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PHASE II ENVIRONMENTAL EVALUATION AND CONCEPTUAL REMEDIAL ACTION PLAN FOR AMERON'S BUFFALO FACILITY

Submitted to:

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1.0 INTRODUCTION

This report presents the results of an environmental assessment undertaken by Meredith/Boli & Associates, Inc. (M/B&A) during the week of 22 October through 26 October 1984 at the Ameron, Inc. site, which is located at 111 Colgate Avenue in the City of Buffalo, New York (Figures 2-1 and 2-2). This investigation was performed in accordance with the Phase II Environmental Evaluation Plan submitted to and approved by the New York Department of Environmental Conservation (NYDEC) on 21 September 1984.

The purposes of the Phase II study were to define the character and extent of contamination at Ameron's Buffalo facility and to provide the basis for identifying conceptual remedial action alternatives. This investigation was designed specifically to supplement a cursory evaluation (Phase I) conducted previously by M/B&A at the subject site.

A summary of the Phase I evaluation is presented in Section 2.0 herein. Also included in this section, are background information concerning the historical use of the Ameron property and information on the regional and local geology and hydrogeology.

A summary of the Phase II evaluation, including a description of the groundwater monitoring system, and the chemical test results are presented in Section 3.0 herein. Also included in this section, are M/B&A's interpretations of the resultant data.

Finally, a proposed conceptual remedial action plan for the Ameron site is presented in Section 4.0 herein. This plan is based on the results of the Phase I and Phase II environmental evaluations and is meant to serve as a starting point for upcoming discussions with the NYDEC.

2.0 BACKGROUND

2.1 SITE HISTORY

The Buffalo facility consisted originally of one plant located at 111 Colgate Avenue (Figures 2-1 and 2-2). This plant, along with its product line, was purchased by Ameron as an ongoing business in 1960. Ameron subsequently purchased the adjoining 88 Okell Street property, on which a second plant was located. In 1967, Ameron built a third plant on the Okell Street property. Together, these three plants made up Ameron's Buffalo Protective Coatings Division, which operated under EPA Generator's ID No. NYD-056617632. The Buffalo facility was operated with a full complement of environmental permits and approvals. This included compliance as a hazardous wastes generator (pursuant to RCRA §3010 notification). However, at no time, was the Buffalo operation a treatment, storage, or disposal (TSD) facility.

During the period from November 1982 to June 1983, Ameron phased out operations at the Buffalo facility and sold the remaining inventory, raw materials, and a majority of the machinery to another manufacturer. Waste materials were manifested properly, removed from the site, and transported to approved disposal facilities in New York State in accordance with all local, State, and Federal regulations. A final inspection of the Buffalo facility was conducted by the County of Erie Department of Environmental Planning on 16 June 1983. A copy of the County's notice of this close-out inspection is provided as Exhibit 2-1 hereto. Ameron has since sold a portion of the property (Plant No. 2) to another party.

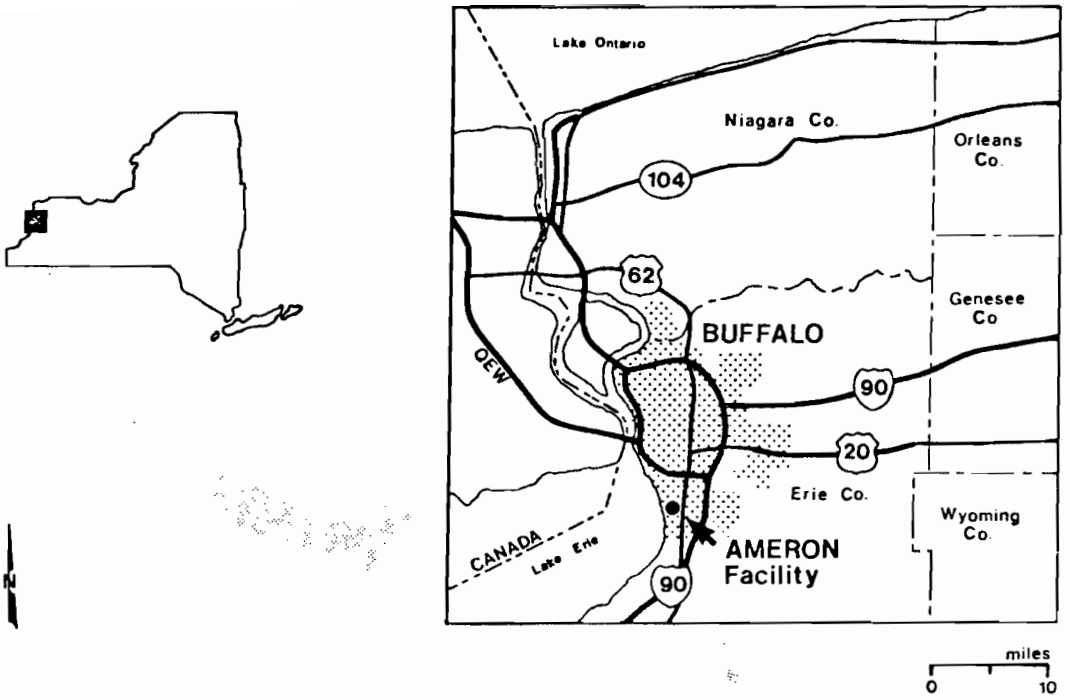
2.2 REGIONAL AND LOCAL SETTING

The geology and groundwater hydrology for the region in which Ameron's Buffalo facility is located were previously reported by M/B&A in Section 2.0 of the document, Cursory Environmental Evaluation of Ameron's Buffalo Facility, 26 September 1983. Section 2.0 of this document has been reproduced and is included herein as Appendix A.

2.3 CURSORY ENVIRONMENTAL EVALUATION

2.3.1 Field Program

In August of 1983, Ameron retained M/B&A to undertake a brief study program at Ameron's Buffalo facility. The primary purpose for this study was to characterize the environmental conditions in the vicinity of Plant No. 2 prior to a contemplated sale of this portion of the property. Once the field program commenced, it became clear that a reasonable initial characterization of the entire property could be achieved as well. This expanded effort included digging and sampling 17 backhoe exploratory trenches as well as acquisition of a number of additional liquid and soil samples from various other locations on the property (refer to Figure 2-3). Screening analytical chemistry subsequently was performed on selected liquid and soil samples. The screening tests included metals pH, electrical conductivity, and total organic carbon (TOC).



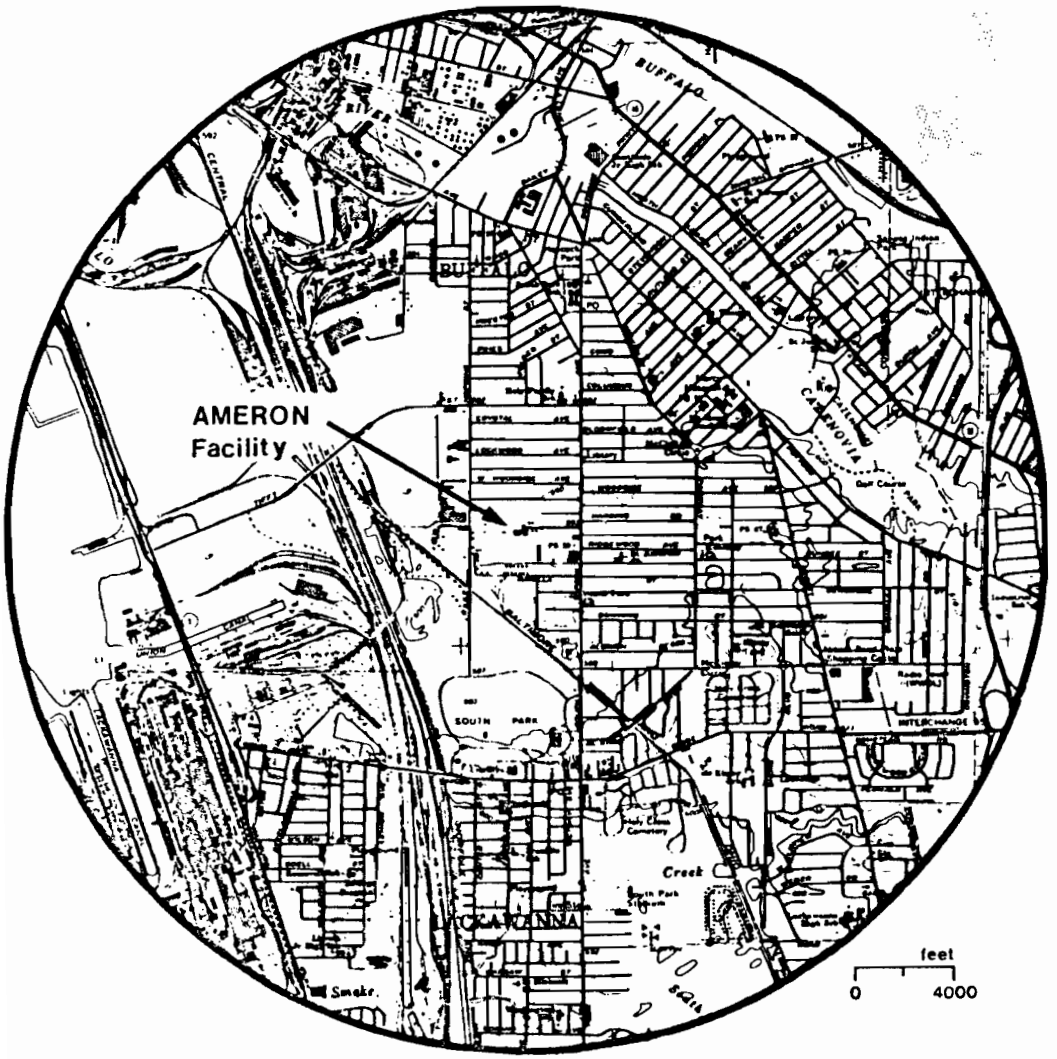
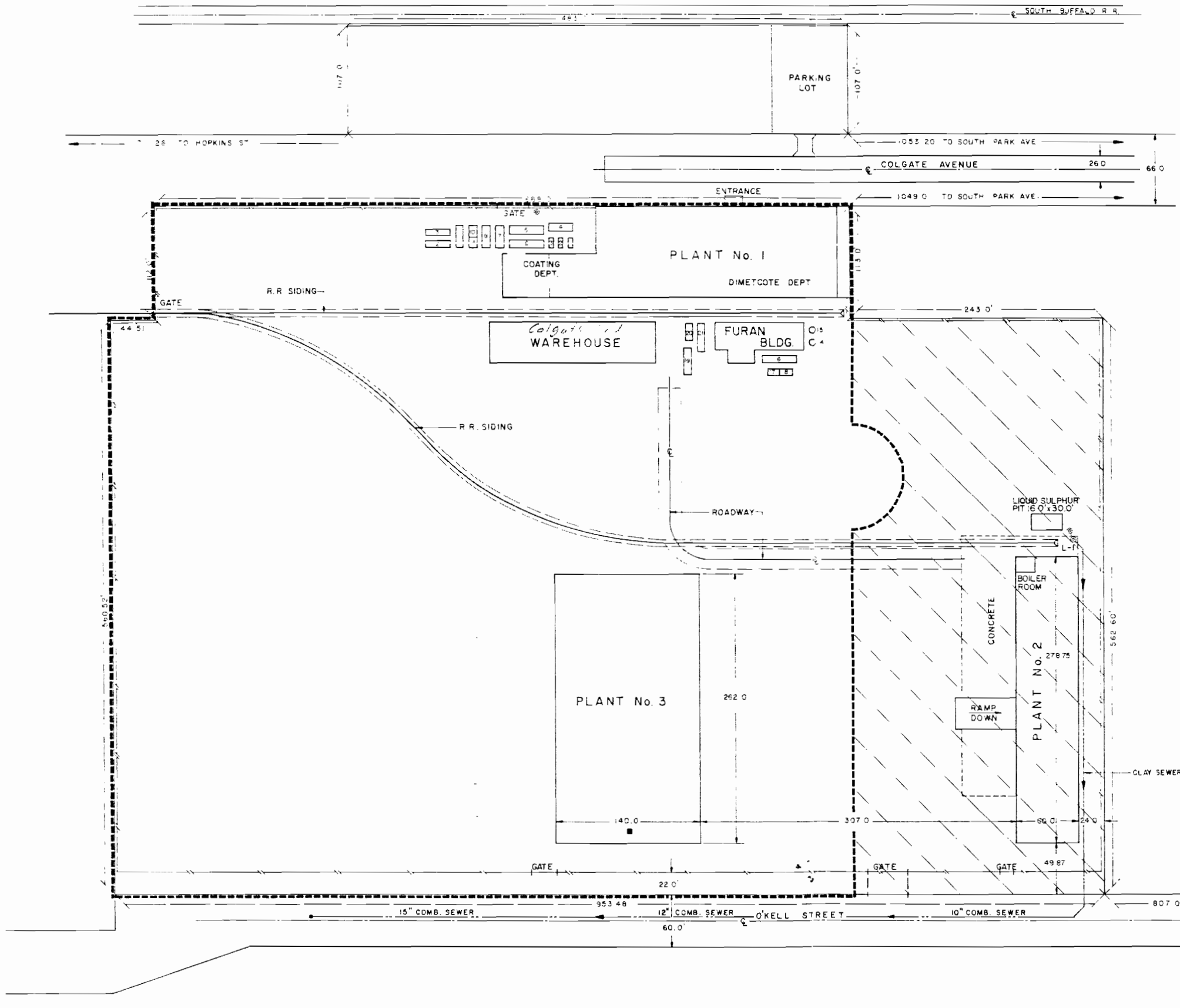


FIGURE 2-1
LOCATION MAP



NOTE ALL PROPERTY BOUNDARIES, BUILDING, TANK LOCATIONS, AND FACILITY DIMENSIONS WERE TAKEN DIRECTLY FROM DRAWINGS FURNISHED TO M/B&A BY AMERON. THE SAMPLING LOCATIONS FOR THE 7 AND 8 SEPTEMBER 1983 SITE INVESTIGATION WERE PLOTTED BY M/B&A.

LEGEND

------ Phase II Study Boundary

Property Sold By AMERON

Manhole Access

N

feet
0 50

TANK No	SIZE DIA x LENGTH	CAPACITY GALS	CONTENTS
1	4'-0"x10'-6"	1000	CELLOSOLVE ACETATE
2	4'-0"x10'-6"	1000	"
3	4'-0"x10'-6"	1000	—
4	8'-0"x22'-0"	8000	ACETONE
5	8'-0"x33'-0"	12000	M E K
6	8'-0"x33'-0"	12000	S C # OR H S # 1
7	8'-0"x22'-0"	8000	M E K
8	8'-0"x22'-0"	8000	X Y L O L
9	8'-0"x11'-0"	4000	006 CLEAR
10	8'-0"x11'-0"	4000	0033 CLEAR
11	8'-0"x22'-0"	8000	STYRENE
12	6'-6"x24'-0"	6000	PHOSPHORIC ACID
13	5'-6"x24'-0"	4000	DI-N-BUTYL AMINE
14	6'-0"x28'-0"	8000	SIL DATE
15	6'-0"x28'-0"	6000	NALCOAG
16	8'-0"x32'-0"	12000	ASPHALT
17	8'-0"x11'-0"	4000	KASIL No
18	8'-0"x11'-0"	4000	ETHYL SILICATE
19	8'-0"x26'7"	10000	FURFURYL ALCOHOL
20	6'-6"x17'-6"	4300	FURFURYL ALDEHYDE
21	6'-6"x28'-6"	7000	FURAN

FIGURE 2-2

Site Plan

NOTE ALL PROPERTY BOUNDARIES, BUILDING, TANK LOCATIONS, AND FACILITY DIMENSIONS WERE TAKEN DIRECTLY FROM DRAWINGS FURNISHED TO M/B&A BY AMERON. THE SAMPLING LOCATIONS FOR THE 1 AND 8 SEPTEMBER 1983 SITE INVESTIGATION WERE PLOTTED BY M B&A

LEGEND

- ------ Phase II Study Boundary
- Property Sold By AMERON
- Manhole Access
- ■ Sampling Point – M/B&A Cursory Evaluation
- □ Sampling Point – M/B&A Phase II Evaluation
- Groundwater Monitoring Well

N

feet
0 50

TANK No	SIZE DIA x LENGTH	CAPACITY GALS	CONTENTS
1	4-0 x 10-6	000	CELLOSOLVE ACETATE
2	4-0 x 10-6	000	
3	4-0 x 10-6	000	—
4	8-0 x 22-0	3000	ACETONE
5	8-0 x 33-0	4000	M B K
6	8-0 x 33-0	4000	30# DRUMS
7	8-0 x 22-0	3000	M E K
8	8-0 x 22-0	3000	X Y L O L
9	8-0 x 11-0	4000	236 CLEAR
10	8-0 x 11-0	4000	0033 CLEAR
11	8-0 x 22-0	3000	STYRENE
12	5-6 x 24-0	6000	PHOSPHORIC ACID
13	5-6 x 24-0	4000	DI-N-BUTYLE AMINE
14	6-0 x 26-0	6000	SILICATE
15	6-0 x 26-0	6000	NALCOAG
16	8-0 x 32-0	2000	ASPHALT
17	8-0 x 11-0	4000	NASIL 1
18	6-0 x 11-0	4000	ETHYL SILICATE
19	8-0 x 26-7	3000	FURFURYL ALCOHOL
20	6-6 x 7-6	4320	FURFURYL ALDEHYDE
21	6-6 x 26-6	7000	FURAN

FIGURE 2-3

MONITORING WELLS AND SAMPLING POINTS LOCATIONS

Exhibit 2-1

Inspection letter from County of Erie [to be submitted under separate cover]

2.3.2 Findings

The results of this cursory environmental investigation were reported to Ameron management in a formal M/B&A document entitled, Cursory Environmental Evaluation of Ameron's Buffalo Facility, dated 26 September 1983. A summary of the findings of that study is presented on Table 2-1 herein. The results suggested that elevated concentrations of organic contaminants had accumulated on surface soils in specific areas of the property. The primary area of concern was the soil underlying the western portion of Plant No. 1. Other areas of potential concern included the area around the Furan Building and the area immediately west of Plant No. 1. Analytical values obtained for downgradient groundwater samples (i.e., sample location TP-13) did not provide evidence that any off-site transportation of organic contaminants was occuring. Based on these initial findings, M/B&A recommended that a detailed environmental investigation be conducted to obtain sufficient data to define the character and extent of contamination present on the property and to develop the basis for a cleanup program.

The investigation also provided information on the site stratigraphy and depth to ground water. Generally, it was observed that near-surface site stratigraphy consisted of three distinct strata: a dark brown-black fill (0 to 12 inches from the surface); a very clayey, sandy silt (12 to 48 inches deep); and a very dense, grey clay (48 inches and deeper to undetermined depth). Groundwater was observed in two distinct systems beneath the site: an unconfined, perched zone within the fill and the clayey, sandy silt; and immobilized interstitial water within the dense grey clay stratum. From the literative, it was learned that a confined aquifer in a bedrock formation likely also existed beneath the site at depth.

TABLE 2-1
ANALYTICAL DATA SUMMARY
PHASE I

Sampling Location	Sample Number	pH	Conductivity mhos/cm	TOC mg/l	PARAMETER [a] B	Ba	Ca	Fe	K	Mg	Mn	Mo	Na	Pb[d]	Si	Sr
TP-1	1	8.19	2339.9	6.2	0.896	0.021	369	0.11	2	42.9	0.03	0.2	151	0.1	7.97	0.735
TP-1	3(s)	-	-	-	-	-	11,000	48,200	17,600	8,080	785	30	10,600	5	-	187
TP-2	4	7.90	2726.2	14	1.97	0.052	599	0.09	5	64.9	0.01	0.3	87	0.1	6.09	1.02
TP-3	5	8.19	1528.9	11	0.486	0.190	297	0.35	3	39.1	3.27	0.3	13	0.1	11.4	0.738
TP-4	8	8.36	1413.0	15	0.625	0.031	304	0.24	7	24.6	0.01	0.3	8	0.1	23.6	0.496
TP-5	15(s)	-	-	-	-	-	8,070	40,900	18,000	7,450	682	30	9,400	5	-	163
TP-7	34	7.92	1567.5	2.1[b]	0.076	0.015	259	0.06	3	83.9	0.06	0.5	18	0.1	8.23	1.00
TP-11	26	7.83	1606.1	24	0.142	0.049	257	0.54	1	67.2	4.74	0.4	28	0.1	14.3	0.585
TP-10	23	7.77	1413.0	25	0.300	0.097	235	0.26	1	52.6	6.32	0.3	24	0.1	14.2	0.610
TP-9	24	7.85	1335.8	80	0.438	0.179	220	0.54	3	61.2	1.92	0.2	15	0.1	36.6	0.629
TP-15	42	7.95	531.9	5.0	0.124	0.016	66.7	0.05	1	14.4	1.05	0.2	33	0.1	5.65	0.221
TP-12	27	7.88	1297.1	12	0.251	0.169	204	0.31	1	20.7	2.99	0.2	58	0.1	12.6	0.818
TP-14	40	7.77	1992.3	4.6	0.345	0.005	343	0.06	1	102	0.32	0.3	51	0.1	10.4	0.814
TP-13	37	7.75	1490.2	4.2[c]	0.294	0.005	285	0.11	1	70.8	1.22	0.2	22	0.1	10.0	0.486
TP-13	38(s)	-	-	-	-	-	8,960	75,200	9,600	3,070	555	30	7,700	5	-	145

[a] All samples were analyzed by ICAP with corresponding values expressed in ppm, except pH, conductivity, and TOC (UV Persulfate/IR Absorption).
[b] Upgradient representative sample; also analyzed by GC/MS.
[c] Downgradient representative sample; also analyzed by GC/MS.
[d] Analyzed by AA.
(s) Denotes solid sample (all others are liquid) which were prepared via HCL digestion prior to analysis.

TABLE 2-1
ANALYTICAL DATA SUMMARY
PHASE I
(concluded)

Sampling Location	Sample Number	pH	Conductivity mhos/cm	TOC mg/l	PARAMETER [a] B	Ba	Ca	Fe	K	Mg	Mn	Mo	Na	Pb [d]	Si	Sr
L-2	21	10.56	843.1	2,200	0.059	0.005	123	0.04	1	1.43	0.01	2.1	19	0.1	13.3	0.310
L-3	22	8.29	138.6	3,900	0.39	0.10	147	35.3	10	19.5	3.6	3	10	0.1	12.5	0.53
L-3	22A	-	-	370,000	-	-	-	-	-	-	-	-	-	-	-	-
L-4	29	7.86	1258.5	430	0.387	0.151	135	9.07	2	25.1	0.67	0.2	105	0.1	18.1	0.576
L-5	28	6.96	778.3	37	0.523	0.066	160	0.08	18	2.76	0.10	0.2	17	0.1	14.5	0.660
L-6	30	7.21	786.9	60	0.966	0.047	151	0.09	18	10.9	0.19	0.2	20	0.1	20.1	0.568
L-8	31	7.54	1451.6	650	0.323	0.144	170	20.7	1	21.9	1.26	0.3	112	0.1	17.4	0.643
L-7	32	7.72	1219.9	1,500	0.244	0.083	125	11.0	1	17.5	0.85	1.3	93	0.1	17.9	0.547
L-9	33	7.78	566.5	470	0.100	0.054	66.9	4.01	1	11.7	0.52	0.5	36	0.1	5.56	0.234
L-1	17	6.87	1722.0	10	0.236	0.036	297	0.27	7	22.0	0.48	0.2	68	0.1	20.9	0.449
TP-5	35	8.47	609.7	17	0.118	0.039	139	0.06	1	6.12	1.32	0.2	3	0.1	14.1	0.229
TP-6	36	8.27	791.3	13	0.130	0.056	171	0.07	1	9.00	1.35	0.2	13	0.1	13.9	0.300
TP-16	46(s)	-	-	-	-	-	9,390	26,100	17,300	5,150	809	30	12,300	5	-	205

[a] All samples were analyzed by ICAP with corresponding values expressed in ppm, except: pH, conductivity, and TOC (UV Persulfate/IR Absorption).
[b] Upgradient representative sample; also analyzed by GC/MS.
[c] Downgradient representative sample; also analyzed by GC/MS.
[d] Analyzed by AA.
(s) Denotes solid sample (all others are liquid) which were prepared via HCL digestion prior to analysis.

3.0 PHASE II ENVIRONMENTAL EVALUATION

3.1 OVERVIEW

The Phase II Environmental Evaluation was designed to build on the information acquired during the cursory environmental evaluation with the primary purpose of more precisely defining the character and extent of contamination at Ameron's Buffalo facility. A secondary purpose of the study was to provide Ameron management with a basis for devising a proposed cleanup program. Because Plant No. 2 was sold to another party, this area of the property (delineated on Figure 2-2) was not included in the investigation.

A strategy for sampling and analysis was developed whereby each succeding step was to be refined on the basis of the data obtained during the preceding step. The environmental evaluation was designed to include the following elements:

- Drill and complete three (3) groundwater monitoring wells
- Collect groundwater samples from the monitoring wells
- Analyze the groundwater samples collected from the monitoring wells using AAS/ICAP and GC/MS for listed priority pollutants and all additional chemicals that have been identified as being used on the property
- Select 5 to 10 soil samples collected during the cursory M/B&A environmental study program
- Collect 15 to 20 additional soil samples for predetermined locations on the property
- Determine marker molecules predicted on the results of the analysis performed on the groundwater samples and knowledge of previous activity at the site
- Obtain agreement on the selected marker molecules with the NYDEC
- Analyze 20 to 30 of the soil samples by AAS/ICAP and GC/MS, as necessary, for selected marker molecules
- Prepare formal M/B&A report presenting the results and findings and recommending alternative cleanup plans.

The Phase II Environmental Evaluation Plan was submitted to the NYDEC in early September 1984. The Plan, with suggested additions and refinements, was approved subsequently by the NYDEC on 21 September 1984.

