.60		3.60		2.70		3		6.10	
Barium	µg/ℓ	30.40	()	14.20	()	5.20	()B	15.30	()	16.50	()	10.80	()
Beryllium	µg/ℓ	0.28	U	0.25	U	0.10	U	0.27	U	0.29	U	0.12	U
Cadmium	µg/ℓ	0.86	U	0.77	U	0.95	U	0.84	U	0.90	U	1.10	U
Calcium	µg/ℓ	2250		1410		1470		2610		2840		1760	
Chromium	µg/ℓ	18.96		18.20		5.90	B	14.40		14.80		6.70	
Cobalt	µg/ℓ	9.90	()B	7.50	()B	3.50	()B	8	()B	8.40	()B	6.20	()
Copper	µg/ℓ	18.30		11.20		9.90		16.30		17.30		14.60	
Iron	µg/ℓ	19800		13600		7010		15500		16200		9020	
Lead	µg/ℓ	5.80	J	5.50		2.30		4.60	J	4.90	J	4.90	
Magnesium	µg/ℓ	5160		3540		1720		4000		4190		1850	
Manganese	µg/ℓ	336		328		201		367		391		93.80	
Mercury	µg/ℓ	0.13	U	0.11	U	0.10	U	0.12	U	0.13	U	0.12	U
Nickel	µg/ℓ	30.70		23.40		12.40		21.50		28.30		12.90	
Potassium	µg/ℓ	643	U	581	U	237	()B	633	U	675	U	445	()J
Selenium	µg/ℓ	0.98	UJ	0.89	UJ	0.81	U	0.97	UJ	1	UJ	0.94	U
Silver	µg/ℓ	1	U	0.91	U	0.74	U	0.99	U	1.10	U	0.87	U
Sodium	µg/ℓ	160	()	119	()	153	()B	294	()	314	()	115	()B
Thallium	µg/ℓ	0.91	U	0.82	U	0.74	U	0.89	U	0.95	U	0.87	U
Vanadium	µg/ℓ	17.30		11.20	()	5.90	()B	13.40		13.10	()	8.50	()
Zinc	µg/ℓ	47.90		26.70		16.10		35.50		37.30		37.10	
TPH by 8015 Modified California Luft													
TPH-Extractable as Diesel	mg/kg	1300		1.20	()B	11	U	1.40	()B	2	()B	12	U
TPH-Purgeable as Gasoline	mg/kg	2700	J	0.04		0.05	U	0.03		0.03		0.50	U

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:		V4-B1				V4-B2				V4-B2				V4-B3				V4-B3				V4-B4	
SAMPLE ID:		V4-B1-1719				V4-B2-1416				V4-B2-1921				V4-B3-1416				V4-B3-1921				V4-B4-0911	
COLLECTION DATE:		09/08/94				09/07/94				09/07/94				09/07/94				09/07/94				09/08/94	
ASSOCIATED QC:		TB-090894-1,ER-090894-1 FB-090894-P, FB-090894-D				TB-090794-1,ER-090894-1 FB-090894-P, FB-090894-D				TB-090794-1,ER-090894-1 FB-090894-P, FB-090894-D				TB-090794-1,ER-090894-1 FB-090894-P, FB-090894-D				TB-090794-1,ER-090894-1 FB-090894-P, FB-090894-D				TB-090894-1,ER-090894-1 FB-090894-P, FB-090894-D	
CRITERIA UNITS:		RESULT	QUAL			RESULT	QUAL			RESULT	QUAL			RESULT	QUAL			RESULT	QUAL			RESULT	QUAL
Halogenated Volatile Organic Compounds by 8010																							
1,1,1,2-Tetrachloroethane	µg/kg	5.20	U			0.94	U			1.10	U			0.95	U			1.10	U			1.10	U
1,1,1-Trichloroethane	µg/kg	16	U			2.80	U			3.40	U			2.80	U			3.40	U			3.40	U
1,1,2,2-Tetrachloroethane	µg/kg	3.40	U			0.63	U			0.76	U			0.63	U			0.76	U			0.75	U
1,1,2-Trichloroethane	µg/kg	4.90	U			0.89	U			1.10	U			0.89	U			1.10	U			1.10	U
1,1-Dichloroethane	µg/kg	4.30	U			0.07	()			0.95	U			0.79	U			0.95	U			0.14	()
1,1-Dichloroethene	µg/kg	4.90	U			0.89	U			0.12	()			0.89	U			1.10	U			1.10	U
1,2,3-Trichloropropane	µg/kg	5.20	U			0.94	U			1.10	U			0.95	U			1.10	U			1.10	U
1,2-Dibromoethane (Ethylene di	µg/kg	7.50	U			1.40	U			1.60	U			1.40	U			1.60	U			1.60	U
1,2-Dichlorobenzene	µg/kg	8	U			1.50	U			1.80	U			1.50	U			1.80	U			1.80	U
1,2-Dichloroethane	µg/kg	3.70	U			0.68	U			0.82	U			0.68	U			0.82	U			0.81	U
1,2-Dichloropropane	µg/kg	3.70	U			0.68	U			0.82	U			0.68	U			0.82	U			0.81	U
1,3-Dichlorobenzene	µg/kg	6.30	U			1.10	U			1.40	U			1.20	U			1.40	U			1.40	U
1,4-Dichlorobenzene	µg/kg	8	U			1.50	U			2.30	U			1.50	U			1.80	U			1.80	U
2-Chloroethyl vinyl ether	µg/kg	6.30	U			1.10	U			1.40	U			1.20	U			1.40	U			1.40	U
2-Chlorotoluene	µg/kg	5.70	U			1	U			1.30	U			1.10	U			1.30	U			1.20	U
4-Chlorotoluene	µg/kg	6.30	U			1.10	U			1.40	U			1.20	U			1.40	U			1.40	U
Bromobenzene	µg/kg	4.30	U			0.78	U			0.95	U			0.79	U			0.95	U			0.94	U
Bromochloromethane	µg/kg	1.70	()			0.94	U			1.10	U			0.95	U			1.10	U			1.10	U
Bromodichloromethane	µg/kg	5.70	U			1	U			1.30	U			1.10	U			1.30	U			1.20	U
Bromoform	µg/kg	5.20	U			0.94	U			1.10	U			0.95	U			1.10	U			1.10	U
Bromomethane	µg/kg	16	U			2.90	U			3.50	U			2.90	U			3.50	U			3.50	U
Carbon tetrachloride	µg/kg	3.70	U			0.68	U			0.82	U			0.68	U			0.82	U			0.81	U
Chlorobenzene	µg/kg	5.20	U			1.90	U			2.30	U			0.95	U			2.30	U			2.20	U
Chloroethane	µg/kg	15	U			2.70	U			3.30	U			2.70	U			3.30	U			3.20	U
Chloroform	µg/kg	5.70	U			0.64	()			0.89	()			0.31	()			0.52	()			0.60	()
Chloromethane	µg/kg	14	U			2.60	U			3.20	U			2.60	U			3.20	U			3.10	U
Cis-1,3-Dichloropropene	µg/kg	5.50	U			0.99	U			1.20	U			1	U			1.20	U			1.20	U
Dibromochloromethane	µg/kg	4.60	U			0.83	U			1	U			0.84	U			1	U			1	U
Dibromomethane	µg/kg	5.20	U			0.94	U			1.10	U			0.95	U			1.10	U			1.10	U
Methylene chloride	µg/kg	9.40	()			1.50	()B			1.80	()B			1.20	()B			3	()B			1.60	()B
Tetrachloroethene	µg/kg	4.60	U			0.83	U			1	U			0.84	U			1	U			1	U
Trans-1,2-Dichloroethene	µg/kg	6.30	U			1.10	U			1.40	U			1.20	U			1.40	U			1.40	U
Trans-1,3-Dichloropropene	µg/kg	4.90	U			0.89	U			1.10	U			0.89	U			1.10	U			1.10	U
Trichloroethene	µg/kg	4.60	U			0.83	U			1	U			0.84	U			1	U			1	U
Vinyl chloride	µg/kg	15	U			2.70	U			3.30	U			2.70	U			3.30	U			3.20	U

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:	V4-B1	V4-B2	V4-B2	V4-B3	V4-B3	V4-B4
SAMPLE ID:	V4-B1-1719	V4-B2-1416	V4-B2-1921	V4-B3-1416	V4-B3-1921	V4-B4-0911
COLLECTION DATE:	09/08/94	09/07/94	09/07/94	09/07/94	09/07/94	09/08/94
ASSOCIATED QC:	TB-090894-1,ER-090894-1 FB-090894-P, FB-090894-D	TB-090794-1,ER-090894-1 FB-090894-P, FB-090894-D	TB-090794-1,ER-090894-1 FB-090894-P, FB-090894-D	TB-090794-1,ER-090894-1 FB-090894-P, FB-090894-D	TB-090794-1,ER-090894-1 FB-090894-P, FB-090894-D	TB-090894-1,ER-090894-1 FB-090894-P, FB-090894-D

CRITERIA UNITS:		RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Aromatic Volatile Organic Compounds by 8020													
1,2-Dichlorobenzene	µg/kg	21000		0.35	()B	1.80	U	0.30	()B	0.29	()B	0.61	()B
1,3-Dichlorobenzene	µg/kg	2400		0.28	()	1	()	0.19	()B	0.29	()B	0.07	()B
1,4-Dichlorobenzene	µg/kg	3100		0.50	()	1.80	U	0.25	()B	0.34	()B	0.19	()B
Benzene	µg/kg	5000	U	0.51	()	3.40		0.05	()	0.06	()	0.05	()
Chlorobenzene	µg/kg	15000		0.94	U	1.10	U	1.90	U	1.10	U	1.10	U
Ethylbenzene	µg/kg	50000		0.74	()	7.40		0.45	()B	0.49	()B	0.38	()B
Methyl-tert-butyl ether	µg/kg	72000	U	11	U	14	U	12	U	14	U	14	U
Styrene	µg/kg	32000		0.04	()B	1.90	U	0.05	()B	1.90	U	1.90	U
Toluene	µg/kg	3600	U	4	()	9.70		1.20	()B	1.70	()	5.40	()
m + p-Xylene	µg/kg	-		-		-		-		-		-	
m-Xylene	µg/kg	60000		1.40	()	9.80		0.66	()B	0.85	()	0.55	()B
o-Xylene	µg/kg	14000		1.20	()	9.10		0.69	()	0.90	()	0.15	()B
p-Xylene	µg/kg	46000		1.40	()	9.80		0.66	()B	0.85	()	0.55	()B
Semivolatile Organic Compounds by CLP 3/90													
1,2,4-Trichlorobenzene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
1,2-Dichlorobenzene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
1,3-Dichlorobenzene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
1,4-Dichlorobenzene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
2,2'-Oxybis(1-chloropropane)	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
2,4,5-Trichlorophenol	µg/kg	18000	U	830	U	1000	U	840	U	1000	U	1000	U
2,4,6-Trichlorophenol	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
2,4-Dichlorophenol	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
2,4-Dimethylphenol	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
2,4-Dinitrophenol	µg/kg	18000	U	830	U	1000	U	840	U	1000	U	1000	U
2,4-Dinitrotoluene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
2,6-Dinitrotoluene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
2-Chloronaphthalene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
2-Chlorophenol	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
2-Methylnaphthalene	µg/kg	22000		340	U	420	U	350	U	420	U	410	U
2-Methylphenol	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
2-Nitroaniline	µg/kg	18000	U	830	U	1000	U	840	U	1000	U	1000	U
2-Nitrophenol	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
3,3'-Dichlorobenzidine	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
3-Nitroaniline	µg/kg	18000	U	830	U	1000	U	840	U	1000	U	1000	U

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:		V4-B1		V4-B2		V4-B2		V4-B3		V4-B3		V4-B4
SAMPLE ID:		V4-B1-1719		V4-B2-1416		V4-B2-1921		V4-B3-1416		V4-B3-1921		V4-B4-0911
COLLECTION DATE:		09/08/94		09/07/94		09/07/94		09/07/94		09/07/94		09/08/94
ASSOCIATED QC:		TB-090894-1,ER-090894-1 FB-090894-P, FB-090894-D		TB-090794-1,ER-090894-1 FB-090894-P, FB-090894-D		TB-090794-1,ER-090894-1 FB-090894-P, FB-090894-D		TB-090794-1,ER-090894-1 FB-090894-P, FB-090894-D		TB-090794-1,ER-090894-1 FB-090894-P, FB-090894-D		TB-090894-1,ER-090894-1 FB-090894-P, FB-090894-D
CRITERIA	UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
4,6-Dinitro-2-methylphenol	µg/kg	18000	U	830	U	1000	U	840	U	1000	U	1000	U
4-Bromophenyl phenyl ether	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
4-Chloro-3-methylphenol	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
4-Chloroaniline	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
4-Chlorophenyl phenyl ether	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
4-Methylphenol	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
4-Nitroaniline	µg/kg	18000	U	830	U	1000	U	840	U	1000	U	1000	U
4-Nitrophenol	µg/kg	18000	U	830	U	1000	U	840	U	1000	U	1000	U
Acenaphthene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
Acenaphthylene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
Anthracene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
Benzo(a)anthracene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
Benzo(a)pyrene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
Benzo(b)fluoranthene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
Benzo(g,h,i)perylene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
Benzo(k)fluoranthene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
Butyl benzyl phthalate	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
Carbazole	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
Chrysene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
Di-n-butyl phthalate	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
Di-n-octyl phthalate	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
Dibenzo(a,h)anthracene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
Dibenzofuran	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
Diethyl phthalate	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
Dimethyl phthalate	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
Fluoranthene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
Fluorene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
Hexachlorobenzene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
Hexachlorobutadiene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
Hexachlorocyclopentadiene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
Hexachloroethane	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
Indeno(1,2,3-cd)pyrene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
Isophorone	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
N-Nitroso-di-n-propylamine	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
N-Nitrosodiphenylamine(1)	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
Naphthalene	µg/kg	13000		340	U	53	I)	350	U	420	U	410	U

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:		V4-B1		V4-B2		V4-B2		V4-B3		V4-B3		V4-B4	
SAMPLE ID:		V4-B1-1719		V4-B2-1416		V4-B2-1921		V4-B3-1416		V4-B3-1921		V4-B4-0911	
COLLECTION DATE:		09/08/94		09/07/94		09/07/94		09/07/94		09/07/94		09/08/94	
ASSOCIATED QC:		TB-090894-1,ER-090894-1 FB-090894-P, FB-090894-D		TB-090794-1,ER-090894-1 FB-090894-P, FB-090894-D		TB-090794-1,ER-090894-1 FB-090894-P, FB-090894-D		TB-090794-1,ER-090894-1 FB-090894-P, FB-090894-D		TB-090794-1,ER-090894-1 FB-090894-P, FB-090894-D		TB-090894-1,ER-090894-1 FB-090894-P, FB-090894-D	
CRITERIA	UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Nitrobenzene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
Pentachlorophenol	µg/kg	18000	U	830	U	1000	U	840	U	1000	U	1000	U
Phenanthrene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
Phenol	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
Pyrene	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
bis(2-Chloroethoxy)methane	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
bis(2-Chloroethyl)ether	µg/kg	7600	U	340	U	420	U	350	U	420	U	410	U
bis(2-Ethylhexyl)phthalate	µg/kg	7600	U	340	U	420	U	350	U	120	()	410	U
TAL Metals by CLP 3/90													
Aluminum	µg/ℓ	2400		3710		3380		3780		4190		4000	
Antimony	µg/ℓ	12.90	U	11.70	U	14.20	U	11.80	UJ	14.20	UJ	14	U
Arsenic	µg/ℓ	6.10		12.20		5.30		12.20		2.50	()	4.10	
Barium	µg/ℓ	9.30	()	10.60	()	12.80	()	24.50	()	8.60	()	10.10	()
Beryllium	µg/ℓ	0.12	U	0.10	U	0.13	U	0.19	()	0.13	U	0.13	U
Cadmium	µg/ℓ	1.10	U	0.96	U	1.26	U	0.97	U	1.27	U	1.20	U
Calcium	µg/ℓ	572	()	882	()	1610		3670		1940		1510	
Chromium	µg/ℓ	5.90		8.50		6.90		8.30		8.30		5.60	
Cobalt	µg/ℓ	4.50	()	5.50	()	4.80	()	5.80	()	7.20	()	7.40	()
Copper	µg/ℓ	6		7.50		13.60		11.70		13.10		11.60	
Iron	µg/ℓ	6740		11500		8320		10800		11200		8330	
Lead	µg/ℓ	3.20		4.90		4.10		4.40		4.20		5.50	
Magnesium	µg/ℓ	1440		2140		1850		2090		2340		1840	
Manganese	µg/ℓ	441		101		111		641		143		242	
Mercury	µg/ℓ	0.12	U	0.10	U	0.13	U	0.11	U	0.13	U	0.13	U
Nickel	µg/ℓ	10.70		15.40		14.40		14.80		16.40		13.80	
Potassium	µg/ℓ	296	()J	285	()J	336	()J	519	()J	398	()J	386	()J
Selenium	µg/ℓ	0.90	U	0.81	U	0.99	U	0.82	U	0.99	U	0.98	U
Silver	µg/ℓ	0.83	U	0.75	U	0.91	U	0.76	U	0.91	U	0.90	U
Sodium	µg/ℓ	124	()B	170	()B	208	()B	115	()B	159	()B	147	()B
Thallium	µg/ℓ	0.83	U	0.75	U	0.91	U	0.76	U	0.91	U	0.90	U
Vanadium	µg/ℓ	5.40	()	8.90	()	7.70	()	8	()	10.10	()	7.70	()
Zinc	µg/ℓ	19		21		21.90		26.70		25.90		21.30	
TPH by 8015 Modified California Luft													
TPH-Extractable as Diesel	mg/kg	4800		10	U	13	U	10	U	13	U	12	U
TPH-Purgeable as Gasoline	mg/kg	9200	J	0.50	U	2.10		0.50	U	0.50	U	0.50	U

TABLE J-1 LABORATORY ANALYTICAL DATA
Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:	V4-B4	V4-B5	V4-B5	V4-B5	V4-B6	V4-B6
SAMPLE ID:	V4-B4-1719	V4-B5-0406	V4-B5-0911	V4-B5-1719	V4-B6-1921	V4-B6-2426
COLLECTION DATE:	09/08/94	09/14/94	09/14/94	09/14/94	09/07/94	09/07/94
ASSOCIATED QC:	TB-090894-1,ER-090894-1 FB-090894-P, FB-090894-D	TB-091494-1,ER-091394-1 FB-090894-P, FB-090894-D	TB-091494-1,ER-091394-1 FB-090894-P, FB-090894-D	TB-091494-1,ER-091394-1 FB-090894-P, FB-090894-D	TB-090794-1,ER-090894-1 FB-090894-P, FB-090894-D	TB-090794-1,ER-090894-1 FB-090894-P, FB-090894-D

CRITERIA UNITS:		RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Halogenated Volatile Organic Compounds by 8010													
1,1,1,2-Tetrachloroethane	µg/kg	4.80	U	0.99	U	1.10	U	5.40	U	1.10	U	1.10	U
1,1,1-Trichloroethane	µg/kg	14	U	3	U	3.40	U	16	U	3.20	U	3.40	U
1,1,2,2-Tetrachloroethane	µg/kg	3.20	U	0.66	U	0.75	U	3.60	U	0.71	U	0.75	U
1,1,2-Trichloroethane	µg/kg	4.50	U	0.93	U	1.10	U	5.10	U	1	U	1.10	U
1,1-Dichloroethane	µg/kg	4	U	0.82	U	0.94	U	4.50	U	0.89	U	0.94	U
1,1-Dichloroethene	µg/kg	4.50	U	0.93	U	1.10	U	5.10	U	1	U	1.10	U
1,2,3-Trichloropropane	µg/kg	4.80	U	0.99	U	1.10	U	5.40	U	1.10	U	1.10	U
1,2-Dibromoethane (Ethylene di	µg/kg	6.90	U	1.40	U	1.60	U	7.70	U	1.50	U	1.60	U
1,2-Dichlorobenzene	µg/kg	7.40	U	1.50	U	1.80	U	8.30	U	1.70	U	1.80	U
1,2-Dichloroethane	µg/kg	3.50	U	0.71	U	0.81	U	3.90	U	0.77	U	0.81	U
1,2-Dichloropropane	µg/kg	3.50	U	0.71	U	0.81	U	3.90	U	0.77	U	0.81	U
1,3-Dichlorobenzene	µg/kg	5.90	U	2	U	2.20	U	6.50	U	1.30	U	1.40	U
1,4-Dichlorobenzene	µg/kg	7.40	U	2	U	2.20	U	8.30	U	1.70	U	1.80	U
2-Chloroethyl vinyl ether	µg/kg	5.90	U	1.20	U	1.40	U	6.50	U	1.30	U	1.40	U
2-Chlorotoluene	µg/kg	5.30	U	1.10	U	1.20	U	6	U	1.20	U	1.20	U
4-Chlorotoluene	µg/kg	5.90	U	1.20	U	1.40	U	6.50	U	1.30	U	1.40	U
Bromobenzene	µg/kg	4	U	0.82	U	0.94	U	4.50	U	0.89	U	0.94	U
Bromochloromethane	µg/kg	4.80	U	0.99	U	1.10	U	5.40	U	0.44	()	1.10	U
Bromodichloromethane	µg/kg	5.30	U	1.10	U	1.20	U	6	U	1.20	U	1.20	U
Bromoform	µg/kg	4.80	U	0.99	U	1.10	U	5.40	U	1.10	U	1.10	U
Bromomethane	µg/kg	15	U	3.10	U	3.50	U	17	U	3.30	U	3.50	U
Carbon tetrachloride	µg/kg	3.50	U	0.71	U	0.81	U	3.90	U	0.77	U	0.81	U
Chlorobenzene	µg/kg	4.80	U	2	U	2.20	U	5.40	U	2.10	U	2.20	U
Chloroethane	µg/kg	14	U	2.90	U	3.20	U	15	U	3.10	U	3.20	U
Chloroform	µg/kg	5.30	U	1.10	U	1.20	U	3.90	()	1.20	U	0.43	()
Chloromethane	µg/kg	13	U	2.70	U	3.10	U	15	U	3	U	3.10	U
Cis-1,3-Dichloropropene	µg/kg	5.10	U	1	U	1.20	U	5.70	U	1.10	U	1.20	U
Dibromochloromethane	µg/kg	4.30	U	0.88	U	1	U	4.80	U	0.95	U	1	U
Dibromomethane	µg/kg	4.80	U	0.99	U	1.10	U	5.40	U	1.10	U	1.10	U
Methylene chloride	µg/kg	15	()	1.50	()B	6.90	()B	30	()	1.30	()B	1.90	()B
Tetrachloroethene	µg/kg	4.30	U	0.88	U	1	U	4.80	U	0.95	U	1	U
Trans-1,2-Dichloroethene	µg/kg	5.90	U	1.20	U	1.40	U	6.50	U	1.30	U	0.41	()
Trans-1,3-Dichloropropene	µg/kg	4.50	U	0.93	U	1.10	U	5.10	U	1	U	1.10	U
Trichloroethene	µg/kg	4.30	U	0.88	U	1	U	4.80	U	0.95	U	1	U
Vinyl chloride	µg/kg	14	U	2.90	U	3.20	U	15	U	3.10	U	3.20	U

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:	V4-B4	V4-B5	V4-B5	V4-B5	V4-B6	V4-B6
SAMPLE ID:	V4-B4-1719	V4-B5-0406	V4-B5-0911	V4-B5-1719	V4-B6-1921	V4-B6-2426
COLLECTION DATE:	09/08/94	09/14/94	09/14/94	09/14/94	09/07/94	09/07/94
ASSOCIATED QC:	TB-090894-1,ER-090894-1 FB-090894-P, FB-090894-D	TB-091494-1,ER-091394-1 FB-090894-P, FB-090894-D	TB-091494-1,ER-091394-1 FB-090894-P, FB-090894-D	TB-091494-1,ER-091394-1 FB-090894-P, FB-090894-D	TB-090794-1,ER-090894-1 FB-090894-P, FB-090894-D	TB-090794-1,ER-090894-1 FB-090894-P, FB-090894-D

CRITERIA UNITS:		RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Aromatic Volatile Organic Compounds by 8020													
1,2-Dichlorobenzene	µg/kg	72		1.50	U	1.80	U	22000		0.08	()B	0.10	()B
1,3-Dichlorobenzene	µg/kg	39		1.20	U	1.40	U	12000		0.09	()B	0.10	()B
1,4-Dichlorobenzene	µg/kg	92		1.50	U	1.80	U	31000		0.20	()B	0.22	()B
Benzene	µg/kg	7.40	U	1.50	U	1.80	U	2600	U	1.70	U	1.80	U
Chlorobenzene	µg/kg	59		0.99	U	1.10	U	8000		1.10	U	1.10	U
Ethylbenzene	µg/kg	53		2	U	0.49	()B	26000		0.12	()B	2.20	U
Methyl-tert-butyl ether	µg/kg	59	U	12	U	14	U	37000	U	13	U	14	U
Styrene	µg/kg	64		1.40	()	1.90	U	7500		1.80	U	1.90	U
Toluene	µg/kg	28	U	5.80	U	0.47	()	4300		0.40	()B	0.41	()B
m+p-Xylene	µg/kg	-		-		-		-		-		-	
m-Xylene	µg/kg	21		1.50	()	1.20	()	48000		0.20	()B	0.11	()B
o-Xylene	µg/kg	36		1.30	U	1.50	U	21000		1.40	U	1.50	U
p-Xylene	µg/kg	21		1.50	()	1.20	()	26000		0.20	()B	0.11	()B
Semivolatile Organic Compounds by CLP 3/90													
1,2,4-Trichlorobenzene	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
1,2-Dichlorobenzene	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
1,3-Dichlorobenzene	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
1,4-Dichlorobenzene	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
2,2'-Oxybis(1-chloropropane)	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
2,4,5-Trichlorophenol	µg/kg	850	U	870	U	990	U	950	U	950	U	1000	U
2,4,6-Trichlorophenol	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
2,4-Dichlorophenol	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
2,4-Dimethylphenol	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
2,4-Dinitrophenol	µg/kg	850	U	870	U	990	U	950	U	950	U	1000	U
2,4-Dinitrotoluene	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
2,6-Dinitrotoluene	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
2-Chloronaphthalene	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
2-Chlorophenol	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
2-Methylnaphthalene	µg/kg	350	U	360	U	410	U	3900		390	U	410	U
2-Methylphenol	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
2-Nitroaniline	µg/kg	850	U	870	U	990	U	950	U	950	U	1000	U
2-Nitrophenol	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
3,3'-Dichlorobenzidine	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
3-Nitroaniline	µg/kg	850	U	870	U	990	U	950	U	950	U	1000	U

