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SEMIANNUAL MONITORING REPORT

OPERABLE UNIT NO. 5 - SITE 2
MARINE CORPS BASE
CAMP LEJEUNE, NORTH CAROLINA

REPORTING PERIOD OCTOBER 1997 - MARCH 1998

CONTRACT TASK ORDER 0367

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PREFACE

The semiannual monitoring reports that are presented herein describe the procedures, analytical findings, and subsequent recommendations of the monitoring program at Operable Unit (OU) No. 5 (Site 2), Marine Corps Base (MCB) Camp Lejeune, North Carolina. Figure P-1 depicts the location of OU No. 5. The monitoring reports have been prepared by Baker Environmental, Inc. and submitted to the United States Environmental Protection Agency - Region IV; the North Carolina Department of Environment and Natural Resources; the Environmental Management Department of MCB Camp Lejeune; and the Naval Facilities Engineering Command, Atlantic Division.

The monitoring program at OU No. 5 was implemented in response to the Record of Decision (ROD) document signed by MCB Camp Lejeune on September 15, 1994. The ROD for OU No. 5 stipulates that documentation in support of the selected remedy, groundwater monitoring coupled with institutional controls, be maintained for periodic regulatory review.

The principal objective of the monitoring program at OU No. 5 is to monitor the potential for human or ecological exposure due to off-site migration of contaminants. The semiannual monitoring reports document the findings and provide interested parties with information required to authorize future decisions regarding OU No. 5. The information presented in the reports will be used to either extend, modify, or discontinue the monitoring program as necessary.

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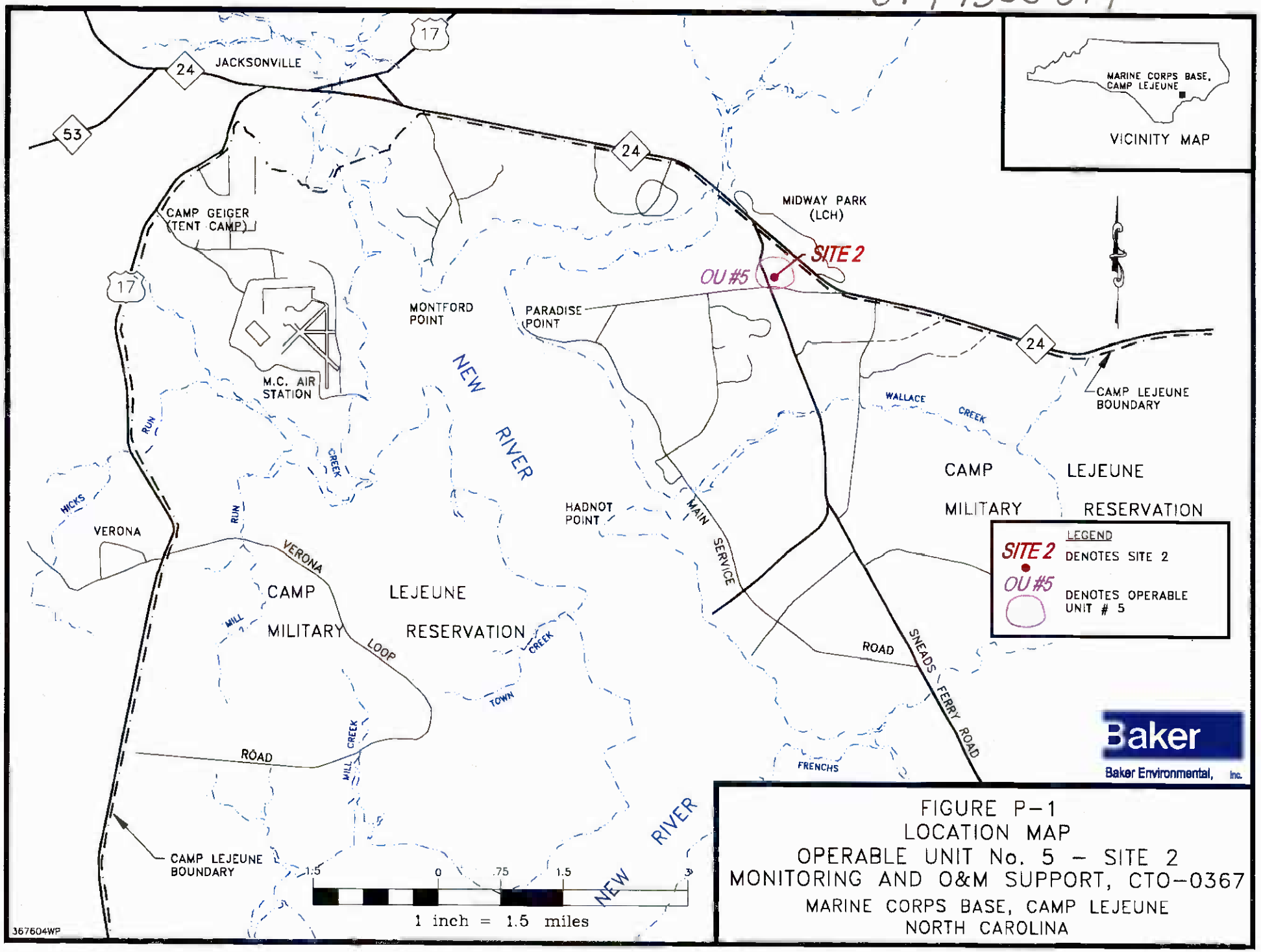

Baker
Baker Environmental, Inc.