3.2 FIELD INVESTIGATION

The field investigation of the Phase II Environmental Evaluation of Ameron's Buffalo Facility was conducted during the period of 22 October 1984 through 25 October 1984 and on 17 December 1984. The objectives of the field program were to install three groundwater monitoring wells and to collect liquid and soil samples at pre-determined locations within the boundaries of the Phase

II study area (refer to Figure 2-3). Three groundwater monitoring wells were installed and 12 test holes were cored (7 outside Plant No. 1 and 5 inside Plant No. 1). A total of 59 soil and liquid samples were collected. Hydraulic grade elevations were established.

3.2.1 Groundwater Monitoring System

The three groundwater monitoring wells (one upgradient and two downgradient) were installed by the geotechnical/drilling contractor, Parratt Wolff (based in Syracuse, New York). The surface locations of the groundwater monitoring wells are shown on Figure 2-3. Each of the three wells was installed to a depth of 12 feet, penetrating the very dense, grey clay underlying the site.

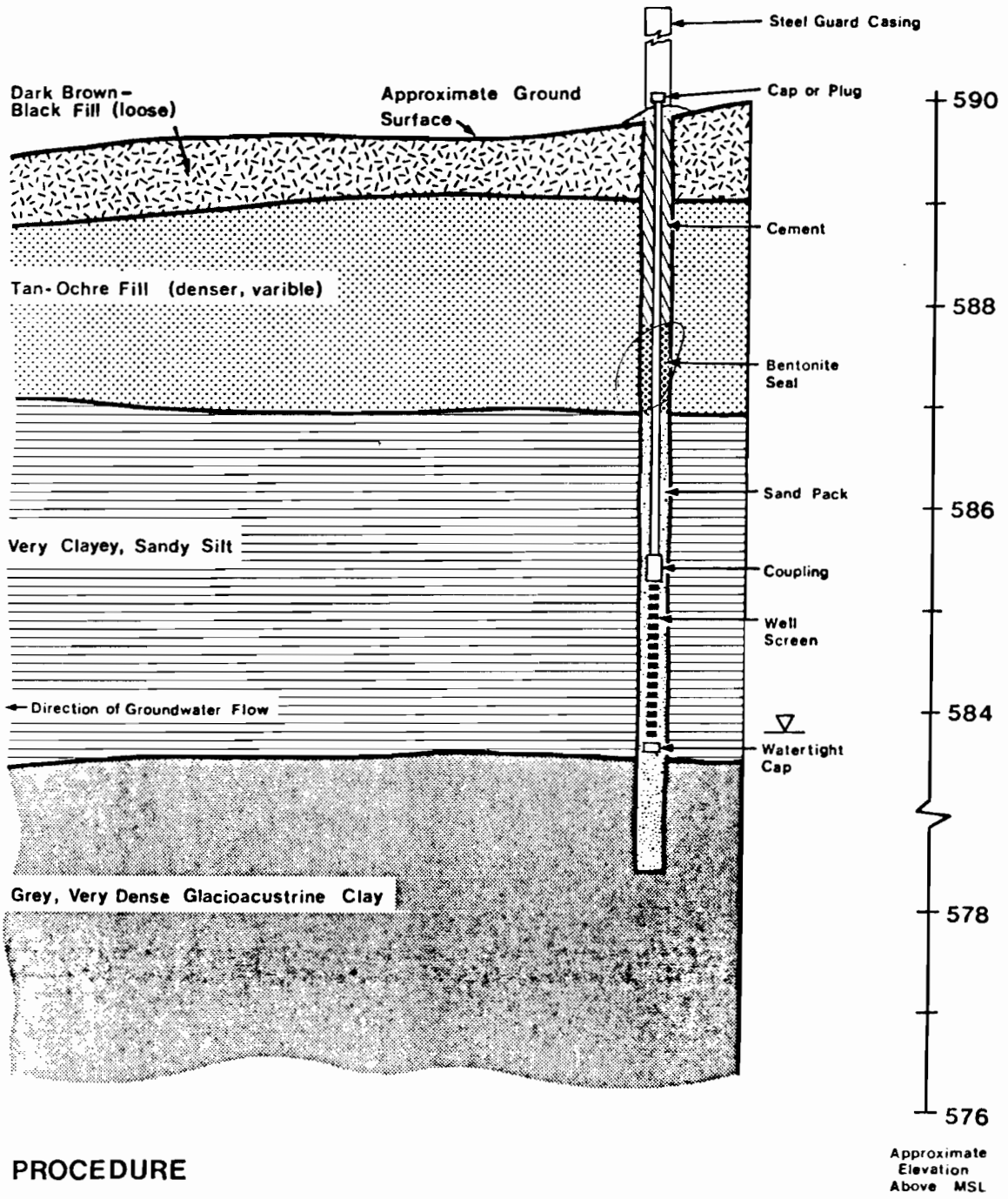
The monitoring wells were cased with 2-inch galvanized steel pipe. Four feet of galvanized screen was installed in each well from 8 to 12 feet. A gravel pack was placed around the well screen. A bentonite seal and cement grout were placed in the annular space above the gravel pack to prevent contamination. A schematic section of a typical groundwater monitoring well installation is shown on Figure 3-1.

3.2.2 Groundwater Sampling Procedures

Additional samples were collected on 17 December 1984 by personnel from Colgate Industries, Inc. under the supervision of M/B&A; chain-of-custody control of the samples were documented per Exhibit 3-1. The following checklist generally outlines the monitoring well sampling method that was used at the Buffalo facility:

- Check equipment (i.e., pump, sample bottles, etc.)
- Measure static water level in the well
- Lower the sampling device (i.e., pump, drop pipe/tubing) into the well)
- Flush the well to remove standing water
- Remove sampling device from well
- Allow the well to recharge to the static water level
- Clean and/or flush sampling equipment with a detergent wash and distilled water rinse
- Lower the sampling device back into the well
- Obtain liquid sample
- Place samples in shuttles for shipment to Montgomery Laboratories, Pasadena, California
- Clean equipment; make sure well is capped securely.

To assure quality control and consistency, the EPA procedures for sampling hazardous waste streams (EPA-600/2-80-018) were observed.



PROCEDURE

Place pipe and screen
Place sand pack
Place bentonite seal
Cement to surface
Flush drilling mud and clean
Place guard casing

FIGURE 3-1

SCHEMATIC SECTION OF TYPICAL GROUNDWATER MONITORING WELL INSTALLATION

EXHIBIT 3-1

SAMPLE CHAIN OF CUSTODY RECORD

Collector's Sample No. _____ Date Sampled _____ Time Sampled _____

Sampling Location: _____

_____

(Draw diagram on reverse side, if required to show precise sampling point.)

Collector's Name: _____ Telephone: ( ) _____

Shipper Name: _____ Telephone: ( ) _____

Source of Waste (e.g., process, operation, etc.): _____

_____

Description of Waste (e.g., physical state, odor, color, etc.): _____

_____

_____

EC _____ pH _____ T°C _____ Other _____

Other Field Observations: _____

_____

_____

Chain of Possession (Each organization/person handling the sample):

1. _____
   Signature Title/Organization Inclusive Dates

   _____
   Name (printed) Complete Address

2. _____
   Signature Title/Organization Inclusive Dates

   _____
   Name (printed) Complete Address

3. _____
   Signature Title/Organization Inclusive Dates

   _____
   Name (printed) Complete Address

4. _____
   Signature Title/Organization Inclusive Dates

   _____
   Name (printed) Complete Address

The static water level within each well, relative to an established datum, was determined by differential leveling. This information reaffirmed the previously determined hydraulic gradient (i.e., from southeast to northeast) across the property.

3.2.3 Soil Sampling Procedures

The drilling contractor also cored seven test holes, each six feet deep, at pre-determined locations on-site (refer to Figure 2-3). At each of these locations, soil samples were collected at the interfaces (lithologic contacts) between the previously observed dark brown-black fill and the very clayey, sandy silt; and between the very clayey, sandy silt and the grey, very dense glaciolacustrine clay. Samples were collected using a split-barrel sample spoon under the supervision of M/B&A. Samples were placed in glass jars with Teflon lid liners. The split spoon sampler was steamed cleaned between bore holes. As with groundwater samples, M/B&A followed the most recent EPA procedures for sample container cleaning, sample collecting, preservation, storage, and shipment.

Five soil core samples were collected inside Plant No. 1 with the assistance of Colgate Industries. The samples were collected for depths of 0 to 2 feet, 2 to 4 feet, and 4 to 6 feet. A hand-driven, sampling spoon was used to collect these samples, which were placed in glass jars with Teflon lid liners.

3.2.4 Health and Safety Plan

A primary concern during sampling of potentially hazardous substrates is personnel safety, requiring the use of protective clothing and equipment to minimize exposures to hazards. The NYDEC required that a detailed health and safety plan be developed and an on-site coordinator designated prior to the initiation of the Phase II field investigation. The health and safety plan developed and observed by M/B&A (and its subcontractors) during the field investigation is reproduced as Appendix B hereto.

3.3 CHEMICAL ANALYTICAL PROGRAM

3.3.1 Analytical Procedures

All groundwater and soil samples were shipped to James Montgomery Laboratories (located in Pasadena, California) for chemical analysis. The analytical procedures used by James Montgomery Laboratories for determining whether a sample contains a given toxic constituent are those presented in the EPA manual, Test Methods for Evaluating Solid Waste, Physical/Chemical Methods, Second Edition, July 1982. The Gas Chromatography/Mass Spectrometry Methods (GC/MS) presented in Section 8.2 of this manual were used to measure listed priority organic pollutants and additional selected chemical organic species. For groundwater samples, the Atomic Absorption Methods presented in Section 7.0 of the EPA manual were used to measure priority pollutant metals concentrations. In addition, a total organic carbon analyzer was used to measure TOC; specific conductance and pH were determined with the use of a conductivity instrument and pH meter, respectively.

3.3.2 Quality Assurance/Quality Control

James Montgomery Laboratories maintains full quality assurance (QA) and quality control (QC) procedures. The QA program covers sampling protocol, laboratory control, sample handling, and other quality assurance parameters. The program is based on the EPA handbook, Handbook for Analytical Quality Control in Water and Wastewater Laboratories, March 1979. The following is a brief summary of QC procedures used in Montgomery Laboratories' analyses:

- A minimum of three values for standard curve quantification
- Duplicates run at least every tenth sample or once per sample set, whichever is more frequent
- Spikes added for recovery on at least every tenth sample in a set
- Additional standards run after every tenth sample to verify standard curves
- A reagent and procedure blank run with every 10 samples or per set, whichever is more frequent
- A field blank is run whenever possible.

Finally, every lab report is reviewed by the analyst, the group leader and/or QA officer, and the lab director so there is continuous cross-checking of results.

3.3.3 Chemical Test Results

Three groundwater samples (one collected from each monitoring well) were tested by the Laboratory. A summary of the results of the groundwater analyses is presented on Table 3-1 herein. A copy set of the complete laboratory reports is provided as Appendix C hereto.

The concentration levels of the metals included in the groundwater analyses all were below the maximum concentration of contaminants for characteristics of EP Toxicity. In addition, the variability of the concentration levels between the upgradient well (MW-1) and the two downgradient wells (MW-2 and MW-3) was insignificant. The results (i.e, no detection) of the quantitative analysis for organic compounds support the findings of the cursory evaluation that organic contaminants known to be present in specific areas on the property are not migrating off-site.

In addition, 42 soil samples were selected by M/B&A and analyzed chemically. A summary of the results is presented on Table 3-2. A copy set of the laboratory reports is provided as Appendix D hereto.

Generally, eight of these 42 samples should be considered significantly contaminated (i.e., containing one or more organic compound with a concentration greater than one part per million) and 14 are slightly contaminated (i.e., containing one or more organic compounds with a concentration less than one part per million, but greater than the test level of detection). The other 20 samples included in the quantitative analyses revealed no organic contaminants above the laboratory's levels of detection.

TABLE 3-1
GROUNDWATER ANALYTICAL DATA SUMMARY
PHASE II

	Detected Elements/Parameters [1]		
Parameter	MW-1	MW-2	MW-3
Silver	<0.005	<0.005	<0.005
Arsenic	<0.001	<0.001	<0.001
Beryllium	0.005	0.004	0.006
Cadmium	<0.003	<0.003	<0.003
Chromium, total	<0.029	<0.029	<0.029
Copper	0.22	0.039	0.042
Mercury	<0.0003	<0.0003	<0.0003
Nickel	0.020	<0.008	<0.008
Lead	0.023	0.004	0.005
Antimony	<0.002	0.004	<0.002
Selenium	0.002	0.003	0.001
Thallium	<0.005	<0.005	<0.005
Zinc	13	7.9	19
Phenol	<0.005	0.007	<0.005
pH	7.7	7.8	7.4
TOC	3.6	5.2	5.4
Priority Pollutant Volatile Organics [2]	ND [3]	ND	ND
Additional Compounds [2]	ND	ND	ND

[1] Concentrations for all parameters except pH are expressed in milligrams per liter (mg/l).

[2] A list of the compounds included in the quantitative analyses, together with minimum detection limits, is included with the formal lab report prepared by James Montgomery Laboratories, which is provided as Appendix C hereto.

[3] ND = Not detected.

TABLE 3-2
SOIL ANALYTICAL DATA SUMMARY [1]
PHASE II

Sample Location [2]	Sample Identification	Sample Depth [3]	Detected Compounds [4] Priority Pollutant Volatile Organics	Non-Priority Pollutant Volatile Organics [6]
MW-2	2	12-36	ND [5]	1,1-Biphenyl (0.380)
	4	36-60	ND	1,1-Biphenyl (0.150) C_4 alkylbenzene isomers (0.400)
MW-1	12	12-36	ND	ND
	13	48-60	ND	ND
4	15	0-24	ND	ND
	16	24-48	ND	1,1-Biphenyl (0.120)
	17	48-72	ND	Decane (0.790)
5	18	0-24	ND	ND
	19	24-48	ND	ND
	20	48-72	ND	ND
6	21	0-8	ND	Acetone (5.0) MEK (17.0) m,p-xylene (87.0) o-xylene (52.0) MIBK (35.0) Octane (6.0) Dimethylcyclohexane (13.0) C_9H_{20} alkane (13.0) C_3 alkyl-benzene isomers (260.0) C_4 alkyl-benzene isomers (260.0)
	22	24-48	ND	ND
	23	48-72	ND	Trimethylbenzene isomers (0.024) Tetramethylbenzene isomers (0.040)

TABLE 3-2
(continued)

Sample Location [2]	Sample Identification	Sample Depth [3]	Detected Compounds [4] Priority Pollutant Volatile Organics	Non-Priority Pollutant Volatile Organics [6]
7	25	0-8	Ethylbenzene (0.040)	m,p-xylene (0.320) o-xylene (0.070) Dimethyloctane (0.075) MIBK (0.160)
	24	24-48	ND	ND
	26	48-72	ND	ND
8	27	0-8	ND	o-xylene (0.100) Dimethyloctene (0.120) Decahydronaphthalene (0.110)
	28	24-48	ND	C_8-C_{11} hydrocarbons (0.020)
	29	48-72	ND	Decane (0.160) 1,1-biphenyl (1.3) C_4 alkylbenzene isomers (0.130)
9	30	0-8	ND	1,1-biphenyl (0.100) oxybisbenzene (0.160)
	31	24-48	ND	ND
	32	48-72	ND	ND
10	33	0-12	Ethylbenzene (0.230)	m,p-xylene (0.800) o-xylene (0.360) MIBK (0.570)
	34	24-48	ND	ND
	35	48-72	ND	ND
√ 17	50	14-18	Ethylbenzene (0.037)	m,p-xylene (0.520) o-xylene (0.150)
	49	22-27	ND	ND
	48	33-35	ND	ND
18	53	0-5	Trichloroethene (0.053)	ND

TABLE 3-2
(continued)

Sample Location [2]	Sample Identification	Sample Depth [3]	Detected Compounds [4] Priority Pollutant Volatile Organics	Non-Priority Pollutant Volatile Organics [6]
	52	17-21	ND	ND
	51	33-38	ND	ND
19	58	24-28	ND	Acetone (2.0) MEK (3.0) m,p-xylene (3.0) MIBK (23.0)
20	55	<30	Ethylbenzene (5.0) Toluene (10.0)	m,p-xylene (50.0) o-xylene (13.0) MIBK (130.0) C_3 alkylbenzene isomers (2.0) C_4 alkylbenzene isomers (36.0)
	54	30-34	ND	4-methyl-2 pentanone (8.5)
21	59	24-28	Toluene (220.0)	Acetone (53.0) MEK (110.0) m,p-xylene (720.0) o-xylene (240.0) Heptanes (290.0) methylcyclohexane (21.0) MIBK (16.0) Trimethylbenzene isomers (47.0)
	57	44-48	Ethylbenzene (0.750)	Acetone (34.0) MIBK (130.0) MEK (32.0) 2-hexanol (1.8) m,p-xylene (3.5) o-xylene (1.1) 2-propanol (2.5) 2-hexanone (1.8)
	56	48-52	Ethylbenzene (0.850)	Acetone (1.9) MEK (9.1) 2-propanol (2.5) MIBK (48.0) 2-hexanone (9.0) m,p-xylene (2.3) o-xylene (1.4)

TABLE 3-2
(concluded)

Sample Location [2]	Sample Identification	Sample Depth [3]	Detected Compounds [4] Priority Pollutant Volatile Organics	Non-Priority Pollutant Volatile Organics [6]
TP-8	60	44	ND	Tetramethylcyclopropane (0.026)
TP-9	61	18	ND	ND
	62	42	ND	1,1-biphenyl (0.360)
TP-11	63	2	ND	ND
TP-15	64	7	ND	ND

[1] The formal laboratory report prepared by James Montgomery Laboratories is reproduced as Appendix D hereto. The report provides a list of compounds included in the priority pollutant volatile organic quantitative analyses, together with minimum detection limits.

[2] Refer to Figure 2-3.

[3] Measured in inches from ground surface.

[4] Concentrations for all compounds detected in the quantitative analyses are expressed in milligrams/kilogram (i.e., mg/kg = parts per million).

[5] ND = Not detected.

[6] ( ) = concentration level in mg/kg.

3.4 FINDINGS AND DATA INTERPRETATION

3.4.1 Data Limitations

Reviewers of this report should note that the Phase I and Phase II environmental evaluations performed at the site to date are not absolutely definitive in their detail. For example, the physical and chemical data are sufficient only to draw reasonable conclusions regarding the approximate extent of the subsurface pollutant contamination. As is typical of this type of investigation, the number of samples collected and tested is controlled to a large extent by economic considerations. Therefore, the data collected are not sufficient to unequivocally pinpoint areas of contamination, nor can exact pollutant concentrations be defined for these areas. However, the results are adequate to establish estimated boundaries of contamination (see Section 3.4.2 herein), upon which a conceptual remedial action plan can be based.

3.4.2 Findings and Conclusions

Based on the results of the field investigation and chemical analyses performed on selected soil and groundwater samples, it is clear that organic contamination of varying concentration levels does exist at certain locations on the Ameron property. The discussion herein provides a summary of data concerning the horizontal and vertical extent of contamination found on-site. In addition, general information on the contaminants as to their potential hazards is provided (see Table 3-3 herein). The compounds shown on Table 3-3 are representative of the contaminants identified in on-site soil samples.

The samples collected at points south of the Furan Building (i.e., sample locations TP-8, 4, and TP-9) revealed relatively low concentrations (i.e., less than 1 ppm) of certain aliphatic hydrocarbon compounds. Since the three detected compounds are fairly insoluble in water, they typically pose lesser health and environmental risks than more water soluble (and/or otherwise more mobile) volatile organic compounds. Under the present physical circumstances, the likelihood that these contaminants could migrate off-site (by means of groundwater flow, surface runoff, or air) is small. However, if the soil were disturbed in this area (e.g., by future site development) a potential hazard could exist to workers and/or the environment. It is estimated that the lateral area of contamination is approximately 150 feet x 175 feet. The vertical extent of contamination is estimated to average approximately 4 feet.

The samples collected in the triangular-shaped area south of the Plant 1 warehouse (i.e., sample locations 6, 7, and 8) revealed varying concentrations of organic solvents (e.g., xylene, MEK, and MIBK) and other hydrocarbons (e.g., decane, octane, etc.). Two of the solvent compounds identified are at least partially soluble in water and could present an environmental hazard if the contaminants were to mix with surface runoff or the shallow ground water. The groundwater analytical results (refer to Table 3-1) indicate that this presently is not occurring. It is estimated the lateral area of contamination is 160 feet x 150 feet x 220 feet and that the vertical extent of contamination is estimated to be about 4 feet.

Samples collected in the area of Plant No. 1 confirm previous indications that high concentrations of waste solvents are present in the soil underlying the two western-most rooms that once housed the Coatings Department. The

TABLE 3-3
PHYSICAL AND TOXICOLOGICAL PROPERTIES
OF SELECTED CONTAMINANTS

Compound	Solubility	Evaporation Temperature at 1 atm (°F)	Flash Point (°F)	TLV (ppm)	LD_{50} [1] (ppm)
Reference Compound					
Benzene	No	176	12	25	3800
Priority Pollutants					
Toluene	No	232	40	100	5000
Ethylbenzene	No	277	-	100	3500
Trichloro-ethene	No	-	None	100	4920
Non-Priority Pollutants					
Xylene	No	278	81	100	5000
Acetone	Partially	134	0	1000	9750
MEK	Partially	176	22	200	3400
MIBK	No	246	73	100	2590
1,1-Biphenyl	No	491	-	-	3250
Decane	No	345	>25		-
Heptane	No	209	25	500	-
Octane	No	257	>25	500	-

[1] A calculated dose of substance which is expected to cause the death of 50% of an entire defined experimental animal population. The numbers reported are for studies conducted on rats.

References:

U.S. Department of Health and Human Services, Registry of Toxic Effects of Chemical Substances, 1979 Edition.

CRC Handbook of Chemistry and Physics, 62nd Edition.

solvents identified in this area generally exhibit low to moderately low flash points, have relatively low vapor pressures, and can cause certain health effects through improper exposure, if corrective measures are not implemented. A potential worker health hazard, therefore, exists in this space in the future, unless remedial actions are undertaken. Samples collected in other areas of the building revealed only very low (i.e., less than 1 ppm) concentrations of solvents in the base soils underlying the concrete slab. This confirmed M/B&A's earlier hypothesis that the contaminants are trapped within the building's foundation ring walls and are limited to the western portion of Plant No. 1. It is estimated that the lateral extent of contamination is 50 feet x 100 feet and that the vertical extent of contamination is on the order 4 feet.

Finally, samples collected in the area west of Plant No. 1 (i.e., sample locations 9 and 10 and MW-2) revealed low concentrations (i.e., less than 1 ppm) of xylene, MIBK, and several hydrocarbon isomers. The presence of these compounds in the soil likely is the result of spillage/leakage associated with the underground tanks located in this area. Samples collected and analyzed during the Phase I investigation indicated that the tank contents possess high concentrations of organic compounds. At a minimum, the DEC has indicated (by letter from Mr. Peter J. Buechi to Mr. Clinton D. Jones, dated 21 September 1984) that removal of the liquid material from the tanks will be required. The lateral extent of potential contamination in this area is estimated to be 150 feet x 100 feet. The vertical extent of potential contamination in this area is estimated to be 1 foot.

4.0 CONCEPTUAL REMEDIAL ACTION PLAN

4.1 OBJECTIVES

The overall purpose of the conceptual remedial action plan proposed herein is to establish the major types of activities necessary for mitigation of the potential environmental hazards identified during the Phase I and Phase II environmental evaluations performed to date (see Subsection 2.3 and Section 3.0 herein). The recommendations presented in Subsection 4.2 herein are meant as starting points for discussions among Ameron management, M/B&A, and the DEC. The primary goals of the proposed conceptual remedial action plan are to:

- Remove and dispose of the liquid contents of the underground tanks located on the site
- Remove the liquid organic contaminants contained beneath the two western-most rooms of Plant No. 1 to the extent feasible
- Install a vapor collection and ventilation system beneath the two western-most rooms of Plant No. 1
- Continue to monitor the near-surface ground water for migration of contaminants and initiate airspace monitoring for detection of potentially hazardous organic vapor levels within Plant No. 1.

4.2 MAJOR ELEMENTS

The major elements proposed for inclusion in the approved remedial action plan for the Ameron site are described below. They are:

- Plant Building No. 1. It is proposed, to the extent possible, that the liquid organic contaminants underlying the two western-most rooms in Plant No. 1 be removed by surface pumping. This would be accomplished by installing a number of small-diameter, shallow wells (the depth of the wells not to exceed the depth of the foundation walls), removing a sufficient volume of liquid from each point (based on the number of wells installed, soil porosity, soil permeability, etc.), and placing the extracted liquid in drums for subsequent testing and proper disposal. An alternative technique is to extend the existing trench (located now only in one of the two westernmost rooms) to run the entire length of the contaminated area and to remove liquids by pumping that collect in the trench. The liquids similarly would be tested and disposed of at an approved facility.

  To handle any residual organics that will remain bound in the soil underlying the floor, a passive organic vapor collection and ventilation system to be installed beneath the floor slab and immediately above the contaminated soil is proposed. The design of this system will be prepared by an engineer knowledgeable in this type of construction and familiar with the applicable local building codes and ordinances.

- Underground Tanks. It is proposed that the liquids now contained in the underground tanks on-site be removed and, after testing, transported to an approved disposal facility. Alternatively, if the test results indicate that the liquids are of an acceptable "quality," reclamation of the solvents from the liquid waste would be considered. For either option, after removing the liquids, it is proposed that the tanks be abandoned in-place in accordance with the applicable State and County rules and regulations.

- Monitoring. It is proposed that groundwater samples be collected quarterly from each of the three existing groundwater monitoring wells for one year, and biannually for two additional years. Thereafter, if test results show no indication of migration of on-site contaminants, it is proposed that monitoring be discontinued. Groundwater samples will be tested for selected priority organic pollutants and additional chemical organic species, based on the results of the on-site soil analyses performed during the Phase II Environmental Evaluation.