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4

Vermont Air National Guard Base

LOCATOR:		V4-B4		V4-B5		V4-B5		V4-B5		V4-B6		V4-B6
SAMPLE ID:		V4-B4-1719		V4-B5-0406		V4-B5-0911		V4-B5-1719		V4-B6-1921		V4-B6-2426
COLLECTION DATE:		09/08/94		09/14/94		09/14/94		09/14/94		09/07/94		09/07/94
ASSOCIATED QC:		TB-090894-1,ER-090894-1 FB-090894-P, FB-090894-D		TB-091494-1,ER-091394-1 FB-090894-P, FB-090894-D		TB-091494-1,ER-091394-1 FB-090894-P, FB-090894-D		TB-091494-1,ER-091394-1 FB-090894-P, FB-090894-D		TB-090794-1,ER-090894-1 FB-090894-P, FB-090894-D		TB-090794-1,ER-090894-1 FB-090894-P, FB-090894-D
CRITERIA	UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
4,6-Dinitro-2-methylphenol	µg/kg	850	U	870	U	990	U	950	U	950	U	1000	U
4-Bromophenyl phenyl ether	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
4-Chloro-3-methylphenol	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
4-Chloroaniline	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
4-Chlorophenyl phenyl ether	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
4-Methylphenol	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
4-Nitroaniline	µg/kg	850	U	870	U	990	U	950	U	950	U	1000	U
4-Nitrophenol	µg/kg	850	U	870	U	990	U	950	U	950	U	1000	U
Acenaphthene	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
Acenaphthylene	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
Anthracene	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
Benzo(a)anthracene	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
Benzo(a)pyrene	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
Benzo(b)fluoranthene	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
Benzo(g,h,i)perylene	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
Benzo(k)fluoranthene	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
Butyl benzyl phthalate	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
Carbazole	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
Chrysene	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
Di-n-butyl phthalate	µg/kg	350	U	74	()B	66	()B	65	()B	390	U	410	U
Di-n-octyl phthalate	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
Dibenzo(a,h)anthracene	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
Dibenzofuran	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
Diethyl phthalate	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
Dimethyl phthalate	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
Fluoranthene	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
Fluorene	µg/kg	350	U	360	U	410	U	58	()	390	U	410	U
Hexachlorobenzene	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
Hexachlorobutadiene	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
Hexachlorocyclopentadiene	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
Hexachloroethane	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
Indeno(1,2,3-cd)pyrene	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
Isophorone	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
N-Nitroso-di-n-propylamine	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
N-Nitrosodiphenylamine(1)	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
Naphthalene	µg/kg	350	U	360	U	410	U	480		390	U	410	U

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:		V4-B4		V4-B5		V4-B5		V4-B5		V4-B6		V4-B6	
SAMPLE ID:		V4-B4-1719		V4-B5-0406		V4-B5-0911		V4-B5-1719		V4-B6-1921		V4-B6-2426	
COLLECTION DATE:		09/08/94		09/14/94		09/14/94		09/14/94		09/07/94		09/07/94	
ASSOCIATED QC:		TB-090894-1,ER-090894-1 FB-090894-P, FB-090894-D		TB-091494-1,ER-091394-1 FB-090894-P, FB-090894-D		TB-091494-1,ER-091394-1 FB-090894-P, FB-090894-D		TB-091494-1,ER-091394-1 FB-090894-P, FB-090894-D		TB-090794-1,ER-090894-1 FB-090894-P, FB-090894-D		TB-090794-1,ER-090894-1 FB-090894-P, FB-090894-D	
	CRITERIA UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Nitrobenzene	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
Pentachlorophenol	µg/kg	850	U	870	U	990	U	950	U	950	U	1000	U
Phenanthrene	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
Phenol	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
Pyrene	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
bis(2-Chloroethoxy)methane	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
bis(2-Chloroethyl)ether	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
bis(2-Ethylhexyl)phthalate	µg/kg	350	U	360	U	410	U	390	U	390	U	410	U
TAL Metals by CLP 3/90													
Aluminum	µg/ℓ	3320		6170		7290		5630		3570		2920	
Antimony	µg/ℓ	11.90	U	6.70	U	8	J	7.20	U	13.30	U	14	U
Arsenic	µg/ℓ	7.40		4.80		3.20		14.10		34.40		3.10	
Barium	µg/ℓ	10.90	()	16.10	()	16.90	()	13.30	()	45.60	()	6.40	()
Beryllium	µg/ℓ	0.14	()	0.24	U	0.27	U	0.26	U	0.22	()	0.12	U
Cadmium	µg/ℓ	0.98	U	0.75	U	0.85	U	0.81	U	1.18	U	1.20	U
Calcium	µg/ℓ	793	()	1370		1550		1020	()	1120	()	1730	
Chromium	µg/ℓ	6.80		8.90		10.10		11.40		6.80		6	
Cobalt	µg/ℓ	5.70	()	5.60	()B	8.20	()B	5.40	()B	7	()	6.20	()
Copper	µg/ℓ	8.40		9.70		14.10		9.90		11.10		13.40	
Iron	µg/ℓ	8830		12600		13900		13000		13500		7660	
Lead	µg/ℓ	3.60		13.40	J	4.30	J	5.30	J	6		4.10	
Magnesium	µg/ℓ	1920		2840		3410		3320		2200		1710	
Manganese	µg/ℓ	101		290		403		149		2310		215	
Mercury	µg/ℓ	0.11	U	0.11	U	0.12	U	0.12	U	0.12	U	0.12	U
Nickel	µg/ℓ	12.40		21.60		17.90		19		17		15.70	
Potassium	µg/ℓ	391	()J	564	U	636	U	606	U	454	()J	327	()J
Selenium	µg/ℓ	0.83	U	0.86	UJ	0.97	UJ	0.93	UJ	0.93	U	0.98	U
Silver	µg/ℓ	0.77	U	0.88	U	1	U	0.95	U	0.86	U	0.90	U
Sodium	µg/ℓ	109	()B	112	()	197	()	239	()	150	()B	190	()B
Thallium	µg/ℓ	0.77	U	0.79	U	0.90	U	0.85	U	0.86	U	0.90	U
Vanadium	µg/ℓ	7	()	9.50	()	11.30	()	8.30	()	9.80	()	6.80	()
Zinc	µg/ℓ	25.10		37.70		34.20		27.20		26.80		19	
TPH by 8015 Modified California Luft													
TPH-Extractable as Diesel	mg/kg	1.90	()B	1.40	()B	1.60	()B	2700		12	U	12	U
TPH-Purgeable as Gasoline	mg/kg	250		0.50	U	0.50	U	4110	J	0.50	U	0.50	U

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:		V4-BG		V4-BG		V4-BG		V4-BG			
SAMPLE ID:		V4-BG-0911		V4-BG-1416		V4-BG-1416D		V4-BG-1921			
COLLECTION DATE:		09/10/94		09/10/94		09/10/94		09/10/94			
ASSOCIATED QC:		TB-091094-1 FB-090894-P, FB-090894-D		TB-091094-1 FB-090894-P, FB-090894-D		TB-091094-1 FB-090894-P, FB-090894-D		TB-091094-1 FB-090894-P, FB-090894-D			
CRITERIA UNITS:		RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL		
Halogenated Volatile Organic Compounds by 8010											
1,1,1,2-Tetrachloroethane	µg/kg	0.94	U	0.93	U	0.98	U	1.10	U		
1,1,1-Trichloroethane	µg/kg	2.80	U	2.80	U	2.90	U	3.40	U		
1,1,2,2-Tetrachloroethane	µg/kg	0.63	U	0.62	U	0.65	U	0.75	U		
1,1,2-Trichloroethane	µg/kg	0.89	U	0.88	U	0.92	U	1.10	U		
1,1-Dichloroethane	µg/kg	0.78	U	0.77	U	0.82	U	0.94	U		
1,1-Dichloroethene	µg/kg	0.89	U	0.88	U	0.92	U	0.20	()		
1,2,3-Trichloropropane	µg/kg	0.94	U	0.93	U	0.06	()	1.10	U		
1,2-Dibromoethane (Ethylene di	µg/kg	1.40	U	1.30	U	1.40	U	1.60	U		
1,2-Dichlorobenzene	µg/kg	1.50	U	1.40	U	1.50	U	1.80	U		
1,2-Dichloroethane	µg/kg	0.68	U	0.67	U	0.71	U	0.81	U		
1,2-Dichloropropane	µg/kg	0.68	U	0.67	U	0.71	U	0.81	U		
1,3-Dichlorobenzene	µg/kg	1.10	U	1.90	U	1.20	U	1.40	U		
1,4-Dichlorobenzene	µg/kg	1.50	U	1.40	U	1.50	U	1.80	U		
2-Chloroethyl vinyl ether	µg/kg	1.10	U	1.10	U	1.20	U	1.40	U		
2-Chlorotoluene	µg/kg	1	U	1	U	1.10	U	1.20	U		
4-Chlorotoluene	µg/kg	1.10	U	1.10	U	1.20	U	1.40	U		
Bromobenzene	µg/kg	0.78	U	0.77	U	0.82	U	0.94	U		
Bromochloromethane	µg/kg	0.94	U	0.93	U	0.98	U	1.10	U		
Bromodichloromethane	µg/kg	1	U	1	U	1.10	U	1.20	U		
Bromoform	µg/kg	0.10	()J	0.93	U	0.98	U	1.10	U		
Bromomethane	µg/kg	2.90	U	2.90	U	3	U	3.50	U		
Carbon tetrachloride	µg/kg	0.68	U	0.67	U	0.71	U	0.81	U		
Chlorobenzene	µg/kg	1.90	U	1.90	U	2	U	1.10	U		
Chloroethane	µg/kg	2.70	U	2.70	U	2.80	U	3.20	U		
Chloroform	µg/kg	1	U	1	U	1.10	U	1.20	U		
Chloromethane	µg/kg	2.60	U	2.60	U	2.70	U	3.10	U		
Cis-1,3-Dichloropropene	µg/kg	0.99	U	0.98	U	1	U	1.20	U		
Dibromochloromethane	µg/kg	0.83	U	0.82	U	0.87	U	1	U		
Dibromomethane	µg/kg	0.94	U	0.93	U	0.98	U	1.10	U		
Methylene chloride	µg/kg	1.50	()B	1.40	()B	1.60	()B	2.40	()B		
Tetrachloroethene	µg/kg	0.83	U	0.82	U	0.87	U	1	U		
Trans-1,2-Dichloroethene	µg/kg	1.10	U	1.10	U	1.20	U	1.40	U		
Trans-1,3-Dichloropropene	µg/kg	0.89	U	0.88	U	0.92	U	1.10	U		
Trichloroethene	µg/kg	0.83	U	0.82	U	0.87	U	1	U		
Vinyl chloride	µg/kg	2.70	U	2.70	U	2.80	U	3.20	U		

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4

Vermont Air National Guard Base

LOCATOR:	V4-BG	V4-BG	V4-BG	V4-BG
SAMPLE ID:	V4-BG-0911	V4-BG-1416	V4-BG-1416D	V4-BG-1921
COLLECTION DATE:	09/10/94	09/10/94	09/10/94	09/10/94
ASSOCIATED QC:	TB-091094-1 FB-090894-P, FB-090894-D	TB-091094-1 FB-090894-P, FB-090894-D	TB-091094-1 FB-090894-P, FB-090894-D	TB-091094-1 FB-090894-P, FB-090894-D

CRITERIA UNITS:		RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Aromatic Volatile Organic Compounds by 8020									
1,2-Dichlorobenzene	µg/kg	0.61	()B	0.39	()B	0.31	()	0.39	()B
1,3-Dichlorobenzene	µg/kg	0.42	()B	1.10	U	0.21	()	0.33	()B
1,4-Dichlorobenzene	µg/kg	0.36	()B	0.56	()B	0.34	()	0.56	()B
Benzene	µg/kg	0.06	()	0.13	()	1.50	U	0.11	()
Chlorobenzene	µg/kg	0.94	U	0.93	U	0.98	U	0.05	()B
Ethylbenzene	µg/kg	0.60	()B	0.10	()B	0.27	()	0.50	()B
Methyl-tert-butyl ether	µg/kg	11	U	11	U	12	U	14	U
Styrene	µg/kg	1.60	U	1.50	U	1.60	U	1.90	U
Toluene	µg/kg	0.21	()B	0.19	()B	0.23	()	0.44	()B
m + p-Xylene	µg/kg	-		-		-		-	
m-Xylene	µg/kg	0.19	()B	0.10	()B	0.37	()	0.67	()B
o-Xylene	µg/kg	0.08	()B	0.13	()B	0.31	()	0.65	()B
p-Xylene	µg/kg	0.19	()B	0.10	()B	0.37	()B	0.67	()B
Semivolatile Organic Compounds by CLP 3/90									
1,2,4-Trichlorobenzene	µg/kg	340	U	340	U	360	U	410	U
1,2-Dichlorobenzene	µg/kg	340	U	340	U	360	U	410	U
1,3-Dichlorobenzene	µg/kg	340	U	340	U	360	U	410	U
1,4-Dichlorobenzene	µg/kg	340	U	340	U	360	U	410	U
2,2'-Oxybis(1-chloropropane)	µg/kg	340	U	340	U	360	U	410	U
2,4,5-Trichlorophenol	µg/kg	830	U	820	U	870	U	1000	U
2,4,6-Trichlorophenol	µg/kg	340	U	340	U	360	U	410	U
2,4-Dichlorophenol	µg/kg	340	U	340	U	360	U	410	U
2,4-Dimethylphenol	µg/kg	340	U	340	U	360	U	410	U
2,4-Dinitrophenol	µg/kg	830	U	820	U	870	U	1000	U
2,4-Dinitrotoluene	µg/kg	340	U	340	U	360	U	410	U
2,6-Dinitrotoluene	µg/kg	340	U	340	U	360	U	410	U
2-Chloronaphthalene	µg/kg	340	U	340	U	360	U	410	U
2-Chlorophenol	µg/kg	340	U	340	U	360	U	410	U
2-Methylnaphthalene	µg/kg	340	U	340	U	360	U	410	U
2-Methylphenol	µg/kg	340	U	340	U	360	U	410	U
2-Nitroaniline	µg/kg	830	U	820	U	870	U	1000	U
2-Nitrophenol	µg/kg	340	U	340	U	360	U	410	U
3,3'-Dichlorobenzidine	µg/kg	340	U	340	U	360	U	410	U
3-Nitroaniline	µg/kg	830	U	820	U	870	U	1000	U

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:		V4-BG		V4-BG		V4-BG		V4-BG
SAMPLE ID:		V4-BG-0911		V4-BG-1416		V4-BG-1416D		V4-BG-1921
COLLECTION DATE:		09/10/94		09/10/94		09/10/94		09/10/94
ASSOCIATED QC:		TB-091094-1 FB-090894-P, FB-090894-D		TB-091094-1 FB-090894-P, FB-090894-D		TB-091094-1 FB-090894-P, FB-090894-D		TB-091094-1, FB-090894-P, FB-090894-D
CRITERIA	UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
4,6-Dinitro-2-methylphenol	µg/kg	830	U	820	U	870	U	1000	U
4-Bromophenyl phenyl ether	µg/kg	340	U	340	U	360	U	410	U
4-Chloro-3-methylphenol	µg/kg	340	U	340	U	360	U	410	U
4-Chloroaniline	µg/kg	340	U	340	U	360	U	410	U
4-Chlorophenyl phenyl ether	µg/kg	340	U	340	U	360	U	410	U
4-Methylphenol	µg/kg	340	U	340	U	360	U	410	U
4-Nitroaniline	µg/kg	830	U	820	U	870	U	1000	U
4-Nitrophenol	µg/kg	830	U	820	U	870	U	1000	U
Acenaphthene	µg/kg	340	U	340	U	360	U	410	U
Acenaphthylene	µg/kg	340	U	340	U	360	U	410	U
Anthracene	µg/kg	340	U	340	U	360	U	410	U
Benzo(a)anthracene	µg/kg	340	U	340	U	360	U	410	U
Benzo(a)pyrene	µg/kg	340	U	340	U	360	U	410	U
Benzo(b)fluoranthene	µg/kg	340	U	340	U	360	U	410	U
Benzo(g,h,i)perylene	µg/kg	340	U	340	U	360	U	410	U
Benzo(k)fluoranthene	µg/kg	340	U	340	U	360	U	410	U
Butyl benzyl phthalate	µg/kg	340	U	340	U	360	U	410	U
Carbazole	µg/kg	340	U	340	U	360	U	410	U
Chrysene	µg/kg	340	U	340	U	360	U	410	U
Di-n-butyl phthalate	µg/kg	340	U	35	(I)	44	(I)	410	U
Di-n-octyl phthalate	µg/kg	340	U	340	U	360	U	410	U
Dibenzo(a,h)anthracene	µg/kg	340	U	340	U	360	U	410	U
Dibenzofuran	µg/kg	340	U	340	U	360	U	410	U
Diethyl phthalate	µg/kg	340	U	340	U	360	U	410	U
Dimethyl phthalate	µg/kg	340	U	340	U	360	U	410	U
Fluoranthene	µg/kg	340	U	340	U	360	U	410	U
Fluorene	µg/kg	340	U	340	U	360	U	410	U
Hexachlorobenzene	µg/kg	340	U	340	U	360	U	410	U
Hexachlorobutadiene	µg/kg	340	U	340	U	360	U	410	U
Hexachlorocyclopentadiene	µg/kg	340	U	340	U	360	U	410	U
Hexachloroethane	µg/kg	340	U	340	U	360	U	410	U
Indeno(1,2,3-cd)pyrene	µg/kg	340	U	340	U	360	U	410	U
Isophorone	µg/kg	340	U	340	U	360	U	410	U
N-Nitroso-di-n-propylamine	µg/kg	340	U	340	U	360	U	410	U
N-Nitrosodiphenylamine(1)	µg/kg	340	U	340	U	360	U	410	U
Naphthalene	µg/kg	340	U	340	U	360	U	410	U

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:		V4-BG		V4-BG		V4-BG		V4-BG	
SAMPLE ID:		V4-BG-0911		V4-BG-1416		V4-BG-1416D		V4-BG-1921	
COLLECTION DATE:		09/10/94		09/10/94		09/10/94		09/10/94	
ASSOCIATED QC:		TB-091094-1 FB-090894-P, FB-090894-D		TB-091094-1 FB-090894-P, FB-090894-D		TB-091094-1 FB-090894-P, FB-090894-D		TB-091094-1, FB-090894-P, FB-090894-D	
	CRITERIA UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Nitrobenzene	µg/kg	340	U	340	U	360	U	410	U
Pentachlorophenol	µg/kg	830	U	820	U	870	U	1000	U
Phenanthrene	µg/kg	340	U	340	U	360	U	410	U
Phenol	µg/kg	340	U	340	U	360	U	410	U
Pyrene	µg/kg	340	U	340	U	360	U	410	U
bis(2-Chloroethoxy)methane	µg/kg	340	U	340	U	360	U	410	U
bis(2-Chloroethyl)ether	µg/kg	340	U	340	U	360	U	410	U
bis(2-Ethylhexyl)phthalate	µg/kg	340	U	340	U	360	U	410	U
TAL Metals by CLP 3/90									
Aluminum	µg/ℓ	3540		3790		5280		4140	
Antimony	µg/ℓ	11.60	U	11.50	U	12.10	U	14	U
Arsenic	µg/ℓ	3.10		8.90		9.60		3.50	
Barium	µg/ℓ	9.60	()	13	()	13.60	()	9	()
Beryllium	µg/ℓ	0.17	()	0.10	U	0.13	()	0.13	U
Cadmium	µg/ℓ	0.96	U	0.95	U	1	U	1.20	U
Calcium	µg/ℓ	1240		1450		1750		1700	
Chromium	µg/ℓ	7.70		6.90		10.60		8.30	
Cobalt	µg/ℓ	7.40	()	8.50	()	10.70	()	8.10	()
Copper	µg/ℓ	11.70		14.90		15.30		13.90	
Iron	µg/ℓ	7700		13200		16500		10500	
Lead	µg/ℓ	4.10		3.60		4		3.80	
Magnesium	µg/ℓ	1930		1950		2870		2520	
Manganese	µg/ℓ	255		580		548		263	
Mercury	µg/ℓ	0.10	U	0.10	U	0.11	U	0.13	U
Nickel	µg/ℓ	15.10		18.70		21.20		16.20	
Potassium	µg/ℓ	363	()J	392	()J	524	()J	434	()J
Selenium	µg/ℓ	0.81	U	0.80	U	0.85	U	0.98	U
Silver	µg/ℓ	0.75	U	0.74	U	0.78	U	0.90	U
Sodium	µg/ℓ	114	()B	161	()B	169	()B	172	()B
Thallium	µg/ℓ	0.75	U	0.74	U	0.78	U	0.90	U
Vanadium	µg/ℓ	6.80	()	9.60	()	13.40		10.10	()
Zinc	µg/ℓ	18.30		26.40		31.80		26.70	
TPH by 8015 Modified California Luft									
TPH-Extractable as Diesel	mg/kg	6.90	U	10	U	11	U	12	U
TPH-Purgeable as Gasoline	mg/kg	0.50	U	0.50	U	0.50	U	0.50	U

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:	V3-BG1	V3-BG1	V3-BG1	V3-BG1	V3-MW1	V3-MW1
SAMPLE ID:	V3-BG1-1094	V3-BG1-1094F	V3-BG1-1094D	V3-BG1-1094DF	V3-MW1-1094	V3-MW1-1094F
COLLECTION DATE:	10/24/94	10/24/94	10/24/94	10/24/94	10/31/94	10/31/94
ASSOCIATED QC:	TB-102494-2,ER-102494-1 FB-092494-P	TB-102494-2,ER-102494-1 FB-092494-P	TB-102494-2,ER-102494-1 FB-092494-P	TB-102494-2,ER-102494-1 FB-092494-P	TB-103194-1,ER-102494-1 FB-092494-P	TB-103194-1,ER-102494-1 FB-092494-P

CRITERIA UNITS:		RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Halogenated Volatile Organic Compounds by 8010													
1,1,1,2-Tetrachloroethane	µg/ℓ	0.35	U	-		0.35	U	-		0.35	U	-	
1,1,1-Trichloroethane	µg/ℓ	0.22	()	-		0.02	()J	-		0.35	U	-	
1,1,2,2-Tetrachloroethane	µg/ℓ	0.40	U	-		0.40	U	-		0.40	U	-	
1,1,2-Trichloroethane	µg/ℓ	0.25	U	-		0.25	U	-		0.25	U	-	
1,1-Dichloroethane	µg/ℓ	0.35	U	-		0.35	U	-		0.35	U	-	
1,1-Dichloroethene	µg/ℓ	0.35	U	-		0.35	U	-		0.35	U	-	
1,2,3-Trichloropropane	µg/ℓ	0.35	U	-		0.35	U	-		0.35	U	-	
1,2-Dibromoethane (Ethylene di	µg/ℓ	0.35	U	-		0.35	U	-		0.35	U	-	
1,2-Dichlorobenzene	µg/ℓ	0.30	U	-		0.30	U	-		0.30	U	-	
1,2-Dichloroethane	µg/ℓ	0.25	U	-		0.25	U	-		0.25	U	-	
1,2-Dichloropropane	µg/ℓ	0.30	U	-		0.30	U	-		0.30	U	-	
1,3-Dichlorobenzene	µg/ℓ	0.20	U	-		0.20	U	-		0.20	U	-	
1,4-Dichlorobenzene	µg/ℓ	0.20	U	-		0.20	U	-		0.20	U	-	
2-Chloroethyl vinyl ether	µg/ℓ	0.40	U	-		0.40	U	-		0.40	U	-	
2-Chlorotoluene	µg/ℓ	0.25	U	-		0.25	U	-		0.25	U	-	
4-Chlorotoluene	µg/ℓ	0.35	U	-		0.35	U	-		0.35	U	-	
Bromobenzene	µg/ℓ	0.85	U	-		0.85	U	-		0.85	U	-	
Bromochloromethane	µg/ℓ	0.25	U	-		0.25	U	-		0.25	U	-	
Bromodichloromethane	µg/ℓ	0.40	U	-		0.40	U	-		0.40	U	-	
Bromoform	µg/ℓ	0.50	U	-		0.50	U	-		0.50	U	-	
Bromomethane	µg/ℓ	0.45	U	-		0.45	U	-		0.45	U	-	
Carbon tetrachloride	µg/ℓ	0.35	U	-		0.35	U	-		0.35	U	-	
Chlorobenzene	µg/ℓ	0.35	U	-		0.35	U	-		0.35	U	-	
Chloroethane	µg/ℓ	0.50	U	-		0.50	U	-		0.50	U	-	
Chloroform	µg/ℓ	0.17	()	-		0.35	U	-		0.08	()	-	
Chloromethane	µg/ℓ	0.50	U	-		0.50	U	-		0.50	U	-	
Cis-1,3-Dichloropropene	µg/ℓ	0.30	U	-		0.30	U	-		0.30	U	-	
Dibromochloromethane	µg/ℓ	0.30	U	-		0.30	U	-		0.30	U	-	
Dibromomethane	µg/ℓ	0.40	U	-		0.40	U	-		0.40	U	-	
Methylene chloride	µg/ℓ	1.40	B	-		1.60	B	-		1	B	-	
Tetrachloroethene	µg/ℓ	0.30	U	-		0.30	U	-		0.30	U	-	
Trans-1,2-Dichloroethene	µg/ℓ	0.30	U	-		0.30	U	-		0.30	U	-	
Trans-1,3-Dichloropropene	µg/ℓ	0.25	U	-		0.25	U	-		0.25	U	-	
Trichloroethene	µg/ℓ	0.15	()J	-		0.18	()	-		0.24	()	-	
Vinyl chloride	µg/ℓ	0.55	U	-		0.55	U	-		0.55	U	-	