FIGURE P-1
LOCATION MAP
OPERABLE UNIT No. 5 – SITE 2
MONITORING AND O&M SUPPORT, CTO-0367
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

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SEMIANNUAL MONITORING REPORT

The semiannual monitoring report which follows presents a summary of groundwater sampling activities, field observations, analytical results, and significant findings which pertain to the monitoring program at Operable Unit (OU) No. 5 (Site 2), Marine Corps Base (MCB) Camp Lejeune, North Carolina. The report describes activities completed during the fourth quarter of calendar year 1997. Conclusions and recommendations regarding the monitoring program at Site 2 are also presented within this report.

Semiannual monitoring activities at Site 2 commenced October 22, 1997 and concluded October 26, 1997. Groundwater samples from Site 2 were obtained from seven shallow monitoring wells and one intermediate monitoring well. Figure 1 depicts the locations of all existing monitoring wells and the former locations of four abandoned monitoring wells at Site 2. [Note that all tables and figures are provided after the text portion of this report.]

Sampling activities were conducted and subsequent laboratory analyses were performed according to procedures and methods specified in the Long-Term Monitoring Work Plans for OU No. 5 (Baker, 1996). The project work plans identify a select number of monitoring wells at Site 2 for which continued periodic sampling is required. Figure 1 depicts the locations of wells included in the monitoring program; Table 1 provides construction details of the monitoring wells. As stipulated in the project work plans, measurements of pH, specific conductance, dissolved oxygen, temperature, and turbidity were recorded prior to sampling. These measurements were taken to ensure that groundwater conditions had stabilized and that a representative sample had been obtained from the aquifer. Summaries of all groundwater field parameters are provided in Table 2.

The monitoring program at Site 2 was implemented to assess whether contamination, detected during previous investigations, remains present, has migrated, or has degraded through natural processes. Based upon previous analytical results and decision documents, Target Compound List (TCL) volatiles were identified as contaminants of concern at Site 2. Table 3 provides a summary of requested laboratory analyses and sample identifications.

Sample information, including well number, sample identification, time and date of sample collection, samplers, analytical parameters, and required laboratory turnaround time was recorded in a field logbook and on sample labels. Chain-of-custody documentation, provided in Attachment A, accompanied the samples to the laboratory.

Groundwater Elevation and Flow Direction

The following provides information concerning groundwater elevation and flow direction at Site 2. Water level measurements were obtained on October 26, 1997. Table 4 provides a summary of all water level measurements obtained during the monitoring program. Figure 2 depicts the static elevations and approximate flow direction of groundwater at Site 2, based upon the most recent water level measurements.

Static water level measurements were collected after all sampling activities had been completed. Measurements were recorded from top-of-casing reference points marked on each monitoring well casing. As Figure 2 suggests, shallow groundwater at Site 2 generally flows north-northeast toward Overs Creek, a tributary of Northeast Creek. Drainage ditches lie on both sides of the MCB, Camp Lejeune Railroad at Site 2. Surface water in the drainage ditches is stagnant with minimal flow. The

ditches appear to act as both a discharge and recharge, depending upon intensity and duration of precipitation events and the seasonal variations of the watertable.

Field Observations

The following field observations were noted in a previous monitoring report. The observations, however, remain relevant to the monitoring program and are therefore presented here.

Upon completion of shallow monitoring well 02-GW12, it was noted that the static water level was lower than anticipated. Groundwater was encountered at four feet below ground surface during installation of the pilot test boring. The water level had decreased within 24 hours after installation to a depth of 10 feet below ground surface. The water level was again recorded 48 hours after installation; it had decreased to a depth of approximately 21 feet below ground surface. Although shallow monitoring well 02-GW12 has produced a sufficient amount of groundwater during sampling activities, it continues to be purged dry almost immediately due to the low volume of water in the well.

The observed static water level in monitoring well 02-GW12 may indicate the presence of a shallow perched groundwater zone at Site 2. Perched groundwater results from a layer or "lens" of lower permeability soil positioned within more permeable materials. Water moving downward through the unsaturated zone is intercepted by the lower permeable material and accumulates on top of the lens, resulting in saturated soil above the main water table. Groundwater can move laterally, across the less permeable layer and then seep downward to the main watertable. At Site 2 a layer of silt is present beginning at approximately 13.0 feet below ground surface and extending to a depth of 16.0 feet below ground surface. This silt layer may retard or slow the vertical movement of groundwater, resulting in a perched groundwater zone.

ANALYTICAL RESULTS AND FINDINGS

The section which follows presents analytical results and findings from sampling performed at Site 2 during the fourth calendar quarter of 1997. A summary of all analytical results compiled during the sampling event are presented in Attachment B and corresponding laboratory data sheets are provided in Attachment C.

One trip blank was prepared prior to the sampling event. The trip blank accompanied groundwater samples from Site 2 during field collection, shipment, and laboratory analysis. As provided in Table 5, methylene chloride and toluene were detected in trip blank sample IR02-TB01-97D. Methylene chloride was detected at an estimated concentration of 1.6 micrograms per liter (µg/L) and toluene was detected at 0.67 µg/L in the trip blank sample. Both methylene chloride and toluene are common laboratory contaminants.

Groundwater conditions within the upper and lower portions of the surficial aquifer were evaluated through collection and analysis of samples obtained from seven shallow monitoring wells and one intermediate monitoring well at Site 2 (refer to Table 1 for well construction details). Analytical results from the monitoring program are provided in the paragraphs which follow and are summarized in Table 6. A summary of positive detections is provided in Table 7. The discussion which follows presents not only the most recent analytical results, but a comparison of those results versus previous investigative results.