  Additionally, it is proposed that, following installation of the passive organic vapor collection and ventilation system in the substructure of Plant Building No. 1, industrial hygiene samples (i.e., area air samples) be collected in the two westernmost rooms on the same schedule as for groundwater samples. It is proposed that the concentration levels of total organic hydrocarbon (as hexane) be measured and used as an indicator parameter for assessing the effectiveness of the proposed corrective actions.

APPENDIX A

Regional Geology and Hydrology

2.0 REGIONAL AND LOCAL SETTING

2.1 SOURCES OF REGIONAL HYDROGEOLOGIC INFORMATION

The geology and groundwater hydrology of Erie County, New York, have been investigated and documented in reasonable detail. Four major studies were consulted by M/B&A in characterizing the region in which Ameron's Buffalo Facility is located. These data sources are described briefly in the ensuing paragraphs.

- Ground Water Resources of the Erie-Niagara Basin, prepared by A. M. La Sala, Jr., United States Department of the Interior Geologic Survey, in cooperation with the New York State Conservation Department Division of Water Resources, Basin Planning Report ENB-3, 1968.

  This study evaluated the Erie-Niagara basin, New York, which borders Lake Erie and the Niagara River and which includes the principal portion of their drainage in New York. The Erie-Niagara Basin is bordered on the south by the Cattaragus Creek Basin and on the north by the Tonawanda Creek Basin. Groundwater resources of the Erie-Niagara basin, including the quality and quantity of water available for development, its areal distribution, and seasonal variations were assessed. Potential and existing pollution sources also were investigated with respect to their effect on the availability of ground water.

- Geology of Erie County, New York, by Edward J. Buehler and Irving H. Tesmer, Buffalo Society of Natural Sciences Bulletin, Vol. 21, No. 3, 1963.

  This paper was written to summarize and consolidate all of the then existing, and scattered information on the geology of Erie County into one reference. The bedrock stratigraphy is discussed in detail. The historical surficial geology of the area also is discussed. The paper contains geologic maps of Erie County which, in conjunction with the stratigraphic column, allow the reader to determine which basement rock units underlie a particular area.

- Hydrogeologic Investigation, Alltift Landfill, Erie County, New York, prepared by a joint venture of Wehran Engineering Corporation and Recra Research, Inc., 1978.

  This hydrogeologic study was prepared for Alltift Landfill, Inc., by Wehran Engineering/Recra Research, as part of the process to secure approval to construct a solid wastes management facility. The study was intended for submittal to the New York State Department of Environmental Conservation (DEC). The Alltift Landfill site is located in the industrialized, southern portion of Buffalo, New York. Ameron's Buffalo Facility is located approximately 2,000 feet east, and just south of the southern end of the landfill site. The field investigation involved drilling eight exploratory borings. The borings were drilled down to the top of the bedrock and well points were installed to monitor groundwater levels and to permit sampling of groundwater quality. The objectives of this investigation were to characterize the geology and hydrology of the site, as well as the extent of, and potential for, landfill-induced environmental impacts on surface or

ground waters. In addition to logs of each boring describing geologic conditions, detailed water quality analyses were performed on samples from the eight wells and from five surface water sampling points. One major discovery made in the course of this study was that the Alltift Landfill operation overlies a previously existing repository for hazardous and non-hazardous chemical wastes. Leachate from the previous as well as the current operations apparently has adversely affected the unconfined, near-surface ground water quality. Surface water reportedly has been affected by landfill leachate, but perhaps to a lesser degree than by discharges from nearby steel mills.

- Supplemental Hydrogeologic Investigation--Alltift, prepared by Recra Research, Inc., 1982.

  Alltift Landfill, Inc., was informed during January 1981 that its application for a DEC permit to operate a landfill would not be approved unless remedial measures were taken. These measures included installation of a cut-off wall and leachate collection system. To accomplish this, acquisition of parcels of land adjacent to the original site was deemed necessary. This supplemental hydrogeologic study was initiated to evaluate the subsurface conditions underlying these adjacent properties.

  Seven exploratory borings were performed at locations along the proposed expansion areas to the east and west of the original site. Four of these borings were converted to deep groundwater monitoring wells to test the water quality in the deep, confined aquifer. The test borings provided visual characterization of the fill, natural soil, and bedrock underlying the study area.

2.2 REGIONAL PHYSIOGRAPHY

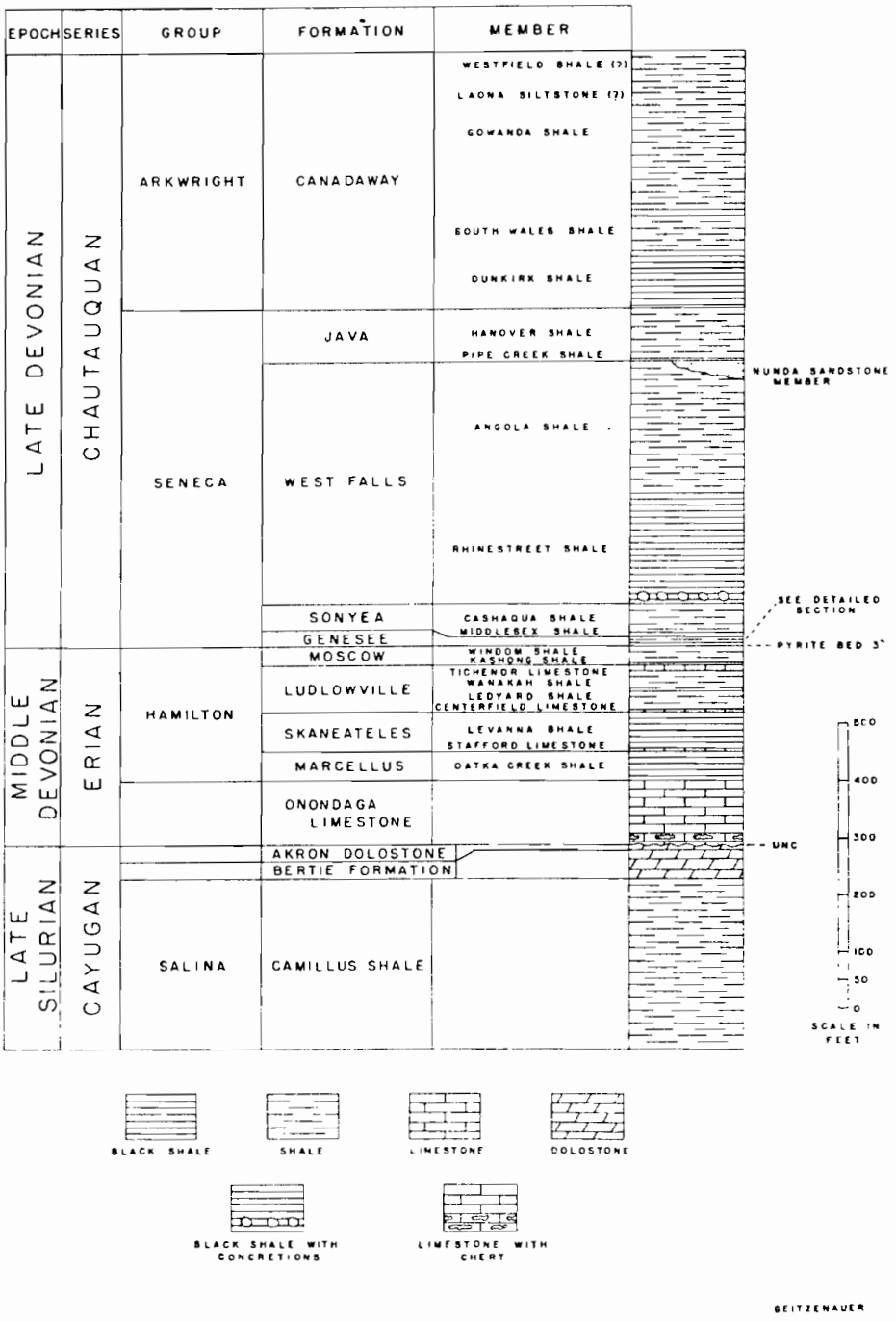
Erie County has been divided into three physiographic regions: the relatively flat Tonawanda plain to the north, the central Lake Erie plain, and the Allegheny plateau to the south (Buehler and Tesmer, 1963). The elevation of the land surface generally rises from north to south. Ameron's Buffalo Facility lies within the Lake Erie plain, the northern border of which is defined by a prominent outcropping of sedimentary rocks called the Onondaga escarpment. This north facing cliff, formed by the edge of the resistant Onondaga Limestone and Upper Silurian Dolostone, can be traced eastward from Buffalo to Akron. South of the Lake Erie plain is a hilly region known as the Lake Erie or Portage escarpment. The plain itself is six to twelve miles in width, smooth to gently rolling, and rises in elevation toward its southern border.

2.3 REGIONAL AND LOCAL GEOLOGY

2.3.1 Historical

Erie County is underlain by sedimentary bedrock deposited during the Silurian and Devonian Periods (340 to 430 million years ago; see Figure 1 herein). These strata were formed by deposition from ancient seas; sands were accumulated in the Early Silurian. The Middle Silurian was a time of extensive marine flooding and concomitant limestone and shale deposition. During the Late Silurian, these seas became restricted in area and subsequent evaporation caused deposition of

FIGURE 1
GENERALIZED STRATIGRAPHY
OF ERIE COUNTY, NEW YORK



Source: Buehler and Tesmer, 1960. Page 18.

salt (principally sodium chloride), gypsum, and anhydrite. Later in the Silurian Period, the water became less saline and deposition of the Bertie and Akron formations (mostly dolostone) occurred. At the close of the Silurian and through the Early Devonian, the ancient sea withdrew from the area that is now eastern New York State. Thus, there are no early Devonian sediments in the geologic record of Erie County. This unconformity in the geologic record is represented by the middle Devonian strata in contact with late Silurian strata (see Figure 1 herein). The Onondaga Limestone formation resulted from the return of a warm, clear, tropical sea in the middle Devonian. The Onondaga sea gave way to muddy waters resulting in the shales of the middle Devonian Hamilton group. Interspersed among these shales are layers of limestone representing brief periods of clear water. The late Devonian is characterized in this area by deposition of black shales of the Seneca and Arkwright groups. The rest of the Paleozoic Era, all of the Mesozoic Era, and most of the Cenozoic Era have left no record in Erie County (Buehler and Tesmer, 1963). Sedimentary bedrock is unconformably overlain largely by unconsolidated glacial deposits from the Pleistocene Epoch (Cenozoic Era), 10,000 to 15,000 years ago, when the region was covered with ice sheets.

2.3.2 Regional Stratigraphy and Surficial Materials

The glacial deposits are of three types. These are : 1) till, which is a non-sorted mixture of clay, silt, sand, and stones deposited directly from the ice sheet; 2) lake deposits, which are bedded clay, silt, and sand that filtered out of lakes fed by the melting ice; and 3) sand and gravel deposits laid down in glacial streams (A. M. La Sala Jr., 1968). These glacial deposits may range in thickness from less than 50 feet in the northern part of the Erie-Niagara basin to more than 600 feet in the south (A. M. La Sala Jr., 1968). Other unconsolidated materials include alluvial deposits formed by streams in recent times, organic deposits formed by decayed plant matter, and assorted fill materials. The surficial geologic map prepared by the U.S. Department of the Interior (A. M. La Sala, Jr., 1968) shows the distribution of unconsolidated surface materials for the Erie-Niagara basin. Till is the most widespread of the deposits in the basin. With an understanding of the geologic processes that formed the deposits, subsurface distributions may be inferred from this map.

The sequence of bedded or layered sedimentary rock formations is shown in Figure 1 with the youngest formations at the top of the column and the oldest at the bottom. The layered rock formations are not horizontal, but rather are uniformly inclined gently southward, at from 20 to 60 feet per mile (A. M. La Sala Jr., 1968). This slight dip of the strata southward is barely perceptible in outcrops. The strata strike approximately east-west. Erosional action of this structure (southward dip and east-west strike) results in an outcrop pattern of approximately east-west trending bands, with the oldest to the north and youngest to the south. Perhaps the best example of this is the frequent outcropping of the resistant Onondaga Limestone and Late Silurian dolostone along the Onondaga escarpment. Other outcrops which show the east-west trending bands of bedrock occur along the shore of Lake Erie and in stream valleys where erosion has cut through overlying unconsolidated material to expose the underlying bedrock. The geologic map by Buehler and Tesmer (1963) clearly shows the underlying bands of bedrock in Erie County trending east-west, with the oldest in the north and the youngest in the south.

2.3.3 Local Stratigraphy and Surficial Materials

Exploratory borings performed at the Alltift Landfill site, northwest of Ameron's Buffalo Facility, provide useful information on the bedrock stratigraphy and overlying unconsolidated material. Figure 2 herein (adapted from Wehran Engineering and Recra Research, Inc., 1978) shows the geologic formations found beneath the Alltift Landfill site. Not shown in this column is Moorehouse Limestone, which was encountered in borings made during a second hydrogeologic study (Recra Research, Inc., 1982) at the Alltift site and adjacent properties. The Moorehouse Limestone, a member of the Onondaga Formation, underlies the Oatka Creek Shale member of the Marcellus Formation.

2.3.3.1 Bedrock

The bedrock formation underlying most of the Alltift Landfill site is the Oatka Creek Shale member of the Marcellus formation. At the southern end of the landfill site the underlying bedrock floor is the Stafford Limestone member of the Skaneateles formation which in turn is underlain by Oatka Creek Shale. These findings support Buehler and Tesmer's (1963) mapping of the Marcellus/Skaneateles contact in the area. Much of the mapping necessarily was accomplished by approximation since most of the actual bedrock contacts are covered by thick surficial deposits.

Buehler and Tesmer's bedrock geology map indicates that Ameron's Buffalo Facility is underlain by the Skaneateles formation. The particular member of the Skaneateles formation underlying the Ameron Buffalo facility is probably Stafford Limestone, or perhaps Levonna Shale (which is younger and likely would appear as basement rocks further south of the Stafford Limestone member). Buehler and Tesmer (1963) describe these two rock types and Oatka Creek Shale, as follows:

- Stafford Limestone is a gray limestone which weathers chocolate brown. Bedding varies from massive to shaley. Thickness is 8.5-15 feet. The contact with overlying Levonna Shale is usually fairly distinct.

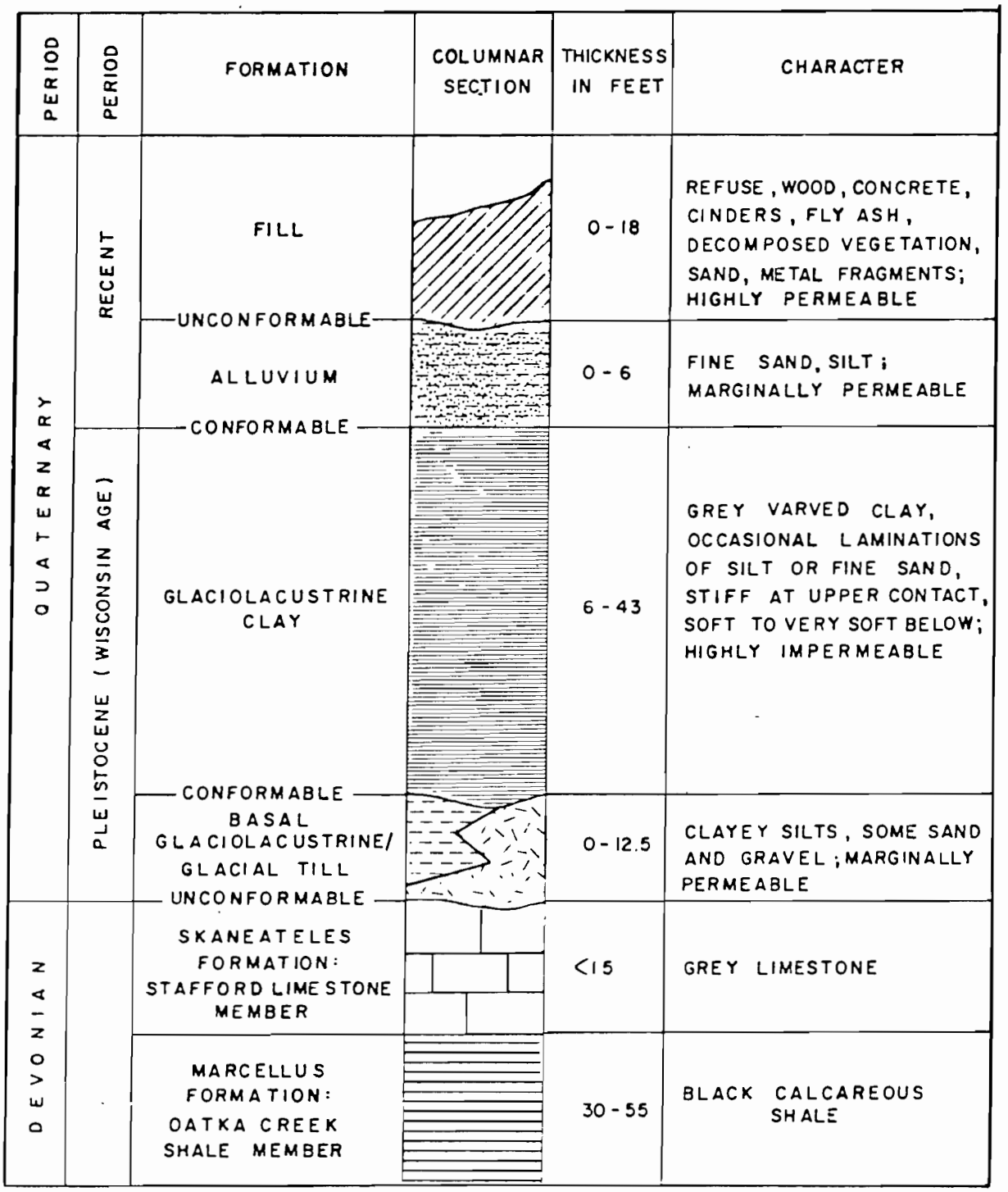
- Levonna Shale is a fissile shale, dark gray or black near the bottom, and lighter olive gray near the top. There are some calcareous beds and some pyritiferous concretions. Thickness is 45-80 feet. The upper contact with the Centerfield Limestone member of the Ludlowe formation cannot be seen in Erie county.

- Oatka Creek Shale is a dense, black, fissile shale with a petroliferous odor. There are some beds of grey shale and several concretionary layers. Nodules of pyrite occur in the black shale near the base. Thickness is 30-55 feet. The contact with Stafford Limestone is often transitional.

2.3.3.2 Unconsolidated Materials

As noted, Erie County is characterized by unconsolidated glacial deposits unconformably overlying bedrock. The exploratory borings performed at the Alltift

FIGURE 2
STRATIGRAPHY OF THE ALLTIFT LANDFILL SITE



Source: Wehran Engineering and Recra Research, Inc., 1978.

Landfill site indicate a general sequence of unconsolidated materials, from oldest to youngest, they are reported to be glacial till/basal glaciolocustrine deposits, glaciolacustrine clay, alluvial sand and silt, and fill. These materials are described in the following sections. Glacial sand and gravel, a category not delineated in the Alltift Landfill studies, also will be discussed in the following sections.

2.3.3.3 Basal Glaciolacustrine Deposits/Glacial Till

Glacial till is an unconsolidated, heterogeneous mixture of rock fragment materials deposited at the advancing or retreating edge of glacial ice. Basal glaciolacustrine deposits consist of clayey silts and fine sand. These two types of material are difficult to differentiate in the subsurface. Because they are functionally similar in terms of hydrogeologic properties, they may be considered as one composite unit (Wehran Engineering and Recra Research, Inc., 1978). These clayey silts and sands are marginally permeable and their thicknesses ranged from zero to 12.5 feet at the Alltift Landfill site.

2.3.3.4 Glaciolacustrine Clay

This stratum consists of clay, silty clay, and thin (2 mm to 5 cm) laminations of silt or fine sand (Wehran Engineering and Recra Research, Inc., 1978), and is highly impermeable. The permeabilities of samples from the Alltift Landfill site were measured and found to average 6.1×10^{-8} cm/sec (Wehran Engineering and Recra Research, Inc., 1978). Three strata of differing characteristics were reported in the second hydrogeologic study at the Alltift Landfill site as follows:

(1) An uppermost, coarse to fine silty soil with slight plasticity

(2) Inorganic clays of low to medium plasticity

(3) Inorganic clays of high plasticity with intermittent silt and fine sand lenses.

The contacts between these sedimentary beds were transitional and could not be precisely determined.

The thickness of the glaciolacustrine clay layer ranged from 43 feet to zero (absent from one test boring). The overall trend was that the clay layer thins, and the depth to bedrock decreases, in a southerly direction along the landfill site (Recra Research, Inc., 1982).

2.3.3.5 Glacial Sand and Gravel

These deposits may interfinger with glacial lake deposits, principally in the major valleys of the Appalachian Uplands (high-relief areas to the south), with only scattered occurrences elsewhere. Where these deposits are thick enough and water-bearing, they represent the best aquifers in the Erie-Niagara basin (A. M. La Sala Jr., 1968).

2.3.3.6 Recent Alluvium

This consists of marginally permeable clayey silts, with occasional beds of fine or medium grained sands deposited by recent (post-glacial) streams. In the Alltift Landfill studies, reported thicknesses usually were less than 6 feet, and in many areas these deposits were not encountered at all.

2.3.3.7 Fill

In the Alltift Landfill studies, fill was defined as the soil and assorted landfill materials from previous operations at the site. Reportedly, the entire vicinity of the Buffalo Facility is covered by varying thicknesses of fill, mostly slag from nearby steel mills.

The surficial geology map, prepared by the US Department of the Interior (A. M. La Sala Jr., 1968), indicates that the predominant surficial material in the region of the Alltift Landfill and Ameron's Buffalo Facility is glaciolocustrine clay (glacial lake deposits), probably underlain by glacial till. The investigations at the Alltift Landfill site seem to support this mapping.

2.4 REGIONAL AND LOCAL GROUND WATER

2.4.1 Regional Occurrence

Water travels through unconsolidated deposits (usually surficial) and through bedrock in distinctly different ways. Unconsolidated material consists of grains packed together with open pore spaces through which water may flow. Unconsolidated deposits vary in their ability to store and transmit water due to differences in structure and texture, thickness of the deposit, and because of their distribution and spatial relationships to one another. Sedimentary bedrock consists of particles that have been compacted and cemented, thereby rendering the rock considerably more impermeable to water. However, ground water is transmitted through these bedrock units along joints or fractures separating the large blocks.

Till is composed of non-sorted rock fragments of variable composition and texture depending upon the types of rocks over which the ice passed and the degree to which the rock fragments were torn and abraded. Thickness varies from 2 to 3 feet to more than 200 feet (A. M. La Sala Jr., 1968). Permeability is low and only small supplies of water are available from till deposits.

Glaciolacustrine (glacial lake) deposits tend to be horizontally bedded and well sorted. Thicknesses range from very thin (or non-existent) to greater than 300 feet. The clays are essentially impermeable. Sections of fine sand within these deposits may provide small supplies of water, but lake deposits generally are not used as sources of ground water.

Glacial sand and gravel deposits may occur above or below, or may interfinger with glacial lake deposits. These deposits are marked by stratification and sorting. In valley bottoms the thickness of some deposits exceeds 100 feet, while they are thinner in other areas. Thick deposits with large amounts of gravel provide the highest-yielding wells in the region. The sand and gravel deposits that underlie lake deposits in the major valley are not mapped and must be characterized by subsurface data.

Alluvial deposits are found along all streams and flood plains of larger streams. These deposits are not significant sources of water.

Water may pass through and be stored in bedrock in a number of ways. The principal method is through regularly arranged (roughly parallel) fractures caused by geologic forces over broad areas. A. M. La Sala, Jr. (1968) suggested that the most important type of fracture are horizontal joints parallel to the bedding plane of the rocks. Such joints develop along planes of weakness between adjacent rock layers.

Water-bearing openings in bedrock also may be related to solubility of the rock types involved. Ground water may widen existing joints by dissolving bedrock material, thus increasing the water-bearing capacity of the formation. In general, the limestones and dolostones (dolomite) are considered soluble whereas the shales are relatively insoluble. The soluble bedrocks (limestone, dolomite) are an important source of water, while shale bedrock yields only small supplies (A. M. La Sala Jr., 1968).

Faults in the bedrock also may provide openings for ground water circulation. A fault is a fracture where adjacent masses of rock have been offset. Only one major fault is known in the region, though others may exist.

A. M. La Sala, Jr. (1968) estimated that the amount of ground water storage in the Erie-Niagara basin, assuming an average 100 foot zone of saturation and ten percent porosity, is equivalent to 120 inches of water spread over the entire area. This 120 inches is about three times the annual average precipitation and ten times the annual ground water discharge of the area. Discharge occurs naturally into streams and via pumping of ground water. Ground water is recharged predominantly through direct infiltration of precipitation, infiltration of overland run-off, and induced infiltration. Induced infiltration occurs when a well in a permeable deposit near a stream is pumped to such a degree that a hydraulic gradient from the stream toward the well is created, inducing recharge of the aquifer by stream water.

Both the water table and the confined aquifers show seasonal fluctuations in storage. However, confined aquifers tend to show minor fluctuations of short duration which are superimposed on the seasonal changes (A. M. La Sala Jr., 1968). Water level fluctuations in the bedrock may be somewhat out of phase with fluctuations in the overlying till when the recharge areas for the two systems are different. Water-table aquifers near streams tend to show a narrower range of fluctuations than aquifers which are less immediately affected by recharge and discharge due to stream flow.

Sand and gravel deposits have high rates of recharge due to infiltration. Clays, silts and till, which are less permeable, accept infiltration at lower rates. It follows, then, that aquifers which receive the most recharge are sand and gravel deposits. The thickest sand and gravel deposits are found in the valleys and stream beds of the Appalachain Uplands in the southern half of Erie County.