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:		V3-BG1		V3-BG1		V3-BG1		V3-BG1		V3-MW1		V3-MW1	
SAMPLE ID:		V3-BG1-1094		V3-BG1-1094F		V3-BG1-1094D		V3-BG1-1094DF		V3-MW1-1094		V3-MW1-1094F	
COLLECTION DATE:		10/24/94		10/24/94		10/24/94		10/24/94		10/31/94		10/31/94	
ASSOCIATED QC:		TB-102494-2,ER-102494-1 FB-092494-P		TB-102494-2,ER-102494-1 FB-092494-P		TB-102494-2,ER-102494-1 FB-092494-P		TB-102494-2,ER-102494-1 FB-092494-P		TB-103194-1,ER-102494-1 FB-092494-P		TB-103194-1,ER-102494-1 FB-092494-P	
CRITERIA UNITS:		RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Aromatic Volatile Organic Compounds by 8020													
1,2-Dichlorobenzene	µg/ℓ	0.15	U	-		0.15	U	-		140		-	
1,3-Dichlorobenzene	µg/ℓ	0.20	U	-		0.20	U	-		1.10	B	-	
1,4-Dichlorobenzene	µg/ℓ	0.15	U	-		0.15	U	-		0.15	U	-	
Benzene	µg/ℓ	0.35	U	-		0.35	U	-		160		-	
Chlorobenzene	µg/ℓ	0.25	U	-		0.25	U	-		0.25	U	-	
Ethylbenzene	µg/ℓ	0.20	U	-		0.20	U	-		420		-	
Methyl-tert-butyl ether	µg/ℓ	5	U	-		5	U	-		5	U	-	
Styrene	µg/ℓ	0.25	U	-		0.25	U	-		0.25	U	-	
Toluene	µg/ℓ	0.47		-		0.42		-		840		-	
m + p-Xylene	µg/ℓ	-		-		-		-		520		-	
m-Xylene	µg/ℓ	0.25	()B	-		0.19	()B	-		-		-	
o-Xylene	µg/ℓ	0.20	U	-		0.20	U	-		2.30		-	
p-Xylene	µg/ℓ	0.25	()B	-		0.19	()B	-		-		-	
Semivolatile Organic Compounds by CLP 3/90													
1,2,4-Trichlorobenzene	µg/ℓ	5	U	-		5	U	-		5	U	-	
2,2'-Oxybis(1-chloropropane)	µg/ℓ	5	U	-		5	U	-		5	U	-	
2,4,5-Trichlorophenol	µg/ℓ	20	U	-		20	U	-		20	U	-	
2,4,6-Trichlorophenol	µg/ℓ	5	U	-		5	U	-		5	U	-	
2,4-Dichlorophenol	µg/ℓ	5	U	-		5	U	-		5	U	-	
2,4-Dimethylphenol	µg/ℓ	5	U	-		5	U	-		8		-	
2,4-Dinitrophenol	µg/ℓ	20	U	-		20	U	-		20	U	-	
2,4-Dinitrotoluene	µg/ℓ	5	U	-		5	U	-		5	U	-	
2,6-Dinitrotoluene	µg/ℓ	5	U	-		5	U	-		5	U	-	
2-Chloronaphthalene	µg/ℓ	5	U	-		5	U	-		5	U	-	
2-Chlorophenol	µg/ℓ	5	U	-		5	U	-		5	U	-	
2-Methylnaphthalene	µg/ℓ	5	U	-		5	U	-		27		-	
2-Methylphenol	µg/ℓ	5	U	-		5	U	-		40		-	
2-Nitroaniline	µg/ℓ	20	U	-		20	U	-		20	U	-	
2-Nitrophenol	µg/ℓ	5	U	-		5	U	-		5	U	-	
3,3'-Dichlorobenzidine	µg/ℓ	5	U	-		5	U	-		5	U	-	
3-Nitroaniline	µg/ℓ	20	U	-		20	U	-		20	U	-	
4,6-Dinitro-2-methylphenol	µg/ℓ	20	U	-		20	U	-		20	U	-	
4-Bromophenyl phenyl ether	µg/ℓ	5	U	-		5	U	-		5	U	-	
4-Chloro-3-methylphenol	µg/ℓ	5	U	-		5	U	-		5	U	-	

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4

Vermont Air National Guard Base

LOCATOR:		V3-BG1		V3-BG1		V3-BG1		V3-BG1		V3-MW1		V3-MW1	
SAMPLE ID:		V3-BG1-1094		V3-BG1-1094F		V3-BG1-1094D		V3-BG1-1094DF		V3-MW1-1094		V3-MW1-1094F	
COLLECTION DATE:		10/24/94		10/24/94		10/24/94		10/24/94		10/31/94		10/31/94	
ASSOCIATED QC:		TB-102494-2,ER-102494-1 FB-092494-P		TB-102494-2,ER-102494-1 FB-092494-P		TB-102494-2,ER-102494-1 FB-092494-P		TB-102494-2,ER-102494-1 FB-092494-P		TB-103194-1,ER-102494-1 FB-092494-P		TB-103194-1,ER-102494-1 FB-092494-P	
CRITERIA UNITS:		RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
4-Chloroaniline	µg/ℓ	5	U	-		5	U	-		5	U	-	
4-Chlorophenyl phenyl ether	µg/ℓ	5	U	-		5	U	-		5	U	-	
4-Methylphenol	µg/ℓ	5	U	-		5	U	-		4	(I)J	-	
4-Nitroaniline	µg/ℓ	20	U	-		20	U	-		20	U	-	
4-Nitrophenol	µg/ℓ	20	U	-		20	U	-		20	U	-	
Acenaphthene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Acenaphthylene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Anthracene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Benzo(a)anthracene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Benzo(a)pyrene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Benzo(b)fluoranthene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Benzo(g,h,i)perylene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Benzo(k)fluoranthene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Butyl benzyl phthalate	µg/ℓ	5	U	-		5	U	-		5	U	-	
Chrysene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Di-n-butyl phthalate	µg/ℓ	0.60	J	-		5	U	-		5	U	-	
Di-n-octyl phthalate	µg/ℓ	5	U	-		5	U	-		5	U	-	
Dibenzo(a,h)anthracene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Dibenzofuran	µg/ℓ	5	U	-		5	U	-		5	U	-	
Diethyl phthalate	µg/ℓ	5	U	-		5	U	-		5	U	-	
Dimethyl phthalate	µg/ℓ	5	U	-		5	U	-		5	U	-	
Fluoranthene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Fluorene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Hexachlorobenzene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Hexachlorobutadiene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Hexachlorocyclopentadiene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Hexachloroethane	µg/ℓ	5	U	-		5	U	-		5	U	-	
Indeno(1,2,3-cd)pyrene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Isophorone	µg/ℓ	5	U	-		5	U	-		5	U	-	
N-Nitroso-di-n-propylamine	µg/ℓ	5	U	-		5	U	-		5	U	-	
N-Nitrosodiphenylamine(1)	µg/ℓ	5	U	-		5	U	-		58		-	
Naphthalene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Nitrobenzene	µg/ℓ	5	U	-		20	U	-		20	U	-	
Pentachlorophenol	µg/ℓ	20	U	-		5	U	-		5	U	-	
Phenanthrene	µg/ℓ	5	U	-		5	U	-		3	(I)J	-	
Phenol	µg/ℓ	5	U	-									

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:		V3-BG1		V3-BG1		V3-BG1		V3-BG1		V3-MW1		V3-MW1	
SAMPLE ID:		V3-BG1-1094		V3-BG1-1094F		V3-BG1-1094D		V3-BG1-1094DF		V3-MW1-1094		V3-MW1-1094F	
COLLECTION DATE:		10/24/94		10/24/94		10/24/94		10/24/94		10/31/94		10/31/94	
ASSOCIATED QC:		TB-102494-2,ER-102494-1 FB-092494-P		TB-102494-2,ER-102494-1 FB-092494-P		TB-102494-2,ER-102494-1 FB-092494-P		TB-102494-2,ER-102494-1 FB-092494-P		TB-103194-1,ER-102494-1 FB-092494-P		TB-103194-1,ER-102494-1 FB-092494-P	
CRITERIA	UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Pyrene	µg/ℓ	5	U	-		5	U	-		5	U	-	
bis(2-Chloroethoxy)methane	µg/ℓ	5	U	-		5	U	-		5	U	-	
bis(2-Chloroethyl)ether	µg/ℓ	5	U	-		5	U	-		5	U	-	
bis(2-Ethylhexyl)phthalate	µg/ℓ	7		-		8		-		2	()J	-	
TAL Metals by CLP 3/90													
Aluminum	µg/ℓ	3860		63.60	()B	3230		74.30	()B	6190	J	52.70	()B
Antimony	µg/ℓ	50.80	U	50.80	U	50.80	U	50.80	U	50.80	U	50.80	U
Arsenic	µg/ℓ	4.90	()B	1.70	U	4.60	()B	1.70	U	2.90	()J	1.70	U
Barium	µg/ℓ	35	()	7.90	()	32.40	()	8.10	()	153	()	28.40	()
Beryllium	µg/ℓ	0.50	U	0.50	U	0.50	U	0.50	U	0.85	()J	0.50	U
Cadmium	µg/ℓ	4.30	U	4.30	U	4.30	U	4.30	U	4.30	U	4.30	UJ
Calcium	µg/ℓ	54800		50700	()B	53400		51500		170000		94200	
Chromium	µg/ℓ	9.80	()	6.30	()B	7.30	()	5.40	U	8.80	()	5.40	U
Cobalt	µg/ℓ	11.80	U	11.80	U	11.80	U	11.80	U	62.10		14.40	()
Copper	µg/ℓ	23.50	()	7.60	U	21.60	()	7.60	U	82.70		7.60	U
Iron	µg/ℓ	9810		63	()B	8000		63	()B	7560		105	B
Lead	µg/ℓ	7.20	J	2.30	U	6.20	J	2.30	U	25.10		2.30	U
Magnesium	µg/ℓ	9660		7880		8950		7900		29700		20800	
Manganese	µg/ℓ	553		81.60		540		82		7340		2840	
Mercury	µg/ℓ	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
Nickel	µg/ℓ	17.30	U	17.30	U	19.90	()	17.30	U	96.20		21.60	()
Potassium	µg/ℓ	1890	()	1170	()	1620	()	1010	()	2350	()	1660	()
Selenium	µg/ℓ	2.80	U	2.80	U	2.80	U	2.80	U	2.80	U	2.80	UJ
Silver	µg/ℓ	3.20	U	3.20	UJ	3.20	U	3.20	UJ	3.20	U	3.20	U
Sodium	µg/ℓ	109000		103000		98100		101000		309000		254000	
Thallium	µg/ℓ	36	U	36	U	36	U	36.04	U	36	U		R
Vanadium	µg/ℓ	8.70	()	5.40	U	7.40	()	5.40	U	7.30	()	5.40	U
Zinc	µg/ℓ	28.30		5.20	U	28.30		5.20	U	107	J	5.20	U
TPH by 8015 Modified California Luft													
TPH-Extractable as Diesel	mg/ℓ	0.50	U	-		0.50	U	-		27		-	
TPH-Purgeable as Gasoline	mg/ℓ	0.02	B	-		0.01		-		12		-	

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:	V3-MW3		V3-MW3		V4-BG1		V4-BG1		V4-MW2		V4-MW2	
SAMPLE ID:	V3-MW3-1094		V3-MW3-1094F		V4-BG1-1094		V4-BG1-1094F		V4-MW2-1094		V4-MW2-1094F	
COLLECTION DATE:	10/31/94		10/31/94		10/25/94		10/25/94		10/27/94		10/27/94	
ASSOCIATED QC:	TB-103194-1,ER-102494-1 FB-092494-P		TB-103194-1,ER-102494-1 FB-092494-P		TB-102594-1,ER-102494-1 FB-092494-P		TB-102594-1,ER-102494-1 FB-092494-P		TB-102794-1,ER-102494-1 FB-092494-P		TB-102794-1,ER-102494-1 FB-092494-P	
CRITERIA UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Halogenated Volatile Organic Compounds by 8010												
1,1,1,2-Tetrachloroethane µg/ℓ	0.35	U	-		0.35	U	-		0.35	U	-	
1,1,1-Trichloroethane µg/ℓ	0.35	U	-		0.35	U	-		0.35	U	-	
1,1,2,2-Tetrachloroethane µg/ℓ	0.40	U	-		0.40	U	-		0.40	U	-	
1,1,2-Trichloroethane µg/ℓ	0.25	U	-		0.25	U	-		0.25	U	-	
1,1-Dichloroethane µg/ℓ	0.35	U	-		0.35	U	-		0.35	U	-	
1,1-Dichloroethene µg/ℓ	0.35	U	-		0.35	U	-		0.35	U	-	
1,2,3-Trichloropropane µg/ℓ	0.35	U	-		0.35	U	-		0.35	U	-	
1,2-Dibromoethane (Ethylene di µg/ℓ	0.35	U	-		0.35	U	-		0.35	U	-	
1,2-Dichlorobenzene µg/ℓ	0.30	U	-		0.30	U	-		0.30	U	-	
1,2-Dichloroethane µg/ℓ	0.25	U	-		0.25	U	-		0.25	U	-	
1,2-Dichloropropane µg/ℓ	0.30	U	-		0.30	U	-		0.30	U	-	
1,3-Dichlorobenzene µg/ℓ	0.20	U	-		0.20	U	-		0.20	U	-	
1,4-Dichlorobenzene µg/ℓ	0.20	U	-		0.20	U	-		0.20	U	-	
2-Chloroethyl vinyl ether µg/ℓ	0.40	U	-		0.40	U	-		0.40	U	-	
2-Chlorotoluene µg/ℓ	0.25	U	-		0.25	U	-		0.25	U	-	
4-Chlorotoluene µg/ℓ	0.35	U	-		0.35	U	-		0.35	U	-	
Bromobenzene µg/ℓ	0.85	U	-		0.85	U	-		0.85	U	-	
Bromochloromethane µg/ℓ	0.25	U	-		0.25	U	-		0.25	U	-	
Bromodichloromethane µg/ℓ	0.40	U	-		0.40	U	-		0.40	U	-	
Bromoform µg/ℓ	0.50	U	-		0.50	U	-		0.50	U	-	
Bromomethane µg/ℓ	0.45	U	-		0.45	U	-		0.45	U	-	
Carbon tetrachloride µg/ℓ	0.35	U	-		0.35	U	-		0.35	U	-	
Chlorobenzene µg/ℓ	0.35	U	-		0.35	U	-		0.35	U	-	
Chloroethane µg/ℓ	0.50	U	-		0.50	U	-		0.50	U	-	
Chloroform µg/ℓ	0.35	U	-		0.15	()	-		0.35	U	-	
Chloromethane µg/ℓ	0.50	U	-		0.50	U	-		0.50	U	-	
Cis-1,3-Dichloropropene µg/ℓ	0.30	U	-		0.30	U	-		0.30	U	-	
Dibromochloromethane µg/ℓ	0.30	U	-		0.30	U	-		0.30	U	-	
Dibromomethane µg/ℓ	0.40	U	-		0.40	U	-		0.40	U	-	
Methylene chloride µg/ℓ	0.64	()B	-		1.60	B	-		1.60	B	-	
Tetrachloroethene µg/ℓ	0.30	U	-		0.30	U	-		0.30	U	-	
Trans-1,2-Dichloroethene µg/ℓ	0.30	U	-		0.30	U	-		0.30	U	-	
Trans-1,3-Dichloropropene µg/ℓ	0.25	U	-		0.25	U	-		0.25	U	-	
Trichloroethene µg/ℓ	0.30	U	-		0.10	()	-		0.30	U	-	
Vinyl chloride µg/ℓ	0.55	U	-		0.55	U	-		0.55	U	-	

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:		V3-MW3		V3-MW3		V4-BG1		V4-BG1		V4-MW2		V4-MW2	
SAMPLE ID:		V3-MW3-1094		V3-MW3-1094F		V4-BG1-1094		V4-BG1-1094F		V4-MW2-1094		V4-MW2-1094F	
COLLECTION DATE:		10/31/94		10/31/94		10/25/94		10/25/94		10/27/94		10/27/94	
ASSOCIATED QC:		TB-103194-1,ER-102494-1 FB-092494-P		TB-103194-1,ER-102494-1 FB-092494-P		TB-102594-1,ER-102494-1 FB-092494-P		TB-102594-1,ER-102494-1 FB-092494-P		TB-102794-1,ER-102494-1 FB-092494-P		TB-102794-1,ER-102494-1 FB-092494-P	
CRITERIA	UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Aromatic Volatile Organic Compounds by 8020													
1,2-Dichlorobenzene	µg/ℓ	0.90		-		0.15	U	-		25		-	
1,3-Dichlorobenzene	µg/ℓ	2.50		-		0.20	U	-		6.30		-	
1,4-Dichlorobenzene	µg/ℓ	0.28	U	-		0.15	U	-		0.15	U	-	
Benzene	µg/ℓ	0.35	U	-		0.35	U	-		84		-	
Chlorobenzene	µg/ℓ	0.54		-		0.25	U	-		0.23	U	-	
Ethylbenzene	µg/ℓ	0.55		-		0.20	U	-		160		-	
Methyl-tert-butyl ether	µg/ℓ	5	U	-		5	U	-		4.90	(I)	-	
Styrene	µg/ℓ	0.36		-		0.25	U	-		0.25	U	-	
Toluene	µg/ℓ	0.33	B	-		0.25	U	-		18		-	
m+p-Xylene	µg/ℓ	-		-		0.50	U	-		210		-	
m-Xylene	µg/ℓ	0.54	U	-		-		-		-		-	
o-Xylene	µg/ℓ	0.73		-		0.20	U	-		0.79		-	
p-Xylene	µg/ℓ	0.54	U	-		-		-		-		-	
Semivolatile Organic Compounds by CLP 3/90													
1,2,4-Trichlorobenzene	µg/ℓ	5	U	-		5	U	-		5	U	-	
2,2'-Oxybis(1-chloropropane)	µg/ℓ	5	U	-		5	U	-		5	U	-	
2,4,5-Trichlorophenol	µg/ℓ	20	U	-		20	U	-		20	U	-	
2,4,6-Trichlorophenol	µg/ℓ	5	U	-		5	U	-		5	U	-	
2,4-Dichlorophenol	µg/ℓ	5	U	-		5	U	-		5	U	-	
2,4-Dimethylphenol	µg/ℓ	5	U	-		5	U	-		6		-	
2,4-Dinitrophenol	µg/ℓ	20	U	-		20	U	-		20	U	-	
2,4-Dinitrotoluene	µg/ℓ	5	U	-		5	U	-		5	U	-	
2,6-Dinitrotoluene	µg/ℓ	5	U	-		5	U	-		5	U	-	
2-Chloronaphthalene	µg/ℓ	5	U	-		5	U	-		5	U	-	
2-Chlorophenol	µg/ℓ	5	U	-		5	U	-		5	U	-	
2-Methylnaphthalene	µg/ℓ	0.60	(I)	-		5	U	-		46		-	
2-Methylphenol	µg/ℓ	5	U	-		5	U	-		5	U	-	
2-Nitroaniline	µg/ℓ	20	U	-		20	U	-		20	U	-	
2-Nitrophenol	µg/ℓ	5	U	-		5	U	-		5	U	-	
3,3'-Dichlorobenzidine	µg/ℓ	5	U	-		5	U	-		5	U	-	
3-Nitroaniline	µg/ℓ	20	U	-		20	U	-		20	U	-	
4,6-Dinitro-2-methylphenol	µg/ℓ	20	U	-		20	U	-		20	U	-	
4-Bromophenyl phenyl ether	µg/ℓ	5	U	-		5	U	-		5	U	-	
4-Chloro-3-methylphenol	µg/ℓ	5	U	-		5	U	-		5	U	-	

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:		V3-MW3		V3-MW3		V4-BG1		V4-BG1		V4-MW2		V4-MW2	
SAMPLE ID:		V3-MW3-1094		V3-MW3-1094F		V4-BG1-1094		V4-BG1-1094F		V4-MW2-1094		V4-MW2-1094F	
COLLECTION DATE:		10/31/94		10/31/94		10/25/94		10/25/94		10/27/94		10/27/94	
ASSOCIATED QC:		TB-103194-1,ER-102494-1 FB-092494-P		TB-103194-1,ER-102494-1 FB-092494-P		TB-102594-1,ER-102494-1 FB-092494-P		TB-102594-1,ER-102494-1 FB-092494-P		TB-102794-1,ER-102494-1 FB-092494-P		TB-102794-1,ER-102494-1 FB-092494-P	
	CRITERIA UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
4-Chloroaniline	µg/ℓ	5	U	-		5	U	-		5	U	-	
4-Chlorophenyl phenyl ether	µg/ℓ	5	U	-		5	U	-		5	U	-	
4-Methylphenol	µg/ℓ	5	U	-		5	U	-		5	U	-	
4-Nitroaniline	µg/ℓ	20	U	-		20	U	-		20	U	-	
4-Nitrophenol	µg/ℓ	20	U	-		20	U	-		20	U	-	
Acenaphthene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Acenaphthylene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Anthracene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Benzo(a)anthracene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Benzo(a)pyrene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Benzo(b)fluoranthene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Benzo(g,h,i)perylene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Benzo(k)fluoranthene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Butyl benzyl phthalate	µg/ℓ	5	U	-		5	U	-		5	U	-	
Chrysene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Di-n-butyl phthalate	µg/ℓ	5	U	-		5	U	-		0.80	(I)J	-	
Di-n-octyl phthalate	µg/ℓ	5	U	-		5	U	-		5	U	-	
Dibenzo(a,h)anthracene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Dibenzofuran	µg/ℓ	5	U	-		5	U	-		5	U	-	
Diethyl phthalate	µg/ℓ	5	U	-		5	U	-		5	U	-	
Dimethyl phthalate	µg/ℓ	5	U	-		5	U	-		5	U	-	
Fluoranthene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Fluorene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Hexachlorobenzene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Hexachlorobutadiene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Hexachlorocyclopentadiene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Hexachloroethane	µg/ℓ	5	U	-		5	U	-		5	U	-	
Indeno(1,2,3-cd)pyrene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Isophorone	µg/ℓ	5	U	-		5	U	-		5	U	-	
N-Nitroso-di-n-propylamine	µg/ℓ	5	U	-		5	U	-		5	U	-	
N-Nitrosodiphenylamine(1)	µg/ℓ	5	U	-		5	U	-		5	U	-	
Naphthalene	µg/ℓ	5	U	-		5	U	-		96	J	-	
Nitrobenzene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Pentachlorophenol	µg/ℓ	20	U	-		20	U	-		20	U	-	
Phenanthrene	µg/ℓ	5	U	-		5	U	-		5	U	-	
Phenol	µg/ℓ	5	U	-		5	U	-		5		-	

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:		V3-MW3		V3-MW3		V4-BG1		V4-BG1		V4-MW2		V4-MW2	
SAMPLE ID:		V3-MW3-1094		V3-MW3-1094F		V4-BG1-1094		V4-BG1-1094F		V4-MW2-1094		V4-MW2-1094F	
COLLECTION DATE:		10/31/94		10/31/94		10/25/94		10/25/94		10/27/94		10/27/94	
ASSOCIATED QC:		TB-103194-1,ER-102494-1 FB-092494-P		TB-103194-1,ER-102494-1 FB-092494-P		TB-102594-1,ER-102494-1 FB-092494-P		TB-102594-1,ER-102494-1 FB-092494-P		TB-102794-1,ER-102494-1 FB-092494-P		TB-102794-1,ER-102494-1 FB-092494-P	
CRITERIA	UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Pyrene	µg/ℓ	5	U	-		5	U	-		5	U	-	
bis(2-Chloroethoxy)methane	µg/ℓ	5	U	-		5	U	-		5	U	-	
bis(2-Chloroethyl)ether	µg/ℓ	5	U	-		5	U	-		5	U	-	
bis(2-Ethylhexyl)phthalate	µg/ℓ	1	()	-		5	U	-		8		-	
TAL Metals by CLP 3/90													
Aluminum	µg/ℓ	4840	J	64.90	()B	7960		70.30	()B	5380		59.50	()B
Antimony	µg/ℓ	50.80	U	50.80	U	50.80	U	50.80	U	50.80	U	50.80	U
Arsenic	µg/ℓ	2.20	()J	1.70	U	5	()B	1.70	U	67.90	J	56.40	J
Barium	µg/ℓ	98.30	()	28.10	()	98.90	()	51.90	()	81.10	()	59.30	()
Beryllium	µg/ℓ	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U	0.50	U
Cadmium	µg/ℓ	4.30	U	4.30	UJ	4.30	U	4.30	U	4.30	U	4.30	U
Calcium	µg/ℓ	141000		106000		109000		136000		102000		110000	
Chromium	µg/ℓ	10.10		7.30	()	21.10		5.40	U	17		5.40	U
Cobalt	µg/ℓ	21.10	()	11.80	U	11.80	U	11.80	U	15.50	()	11.80	U
Copper	µg/ℓ	38.30		7.60	U	19.20	()	7.60	U	39.40		7.60	U
Iron	µg/ℓ	5290		3.80	U	11600		3.80	U	54300		33600	J
Lead	µg/ℓ	21.30		2.30	U	5.50	J	2.30	U	12.60	J	2.30	U
Magnesium	µg/ℓ	16500		13400		20100		19400		16500		14700	
Manganese	µg/ℓ	10200		7730		1030		1040		4750		4940	
Mercury	µg/ℓ	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U	0.20	U
Nickel	µg/ℓ	38.20	()	17.30	U	24.90	()	17.30	U	22.50	()B	17.30	U
Potassium	µg/ℓ	3990	()	3250	()	3450	()	2090	()	2550	()	2400	()
Selenium	µg/ℓ	2.80	U	2.80	UJ	28	U	28	U	2.80	U	2.80	U
Silver	µg/ℓ	3.20	U	3.20	U	3.20	U	3.20	UJ	3.20	U	3.20	U
Sodium	µg/ℓ	228000		203000		60000		83800		117000		131000	
Thallium	µg/ℓ	36	U		R	36	U	36	U	36	U	36	U
Vanadium	µg/ℓ	5.40	U	5.40	U	13.20	()	5.40	U	17.40	()	5.40	U
Zinc	µg/ℓ	46	J	5.20	U	37.60		5.20	U	44.60		7.10	()J
TPH by 8015 Modified California Luft													
TPH-Extractable as Diesel	mg/ℓ	1.50		-		0.50	U	-		4.80	B	-	
TPH-Purgeable as Gasoline	mg/ℓ	1.40		-		0.03	B	-		9		-	