A total of six volatile organic compounds (VOCs) were detected among samples obtained from six of the seven shallow monitoring wells and the one intermediate monitoring well at Site 2. As depicted in Figure 3, the majority of VOC detections were limited to the southern portion of the study area. Ethylbenzene, tetrachloroethene, and xylene (total) were detected at maximum concentrations of 230, 7.9, and 2,000 µg/L in the sample obtained from monitoring well 02-GW03. Tetrachloroethene was the only VOC detected at a concentrations which exceeded an applicable Federal Maximum Contaminant Level (MCL). Tetrachloroethene was detected among four of the groundwater samples at concentrations which exceeded the 5 µg/L MCL and among five samples at concentrations which exceeded the North Carolina Water Quality Standard (NCWQS) of 0.7 µg/L. Tetrachloroethene has not been detected among any of the previous groundwater samples obtained from Site 2. Additional testing will be required to determine if tetrachloroethene is now a potential contaminant of concern.

Methylene chloride and xylenes in the sample obtained from 02-GW03 exceeded applicable NCWQS concentrations of 5 and 530 µg/L, respectively. Acetone and toluene, common laboratory contaminants, were each detected among two of the groundwater samples. None of the positive acetone or toluene detections exceeded applicable groundwater standards. Analytical results from the sampling event and a comparison of those results versus applicable groundwater standards are provided in Table 6.

The VOCs ethylbenzene and xylene (total) have consistently been detected in samples obtained from monitoring well 02-GW03 at concentrations exceeding the applicable state standards. Figures 4 and 5 depict ethylbenzene and xylene (total) concentrations in samples obtained from 02-GW03 since inception of monitoring program activities at Site 2. The same VOCs were identified in the Record of Decision (ROD) as contaminants of concern at Site 2 (Baker, 1994). As depicted in Figures 4 and 5, ethylbenzene and xylene (total) concentrations in samples obtained from 02-GW03 have generally increased since July 1996. The most probable explanation for the observed increase is the change in sampling protocol during 1996. Since July of 1996, groundwater samples have been acquired using a low-flow purge and sampling method. The low-flow method tends to result in samples that more accurately reflect true groundwater conditions.

Benzene, styrene, and 1,1,2-trichloroethane have been detected in samples obtained from 02-GW03 during previous sampling events. Analytical results from adjacent monitoring wells have exhibited lower concentrations of similar VOCs, suggesting that the observed contaminants are concentrated in the immediate vicinity of 02-GW03. Ethylbenzene, tetrachloroethene, and xylenes were detected most recently at concentrations of 3.2, 8.6, and 49 µg/L in the sample obtained from monitoring well 02-GW12. Based upon the potentiometric surface map (refer to Figure 2), contaminants may have been transported by groundwater from nearby. Analytical data collected to date suggests that a localized area of groundwater contamination exists adjacent to monitoring well 02-GW03. Future samples collected from the southern portion of Site 2 will be required to confirm the migration of contaminants to 02-GW07 and 02-GW12 from the area surrounding 02-GW03.

Tetrachloroethene and xylenes were detected at a concentrations of 10 and 1.6 µg/L in the sample obtained from intermediate monitoring well 02-GW03IW. Intermediate well 02-GW03IW was installed during February 1997 to determine if detected contaminants in samples obtained from 02-GW03, located within 15 feet of 02-GW03IW, had migrated vertically. The intermediate groundwater sample was obtained from a depth interval of 50 to 60 feet below ground surface. Shallow groundwater samples are typically obtained from less than 25 feet below ground surface. The presence of tetrachloroethene and xylenes within the deeper portion of the surficial aquifer suggests

that contamination may have begun to migrate vertically. Additional sampling will be needed to confirm the downward movement of contamination, however.

RECOMMENDATIONS

The ROD for Site 2 stipulates that possible off-site migration of contaminants be monitored through groundwater sample collection and analysis (Baker, 1994). Groundwater monitoring was implemented to ensure that potential human and ecological receptors would not be exposed to known site contaminants. The sections which follow describe recommendations which have been implemented and recommendations which are proposed for future consideration.

Implemented Recommendations

Detailed information pertaining to the implemented recommendations which follow has been presented within previous monitoring reports. The final disposition of each recommendation is presented here to update information regarding the monitoring program. It remains the intent of this report to provide a thorough listing of recommendations and implemented actions.

Supply Well Sampling

Supply wells HP-616, HP- 646, and HP-647 were eliminated from the monitoring program at Site 2 during January 1997. The supply wells are located more than 1,200 feet from the study area and were sampled for six consecutive quarters with only one positive detection of an organic compound. In addition, all supply wells are currently sampled as part of an ongoing monitoring program administered by MCB Camp Lejeune.

Monitoring Well Sampling Scheme

Monitoring wells 02-GW06 and 02-GW09 were eliminated from the sampling program at Site 2 during February of 1997. The two monitoring wells are not positioned hydraulically downgradient of known contamination. Additional information gained from monitoring wells 02-GW06 and 02-GW09 was not expected to provide relevant data in support of the decision making process.

Sampling Frequency

The majority of groundwater samples obtained from Site 2 have exhibited little or no contamination during the initial six quarterly sampling events. Only two contaminants, ethylbenzene and xylenes, have consistently been detected above state water quality standards. In addition, there is little evidence to suggest that contaminants have migrated from the area immediately surrounding 02-GW03. Based upon this information, the number of yearly sampling events was reduced from four to two.

Sample Analyses

The sampling program for Site 2 was modified to eliminate total metal, total dissolved solid, and total suspended solid analyses from the monitoring program. Although iron, manganese, and total dissolved solids were detected at concentrations which exceeded applicable North Carolina standards, these analyses were not necessary data requirements. There was no history or evidence to suggest that metal disposal activities may have occurred at Site 2. Soils of the North Carolina

coastal plain tend to be naturally rich in metals, especially iron and manganese. It is not uncommon to detect total metal concentrations in groundwater at MCB Camp Lejeune that exceed applicable water quality standards.