2.4.2 Regional Quality

Chemical constituents in the ground water in the Erie-Niagara basin are predominantly obtained from the solution of rock materials. Four relatively soluble

minerals are present in the rocks of the basin:

- Calcite ($CaC0_3$), from Limestone
- Dolomite ($CaMg(CO_3)2$)
- Gypsum ($CaSO_4 \cdot 2H_2O$)
- Halite (NaCL).

Calcite and dolomite are ubiquitous throughout the region in both the bedrock and unconsolidated materials. Even most of the shale units are calcareous. Gypsum is found mostly in Camillus Shale and Lockport Dolomite, two older strata which form the bedrock floor in the northern regions of the basin. Halite also is found in the Camillus Shale. The above minerals are largely responsible for the significant quantities of calcium, magnesium, sodium, bicarbonate, sulfate, and chloride present in the Erie-Niagara basin groundwater.

The US Geological Survey (USGS; A. M. La Sala Jr., 1968) has mapped ground water quality in bedrock in the Erie-Niagara basin for chloride content, sulfate content, hardness (as $CaCO_3$) and specific conductance. All four parameters show a trend of increasing values from the southern to northern region of the basin. Ameron's Buffalo Facility falls within the low to middle range of values for each parameter. The USGS map indicates the ranges of water quality expected to be encountered at Ameron's Buffalo Facility to be as follows: sulfate content, 100 to 500 ppm; chloride content, 100 to 500 ppm; hardness, 100 to 500 ppm, and specific conductance, 1000 to 3000 μmhos per centimeter at 25° C.

Dissolved solids of precipitation in the region range from 15 to 50 ppm, and the content of overland flow ranges from 50 to 100 ppm (A. M. La Sala Jr. 1968). As water infiltrates the ground and moves toward the water table its dissolved solids content increases.

The dissolution of calcite, dolomite, and gypsum is enhanced by acidity in the water. CO_2 in the atmosphere and in the soil dissolves in the water to yield carbonic acid. Thus, dissolved solids tend to increase in the water in proportion to distance travelled through the zone of aeration as it flows along in the zone of saturation. However, this relationship is not absolute, as the concentration of dissolved constituents in ground water will vary according to a variety of factors (e.g., rock type, overland flow, chemical interactions, recharge areas, etc.).

Pollution from a wide range of sources may affect basin water quality. Among the categories that are known to have caused ground water pollution are injection of industrial wastes through disposal wells, use of salt for controlling ice and snow, and spills and leaks of petroleum or chemical products. Two geologic systems have a high potential for pollution in the area. These are 1) outcrops of bedrock, or bedrock thinly covered with glacial deposits, and 2) sand and gravel deposits in valleys. Devonian Shale formations with their overlying glacial deposits in some of the lowlands is an example of the first type of geology susceptible to potential pollution.

2.4.3 Local Occurrence

Investigations at the Alltift Landfill revealed ground water in three different forms under the site:

- An unconfined, perched aquifer within the surficial till and unconsolidated deposits. This water-table aquifer was bounded below by glaciolacustrine clay
- Immobilized interstitial water within the glaciolacustrine clay stratum
- A confined aquifer within the permeable till and adjoining fractured bedrock (Oatka Creek Shale and Stafford Limestone).

In the first eight test borings taken at the Alltift Landfill site, the ground level elevation ranged from 584 to 604 feet (above mean sea level) and the depth to water table ranged from 4 feet to 25 feet below ground surface. The average thickness of the zone of saturation under the landfill site in July 1978 was 8 to 9 feet.

The horizontal component of flow within the confined aquifer is in a generally north-northwest direction at the Alltift landfill site (Recra Research, Inc. 1982). Water in the unconfined aquifer moves out radially from a ground water mound at the eastern edge of the site in a general westerly direction, discharging into ponds at the southern and western sides of the landfill. Surface waters tend to flow in a northerly direction.

2.4.4 Local Quality

The New York State Water Resources Commission has reported on water quality from about 250 wells throughout the Erie-Niagara basin (A. M. La Sala, Jr., 1968). The relative locations of seven of these wells, all within a 12-mile radius of Ameron's Buffalo Facility, and their chemical characteristics are summarized in Table 1 herein.

The two hydrogeologic studies undertaken at the Alltift Landfill site provide more recent water quality data for the unconfined, perched water table, the confined deep aquifer, and for surface (pond) water adjacent to the site. The data in Appendix A describes the water quality from eight test borings into the unconfined aquifer. This aquifer is directly contacted by leachate from the landfill; water quality is generally poor. Conductivity, chloride, TOC, COD, and BOD levels were elevated in virtually all test wells.

Five surface water samples from the ponded water adjacent to the landfill site were analyzed in the 1978 Alltift study. Data from these samples are reproduced in Appendix A as well. The water quality in these surface samples was poor, partly due to leachate from the landfill. The most significant contributions to the acidity, metals concentrations, and total solids, however, were believed to be from discharges from Ramco Steel, Inc. (Wehran Engineering/Recra Research, Inc., 1978).

In the supplemental hydrogeologic investigation at the Alltift Landfill site (Recra Research, Inc., 1982), the water quality of the underlying bedrock aquifer

TABLE 1
SELECTED WATER QUALITY DATA
IN THE VICINITY OF
AMERON'S BUFFALO FACILITY

Well No.	Depth (feet)	Date Collected	Proximity to Site (miles)		Water-Bearing Material	Ground Elevation (MSL)	Depth to water (feet)	PARAMETER [a] SiO_2	Fe	Mn	Ca	Mg	Na	K	Conductivity µmhos	Hardness ($CaCO_3$)	pH
246-836-1	105	6-19-51	12	ESE	Sgd [b]	895	9.5	13	.04	.45	136	12	48	20	1,020	389	7.4
248-850-1	40	6-16-51	1.9	SSW	Shale	580	21	17	.10	.00	184	41	58	5.2	1,320	628	7.1
252-850-1	180	6-19-51	2.5	N	Lime-stone/ Camillus Shale	590	20	15	.08	.22	212	124	197	13	2,310	1,040	6.8
252-852-3	127	6-18-51	3	NW	Lime-stone	580	0	14	5.6	.35	254	62	402	16	3,680	890	7.3
246-849-1	39	7-27-63	4.5	S	Shale	685	9.2	-	-	-	-	-	-	-	853	452	7.3
247-840-1	40	7-26-63	8.25	ESE	Shale	890	21.1	-	-	-	-	-	-	-	765	248	7.1
246-842-1	52	7-26-63	6.75	SE	Sgd [b]	830	9.4	-	-	-	-	-	-	-	648	276	7.3
248-844-1	20	7-26-63	5.25	ESE	Shale	740	8.5	-	-	-	-	-	-	-	1,130	446	7.2
248-850-1	40	3-20-63	1.9	SSW	Shale	580	21	-	-	-	-	-	-	-	1,290	538	6.9
249-840-1	22	7-26-63	8.25	ESE	Sgd [b]	830	10.5	-	-	-	-	-	-	-	349	145	7.5
251-850-2	116	9-11-63	1.1	NNW	Lime-stone	585	-	-	-	-	-	-	-	-	1,750	338	7.2

[a] All values are in ppm, except where noted.

[b] Stratifed glacial deposits

Source: Adapted from Ground-Water Resources of the Erie-Niagara Basin, New York, A. M. La Sala, Jr., 1968.

was analyzed. The results from four test wells also are presented in Appendix A. The water quality from these monitoring wells is poorer than one would expect from a confined aquifer and indicates the presence of contamination. In one test boring adjacent to the landfill site the confining glaciolocustrine clay stratum was not encountered. This indicates an apparent hydrologic connection between the upper water table and the bedrock aquifer. Recra Research, Inc. (1982) postulated that the probable source of contamination of the underground aquifer was a function of ponded surface water south of the landfill site near the test boring at which the confining clay was not encountered.

APPENDIX B

Health and Safety Plan

HEALTH AND SAFETY PLAN
for
Field Investigation
Ameron's Buffalo Facility

PURPOSE: The purpose of this plan is to establish personnel protection standards and safety operating procedures that will be observed during activities associated with the field investigation to be conducted at Ameron's Buffalo Facility during the week of 22 October 1984 through 26 October 1984. The field investigation is part of the Phase II Environmental Evaluation Program developed by the scientific consultant to characterize the environmental conditions at this facility and includes installation of three groundwater monitoring wells and collection of liquid and soil samples.

FACILITY OWNER:
Ameron, Inc.
4700 Ramona Boulevard
Monterey Park, CA 91754
(213) 268-4111

FACILITY LOCATION:
111 Colgate Avenue
Buffalo, New York 14220

SCIENTIFIC CONSULTANT:
MEREDITH/BOLI & ASSOCIATES, INC.
8857 West Olympic Boulevard
Suite 200
Beverly Hills, CA 90211
(213) 659-6122

SITE CONTRACTORS:
Parratt Wolff, Inc.
Fisher Road
East Syracuse, New York 13057
(315) 437-1429

Colgate Industries
142 Colgate Avenue
Buffalo, New York 14220
(716) 822-8284

DATES OF INVESTIGATION: 22 October 1984 through 26 October 1984

SITE SAFETY COORDINATOR:

Mr. William C. Hass
Project Manager
MEREDITH/BOLI & ASSOCIATES, INC.
8857 West Olympic Boulevard
Suite 200
Beverly Hills, CA 90211
(213) 659-6122

LEVEL OF HAZARD:

A previous investigation at this site (M/B&A, September 1983) indicated the presence of industrial solvents in one area of the facility that could cause irritation to the eyes, lungs, and intestinal track. The facility has been inactive since this investigation.

MINIMUM SAFETY STANDARDS:

Level C protective gear, as defined by USEPA, will be required to be worn by personnel working in the areas of potential contamination as determined by the Site Safety Coordinator. Changes in the level of the personal protective gear worn on-site may be made by the Site Safety Coordinator on the basis of the air monitoring program results. Level C protective gear will include:

- Full-face, air purifying respirator (MESA/NIOSH approved)
- Overalls and long-sleeved jacket or coveralls
- Hooded 2-piece chemical splash suit, when applicable
- Gloves--Outer (chemical protective), when applicable
- Gloves--Inner (surgical type), when applicable
- Hard hat
- Boots--Outer (chemical protective heavy rubber throw aways), when applicable
- Boots--Inner (chemical protective, steel toe & shank), when applicable.

AIR MONITORING SURVEY:

The Site Safety Coordinator will survey the site every second hour, and at such other times deemed necessary by alteration of wind speed or direction, or the type of work being conducted, using a photoionization detector. Should the results of the air monitoring survey indicate levels of total organic vapor in excess of 5 ppm above background, the Site Safety Coordinator will instruct effected personnel to cease operations until Level B or Level A protective gear can be secured for subsequent operations.

PERSONAL HYGIENE:

The following personnel hygiene practices will be followed:

- Eating, drinking, chewing gum or tobacco, smoking or any practice that increases the probability of hand to mouth transfer and ingestion of material will be prohibited in any area where the possibility of contamination exists
- Hands will be thoroughly washed upon leaving a contaminated or suspected contaminated area before eating, drinking, or any other activities transpire
- Thorough washing of the entire body will be accomplished whenever decontamination procedures for outer garmets is in effect.

DECONTAMINATION

Decontamination of personnel, equipment, etc. at the site will consist of rinsing with water and washing with detergent/water solution. The spent solution, brushes, sponges, containers, etc., used in the decontamination process will be considered contaminated and properly disposed.

EMERGENCY TELEPHONE NUMBERS:

Dial 911 (Emergency telephone located at 142 Colgate Avenue, immediately across the street from Ameron Facility).

INCORPORATED REFERENCE:

The attached USEPA Interim Standard Operating Safety Guides are incorporated by reference hereto, and for situations not addressed here, will be considered applicable.

INTERIM STANDARD OPERATING SAFETY GUIDES

REVISED

September 1982

OFFICE OF EMERGENCY AND REMEDIAL RESPONSE

HAZARDOUS RESPONSE SUPPORT DIVISION

PART 5

SITE ENTRY - LEVELS OF PROTECTION

1. INTRODUCTION

Personnel must wear protective equipment when response activities involve known or suspected atmospheric contamination, when vapors, gases, or particulates may be generated, or when direct contact with skin-affecting substances may occur. Respirators can protect lungs, gastrointestinal tract, and eyes against air toxicants. Chemical-resistant clothing can protect the skin from contact with skin-destructive and -absorbable chemicals. Good personal hygiene limits or prevents ingestion of material.

Equipment to protect the body against contact with known or anticipated chemical hazards has been divided into four categories according to the degree of protection afforded:

- Level A: Should be worn when the highest level of respiratory, skin, and eye protection is needed.

- Level B: Should be selected when the highest level of respiratory protection is needed, but a lesser level of skin protection. Level B protection is the minimum level recommended on initial site entries until the hazards have been further defined by on-site studies and appropriate personnel protection utilized.

- Level C: Should be selected when the type(s) of airborne subtance(s) is known, the concentration(s) is measured, and the criteria for using air-purifying respirators are met.

- Level D: Should not be worn on any site with respiratory or skin hazards. Is primarily a work uniform providing minimal protection.

The Level of Protection selected should be based primarily on:

- Type(s) and measured concentration(s) of the chemical substance(s) in the ambient atmosphere and its toxicity.

- Potential or measured exposure to substances in air, splashes of liquids, or other direct contact with material due to work being performed.

In situations where the type(s) of chemical(s), concentration(s), and possibilities of contact are not known, the appropriate Level of Protection must be selected based on professional experience and judgment until the hazards can be better characterized.

While personnel protective equipment reduces the potential for contact with harmful substances, ensuring the health and safety of response personnel requires, in addition, safe work practices, decontamination, site entry

protocols, and other safety considerations. Together, these protocols establish a combined approach for reducing potential harm to workers.

II. LEVELS OF PROTECTION

A. Level A Protection

1. Personnel protective equipment

- Pressure-demand, self-contained breathing apparatus, approved by the Mine Safety and Health Administration (MSHA) and National Institute of Occupational Safety and Health (NIOSH).
- Fully encapsulating chemical-resistant suit
- Coveralls*
- Long cotton underwear*
- Gloves (outer), chemical-resistant
- Gloves (inner), chemical-resistant
- Boots, chemical-resistant, steel toe and shank. (Depending on suit construction, worn over or under suit boot)
- Hard hat* (under suit)
- Disposable protective suit, gloves, and boots* (Worn over fully encapsulating suit)
- 2-Way radio communications (intrinsically safe)

2. Criteria for selection

Meeting any of these criteria warrants use of Level A Protection:

- The chemical substance(s) has been identified and requires the highest level of protection for skin, eyes, and the respiratory system based on:
  - -- measured (or potential for) high concentration(s) of atmospheric vapors, gases, or particualtes

or

  - -- site operations and work functions involving high potential for splash, immersion, or exposure to unexpected vapors, gases, or particulates.

*Optional

- Extremely hazardous substances (for example: dioxin, cyanide compounds, concentrated pesticides, Department of Transportation Poison "A" materials, suspected carcinogens, and infectious substances) are known or suspected to be present, and skin contact is possible.

- The potential exists for contact with substances that destroy skin.

- Operations must be conducted in confined, poorly ventilated areas until the absence of hazards requiring Level A protection is demonstrated.

- Total atmospheric readings on the Century OVA System, HNU Photoionizer, and similar instruments indicate 500-1,000 ppm of unidentified substances. (See Appendixes I and II.)

3. Guidance on selection criteria

The fully encapsulating suit provides the highest degree of protection to skin, eyes, and respiratory system if the suit material is resistant to the chemical(s) of concern during the time the suit is worn and/or at the measured or anticipated concentrations. While Level A provides maximum protection, the suit material may be rapidly permeated and penetrated by certain chemicals from extremely high air concentrations, splashes, or immersion of boots or gloves in concentrated liquids or sludges. These limitations should be recognized when specifying the type of chemical-resistant garment. Whenever possible, the suit material should be matched with the substance it is used to protect against.

The use of Level A protection and other chemical-resistant clothing requires evaluating the problems of physical stress, in particular heat stress associated with the wearing of impermeable protective clothing. Response personnel must be carefully monitored for physical tolerance and recovery.

Protective equipment being heavy and cumbersome, decreases dexterity, agility, visual acuity, etc., and so increases the probability of accidents. This probability decreases as less protective equipment is required. Thus, increased probability of accidents should be considered when selecting a Level of Protection.

Many toxic substances are difficult to detect or measure in the field. When such substances (especially those readily absorbed by or destructive to the skin) are known or suspected to be present and personnel contact is unavoidable, Level A protection should be worn until more accurate information can be obtained.

B. Level B Protection

1. Personal protective equipment

- Pressure-demand, self-contained breathing apparatus (MSHA/NIOSH approved)

- Chemical-resistant clothing (overalls and long-sleeved jacket; coveralls; hooded, one or two-piece chemical-splash suit; disposable chemical-resistant coveralls)
- Coveralls*
- Gloves (outer), chemical-resistant
- Gloves (inner), chemical-resistant
- Boots (outer), chemical-resistant, steel toe and shank
- Boots (outer), chemical-resistant (disposable)*
- Hard hat (face shield*)
- 2-Way radio communications (intrinsically safe)

2. Criteria for selection

Meeting any one of these criteria warrants use of Level B protection:

- The type(s) and atmospheric concentration(s) of toxic substances have been identified and require the highest level of respiratory protection, but a lower level of skin and eye protection. These would be atmospheres:
  - -- with concentrations Immediately Dangerous to Life and Health (IDLH)

    or

  - -- exceeding limits of protection afforded by a full-face, air-purifying mask

    or

  - -- containing substances for which air-purifying canisters do not exist or have low removal efficiency

    or

  - -- containing substances requiring air-supplied equipment, but substances and/or concentraions do not respresent a serious skin hazard.
- The atmosphere contains less than 19.5% oxygen.
- Site operations make it highly unlikely that the small, unprotected area of the head or neck will be contacted by splashes of extremely hazardous substances.

*Optional

- Total atmospheric concentrations of unidentified vapors or gases range from 5 ppm to 500 ppm on instruments such as the Century OVA System or HNU Photoionizer, and vapors are not suspected of containing high levels of chemicals toxic to skin. (See Appendixes I and J.)

3. Guidance on selection criteria

Level B equipment provides a high level of protection to the respiratory tract, but a somewhat lower level of protection to skin. The chemical-resistant clothing required in Level B is available in a wide variety of styles, materials, construction detail, permeability, etc. These factors all affect the degree of protection afforded. Therefore, a specialist should select the most effective chemical-resistant clothing (and fully encapsulating suit) based on the known or anticipated hazards and/or job function.

Generally, if a self-contained breathing apparatus is required, Level B clothing rather than a Level A fully encapsulating suit is selected, based on the protection needed against known or anticipated substances affecting the skin. Level B skin protection is selected by:

- Comparing the concentrations of known or identified substances in air with skin toxicity data.

- Determining the presence of substances that are destructive to and/or readily absorbed through the skin by liquid splashes, unexpected high levels of gases or particulates, or other means of direct contact.

- Assessing the effect of the substance (at its measured air concentrations or splash potential) on the small area of the head and neck unprotected by chemical- resistant clothing.

For initial site entry and reconnaissance at an open site, approaching whenever possible from the upwind direction, Level B protection (with good quality, hooded, chemical-resistant clothing) should protect response personnel, providing the conditions described in selecting Level A are known or judged to be absent. For continuous operations, the aforementioned criteria must be evaluated.

At 500 pm total vapors/gases, upgrading to Level A protection may be advisable. A major factor for re-evaluation is the presence of vapors, gases, or particulates requiring a higher degree of skin protection.

C. Level C Protection

1. Personal protective equipment

- Full-face, air-purifying, canister-equipped respirator (MSHA/NIOSH approved)

- Chemical-resistant clothing (coveralls; hooded, two-piece chemical

splash suit; chemical-resistant hood and apron; disposable chemical-resistant coveralls)

- Coveralls*
- Gloves (outer), chemical-resistant
- Gloves (inner), chemical-resistant*
- Boots (outer), chemical-resistant, steel toe and shank*
- Boots (outer), chemical-resistant (disposable)*
- Hard hat (face shield*)
- Escape mask*
- 2-Way radio communications (intrinsically safe)

2. Criteria for selection

Meeting all of these criteria permits use of Level C protection:

- Measured air concentrations of identified substances will be reduced by the respirator to at or below the substance's exposure limit, and the concentration is within the service limit of the canister.
- Atmospheric contaminant concentrations do not exceed IDLH levels.
- Atmospheric contaminants, liquid splashes, or other direct contact will not adversely affect the small area of skin left unprotected by chemical-resistant clothing.
- Job functions have been determined not to require self-contained breathing apparatus.
- Total vapor readings register between background and 5 ppm above background on instruments such as the HNU Photoionizer and Century OVA System. (See Appendixes I and II.)
- Air will be monitored periodically.

3. Guidance on selection criteria

Level C protection is distinguished from Level B by the equipment used to protect the respiratory system, assuming the same type of chemical-resistant clothing is used. The main selection criterion for Level C is that conditions permit wearing air-purifying devices.

The air-purifying device must be a full-face mask (MSHA/NIOSH approved) equipped with a canister suspended from the chin or on a harness. Canisters

*Optional

must be able to remove the substances encountered. Quarter- or half-masks or cheek-cartridge full-face masks should be used only with the approval of a qualified individual.

In addition, a full-face, air-purifying mask can be used only if:

- Oxygen content of the atmosphere is at least 19.5% by volume.
- Substance(s) is identified and its concentration(s) measured.
- Substance(s) has adequate warning properties.
- Individual passes a qualitative fit-test for the mask.
- Appropriate cartridge/canister is used, and its service limit concentration is not exceeded.

An air monitoring program is part of all response operations when atmospheric contamination is known or suspected. It is particularly important that the air be monitored thoroughly when personnel are wearing air-purifying respirators (Level C). Continual surveillance using direct-reading instruments and air sampling is needed to detect any changes in air quality necessitating a higher level of respiratory protection. See Part 8 for guidance on air monitoring.

Total unidentified vapor/gas concentrations of 5 ppm above background require Level B protection. Only a qualified individual should select Level C (air-purifying respirators) protection for continual use in an unidentified vapor/gas concentration of background to 5 ppm above background.

D. Level D Protection

1. Personal protective equipment

- Coveralls
- Gloves*
- Boots/shoes, leather or chemical-resistant, steel toe and shank
- Boots (outer), chemical-resistant (disposable)*
- Safety glasses or chemical splash goggles*
- Hard hat (face shield)*
- Escape mask*

2. Criteria for selection

Meeting any of these criteria allows use of Level D protection:

No hazardous air pollutants have been measured.

*Optional

Work functions preclude splashes, immersion, or potential for unexpected inhalation of any chemicals.

3. Guidance on selection criteria

Level D protection is primarily a work uniform. It can be worn in areas where: 1) only boots can be contaminated, or 2) there are no inhalable toxic substances.

III. PROTECTION IN UNKNOWN ENVIRONMENTS

In all site operations, selecting the appropriate personnel protection equipment is one of the first steps in reducing the potential for adverse health effects. Until the hazardous conditions presented by an environmental incident can be identified and personnel safety measures commensurate with the hazards - real or potential - instituted, preliminary measures will have to be based on applying experience, judgment, and professional knowledge to the particular incident at hand. Lack of knowledge concerning the hazards that could be encountered precludes selecting protective equipment by comparing environmental concentrations of known toxicants against protection afforded by each type of equipment.

One of the first considerations in evaluating the risk of an unknown environment is to measure immediate atmospheric hazards such as the concentrations (or potential concentrations) of vapors, gases, and particulates; oxygen content of the air; explosive potential; and, to a lesser degree, the possibility of radiation exposure. In addition to air measurements, visual observation and/or evaluation of existing data can help determine the degree of risk from other materials that are explosive, have a high fire potential, are extremely toxic, or exhibit other hazardous characteristics that cannot be monitored by field instruments.

Total vapor/gas concentration as indicated by instruments such as the Century OVA System or the HNU Photoionizer is a useful adjunct to professional judgment in selecting the Level of Protection to be worn in an unknown environment. It should not be the sole criterion, but should be considered with all other available information. Total vapor/gas concentration should be applied only by qualified persons thoroughly familiar with the information contained in Appendixes I and II.

The initial on-site survey and reconnaissance, which may consist of more than one entry, is to characterize the immediate hazards and, based on these findings, establish preliminary safety requirements. As data are obtained from the initial survey, the Level of Protection and other safety procedures are adjusted. Initial data also provide information on which to base further monitoring and sampling. No method can select a Level of Protection in all unknown environments. Each situation must be examined individually. Some general approaches can be given, however, for judging the situation and determining the Level of Protection required.

A. Level C

Level C protection (full-face, air-purifying respirator) should be worn routinely in an atmosphere only after the type(s) of air contaminant(s) is identified and concentrations measured. To permit flexibility in prescribing a Level of Protection at certain environmental incidents, a specialist could consider air-purifying respirators for use in unidentified vapor/gas concentrations of a few parts per million. The guideline of total vapor/gas concentration of background to 5 ppm above background should not be the sole criterion for selecting Level C. Since the individual contributors may never be completely identified, a decision on continuous wearing of Level C must be made, after assessing all safety considerations, including:

- The presence of (or potential for) organic or inorganic vapors/gases against which a canister is ineffective or has a short service life.

- The known (or suspected) presence in air of substances with low TLV or IDLH levels.

- The presence of particulates in air.

- The errors associated with both the instruments and monitoring procedures used.

- The presence of (or potential for) substances in air which do not elicit a response on the instrument(s) used.

- The potential for higher concentrations in the ambient atmosphere or in the air adjacent to specific site operations.

The continuous use of air-purifying respirators (Level C) should be based on the identification of the substances contributing to the total vapor/gas concentration and the application of published criteria for the routine use of air-purifying devices. Unidentified ambient concentrations of organic/vapors or gases in air approaching or exceeding 5 ppm above background require Level B protection.

Individuals without appropriate training and/or experience should be discouraged from modifying upward the recommended total vapor/gas concentration guideline and associated Levels of Protection.