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:		V4-MW3		V4-MW3
SAMPLE ID:		V4-MW3-1094		V4-MW3-1094F
COLLECTION DATE:		10/26/94		10/26/94
ASSOCIATED QC:		TB-102694-1,ER-102494-1 FB-092494-P		TB-102694-1,ER-102494-1 FB-092494-P
CRITERIA	UNITS:	RESULT	QUAL	RESULT QUAL
Halogenated Volatile Organic Compounds by 8010				
1,1,1,2-Tetrachloroethane	µg/ℓ	0.35	U	-
1,1,1-Trichloroethane	µg/ℓ	0.35	U	-
1,1,2,2-Tetrachloroethane	µg/ℓ	0.40	U	-
1,1,2-Trichloroethane	µg/ℓ	0.25	U	-
1,1-Dichloroethane	µg/ℓ	0.35	U	-
1,1-Dichloroethene	µg/ℓ	0.35	U	-
1,2,3-Trichloropropane	µg/ℓ	0.35	U	-
1,2-Dibromoethane (Ethylene di	µg/ℓ	0.35	U	-
1,2-Dichlorobenzene	µg/ℓ	0.30	U	-
1,2-Dichloroethane	µg/ℓ	0.25	U	-
1,2-Dichloropropane	µg/ℓ	0.30	U	-
1,3-Dichlorobenzene	µg/ℓ	0.20	U	-
1,4-Dichlorobenzene	µg/ℓ	0.20	U	-
2-Chloroethyl vinyl ether	µg/ℓ	0.40	U	-
2-Chlorotoluene	µg/ℓ	0.25	U	-
4-Chlorotoluene	µg/ℓ	0.35	U	-
Bromobenzene	µg/ℓ	0.85	U	-
Bromochloromethane	µg/ℓ	0.25	U	-
Bromodichloromethane	µg/ℓ	0.40	U	-
Bromoform	µg/ℓ	0.50	U	-
Bromomethane	µg/ℓ	0.45	U	-
Carbon tetrachloride	µg/ℓ	0.35	U	-
Chlorobenzene	µg/ℓ	0.35	U	-
Chloroethane	µg/ℓ	0.50	U	-
Chloroform	µg/ℓ	0.35	U	-
Chloromethane	µg/ℓ	0.50	U	-
Cis-1,3-Dichloropropene	µg/ℓ	0.30	U	-
Dibromochloromethane	µg/ℓ	0.30	U	-
Dibromomethane	µg/ℓ	0.40	U	-
Methylene chloride	µg/ℓ	1.40	B	-
Tetrachloroethene	µg/ℓ	0.30	U	-
Trans-1,2-Dichloroethene	µg/ℓ	0.30	U	-
Trans-1,3-Dichloropropene	µg/ℓ	0.25	U	-
Trichloroethene	µg/ℓ	0.19	(I)	-
Vinyl chloride	µg/ℓ	0.55	U	-

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:	V4-MW3		V4-MW3	
SAMPLE ID:	V4-MW3-1094		V4-MW3-1094F	
COLLECTION DATE:	10/26/94		10/26/94	
ASSOCIATED QC:	TB-102694-1,ER-102494-1 FB-092494-P		TB-102694-1,ER-102494-1 FB-092494-P	
CRITERIA UNITS:	RESULT	QUAL	RESULT	QUAL
Aromatic Volatile Organic Compounds by 8020				
1,2-Dichlorobenzene	µg/ℓ	0.15	U	-
1,3-Dichlorobenzene	µg/ℓ	0.20	U	-
1,4-Dichlorobenzene	µg/ℓ	0.15	U	-
Benzene	µg/ℓ	0.35	U	-
Chlorobenzene	µg/ℓ	0.25	U	-
Ethylbenzene	µg/ℓ	0.20	U	-
Methyl-tert-butyl ether	µg/ℓ	5	U	-
Styrene	µg/ℓ	0.25	U	-
Toluene	µg/ℓ	0.23	()	-
m + p-Xylene	µg/ℓ	0.50	U	-
m-Xylene	µg/ℓ	-		-
o-Xylene	µg/ℓ	0.20	U	-
p-Xylene	µg/ℓ	-		-
Semivolatile Organic Compounds by CLP 3/90				
1,2,4-Trichlorobenzene	µg/ℓ	5	U	-
2,2'-Oxybis(1-chloropropane)	µg/ℓ	5	U	-
2,4,5-Trichlorophenol	µg/ℓ	20	U	-
2,4,6-Trichlorophenol	µg/ℓ	5	U	-
2,4-Dichlorophenol	µg/ℓ	5	U	-
2,4-Dimethylphenol	µg/ℓ	5	U	-
2,4-Dinitrophenol	µg/ℓ	20	U	-
2,4-Dinitrotoluene	µg/ℓ	5	U	-
2,6-Dinitrotoluene	µg/ℓ	5	U	-
2-Chloronaphthalene	µg/ℓ	5	U	-
2-Chlorophenol	µg/ℓ	5	U	-
2-Methylnaphthalene	µg/ℓ	5	U	-
2-Methylphenol	µg/ℓ	5	U	-
2-Nitroaniline	µg/ℓ	20	U	-
2-Nitrophenol	µg/ℓ	5	U	-
3,3'-Dichlorobenzidine	µg/ℓ	5	U	-
3-Nitroaniline	µg/ℓ	20	U	-
4,6-Dinitro-2-methylphenol	µg/ℓ	20	U	-
4-Bromophenyl phenyl ether	µg/ℓ	5	U	-
4-Chloro-3-methylphenol	µg/ℓ	5	U	-

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:		V4-MW3		V4-MW3
SAMPLE ID:		V4-MW3-1094		V4-MW3-1094F
COLLECTION DATE:		10/26/94		10/26/94
ASSOCIATED QC:		TB-102694-1,ER-102494-1 FB-092494-P		TB-102694-1,ER-102494-1 FB-092494-P
CRITERIA	UNITS:	RESULT	QUAL	RESULT	QUAL
4-Chloroaniline	µg/ℓ	5	U	-	
4-Chlorophenyl phenyl ether	µg/ℓ	5	U	-	
4-Methylphenol	µg/ℓ	5	U	-	
4-Nitroaniline	µg/ℓ	20	U	-	
4-Nitrophenol	µg/ℓ	20	U	-	
Acenaphthene	µg/ℓ	5	U	-	
Acenaphthylene	µg/ℓ	5	U	-	
Anthracene	µg/ℓ	5	U	-	
Benzo(a)anthracene	µg/ℓ	5	U	-	
Benzo(a)pyrene	µg/ℓ	5	U	-	
Benzo(b)fluoranthene	µg/ℓ	5	U	-	
Benzo(g,h,i)perylene	µg/ℓ	5	U	-	
Benzo(k)fluoranthene	µg/ℓ	5	U	-	
Butyl benzyl phthalate	µg/ℓ	5	U	-	
Chrysene	µg/ℓ	5	U	-	
Di-n-butyl phthalate	µg/ℓ	5	U	-	
Di-n-octyl phthalate	µg/ℓ	5	U	-	
Dibenzo(a,h)anthracene	µg/ℓ	5	U	-	
Dibenzofuran	µg/ℓ	5	U	-	
Diethyl phthalate	µg/ℓ	5	U	-	
Dimethyl phthalate	µg/ℓ	5	U	-	
Fluoranthene	µg/ℓ	5	U	-	
Fluorene	µg/ℓ	5	U	-	
Hexachlorobenzene	µg/ℓ	5	U	-	
Hexachlorobutadiene	µg/ℓ	5	U	-	
Hexachlorocyclopentadiene	µg/ℓ	5	U	-	
Hexachloroethane	µg/ℓ	5	U	-	
Indeno(1,2,3-cd)pyrene	µg/ℓ	5	U	-	
Isophorone	µg/ℓ	5	U	-	
N-Nitroso-di-n-propylamine	µg/ℓ	5	U	-	
N-Nitrosodiphenylamine(1)	µg/ℓ	5	U	-	
Naphthalene	µg/ℓ	5	U	-	
Nitrobenzene	µg/ℓ	5	U	-	
Pentachlorophenol	µg/ℓ	20	U	-	
Phenanthrene	µg/ℓ	5	U	-	
Phenol	µg/ℓ	5	U	-	

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:		V4-MW3		V4-MW3	
SAMPLE ID:		V4-MW3-1094		V4-MW3-1094F	
COLLECTION DATE:		10/26/94		10/26/94	
ASSOCIATED QC:		TB-102694-1,ER-102494-1 FB-092494-P		TB-102694-1,ER-102494-1 FB-092494-P	
CRITERIA	UNITS:	RESULT	QUAL	RESULT	QUAL
Pyrene	µg/ℓ	5	U	-	
bis(2-Chloroethoxy)methane	µg/ℓ	5	U	-	
bis(2-Chloroethyl)ether	µg/ℓ	5	U	-	
bis(2-Ethylhexyl)phthalate	µg/ℓ	5	U	-	
TAL Metals by CLP 3/90					
Aluminum	µg/ℓ	11700		86.60	()B
Antimony	µg/ℓ	50.80	U	50.80	U
Arsenic	µg/ℓ	19.60	J	1.70	U
Barium	µg/ℓ	126	()	28.10	()
Beryllium	µg/ℓ	0.75	()	0.50	U
Cadmium	µg/ℓ	4.30	U	4.30	U
Calcium	µg/ℓ	79500		74500	
Chromium	µg/ℓ	26.50		5.40	U
Cobalt	µg/ℓ	18.80	()	11.80	U
Copper	µg/ℓ	55.60		7.60	U
Iron	µg/ℓ	25400		42	()B
Lead	µg/ℓ	32		2.30	U
Magnesium	µg/ℓ	13000		8040	
Manganese	µg/ℓ	1760		150	
Mercury	µg/ℓ	0.20	U	0.20	U
Nickel	µg/ℓ	53.90		17.30	U
Potassium	µg/ℓ	6370		4280	()
Selenium	µg/ℓ	28	U	2.80	U
Silver	µg/ℓ	3.20	U	3.20	UJ
Sodium	µg/ℓ	666750		185000	
Thallium	µg/ℓ	36	U	36	U
Vanadium	µg/ℓ	24.30	()	5.40	U
Zinc	µg/ℓ	113		5.20	U
TPH by 8015 Modified California Luft					
TPH-Extractable as Diesel	mg/ℓ	0.50	U	-	
TPH-Purgeable as Gasoline	mg/ℓ	0.05	B	-	

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:	V4-D1	V4-D1	V4-D2	V4-D3
SAMPLE ID:	V4-D1-0050	V4-D1-0050D	V4-D2-0050	V4-D3-0050
COLLECTION DATE:	10/28/94	10/28/94	10/28/94	10/28/94
ASSOCIATED QC:	TB-102894-2,ER-102894-2 FB-092494-P	TB-102894-2,ER-102894-2 FB-092494-P	TB-102894-2,ER-102894-2 FB-092494-P	TB-102894-2,ER-102894-2 FB-092494-P

CRITERIA UNITS:		RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Halogenated Volatile Organic Compounds by 8010									
1,1,1,2-Tetrachloroethane	µg/kg	1.10	U	1.10	U	1.30	U	0.99	U
1,1,1-Trichloroethane	µg/kg	3.30	U	3.20	U	3.90	U	3	U
1,1,2,2-Tetrachloroethane	µg/kg	0.73	U	0.71	U	0.87	U	0.66	U
1,1,2-Trichloroethane	µg/kg	1	U	1	U	1.20	U	0.93	U
1,1-Dichloroethane	µg/kg	0.91	U	0.88	U	1.10	U	0.82	U
1,1-Dichloroethene	µg/kg	1	U	1	U	1.20	U	0.93	U
1,2,3-Trichloropropane	µg/kg	1.10	U	1.10	U	1.30	U	0.99	U
1,2-Dibromoethane (Ethylene di	µg/kg	1.60	U	1.50	U	1.90	U	1.40	U
1,2-Dichlorobenzene	µg/kg	1.70	U	1.60	U	2	U	1.50	U
1,2-Dichloroethane	µg/kg	0.79	U	0.76	U	0.94	U	0.71	U
1,2-Dichloropropane	µg/kg	0.79	U	0.76	U	0.94	U	0.71	U
1,3-Dichlorobenzene	µg/kg	2.20	U	2.10	U	2.60	U	2	U
1,4-Dichlorobenzene	µg/kg	2.20	U	2.10	U	2.60	U	2	U
2-Chloroethyl vinyl ether	µg/kg	1.30	U	1.30	U	1.60	U	1.20	U
2-Chlorotoluene	µg/kg	1.20	U	1.20	U	1.40	U	1.10	U
4-Chlorotoluene	µg/kg	1.30	U	1.30	U	1.60	U	1.20	U
Bromobenzene	µg/kg	0.91	U	0.88	U	1.10	U	0.82	U
Bromochloromethane	µg/kg	1.10	U	1.10	U	1.30	U	0.99	U
Bromodichloromethane	µg/kg	1.20	U	1.20	U	1.40	U	1.10	U
Bromoform	µg/kg	1.10	U	1.10	U	1.30	U	0.99	U
Bromomethane	µg/kg	3.40	U	3.30	U	4.10	U	3.10	U
Carbon tetrachloride	µg/kg	0.79	U	0.76	U	0.94	U	0.71	U
Chlorobenzene	µg/kg	2.20	U	2.10	U	2.60	U	2	U
Chloroethane	µg/kg	3.20	U	3.10	U	3.80	U	2.90	U
Chloroform	µg/kg	1.20	U	1.20	U	1.40	U	1.10	U
Chloromethane	µg/kg	3	U	2.90	U	3.60	U	2.70	U
Cis-1,3-Dichloropropene	µg/kg	1.20	U	1.10	U	1.40	U	1	U
Dibromochloromethane	µg/kg	0.98	U	0.94	U	1.20	U	0.88	U
Dibromomethane	µg/kg	1.10	U	1.10	U	1.30	U	0.99	U
Methylene chloride	µg/kg	3.50	()B	1.80	()B	67	J	8.40	B
Tetrachloroethene	µg/kg	0.98	U	0.94	U	1.20	U	0.88	U
Trans-1,2-Dichloroethene	µg/kg	1.30	U	1.30	U	1.60	U	1.20	U
Trans-1,3-Dichloropropene	µg/kg	1	U	1	U	1.20	U	0.93	U
Trichloroethene	µg/kg	0.98	U	0.94	U	1.20	U	0.88	U
Vinyl chloride	µg/kg	3.20	U	3.10	U	3.80	U	2.90	U

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:		V4-D1		V4-D1		V4-D2		V4-D3			
SAMPLE ID:		V4-D1-0050		V4-D1-0050D		V4-D2-0050		V4-D3-0050			
COLLECTION DATE:		10/28/94		10/28/94		10/28/94		10/28/94			
ASSOCIATED QC:		TB-102894-2,ER-102894-2 FB-092494-P		TB-102894-2,ER-102894-2 FB-092494-P		TB-102894-2,ER-102894-2 FB-092494-P		TB-102894-2,ER-102894-2 FB-092494-P			
CRITERIA UNITS:		RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL		
Aromatic Volatile Organic Compounds by 8020											
1,2-Dichlorobenzene	µg/kg	1.70	U	1.60	U	2	U	0.22	()B		
1,3-Dichlorobenzene	µg/kg	1.30	U	1.30	U	1.60	U	1.20	U		
1,4-Dichlorobenzene	µg/kg	1.70	U	1.60	U	2	U	1.50	U		
Benzene	µg/kg	1.70	U	1.60	U	2	U	1.50	U		
Chlorobenzene	µg/kg	1.10	U	1.10	U	1.30	U	0.99	U		
Ethylbenzene	µg/kg	2.20	U	2.10	U	2.60	U	0.24	()B		
Methyl-tert-butyl ether	µg/kg	13	U	13	U	16	U	12	U		
Styrene	µg/kg	1.80	U	1.80	U	2.20	U	1.60	U		
Toluene	µg/kg	6.50	U	6.20	U	7.70	U	0.24	()B		
m + p-Xylene	µg/kg	3.90	U	3.80	U	4.60	U	-			
m-Xylene	µg/kg	-		-		-		0.03	()B		
o-Xylene	µg/kg	1.50	U	1.40	U	1.70	U	1.30	U		
p-Xylene	µg/kg	-		-		-		0.03	()B		
Semivolatile Organic Compounds by CLP 3/90											
1,2,4-Trichlorobenzene	µg/kg	4000	U	3800	U	2400	U	360	U		
1,2-Dichlorobenzene	µg/kg	4000	U	3800	U	2400	U	360	U		
1,3-Dichlorobenzene	µg/kg	4000	U	3800	U	2400	U	360	U		
1,4-Dichlorobenzene	µg/kg	4000	U	3800	U	2400	U	360	U		
2,2'-Oxybis(1-chloropropane)	µg/kg	4000	U	3800	U	2400	U	360	U		
2,4,5-Trichlorophenol	µg/kg	9700	U	9300	U	5800	U	870	U		
2,4,6-Trichlorophenol	µg/kg	4000	U	3800	U	2400	U	360	U		
2,4-Dichlorophenol	µg/kg	4000	U	3800	U	2400	U	360	U		
2,4-Dimethylphenol	µg/kg	4000	U	3800	U	2400	U	360	U		
2,4-Dinitrophenol	µg/kg	9700	U	9300	U	5800	U	870	U		
2,4-Dinitrotoluene	µg/kg	4000	U	3800	U	2400	U	360	U		
2,6-Dinitrotoluene	µg/kg	4000	U	3800	U	2400	U	360	U		
2-Chloronaphthalene	µg/kg	4000	U	3800	U	2400	U	360	U		
2-Chlorophenol	µg/kg	4000	U	3800	U	2400	U	360	U		
2-Methylnaphthalene	µg/kg	4000	U	3800	U	2400		360	U		
2-Methylphenol	µg/kg	4000	U	3800	U	2400	U	360	U		
2-Nitroaniline	µg/kg	9700	U	9300	U	5800	U	870	U		
2-Nitrophenol	µg/kg	4000	U	3800	U	2400	U	360	U		
3,3'-Dichlorobenzidine	µg/kg	4000	U	3800	U	2400	U	360	U		
3-Nitroaniline	µg/kg	9700	U	9300	U	5800	U	870	U		

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4

Vermont Air National Guard Base

LOCATOR:		V4-D1		V4-D1		V4-D2		V4-D3	
SAMPLE ID:		V4-D1-0050		V4-D1-0050D		V4-D2-0050		V4-D3-0050	
COLLECTION DATE:		10/28/94		10/28/94		10/28/94		10/28/94	
ASSOCIATED QC:		TB-102894-2,ER-102894-2 FB-092494-P		TB-102894-2,ER-102894-2 FB-092494-P		TB-102894-2,ER-102894-2 FB-092494-P		TB-102894-2,ER-102894-2 FB-092494-P	
CRITERIA	UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
4,6-Dinitro-2-methylphenol	µg/kg	9700	U	9300	U	5800	U	870	U
4-Bromophenyl phenyl ether	µg/kg	4000	U	3800	U	2400	U	360	U
4-Chloro-3-methylphenol	µg/kg	4000	U	3800	U	2400	U	360	U
4-Chloroaniline	µg/kg	4000	U	3800	U	2400	U	360	U
4-Chlorophenyl phenyl ether	µg/kg	4000	U	3800	U	2400	U	360	U
4-Methylphenol	µg/kg	4000	U	3800	U	2400	U	360	U
4-Nitroaniline	µg/kg	9700	U	9300	U	5800	U	870	U
4-Nitrophenol	µg/kg	9700	U	9300	U	5800	U	870	U
Acenaphthene	µg/kg	4000	UJ	3800	U	3500	J	360	UJ
Acenaphthylene	µg/kg	4000	U	3800	UJ	2400	U	360	U
Anthracene	µg/kg	4000	U	3800	U	2500		360	U
Benzo(a)anthracene	µg/kg	4000	U	3800	U	5300		46	()
Benzo(a)pyrene	µg/kg	4000	U	3800	U	4500		360	U
Benzo(b)fluoranthene	µg/kg	4000	U	3800	U	7000		82	()
Benzo(g,h,i)perylene	µg/kg	4000	U	3800	U	2800		360	U
Benzo(k)fluoranthene	µg/kg	4000	U	3800	U	7500		81	()
Butyl benzyl phthalate	µg/kg	4000	U	400	()	600	()	360	U
Carbazole	µg/kg	4000	U	3800	U	1900	()	360	U
Chrysene	µg/kg	4000	U	3800	U	5300		46	()
Di-n-butyl phthalate	µg/kg	4000	U	3800	U	2400	U	360	U
Di-n-octyl phthalate	µg/kg	4000	U	430	()	2400	U	360	U
Dibenzo(a,h)anthracene	µg/kg	4000	U	3800	U	880	()	360	U
Dibenzofuran	µg/kg	4000	U	3800	U	1800	()	360	U
Diethyl phthalate	µg/kg	4000	U	3800	U	2400	U	360	U
Dimethyl phthalate	µg/kg	4000	U	3800	U	2400	U	360	U
Fluoranthene	µg/kg	4000	U	3800	U	14000		59	()
Fluorene	µg/kg	4000	U	3800	U	2700		360	U
Hexachlorobenzene	µg/kg	4000	U	3800	U	2400	U	360	U
Hexachlorobutadiene	µg/kg	4000	U	3800	U	2400	U	360	U
Hexachlorocyclopentadiene	µg/kg	4000	U	3800	U	2400	U	360	U
Hexachloroethane	µg/kg	4000	U	3800	U	2400	U	360	U
Indeno(1,2,3-cd)pyrene	µg/kg	4000	U	3800	U	2900		360	U
Isophorone	µg/kg	4000	U	3800	U	2400	U	360	U
N-Nitroso-di-n-propylamine	µg/kg	4000	U	3800	U	2400	U	360	U
N-Nitrosodiphenylamine(1)	µg/kg	4000	U	3800	U	2400	U	360	U
Naphthalene	µg/kg	4000	U	3800	U	630	()	360	U

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:		V4-D1		V4-D1		V4-D2		V4-D3	
SAMPLE ID:		V4-D1-0050		V4-D1-0050D		V4-D2-0050		V4-D3-0050	
COLLECTION DATE:		10/28/94		10/28/94		10/28/94		10/28/94	
ASSOCIATED QC:		TB-102894-2,ER-102894-2 FB-092494-P		TB-102894-2,ER-102894-2 FB-092494-P		TB-102894-2,ER-102894-2 FB-092494-P		TB-102894-2,ER-102894-2 FB-092494-P	
	CRITERIA UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Nitrobenzene	µg/kg	4000	U	3800	U	2400	U	360	U
Pentachlorophenol	µg/kg	9700	U	9300	U	5800	U	870	U
Phenanthrene	µg/kg	4000	U	3800	U	16000		360	U
Phenol	µg/kg	4000	U	3800	U	2400	U	360	U
Pyrene	µg/kg	4000	U	3800	U	11000		60	()
bis(2-Chloroethoxy)methane	µg/kg	4000	U	3800	U	2400	U	360	U
bis(2-Chloroethyl)ether	µg/kg	4000	U	3800	U	2400	U	360	U
bis(2-Ethylhexyl)phthalate	µg/kg	4000	U	3800	U	1100	()	170	()
TAL Metals by CLP 3/90									
Aluminum	mg/kg	4680		6010		8130		3410	
Antimony	mg/kg	9.40	U	9.10	U	11.30	U	8.60	U
Arsenic	mg/kg	0	()	0	()	0	()	0	()
Barium	mg/kg	22.70	()	26.20	()	54	()	9.20	()
Beryllium	mg/kg	0.39	U	0.37	U	0.49	()	0.35	U
Cadmium	mg/kg	1.50	J	1.90	J	3.80	J	1	U
Calcium	mg/kg	1390		3410		8560		706	()
Chromium	mg/kg	48.30		49.70	J	37.70		6.30	
Cobalt	mg/kg	6	()	4.20	()	12.40	()	3.30	()
Copper	mg/kg	22.60		24.20		33.40		6.60	
Iron	mg/kg	10700		12500		16500		7790	
Lead	mg/kg	84.20	J	126	J	113	J	0	()B
Magnesium	mg/kg	2920		4090		3010		1430	
Manganese	mg/kg	157	J	131	J	607	J	184	J
Mercury	mg/kg	0.12	U	0.12	U	0.17	J	0.10	U
Nickel	mg/kg	21		10.60		21.70		8.80	U
Potassium	mg/kg	514	U	497	U	758	()	470	U
Selenium	mg/kg	0.68	U	0.64	U	0.81	U	0.62	U
Silver	mg/kg	1.50	()	1	()	1.40	()	0.70	U
Sodium	mg/kg	119	()B	104	()B	110	()B	80.60	()B
Thallium	mg/kg	0.88	U	0.82	U	1	U	0.79	U
Vanadium	mg/kg	11	()	12.30		16.80		5.10	()
Zinc	mg/kg	153		170		400		58.30	
TPH by 8015 Modified California Luft									
TPH-Extractable as Diesel	mg/kg	240		57		240		21	
TPH-Purgeable as Gasoline	mg/kg	0.03	B	0.05	B	0.05	B	0.05	B