Monitoring Well Abandonment and Installation

Deep monitoring well 02-GW03DW was situated adjacent to shallow monitoring well 02-GW03. The screened portion of 02-GW03DW was below a semi-confining unit that separates the surficial and Castle Hayne aquifers. Field observations suggested that bentonite clay, installed during well construction, had begun to enter the screen and sandpack of deep monitoring well 02-GW03DW. The sandpack was presumably clogged with bentonite, limiting the ability of groundwater to enter the well screen. Bentonite clay, as a result, may also have been introduced into groundwater samples obtained from the deep well. The bentonite may have falsely biased total metal and dissolved solid results. The results reflected naturally occurring metals from the surrounding formation that had adhered to the clay particles by a weak ionic bond.

Based on this information, well 02-GW03DW was abandoned. An intermediate well, set immediately above the semi-confining unit, was then installed to replace the deep monitoring well. The intermediate well was situated adjacent to shallow monitoring well 02-GW03 and installed to a depth of approximately 60 feet below ground surface. Groundwater samples collected above the semi-confining layer will be employed to determine if contaminants have migrated from the upper portion of the surficial aquifer to the lower portion of the surficial aquifer.

Shallow Monitoring Well Abandonment

Recorded field observations suggested that three of the five monitoring wells installed at Site 2 during 1984 had begun to deteriorate and were clogged with fine-grained material from the surrounding formation. Based upon this information, monitoring wells 02-GW01, 02-GW02, and 02-GW04 were abandoned.

Well Security and Aesthetics

Shallow monitoring wells that were installed during the 1984 Confirmation Study had begun to show signs of deterioration. The bollards and protective casings of wells 02-GW01 through 02-GW05 had developed peeling paint and rust. In addition, a number of the padlocks used to secure the protective steel covers were either missing or no longer functioned properly. As recommended, the bollards and well casings were repainted with a weather and rust resistant paint. New padlocks that operate with a universal key were also installed on each of the monitoring wells at Site 2.

Proposed Recommendations

Based upon the observations and findings presented in this monitoring report, no significant changes to the monitoring program are currently recommended.

REFERENCES

Baker Environmental, Incorporated (Baker). 1994. Record of Decision for Operable Unit No. 5 (Site 2), Marine Corps Base Camp Lejeune, North Carolina. Final. Prepared for the Department of the Navy Atlantic Division Naval Facilities Engineering Command, Norfolk, Virginia.

Baker Environmental, Inc. (Baker). December 1996. Long-Term Monitoring Work Plans for Remedial Investigation Sites. Prepared for the Navy Atlantic Division Naval Facilities Engineering Command, Norfolk, Virginia.

Environmental Science & Engineering (ES&E). 1990. Site Summary Report. Final. Prepared for the Department of the Navy Atlantic Division Naval Facilities Engineering Command, Norfolk, Virginia. ESE Project No. 49-02036.

Bowels, Joseph E., Physical and Geotechnical Properties of Soils, second edition McGraw-Hill Inc., 1984.

TABLES

TABLE 1

SUMMARY OF WELL CONSTRUCTION DETAILS
OPERABLE UNIT NO. 5 - SITE 2
MONITORING AND O&M SUPPORT, CTO - 0367
MCB, CAMP LEJEUNE, NORTH CAROLINA

Monitoring Well Number	Date Installed	Top of Casing Elevation (feet, msl)	Ground Surface Elevation (feet, msl)	Boring Depth (feet, bgs)	Well Depth (feet, bgs)	Screen Interval Depth (feet, bgs)	Depth to Sand Pack (feet, bgs)	Depth to Bentonite (feet, bgs)	Stick-Up (feet, ags)
02-GW03	1984	35.40	33.00	NA	25.0	10.0 to 25.0	NA	NA	NA
02-GW03IW	1997	35.34	32.21	70.0	60.0	50.0 to 60.0	45.0	34.0	3.1
02-GW05	1984	33.72	31.80	NA	25.0	10.0 to 25.0	NA	NA	NA
02-GW07	1993	34.03	31.6	16.0	13.0	3.0 to 13.0	2.0	1.0	2.4
02-GW08	1993	34.92	31.90	12.5	12.5	2.5 to 12.5	1.5	0.5	3
02-GW10	1994	32.28	32.47	15.0	13.5	3.5 to 13.5	2.5	1.5	3.5
02-GW11	1994	35.20	33.94	15.0	14.0	1.0 to 14.0	3.0	2.0	3
02-GW12	1997	34.37	31.52	31.0	23.0	3.0 to 23.0	2.0	1.0	2.8

Notes:

(1) Water Supply Well
msl = Mean sea level
bgs = Below ground surface
NA = Information not available
ags = Above ground surface

TABLE 2

SUMMARY OF GROUNDWATER FIELD PARAMETERS
OPERABLE UNIT NO. 5 - SITE 2
MONITORING AND O&M SUPPORT, CTO-0367
MCB, CAMP LEJEUNE, NORTH CAROLINA