B. Level A

Level A should be worn when maximum protection is needed against substances that could damage the surface of the skin and/or be absorbed through the skin. Since Level A requires the use of a self-contained breathing apparatus, the eyes and respiratory system are also protected. For initial site entry, skin toxicants would exist primarily as vapors, gases, or particulates in air, with a lesser

possibility of splash. Continuous operations at an abandoned waste site, for instance, may require Level A due to working with and around severe skin toxicants.

Until air monitoring data are available to assist in the selection of the appropriate Level of Protection, the use of Level A for initial site entries may have to be based on indirect evidence of the potential for atmospheric contamination or direct skin contact.

Considerations that may require Level A protection include:

- Confined spaces: Enclosed, confined, or poorly ventilated areas are conducive to buildup in air of toxic vapors, gases, or particulates. (Explosive or oxygen-deficient atmospheres also are more probable in confined spaces.) Low-lying outdoor areas - ravines, ditches, and gulleys - tend to accumulate any heavier-than-air vapors or gases present.

- Suspected/known toxic substances: Various substances may be known or suspected to be involved in an incident, but there are no field instruments available to detect or quantify air concentrations. In these cases, media samples must be analyzed in the laboratory. Until these substances are identified and levels measured, maximum protection may be necessary.

- Visible emissions: Visible emissions from leaking containers or railroad/vehicular tank cars, as well as smoke from chemical fires, indicate high potential for concentrations of substances that could be extreme respiratory or skin hazards.

- Job functions: Initial site entries are generally walk-throughs in which instruments and/or visual observations provide a preliminary characterization of the hazards. Subsequent entries are to conduct the many activities needed to reduce the environmental impact of those hazards. Levels of Protection for later operations are based not only on data obtained from the initial and subsequent environmental monitoring, but also on the probability of contamination. Maximum protection (Level A) should be worn when:

  -- there is a high probability for exposure to high concentrations of vapors, gases, or particulates.

  -- substances could splash.

  -- substances are known or suspected of being extremely toxic directly to the skin or by being absorbed.

Examples of situations where Level A has been worn are:

- Excavating of soil suspected of being contaminated with dioxin.

- Entering cloud of chlorine released in a railroad accident.

- Handling and moving drums suspected and/or known to contain substances that were skin destructive or absorbable.

- Responding to accidents involving cyanide, arsenic, or undiluted pesticides.

C. Level B

While Level B protection does not afford the maximum skin (and eye) protection as does a fully encapsulating suit, a good quality, hooded, chemical-resistant, one-or-two-piece garment, with taped joints, provides a reasonably high degree of protection. At most abandoned hazardous waste sites, ambient atmospheric gas/vapor levels have not approached concentrations sufficiently high to warrant maximum protection. In all but a few circumstances, Level B should provide the protection needed for initial entry. Subsequent operations require a re-evaluation of Level B based on the probability of being splashed by chemicals, their effect on the skin, or the presence of hard-to-detect air contaminants.

IV. ADDITIONAL CONSIDERATIONS

In addition to the topics previously addressed, there are other factors which should be considered in selecting the appropriate Level of Protection.

A. Protective Clothing

No adequate criteria are available, similar to the respiratory protection decision-logic, for selecting protective clothing. A concentration of a known substance in the air approaching a TLV or permissible exposure limit for the skin does not automatically warrant a fully encapsulating suit. A hooded, high quality, chemical-resistant suit may provide adequate protection. The selection of Level A over Level B is a judgment that should be made by a qualified individual considering the following factors:

- Effect of the material on skin:

  -- highly hazardous substances are those that are easily absorbed through the skin, causing systemic effects, or that cause severe skin destruction. Liquids are generally more hazardous than vapors/gases and particulates.

  -- less hazardous substances are those that are not easily absorbed through the skin, causing systemic effects, or that cause severe skin destruction

- Concentration of the material - the higher the concentration, the higher the risk.

- The potential for contact with the material due to the work being done and the probability of direct exposure to the small area of skin unprotected by Level B or C chemical-resistant clothing.

B. Chemicals Toxic to Skin

The chemicals listed in Appendix III are identified in the Oil and Hazardous Materials Technical Assistance Data Base System (OHMTADS) as having adverse skin effects ranging from irritation to absorption into the body. Knowledge concerning the presence of absence of these materials could be useful in selecting the necessary Level of Protection. Other substances affecting the skin, but not listed in OHMTADS, may be present. Therefore, a major effort should be made to identify all substances.

C. Atmospheric Conditions

Atmospheric conditions such as stability, temperature, wind direction, wind velocity, and pressure determine the behavior of contaminants in air or the potential for volatile material getting in air. These parameters should be considered in determining the need for and Level of Protection required.

D. Air Monitoring

A program must be established for periodic monitoring of the air during site operations. Without an air monitoring program, any changes could go undetected and jeopardize response personnel. Monitoring can be done with various types of air pumps and filtering devices followed by analysis of filtering media; portable real-time monitoring instruments located strategically on-site; personal dosimeters; and periodic walk-throughs by personnel carrying survey instruments.

E. Work in Exclusion Zone

For operations in the on-site Exclusion Zone (area of potential contamination), different Levels of Protection may be selected, and various types of chemical-resistant clothing may be worn. This selection would be based not only on measured air concentrations, but also on the job function or reason for being in the area and the potential for skin contact or inhalation of the materials present.

F. Escape Masks

The use of escape masks is an option in Level C and D protection. A specialist should determine their use on a case-by-case basis. Escape masks could also be strategically located on-site in areas that have higher possibilities of vapors, gases, or particulates.

APPENDIX C

Groundwater Analytical Data

MONTGOMERY LABORATORIES
a division of James M. Montgomery, Consulting Engineers, Inc.
555 East Walnut Street, Pasadena, California 91101
(818) 796-9141 / (213) 681-4255 Telex 67-5420

Report of Inorganic Analyses

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W01682
Report#: R05111
Phone #: 213-659-6122

Date Sampled: 12/17/84
Date Completed: 1/7/85

Date Received: 12/20/84

Lab#	Sample I.D.	Phenol mg/l	pH Units
EC2892	WELL # 1 (SCHOOLYARD)	<0.005	7.7
EC2893	WELL # 2 (NEAR PLANT)	0.007	7.8
EC2894	WELL # 3 (NEAR RR TRACKS)	<0.005	7.4
EC2895	FIELD BLANKS (12/17/84)	<0.005	5.8

NA: Not Analyzed

Submitted by Joseph F. Maninik

Approved by A. Eaton

MONTGOMERY LABORATORIES
a division of James M. Montgomery, Consulting Engineers, Inc.
555 East Walnut Street, Pasadena, California 91101
(818) 796-9141 / (213) 681-4255 Telex 67-5420

Report of analysis for
TOTAL ORGANIC CARBON

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W01682
Report#: R05117
Phone #: 213-659-6122

Date Sampled: 12/17/84
Date Analyzed: 1/3/85

Date Received: 12/20/84

Lab#	Sample Description	Total Organic Carbon (milligrams/liter)
EC2892	WELL # 1 (SCHOOLYARD)	3.6
EC2893	WELL # 2 (NEAR PLANT)	5.2
EC2894	WELL # 3 (NEAR RR TRACKS)	5.4
EC2895	FIELD BLANKS (12/17/84)	ND

RECEIVED
JAN 08 1985
MEREDITH/BOLI
& ASSOCIATES, INC.

NA: Not analyzed
ND: Not detected; minimum detection limit = 0.1 mg/l

Submitted by Karen Prescott Approved by Albert X. Trunell

MONTGOMERY LABORATORIES
a division of James M. Montgomery, Consulting Engineers, Inc.
555 East Walnut Street, Pasadena, California 91101
(818) 796-9141 / (213) 681-4255 Telex 67-5420

Report of GC/MS Analysis for VOLATILE ORGANICS in Water

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W01682
Report#: R05112
Phone #: 213-659-6122

Date Sampled: 12/17/84
Date Received: 12/20/84
Date Analyzed: 1/8/85

Lab #: EC2892
Sample I.D.: WELL # 1 (SCHOOLYARD)

Compound	Concentration (ug/l)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantified; detected below minimum detection limit

Submitted by _____ Approved by _____

Report of Analysis by GC/MS for VOLATILE ORGANICS

Additional compounds tentatively identified:

Compound	Concentration (micrograms/liter)
Ethyldimethylbenzene	1.0

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantified; detected below minimum detection limit
(): Tentative value based on the response of Ethylbenzene standard.

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	1.0	1,1,1-Trichloroethane	0.1
Acrylonitrile	1.0	1,1,2-Trichloroethane	0.1
Benzene	0.1	Trichloroethene	0.1
Bromoform	0.1	Vinyl Chloride	0.1
Carbon Tetrachloride	0.1	Acetone	0.1
Chlorobenzene	0.1	Methylethylketone	0.5
Dibromochloromethane	0.1	Tetrahydrofuran	0.1
Chloroethane	0.1	trans-1,3-Dichloropropene	0.1
2-Chloroethylvinylether	0.1	cis-1,3-Dichloropropene	0.1
Chloroform	0.1	m,p-Xylene	0.1
Dichlorobromomethane	0.1	o-Xylene	0.1
1,1-Dichloroethane	0.1	p-Chlorotoluene	0.1
1,2-Dichloroethane	0.1	Styrene	0.1
1,1-Dichloroethene	0.1	1,3-Dichlorobenzene	0.1
1,2-Dichloropropane	0.1	1,2-Dichlorobenzene	0.1
1,2-Dichloropropene	0.1	1,4-Dichlorobenzene	0.1
Ethylbenzene	0.1	1,2-Dibromo-3-chloropropane	0.5
Methyl Bromide	0.1	Trichlorobenzene	0.1
Methyl Chloride	0.1	Naphthalene	0.1
Methylene Chloride	0.1	trans-1,2-Dichloroethene	0.1
1,1,2,2-Tetrachloroethane	0.1	cis-1,2-Dichloroethene	0.1
Tetrachloroethene	0.1	Trichlorofluoromethane	0.1
Toluene	0.1	Propylbenzene	0.1
1,2-Dibromoethane (EDB)	0.1		

MDL - Minimum detection limit in micrograms/liter

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GCMS

Additional Compounds Included in Quantitative Analysis

Compound	MDL
2-Ethoxyethyl acetate	10
Methylisobutylketone(MIBK)	1
Furfuryl aldehyde	10
Di-n-butylamine	100
Cyclohexanone	10

MDL = Estimated Minimum Detection Limit in micrograms/liter

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555 East Walnut Street, Pasadena, California 91101
(818) 796-9141 / (213) 681-4255 Telex 67-5420

Report of GC/MS Analysis for VOLATILE ORGANICS in Water

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W01682
Report#: R05113
Phone #: 213-659-6122

Date Sampled: 12/17/84
Date Analyzed: 1/8/85
Date Received: 12/20/84

Lab #: EC2893
Sample I.D.: WELL # 2 (NEAR PLANT)

Compound	Concentration (ug/l)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantified; detected below minimum detection limit

Submitted by _____ Approved by _____

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	1.0	1,1,1-Trichloroethane	0.1
Acrylonitrile	1.0	1,1,2-Trichloroethane	0.1
Benzene	0.1	Trichloroethene	0.1
Bromoform	0.1	Vinyl Chloride	0.1
Carbon Tetrachloride	0.1	Acetone	0.1
Chlorobenzene	0.1	Methylethylketone	0.5
Dibromochloromethane	0.1	Tetrahydrofuran	0.1
Chloroethane	0.1	trans-1,3-Dichloropropene	0.1
2-Chloroethylvinylether	0.1	cis-1,3-Dichloropropene	0.1
Chloroform	0.1	m,p-Xylene	0.1
Dichlorobromomethane	0.1	o-Xylene	0.1
1,1-Dichloroethane	0.1	p-Chlorotoluene	0.1
1,2-Dichloroethane	0.1	Styrene	0.1
1,1-Dichloroethene	0.1	1,3-Dichlorobenzene	0.1
1,2-Dichloropropane	0.1	1,2-Dichlorobenzene	0.1
1,2-Dichloropropene	0.1	1,4-Dichlorobenzene	0.1
Ethylbenzene	0.1	1,2-Dibromo-3-chloropropane	0.5
Methyl Bromide	0.1	Trichlorobenzene	0.1
Methyl Chloride	0.1	Naphthalene	0.1
Methylene Chloride	0.1	trans-1,2-Dichloroethene	0.1
1,1,2,2-Tetrachloroethane	0.1	cis-1,2-Dichloroethene	0.1
Tetrachloroethene	0.1	Trichlorofluoromethane	0.1
Toluene	0.1	Propylbenzene	0.1
1,2-Dibromoethane (EDB)	0.1		

MDL - Minimum detection limit in micrograms/liter

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GCMS

Additional Compounds Included in Quantitative Analysis

Compound	MDL
2-Ethoxyethyl acetate	10
Methylisobutylketone(MIBK)	1
Furfuryl aldehyde	10
Di-n-butylamine	100
Cyclohexanone	10

MDL = Estimated Minimum Detection Limit in micrograms/liter

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Report of GC/MS Analysis for VOLATILE ORGANICS in Water

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W01682
Report#: R05114
Phone #: 213-659-6122

Date Sampled: 12/17/84
Date Analyzed: 1/8/85

Date Received: 12/20/84

Lab #: EC2894
Sample I.D.: WELL # 3 (NEAR RR TRACKS)

Compound	Concentration (ug/l)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantified; detected below minimum detection limit

Submitted by _____ Approved by _____

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	1.0	1,1,1-Trichloroethane	0.1
Acrylonitrile	1.0	1,1,2-Trichloroethane	0.1
Benzene	0.1	Trichloroethene	0.1
Bromoform	0.1	Vinyl Chloride	0.1
Carbon Tetrachloride	0.1	Acetone	0.1
Chlorobenzene	0.1	Methylethylketone	0.5
Dibromochloromethane	0.1	Tetrahydrofuran	0.1
Chloroethane	0.1	trans-1,3-Dichloropropene	0.1
2-Chloroethylvinylether	0.1	cis-1,3-Dichloropropene	0.1
Chloroform	0.1	m,p-Xylene	0.1
Dichlorobromomethane	0.1	o-Xylene	0.1
1,1-Dichloroethane	0.1	p-Chlorotoluene	0.1
1,2-Dichloroethane	0.1	Styrene	0.1
1,1-Dichloroethene	0.1	1,3-Dichlorobenzene	0.1
1,2-Dichloropropane	0.1	1,2-Dichlorobenzene	0.1
1,2-Dichloropropene	0.1	1,4-Dichlorobenzene	0.1
Ethylbenzene	0.1	1,2-Dibromo-3-chloropropane	0.5
Methyl Bromide	0.1	Trichlorobenzene	0.1
Methyl Chloride	0.1	Naphthalene	0.1
Methylene Chloride	0.1	trans-1,2-Dichloroethene	0.1
1,1,2,2-Tetrachloroethane	0.1	cis-1,2-Dichloroethene	0.1
Tetrachloroethene	0.1	Trichlorofluoromethane	0.1
Toluene	0.1	Propylbenzene	0.1
1,2-Dibromoethane (EDB)	0.1		

MDL - Minimum detection limit in micrograms/liter

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GCMS

Additional Compounds Included in Quantitative Analysis

Compound	MDL
2-Ethoxyethyl acetate	10
Methylisobutylketone(MIBK)	1
Furfuryl aldehyde	10
Di-n-butylamine	100
Cyclohexanone	10

MDL = Estimated Minimum Detection Limit in micrograms/liter

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Report of Priority Pollutant Metals in water

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W01682
Report#: R05116
Phone #: 213-659-6122

Date Sampled: 12/17/84
Date Completed: 1/17/85
Date Received: 12/20/84

Lab#	Sample I.D.	Ag mg/l	As mg/l	Be mg/l	Cd mg/l
EC2892	WELL # 1 (SCHOOLYARD)	<0.005	<0.001	0.005	<0.003
EC2893	WELL # 2 (NEAR PLANT)	<0.005	<0.001	0.004	<0.003
EC2894	WELL # 3 (NEAR RR TRACKS)	<0.005	<0.001	0.006	<0.003
EC2895	FIELD BLANKS (12/17/84)	<0.005	<0.001	0.006	<0.003

Lab#	Sample I.D.	Cr mg/l	Cu mg/l	Hg mg/l	Ni mg/l
EC2892	WELL # 1 (SCHOOLYARD)	<0.029	0.22	<0.0003	0.020
EC2893	WELL # 2 (NEAR PLANT)	<0.029	0.039	<0.0003	<0.008
EC2894	WELL # 3 (NEAR RR TRACKS)	<0.029	0.042	<0.0003	<0.008
EC2895	FIELD BLANKS (12/17/84)	<0.029	<0.007	<0.0003	<0.008

Lab#	Sample I.D.	Pb mg/l	Sb mg/l	Se mg/l	Tl mg/l
EC2892	WELL # 1 (SCHOOLYARD)	0.023	<0.002	0.002	<0.005
EC2893	WELL # 2 (NEAR PLANT)	0.004	0.004	0.003	<0.005
EC2894	WELL # 3 (NEAR RR TRACKS)	0.005	<0.002	0.001	<0.005
EC2895	FIELD BLANKS (12/17/84)	<0.002	0.006	<0.001	<0.005

Lab#	Sample I.D.	Zn mg/l
EC2892	WELL # 1 (SCHOOLYARD)	13
EC2893	WELL # 2 (NEAR PLANT)	7.9
EC2894	WELL # 3 (NEAR RR TRACKS)	19
EC2895	FIELD BLANKS (12/17/84)	0.012

NA: Not Analyzed

Submitted by Larry Lawrence Approved by J. Oppenheimer

APPENDIX D

Soil Analytical Data

MONTGOMERY LABORATORIES
a division of James M. Montgomery, Consulting Engineers, Inc.
555 East Walnut Street, Pasadena, California 91101
(818) 796-9141 / (213) 681-4255 Telex 67-5420

Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02237
Report#: R07425
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/2/85

Date Received: 2/14/85

Lab #: F26345
Sample I.D.: # 2-10/22/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND

RECEIVED
MAR 12 1985
MEREDITH/BOLI & ASSOCIATES, INC.

APPROVED
QC OFFICER

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantitated; Detected but below minimum quantitation limits
(): Tentative value only

Submitted by

Approved by

MAR 8 1985

Report of Analysis by GC/MS for
VOLATILE ORGANICS

Additional compounds tentatively identified:

Compound	Concentration (micrograms/kilogram)
1,1-Biphenyl	(380)

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantified; detected below minimum detection limit
(): Tentative value based on the response of Ethylbenzene standard.

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	200	1,1,1-Trichloroethane	20
Acrylonitrile	200	1,1,2-Trichloroethane	20
Benzene	20	Trichloroethene	20
Bromoform	20	Vinyl Chloride	20
Carbon Tetrachloride	20	Acetone	20
Chlorobenzene	20	Methylethylketone	100
Dibromochloromethane	20	Tetrahydrofuran	20
Chloroethane	20	trans-1,3-Dichloropropene	20
2-Chloroethylvinylether	20	cis-1,3-Dichloropropene	20
Chloroform	20	m,p-Xylene	20
Dichlorobromomethane	20	o-Xylene	20
1,1-Dichloroethane	20	p-Chlorotoluene	20
1,2-Dichloroethane	20	Styrene	20
1,1-Dichloroethene	20	1,3-Dichlorobenzene	20
1,2-Dichloropropane	20	1,2-Dichlorobenzene	20
1,2-Dichloropropene	20	1,4-Dichlorobenzene	20
Ethylbenzene	20	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	20	Trichlorobenzene	20
Methyl Chloride	20	Naphthalene	20
Methylene Chloride	20	trans-1,2-Dichloroethene	20
1,1,2,2-Tetrachloroethane	20	cis-1,2-Dichloroethene	20
Tetrachloroethene	20	Trichlorofluoromethane	20
Toluene	20	Propylbenzene	20
1,2-Dibromoethane (EDB)	20		

MDL - Minimum detection limit in micrograms/kilogram wet weight

MONTGOMERY LABORATORIES
a division of James M. Montgomery, Consulting Engineers, Inc.
555 East Walnut Street, Pasadena, California 91101
(818) 796-9141 / (213) 681-4255 Telex 67-5420

Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02237
Report#: R07426
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/4/85

Date Received: 2/14/85

Lab #: F26346
Sample I.D.: # 4-10/22/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOALTILE ORGANICS	ND

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QC OFFICER

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantitated; Detected but below minimum quantitation limits
(): Tentative value only

Submitted by

Approved by

MAR 8 1985

Report of Analysis by GC/MS for
VOLATILE ORGANICS

Additional compounds tentatively identified:

Compound	Concentration (micrograms/kilogram)
C4 alkylbenzene isomers	(400)
1,1-Biphenyl	(150)

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantified; detected below minimum detection limit
(): Tentative value based on the response of Ethylbenzene standard.

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	1000	1,1,1-Trichloroethane	100
Acrylonitrile	1000	1,1,2-Trichloroethane	100
Benzene	100	Trichloroethene	100
Bromoform	100	Vinyl Chloride	100
Carbon Tetrachloride	100	Acetone	100
Chlorobenzene	100	Methylethylketone	500
Dibromochloromethane	100	Tetrahydrofuran	100
Chloroethane	100	trans-1,3-Dichloropropene	100
2-Chloroethylvinylether	100	cis-1,3-Dichloropropene	100
Chloroform	100	m,p-Xylene	100
Dichlorobromomethane	100	o-Xylene	100
1,1-Dichloroethane	100	p-Chlorotoluene	100
1,2-Dichloroethane	100	Styrene	100
1,1-Dichloroethene	100	1,3-Dichlorobenzene	100
1,2-Dichloropropane	100	1,2-Dichlorobenzene	100
1,2-Dichloropropene	100	1,4-Dichlorobenzene	100
Ethylbenzene	100	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	100	Trichlorobenzene	100
Methyl Chloride	100	Naphthalene	100
Methylene Chloride	100	trans-1,2-Dichloroethene	100
1,1,2,2-Tetrachloroethane	100	cis-1,2-Dichloroethene	100
Tetrachloroethene	100	Trichlorofluoromethane	100
Toluene	100	Propylbenzene	100
1,2-Dibromoethane (EDB)	100		

MDL - Minimum detection limit in micrograms/kilogram

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Report of GC/MS Analysis for
VOLATILE ORGANICS
in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02238
Report#: R07433
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/2/85

Date Received: 2/14/85

Lab #: F26353
Sample I.D.: # 12-10/23/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND
NON-PRIORITY POLLUTANT VOLATILE ORGANICS	ND

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MEREDITH/BOLI & ASSOCIATES, INC.

APPROVED
QC OFFICER
Robert K. Lee

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantitated; Detected but below minimum quantitation limits
(): Tentative value only

Submitted by T K Lee

Approved by Albert K. Truman
MAR 8 1985

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	200	1,1,1-Trichloroethane	20
Acrylonitrile	200	1,1,2-Trichloroethane	20
Benzene	20	Trichloroethene	20
Bromoform	20	Vinyl Chloride	20
Carbon Tetrachloride	20	Acetone	20
Chlorobenzene	20	Methylethylketone	100
Dibromochloromethane	20	Tetrahydrofuran	20
Chloroethane	20	trans-1,3-Dichloropropene	20
2-Chloroethylvinylether	20	cis-1,3-Dichloropropene	20
Chloroform	20	m,p-Xylene	20
Dichlorobromomethane	20	o-Xylene	20
1,1-Dichloroethane	20	p-Chlorotoluene	20
1,2-Dichloroethane	20	Styrene	20
1,1-Dichloroethene	20	1,3-Dichlorobenzene	20
1,2-Dichloropropane	20	1,2-Dichlorobenzene	20
1,2-Dichloropropene	20	1,4-Dichlorobenzene	20
Ethylbenzene	20	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	20	Trichlorobenzene	20
Methyl Chloride	20	Naphthalene	20
Methylene Chloride	20	trans-1,2-Dichloroethene	20
1,1,2,2-Tetrachloroethane	20	cis-1,2-Dichloroethene	20
Tetrachloroethene	20	Trichlorofluoromethane	20
Toluene	20	Propylbenzene	20
1,2-Dibromoethane (EDB)	20		

MDL - Minimum detection limit in micrograms/kilogram wet weight

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Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02238
Report#: R07434
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/2/85

Date Received: 2/14/85

Lab #: F26354
Sample I.D.: # 13-10/23/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND
NON-PRIORITY POLLUTANT VOLATILE ORGANICS	ND

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MEREDITH/BOLI & ASSOCIATES INC.

APPROVED
QC OFFICER

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantitated; Detected but below minimum quantitation limits
(): Tentative value only

Submitted by _____ Approved by _____

MAR 8 1985

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	200	1,1,1-Trichloroethane	20
Acrylonitrile	200	1,1,2-Trichloroethane	20
Benzene	20	Trichloroethene	20
Bromoform	20	Vinyl Chloride	20
Carbon Tetrachloride	20	Acetone	20
Chlorobenzene	20	Methylethylketone	100
Dibromochloromethane	20	Tetrahydrofuran	20
Chloroethane	20	trans-1,3-Dichloropropene	20
2-Chloroethylvinylether	20	cis-1,3-Dichloropropene	20
Chloroform	20	m,p-Xylene	20
Dichlorobromomethane	20	o-Xylene	20
1,1-Dichloroethane	20	p-Chlorotoluene	20
1,2-Dichloroethane	20	Styrene	20
1,1-Dichloroethene	20	1,3-Dichlorobenzene	20
1,2-Dichloropropane	20	1,2-Dichlorobenzene	20
1,2-Dichloropropene	20	1,4-Dichlorobenzene	20
Ethylbenzene	20	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	20	Trichlorobenzene	20
Methyl Chloride	20	Naphthalene	20
Methylene Chloride	20	trans-1,2-Dichloroethene	20
1,1,2,2-Tetrachloroethane	20	cis-1,2-Dichloroethene	20
Tetrachloroethene	20	Trichlorofluoromethane	20
Toluene	20	Propylbenzene	20
1,2-Dibromoethane (EDB)	20		

MDL - Minimum detection limit in micrograms/kilogram wet weight

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Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02238
Report#: R07435
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/2/85

Date Received: 2/14/85

Lab #: F26355
Sample I.D.: # 15-10/23/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND
NON-PRIORITY POLLUTANT VOLATILE ORGANICS	ND

RECEIVED
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MEREDITH/BOLI & ASSOCIATES, INC.