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:		V4-SW3		V4-SW3
SAMPLE ID:		V4-SW3-1094		V4-SW3-1094D
COLLECTION DATE:		10/28/94		10/28/94
ASSOCIATED QC:		TB-102894-2,ER-102894-1 FB-092494-P		TB-102894-2,ER-102894-1 FB-092494-P
CRITERIA	UNITS:	RESULT	QUAL	RESULT	QUAL
Halogenated Volatile Organic Compounds by 8010					
1,1,1,2-Tetrachloroethane	µg/ℓ	0.35	U	0.35	U
1,1,1-Trichloroethane	µg/ℓ	0.35	U	0.35	U
1,1,2,2-Tetrachloroethane	µg/ℓ	0.40	U	0.40	U
1,1,2-Trichloroethane	µg/ℓ	0.25	U	0.25	U
1,1-Dichloroethane	µg/ℓ	0.35	U	0.35	U
1,1-Dichloroethene	µg/ℓ	0.35	U	0.35	U
1,2,3-Trichloropropane	µg/ℓ	0.35	U	0.35	U
1,2-Dibromoethane (Ethylene di	µg/ℓ	0.35	U	0.35	U
1,2-Dichlorobenzene	µg/ℓ	0.30	U	0.30	U
1,2-Dichloroethane	µg/ℓ	0.25	U	0.25	U
1,2-Dichloropropane	µg/ℓ	0.30	U	0.30	U
1,3-Dichlorobenzene	µg/ℓ	0.20	U	0.20	U
1,4-Dichlorobenzene	µg/ℓ	0.20	U	0.20	U
2-Chloroethyl vinyl ether	µg/ℓ	0.40	U	0.40	U
2-Chlorotoluene	µg/ℓ	0.25	U	0.25	U
4-Chlorotoluene	µg/ℓ	0.35	U	0.35	U
Bromobenzene	µg/ℓ	0.85	U	0.85	U
Bromochloromethane	µg/ℓ	0.25	U	0.25	U
Bromodichloromethane	µg/ℓ	0.40	U	0.40	U
Bromoform	µg/ℓ	0.50	U	0.50	U
Bromomethane	µg/ℓ	0.45	U	0.45	U
Carbon tetrachloride	µg/ℓ	0.35	U	0.35	U
Chlorobenzene	µg/ℓ	0.35	U	0.35	U
Chloroethane	µg/ℓ	0.50	U	0.50	U
Chloroform	µg/ℓ	0.35	U	0.35	U
Chloromethane	µg/ℓ	0.50	U	0.50	U
Cis-1,3-Dichloropropene	µg/ℓ	0.30	U	0.30	U
Dibromochloromethane	µg/ℓ	0.30	U	0.30	U
Dibromomethane	µg/ℓ	0.40	U	0.40	U
Methylene chloride	µg/ℓ	1.40	B	1.60	B
Tetrachloroethene	µg/ℓ	0.30	U	0.30	U
Trans-1,2-Dichloroethene	µg/ℓ	0.30	U	0.30	U
Trans-1,3-Dichloropropene	µg/ℓ	0.25	U	0.25	U
Trichloroethene	µg/ℓ	0.30	U	0.30	U
Vinyl chloride	µg/ℓ	0.55	U	0.55	U

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:		V4-SW3		V4-SW3
SAMPLE ID:		V4-SW3-1094		V4-SW3-1094D
COLLECTION DATE:		10/28/94		10/28/94
ASSOCIATED QC:		TB-102894-2,ER-102894-1 FB-092494-P		TB-102894-2,ER-102894-1 FB-092494-P
CRITERIA UNITS:		RESULT	QUAL	RESULT	QUAL
Aromatic Volatile Organic Compounds by 8020					
1,2-Dichlorobenzene	µg/ℓ	0.35	J	0.30	B
1,3-Dichlorobenzene	µg/ℓ	0.34	J	0.53	
1,4-Dichlorobenzene	µg/ℓ	0.15	UJ	0.33	B
Benzene	µg/ℓ	0.35	UJ	0.35	U
Chlorobenzene	µg/ℓ	0.25	UJ	0.25	U
Ethylbenzene	µg/ℓ	0.20	UJ	0.20	U
Methyl-tert-butyl ether	µg/ℓ	5	UJ	5	U
Styrene	µg/ℓ	0.25	UJ	0.25	U
Toluene	µg/ℓ	0.30	B	0.24	()B
m+p-Xylene	µg/ℓ	0.50	UJ	0.50	U
o-Xylene	µg/ℓ	0.20	UJ	0.20	U
Semivolatile Organic Compounds by CLP 3/90					
1,2,4-Trichlorobenzene	µg/ℓ	5	U	5	U
2,2'-Oxybis(1-chloropropane)	µg/ℓ	5	U	5	U
2,4,5-Trichlorophenol	µg/ℓ	20	U	20	U
2,4,6-Trichlorophenol	µg/ℓ	5	U	5	U
2,4-Dichlorophenol	µg/ℓ	5	U	5	U
2,4-Dimethylphenol	µg/ℓ	5	U	5	U
2,4-Dinitrophenol	µg/ℓ	20	U	20	U
2,4-Dinitrotoluene	µg/ℓ	5	U	5	U
2,6-Dinitrotoluene	µg/ℓ	5	U	5	U
2-Chloronaphthalene	µg/ℓ	5	U	5	U
2-Chlorophenol	µg/ℓ	5	U	5	U
2-Methylnaphthalene	µg/ℓ	5	U	5	U
2-Methylphenol	µg/ℓ	5	U	5	U
2-Nitroaniline	µg/ℓ	20	U	20	U
2-Nitrophenol	µg/ℓ	5	U	5	U
3,3'-Dichlorobenzidine	µg/ℓ	5	U	5	U
3-Nitroaniline	µg/ℓ	20	U	20	U
4,6-Dinitro-2-methylphenol	µg/ℓ	20	U	20	U
4-Bromophenyl phenyl ether	µg/ℓ	5	U	5	U
4-Chloro-3-methylphenol	µg/ℓ	5	U	5	U
4-Chloroaniline	µg/ℓ	5	U	5	U
4-Chlorophenyl phenyl ether	µg/ℓ	5	U	5	U

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:		V4-SW3		V4-SW3
SAMPLE ID:		V4-SW3-1094		V4-SW3-1094D
COLLECTION DATE:		10/28/94		10/28/94
ASSOCIATED QC:		TB-102894-2,ER-102894-1 FB-092494-P		TB-102894-2,ER-102894-1 FB-092494-P
	CRITERIA UNITS:	RESULT	QUAL	RESULT	QUAL
4-Methylphenol	µg/ℓ	5	U	5	U
4-Nitroaniline	µg/ℓ	20	U	20	U
4-Nitrophenol	µg/ℓ	20	U	20	U
Acenaphthene	µg/ℓ	5	U	5	U
Acenaphthylene	µg/ℓ	5	U	5	U
Anthracene	µg/ℓ	5	U	5	U
Benzo(a)anthracene	µg/ℓ	5	U	5	U
Benzo(a)pyrene	µg/ℓ	5	U	5	U
Benzo(b)fluoranthene	µg/ℓ	5	U	5	U
Benzo(g,h,i)perylene	µg/ℓ	5	U	5	U
Benzo(k)fluoranthene	µg/ℓ	5	U	5	U
Butyl benzyl phthalate	µg/ℓ	5	U	5	U
Chrysene	µg/ℓ	5	U	5	U
Di-n-butyl phthalate	µg/ℓ	0.60	(l)J	5	U
Di-n-octyl phthalate	µg/ℓ	5	U	5	U
Dibenzo(a,h)anthracene	µg/ℓ	5	U	5	U
Dibenzofuran	µg/ℓ	5	U	5	U
Diethyl phthalate	µg/ℓ	5	U	5	U
Dimethyl phthalate	µg/ℓ	5	U	5	U
Fluoranthene	µg/ℓ	5	U	5	U
Fluorene	µg/ℓ	5	U	5	U
Hexachlorobenzene	µg/ℓ	5	U	5	U
Hexachlorobutadiene	µg/ℓ	5	U	5	U
Hexachlorocyclopentadiene	µg/ℓ	5	U	5	U
Hexachloroethane	µg/ℓ	5	U	5	U
Indeno(1,2,3-cd)pyrene	µg/ℓ	5	U	5	U
Isophorone	µg/ℓ	5	U	5	U
N-Nitroso-di-n-propylamine	µg/ℓ	5	U	5	U
N-Nitrosodiphenylamine(1)	µg/ℓ	5	U	5	U
Naphthalene	µg/ℓ	5	U	5	U
Nitrobenzene	µg/ℓ	5	U	5	U
Pentachlorophenol	µg/ℓ	20	U	20	U
Phenanthrene	µg/ℓ	5	U	5	U
Phenol	µg/ℓ	0.60	(l)J	5	U
Pyrene	µg/ℓ	5	U	5	U
bis(2-Chloroethoxy)methane	µg/ℓ	5	U	5	U

TABLE J-1 LABORATORY ANALYTICAL DATA

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

LOCATOR:		V4-SW3		V4-SW3	
SAMPLE ID:		V4-SW3-1094		V4-SW3-1094D	
COLLECTION DATE:		10/28/94		10/28/94	
ASSOCIATED QC:		TB-102894-2,ER-102894-1 FB-092494-P		TB-102894-2,ER-102894-1 FB-092494-P	
CRITERIA	UNITS:	RESULT	QUAL	RESULT	QUAL
bis(2-Chloroethyl)ether	µg/ℓ	5	U	5	U
bis(2-Ethylhexyl)phthalate	µg/ℓ	7		8	
TAL Metals by CLP 3/90					
Aluminum	µg/ℓ	156	()	144	()
Antimony	µg/ℓ	50.80	U	50.80	U
Arsenic	µg/ℓ	2.40	()J	1.90	()J
Barium	µg/ℓ	18.70	()	18	()
Beryllium	µg/ℓ	0.50	U	0.50	U
Cadmium	µg/ℓ	4.30	U	4.30	U
Calcium	µg/ℓ	18900		18300	
Chromium	µg/ℓ	5.40	U	5.40	U
Cobalt	µg/ℓ	11.80	U	11.80	U
Copper	µg/ℓ	11.50	()	10.40	()
Iron	µg/ℓ	1320		1200	
Lead	µg/ℓ	11		9.70	
Magnesium	µg/ℓ	1530	()B	1480	()
Manganese	µg/ℓ	121		116	
Mercury	µg/ℓ	0.20	U	0.20	U
Nickel	µg/ℓ	17.30	U	17.30	U
Potassium	µg/ℓ	6650		6420	
Selenium	µg/ℓ	2.80	U	2.80	U
Silver	µg/ℓ	3.20	U	3.20	U
Sodium	µg/ℓ	15000		14600	
Thallium	µg/ℓ	36	U	36	U
Vanadium	µg/ℓ	5.40	U	5.40	U
Zinc	µg/ℓ	2470	J	2350	J
TPH by 8015 Modified California Luft					
TPH-Extractable as Diesel	mg/ℓ	12		16	J
TPH-Purgeable as Gasoline	mg/ℓ	0.43	()	0.50	

Chain of Custody Record

The Earth Technology Corporation

Lab job no.:
Date 9/7/94
Page 1 of 1

Laboratory Compuchem Labs Inc
Address 3308 Chapel Hill/Nelson Hwy Research Triangle Park N.C. 27709
Client Earth Tech
Address 683 Emory Valley Rd Oak Ridge TN 37830
Project Name / Number VTANG 931802-08
Contract / Purchase Order / Quote N/A

Method of Shipment Federal Express priority Overnight
Airbill No. 239427708 2
Shipment No. # 1
Cooler No. # 1
Project Manager G. Maynor
Telephone No. 802-864-3318
Fax No. As above
Samplers: (Signature) Greg Maynor

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation Temp.	Preservation Chemical	Filtered?	No. of Containers	VOCs 8010/8020	Styrene, Toluene, Xylenes, Ethyl Benzene 8020	TCE, PCE 8010	VOCs 8010/8020	Remarks
V4-B6-1421	Site 4	9/7/94	1355	Soil	6-inch stainless steel liner	4°C	N/A		2	1	1			2
V4-B6-2426	"	9/7/94	1408	Soil	"	"	"		2	1	1			2
V4-B3-1416	"	"	1512	"	"	"	"		2	1	1			2
V4-B3-1921	"	"	1519	"	"	"	"		2	1	1			2
V4-B2-1416	"	"	1642	"	"	"	"		2	1	1			2
V4-B2-1921	"	"	1655	"	"	"	"		2	1	1			2
TB-090794-1	VTANG Site 4	9/7/94	1200	Lab wtr	40 ml clear vial	"	HCl		2			2		2
														14 Total

9/7/94

Relinquished by:	Date	Received by:	Date
Signature Greg Maynor	9/7/94	Signature	
Printed Greg Maynor	Time	Printed	Time
Company Earth Tech	1900	Company	
Reason Fed Ex to Lab			

Relinquished by:	Date	Received by:	Date
Signature	9/7/94	Signature	
Printed	Time	Printed	Time
Company		Company	
Reason			

Relinquished by:	Date	Received by:	Date
Signature		Signature	
Printed	Time	Printed	Time
Company		Company	
Reason			

Comments:
AIRBILL NO. 239427708 2

F-1000
3/25/92

DISTRIBUTION: White to Laboratory, Canary to Earth Technology Project File, Pink to Courier, Golden to Field File

The Earth Technology Corporation

Chain of Custody Record

Lab job no.: _____
Date 9/8/94
Page 1 of 1

Laboratory Quanterra Lab Inc
Address 5308 Inspiration Dr Suite 110 Durham, Research Triangle Park, NC 27709
Client Earth Tech
Address 683 Emory Valley Rd Oak Ridge TN 37830
Project Name / Number VTANG 931802
Contract / Purchase Order / Quote _____

Method of Shipment Fed Express
Airbill No. 218 52 81475
Shipment No. 1
Cooler No. 1
Project Manager Greg Maynor
Telephone No. 802 864 3318
Fax No. 802 864 3318
Samplers: (Signature) Peter J. Lay

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation Temp.	Preservation Chemical	Filtered?	No. of Containers	VOC 8010/8020	SVOC CLP 3/90 mod	TAL metals	TPH mod 8015	Remarks
V4-B4-0911	Site 4	9/8/94	0945	Soil	6" Stainless Sleeve	4°C	none		2	✓	✓	✓	✓	
V4-B4-1719	"	"	0958	Soil	" " "	4°C	"		2	✓	✓	✓	✓	
V4-B1-0911	Site 4	9/8/94	1157	Soil	6" Stainless Steel Sleeve	4°C	none		2	✓	✓	✓	✓	
V4-B1-1719	"	"	1352	Soil	" " "	4°C	"		2	✓	✓	✓	✓	
TB-090894-1	Site 4	9/8/94	0730	Water	3 - 40 mL VOA	4°C	HCL		2	✓				
FB-090894-D	Facility	9/8/94	1715	water	Sample bottle	4°C	HCL preserved		10	✓	✓	✓	✓	(Add-on) Include 2-40mL VOAs 2-1L Amber S.V.OAs
FB-090894-D	Facility	9/8/94	1800	water	" "	4°C	HCL preserved		10	✓	✓	✓	✓	(DI) 2-1L Amber S.V.OAs 1-1L C Please Collect metals
ER-090894-1	Site 4	9/8/94	1830	water	" "	4°C	" "		10	✓	✓	✓	✓	3-40mL VOAs for TPH 2-1ter amber for TPH
														*Please ADD HCL to All waters for analysis for TPH in 1L C bottles
					TOTAL # of containers				(40)					

Relinquished by:	Date	Received by:	Date
Signature	9/8/94	Signature	
Printed		Printed	
Company	Earth Tech	Company	Fed Express
Reason	Shipment		
Time	1930	**Time**	

Relinquished by:	Date	Received by:	Date
Signature		Signature	
Printed		Printed	
Company	FedEx 9/8/94	Company	
Reason			
Time		**Time**	

Relinquished by:	Date	Received by:	Date
Signature		Signature	
Printed		Printed	
Company		Company	
Reason			
Time		**Time**	

Comments: Airbill No. 218528147 5

DISTRIBUTION: White to Laboratory, Canary to Earth Technology Project File, Pink to Courier, Golden to Field File

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3/25/92

COC # V-091294-1

Chain of Custody Record

Lab job no.:

Date 9/12/94

Page 1 of 1

The Earth Technology Corporation

Laboratory Compuchem Lab
Address 3308 Chapel Hill/Nelson Hwy Research
Triangle Park, NC 27709
Client Earth Tech
Address 6083 Emory Valley Rd
Oak Ridge TN 37830
Project Name / Number 931802-08/10
Contract / Purchase Order / Quote

Method of Shipment FedEX
Airbill No. 218528152 3
Shipment No. # 1 9/12/94
Cooler No. # 2
Project Manager Greg Maynor
Telephone No. 615-483-9404
Fax No. 615-481-3834
Samplers: (Signature) Greg Maynor

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation Temp.	Preservation Chemical	Total No. of Containers	Analysis Required	Remarks
FB-091294-P	VTANG	9/12/94	1530	wtr	1 Liter Amb. gl.	4°C	NONE	2	2	Extra volume sent for MS/MSD pair
FB-091294-D	VTANG	9/12/94	1335	wtr	1 Liter Amb. gl.	4°C	NONE	2	2	
V4-BG-0911	site 4 SB-BG	9/10/94	0854	soil	6-inch stainless steel sleeves		"	3	1 2	
V4-BG-1416	"	9/10/94	0935	"	"		"	3	1 2	* volumes for V4-BG-1416-D
V4-BG-1416-D	"	9/10/94	0935	"	"		"	*	* *	* volume contained in sleeves for V4-BG-1416.
V4-BG-1921	site 4 SB-BG	9/10/94	0950	"	"		"	2	1 1	
TB-091094-1	LAB	9/10/94	0700	wtr	40 ml. cl. gl.	4°C	HCL	2	2	
		Gw 9/12/94					Total	14		Gw 9/12/94

Gw 9/12/94

Relinquished by:	Date	Received by:	Date
Signature Greg Maynor	9/12/94	Signature	
Printed Greg Maynor	Time 1830	Printed	Time
Company Earth Tech		Company	
Reason Lab			

Relinquished by:	Date	Received by:	Date
Signature		Signature	
Printed	Time	Printed	Time
Company		Company	
Reason			

Relinquished by:	Date	Received by:	Date
Signature Gw		Signature	
Printed	Time	Printed	Time
Company		Company	
Reason			

Comments: Extra volumes on V4-BG-0911 for MS/MSD and on V4-BG-1416 for Duplicate on V4-BG-1416-D.
* sample sleeve ends where marked
* within holding times 9/10/93 samples held for Monday shipment

DISTRIBUTION: to Lab, Canary - Earth Technology Project File, Pink to Courier, Golden to Field File

F-1000
3/25/92

COC #2 COC # V091294-2

Chain of Custody Record

The Earth Technology Corporation

Lab job no.: ____

Date 9/12/94

Page 1 of 3

Laboratory Compuchem Lab Inc.
Address 3308 Chapel Hill/Nelson Hwy
Research Triangle Park, NC
27709
Client EARTH TECH
Address 163 Emory Valley Rd.
Oak Ridge, TN 37830
Project Name / Number VTANG 931802-0810
Contract / Purchase Order / Quote ____

Method of Shipment Federal Express
Airbill No. ____
Shipment No. ____
Cooler No. ____
Project Manager Greg Mayhan
Telephone No. 615 483 9404
Fax. No. 615 481 3834
Samplers: (Signature) ____

1 sleeve 9/12/94
1 sleeve 9/12/94

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation Temp.	Preservation Chemical	Filtered (Y/N)	No. of Containers	40CFR680/8270	40CFR680/8270 SIM	40CFR680/8270 TCL+TICs	TPH-DRO/8015	40CFR680/8015	Remarks
VI-B1-0305	Site1	9-11-94	1208	Soil	6" Stainless Steel	4°C	none	N/A	2	1	1			1	9/12/94
VI-B1-0810	Site1	9-11-94	1219	Soil	6" Stainless	4°C	none		3	1	2			1	9/12/94
VI-B1-0810D	Site1	9-11-94	1219	Soil	6" Stainless	4°C	none		1		1			1	9/12/94 Sample contained IN above sample *
VI-B2-0305	Site1	9/11/94	1313	Soil	6" Stainless	4°C	none		2	1	1			1	9/12/94
VI-B2-0810	Site1	9/11/94	1328	Soil	6" Stainless	4°C	none		2	1	1			1	9/12/94
VI-B3-0305	Site1	9/11/94	1355	Soil	6" Stainless	4°C	none		2	1	1			1	9/12/94
* VI-B3-0810	Site1	9/11/94	1406	Soil	6" Stainless	4°C	none		3	1	2			1	9/12/94 extra Volume for MS/MSD *
VI-B4-0305	Site1	9/11/94	1518	Soil	6" Stainless	4°C	none		2	1	1			1	9/12/94
VI-B4-0810	Site1	9/11/94	1528	Soil	6" Stainless	4°C	none		2	1	1			1	9/12/94
VI-B5-0305	Site1	9/11/94	1610	Soil	6" Stainless	4°C	None		2	1	1			1	9/12/94
VI-B5-0810	Site1	9/11/94	1630	Soil	6" Stainless	4°C	none		2	1	1			1	9/12/94
VI-B6-0809	Site1	9/11/94	1702	Soil	6" Stainless	4°C	none		2	1	1			1	9/12/94

Relinquished by:	Date	Received by:	Date	Relinquished by:	Date	Received by:	Date
Signature 9/12/94		Signature		Signature		Signature 9/12/94	
Printed	Time	Printed	Time	Printed 9/12/94	Time	Printed	Time
Company		Company		Company		Company	
Reason				Reason			

Comments: See page 2 of 2 for Remaining Samples. 9/12/94

Relinquished by:	Date	Received by:	Date
Signature 9/12/94		Signature	
Printed	Time	Printed	Time
Company		Company	
Reason			

DISTRIBUTION: White to Laboratory, Canary to Earth Technology Project File, Pink to Courier, Golden to Field File

F-1000
3/25/92

COC # V091294-2

Chain of Custody Record

The Earth Technology Corporation

Lab job no.: _____ Date 9/12/94 Page 2 of 3

Laboratory Compuchem Lab Inc. | Method of Shipment Federal Express
Address 3308 Chapel Hill/Nelson Hwy Research Triangle Park, NC 27709 | Airbill No. 218528152 23
Client Earth Tech | Shipment No. # 1 9/12/94
Address 1683 Cmory Valley Rd. Oak Ridge, TN 37830 | Cooler No. # 1
Project Name / Number VTANG 931802.10 | Project Manager Greg Maynor
Contract / Purchase Order / Quote _____ | Telephone No. 615 483 9404
Samplers: (Signature) [signature] | Fax. No. 615 481 3834

1 sleeve Gm 9/12/94
1 sleeve Gm 9/12/94

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation Temp.	Preservation Chemical	Total #	No. of Containers	VOCs 8010/8020	SVOCs 8270	PAHs 8310	Pesticides 8080	Herbicides 8150	Metals	Analysis Required	Remarks
VI-B6-0305	Site 1	9/11/94	1655	Soil	6" Stainless	4°C	none	N/A	3	1	2					Gm 9/12/94	
VI-B6-0305D	Site 1	9/11/94	1655	Soil	6" Stainless	4°C	none		*							Gm 9/12/94	*Sample contained IN ABOVE Sample
VI-B7-0305	Site 1	9/12/94	0730	Soil	6" Stainless	4°C	none		2	1	1					Gm 9/12/94	
VI-B7-0810	Site 1	9/12/94	0813	Soil	6" Stainless	4°C	none		2	1	1					Gm 9/12/94	
VI-B8-0305	Site 1	9/12/94	0815	Soil	6" Stainless	4°C	none		2	1	1					Gm 9/12/94	
VI-B8-0810	Site 1	9/12/94	0859	Soil	6" Stainless	4°C	none		2	1	1					Gm 9/12/94	
														1	1		
														1	1		

9/12/94
10
11
12
13

Relinquished by:	Date	Received by:	Date
Signature Gm		Signature	
Printed	Time	Printed	Time
Company		Company	
Reason			

Received by: Signature 9/12/94 15 Printed Company

Relinquished by:	Date	Received by:	Date
Signature		Signature	
Printed	Time	Printed	Time
Company		Company	
Reason			

Relinquished by:	Date	Received by:	Date
Signature 9/12/94		Signature	
Printed	Time	Printed	Time
Company		Company	
Reason			

Comments: See page 3 of 3

COC # VT091294-2

Chain of Custody Record

The Earth Technology Corporation

Lab job no.:
Date 9/12/94
Page 3 of 3

Laboratory: Compuchem Lab
Address: 3308 Chapel Hill/Nelson Hwy, Research Triangle Pk, NC 27709
Method of Shipment: Fed Ex
Airbill No.
Shipment No.
Cooler No.
Project Manager
Telephone No.
Fax. No.
Samplers: (Signature)

Client: Earth Tech
Address: 1087 Emory Valley Rd, Oak Ridge, TN 37830
Project Name / Number: VTANG 931802-08/10
Contract / Purchase Order / Quote

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation: Temp.	Preservation: Chemical	Total No. of Containers	Analysis Required	Remarks
~~FB-091294-P~~	~~VTANG~~	~~9/12/94~~	1330	~~wtr~~	1 Liter Amb gl.	4°C	~~None~~	2		Potable wtr - source
~~FB-091294-D~~	~~VTANG~~	~~9/12/94~~	~~1335~~	~~wtr~~	1 Liter Amb gl.	4°C	~~None~~	2		Deionized wtr Source Lot #G189
ER-091294-1	Site 4 QA/QC	9/12/94	1545	wtr	1 Liter Amb gl.	4°C	see analysis required	12	2 3 2 2 2 1	SI Site 4 QA/QC ER on decontaminated sleeve
ER-091294-2	Site 1 QA/QC	9/12/94	1555	wtr	1 Liter Amb gl.	4°C	see analysis required	12	2 3 2 2 2 1	RI Site 1 QA/QC ER on decontaminated sleeve
TB-091194-1	Site 1 VTANG	9/11/94	0700	Lab wtr	40 ml. clr. gl.	4°C	HCl	2	2	TB in cooler for Site 1 (VI) samples 9/11 & 9/12
							Total	65		Total containers

PL talked w/ Lab contaminant analysis No Pest/PCB on site 4, 1

Relinquished by: Signature: Greg Maynor; Printed: Greg Maynor; Company: Earth Tech; Reason: Lab
Date: 9/12/94; Time: 1830

Received by: Signature; Printed; Company

Relinquished by: Signature; Printed; Company; Reason

Received by: Signature; Printed; Company

Relinquished by: Signature; Printed; Company; Reason

Received by: Signature; Printed; Company

Comments: Note 9/11/94 samples were held over for 9/12/94 (Monday) shipment. 9/11/94 & 9/12/94 Samples were collected & stored in same cooler w/ (1) TRIP Blank - TB-091194-1. Don't miss Holding times. Sample sleeves are marked [illegible]

DISTRIBUTION: White to Laboratory, Canary to Earth Technology Project File, Pink to Courier, Golden to Field File

F-1000
3/25/92

COC # V-091394-1

Chain of Custody Record

The Earth Technology Corporation

Lab job no.: ____

Date 09/13/94

Page 1 of 2

Laboratory Compuchem / Lab — Method of Shipment Fed Ex

Address 3308 Chapel Hill/Nelson Hwy, Research Triangle Park, NC 27709 — Airbill No. 218528148[illegible]

Shipment No. 1 - 9/13/94

Cooler No. 1 - 9/13/94

Client Earth Tech — Project Manager G. Maynor

Address 683 Emory Valley Rd Oak Ridge, TN 37830 — Telephone No. 615-483-9404

Project Name / Number VTANG 931802-08 — Fax No. 615-481-3830

Contract / Purchase Order / Quote ____ — Samplers: (Signature) Greg Maynor & Mark Ickes

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation: Temp.	Preservation: Chemical	Matrix	Analysis Required	Remarks
TB-091394-1	VTANG	9/13/94	0700	LAB WTR	40 ml. cl. gl.	4°C	HCL	N/A	2	
V3-B5-0305	Site 3 SB-5	9/13/94	0807	SOIL	6 inch steel sleeve	4°C	NONE		2	
V3-B5-1315	"	"	0833	"	"	"	"		2	
V3-B2-0305	Site 3 SB-2	"	0920	"	"	"	"		2	
V3-B2-1113	"	"	0939	"	"	"	"		2	
V3-B3-0305	Site 3 SB-3	"	1315	"	"	"	"		2	
V3-B3-1315	"	"	1337	"	"	"	"		2	
V3-B1-0305	Site 3 SB-1	"	1032	"	"	"	"		2	
V3-B1-1113	"	"	1121	"	"	"	"		3	
*V3-B1-1113-D	"	"	1121	"	"	"	"		*	* volume in sleeves (Dup.) For V3-B1-1113
V3-B4-0305	Site 3 SB-4	"	1459	"	"	"	"		2	
V3-B4-0810	"	"	1507	"	"	"	"		3	Extra volume for MS/MSD (QA/QC) MS/MSD

Relinquished by:	Date	Received by:	Date
Signature		Signature	
Printed	Time	Printed	Time
Company		Company	
Reason			

Relinquished by:	Date	Received by:	Date
Signature		Signature	
Printed	Time	Printed	Time
Company		Company	
Reason			

Relinquished by:	Date	Received by:	Date
Signature		Signature	
Printed	Time	Printed	Time
Company		Company	
Reason			

Relinquished by:	Date	Received by:	Date
Signature		Signature	
Printed	Time	Printed	Time
Company		Company	
Reason			

Comments: * Sample marked ends of sleeves where indicated.