Well Number	Measuring Time	Well Volumes	Field Parameters			
			Specific Conductance µmhos/cm	Temperature (°C)	pH (S.U.)	Turbidity (N.T.U)
02-GW03 (10/23/97)	1107	1.0	156.5	16.7	4.84	13.6
	1129	2.0	151	16.4	4.95	1.0
	1200	3.0	159	18.5	4.98	1.5
02-GW05 (10/22/97)	1632	1.0	231	19.2	4.47	15.1
	1639	1.5	217	19.7	4.37	7.1
	1647	2.0	220	19.0	4.39	3.5
	1653	2.5	220	19.0	4.41	2.1
	1700	3.0	221	19.0	4.41	1.8
02-GW03IW (10/23/97)	1108	1.0	766	16.2	5.43	3.1
	1150	1.5	786	17.1	5.59	2.8
	1220	2.0	794	17.3	5.49	1.6
	1305	2.5	809	17.8	5.34	0.6
	1358	3.0	802	17.0	5.29	0.6
02-GW07 (10/23/97)	0742	1.0	172	18.2	4.83	1.7
	0750	1.5	143	18.4	4.90	4.9
	0805	2.0	141	19.1	4.90	1.1
	0822	2.5	137	18.7	4.74	5.3
	0835	3.0	135	18.9	4.82	1.9
02-GW08 (10/23/97)	0941	1.0	191	17.8	3.71	23.3
	0956	1.5	153	17.1	4.39	23
	1016	2.0	159	17.5	5.82	200+
	1242	2.5	143	19.0	4.71	8.0
	1348	3.0	139	18.8	4.61	5.7
02-GW10 (10/23/97)	1435	1.0	310	23.0	6.21	4.4
	1444	2.0	316	22.3	6.28	10.7
	1453	3.0	308	22.5	6.28	0.6
	1503	4.0	302	22.5	6.29	0.9
02-GW11 (10/22/97)	1718	1.0	171	21.3	4.87	2.6
	1724	2.0	169.0	21.4	4.88	1.7
	1728	3.0	168	21.6	4.96	1.2
	1734	4.0	170	20.9	4.96	2.0

TABLE 2 (Continued)

SUMMARY OF GROUNDWATER FIELD PARAMETERS
OPERABLE UNIT NO. 5 - SITE 2
MONITORING AND O&M SUPPORT, CTO-0367
MCB, CAMP LEJEUNE, NORTH CAROLINA

Well Number	Measuring Time	Well Volumes	Field Parameters			
			Specific Conductance µmhos/cm	Temperature (°C)	pH (S.U.)	Turbidity (N.T.U)
02-GW12 (10/23/97)	0852	1.0	136	19.2	4.93	7.6
	0857	2.0	138	18.9	5.04	1.1
	0902	3.0	139	18.6	4.95	1.2
	0907	4.0	140	19.2	5.06	2.0

Notes:

N.T.U. = Nephelometric Turbidity Units
S.U. = Standard Units
µmhos/cm = micro ohms per centimeter
°C = Degrees Centigrade

TABLE 3

GROUNDWATER SAMPLING SUMMARY
OPERABLE UNIT NO. 5 - SITE 2
MONITORING AND O&M SUPPORT, CTO-0367
MCB, CAMP LEJEUNE, NORTH CAROLINA

Sample Location	Media	TCL Volatiles[1]	Sample Identification
02-GW03	GW	X	IR02-GW03-97D
02-GW03IW	GW	X	IR02-GW03IW-97D
02-GW05	GW	X	IR02-GW05-97D
02-GW07	GW	X	IR02-GW07-97D
02-GW08	GW	X	IR02-GW08-97D
02-GW10	GW	X	IR02-GW10-97D
02-GW11	GW	X	IR02-GW11-97D
02-GW12	GW	X	IR02-GW12-97D

Notes:

[1] Target Compound List Organics by Environmental Protection Agency (EPA) Method 8260A.

X = Requested Analysis

TABLE 4

SUMMARY OF WATER LEVEL MEASUREMENTS
OPERABLE UNIT NO. 5 - SITE 2
MONITORING AND O&M SUPPORT, CTO-0367
MCB, CAMP LEJEUNE, NORTH CAROLINA

Well Identification	Reference Elevation [1]	SWE (08/08/96)	SWE (11/06/96)	SWE (04/26/97)	SWL (10/26/97)	SWE (10/26/97)
02-GW03	35.40	20.23	28.67	27.91	11.03	24.37
02-GW03IW	35.34	NA	NA	7.39	32.05	3.29
02-GW05	33.72	18.24	24.35	25.54	9.57	24.15
02-GW06	34.40	31.61	30.55	20/44	7.72	26.68
02-GW07	34.03	30.06	29.25	27.41	7.93	26.10
02-GW08	34.92	31.74	31.04	29.60	7.81	27.11
02-GW09	35.02	31.42	30.07	28.82	9.87	25.15
02-GW10	32.28	27.29	NR	26.32	6.33	25.95
02-GW11	35.20	28.97	28.36	27.58	7.94	27.26
02-GW12	34.37	NA	NA	9.73	18.47	15.90

Notes:

[1] Top of well casing in feet above mean sea level (msl)

NA = Not Applicable
NR = Not Recorded
SWL = Static water level taken from top of well casing
SWE = Static water elevation in feet above msl

TABLE 5

TRIP BLANK ANALYTICAL RESULTS
OPERABLE UNIT NO. 5 - SITE 2
MONITORING AND O&M SUPPORT, CTO-0367
MCB, CAMP LEJEUNE, NORTH CAROLINA

SAMPLE ID	IR02-TB01-97D
LAB ID	H7J240147009
DATE SAMPLED	10-23-1997
VOLATILES (ug/L)	
1,1,1-Trichloroethane	5 U
1,1,2,2-Tetrachloroethane	5 U
1,1,2-Trichloroethane	5 U
1,1-Dichloroethane	5 U
1,1-Dichloroethene	5 U
1,2-Dichloroethane	5 U
1,2-Dichloroethene (total)	5 U
1,2-Dichloropropane	5 U
2-Butanone	20 U
2-Hexanone	20 U
4-Methyl-2-pentanone	20 U
Acetone	20 U
Benzene	5 U
Bromodichloromethane	5 U
Bromoform	5 U
Bromomethane	10 U
Carbon disulfide	5 U
Carbon tetrachloride	5 U
Chlorobenzene	5 U
Chloroethane	10 U
Chloroform	5 U
Chloromethane	10 U
cis-1,3-Dichloropropene	5 U
Dibromochloromethane	5 U
Ethylbenzene	5 U
Methylene chloride	1.6 J
Styrene	5 U
Tetrachloroethene	5 U
Toluene	0.67 J
trans-1,3-Dichloropropene	5 U
Trichloroethene	5 U
Vinyl chloride	10 U
Xylenes (total)	5 U