APPROVED
QC OFFICER
Robert R Ward

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantitated; Detected but below minimum quantitation limits
(): Tentative value only

Submitted by H K Lau

Approved by Albert K. Trundell

MAR 8 1985

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	200	1,1,1-Trichloroethane	20
Acrylonitrile	200	1,1,2-Trichloroethane	20
Benzene	20	Trichloroethene	20
Bromoform	20	Vinyl Chloride	20
Carbon Tetrachloride	20	Acetone	20
Chlorobenzene	20	Methylethylketone	100
Dibromochloromethane	20	Tetrahydrofuran	20
Chloroethane	20	trans-1,3-Dichloropropene	20
2-Chloroethylvinylether	20	cis-1,3-Dichloropropene	20
Chloroform	20	m,p-Xylene	20
Dichlorobromomethane	20	o-Xylene	20
1,1-Dichloroethane	20	p-Chlorotoluene	20
1,2-Dichloroethane	20	Styrene	20
1,1-Dichloroethene	20	1,3-Dichlorobenzene	20
1,2-Dichloropropane	20	1,2-Dichlorobenzene	20
1,2-Dichloropropene	20	1,4-Dichlorobenzene	20
Ethylbenzene	20	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	20	Trichlorobenzene	20
Methyl Chloride	20	Naphthalene	20
Methylene Chloride	20	trans-1,2-Dichloroethene	20
1,1,2,2-Tetrachloroethane	20	cis-1,2-Dichloroethene	20
Tetrachloroethene	20	Trichlorofluoromethane	20
Toluene	20	Propylbenzene	20
1,2-Dibromoethane (EDB)	20		

MDL - Minimum detection limit in micrograms/kilogram wet weight

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Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02238
Report#: R07436
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/2/85

Date Received: 2/14/85

Lab #: F26356
Sample I.D.: # 16-10/23/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND

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ND: Not Detected
NA: Not Analyzed
NQ: Not Quantitated; Detected but below minimum quantitation limits
(): Tentative value only

Submitted by _____ Approved by _____

MAR 8 1985

Report of Analysis by GC/MS for
VOLATILE ORGANICS

Additional compounds tentatively identified:

Compound	Concentration (micrograms/kilogram)
1,1,-Biphenyl	(120)

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantified; detected below minimum detection limit
(): Tentative value based on the response of Ethylbenzene standard.

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	200	1,1,1-Trichloroethane	20
Acrylonitrile	200	1,1,2-Trichloroethane	20
Benzene	20	Trichloroethene	20
Bromoform	20	Vinyl Chloride	20
Carbon Tetrachloride	20	Acetone	20
Chlorobenzene	20	Methylethylketone	100
Dibromochloromethane	20	Tetrahydrofuran	20
Chloroethane	20	trans-1,3-Dichloropropene	20
2-Chloroethylvinylether	20	cis-1,3-Dichloropropene	20
Chloroform	20	m,p-Xylene	20
Dichlorobromomethane	20	o-Xylene	20
1,1-Dichloroethane	20	p-Chlorotoluene	20
1,2-Dichloroethane	20	Styrene	20
1,1-Dichloroethene	20	1,3-Dichlorobenzene	20
1,2-Dichloropropane	20	1,2-Dichlorobenzene	20
1,2-Dichloropropene	20	1,4-Dichlorobenzene	20
Ethylbenzene	20	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	20	Trichlorobenzene	20
Methyl Chloride	20	Naphthalene	20
Methylene Chloride	20	trans-1,2-Dichloroethene	20
1,1,2,2-Tetrachloroethane	20	cis-1,2-Dichloroethene	20
Tetrachloroethene	20	Trichlorofluoromethane	20
Toluene	20	Propylbenzene	20
1,2-Dibromoethane (EDB)	20		

MDL - Minimum detection limit in micrograms/kilogram wet weight

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555 East Walnut Street, Pasadena, California 91101
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Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02238
Report#: R07437
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/4/85

Date Received: 2/14/85

Lab #: F26357
Sample I.D.: # 17-10/23/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND

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NQ: Not Quantitated; Detected but below minimum quantitation limits
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Submitted by _____ Approved by _____

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Report of Analysis by GC/MS for
VOLATILE ORGANICS

Additional compounds tentatively identified:

Compound	Concentration (micrograms/kilogram)
Decane	(790)

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantified; detected below minimum detection limit
(): Tentative value based on the response of Ethylbenzene standard.

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	1000	1,1,1-Trichloroethane	100
Acrylonitrile	1000	1,1,2-Trichloroethane	100
Benzene	100	Trichloroethene	100
Bromoform	100	Vinyl Chloride	100
Carbon Tetrachloride	100	Acetone	100
Chlorobenzene	100	Methylethylketone	500
Dibromochloromethane	100	Tetrahydrofuran	100
Chloroethane	100	trans-1,3-Dichloropropene	100
2-Chloroethylvinylether	100	cis-1,3-Dichloropropene	100
Chloroform	100	m,p-Xylene	100
Dichlorobromomethane	100	o-Xylene	100
1,1-Dichloroethane	100	p-Chlorotoluene	100
1,2-Dichloroethane	100	Styrene	100
1,1-Dichloroethene	100	1,3-Dichlorobenzene	100
1,2-Dichloropropane	100	1,2-Dichlorobenzene	100
1,2-Dichloropropene	100	1,4-Dichlorobenzene	100
Ethylbenzene	100	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	100	Trichlorobenzene	100
Methyl Chloride	100	Naphthalene	100
Methylene Chloride	100	trans-1,2-Dichloroethene	100
1,1,2,2-Tetrachloroethane	100	cis-1,2-Dichloroethene	100
Tetrachloroethene	100	Trichlorofluoromethane	100
Toluene	100	Propylbenzene	100
1,2-Dibromoethane (EDB)	100		

MDL - Minimum detection limit in micrograms/kilogram

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Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02238
Report#: R07438
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/3/85

Date Received: 2/14/85

Lab #: F26358
Sample I.D.: # 18-10/23/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND
NON-PRIORITY POLLUTANT VOLATILE ORGANICS	ND

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APPROVED
QC OFFICER

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantitated; Detected but below minimum quantitation limits
(): Tentative value only

Submitted by _____ Approved by _____

MAR 8 1985

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	1000	1,1,1-Trichloroethane	100
Acrylonitrile	1000	1,1,2-Trichloroethane	100
Benzene	100	Trichloroethene	100
Bromoform	100	Vinyl Chloride	100
Carbon Tetrachloride	100	Acetone	100
Chlorobenzene	100	Methylethylketone	500
Dibromochloromethane	100	Tetrahydrofuran	100
Chloroethane	100	trans-1,3-Dichloropropene	100
2-Chloroethylvinylether	100	cis-1,3-Dichloropropene	100
Chloroform	100	m,p-Xylene	100
Dichlorobromomethane	100	o-Xylene	100
1,1-Dichloroethane	100	p-Chlorotoluene	100
1,2-Dichloroethane	100	Styrene	100
1,1-Dichloroethene	100	1,3-Dichlorobenzene	100
1,2-Dichloropropane	100	1,2-Dichlorobenzene	100
1,2-Dichloropropene	100	1,4-Dichlorobenzene	100
Ethylbenzene	100	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	100	Trichlorobenzene	100
Methyl Chloride	100	Naphthalene	100
Methylene Chloride	100	trans-1,2-Dichloroethene	100
1,1,2,2-Tetrachloroethane	100	cis-1,2-Dichloroethene	100
Tetrachloroethene	100	Trichlorofluoromethane	100
Toluene	100	Propylbenzene	100
1,2-Dibromoethane (EDB)	100		

MDL - Minimum detection limit in micrograms/kilogram

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Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02238
Report#: R07439
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/3/85

Date Received: 2/14/85

Lab #: F26359
Sample I.D.: # 19-10/23/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND
NON-PRIORITY POLLUTANT VOLATILE ORGANICS	ND

APPROVED
QC OFFICER
Robert A. Clark

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantitated; Detected but below minimum quantitation limits
(): Tentative value only

Submitted by K. Lin

Approved by Albert K. Trundell

MAR 8 1985

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	200	1,1,1-Trichloroethane	20
Acrylonitrile	200	1,1,2-Trichloroethane	20
Benzene	20	Trichloroethene	20
Bromoform	20	Vinyl Chloride	20
Carbon Tetrachloride	20	Acetone	20
Chlorobenzene	20	Methylethylketone	100
Dibromochloromethane	20	Tetrahydrofuran	20
Chloroethane	20	trans-1,3-Dichloropropene	20
2-Chloroethylvinylether	20	cis-1,3-Dichloropropene	20
Chloroform	20	m,p-Xylene	20
Dichlorobromomethane	20	o-Xylene	20
1,1-Dichloroethane	20	p-Chlorotoluene	20
1,2-Dichloroethane	20	Styrene	20
1,1-Dichloroethene	20	1,3-Dichlorobenzene	20
1,2-Dichloropropane	20	1,2-Dichlorobenzene	20
1,2-Dichloropropene	20	1,4-Dichlorobenzene	20
Ethylbenzene	20	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	20	Trichlorobenzene	20
Methyl Chloride	20	Naphthalene	20
Methylene Chloride	20	trans-1,2-Dichloroethene	20
1,1,2,2-Tetrachloroethane	20	cis-1,2-Dichloroethene	20
Tetrachloroethene	20	Trichlorofluoromethane	20
Toluene	20	Propylbenzene	20
1,2-Dibromoethane (EDB)	20		

MDL - Minimum detection limit in micrograms/kilogram wet weight

MONTGOMERY LABORATORIES
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Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02238
Report#: R07440
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/3/85

Date Received: 2/14/85

Lab #: F26360
Sample I.D.: # 20-10/23/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND
NON-PRIORITY POLLUTANT VOLATILE ORGANICS	ND

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QC OFFICER

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantitated; Detected but below minimum quantitation limits
(): Tentative value only

Submitted by _____ Approved by _____

MAR 8 1985

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	200	1,1,1-Trichloroethane	20
Acrylonitrile	200	1,1,2-Trichloroethane	20
Benzene	20	Trichloroethene	20
Bromoform	20	Vinyl Chloride	20
Carbon Tetrachloride	20	Acetone	20
Chlorobenzene	20	Methylethylketone	100
Dibromochloromethane	20	Tetrahydrofuran	20
Chloroethane	20	trans-1,3-Dichloropropene	20
2-Chloroethylvinylether	20	cis-1,3-Dichloropropene	20
Chloroform	20	m,p-Xylene	20
Dichlorobromomethane	20	o-Xylene	20
1,1-Dichloroethane	20	p-Chlorotoluene	20
1,2-Dichloroethane	20	Styrene	20
1,1-Dichloroethene	20	1,3-Dichlorobenzene	20
1,2-Dichloropropane	20	1,2-Dichlorobenzene	20
1,2-Dichloropropene	20	1,4-Dichlorobenzene	20
Ethylbenzene	20	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	20	Trichlorobenzene	20
Methyl Chloride	20	Naphthalene	20
Methylene Chloride	20	trans-1,2-Dichloroethene	20
1,1,2,2-Tetrachloroethane	20	cis-1,2-Dichloroethene	20
Tetrachloroethene	20	Trichlorofluoromethane	20
Toluene	20	Propylbenzene	20
1,2-Dibromoethane (EDB)	20		

MDL - Minimum detection limit in micrograms/kilogram wet weight

MONTGOMERY LABORATORIES
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(818) 796-9141 / (213) 681-4255 Telex 67-5420

Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02238
Report#: R07441
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/4/85

Date Received: 2/14/85

Lab #: F26361
Sample I.D.: # 21-10/23/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND

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APPROVED
QC OFFICER
Robert R. Ward

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NA: Not Analyzed
NQ: Not Quantitated; Detected but below minimum quantitation limits
(): Tentative value only

Submitted by K Lee

Approved by Albert R. Jarrell

MAR 8 1985

Report of Analysis by GC/MS for
VOLATILE ORGANICS

Additional compounds tentatively identified:

Compound	Concentration (micrograms/kilogram)
Acetone	5000
Methylethylketone	17000
m,p-Xylene	(87000)
o-Xylene	(52000)
Methyl isobutyl ketone	35000
Octane	(6000)
Dimethylcyclohexane	(13000)
C9H20 alkane	(13000)
C3 alkyl-Benzene isomers	(260000)
C4 alkyl-Benzene isomers	(260000)

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantified; detected below minimum detection limit
(): Tentative value based on the response of Ethylbenzene standard.

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	20,000	1,1,1-Trichloroethane	2000
Acrylonitrile	20,000	1,1,2-Trichloroethane	2000
Benzene	2000	Trichloroethene	2000
Bromoform	2000	Vinyl Chloride	2000
Carbon Tetrachloride	2000	Acetone	2000
Chlorobenzene	2000	Methylethylketone	10,000
Dibromochloromethane	2000	Tetrahydrofuran	2000
Chloroethane	2000	trans-1,3-Dichloropropene	2000
2-Chloroethylvinylether	2000	cis-1,3-Dichloropropene	2000
Chloroform	2000	m,p-Xylene	2000
Dichlorobromomethane	2000	o-Xylene	2000
1,1-Dichloroethane	2000	p-Chlorotoluene	2000
1,2-Dichloroethane	2000	Styrene	2000
1,1-Dichloroethene	2000	1,3-Dichlorobenzene	2000
1,2-Dichloropropane	2000	1,2-Dichlorobenzene	2000
1,2-Dichloropropene	2000	1,4-Dichlorobenzene	2000
Ethylbenzene	2000	1,2-Dibromo-3-chloropropane	10,000
Methyl Bromide	2000	Trichlorobenzene	2000
Methyl Chloride	2000	Naphthalene	2000
Methylene Chloride	2000	trans-1,2-Dichloroethene	2000
1,1,2,2-Tetrachloroethane	2000	cis-1,2-Dichloroethene	2000
Tetrachloroethene	2000	Trichlorofluoromethane	2000
Toluene	2000	Propylbenzene	2000
1,2-Dibromoethane (EDB)	2000		

MDL - Minimum detection limit in micrograms/kilogram wet weight

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Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02238
Report#: R07442
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/3/85

Date Received: 2/14/85

Lab #: F26362
Sample I.D.: # 22-10/23/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND
NON-PRIORITY POLLUTANT VOLATILE ORGANICS	ND

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QC OFFICER

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantitated; Detected but below minimum quantitation limits
(): Tentative value only

Submitted by

Approved by

MAR 8 1985

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	1000	1,1,1-Trichloroethane	100
Acrylonitrile	1000	1,1,2-Trichloroethane	100
Benzene	100	Trichloroethene	100
Bromoform	100	Vinyl Chloride	100
Carbon Tetrachloride	100	Acetone	100
Chlorobenzene	100	Methylethylketone	500
Dibromochloromethane	100	Tetrahydrofuran	100
Chloroethane	100	trans-1,3-Dichloropropene	100
2-Chloroethylvinylether	100	cis-1,3-Dichloropropene	100
Chloroform	100	m,p-Xylene	100
Dichlorobromomethane	100	o-Xylene	100
1,1-Dichloroethane	100	p-Chlorotoluene	100
1,2-Dichloroethane	100	Styrene	100
1,1-Dichloroethene	100	1,3-Dichlorobenzene	100
1,2-Dichloropropane	100	1,2-Dichlorobenzene	100
1,2-Dichloropropene	100	1,4-Dichlorobenzene	100
Ethylbenzene	100	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	100	Trichlorobenzene	100
Methyl Chloride	100	Naphthalene	100
Methylene Chloride	100	trans-1,2-Dichloroethene	100
1,1,2,2-Tetrachloroethane	100	cis-1,2-Dichloroethene	100
Tetrachloroethene	100	Trichlorofluoromethane	100
Toluene	100	Propylbenzene	100
1,2-Dibromoethane (EDB)	100		

MDL - Minimum detection limit in micrograms/kilogram

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Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02241
Report#: R07455
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/2/85

Date Received: 2/14/85

Lab #: F26375
Sample I.D.: # 23-10/23/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND

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NA: Not Analyzed
NQ: Not Quantitated; Detected but below minimum quantitation limits
(): Tentative value only

Submitted by _____ Approved by _____

MAR 8 1985

Report of Analysis by GC/MS for
VOLATILE ORGANICS

Additional compounds tentatively identified:

Compound	Concentration (micrograms/kilogram)
Trimethylbenzene isomers	(24)
Tetramethylbenzene isomers	(40)

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantified; detected below minimum detection limit
(): Tentative value based on the response of Ethylbenzene standard.

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	200	1,1,1-Trichloroethane	20
Acrylonitrile	200	1,1,2-Trichloroethane	20
Benzene	20	Trichloroethene	20
Bromoform	20	Vinyl Chloride	20
Carbon Tetrachloride	20	Acetone	20
Chlorobenzene	20	Methylethylketone	100
Dibromochloromethane	20	Tetrahydrofuran	20
Chloroethane	20	trans-1,3-Dichloropropene	20
2-Chloroethylvinylether	20	cis-1,3-Dichloropropene	20
Chloroform	20	m,p-Xylene	20
Dichlorobromomethane	20	o-Xylene	20
1,1-Dichloroethane	20	p-Chlorotoluene	20
1,2-Dichloroethane	20	Styrene	20
1,1-Dichloroethene	20	1,3-Dichlorobenzene	20
1,2-Dichloropropane	20	1,2-Dichlorobenzene	20
1,2-Dichloropropene	20	1,4-Dichlorobenzene	20
Ethylbenzene	20	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	20	Trichlorobenzene	20
Methyl Chloride	20	Naphthalene	20
Methylene Chloride	20	trans-1,2-Dichloroethene	20
1,1,2,2-Tetrachloroethane	20	cis-1,2-Dichloroethene	20
Tetrachloroethene	20	Trichlorofluoromethane	20
Toluene	20	Propylbenzene	20
1,2-Dibromoethane (EDB)	20		

MDL - Minimum detection limit in micrograms/kilogram wet weight

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Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02241
Report#: R07457
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/3/85

Date Received: 2/14/85

Lab #: F26377
Sample I.D.: # 25-10/23/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS:	
Ethylbenzene	40
Others	ND

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Report of Analysis by GC/MS for
VOLATILE ORGANICS

Additional compounds tentatively identified:

Compound	Concentration (micrograms/kilogram)
m,p-Xylenes	(320)
o-Xylene	(70)
Dimethyloctane	(75)
Methylisobutylketone	160

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantified; detected below minimum detection limit
(): Tentative value based on the response of Ethylbenzene standard.

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	200	1,1,1-Trichloroethane	20
Acrylonitrile	200	1,1,2-Trichloroethane	20
Benzene	20	Trichloroethene	20
Bromoform	20	Vinyl Chloride	20
Carbon Tetrachloride	20	Acetone	20
Chlorobenzene	20	Methylethylketone	100
Dibromochloromethane	20	Tetrahydrofuran	20
Chloroethane	20	trans-1,3-Dichloropropene	20
2-Chloroethylvinylether	20	cis-1,3-Dichloropropene	20
Chloroform	20	m,p-Xylene	20
Dichlorobromomethane	20	o-Xylene	20
1,1-Dichloroethane	20	p-Chlorotoluene	20
1,2-Dichloroethane	20	Styrene	20
1,1-Dichloroethene	20	1,3-Dichlorobenzene	20
1,2-Dichloropropane	20	1,2-Dichlorobenzene	20
1,2-Dichloropropene	20	1,4-Dichlorobenzene	20
Ethylbenzene	20	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	20	Trichlorobenzene	20
Methyl Chloride	20	Naphthalene	20
Methylene Chloride	20	trans-1,2-Dichloroethene	20
1,1,2,2-Tetrachloroethane	20	cis-1,2-Dichloroethene	20
Tetrachloroethene	20	Trichlorofluoromethane	20
Toluene	20	Propylbenzene	20
1,2-Dibromoethane (EDB)	20		

MDL - Minimum detection limit in micrograms/kilogram wet weight

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Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02241
Report#: R07456
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/3/85

Date Received: 2/14/85

Lab #: F26376
Sample I.D.: # 24-10/23/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLAITLE ORGANICS	ND
NON-PRIORITY POLLUTANT VOLATILE ORGANICS	ND

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ND: Not Detected
NA: Not Analyzed
NQ: Not Quantitated; Detected but below minimum quantitation limits
(): Tentative value only

Submitted by

Approved by

MAR 8 1985

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	200	1,1,1-Trichloroethane	20
Acrylonitrile	200	1,1,2-Trichloroethane	20
Benzene	20	Trichloroethene	20
Bromoform	20	Vinyl Chloride	20
Carbon Tetrachloride	20	Acetone	20
Chlorobenzene	20	Methylethylketone	100
Dibromochloromethane	20	Tetrahydrofuran	20
Chloroethane	20	trans-1,3-Dichloropropene	20
2-Chloroethylvinylether	20	cis-1,3-Dichloropropene	20
Chloroform	20	m,p-Xylene	20
Dichlorobromomethane	20	o-Xylene	20
1,1-Dichloroethane	20	p-Chlorotoluene	20
1,2-Dichloroethane	20	Styrene	20
1,1-Dichloroethene	20	1,3-Dichlorobenzene	20
1,2-Dichloropropane	20	1,2-Dichlorobenzene	20
1,2-Dichloropropene	20	1,4-Dichlorobenzene	20
Ethylbenzene	20	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	20	Trichlorobenzene	20
Methyl Chloride	20	Naphthalene	20
Methylene Chloride	20	trans-1,2-Dichloroethene	20
1,1,2,2-Tetrachloroethane	20	cis-1,2-Dichloroethene	20
Tetrachloroethene	20	Trichlorofluoromethane	20
Toluene	20	Propylbenzene	20
1,2-Dibromoethane (EDB)	20		

MDL - Minimum detection limit in micrograms/kilogram wet weight

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Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02241
Report#: R07458
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/3/85

Date Received: 2/14/85

Lab #: F26378
Sample I.D.: # 26-10/23/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND
NON-PRIORITY POLLUTANT VOLATILE ORGANICS	ND

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QC OFFICER

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantitated; Detected but below minimum quantitation limits
(): Tentative value only

Submitted by _____ Approved by _____

MAR 8 1985

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	200	1,1,1-Trichloroethane	20
Acrylonitrile	200	1,1,2-Trichloroethane	20
Benzene	20	Trichloroethene	20
Bromoform	20	Vinyl Chloride	20
Carbon Tetrachloride	20	Acetone	20
Chlorobenzene	20	Methylethylketone	100
Dibromochloromethane	20	Tetrahydrofuran	20
Chloroethane	20	trans-1,3-Dichloropropene	20
2-Chloroethylvinylether	20	cis-1,3-Dichloropropene	20
Chloroform	20	m,p-Xylene	20
Dichlorobromomethane	20	o-Xylene	20
1,1-Dichloroethane	20	p-Chlorotoluene	20
1,2-Dichloroethane	20	Styrene	20
1,1-Dichloroethene	20	1,3-Dichlorobenzene	20
1,2-Dichloropropane	20	1,2-Dichlorobenzene	20
1,2-Dichloropropene	20	1,4-Dichlorobenzene	20
Ethylbenzene	20	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	20	Trichlorobenzene	20
Methyl Chloride	20	Naphthalene	20
Methylene Chloride	20	trans-1,2-Dichloroethene	20
1,1,2,2-Tetrachloroethane	20	cis-1,2-Dichloroethene	20
Tetrachloroethene	20	Trichlorofluoromethane	20
Toluene	20	Propylbenzene	20
1,2-Dibromoethane (EDB)	20		

MDL - Minimum detection limit in micrograms/kilogram wet weight

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Report of GC/MS Analysis for
VOLATILE ORGANICS
in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02241
Report#: R07459
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/4/85

Date Received: 2/14/85

Lab #: F26379
Sample I.D.: # 27-10/23/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND

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QC OFFICER

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantitated; Detected but below minimum quantitation limits
(): Tentative value only

Submitted by

Approved by

MAR 8 1985

Report of Analysis by GC/MS for
VOLATILE ORGANICS

Additional compounds tentatively identified:

Compound	Concentration (micrograms/kilogram)
o-Xylene	(100)
Dimethyloctene	(120)
Decahydronaphthalene	(110)

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantified; detected below minimum detection limit
(): Tentative value based on the response of Ethylbenzene standard.

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	1000	1,1,1-Trichloroethane	100
Acrylonitrile	1000	1,1,2-Trichloroethane	100
Benzene	100	Trichloroethene	100
Bromoform	100	Vinyl Chloride	100
Carbon Tetrachloride	100	Acetone	100
Chlorobenzene	100	Methylethylketone	500
Dibromochloromethane	100	Tetrahydrofuran	100
Chloroethane	100	trans-1,3-Dichloropropene	100
2-Chloroethylvinylether	100	cis-1,3-Dichloropropene	100
Chloroform	100	m,p-Xylene	100
Dichlorobromomethane	100	o-Xylene	100
1,1-Dichloroethane	100	p-Chlorotoluene	100
1,2-Dichloroethane	100	Styrene	100
1,1-Dichloroethene	100	1,3-Dichlorobenzene	100
1,2-Dichloropropane	100	1,2-Dichlorobenzene	100
1,2-Dichloropropene	100	1,4-Dichlorobenzene	100
Ethylbenzene	100	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	100	Trichlorobenzene	100
Methyl Chloride	100	Naphthalene	100
Methylene Chloride	100	trans-1,2-Dichloroethene	100
1,1,2,2-Tetrachloroethane	100	cis-1,2-Dichloroethene	100
Tetrachloroethene	100	Trichlorofluoromethane	100
Toluene	100	Propylbenzene	100
1,2-Dibromoethane (EDB)	100		

MDL - Minimum detection limit in micrograms/kilogram

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Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02241
Report#: R07460
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/2/85

Date Received: 2/14/85

Lab #: F26380
Sample I.D.: # 28-10/23/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND

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MEREDITH/BOLI & ASSOCIATES, INC.