⇒ Note most soils are dirty w/ JP8 fuel. watch VOCs 8010/8020

DISTRIBUTION: White to Laboratory, Canary to Earth Technology Project File, Pink to Courier, Golden to Field File

F-1000 3/25/92

The Earth Technology Corporation

Chain of Custody Record

Lab job no.: _____
Date 9/13/94
Page 2 of 2

Laboratory Compuchem Lab
Address 3308 Chapel Hill/Nelson Highway, Research Triangle Park, NC 27709
Client Earth Tech,
Address 6683 Emory Valley Rd, Oak Ridge, TN 37830
Project Name / Number VTANG 93802-08
Contract / Purchase Order / Quote _____

Method of Shipment Fed Ex
Airbill No. 218528148 6
Shipment No. 1-9/13/94
Cooler No. 1-9/13/94
Project Manager G. Maynor
Telephone No. 615-483-9484
Fax No. 615-481-3834
Samplers: (Signature) Greg Maynor 9/13/94

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation Temp.	Preservation Chemical	Filtered	No. of Containers	Analysis Required	Remarks
V3-B4-1315	site 3 SB-4	9/13/94	1544	soil	6" steel sleeve	4°C	NONE	N/A	3 1 2		* volume in sleeves for V3-B4-1315 (Dup)
* V3-B4-1315-D	site 3 SB-4	9/13/94	1544	"	"	"	"		* * *		
ER-091394-1	VTANG	9/13/94	1830	DI WTR	see analysis required	"	See Analysis		10	2 3 2 2 1 2	Site 3 RINSATE Lot # G189
ER-091394-2	VTANG	9/13/94	1900	DI WTR	"	"	"		12	2 3 2 2 1 2	Site 1 RINSATE off stand Lot # G189
		Gm 9/13/94		COC		Total			49		Gm 9/13/94

Gm 9/12/94

Relinquished by:	Date	Received by:	Date
Signature Greg Maynor	9/13/94	Signature	
Printed Greg Maynor	Time 2000	Printed	Time
Company Earth Tech		Company	
Reason Lab			

Relinquished by:	Date	Received by:	Date
Signature		Signature	
Printed	9/13/94	Printed	Time
Company	Time	Company 9/13/94	
Reason			

Relinquished by:	Date	Received by:	Date
Signature Gm		Signature Gm	
Printed		Printed	Time
Company	Time	Company	
Reason			

Comments: * Sample marked ends of sleeves where indicated.
→ Note: Most soils are dirty w/ JP-8 Fuel watch VOCs 8010/8020

DISTRIBUTION: White to Laboratory, Canary to Earth Technology Project File, Pink to Courier, Golden to Field File

F-1000
3/25/92

COC # V-091494-1

Chain of Custody Record

The Earth Technology Corporation

Lab job no.:

Date 9-14-94

Page 1 of 1

Laboratory Compuchem Labs INC
Address 3308 Chapel Hill/Nelson Hwy - Research Triangle Park NC 27709
Client Earth Tech
Address 613 Emory Valley Rd Oak Ridge TN 37830
Project Name / Number VTANG 931802-05/10
Contract / Purchase Order / Quote

Method of Shipment Federal Express
Airbill No. 2185281512
Shipment No. 1
Cooler No. 1
Project Manager Greg Maynor
Telephone No. 6154839404
Fax. No. 6154813834
Samplers: (Signature) Patrick H Lay

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation: Temp.	Preservation: Chemical	Filtered	No. of Containers	VOCs 8010/8020	SVOCs 8270 TCL + TICs	VOCs 8010/8020 + TCL Volatile TICs	Total Metals 6010/7000 Series + Hg	Total Cyanide 9010	Analysis Required	Remarks
V4-BS-0406	Site 4	9/14/94	0932	Soil	6" Stainless	4°C	none		2	1	1					
V4-BS-0911	Site 4	9/14/94	0943	Soil	6" Stainless	4°C	none		2	1	1					
V4-BS-1719	Site 4	9/14/94	0953	Soil	6" Stainless	4°C	none		2	1	1					
TB-091494-1	Site 4	9/14/94	0700	water	Voa vial 40mL	4°C	HCL		2			2				

Relinquished by: Signature Patrick H Lay; Printed PATRICK H LAY; Company Earth Tech; Reason Shipment. Date 9/14/94 Time 1930

Received by: Signature ____ Printed ____ Company ____ Date ____ Time ____

Relinquished by: Signature ____ Printed ____ Company ____ Reason ____ Date ____ Time ____

Received by: Signature ____ Printed ____ Company ____ Date ____ Time ____

Relinquished by: Signature ____ Printed ____ Company ____ Reason ____ Date 9/14/94 Time ____

Received by: Signature ____ Printed ____ Company ____ Date 9/14/94 Time ____

Comments: NOTE: These are the last samples to be sent for this 1st sampling event. Sampling will resume on 09-20-94 & samples will be sent for delivery on 09-21-94 RAL 9-14-94

DISTRIBUTION: White to Laboratory, Canary to Earth Technology Project File, Pink to Courier, Golden to Field File

F-1000
3/25/92

CoC # V-092094-1

Chain of Custody Record

The Earth Technology Corporation

Lab Job no.: _____
Date 9-20-94
Page 1 of 1

Laboratory Compuchem Lab, Inc
Address 3308 Chapel Hill/Nelson Hwy Research Triangle Park NC 27709
Client Earth Tech
Address 1683 Emory Valley Rd Oak Ridge TN 37830
Project Name / Number VTANG 931802-08
Contract / Purchase Order / Quote _____

Method of Shipment Fed Express
Airbill No. 218528150
Shipment No. 1
Cooler No. 1
Project Manager Greg Maynor
Telephone No. 615 483 9404
Fax. No. 615 481 3834
Samplers: (Signature) Patrick Hlay

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation: Temp.	Preservation: Chemical	Planned	No. of Containers	VOCs 40ml/Prsv Glass Vial	Soil/Sediment Sieve Stainless Steel	VOCs 40ml/Prsv Glass Vial	Soil/Sediment Sieve Stainless Steel	TPH-418.1 250ml/Prsv Glass	Herbicides 250ml/Prsv Glass	TPH-8015 250ml/Prsv Glass	Total Metals 1 Liter/HNO3 Prsv Plastic	Total Metals 1 Liter/HNO3 Prsv Plastic	Soil/Sediment Sieve Stainless Steel	Total Metals 1 Liter/HNO3 Prsv Plastic	Remarks
V3-BG1-0305	Site 3	9/20/94	0730	Soil	6" Stainless	4°C	None		2	1									1		
V3-BG1-1820	Site 3	"	0810	"	"	4°C			3	1	1						1				Extra Volume for MS/MSD
V3-BG1-3840	Site 3	"	0958	"	"	4°C			3	1	1						1				
V3-BG1-3840D	Site 3	"	0958	"	"	4°C			*	*	*						*				Sample contained in V3-BG1-3840 donut
TB-092094-1	Site 3	9/20	0700	Water					2			2									
~~ER-092094-1~~	Site 3	9/20	1830	Water			HNO3		10			2	3	3							
ER-092094-1	Site 3	9/20	1830	Water		4°C			10			2	2	3	2	1					
				TOTAL					20												

Analysis Required

Relinquished by:	Date	Received by:	Date
Signature Patrick Hlay	9/21/94	Signature	
Printed PATRICK HLAY	Time 1900 2000	Printed	Time
Company Fed Express		Company	
Reason Shipment			

Relinquished by:	Date	Received by:	Date
Signature		Signature	
Printed	Time	Printed	Time
Company		Company	
Reason			

Relinquished by:	Date	Received by:	Date
Signature		Signature	
Printed	Time	Printed	Time
Company		Company	
Reason:			

Comments: Extra volume sent for MS/MSD IN sample V3-BG1-1820; Also Duplicate sample V3-BG1-3840D sent w/ Host sample

DISTRIBUTION: White to Laboratory, Canary to Earth Technology Project File, Pink to Courier, Golden to Field File

F-1000
3/25/92

COC # V-092194-1

Chain of Custody Record

The Earth Technology Corporation

Lab job no.: _____
Date 9/21/94
Page 1 of 1

Laboratory Compu Chem Lab INC
Address 3308 Chapel Hill/Nelson Hwy
Research Triangle Park, NC 27709
Client Earth Tech
Address 683 Emory Valley Rd
Oak Ridge TN 37830
Project Name / Number YTANG 931802
Contract / Purchase Order / Quoté _____

Method of Shipment FED express
Airbill No. 218528149O
Shipment No. _____
Cooler No. 1
Project Manager Greg Mayhor
Telephone No. 615 483 9464
Fax. No. 615 481 3834
Samplers: (Signature) Patrick Hay

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation: Temp.	Preservation: Chemical	Filtered	No. of Containers	VOCs 8010/8020	VOCs 8010/8020 + TICs	GVOCs 8015	TPH 8015	TPH STARS	PCB/Pesticides	VOCs 8260	TPH 8015	TAL Metals	TCLP Metals	Remarks
V1-B9-0305	S.tel	9/20	1600	Soil	6" Stainless	4°C	none		2	1	1									
V1-B9-0810	"	"	1615	"	" "	"	"		2	1	1									
V1-B10-0305	S.tel	9/21	0856	Soil	6" Stainless	4°C	none		3	1		1	1							extra volume for MS/MS
V1-B10-0709	S.tel	9/21	0908	Soil	" "	"	"		2	1	1									
V1-B11-0305	S.tel	9/21	1125	Soil	" "	"	"		2	1	1									
V1-B11-1517	S.tel	9/21	1148	Soil	" "	"	"		4	1		1		1	1					
V1-B11-1517D	S.tel	"	1148	Soil	" "	"	"		*			*		*	*					Sample contained in V1-B11-1517 above
V1-B12-0305	S.tel	9/21	1455	Soil	" "	"	"		2	1	1									
V1-B12-~~0305~~ 1517MS	S.tel	9/21	1525	Soil	" "	"	"		2	1	1									X1517 Notified Lab 9/22
TB-092094-2	S.tel	9/20	1530	water	See Anal:	4°C	HCl		2							2				
FB-092194-1	S.tel	9/21	0850	water	" "	4°C	HCl		6							2	3	1		
ER-092194-1	S.tel	9/21	1900	water	" "	4°C	HCl		6							2	3	1		

Relinquished by:	Date	Received by:	Date
Signature Patrick Hay	9/21/94	Signature	
Printed PATRICK HAY	Time 2000	Printed	Time
Company Earth Tech		Company	
Reason Shipment			

Relinquished by:	Date	Received by:	Date
Signature		Signature	
Printed	Time	Printed	Time
Company		Company	
Reason			

Relinquished by:	Date	Received by:	Date
Signature PAL		Signature PAL	
Printed	Time	Printed	Time
Company		Company	
Reason			

Comments: Extra Volume Sent w/ V1-B12 0305 for MS/MSD* Duplicate sample for V1-B11-1517D to be pulled from Host Sample V1-B11-1517 as indicated TOTAL # of containers = 33

DISTRIBUTION: White to Laboratory, Canary to Earth Technology Project File, Pink to Courier, Golden to Field File

F-1000
3/25/93

COC # V-092194-2

Chain of Custody Record

The Earth Technology Corporation

Lab job no.:

Date 9/21/94

Page 1 of 1

Laboratory Compuchem Lab Inc
Address 3308 Chapel Hill/Nelson Hwy Research Triangle Park NC 27709
Client Earth Tech
Address 683 Emory Valley Rd. Oak Ridge TN 37830
Project Name / Number 631802-10/VTANG
Contract / Purchase Order / Quote

Method of Shipment Fed Express
Airbill No. 218528149 0
Shipment No.
Cooler No. 2
Project Manager Greg Mayhor
Telephone No. 615 483 9404
Fax No. 615 483 481 3834
Samplers: (Signature) Patrick H Lay

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation Temp.	Preservation Chemical	Filtered	No. of Containers	Analysis Required						Remarks
FB-092194-1	S.tel	9/21/94	0850	water	500 anal	4°C	none		12	2	2	2	TCL			
ER-092194-1	S.tel	9/21/94	1900	water	" "	4°C	none		12	2	2	2	TCL			
					TOTAL				12							

Relinquished by:	Date	Received by:	Date
Signature Patrick H Lay	9/21/94	Signature	
Printed PATRICK H LAY	Time 2000	Printed	Time
Company Earth Tech		Company	
Reason Shipment			

Relinquished by:	Date	Received by:	Date
Signature		Signature	
Printed	Time	Printed	Time
Company		Company	
Reason			

Relinquished by:	Date	Received by:	Date
Signature		Signature	
Printed	Time	Printed	Time
Company		Company	
Reason			

Comments:

DISTRIBUTION: White to Laboratory, Canary to Earth Technology Project File, Pink to Courier, Golden to Field File

F-1000
3/25/92

Col #V-092294-1

Chain of Custody Record

The Earth Technology Corporation

Lab job no.:

Date 9/22/94

Page 1 of 1

Laboratory Compuchem Labs Inc — Method of Shipment Fed Express

Address 3308 Chapel Hill/Nelson Hwy Research Triangle Park NC 27709 — Airbill No. 218544 6093

Shipment No. 1

Cooler No. 1

Client Earth Tech — Project Manager Greg Magnor

Address 1083 Emory Valley Rd Oak Ridge TN 37830 — Telephone No. 615 483 9404

Project Name / Number VTANG/931802-10 — Fax. No. 615 481 3834

Contract / Purchase Order / Quote — Samplers: (Signature) Edward Hall

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation Temp.	Preservation Chemical	Filtered?	No. of Containers	VOCs (SW8010/8020 or 624/8240)	SVOCs (SW8270 or 625/8270)	TPH (SW8015 Mod.)	Analysis Required	Remarks
V1-B13-0305	Site1 3-5'	9-22-94	0908	Soil	6" Stainless	4°C	none		2	1	1			
V1-B13-0810	Site1 8-10'	9/22/94	1618	Soil	6" Stainless	4°C	none		2	1	1			
V1-B14-0305	Site1 0305	9/22/94	1546	Soil	6" Stainless	4°C	none		2	1	1			
V1-B14-0709	Site1 7-9	9/22/94	1556	Soil	6" Stainless	4°C	none		2	1	1			
TB-092294-1	Site1	9/22/94	0700	water	40 mL VOA	4°C	HCl		2		2			
					TOTAL				10					

Relinquished by: Signature [signature] — Printed T. McMullen — Company Earth Tech — Reason Shipment — Date 9/22/94 — Time 1230

Received by: Signature — Printed — Company — Date — Time

Relinquished by: Signature — Printed — Company — Reason — Date — Time

Received by: Signature — Printed — Company — Date — Time

Relinquished by: Signature — Printed — Company — Reason — Date — Time

Received by: Signature — Printed — Company — Date — Time

Comments:

DISTRIBUTION: White to Laboratory, Canary to Earth Technology Project File, Pink to Courier, Golden to Field File

F-1000
3/25/92

COC # V-092694-1

Chain of Custody Record

The Earth Technology Corporation

Lab job no.:

Date 9/26/92

Page 1 of 1

Laboratory Compuchem Labs Inc
Address 3308 Chapel Hill/Nelson Hwy/Research Triangle Park NC 27709
Client Earth Tech
Address 683 Emory Valley Rd. Oak Ridge TN
Project Name / Number VTAL06-931802-0810
Contract / Purchase Order / Quote

Method of Shipment Federal Express
Airbill No. 218544597 5
Shipment No.
Cooler No. 1
Project Manager Greg Hanor
Telephone No. 615-483-9403
Fax No. 615-483-3834
Samplers: (Signature) T McMullen / Patrick Hay

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation Temp.	Preservation Chemical	Filtered	No. of Containers	VOC 8010/8020	BNA 8270	Pest/PCB 8080	Metals 6010/7000	VOC 8240	BNA 8270	Pest/PCB 8080	TPH Gasoline 8015	TPH Diesel 8015	PCB Screen 8080	TAL Metals 6010/7000	Remarks
VI-B15-0204	Site1 2-4	9/25/92	0858	Soil	Sea anal.	4°C	Sea anal		2	1			1								
VI-B15-0106	Site1 1-6	9/25/92	0920	Soil	"	"	"		2	1			1								
VI-B16-0305	Site1 3-5	9/24/92	1108	Soil	"	4°C	"		3	1	1	1									
VI-B16-0305D	Site1 3-5	9/24	1108	Soil	"	4°C	"		*	*	*	*									Sample contained in VI-B16-0305-Lab Sample
VI-B16-1315	Site1 13-15	9/24	1130	Soil	"	4°C	"		2	1			1								
TB-092594-1	Site1	9/25	0700	Water	40 mL VOA	4°C	HCl		2					2							
ER-092694-1	Site1	9/26	1830	Water	Sea anal	4°C	Sea anal		12					2	2	3	2	2	1		
					Total				23												

Relinquished by: Signature T McMullen / Printed T. McMullen / Company Earth Tech / Reason Shipment — Date 9/26/92 — Time 2000

Received by: Signature / Printed / Company — Date / Time

Relinquished by: Signature / Printed / Company / Reason — Date / Time

Received by: Signature / Printed / Company — Date / Time

Relinquished by: Signature / Printed / Company / Reason — Date / Time

Received by: Signature / Printed / Company — Date / Time

Comments: Please pull Duplicate analysis on VI-B16-0305 as indicated. PHL 9/24/92

DISTRIBUTION: White to Laboratory, Canary to Earth Technology Project File, Pink to Courier, Golden to Field File

F-1000
3/25/92

The Earth Technology Corporation

Chain of Custody Record

Lab job no.:

Date 9/27/94

Page 1 of 1

Laboratory The H.C. Nutting Co. — Method of Shipment Fed Express

Address Corporate center - 4120 Airport Road Cincinnati OHIO 45226

ATTN Bob House — Airbill No. 218544 6082

Client EARTH TECH — Shipment No. 1

Address 683 Emory Valley Rd Oak Ridge, TN 37830 — Cooler No. Box #1

Project Name / Number 931802-10 VTANG — Project Manager Greg Mayhor

Contract / Purchase Order / Quote 43 B97785C — Telephone No. 615 483 9404

Samplers: (Signature) — Fax. No. 615 481 3834

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation Temp.	Preservation Chemical	Filtered	No. of Containers	Flammability	Gravity Grade	Attenburg Limits	Remarks
VI-BR4-5153	Site1 51-53	9/27/94	1300	Soil	2.5' Shelby	Room	none		1	X	X	X	
VI-MW7I 3537	Site1 35-37	9/25/94	1530	Soil	" "	"	"		1	X	X	X	
VI-B16-3032	Site1 3032	9/26/94	1300	Soil	" "	"	"		1	X	X	X	
VI-B16-14.5-15	Site1 14.5-15	9/24/94	1120	Soil	6" Stainless				1	X	X	X	RB mold if necessary
					TOTAL				4				

Relinquished by:	Date	Received by:	Date
Signature J.M.Mullen	9/27/94	Signature	
Printed J.M.Mullen	Time 2000	Printed	Time
Company Earth Tech		Company	
Reason Shipment			

Relinquished by:	Date	Received by:	Date
Signature		Signature	
Printed	Time	Printed	Time
Company		Company PHC	
Reason			

Relinquished by:	Date	Received by:	Date
Signature PHC		Signature	
Printed	Time	Printed	Time
Company		Company	
Reason			

Comments:

DISTRIBUTION: White to Laboratory, Canary to Earth Technology Project File, Pink to Courier, Golden to Field File

F-1000 4/25/92

TOC-LEV-092894-1

Chain of Custody Record

The Earth Technology Corporation

Lab job no.: _____

Date 9/28/94

Page 1 of 1

Laboratory Compuchem Labs Inc
Address 3308 Chapel Hill/Nelson Hwy - Research Triangle Park, NC 27709
Client Earth Tech
Address 683 Emory Valley Rd. Oak Ridge TN 37830
Project Name / Number YTANG 931802-10
Contract / Purchase Order / Quote _____

Method of Shipment Fedexpress
Airbill No. 218544 5986
Shipment No. _____
Cooler No. 1
Project Manager Greg Mayhue
Telephone No. 615 483 9401
Fax No. 615 481 3834
Samplers: (Signature) Patrick Hogan

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation Temp.	Preservation Chemical	Filtered	No. of Containers	VOCs 8240	TPH 8015	VOCs 8240 SPLP	Analysis Required	Remarks
VI-BR4-0406	Site 1 4-6'	9/27/94	0845	Soil	6" Stainless	4°C	none		2	1	1			
VI-BR4-1416	Site 1 14-16	9/27/94	0855	Soil	6" Stainless	4°C	none		2	1	1			
TB-092794-1	Site 1	9/27/94	0900	WATER	40 mL VOA	4°C	HCL		2		2			
						TOTAL =			6					

Relinquished by:	Date	Received by:	Date
Signature T. McMullen	9/28/94	Signature _____	
Printed T. McMullen	Time 2000	Printed _____	Time
Company Earth Tech		Company _____	
Reason Shipment			

Relinquished by:	Date	Received by:	Date
Signature _____		Signature _____	
Printed _____	Time	Printed _____	Time
Company _____		Company _____	
Reason _____			

Relinquished by:	Date	Received by:	Date
Signature PKH		Signature PKH	
Printed _____	Time	Printed _____	Time
Company _____		Company _____	
Reason _____			

Comments: _____

DISTRIBUTION: White to Laboratory, Canary to Earth Technology Project File, Pink to Courier, Golden to Field File

F-1000
3/25/92

COC # V-092894-2

Chain of Custody Record

The Earth Technology Corporation

Lab job no.: _____
Date 9/28/94
Page 1 of 1

Laboratory Compuchem Labs Inc
Address 3308 Chapel Hill/Nelson Hwy – Research Triangle Park NC 27709
Client Earth Tech
Address 683 Emory Valley Rd Oak Ridge TN 37830
Project Name / Number TANS - 931802-10
Contract / Purchase Order / Quote _____

Method of Shipment Fed Express
Airbill No. 2185445986
Shipment No. _____
Cooler No. 2
Project Manager Greg Mayhor
Telephone No. 615 483 9404
Fax. No. 615 481 3834
Samplers: (Signature) Jtech Hall