U = not detected
J = estimated value
ug/L = micrograms per liter

TABLE 6

SUMMARY OF GROUNDWATER ANALYTICAL RESULTS
OPERABLE UNIT NO. 5 - SITE 2
MONITORING AND O&M SUPPORT, CTO-0367
MCB, CAMP LEJEUNE, NORTH CAROLINA

Fraction	Detected Contaminants	Comparison Criteria		Concentration Range		Location of Maximum Detection	Detection Frequency	Detections Above	
		NCWQS	MCL	Min.	Max.			NCWQS	MCL
Volatile Organics	Acetone	700	NE	6.9	7.3	02-GW11	2/8	0	NA
	Ethylbenzene	29	700	3.2 J	230	02-GW03	2/8	1	0
	Methylene Chloride	5	NE	1.6 J	6.0 J	02-GW03	4/8	1	NA
	Tetrachloroethene	0.7	5	3.5 J	10	02-GW03IW	5/8	5	4
	Toluene	1,000	1,000	0.7 J	7.9 J	02-GW03	2/8	0	0
	Xylene (Total)	530	10,000	1.6 J	2,000	02-GW03	3/8	1	0

Notes:

Concentrations presented in micrograms per liter (µg/L) or parts per billion.

J = Compound Detected at Estimated Concentration
MCL = Federal Maximum Contaminant Level. Maximum permissible level of a contaminant in water which is delivered to users of public water systems (U.S. Environmental Protection Agency - Drinking Water Regulations and Health Advisories).
NA = Not Applicable
NCWQS = North Carolina Water Quality Standards (North Carolina Administrative Code, Title 15A, Subchapter 2L).
NE = Not Established

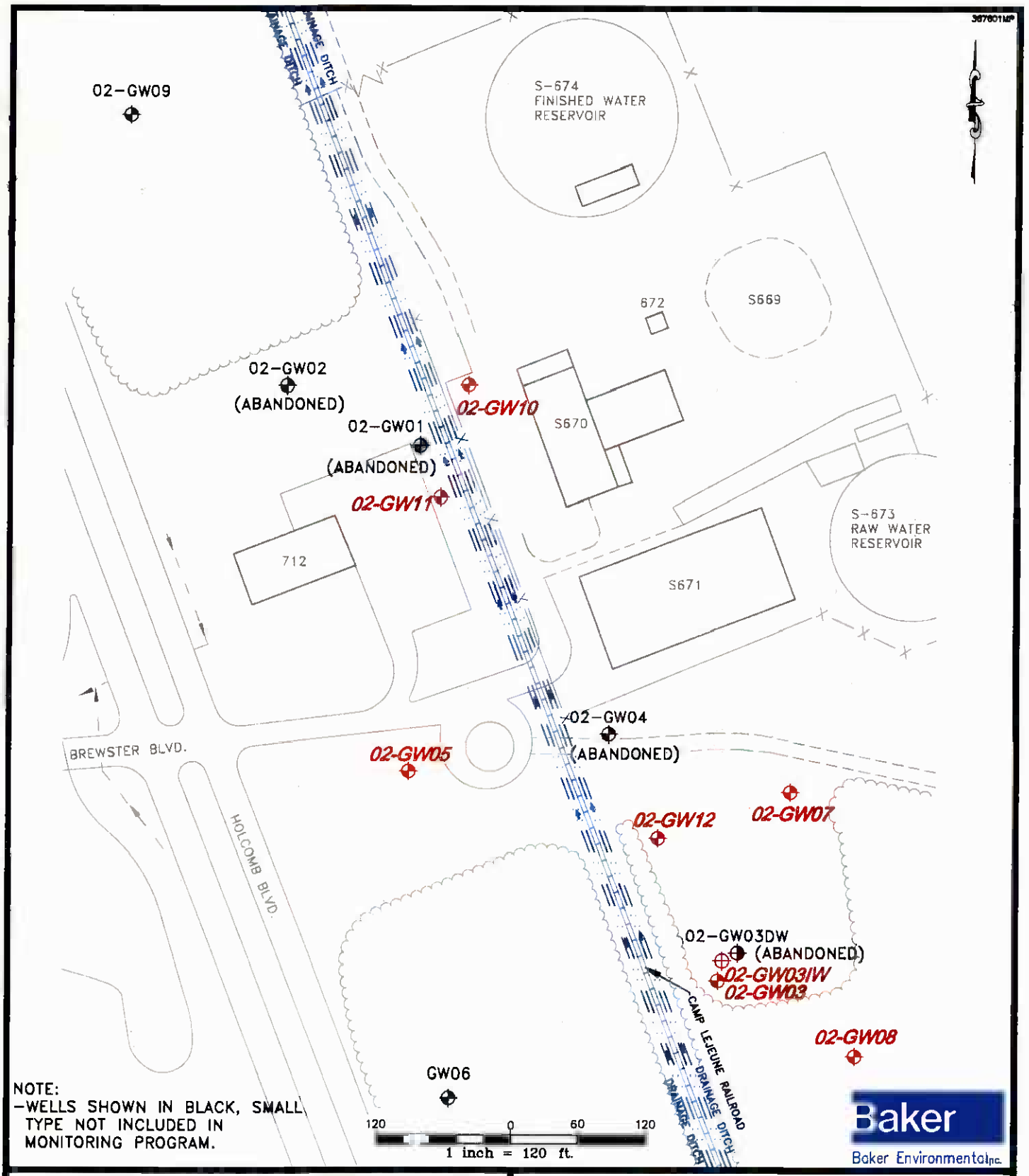
TABLE 7

POSITIVE DETECTIONS IN GROUNDWATER
OPERABLE UNIT NO. 5 - SITE 2
MONITORING AND O&M SUPPORT, CTO-0367
MCB, CAMP LEJEUNE, NORTH CAROLINA