APPROVED
QC OFFICER
Robert R. Hass

ND: Not Detected
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NQ: Not Quantitated; Detected but below minimum quantitation limits
(): Tentative value only

Submitted by T. K. Kwan

Approved by Albert K. Trundell
MAR 8 1985

Report of Analysis by GC/MS for
VOLATILE ORGANICS

Additional compounds tentatively identified:

Compound	Concentration (micrograms/kilogram)
C8-C11 Hydrocarbon	(20)

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantified; detected below minimum detection limit
(): Tentative value based on the response of Ethylbenzene standard.

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	200	1,1,1-Trichloroethane	20
Acrylonitrile	200	1,1,2-Trichloroethane	20
Benzene	20	Trichloroethene	20
Bromoform	20	Vinyl Chloride	20
Carbon Tetrachloride	20	Acetone	20
Chlorobenzene	20	Methylethylketone	100
Dibromochloromethane	20	Tetrahydrofuran	20
Chloroethane	20	trans-1,3-Dichloropropene	20
2-Chloroethylvinylether	20	cis-1,3-Dichloropropene	20
Chloroform	20	m,p-Xylene	20
Dichlorobromomethane	20	o-Xylene	20
1,1-Dichloroethane	20	p-Chlorotoluene	20
1,2-Dichloroethane	20	Styrene	20
1,1-Dichloroethene	20	1,3-Dichlorobenzene	20
1,2-Dichloropropane	20	1,2-Dichlorobenzene	20
1,2-Dichloropropene	20	1,4-Dichlorobenzene	20
Ethylbenzene	20	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	20	Trichlorobenzene	20
Methyl Chloride	20	Naphthalene	20
Methylene Chloride	20	trans-1,2-Dichloroethene	20
1,1,2,2-Tetrachloroethane	20	cis-1,2-Dichloroethene	20
Tetrachloroethene	20	Trichlorofluoromethane	20
Toluene	20	Propylbenzene	20
1,2-Dibromoethane (EDB)	20		

MDL - Minimum detection limit in micrograms/kilogram wet weight

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(818) 796-9141 / (213) 681-4255 Telex 67-5420

Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02241
Report#: R07461
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/4/85

Date Received: 2/14/85

Lab #: F26381
Sample I.D.: # 29-10/23/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND

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MEREDITH/BOLI & ASSOCIATES INC.

APPROVED
QC OFFICER
Robert R. Clark

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantitated; Detected but below minimum quantitation limits
(): Tentative value only

Submitted by K Lee

Approved by Albert R. Jannelli
MAR 8 1985

Report of Analysis by GC/MS for
VOLATILE ORGANICS

Additional compounds tentatively identified:

Compound	Concentration (micrograms/kilogram)
Decane	(160)
1,1-Biphenyl	(1300)
C4 Alkylbenzene isomers	(130)

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantified; detected below minimum detection limit
(): Tentative value based on the response of Ethylbenzene standard.

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	1000	1,1,1-Trichloroethane	100
Acrylonitrile	1000	1,1,2-Trichloroethane	100
Benzene	100	Trichloroethene	100
Bromoform	100	Vinyl Chloride	100
Carbon Tetrachloride	100	Acetone	100
Chlorobenzene	100	Methylethylketone	500
Dibromochloromethane	100	Tetrahydrofuran	100
Chloroethane	100	trans-1,3-Dichloropropene	100
2-Chloroethylvinylether	100	cis-1,3-Dichloropropene	100
Chloroform	100	m,p-Xylene	100
Dichlorobromomethane	100	o-Xylene	100
1,1-Dichloroethane	100	p-Chlorotoluene	100
1,2-Dichloroethane	100	Styrene	100
1,1-Dichloroethene	100	1,3-Dichlorobenzene	100
1,2-Dichloropropane	100	1,2-Dichlorobenzene	100
1,2-Dichloropropene	100	1,4-Dichlorobenzene	100
Ethylbenzene	100	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	100	Trichlorobenzene	100
Methyl Chloride	100	Naphthalene	100
Methylene Chloride	100	trans-1,2-Dichloroethene	100
1,1,2,2-Tetrachloroethane	100	cis-1,2-Dichloroethene	100
Tetrachloroethene	100	Trichlorofluoromethane	100
Toluene	100	Propylbenzene	100
1,2-Dibromoethane (EDB)	100		

MDL - Minimum detection limit in micrograms/kilogram

MONTGOMERY LABORATORIES
a division of James M. Montgomery, Consulting Engineers, Inc.
555 East Walnut Street, Pasadena, California 91101
(818) 796-9141 / (213) 681-4255 Telex 67-5420

Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02241
Report#: R07462
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/2/85

Date Received: 2/14/85

Lab #: F26382
Sample I.D.: # 30-10/23/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND

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APPROVED
QC OFFICER

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantitated; Detected but below minimum quantitation limits
(): Tentative value only

Submitted by

Approved by

MAR 8 1985

Report of Analysis by GC/MS for
VOLATILE ORGANICS

Additional compounds tentatively identified:

Compound	Concentration (micrograms/kilogram)
1,1-Biphenyl	(100)
Oxybisbenzene	(160)

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantified; detected below minimum detection limit
(): Tentative value based on the response of Ethylbenzene standard.

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	200	1,1,1-Trichloroethane	20
Acrylonitrile	200	1,1,2-Trichloroethane	20
Benzene	20	Trichloroethene	20
Bromoform	20	Vinyl Chloride	20
Carbon Tetrachloride	20	Acetone	20
Chlorobenzene	20	Methylethylketone	100
Dibromochloromethane	20	Tetrahydrofuran	20
Chloroethane	20	trans-1,3-Dichloropropene	20
2-Chloroethylvinylether	20	cis-1,3-Dichloropropene	20
Chloroform	20	m,p-Xylene	20
Dichlorobromomethane	20	o-Xylene	20
1,1-Dichloroethane	20	p-Chlorotoluene	20
1,2-Dichloroethane	20	Styrene	20
1,1-Dichloroethene	20	1,3-Dichlorobenzene	20
1,2-Dichloropropane	20	1,2-Dichlorobenzene	20
1,2-Dichloropropene	20	1,4-Dichlorobenzene	20
Ethylbenzene	20	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	20	Trichlorobenzene	20
Methyl Chloride	20	Naphthalene	20
Methylene Chloride	20	trans-1,2-Dichloroethene	20
1,1,2,2-Tetrachloroethane	20	cis-1,2-Dichloroethene	20
Tetrachloroethene	20	Trichlorofluoromethane	20
Toluene	20	Propylbenzene	20
1,2-Dibromoethane (EDB)	20		

MDL - Minimum detection limit in micrograms/kilogram wet weight

MONTGOMERY LABORATORIES
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555 East Walnut Street, Pasadena, California 91101
(818) 796-9141 / (213) 681-4255 Telex 67-5420

Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02241
Report#: R07463
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/2/85

Date Received: 2/14/85

Lab #: F26383
Sample I.D.: # 31-10/23/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND
NON-PRIORITY POLLUTANT VOLATILE ORGANICS	ND

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MEREDITH/BOLI & ASSOCIATES, INC.

APPROVED
QC OFFICER

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantitated; Detected but below minimum quantitation limits
(): Tentative value only

Submitted by

Approved by

MAR 8 1985

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	200	1,1,1-Trichloroethane	20
Acrylonitrile	200	1,1,2-Trichloroethane	20
Benzene	20	Trichloroethene	20
Bromoform	20	Vinyl Chloride	20
Carbon Tetrachloride	20	Acetone	20
Chlorobenzene	20	Methylethylketone	100
Dibromochloromethane	20	Tetrahydrofuran	20
Chloroethane	20	trans-1,3-Dichloropropene	20
2-Chloroethylvinylether	20	cis-1,3-Dichloropropene	20
Chloroform	20	m,p-Xylene	20
Dichlorobromomethane	20	o-Xylene	20
1,1-Dichloroethane	20	p-Chlorotoluene	20
1,2-Dichloroethane	20	Styrene	20
1,1-Dichloroethene	20	1,3-Dichlorobenzene	20
1,2-Dichloropropane	20	1,2-Dichlorobenzene	20
1,2-Dichloropropene	20	1,4-Dichlorobenzene	20
Ethylbenzene	20	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	20	Trichlorobenzene	20
Methyl Chloride	20	Naphthalene	20
Methylene Chloride	20	trans-1,2-Dichloroethene	20
1,1,2,2-Tetrachloroethane	20	cis-1,2-Dichloroethene	20
Tetrachloroethene	20	Trichlorofluoromethane	20
Toluene	20	Propylbenzene	20
1,2-Dibromoethane (EDB)	20		

MDL - Minimum detection limit in micrograms/kilogram wet weight

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Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02241
Report#: R07464
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/4/85
Date Received: 2/14/85

Lab #: F26384
Sample I.D.: # 32-10/23/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND
NON-PRIORITY POLLUTANT VOLATILE ORGANICS	ND

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MEREDITH/BOLI & ASSOCIATES, INC.

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QC OFFICER
[signature]

ND: Not Detected
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NQ: Not Quantitated; Detected but below minimum quantitation limits
(): Tentative value only

Submitted by [signature]   Approved by [signature]
MAR 8 1985

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	200	1,1,1-Trichloroethane	20
Acrylonitrile	200	1,1,2-Trichloroethane	20
Benzene	20	Trichloroethene	20
Bromoform	20	Vinyl Chloride	20
Carbon Tetrachloride	20	Acetone	20
Chlorobenzene	20	Methylethylketone	100
Dibromochloromethane	20	Tetrahydrofuran	20
Chloroethane	20	trans-1,3-Dichloropropene	20
2-Chloroethylvinylether	20	cis-1,3-Dichloropropene	20
Chloroform	20	m,p-Xylene	20
Dichlorobromomethane	20	o-Xylene	20
1,1-Dichloroethane	20	p-Chlorotoluene	20
1,2-Dichloroethane	20	Styrene	20
1,1-Dichloroethene	20	1,3-Dichlorobenzene	20
1,2-Dichloropropane	20	1,2-Dichlorobenzene	20
1,2-Dichloropropene	20	1,4-Dichlorobenzene	20
Ethylbenzene	20	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	20	Trichlorobenzene	20
Methyl Chloride	20	Naphthalene	20
Methylene Chloride	20	trans-1,2-Dichloroethene	20
1,1,2,2-Tetrachloroethane	20	cis-1,2-Dichloroethene	20
Tetrachloroethene	20	Trichlorofluoromethane	20
Toluene	20	Propylbenzene	20
1,2-Dibromoethane (EDB)	20		

MDL - Minimum detection limit in micrograms/kilogram wet weight

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Report of GC/MS Analysis for
VOLATILE ORGANICS
in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02241
Report#: R07465
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/3/85

Date Received: 2/14/85

Lab #: F26385
Sample I.D.: # 33-10/23/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS:	
Ethylbenzene	230
Others	ND

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QC OFFICER

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantitated; Detected but below minimum quantitation limits
(): Tentative value only

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Report of Analysis by GC/MS for
VOLATILE ORGANICS

Additional compounds tentatively identified:

Compound	Concentration (micrograms/kilogram)
m,p-Xylenes	(800)
o-Xylene	(360)
Methylisobutylketone	570

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantified; detected below minimum detection limit
(): Tentative value based on the response of Ethylbenzene standard.

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	1000	1,1,1-Trichloroethane	100
Acrylonitrile	1000	1,1,2-Trichloroethane	100
Benzene	100	Trichloroethene	100
Bromoform	100	Vinyl Chloride	100
Carbon Tetrachloride	100	Acetone	100
Chlorobenzene	100	Methylethylketone	500
Dibromochloromethane	100	Tetrahydrofuran	100
Chloroethane	100	trans-1,3-Dichloropropene	100
2-Chloroethylvinylether	100	cis-1,3-Dichloropropene	100
Chloroform	100	m,p-Xylene	100
Dichlorobromomethane	100	o-Xylene	100
1,1-Dichloroethane	100	p-Chlorotoluene	100
1,2-Dichloroethane	100	Styrene	100
1,1-Dichloroethene	100	1,3-Dichlorobenzene	100
1,2-Dichloropropane	100	1,2-Dichlorobenzene	100
1,2-Dichloropropene	100	1,4-Dichlorobenzene	100
Ethylbenzene	100	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	100	Trichlorobenzene	100
Methyl Chloride	100	Naphthalene	100
Methylene Chloride	100	trans-1,2-Dichloroethene	100
1,1,2,2-Tetrachloroethane	100	cis-1,2-Dichloroethene	100
Tetrachloroethene	100	Trichlorofluoromethane	100
Toluene	100	Propylbenzene	100
1,2-Dibromoethane (EDB)	100		

MDL - Minimum detection limit in micrograms/kilogram

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Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02241
Report#: R07466
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/3/85

Date Received: 2/14/85

Lab #: F26386
Sample I.D.: # 34-10/23/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND
NON-PRIORITY POLLUTANT VOLAITLE ORGANICS	ND

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APPROVED
QC OFFICER
Robert R. Ward

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantitated; Detected but below minimum quantitation limits
(): Tentative value only

Submitted by _____ Approved by _____

MAR 8 1985

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	200	1,1,1-Trichloroethane	20
Acrylonitrile	200	1,1,2-Trichloroethane	20
Benzene	20	Trichloroethene	20
Bromoform	20	Vinyl Chloride	20
Carbon Tetrachloride	20	Acetone	20
Chlorobenzene	20	Methylethylketone	100
Dibromochloromethane	20	Tetrahydrofuran	20
Chloroethane	20	trans-1,3-Dichloropropene	20
2-Chloroethylvinylether	20	cis-1,3-Dichloropropene	20
Chloroform	20	m,p-Xylene	20
Dichlorobromomethane	20	o-Xylene	20
1,1-Dichloroethane	20	p-Chlorotoluene	20
1,2-Dichloroethane	20	Styrene	20
1,1-Dichloroethene	20	1,3-Dichlorobenzene	20
1,2-Dichloropropane	20	1,2-Dichlorobenzene	20
1,2-Dichloropropene	20	1,4-Dichlorobenzene	20
Ethylbenzene	20	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	20	Trichlorobenzene	20
Methyl Chloride	20	Naphthalene	20
Methylene Chloride	20	trans-1,2-Dichloroethene	20
1,1,2,2-Tetrachloroethane	20	cis-1,2-Dichloroethene	20
Tetrachloroethene	20	Trichlorofluoromethane	20
Toluene	20	Propylbenzene	20
1,2-Dibromoethane (EDB)	20		

MDL - Minimum detection limit in micrograms/kilogram wet weight

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a division of James M. Montgomery, Consulting Engineers, Inc.
555 East Walnut Street, Pasadena, California 91101
(818) 796-9141 / (213) 681-4255 Telex 67-5420

Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02240
Report#: R07448
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/3/85

Date Received: 2/14/85

Lab #: F26368
Sample I.D.: # 35-10/25/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND
NON-PRIORITY POLLUTANT VOLATILE ORGANICS	ND

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APPROVED
QC OFFICER
Robert R Ireland

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantitated; Detected but below minimum quantitation limits
(): Tentative value only

Submitted by K Lee

Approved by Albert N. Trimble

MAR 8 1985

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	200	1,1,1-Trichloroethane	20
Acrylonitrile	200	1,1,2-Trichloroethane	20
Benzene	20	Trichloroethene	20
Bromoform	20	Vinyl Chloride	20
Carbon Tetrachloride	20	Acetone	20
Chlorobenzene	20	Methylethylketone	100
Dibromochloromethane	20	Tetrahydrofuran	20
Chloroethane	20	trans-1,3-Dichloropropene	20
2-Chloroethylvinylether	20	cis-1,3-Dichloropropene	20
Chloroform	20	m,p-Xylene	20
Dichlorobromomethane	20	o-Xylene	20
1,1-Dichloroethane	20	p-Chlorotoluene	20
1,2-Dichloroethane	20	Styrene	20
1,1-Dichloroethene	20	1,3-Dichlorobenzene	20
1,2-Dichloropropane	20	1,2-Dichlorobenzene	20
1,2-Dichloropropene	20	1,4-Dichlorobenzene	20
Ethylbenzene	20	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	20	Trichlorobenzene	20
Methyl Chloride	20	Naphthalene	20
Methylene Chloride	20	trans-1,2-Dichloroethene	20
1,1,2,2-Tetrachloroethane	20	cis-1,2-Dichloroethene	20
Tetrachloroethene	20	Trichlorofluoromethane	20
Toluene	20	Propylbenzene	20
1,2-Dibromoethane (EDB)	20		

MDL - Minimum detection limit in micrograms/kilogram wet weight

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555 East Walnut Street, Pasadena, California 91101
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Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02237
Report#: R07429
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/3/85

Date Received: 2/14/85

Lab #: F26349
Sample I.D.: # 50-10/25/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGNICS:	
Ethylbenzene	37
Others	ND

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QC OFFICER

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantitated; Detected but below minimum quantitation limits
(): Tentative value only

Submitted by _____ Approved by _____

MAR 8 1985

Report of Analysis by GC/MS for
VOLATILE ORGANICS

Additional compounds tentatively identified:

Compound	Concentration (micrograms/Kilogram)
m,p-Xylene	(520)
o-Xylene	(150)

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantified; detected below minimum detection limit
(): Tentative value based on the response of Ethylbenzene standard.

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	200	1,1,1-Trichloroethane	20
Acrylonitrile	200	1,1,2-Trichloroethane	20
Benzene	20	Trichloroethene	20
Bromoform	20	Vinyl Chloride	20
Carbon Tetrachloride	20	Acetone	20
Chlorobenzene	20	Methylethylketone	100
Dibromochloromethane	20	Tetrahydrofuran	20
Chloroethane	20	trans-1,3-Dichloropropene	20
2-Chloroethylvinylether	20	cis-1,3-Dichloropropene	20
Chloroform	20	m,p-Xylene	20
Dichlorobromomethane	20	o-Xylene	20
1,1-Dichloroethane	20	p-Chlorotoluene	20
1,2-Dichloroethane	20	Styrene	20
1,1-Dichloroethene	20	1,3-Dichlorobenzene	20
1,2-Dichloropropane	20	1,2-Dichlorobenzene	20
1,2-Dichloropropene	20	1,4-Dichlorobenzene	20
Ethylbenzene	20	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	20	Trichlorobenzene	20
Methyl Chloride	20	Naphthalene	20
Methylene Chloride	20	trans-1,2-Dichloroethene	20
1,1,2,2-Tetrachloroethane	20	cis-1,2-Dichloroethene	20
Tetrachloroethene	20	Trichlorofluoromethane	20
Toluene	20	Propylbenzene	20
1,2-Dibromoethane (EDB)	20		

MDL - Minimum detection limit in micrograms/kilogram wet weight

MONTGOMERY LABORATORIES
a division of James M. Montgomery, Consulting Engineers, Inc.
555 East Walnut Street, Pasadena, California 91101
(818) 796-9141 / (213) 681-4255 Telex 67-5420

Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02237
Report#: R07428
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/2/85

Date Received: 2/14/85

Lab #: F26348
Sample I.D.: # 49-10/25/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND
NON-PRIORITY POLLUTANT VOLATILE ORGANICS	ND

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MEREDITH/BOLI & ASSOCIATES, INC.

APPROVED
QC OFFICER

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantitated; Detected but below minimum quantitation limits
(): Tentative value only

Submitted by _____ Approved by _____

MAR 8 1985

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	200	1,1,1-Trichloroethane	20
Acrylonitrile	200	1,1,2-Trichloroethane	20
Benzene	20	Trichloroethene	20
Bromoform	20	Vinyl Chloride	20
Carbon Tetrachloride	20	Acetone	20
Chlorobenzene	20	Methylethylketone	100
Dibromochloromethane	20	Tetrahydrofuran	20
Chloroethane	20	trans-1,3-Dichloropropene	20
2-Chloroethylvinylether	20	cis-1,3-Dichloropropene	20
Chloroform	20	m,p-Xylene	20
Dichlorobromomethane	20	o-Xylene	20
1,1-Dichloroethane	20	p-Chlorotoluene	20
1,2-Dichloroethane	20	Styrene	20
1,1-Dichloroethene	20	1,3-Dichlorobenzene	20
1,2-Dichloropropane	20	1,2-Dichlorobenzene	20
1,2-Dichloropropene	20	1,4-Dichlorobenzene	20
Ethylbenzene	20	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	20	Trichlorobenzene	20
Methyl Chloride	20	Naphthalene	20
Methylene Chloride	20	trans-1,2-Dichloroethene	20
1,1,2,2-Tetrachloroethane	20	cis-1,2-Dichloroethene	20
Tetrachloroethene	20	Trichlorofluoromethane	20
Toluene	20	Propylbenzene	20
1,2-Dibromoethane (EDB)	20		

MDL - Minimum detection limit in micrograms/kilogram wet weight

MONTGOMERY LABORATORIES
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555 East Walnut Street, Pasadena, California 91101
(818) 796-9141 / (213) 681-4255 Telex 67-5420

Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02237
Report#: R07427
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/2/85

Date Received: 2/14/85

Lab #: F26347
Sample I.D.: # 48-10/25/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND
NON-PRIORITY POLLUTANT VOLATILE ORGANICS	ND

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MEREDITH/BOLI & ASSOCIATES INC.

APPROVED
QC OFFICER
Robert R. Clark

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantitated; Detected but below minimum quantitation limits
(): Tentative value only

Submitted by _____ Approved by _____

MAR 8 1985

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	200	1,1,1-Trichloroethane	20
Acrylonitrile	200	1,1,2-Trichloroethane	20
Benzene	20	Trichloroethene	20
Bromoform	20	Vinyl Chloride	20
Carbon Tetrachloride	20	Acetone	20
Chlorobenzene	20	Methylethylketone	100
Dibromochloromethane	20	Tetrahydrofuran	20
Chloroethane	20	trans-1,3-Dichloropropene	20
2-Chloroethylvinylether	20	cis-1,3-Dichloropropene	20
Chloroform	20	m,p-Xylene	20
Dichlorobromomethane	20	o-Xylene	20
1,1-Dichloroethane	20	p-Chlorotoluene	20
1,2-Dichloroethane	20	Styrene	20
1,1-Dichloroethene	20	1,3-Dichlorobenzene	20
1,2-Dichloropropane	20	1,2-Dichlorobenzene	20
1,2-Dichloropropene	20	1,4-Dichlorobenzene	20
Ethylbenzene	20	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	20	Trichlorobenzene	20
Methyl Chloride	20	Naphthalene	20
Methylene Chloride	20	trans-1,2-Dichloroethene	20
1,1,2,2-Tetrachloroethane	20	cis-1,2-Dichloroethene	20
Tetrachloroethene	20	Trichlorofluoromethane	20
Toluene	20	Propylbenzene	20
1,2-Dibromoethane (EDB)	20		

MDL - Minimum detection limit in micrograms/kilogram wet weight

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Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02237
Report#: R07432
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/3/85

Date Received: 2/14/85

Lab #: F26352
Sample I.D.: # 53-10/25/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS:	
Trichloroethene	53
Others	ND
NON-PRIORITY POLLUTANT VOLATILE ORGANICS	ND

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QC OFFICER

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NQ: Not Quantitated; Detected but below minimum quantitation limits
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Submitted by

Approved by

MAR 8 1985

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	200	1,1,1-Trichloroethane	20
Acrylonitrile	200	1,1,2-Trichloroethane	20
Benzene	20	Trichloroethene	20
Bromoform	20	Vinyl Chloride	20
Carbon Tetrachloride	20	Acetone	20
Chlorobenzene	20	Methylethylketone	100
Dibromochloromethane	20	Tetrahydrofuran	20
Chloroethane	20	trans-1,3-Dichloropropene	20
2-Chloroethylvinylether	20	cis-1,3-Dichloropropene	20
Chloroform	20	m,p-Xylene	20
Dichlorobromomethane	20	o-Xylene	20
1,1-Dichloroethane	20	p-Chlorotoluene	20
1,2-Dichloroethane	20	Styrene	20
1,1-Dichloroethene	20	1,3-Dichlorobenzene	20
1,2-Dichloropropane	20	1,2-Dichlorobenzene	20
1,2-Dichloropropene	20	1,4-Dichlorobenzene	20
Ethylbenzene	20	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	20	Trichlorobenzene	20
Methyl Chloride	20	Naphthalene	20
Methylene Chloride	20	trans-1,2-Dichloroethene	20
1,1,2,2-Tetrachloroethane	20	cis-1,2-Dichloroethene	20
Tetrachloroethene	20	Trichlorofluoromethane	20
Toluene	20	Propylbenzene	20
1,2-Dibromoethane (EDB)	20		

MDL - Minimum detection limit in micrograms/kilogram wet weight

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555 East Walnut Street, Pasadena, California 91101
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Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02237
Report#: R07431
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/2/85

Date Received: 2/14/85

Lab #: F26351
Sample I.D.: # 52-10/25/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND
NON-PRIORITY POLLUTANT VOLATILE ORGANICS	ND

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NQ: Not Quantitated; Detected but below minimum quantitation limits
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PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	200	1,1,1-Trichloroethane	20
Acrylonitrile	200	1,1,2-Trichloroethane	20
Benzene	20	Trichloroethene	20
Bromoform	20	Vinyl Chloride	20
Carbon Tetrachloride	20	Acetone	20
Chlorobenzene	20	Methylethylketone	100
Dibromochloromethane	20	Tetrahydrofuran	20
Chloroethane	20	trans-1,3-Dichloropropene	20
2-Chloroethylvinylether	20	cis-1,3-Dichloropropene	20
Chloroform	20	m,p-Xylene	20
Dichlorobromomethane	20	o-Xylene	20
1,1-Dichloroethane	20	p-Chlorotoluene	20
1,2-Dichloroethane	20	Styrene	20
1,1-Dichloroethene	20	1,3-Dichlorobenzene	20
1,2-Dichloropropane	20	1,2-Dichlorobenzene	20
1,2-Dichloropropene	20	1,4-Dichlorobenzene	20
Ethylbenzene	20	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	20	Trichlorobenzene	20
Methyl Chloride	20	Naphthalene	20
Methylene Chloride	20	trans-1,2-Dichloroethene	20
1,1,2,2-Tetrachloroethane	20	cis-1,2-Dichloroethene	20
Tetrachloroethene	20	Trichlorofluoromethane	20
Toluene	20	Propylbenzene	20
1,2-Dibromoethane (EDB)	20		

MDL - Minimum detection limit in micrograms/kilogram wet weight

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Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02237
Report#: R07430
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/3/85

Date Received: 2/14/85

Lab #: F26350
Sample I.D.: # 51-10/25/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND
NON-PRIORITY POLLUTANT VOLATILE ORGANICS	ND

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PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	200	1,1,1-Trichloroethane	20
Acrylonitrile	200	1,1,2-Trichloroethane	20
Benzene	20	Trichloroethene	20
Bromoform	20	Vinyl Chloride	20
Carbon Tetrachloride	20	Acetone	20
Chlorobenzene	20	Methylethylketone	100
Dibromochloromethane	20	Tetrahydrofuran	20
Chloroethane	20	trans-1,3-Dichloropropene	20
2-Chloroethylvinylether	20	cis-1,3-Dichloropropene	20
Chloroform	20	m,p-Xylene	20
Dichlorobromomethane	20	o-Xylene	20
1,1-Dichloroethane	20	p-Chlorotoluene	20
1,2-Dichloroethane	20	Styrene	20
1,1-Dichloroethene	20	1,3-Dichlorobenzene	20
1,2-Dichloropropane	20	1,2-Dichlorobenzene	20
1,2-Dichloropropene	20	1,4-Dichlorobenzene	20
Ethylbenzene	20	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	20	Trichlorobenzene	20
Methyl Chloride	20	Naphthalene	20
Methylene Chloride	20	trans-1,2-Dichloroethene	20
1,1,2,2-Tetrachloroethane	20	cis-1,2-Dichloroethene	20
Tetrachloroethene	20	Trichlorofluoromethane	20
Toluene	20	Propylbenzene	20
1,2-Dibromoethane (EDB)	20		

MDL - Minimum detection limit in micrograms/kilogram wet weight

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Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02240
Report#: R07453
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/4/85

Date Received: 2/14/85

Lab #: F26373
Sample I.D.: # 58-10/25/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND

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NQ: Not Quantitated; Detected but below minimum quantitation limits
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Report of Analysis by GC/MS for
VOLATILE ORGANICS

Additional compounds tentatively identified:

Compound	Concentration (micrograms/kilogram)
Acetone	2000
Methylethylketone	3000
m,p-Xylene	(3000)
Methyl Isobutylketone	23000

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantified; detected below minimum detection limit
(): Tentative value based on the response of Ethylbenzene standard.