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation Temp.	Preservation Chemical	Filtered?	No. of Containers	VOCs 8010/8020 (TCA, PCE, TCE, BTEX)	TAL Metals (Filtered)	VOCs 8010/8020 (TCA, PCE, TCE, BTEX)	Analysis Required	Remarks
VI-B17-0305	S,tr2 3-5	9/28	1515	Soil	6" Stainless	4°C	none		2	1	1			* Please sample from marked ends
VI-B17-14/16	S,tr2 14-16	9/28	1555	Soil	6" Stainless	4°C	none		2	1	1			
TB-092894-1	Stel	9/28	0700	Water	40 mL Voa	4°C	HCL		2			2		

Relinquished by:	Date	Received by:	Date
Signature T. McMullen	9/28/94	Signature	
Printed T. McMullen	Time 2000	Printed	Time
Company Earth Tech		Company	
Reason Shipment			

Relinquished by:	Date	Received by:	Date
Signature		Signature	
Printed	Time	Printed	Time
Company		Company	
Reason			

Relinquished by:	Date	Received by:	Date
Signature PAG		Signature PAG	
Printed	Time	Printed	Time
Company		Company	
Reason			

Comments: * Please ~~analyze~~ Samples from marked ends of sleeves – marked w/ an "X". PHL 9/28/94

DISTRIBUTION: White to Laboratory, Canary to Earth Technology Project File, Pink to Courier, Golden to Field File

F-1000
3/25/92

COC # V - 092994-1

Chain of Custody Record

The Earth Technology Corporation

Lab job no.: _____
Date: _____
Page _____ of _____

Laboratory: Compuchem Labs Inc
Address: 3308 Chapel Hill/Nelson Hwy Research Triangle Park NC 27709
Client: Earth Tech
Address: 683 Emory Valley Rd Oak Ridge TN 37830
Project Name / Number: 931802-16 VTANG
Contract / Purchase Order / Quote: _____

Method of Shipment: Fed Express
Airbill No.: 218544599 0
Shipment No.: _____
Cooler No.: 1
Project Manager: Greg Mangum
Telephone No.: 615 483 9484
Fax. No.: 615 481 3634
Samplers: (Signature) Patrick Hayes

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation: Temp.	Preservation: Chemical	Filtered?	No. of Containers	40 mL VOA/HCl	1 Liter Amber Glass/ 3/200 Cyanide	1 Liter Amber Glass/ 3/200 Phenols	40 mL Glass/ Unpres.	1 Liter Amber Glass/ Unpres.	1 Liter Amber Glass/ Unpres.	500 mL Plastic/ HNO3	1 Liter Plastic/ HNO3	Remarks
PT-092994	Gate1	9/29	1200	WATER	→	4°C	→		12	2	2	2	3	2	1			*Please add HNO3 to metals Sample
TB-092994-1	Site1	9/29	0900	WTR	40mL VOA	4°C	ACL		2	2								
							TOTAL		14									

Relinquished by:	Date	Time	Received by:	Date	Time
Signature			Signature		
Printed			Printed		
Company			Company		
Reason					

Relinquished by:	Date	Time	Received by:	Date	Time
Signature			Signature		
Printed			Printed		
Company			Company		
Reason					

Relinquished by:	Date	Time	Received by:	Date	Time
Signature			Signature		
Printed			Printed		
Company			Company		
Reason					

Comments: Please add HNO3 to TAL metals Sample (1 Liter plastic) PAL
Need Faxed results ASAP to dispose of drum water PAL

DISTRIBUTION: White to Laboratory, Canary to Earth Technology Project File, Pink to Courier, Golden to Field File

F-1000
3/25/92

COC # V-102494-1

(1)

Chain of Custody Record

The Earth Technology Corporation

Lab job no.: —

Date 10/24/94

Page 1 of 1

Laboratory Compuchem Lab, Inc. | Method of Shipment Fed EX

Address 3308 Chapel Hill / Nelson Hwy | Airbill No. 218544604 5

Research Triangle Park, NC 27709 | Shipment No. # V-10/24/94-1

Client EarthTech | Cooler No. # 1

Address 683 Emory Valley Rd | Project Manager Greg Maynor

Oak Ridge, TN 37830 | Telephone No. 615-483-9404

Project Name / Number 931802-08 | Fax No. 615-481-3834

Contract / Purchase Order / Quote — | Samplers: (Signature) Greg Maynor

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation Temp.	Preservation Chemical	Filtered?	No. of Containers	Analyses Required	Remarks
ER-102494-1	Sites 3/4	10/24/94	0940	DI wtr	see analysis	4°C	see analysis	No	10	2 2 2 1 3	DI wtr Lot # GIBS off of decanned Teflon Bailer
FB-102494-P	"	"	1020	Potable wtr	"	"	"	No	10	2 2 2 1 3	Potable wtr from Firehouse tap
TB-102494-1	"	"	0930	LAB wtr	"	"	"	No	2	2 2	
~~V3-BG1-1094~~	~~Site 3~~	"	~~1315~~	wtr	"	"	"		~~10~~	~~2 2 2 1 3~~ KB 10/24/94	
~~V3-BG1-1094D~~	~~Site 3~~	"	~~1315~~	wtr	"	"	"		~~10~~	~~2 2 2 1 3~~ GW 10/24/94	Duplicate Analysis for PIC
~~V3-BG1-1094F~~	~~Site 3~~	"	~~1315~~	wtr	"	"	"		1	GW 10/24/94	
~~V3-BG1-1094DF~~	~~Site 3~~	"	~~1315~~	wtr	"	"	"		1	GW 10/24/94	Duplicate
							Total		22		

GW 10/24/94 GW 10/24/94

Relinquished by:	Date	Received by:	Date
Signature Greg Maynor	2000	Signature	
Printed Greg Maynor	Time 10/24/94	Printed	Time
Company EarthTech		Company	
Reason Lab			

Relinquished by:	Date	Received by:	Date
Signature		Signature	
Printed	Time	Printed	Time
Company		Company	
Reason 10 24 94			

Relinquished by:	Date	Received by:	Date
Signature GW		Signature	
Printed	Time	Printed	Time
Company		Company	
Reason			

Comments: ER-102494-1 and FB-102494-P cover GW samples from sites 3 and 4 (V3-, V4-).

F-1000 3/25/92

DISTRIBUTION: White to Laboratory, Canary to Earth Technology Project File, Pink to Courier, Golden to Field File

COC # V-102494-2

(2)

The Earth Technology Corporation

Chain of Custody Record

Lab job no.:

Date 10/24/94

Page 1 of 1

Laboratory Compuchem Lab, Inc. | Method of Shipment Fed Ex

Address 3308 Chapel Hill/Nelson Hwy, Research Triangle PK, NC 27709 | Airbill No. 218544606 46

Shipment No. V-10/24/94-1

Cooler No. # 2

Client Earth Tech | Project Manager Greg Maynor

Address 683 Emory Valley Rd Oak Ridge, TN 37830 | Telephone No. 615-483-9404

Project Name / Number 931802-08 | Fax. No. 615-481-3834

Contract / Purchase Order / Quote — | Samplers: (Signature) Greg Maynor

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation Temp.	Preservation Chemical	Filtered?	No. of Containers	TCLP	40 mL Cl Benzene	40 mL Cl Toluene	40 mL Cl Ethylbenzene	40 mL Cl Xylenes	1 L Amber Naphthalene	1 L Amber 2-Methylnaphthalene	1 L Amber Acenaphthene	1 L Amber Fluorene	1 L Amber Phenanthrene	1 L Amber Anthracene	1 L Amber Fluoranthene	1 L Amber Pyrene	1 L Amber Benzo(a)anthracene	1 L Amber Chrysene	1 L Amber Benzo(b)fluoranthene	1 L Amber Benzo(k)fluoranthene	1 L Amber Benzo(a)pyrene	1 L Amber Indeno(1,2,3-cd)pyrene	1 L Amber Dibenz(a,h)anthracene	1 L Amber Benzo(g,h,i)perylene	1 L Amber TPH	1 L Amber Total Metals (Cr, Pb, Ni, Cu, Zn, Ag, As, Be, Cd, Sb, Se, Tl)	1 L Amber Dissolved Metals (Cr, Pb, Ni, Cu, Zn, Ag, As, Be, Cd, Sb, Se, Tl)	1 L Amber Cyanide (Physicron Filter)	Remarks
V3-BG1-1094	Site 3	10/24/94	1315	GW	see analysis	4°C	see Analysis	No	10		2	2	2	1																3			
V3-BG1-1094-D	"	"	1315	"	"	"	"	"	10		2	2	2	1																3			Dup.
V3-BG1-1094F	"	"	1315	"	"	"	"	Yes	1																					1			Filtered metals
V3-BG1-1094DF	"	"	1315	"	"	"	"	Yes	1																					1			Filtered metals Dup.
TB-102494-2	"	"	1300	LAB WTR	"	"	"		2	2																							
							Total		24																								

Relinquished by: Signature Greg Maynor | Printed Greg Maynor | Company Earth Tech | Reason Lab | Date 10/24/94 | Time 2000

Received by: Signature — | Printed — | Company — | Date — | Time —

Relinquished by: Signature — | Printed — | Company — | Reason — | Date 10/24/94 | Time —

Received by: Signature — | Printed — | Company — | Date 10/24/94 | Time —

Relinquished by: Signature — | Printed — | Company — | Reason — | Date — | Time —

Received by: Signature — | Printed — | Company — | Date — | Time —

Comments: F = filtered
D = Dup

DISTRIBUTION: White to Laboratory, Canary to Earth Technology Project File, Pink to Courier, Golden to Field File

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3/25/92

COC # V-102594-1

Chain of Custody Record

The Earth Technology Corporation

Lab job no.: —

Date 10/25/94

Page 1 of 1

Laboratory CompuChem Lab Inc.
Address 3308 Chapel Hill/Nelson Hwy
Research Triangle PK
NC 27709
Client Earth Tech
Address 6683 Emory Valley Rd
Oak Ridge, TN 37830
Project Name / Number 931802-08
Contract / Purchase Order / Quote —

Method of Shipment Fed EX
Airbill No. 317 4036033
Shipment No. # 1
Cooler No. # 1
Project Manager Greg Maynor
Telephone No. 615-483-9404
Fax No. 615-481-3834
Samplers: (Signature) Greg Maynor

Field Sample Number	Location / Depth	Date	Time	Sample Type	Type/Size of Container	Preservation Temp.	Preservation Chemical	Filtered ?	Total No. of Containers	Analysis Required	Remarks
V4-BG1-1094	Site 4 BG-1	10/24/94	1913	GW	see analysis	4°C	see analysis	N	10	40 CFR 136 Appendix IX VOCs, TPH-gas, TPH-diesel, TOC, Cl, F, SO4, NO3, Dissolved Fe, Mn, Ca, Mg, Na, K	
V4-BG1-1094-F	Site 4 BG-1	"	"	GW	"	"	"	Y	1	Dissolved Metals	Filtered metals
TB-102594-1	Site 4	"	0800	LAB wtr	"	"	"	N	2	VOCs	
							Total →		13		

10/25/94 GW

Relinquished by: Signature Greg Maynor, Printed Greg Maynor, Company Earth Tech, Reason Lab — Date 10/24/94, Time 2000

Received by: Signature —, Printed —, Company — — Date —, Time —

Relinquished by: Signature —, Printed —, Company —, Reason 10/25/94 — Date —, Time —

Received by: Signature —, Printed —, Company — — Date 10/25/94, Time —

Relinquished by: Signature GW, Printed —, Company —, Reason — — Date —, Time —

Received by: Signature —, Printed —, Company — — Date —, Time —

Comments: Held until 10/26/94 Due to Fed Ex closing before samples could get delivered for shipment, watch Holding Times please.

DISTRIBUTION: White to Laboratory, Canary to Earth Technology Project File, Pink to Courier, Golden to Field File

F-1000
3/25/92

COC # V-102694-1

Chain of Custody Record

The Earth Technology Corporation

Lab job no.: —
Date 10/26/94
Page 1 of 1

Laboratory CompuChem Labs
Address 3308 Chapel Hill/Nelson Hwy, Research Triangle PK, 27709
Client Earth Tech
Address 1483 Emory Valley Rd Oak Ridge, TN 37830
Project Name / Number 931882-08
Contract / Purchase Order / Quote —

Method of Shipment Fed Ex
Airbill No. 3174036633 10/26/94
Shipment No. # 2 of 2 GW
Cooler No. # 2
Project Manager Greg Mayhor
Telephone No. 615-483-9404
Fax. No. 615-481-3834
Samplers: (Signature) Greg Mayhor

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation: Temp.	Preservation: Chemical	Filtered ?	No. of Containers	Analysis Number	Remarks
V4-MW3-1094	Site 4 MW3	10/26/94	1150	GW	See Analysis	4°C	See Analysis		10	2 3 2 2 1	
V4-MW3-1094-F	Site 4 MW3	10/26/94	1150	GW	"	"	"		1	1	Filtered Metals
TB-102694-1	Site 4	10/26/94	0700	LAB WTR	"	"	"		2	2	
							Total		13		

GW

Relinquished by:	Date	Received by:	Date
Signature Greg Mayhor	10/26/94	Signature	
Printed Greg Mayhor	Time 2000	Printed	Time
Company Earth Tech		Company	
Reason Lab			

Relinquished by:	Date	Received by:	Date
Signature	10/26/94	Signature	10/26/94
Printed	Time	Printed	Time
Company		Company	
Reason			

Relinquished by:	Date	Received by:	Date
Signature GW		Signature	
Printed	Time	Printed	Time
Company		Company	
Reason			

Comments: Watch Holding times please.

DISTRIBUTION: White to Laboratory, Canary to Earth Technology Project File, Pink to Courier, Golden to Field File

F-1000
3/25/92

COC # V-102894-2

Chain of Custody Record

The Earth Technology Corporation

Lab job no.: —

Date 10/28/94

Page 1 of 1

Laboratory Compuchem LAB
Address 3308 Chapel Hill/Nelson Hwy, Research Triangle Pk
Client Earth Tech
Address 1683 Emory Valley Rd, Oak Ridge, TN 37830
Project Name / Number 931802-08
Contract / Purchase Order / Quote —

Method of Shipment Fed Ex
Airbill No. 317403665 5
Shipment No. #1
Cooler No. #2
Project Manager Greg Maynor
Telephone No. 615-483-9404
Fax No. 615-481-3834
Samplers: (Signature) Greg Maynor

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation Temp.	Preservation Chemical	Filtered	No. of Containers	40 ml. clr. G vol. w/HCl Pb 8010/8020	40 ml. clr. G vol. w/HCl Pb 8010/8020	40 ml. clr. G vol. w/HCl Pb 8010/8020	40 ml. amb. G vol. w/HCl TPH 8015	1 Liter amb. G w/HCl TPH 8015	1 Liter amb. G w/HCl Pesticides 8080	1 Liter amb. G w/HCl Aroclors 8080	1 Liter amb. G w/HCl Herbicides 8150	500 ml. plastic w/HNO3 Metals 6010	500 ml. plastic w/NaOH/Zn Acetate Sulfides 9030	Remarks
TB-102894-2	Site 4	10/28/94	1200	LAB wtr	see ANALYSIS	4°C	see ANALYSIS		2	2										
V4-SW3-1094	SW3	"	1345	Surface wtr	"	4			10		2	3	2	2	1					see comments
V4-SW3-1094-D	SW3	"	1345	"	"	4			10		2	3	2	2	1					Dup.
V4-D3-00.5	Site 4 D3	"	1520	Surf. Sed.					2							1	1			
V4-D2-00.5	Site 4 D2	"	1545	"					3							1	2	*		* Extra volume for QA/QC-MS/MSD
~~V4-D2-0 Grab~~	~~10/28/94~~																			
V4-D1-00.5	Site 4 D1	10/28/94	1600	Surf. Sed.	see ANALYSIS	4°C	see ANALYSIS for ANALYSIS		3							1	2			* contains Dup volume V4-D1-00.5-D
V4-D1-00.5-D	Site 4 D1	"	1600	"	"	"										*	*			Dup * volume in liners w/ V4-D1-00.5
							Total		30											

Relinquished by	Date	Received by:	Date
Signature Greg Maynor	10/28/94	Signature	
Printed Greg Maynor	Time 1934	Printed	Time
Company Earth Tech		Company	
Reason Lab			

Relinquished by:	Date	Received by:	Date
Signature		Signature	
Printed	10/28/94	Printed	10/28/94
Company	Time	Company	Time
Reason			

Relinquished by:	Date	Received by:	Date
Signature		Signature	
Printed	10/28/94	Printed	10/28/94
Company	Time	Company	Time
Reason			

Comments: see COC # V-102894-3 for QA/QC (MS/MSD) volumes.

DISTRIBUTION: White to Laboratory, Canary to Earth Technology Project File, Pink to Courier, Golden to Field File

F-1000
3/25/92

COC # V-102794-1

Chain of Custody Record

The Earth Technology Corporation

Lab job no.: _____

Date 10/27/94

Page 1 of 1

Laboratory Compuchem Lab — Method of Shipment Fed EX

Address 3308 Chapel Hill/Nelson Hwy, Research Triangle PK, NC 27709 (Rec'd 10/27/94 GKM) — Airbill No. 317403666 44

Shipment No. # 1

Cooler No. # 1

Client Earth Tech — Project Manager Greg Maynor

Address 683 Emory Valley Rd Oak Ridge, TN 37830 — Telephone No. 615-483-9404

Project Name / Number 931802-08 — Fax No. 615-481-3834

Contract / Purchase Order / Quote _____ — Samplers: (Signature) Greg Maynor

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation Temp.	Preservation Chemical	Filtered?	No. of Containers	Analysis Required: Tot Al 90 mL 10/27/94 GKM; 40 mL 8010/8020 Aromatics; 40 mL 8240 Aromatics; 40 mL 8240 Oxygenates; 1 Liter 8270 Base/Neutrals; 1 Liter 8270 Acids; 1 Liter 8270 Pesticides; 1 Liter Plastic 8270 Pesticides; 1 Liter Dissolved Metals	Remarks
V4-MW2-1094	Site 4 MW2	10/27/94	1648	GW	SEE ANALYSIS	4°C	SEE ANALYSIS		30	6 9 6 6 3	use "QA/QC" for MS/MSD.
V4-MW2-1094-F	Site 4 MW2	"	1648	"	"	"	"	✓	3	3	Filtered. use "QA/QC" for MS/MSD
TB-102794-1	Site 4	"	0715	LAB WTR	"	"	"		2	2	
							TOTAL →		35		

Relinquished by:	Date	Received by:	Date
Signature Greg Maynor	10/27/94	Signature	
Printed Greg Maynor	Time 2000	Printed	Time
Company Earth Tech		Company	
Reason Lab			

Relinquished by:	Date	Received by:	Date
Signature	10/27/94	Signature	
Printed	Time	Printed	Time
Company		Company	
Reason			

Relinquished by:	Date	Received by:	Date
Signature GKM	10/27/94	Signature GKM	10/27/94
Printed	Time	Printed	Time
Company		Company	
Reason			

Comments: USE Samples marked "QA/QC" for MS/MSD. Use other unmarked samples as original. Very important, the unmarked were split w/ state of VT. GKM 10/27/94

DISTRIBUTION: White to Laboratory, Canary to Earth Technology Project File, Pink to Courier, Golden to Field File

F-1000 3/25/92

COC # V-103194-1

Chain of Custody Record

The Earth Technology Corporation

Analytical Laboratories
5702 Bolsa Ave
Huntington Beach, Ca. 92649
(714) 892-2565 FAX (714) 895-4032

To: Compu Chem Lab
3308 Chapel Hill/Nelson Hwy
Research Tr. Triangle Pk, NC 27709

Lab job no.:

Date 10/31/94

Page 1 of 1

Client Earth Tech

Project Manager G. Maynor

Address 683 Emory Valley Rd

Telephone No. 615-483-9404

Project Name / Number 931802-08

Fax. No. 615-481-3834

Contract / Purchase Order / Quote

Samplers: (Signature) Greg Maynor

Lab Sample Number	Field Sample Number	Station Location	Date	Time	Sample Type	Analysis Requested	Preservation	Container	No. of Containers							Remarks
	V3-MW3-1094	Site 3	10/31/94	1505	GW	see analysis	4°C	see analysis	10	2	3	2	2	1		
	V3-MW3-1094F	"	"	1505	"	"	"	"	1						1	filtered
	V3-MW1-1094	"	"	1641	"	"	"	"	10	2	3	2	2	1		
	V3-MW1-1094F	"	"	1641	"	"	"	"	1						1	filtered
	TB-103194	"	"	0700	LAB MT	"	"	"	2	2						
									24							

Emp 10/31/94

Relinquished by:	Date	Received by:	Relinquished by:	Date	Received by:
Signature Greg Maynor	10/31/94	Signature	Signature		Signature
Printed Greg Maynor	Time 2080	Printed	Printed	Time	Printed
Company Earth Tech		Company	Company		Company
Reason lab		Reason	Reason		Reason

Method of Shipment: Fed Ex

Shipment No. 2-174036670

Special Instructions:

Comments:

After analysis, samples are to be:

- ☐ Disposed of (additional fee)
- ☐ Stored (90 days max)
- ☐ Stored over 90 days (additional fee)
- ☐ Returned to customer

F1000

COC # V-102894-3

Chain of Custody Record

The Earth Technology Corporation

Lab job no.: ____

Date 10/28/94

Page 1 of 1

Analytical Laboratories — Gm 10/28/94
5702 Bolsa Ave — Gm 10/28/94
Huntington Beach, Ca 92649 — Gm 10/28/94
(714) 892-2565 FAX (714) 892-4032 — Gm 10/28/94

Client LAB Compuchem Lab

Address 3308 Chapel/Nelson Hwy, Research Triangle, NC, 27709

Project Name / Number VTAN 931802-08

Contract / Purchase Order / Quote ____

Project Manager Greg Maynor

Telephone No. 615-483-9400

Fax. No. 615-481-3834

Samplers: (Signature) Greg Maynor

Laboratory Sample Number	Sample Identification	Location	Date	Time	Sample Type	Analysis Requested	# of Containers	Preservation	20	4	10	4	4	2	Remarks
	V4-SW3-1094 (QA/QC) SW3	Site 4	10/28/94	1345	Surface Water	See Analysis	4	HC	See Analysis						(*Extra volumes for MS/MSD from V4-SW3-1094 COC # V-102894-2)
	TB-102894-3	Site 4	10/28/94	1215	LAB Water	"	1	"	22						
									22-10-12=0						
										Gm 10/28/94					

Gm 10/28/94

Relinquished by: Signature Greg Maynor; Printed Greg Maynor; Company Earth Tech; Reason Lab; Date 10/28/94; Time 1930

Received by: Signature ____; Printed ____; Company ____; Reason ____

Relinquished by: Signature ____; Printed ____; Company Gm 10/28/94; Reason ____; Date ____; Time ____

Received by: Signature ____; Printed ____; Company Gm 10/28/94; Reason ____

Method of Shipment: Fed EX

Shipment No. 217403606655

Special Instructions: next day Saturday pickup

Comments: Extra volumes for MS/MSD analyses for V4-SW3-1094 from coc # V-102894-2.