SAMPLE ID	IR02-GW03-97D	IR02-GW031W-97D	IR02-GW05-97D	IR02-GW07-97D	IR02-GW08-97D	IR02-GW10-97D	IR02-GW11-97D	IR02-GW12-97D
LAB ID	H7J240147001	H7J240147002	H7J240147003	H7J240147004	H7J240147005	H7J240147006	H7J240147007	H7J240147008
DATE SAMPLED	10-23-1997	10-23-1997	10-22-1997	10-23-1997	10-23-1997	10-23-1997	10-22-1997	10-23-1997
VOLATILES (ug/L)								
Acetone	100 U	20 U	20 U	6.9 J	20 U	20 U	7.3 J	20 U
Ethylbenzene	230	5 U	5 U	5 U	5 U	5 U	5 U	3.2 J
Methylene chloride	6 J	5 U	5 U	5 U	2.6 J	2.8 J	5 U	5 U
Tetrachloroethene	6.6 J	10	5 U	5 U	7.7	3.5 J	5 U	8.6
Toluene	7.9 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Xylenes (total)	2000	1.6 J	5 U	5 U	5 U	5 U	5 U	49

U = not detected
J = estimated value
ug/L = micrograms per liter

FIGURES



NOTE:
-WELLS SHOWN IN BLACK, SMALL TYPE NOT INCLUDED IN MONITORING PROGRAM.

Baker
Baker Environmental Inc.

LEGEND

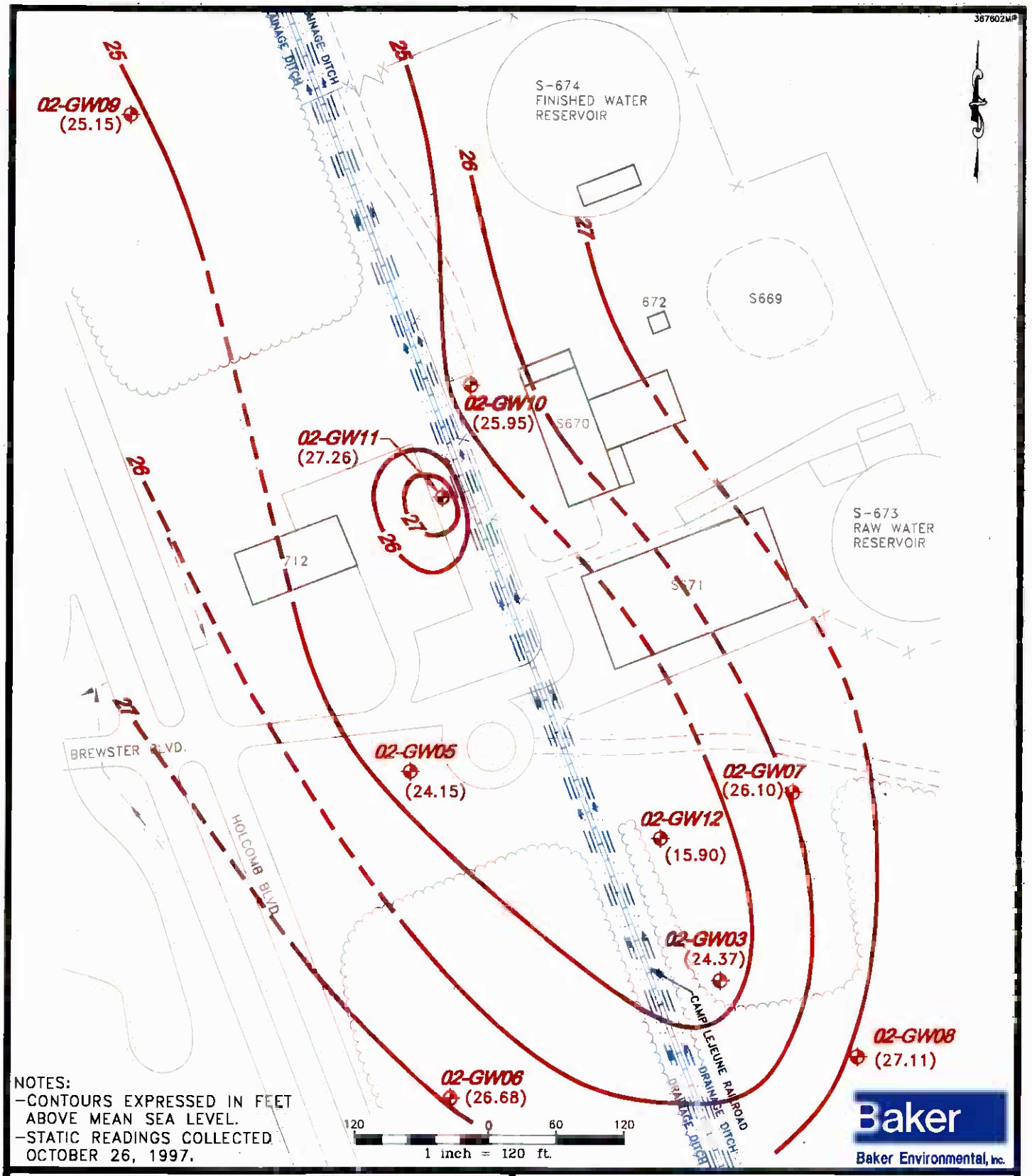
- 02-GW02 — SHALLOW MONITORING WELL
- 02-GW03IW — INTERMEDIATE MONITORING WELL
- 02-GW03DW — DEEP MONITORING WELL
- DIRECTION OF SURFACE WATER FLOW
- RAILROAD
- TREE LINE