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	20,000	1,1,1-Trichloroethane	2000
Acrylonitrile	20,000	1,1,2-Trichloroethane	2000
Benzene	2000	Trichloroethene	2000
Bromoform	2000	Vinyl Chloride	2000
Carbon Tetrachloride	2000	Acetone	2000
Chlorobenzene	2000	Methylethylketone	10,000
Dibromochloromethane	2000	Tetrahydrofuran	2000
Chloroethane	2000	trans-1,3-Dichloropropene	2000
2-Chloroethylvinylether	2000	cis-1,3-Dichloropropene	2000
Chloroform	2000	m,p-Xylene	2000
Dichlorobromomethane	2000	o-Xylene	2000
1,1-Dichloroethane	2000	p-Chlorotoluene	2000
1,2-Dichloroethane	2000	Styrene	2000
1,1-Dichloroethene	2000	1,3-Dichlorobenzene	2000
1,2-Dichloropropane	2000	1,2-Dichlorobenzene	2000
1,2-Dichloropropene	2000	1,4-Dichlorobenzene	2000
Ethylbenzene	2000	1,2-Dibromo-3-chloropropane	10,000
Methyl Bromide	2000	Trichlorobenzene	2000
Methyl Chloride	2000	Naphthalene	2000
Methylene Chloride	2000	trans-1,2-Dichloroethene	2000
1,1,2,2-Tetrachloroethane	2000	cis-1,2-Dichloroethene	2000
Tetrachloroethene	2000	Trichlorofluoromethane	2000
Toluene	2000	Propylbenzene	2000
1,2-Dibromoethane (EDB)	2000		

MDL - Minimum detection limit in micrograms/kilogram wet weight

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Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02240
Report#: R07450
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/4/85

Date Received: 2/14/85

Lab #: F26370
Sample I.D.: # 55-10/25/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS:	
Ethylbenzene	5,000
Toluene	10,000
Others	ND

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(): Tentative value only

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Report of Analysis by GC/MS for
VOLATILE ORGANICS

Additional compounds tentatively identified:

Compound	Concentration (micrograms/kilogram)
m,p-Xylene	(50000)
o-Xylene	(13000)
Methylisobutylketone	130000
C3 alkyl-Benzene isomers	(2000)
C4 alkyl-Benzene isomers	(36000)

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantified; detected below minimum detection limit
(): Tentative value based on the response of Ethylbenzene standard.

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	20,000	1,1,1-Trichloroethane	2000
Acrylonitrile	20,000	1,1,2-Trichloroethane	2000
Benzene	2000	Trichloroethene	2000
Bromoform	2000	Vinyl Chloride	2000
Carbon Tetrachloride	2000	Acetone	2000
Chlorobenzene	2000	Methylethylketone	10,000
Dibromochloromethane	2000	Tetrahydrofuran	2000
Chloroethane	2000	trans-1,3-Dichloropropene	2000
2-Chloroethylvinylether	2000	cis-1,3-Dichloropropene	2000
Chloroform	2000	m,p-Xylene	2000
Dichlorobromomethane	2000	o-Xylene	2000
1,1-Dichloroethane	2000	p-Chlorotoluene	2000
1,2-Dichloroethane	2000	Styrene	2000
1,1-Dichloroethene	2000	1,3-Dichlorobenzene	2000
1,2-Dichloropropane	2000	1,2-Dichlorobenzene	2000
1,2-Dichloropropene	2000	1,4-Dichlorobenzene	2000
Ethylbenzene	2000	1,2-Dibromo-3-chloropropane	10,000
Methyl Bromide	2000	Trichlorobenzene	2000
Methyl Chloride	2000	Naphthalene	2000
Methylene Chloride	2000	trans-1,2-Dichloroethene	2000
1,1,2,2-Tetrachloroethane	2000	cis-1,2-Dichloroethene	2000
Tetrachloroethene	2000	Trichlorofluoromethane	2000
Toluene	2000	Propylbenzene	2000
1,2-Dibromoethane (EDB)	2000		

MDL - Minimum detection limit in micrograms/kilogram wet weight

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Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02240
Report#: R07449
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/4/85

Date Received: 2/14/85

Lab #: F26369
Sample I.D.: # 54-10/25/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND

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NA: Not Analyzed
NQ: Not Quantitated; Detected but below minimum quantitation limits
(): Tentative value only

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Report of Analysis by GC/MS for
VOLATILE ORGANICS

Additional compounds tentatively identified:

Compound	Concentration (micrograms/kilogram)
4-Methyl-2pentanone	(8500)

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantified; detected below minimum detection limit
(): Tentative value based on the response of Ethylbenzene standard.

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	1000	1,1,1-Trichloroethane	100
Acrylonitrile	1000	1,1,2-Trichloroethane	100
Benzene	100	Trichloroethene	100
Bromoform	100	Vinyl Chloride	100
Carbon Tetrachloride	100	Acetone	100
Chlorobenzene	100	Methylethylketone	500
Dibromochloromethane	100	Tetrahydrofuran	100
Chloroethane	100	trans-1,3-Dichloropropene	100
2-Chloroethylvinylether	100	cis-1,3-Dichloropropene	100
Chloroform	100	m,p-Xylene	100
Dichlorobromomethane	100	o-Xylene	100
1,1-Dichloroethane	100	p-Chlorotoluene	100
1,2-Dichloroethane	100	Styrene	100
1,1-Dichloroethene	100	1,3-Dichlorobenzene	100
1,2-Dichloropropane	100	1,2-Dichlorobenzene	100
1,2-Dichloropropene	100	1,4-Dichlorobenzene	100
Ethylbenzene	100	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	100	Trichlorobenzene	100
Methyl Chloride	100	Naphthalene	100
Methylene Chloride	100	trans-1,2-Dichloroethene	100
1,1,2,2-Tetrachloroethane	100	cis-1,2-Dichloroethene	100
Tetrachloroethene	100	Trichlorofluoromethane	100
Toluene	100	Propylbenzene	100
1,2-Dibromoethane (EDB)	100		

MDL - Minimum detection limit in micrograms/kilogram

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Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02240
Report#: R07454
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/4/85

Date Received: 2/14/85

Lab #: F26374
Sample I.D.: # 59-10/25/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS:	
Toluene	220000
Others	ND

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Submitted by

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Report of Analysis by GC/MS for
VOLATILE ORGANICS

Additional compounds tentatively identified:

Compound	Concentration (micrograms/kilogram)
Acetone	(53000)
Methylethylketone	(110000)
m,p-Xylene	(720000)
o-Xylene	(240000)
Heptanes	(290000)
Methylcyclohexane	(21000)
Methyl Isobutyl ketone	16000
Trimethylbenzene isomers	(47000)

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantified; detected below minimum detection limit
(): Tentative value based on the response of Ethylbenzene standard.

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	20,000	1,1,1-Trichloroethane	2000
Acrylonitrile	20,000	1,1,2-Trichloroethane	2000
Benzene	2000	Trichloroethene	2000
Bromoform	2000	Vinyl Chloride	2000
Carbon Tetrachloride	2000	Acetone	2000
Chlorobenzene	2000	Methylethylketone	10,000
Dibromochloromethane	2000	Tetrahydrofuran	2000
Chloroethane	2000	trans-1,3-Dichloropropene	2000
2-Chloroethylvinylether	2000	cis-1,3-Dichloropropene	2000
Chloroform	2000	m,p-Xylene	2000
Dichlorobromomethane	2000	o-Xylene	2000
1,1-Dichloroethane	2000	p-Chlorotoluene	2000
1,2-Dichloroethane	2000	Styrene	2000
1,1-Dichloroethene	2000	1,3-Dichlorobenzene	2000
1,2-Dichloropropane	2000	1,2-Dichlorobenzene	2000
1,2-Dichloropropene	2000	1,4-Dichlorobenzene	2000
Ethylbenzene	2000	1,2-Dibromo-3-chloropropane	10,000
Methyl Bromide	2000	Trichlorobenzene	2000
Methyl Chloride	2000	Naphthalene	2000
Methylene Chloride	2000	trans-1,2-Dichloroethene	2000
1,1,2,2-Tetrachloroethane	2000	cis-1,2-Dichloroethene	2000
Tetrachloroethene	2000	Trichlorofluoromethane	2000
Toluene	2000	Propylbenzene	2000
1,2-Dibromoethane (EDB)	2000		

MDL - Minimum detection limit in micrograms/kilogram wet weight

MONTGOMERY LABORATORIES
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555 East Walnut Street, Pasadena, California 91101
(818) 796-9141 / (213) 681-4255 Telex 67-5420

Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02240
Report#: R07452
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/4/85

Date Received: 2/14/85

Lab #: F26372
Sample I.D.: # 57-10/25/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS:	
Ethylbenzene	750
Others	ND

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QC OFFICER

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantitated; Detected but below minimum quantitation limits
(): Tentative value only

Submitted by _____ Approved by _____

MAR 8 1985

Report of Analysis by GC/MS for
VOLATILE ORGANICS

Additional compounds tentatively identified:

Compound	Concentration (micrograms/kilogram)
Acetone	34,000
Methylisobutylketone	130,000
Methylethylketone	32,000
2-Hexanol	1800
m,p-Xylene	(3500)
o-Xylene	(1100)
2-Propanol	2500
2-Hexanone	1800

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantified; detected below minimum detection limit
(): Tentative value based on the response of Ethylbenzene standard.

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	1000	1,1,1-Trichloroethane	100
Acrylonitrile	1000	1,1,2-Trichloroethane	100
Benzene	100	Trichloroethene	100
Bromoform	100	Vinyl Chloride	100
Carbon Tetrachloride	100	Acetone	100
Chlorobenzene	100	Methylethylketone	500
Dibromochloromethane	100	Tetrahydrofuran	100
Chloroethane	100	trans-1,3-Dichloropropene	100
2-Chloroethylvinylether	100	cis-1,3-Dichloropropene	100
Chloroform	100	m,p-Xylene	100
Dichlorobromomethane	100	o-Xylene	100
1,1-Dichloroethane	100	p-Chlorotoluene	100
1,2-Dichloroethane	100	Styrene	100
1,1-Dichloroethene	100	1,3-Dichlorobenzene	100
1,2-Dichloropropane	100	1,2-Dichlorobenzene	100
1,2-Dichloropropene	100	1,4-Dichlorobenzene	100
Ethylbenzene	100	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	100	Trichlorobenzene	100
Methyl Chloride	100	Naphthalene	100
Methylene Chloride	100	trans-1,2-Dichloroethene	100
1,1,2,2-Tetrachloroethane	100	cis-1,2-Dichloroethene	100
Tetrachloroethene	100	Trichlorofluoromethane	100
Toluene	100	Propylbenzene	100
1,2-Dibromoethane (EDB)	100		

MDL - Minimum detection limit in micrograms/kilogram

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Report of GC/MS Analysis for
VOLATILE ORGANICS
in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02240
Report#: R07451
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/3/85

Date Received: 2/14/85

Lab #: F26371
Sample I.D.: # 56-10/25/84

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS:	
Ethylbenzene	850
Others	ND

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Submitted by

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MAR 8 1985

Report of Analysis by GC/MS for
VOLATILE ORGANICS

Additional compounds tentatively identified:

Compound	Concentration (micrograms/kilogram)
Acetone	(1900)
Methylethylketone	(9100)
2-Propanol	(2500)
Methylisobutylketone	48000
2-Hexanone	(9000)
m,p-Xylene	(2300)
o-Xylene	(1400)

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantified; detected below minimum detection limit
(): Tentative value based on the response of Ethylbenzene standard.

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	1000	1,1,1-Trichloroethane	100
Acrylonitrile	1000	1,1,2-Trichloroethane	100
Benzene	100	Trichloroethene	100
Bromoform	100	Vinyl Chloride	100
Carbon Tetrachloride	100	Acetone	100
Chlorobenzene	100	Methylethylketone	500
Dibromochloromethane	100	Tetrahydrofuran	100
Chloroethane	100	trans-1,3-Dichloropropene	100
2-Chloroethylvinylether	100	cis-1,3-Dichloropropene	100
Chloroform	100	m,p-Xylene	100
Dichlorobromomethane	100	o-Xylene	100
1,1-Dichloroethane	100	p-Chlorotoluene	100
1,2-Dichloroethane	100	Styrene	100
1,1-Dichloroethene	100	1,3-Dichlorobenzene	100
1,2-Dichloropropane	100	1,2-Dichlorobenzene	100
1,2-Dichloropropene	100	1,4-Dichlorobenzene	100
Ethylbenzene	100	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	100	Trichlorobenzene	100
Methyl Chloride	100	Naphthalene	100
Methylene Chloride	100	trans-1,2-Dichloroethene	100
1,1,2,2-Tetrachloroethane	100	cis-1,2-Dichloroethene	100
Tetrachloroethene	100	Trichlorofluoromethane	100
Toluene	100	Propylbenzene	100
1,2-Dibromoethane (EDB)	100		

MDL - Minimum detection limit in micrograms/kilogram

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Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02239
Report#: R07443
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/2/85

Date Received: 2/14/85

Lab #: F26363
Sample I.D.: # 60-NO DATE

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND

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ND: Not Detected
NA: Not Analyzed
NQ: Not Quantitated; Detected but below minimum quantitation limits
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Report of Analysis by GC/MS for
VOLATILE ORGANICS

Additional compounds tentatively identified:

Compound	Concentration (micrograms/kilogram)
Tetramethylcyclopropane	(26)

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantified; detected below minimum detection limit
(): Tentative value based on the response of Ethylbenzene standard.

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	200	1,1,1-Trichloroethane	20
Acrylonitrile	200	1,1,2-Trichloroethane	20
Benzene	20	Trichloroethene	20
Bromoform	20	Vinyl Chloride	20
Carbon Tetrachloride	20	Acetone	20
Chlorobenzene	20	Methylethylketone	100
Dibromochloromethane	20	Tetrahydrofuran	20
Chloroethane	20	trans-1,3-Dichloropropene	20
2-Chloroethylvinylether	20	cis-1,3-Dichloropropene	20
Chloroform	20	m,p-Xylene	20
Dichlorobromomethane	20	o-Xylene	20
1,1-Dichloroethane	20	p-Chlorotoluene	20
1,2-Dichloroethane	20	Styrene	20
1,1-Dichloroethene	20	1,3-Dichlorobenzene	20
1,2-Dichloropropane	20	1,2-Dichlorobenzene	20
1,2-Dichloropropene	20	1,4-Dichlorobenzene	20
Ethylbenzene	20	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	20	Trichlorobenzene	20
Methyl Chloride	20	Naphthalene	20
Methylene Chloride	20	trans-1,2-Dichloroethene	20
1,1,2,2-Tetrachloroethane	20	cis-1,2-Dichloroethene	20
Tetrachloroethene	20	Trichlorofluoromethane	20
Toluene	20	Propylbenzene	20
1,2-Dibromoethane (EDB)	20		

MDL - Minimum detection limit in micrograms/kilogram wet weight

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Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02239
Report#: R07444
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/3/85

Date Received: 2/14/85

Lab #: F26364
Sample I.D.: # 61-NO DATE

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND
NON-PRIORITY POLLUTANT VOLATILE ORGANICS	ND

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PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	200	1,1,1-Trichloroethane	20
Acrylonitrile	200	1,1,2-Trichloroethane	20
Benzene	20	Trichloroethene	20
Bromoform	20	Vinyl Chloride	20
Carbon Tetrachloride	20	Acetone	20
Chlorobenzene	20	Methylethylketone	100
Dibromochloromethane	20	Tetrahydrofuran	20
Chloroethane	20	trans-1,3-Dichloropropene	20
2-Chloroethylvinylether	20	cis-1,3-Dichloropropene	20
Chloroform	20	m,p-Xylene	20
Dichlorobromomethane	20	o-Xylene	20
1,1-Dichloroethane	20	p-Chlorotoluene	20
1,2-Dichloroethane	20	Styrene	20
1,1-Dichloroethene	20	1,3-Dichlorobenzene	20
1,2-Dichloropropane	20	1,2-Dichlorobenzene	20
1,2-Dichloropropene	20	1,4-Dichlorobenzene	20
Ethylbenzene	20	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	20	Trichlorobenzene	20
Methyl Chloride	20	Naphthalene	20
Methylene Chloride	20	trans-1,2-Dichloroethene	20
1,1,2,2-Tetrachloroethane	20	cis-1,2-Dichloroethene	20
Tetrachloroethene	20	Trichlorofluoromethane	20
Toluene	20	Propylbenzene	20
1,2-Dibromoethane (EDB)	20		

MDL - Minimum detection limit in micrograms/kilogram wet weight

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Report of GC/MS Analysis for
VOLATILE ORGANICS
in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02239
Report#: R07445
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/3/85

Date Received: 2/14/85

Lab #: F26365
Sample I.D.: # 62-NO DATE

Compound	Concentration (microgram/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND

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QC OFFICER
Robert N. Clark

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NQ: Not Quantitated; Detected but below minimum quantitation limits
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Report of Analysis by GC/MS for
VOLATILE ORGANICS

Additional compounds tentatively identified:

Compound	Concentration (micrograms/kilogram)
1,1-Biphenyl	(360)

ND: Not Detected
NA: Not Analyzed
NQ: Not Quantified; detected below minimum detection limit
(): Tentative value based on the response of Ethylbenzene standard.

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	1000	1,1,1-Trichloroethane	100
Acrylonitrile	1000	1,1,2-Trichloroethane	100
Benzene	100	Trichloroethene	100
Bromoform	100	Vinyl Chloride	100
Carbon Tetrachloride	100	Acetone	100
Chlorobenzene	100	Methylethylketone	500
Dibromochloromethane	100	Tetrahydrofuran	100
Chloroethane	100	trans-1,3-Dichloropropene	100
2-Chloroethylvinylether	100	cis-1,3-Dichloropropene	100
Chloroform	100	m,p-Xylene	100
Dichlorobromomethane	100	o-Xylene	100
1,1-Dichloroethane	100	p-Chlorotoluene	100
1,2-Dichloroethane	100	Styrene	100
1,1-Dichloroethene	100	1,3-Dichlorobenzene	100
1,2-Dichloropropane	100	1,2-Dichlorobenzene	100
1,2-Dichloropropene	100	1,4-Dichlorobenzene	100
Ethylbenzene	100	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	100	Trichlorobenzene	100
Methyl Chloride	100	Naphthalene	100
Methylene Chloride	100	trans-1,2-Dichloroethene	100
1,1,2,2-Tetrachloroethane	100	cis-1,2-Dichloroethene	100
Tetrachloroethene	100	Trichlorofluoromethane	100
Toluene	100	Propylbenzene	100
1,2-Dibromoethane (EDB)	100		

MDL - Minimum detection limit in micrograms/kilogram

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Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02239
Report#: R07446
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/4/85
Date Received: 2/14/85

Lab #: F26366
Sample I.D.: # 63-NO DATE

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND
NON-PRIORITY POLLUTANT VOLATILE ORGNAICS	ND

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[signature]

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NA: Not Analyzed
NQ: Not Quantitated; Detected but below minimum quantitation limits
(): Tentative value only

Submitted by [signature]

Approved by [signature]

MAR 8 1985

PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	1000	1,1,1-Trichloroethane	100
Acrylonitrile	1000	1,1,2-Trichloroethane	100
Benzene	100	Trichloroethene	100
Bromoform	100	Vinyl Chloride	100
Carbon Tetrachloride	100	Acetone	100
Chlorobenzene	100	Methylethylketone	500
Dibromochloromethane	100	Tetrahydrofuran	100
Chloroethane	100	trans-1,3-Dichloropropene	100
2-Chloroethylvinylether	100	cis-1,3-Dichloropropene	100
Chloroform	100	m,p-Xylene	100
Dichlorobromomethane	100	o-Xylene	100
1,1-Dichloroethane	100	p-Chlorotoluene	100
1,2-Dichloroethane	100	Styrene	100
1,1-Dichloroethene	100	1,3-Dichlorobenzene	100
1,2-Dichloropropane	100	1,2-Dichlorobenzene	100
1,2-Dichloropropene	100	1,4-Dichlorobenzene	100
Ethylbenzene	100	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	100	Trichlorobenzene	100
Methyl Chloride	100	Naphthalene	100
Methylene Chloride	100	trans-1,2-Dichloroethene	100
1,1,2,2-Tetrachloroethane	100	cis-1,2-Dichloroethene	100
Tetrachloroethene	100	Trichlorofluoromethane	100
Toluene	100	Propylbenzene	100
1,2-Dibromoethane (EDB)	100		

MDL - Minimum detection limit in micrograms/kilogram

MONTGOMERY LABORATORIES
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555 East Walnut Street, Pasadena, California 91101
(818) 796-9141 / (213) 681-4255 Telex 67-5420

Report of GC/MS Analysis for VOLATILE ORGANICS in Soil

Meredith/Boli & Associates, Inc.
8857 W. Olympic Blvd.
Suite 200
Beverly Hills, CA 90211
Attn: William C. Hass

Job#/PO#: 437.0228
Workorder#: W02239
Report#: R07447
Phone #: 213-659-6122

Date Sampled: --
Date Analyzed: 3/3/85

Date Received: 2/14/85

Lab #: F26367
Sample I.D.: # 64-NO DATE

Compound	Concentration (micrograms/kilogram)
PRIORITY POLLUTANT VOLATILE ORGANICS	ND
NON-PRIORITY POLLUTANT VOLATILE ORGANICS	ND

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PURGEABLE VOLATILE ORGANIC COMPOUNDS
ANALYSIS BY PURGE AND TRAP GC/MS

Compounds Included in Quantitative Analysis

Compound	MDL	Compound	MDL
Acrolein	200	1,1,1-Trichloroethane	20
Acrylonitrile	200	1,1,2-Trichloroethane	20
Benzene	20	Trichloroethene	20
Bromoform	20	Vinyl Chloride	20
Carbon Tetrachloride	20	Acetone	20
Chlorobenzene	20	Methylethylketone	100
Dibromochloromethane	20	Tetrahydrofuran	20
Chloroethane	20	trans-1,3-Dichloropropene	20
2-Chloroethylvinylether	20	cis-1,3-Dichloropropene	20
Chloroform	20	m,p-Xylene	20
Dichlorobromomethane	20	o-Xylene	20
1,1-Dichloroethane	20	p-Chlorotoluene	20
1,2-Dichloroethane	20	Styrene	20
1,1-Dichloroethene	20	1,3-Dichlorobenzene	20
1,2-Dichloropropane	20	1,2-Dichlorobenzene	20
1,2-Dichloropropene	20	1,4-Dichlorobenzene	20
Ethylbenzene	20	1,2-Dibromo-3-chloropropane	100
Methyl Bromide	20	Trichlorobenzene	20
Methyl Chloride	20	Naphthalene	20
Methylene Chloride	20	trans-1,2-Dichloroethene	20
1,1,2,2-Tetrachloroethane	20	cis-1,2-Dichloroethene	20
Tetrachloroethene	20	Trichlorofluoromethane	20
Toluene	20	Propylbenzene	20
1,2-Dibromoethane (EDB)	20		

MDL - Minimum detection limit in micrograms/kilogram wet weight