After analysis, samples are to be:
- ☐ Disposed of (additional fee)
- ☐ Stored (90 days max)
- ☒ Stored over 90 days (additional fee) Gm 10/28/94
- ☐ Returned to customer

F1000

COC # V-102894-1

Chain of Custody Record

The Earth Technology Corporation

Lab job no.: _____
Date 10/28/94
Page 1 of 1

Laboratory Compchem Lab
Address 3308 Chapel Hill/Nelson Hwy
Research Triangle Pk, NC 27709
Client Earth Tech
Address 683 Emory Valley Rd
Oak Ridge, TN 37830
Project Name / Number 931802-08
Contract / Purchase Order / Quote —

Method of Shipment Fed Ex
Airbill No. 3174036655
Shipment No. # 1
Cooler No. # 1
Project Manager Greg Maynor
Telephone No. 615-483-9404
Fax No. 615-483-3834
Samplers: (Signature) GM 10/28/94

Field Sample Number	Location/ Depth	Date	Time	Sample Type	Type/Size of Container	Preservation Temp.	Preservation Chemical	Filtered Y	Total No. of Containers	40 ml VOCs 8010/8020	40 ml VOCs 8010/8020	40 ml VOCs 8015	40 ml VOCs 8015	1 Liter Amber 8270	1 Liter Amber 8270	1 Liter Poly Cyanide	1 Liter Poly Nitric	Remarks
ER-102894-1	Site 4	10/28/94	1010	DI wtr	see ANALYSIS	4°C	see ANALYSIS		10		2	3	2	2	1			DI wtr #G189 - aft st. steel ladle
ER-102894-2	"	"	1050	"	"	"	"		10		2	3	2	2	1			DI wtr #G189 - aft st. steel liner
TB-102894-1	"	"	1000	LAB wtr	"	"	"		2	2								
							Total		22									

Site 4 surface wtr QA/QC
Subt. Sed. QA/QC

Gm 10/28/94

Relinquished by:	Date	Received by:	Date	Relinquished by:	Date	Received by:	Date
Signature Greg Maynor	10/28/94	Signature		Signature		Signature	
Printed Greg Maynor	Time 1930	Printed	Time	Printed	Time	Printed	Time
Company Earth Tech		Company		Company 10/28/94		Company 10/28/94	
Reason Lab				Reason			

Comments: Equipment Rinsates & Trip Blank - Site 4 Sampling

Relinquished by:	Date	Received by:	Date
Signature GM		Signature GM	
Printed	Time	Printed	Time
Company		Company	
Reason			

DISTRIBUTION: White to Laboratory, Canary to Earth Technology Project File, Pink to Courier, Golden to Field File

F-1000
3/25/92

SHIFT 1

VTANG

SI Sites 3 and 4
Subsurface Soil

1/1

Field QA/QC Summary Form

Soil – VOCs 8010/8020, SVOCs CLP 3/90, TPH 8015, TAL Metals
QA/QC wtr – VOCs 8010/8020, SVOCs CLP 10192, TPH 8015, TAL Metals

	Sample #	Matrix	Date Collected	Associated Field Blanks	Associated Trip Blank	Associated Equip Rinsate	Associated Field Duplicate	Associated MS/MSD	
1	V4-B2-1416	Soil	9/7/94		TB-090794-1				
2	V4-B2-1921	Soil	"						
3	V4-B3-1416	Soil	"						
4	V4-B3-1921	Soil	"						
5	V4-B6-1921	Soil	"	FB-090894-P		ER-090894-1			
6	V4-B6-2426	Soil	"	FB-090894-D		"			
7	V4-B4-0911	Soil	9/8/94		TB-090894-1				
8	V4-B4-1719	Soil	"						
9	V4-B1-0911	Soil	"						
10	V4-B1-1719	Soil	"				(V4-BG-1416-T)		
1	V4-BG-1416	Soil	9/10/94	FB-090894-P		ER-091294-1	V4-BG-1416-D		Dup. VT Split 1
VT Split 2	V4-BG-1921	Soil	"	FB-090894-D	TB-091094-1				
3	V4-BG-0911	Soil	"					V4-BG-0911	QA/QC VT Split 2
4	V3-B5-0305	Soil	9/13/94		TB-091394-1				
5	V3-B5-1315	"	"						
6	V3-B2-0305	"	"						
7	V3-B2-1113	"	"						
8	V3-B3-0305	"	"						
9	V3-B3-1315	"	"						
10	V3-B1-0305	"	"						
	V3-B1-1113	"	"		TB-091394-1	ER-091394-1	V3-B1-1113-D		
	V3-B4-0305	"	"						
	V3-B4-0810	"	"					V3-B4-0810	MS/MSD
	V3-B4-1315	"	"				V3-B4-1315-D		

V4-B5-0406
V4-B5-0911
V4-B5-1719

TB-091494-1

SHIFT 2 VTANG/ASE

9-19-94 thru 9-30-94

1/1

Field QA/QC Summary Form 2nd Drilling Shift

subsurface Soil

DACG

Sample #	Matrix	Date Collected	Associated Field Blanks	Associated Trip Blank	Associated Equip Rinsate	Associated Field Duplicate	Associated MS/MSD
~~V1-BG1~~ DTC							
V3-BG1-0305	Soil	9/20/94	FB-092194-1(P)	TB-092094-1	ER-092094-1		
V3 BG1-1820	Soil	9/20/94	*FB-090894-D ADJ				V3-BG1-1820
V3 BG1-3840	Soil	9/20/94				V3-BG13840D	

VTANG SHIFT #4 10/18-31/94

SI GW/surface wtr./surface sed.
Sites 3 and 4

Field QA/QC Summary Form

	Sample #	Matrix	Date Collected	Associated Field Blanks	Associated Trip Blank	Associated Equip Rinsate	Associated Field Duplicate	Associated MS/MSD
1	V3-BG1-1094	GW	10/24/94	*FB-102494-P	TB-102494-2	ER-102494-1	V3-BG1-1094-D	
	V3-BG1-1094 F	GW	"		"		V3-BG1-1094 DF	
2	V4-BG1-1094	GW	10/25/94		TB-102594-1			
	V4-BG1-1094-F	GW	"		"			
3	V4-MW3-1094	"	10/26/94		TB-102694-1			
	V4-MW3-1094-F	"	"		"			V4-MW2-1094 (QA/QC)
4	V4-MW2-1094	"	10/27/94		TB-102794-1			V4-MW2-1094F (QA/QC)
	V4-MW2-1094-F	"	"		"			
5	V3-MW1-1094	"	10/31/94		TB-103194-1			
	V3-MW1-1094-F	"	"		"			
6	V3-MW3-1094	"	"		"			
	V3-MW3-1094-F	"	"		"			
	V4-SW3-1094	surface wtr.	10/28/94	FB-102494-P	TB-102894-2	**ER-102894-1	V4-SW3-1094-D	V4-SW3-1094 (QA/QC)
	V4-D1-00.5	surface sediment	10/28/94	FB-102494-P	TB-102894-2	**ER-102894-2	V4-D1-00.5-D	V4-D2-00.5 (QA/QC)
	V4-D2-00.5	"	"					
	V4-D3-00.5	"	"					

* TB-102494-1

*TB-102494-1

** TB-102894-1

APPENDIX K: BASE-WIDE BACKGROUND LABORATORY ANALYTICAL RESULTS FOR INORGANIC ANALYTES IN SOILS AND GROUNDWATER

Table K-1 Background Summary of Laboratory Analytical Results

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4

Vermont Air National Guard Base

SITE:	V1-BACKGROUND		V1-BACKGROUND		V1-BACKGROUND		V2-BACKGROUND		V2-BACKGROUND		V2-BACKGROUND	
LOCATOR:	V1-BR4		V1-BR4		V1-BR4		V2-BG1		V2-BG1		V2-BG1	
SAMPLE ID:	V1-BR4-0050		V1-BR4-0406		V1-BR4-1416		V2-BG1-0050		V2-BG1-0305		V2-BG1-0305D	
COLLECTION DATE:	10/08/94		09/27/94		09/27/94		10/09/94		10/10/94		10/10/94	
ASSOCIATED QC:	TB-100894-3,ER-100894-1 FB-101194-1,FB-090894-D		TB-092794-1,ER-092694-1 FB-092094-1,FB-090894-D		TB-092794-1,ER-092694-1 FB-092094-1,FB-090894-D		TB-100894-3, FB-101194-1,FB-090894-D		TB-100994-3,ER-100994-4 FB-101194-1,FB-090894-D		TB-100994-3,ER-100994-4 FB-101194-1,FB-090894-D	
	UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
TAL Metals by CLP 3/90													
Aluminum	mg/kg	6870		3480		3370		4450		4370		5680	
Antimony	mg/kg	10.40	UJ	10.50	U	10.40	U	10.50	UJ	10.30	U	11	U
Arsenic	mg/kg	5		4.40	B	3.50	()B	4.50	J	3.30	B	5.40	B
Barium	mg/kg	20.60	()	8.20	()	6.80	()	65.20		10.20	()	11.80	()
Beryllium	mg/kg	0.10	U	0.10	U	0.10	U	0.20	()	0.12	()B	0.15	()B
Cadmium	mg/kg	0.88	UJ	0.89	UJ	0.88	UJ	0.89	UJ	0.87	UJ	0.93	UJ
Calcium	mg/kg	1130		1260		1500		18300		569	()	915	()
Chromium	mg/kg	10.70		7.80		9.50		10		8.80		9.50	
Cobalt	mg/kg	5.80	()J	4.60	()	5.60	()	4.70	()	5.50	()	5.90	()
Copper	mg/kg	15.90		12.70	J	9.40	J	19.30		9.10	J	10.10	J
Iron	mg/kg	11500		9670		11700		11000		9220		11900	
Lead	mg/kg	7.90	J	4.10		3.90		15.90	J	3.30		5.20	
Magnesium	mg/kg	1940		2210		2320		11900	J	2680		2950	
Manganese	mg/kg	247	J	242		306		244	J	146		170	
Mercury	mg/kg	0.10	U	0.10	U	0.10	U	0.10	UJ	0.10	U	0.11	U
Nickel	mg/kg	12		14.10		14.70		9.80		16.90		17.30	
Potassium	mg/kg	309	()J	223	()	274	()	366	()	291	()	268	()
Selenium	mg/kg	0.58	U	0.58	UJ	0.55	UJ	0.58	UJ	0.57	UJ	0.61	UJ
Silver	mg/kg	0.66	U	0.66	U	0.66	U	0.66	U	0.65	U	0.69	U
Sodium	mg/kg	108	()B	107	()B	123	()B	116	()B	131	()B	141	()B
Thallium	mg/kg	0.75	U	0.74	UJ	0.71	UJ	0.74	UJ	0.74	UJ	0.78	UJ
Vanadium	mg/kg	12.10	()	7.70	()	9.70	()	10.90		7.10	()	10.30	()
Zinc	mg/kg	50.30		20.20		20.80		38.20		22.30		24.30	

Sample IDs : Sample Intervals (0406) in feet below ground surface; D indicates duplicate sample.

mg/kg milligrams/kilogram
TAL Target Analyte List
CLP 3/90 Contract Laboratory Program. March 1990 Methods

Data Validation Qualifiers
() Result is between the method detection limit and the sample quantitation limit
B Possible blank contamination
J Reported value is estimated
U Compound analyzed for but not detected

Table K-1 Background Summary of Laboratory Analytical Results
Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

SITE:		V2-BACKGROUND		V2-BACKGROUND		V2-BACKGROUND		V3-BACKGROUND		V3-BACKGROUND		V3-BACKGROUND	
LOCATOR:		V2-BG1		V2-BG1		V2-BG1		V3-BG1		V3-BG1		V3-BG1	
SAMPLE ID:		V2-BG1-1820		V2-BG1-5355		V2-BG1-6870		V3-BG1-0305		V3-BG1-1820		V3-BG1-3840	
COLLECTION DATE:		10/10/94		10/10/94		10/10/94		09/20/94		09/20/94		09/20/94	
ASSOCIATED QC:		TB-100994-3,ER-100994-4 FB-101194-1,FB-090894-D		TB-100994-3,ER-100994-4 FB-101194-1,FB-090894-D		TB-100994-3,ER-100994-4 FB-101194-1,FB-090894-D		TB-092094-1,ER-092094-1 FB-092194-1, FB-090894-		TB-092094-1,ER-092094-1 FB-092194-1, FB-090894-		TB-092094-1,ER-092094-1 FB-092194-1, FB-090894-	
	UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
TAL Metals by CLP 3/90													
Aluminum	mg/kg	4110		4310		3490		5950		2270		6660	
Antimony	mg/kg	10.80	U	10.70	U	12.30	UJ	6.90	U	11.50	U	7.50	U
Arsenic	mg/kg	4.50	B	3.80	B	2.90	J	5.60		3.60		2.70	
Barium	mg/kg	9.20	()	9.60	()	6.50	()	14.20	()	5.20	()B	15.30	()
Beryllium	mg/kg	0.11	U	0.10	U	0.12	U	0.25	U	0.10	U	0.27	U
Cadmium	mg/kg	0.92	UJ	0.90	UJ	1	UJ	0.77	U	0.95	U	0.84	U
Calcium	mg/kg	1700		1940		1760		1410		1470		2610	
Chromium	mg/kg	8.40		10		10.10		18.20		5.90	B	14.40	
Cobalt	mg/kg	5.80	()	5.70	()	6.50	()	7.50	()B	3.50	()B	8	()B
Copper	mg/kg	11.50	J	12.40	J	9.60		11.20		9.90		16.30	
Iron	mg/kg	11300		12000		11400		13600		7010		15500	
Lead	mg/kg	3.10		3.50		2.70	J	5.50		2.30		4.60	J
Magnesium	mg/kg	2420		2970		2730	J	3540		1720		4000	
Manganese	mg/kg	286		279		201	J	328		201		367	
Mercury	mg/kg	0.11	U	0.11	U	0.12	UJ	0.11	U	0.10	U	0.12	U
Nickel	mg/kg	15.50		17.40		16.20		23.40		12.40		21.50	
Potassium	mg/kg	366	()	358	()	288	()	581	U	237	()B	633	U
Selenium	mg/kg	0.60	UJ	0.59	UJ	0.68	UJ	0.89	UJ	0.81	U	0.97	UJ
Silver	mg/kg	0.68	U	0.67	U	0.77	U	0.91	U	0.74	U	0.99	U
Sodium	mg/kg	139	()B	161	()B	139	()B	119	()	153	()B	294	()
Thallium	mg/kg	0.77	UJ	0.76	UJ	0.88	UJ	0.82	U	0.74	U	0.89	U
Vanadium	mg/kg	9.70	()	10	()	9.50	()	11.20	()	5.90	()B	13.40	
Zinc	mg/kg	24.40		26.40		24.10		26.70		16.10		35.50	

Sample IDs : Sample Intervals (0406) in feet below ground surface; D indicates duplicate sample.

mg/kg milligrams/kilogram
TAL Target Analyte List
CLP-type Contract Laboratory Program, March 1990 Methods

Data Validation Qualifiers
() Result is between the method detection limit and the sample quantitation limit
B Possible blank contamination
J Reported value is estimated
[illegible]ound a[illegible]for but [illegible]detected

Table K-1 Background Summary of Laboratory Analytical Results

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

SITE:		V3-BACKGROUND		V4-BACKGROUND		V4-BACKGROUND		V4-BACKGROUND		V4-BACKGROUND	
LOCATOR:		V3-BG1		V4-BG		V4-BG		V4-BG		V4-BG	
SAMPLE ID:		V3-BG1-3840D		V4-BG-0911		V4-BG-1416		V4-BG-1416D		V4-BG-1921	
COLLECTION DATE:		09/20/94		09/10/94		09/10/94		09/10/94		09/10/94	
ASSOCIATED QC:		TB-092094-1,ER-092094-1 FB-092194-1, FB-090894-		TB-091094-1, FB-090894-P, FB-090894-		TB-091094-1, FB-090894-P, FB-090894-		TB-091094-1, FB-090894-P, FB-090894-		TB-091094-1, FB-090894-P, FB-090894-	
	UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
TAL Metals by CLP 3/90											
Aluminum	mg/kg	6980		3540		3790		5280		4140	
Antimony	mg/kg	8	U	11.60	U	11.50	U	12.10	U	14	U
Arsenic	mg/kg	3		3.10		8.90		9.60		3.50	
Barium	mg/kg	16.50	()	9.60	()	13	()	13.60	()	9	()
Beryllium	mg/kg	0.29	U	0.17	()	0.10	U	0.13	()	0.13	U
Cadmium	mg/kg	0.90	U	0.96	U	0.95	U	1	U	1.20	U
Calcium	mg/kg	2840		1240		1450		1750		1700	
Chromium	mg/kg	14.80		7.70		6.90		10.60		8.30	
Cobalt	mg/kg	8.40	()B	7.40	()	8.50	()	10.70	()	8.10	()
Copper	mg/kg	17.30		11.70		14.90		15.30		13.90	
Iron	mg/kg	16200		7700		13200		16500		10500	
Lead	mg/kg	4.90	J	4.10		3.60		4		3.80	
Magnesium	mg/kg	4190		1930		1950		2870		2520	
Manganese	mg/kg	391		255		580		548		263	
Mercury	mg/kg	0.13	U	0.10	U	0.10	U	0.11	U	0.13	U
Nickel	mg/kg	28.30		15.10		18.70		21.20		16.20	
Potassium	mg/kg	675	U	363	()J	392	()J	524	()J	434	()J
Selenium	mg/kg	1	UJ	0.81	U	0.80	U	0.85	U	0.98	U
Silver	mg/kg	1.10	U	0.75	U	0.74	U	0.78	U	0.90	U
Sodium	mg/kg	314	()	114	()B	161	()B	169	()B	172	()B
Thallium	mg/kg	0.95	U	0.75	U	0.74	U	0.78	U	0.90	U
Vanadium	mg/kg	13.10	()	6.80	()	9.60	()	13.40		10.10	()
Zinc	mg/kg	37.30		18.30		26.40		31.80		26.70	

Sample IDs : Sample Intervals (0406) in feet below ground surface; D indicates duplicate sample.

mg/kg milligrams/kilogram
TAL Target Analyte List
CLP 3/90 Contract Laboratory Program. March 1990 Methods

Data Validation Qualifiers
() Result is between the method detection limit and the sample quantitation limit
B Possible blank contamination
J Reported value is estimated
U Compound analyzed for but not detected

Table K-1 Background Summary of Laboratory Analytical Results

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4

Vermont Air National Guard Base

		V1-BACKGROUND		V2-BACKGROUND		V3-BACKGROUND		V3-BACKGROUND	
SITE:		V1-BACKGROUND		V2-BACKGROUND		V3-BACKGROUND		V3-BACKGROUND	
LOCATOR:		V1-RFW1A		V2-BG1		V3-BG1		V3-BG1	
SAMPLE ID:		V1-RFW1A-0595		V2-BG1-0595		V3-BG1-1094		V3-BG1-1094D	
COLLECTION DATE:		05/10/95		05/09/95		10/24/94		10/24/94	
ASSOCIATED QC:		TB-051095,ER-050995 FB-050995-P,FB-050995-D		TB-050995,ER-050995 FB-050995-P,FB-050995-D		TB-102494-2,ER-102494-1 FB-092494-P		TB-102494-2,ER-102494-1 FB-092494-P	
	UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
TAL Metals by CLP 3/90									
Aluminum	µg/ℓ	58400	J	3520	J	3860		3230	
Aluminum, Dissolved	µg/ℓ	117	()	83.90	U	63.60	()B	74.30	()B
Antimony	µg/ℓ	47.60	U	47.60	U	50.80	U	50.80	U
Antimony, Dissolved	µg/ℓ	47.60	U	47.60	U	50.80	U	50.80	U
Arsenic	µg/ℓ	39.70	J	4.50	()B	4.90	()B	4.60	()B
Arsenic, Dissolved	µg/ℓ	1.90	U	1.90	U	1.70	U	1.70	U
Barium	µg/ℓ	363	J	20.20	()	35	()	32.40	()
Barium, Dissolved	µg/ℓ	20.70	()	3.20	()B	7.90	()	8.10	()
Beryllium	µg/ℓ	2	()B	0.20	U	0.50	U	0.50	U
Beryllium, Dissolved	µg/ℓ	0.20	()B	0.20	U	0.50	U	0.50	U
Cadmium	µg/ℓ	4.40	U	4.40	U	4.30	U	4.30	U
Cadmium, Dissolved	µg/ℓ	4.40	U	4.40	U	4.30	U	4.30	U
Calcium	µg/ℓ	28400		22400		54800		53400	
Calcium, Dissolved	µg/ℓ	10600		23000		50700	()B	51500	
Chromium	µg/ℓ	108		14.30	B	9.80	()	7.30	()
Chromium, Dissolved	µg/ℓ	6.50	U	6.50	U	6.30	()B	5.40	U
Cobalt	µg/ℓ	69.80		8.30	U	11.80	U	11.80	U
Cobalt, Dissolved	µg/ℓ	8.30	U	8.30	U	11.80	U	11.80	U
Copper	µg/ℓ	128		40.90		23.50	()	21.60	()
Copper, Dissolved	µg/ℓ	4.80	U	4.80	()B	7.60	U	7.60	U
Iron	µg/ℓ	103000		9250		9810		8000	
Iron, Dissolved	µg/ℓ	71.20	()	16.80	()B	63	()B	63	()B
Lead	µg/ℓ	39.90	J	7.70		7.20	J	6.20	J
Lead, Dissolved	µg/ℓ	1.80	U	1.80	U	2.30	U	2.30	U
Magnesium	µg/ℓ	29700		6160		9660		8950	
Magnesium, Dissolved	µg/ℓ	1620	()	5030		7880		7900	
Manganese	µg/ℓ	3770		279		553		540	
Manganese, Dissolved	µg/ℓ	8.20	()B	11.60	()	81.60		82	
Mercury	µg/ℓ	0.20	UJ	0.20	U	0.20	U	0.20	U
Mercury, Dissolved	µg/ℓ	0.20	U	0.20	U	0.20	U	0.20	U
Nickel	µg/ℓ	154		16.10	()	17.30	U	19.90	()
Nickel, Dissolved	µg/ℓ	12.20	U	12.20	U	17.30	U	17.30	U

Sample IDs : Sample Date (0595); D indicates duplicate sample.

µg/ℓ micrograms/liter

T[redacted] Target [redacted] List

CLP [redacted] Contract [redacted] Laboratory, [redacted]am, M[redacted]0 Met[redacted]

Data Validation Qualifiers

() Result is between the method detection limit and the sample quantitation limit

B Possible blank contamination

[redacted]ted val[redacted]timated

U Compound an[redacted] for bu[redacted]ected

Table K-1 Background Summary of Laboratory Analytical Results

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

SITE:		V1-BACKGROUND		V2-BACKGROUND		V3-BACKGROUND		V3-BACKGROUND	
LOCATOR:		V1-RFW1A		V2-BG1		V3-BG1		V3-BG1	
SAMPLE ID:		V1-RFW1A-0595		V2-BG1-0595		V3-BG1-1094		V3-BG1-1094D	
COLLECTION DATE:		05/10/95		05/09/95		10/24/94		10/24/94	
ASSOCIATED QC:		TB-051095,ER-050995 FB-050995-P,FB-050995-D		TB-050995,ER-050995 FB-050995-P,FB-050995-D		TB-102494-2,ER-102494-1 FB-092494-P		TB-102494-2,ER-102494-1 FB-092494-P	
	UNITS:	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL	RESULT	QUAL
Potassium	µg/ℓ	10000		1280	U	1890	()	1620	()
Potassium, Dissolved	µg/ℓ	1280	U	1280	U	1170	()	1010	()
Selenium	µg/ℓ	27	UJ	2.70	UJ	2.80	U	2.80	U
Selenium, Dissolved	µg/ℓ	2.70	U	2.70	U	2.80	U	2.80	U
Silver	µg/ℓ	4.30	U	4.30	U	3.20	U	3.20	U
Silver, Dissolved	µg/ℓ	4.30	U	4.30	U	3.20	UJ	3.20	UJ
Sodium	µg/ℓ	166000		2670	()	109000		98100	
Sodium, Dissolved	µg/ℓ	179000	J	2710	()	103000		101000	
Thallium	µg/ℓ	3.60	UJ	3.60	U	36	U	36	U
Thallium, Dissolved	µg/ℓ	36	UJ	3.60	UJ	36	U	36.04	U
Vanadium	µg/ℓ	112		9.60	()	8.70	()	7.40	()
Vanadium, Dissolved	µg/ℓ	3.40	U	3.40	U	5.40	U	5.40	U
Zinc	µg/ℓ	280	J	32.60		28.30		28.30	
Zinc, Dissolved	µg/ℓ	3.60	()B	5.60	()B	5.20	U	5.20	U

Sample IDs : Sample Date (0595); D indicates duplicate sample.

µg/ℓ micrograms/liter
TAL Target Analyte List
CLP 3/90 Contract Laboratory Program, March 1990 Methods

Data Validation Qualifiers
() Result is between the method detection limit and the sample quantitation limit
B Possible blank contamination
J Reported value is estimated
U Compound analyzed for but not detected

Table K-1 Background Summary of Laboratory Analytical Results

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4

Vermont Air National Guard Base

SITE:	V4-BACKGROUND
LOCATOR:	V4-BG
SAMPLE ID:	V4-BG1-1094
COLLECTION DATE:	10/25/94
ASSOCIATED QC:	TB-102594-1,ER-102494-1 FB-092494-P

	UNITS:	RESULT	QUAL
Tal Metals by CLP 3/90			
Aluminum	µg/ℓ	7960	
Aluminum, Dissolved	µg/ℓ	70.30	()B
Antimony	µg/ℓ	50.80	U
Antimony, Dissolved	µg/ℓ	50.80	U
Arsenic	µg/ℓ	5	()B
Arsenic, Dissolved	µg/ℓ	1.70	U
Barium	µg/ℓ	98.90	()
Barium, Dissolved	µg/ℓ	51.90	()
Beryllium	µg/ℓ	0.50	U
Beryllium, Dissolved	µg/ℓ	0.50	U
Cadmium	µg/ℓ	4.30	U
Cadmium, Dissolved	µg/ℓ	4.30	U
Calcium	µg/ℓ	109000	
Calcium, Dissolved	µg/ℓ	136000	
Chromium	µg/ℓ	21.10	
Chromium, Dissolved	µg/ℓ	5.40	U
Cobalt	µg/ℓ	11.80	U
Cobalt, Dissolved	µg/ℓ	11.80	U
Copper	µg/ℓ	19.20	()
Copper, Dissolved	µg/ℓ	7.60	U
Iron	µg/ℓ	11600	
Iron, Dissolved	µg/ℓ	3.80	U
Lead	µg/ℓ	5.50	J
Lead, Dissolved	µg/ℓ	2.30	U
Magnesium	µg/ℓ	20100	
Magnesium, Dissolved	µg/ℓ	19400	
Manganese	µg/ℓ	1030	
Manganese, Dissolved	µg/ℓ	1040	
Mercury	µg/ℓ	0.20	U
Mercury, Dissolved	µg/ℓ	0.20	U
Nickel	µg/ℓ	24.90	()
Nickel, Dissolved	µg/ℓ	17.30	U

Sample IDs : Sample Date (0595); D indicates duplicate sample.

µg/ℓ micrograms/liter

TA[redacted] Target [redacted] List

Cl[redacted] Com[redacted]boratol[redacted]am, Ma[redacted]0 Met[redacted]

Data Validation Qualifiers

() Result is between the method detection limit and the sample quantitation limit

B Possible blank contamination

[redacted]ed valu[redacted]imated

U Compound ana[redacted]for but not detected

Table K-1 Background Summary of Laboratory Analytical Results

Abbreviated Site Investigation - Installation Restoration Program Sites 3 and 4
Vermont Air National Guard Base

SITE:		V4-BACKGROUND	
LOCATOR:		V4-BG	
SAMPLE ID:		V4-BG1-1094	
COLLECTION DATE:		10/25/94	
ASSOCIATED QC:		TB-102594-1,ER-102494-1 FB-092494-P	
	UNITS:	RESULT	QUAL
Potassium	µg/ℓ	3450	()
Potassium, Dissolved	µg/ℓ	2090	()
Selenium	µg/ℓ	28	U
Selenium, Dissolved	µg/ℓ	28	U
Silver	µg/ℓ	3.20	U
Silver, Dissolved	µg/ℓ	3.20	UJ
Sodium	µg/ℓ	60000	
Sodium, Dissolved	µg/ℓ	83800	
Thallium	µg/ℓ	36	U
Thallium, Dissolved	µg/ℓ	36	U
Vanadium	µg/ℓ	13.20	()
Vanadium, Dissolved	µg/ℓ	5.40	U
Zinc	µg/ℓ	37.60	
Zinc, Dissolved	µg/ℓ	5.20	U

Sample IDs : Sample Date (0595); D indicates duplicate sample.

µg/ℓ micrograms/liter
TAL Target Analyte List
CLP 3/90 Contract Laboratory Program, March 1990 Methods

Data Validation Qualifiers
() Result is between the method detection limit and the sample quantitation limit
B Possible blank contamination
J Reported value is estimated
U Compound analyzed for but not detected