SOURCE: LANTDIV, FEB. 1992

FIGURE 1
MONITORING WELL LOCATION MAP
OPERABLE UNIT NO. 5 - SITE 2
MONITORING AND O&M, CTO-0367

MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

01793JJBIY



NOTES:
- CONTOURS EXPRESSED IN FEET ABOVE MEAN SEA LEVEL.
- STATIC READINGS COLLECTED OCTOBER 26, 1997.

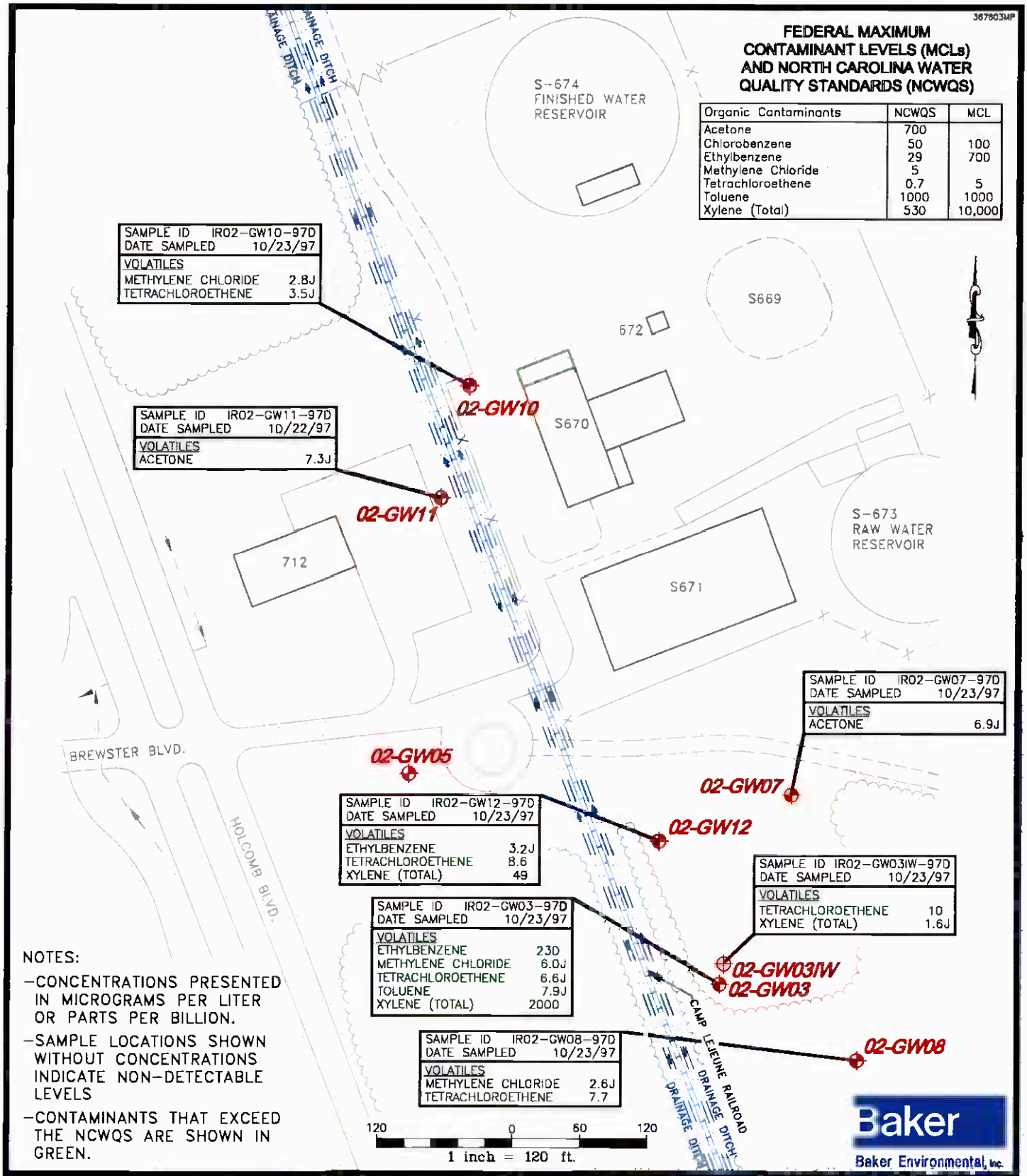
Baker
Baker Environmental, Inc.

LEGEND

02-GW02	SHALLOW MONITORING WELL
(24.37)	STATIC GROUNDWATER ELEVATION
—25—	GROUNDWATER CONTOUR INTERVAL
	DIRECTION OF SURFACE WATER FLOW
	RAILROAD
	TREE LINE

SOURCE: LANTDIV, FEB. 1992

FIGURE 2
SHALLOW GROUNDWATER CONTOUR MAP
OPERABLE UNIT NO. 5 – SITE 2
MONITORING AND O&M SUPPORT
CTO-0367
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA



LEGEND

02-GW02 SHALLOW MONITORING WELL

02-GW03IW INTERMEDIATE MONITORING WELL

DIRECTION OF SURFACE WATER FLOW

RAILROAD

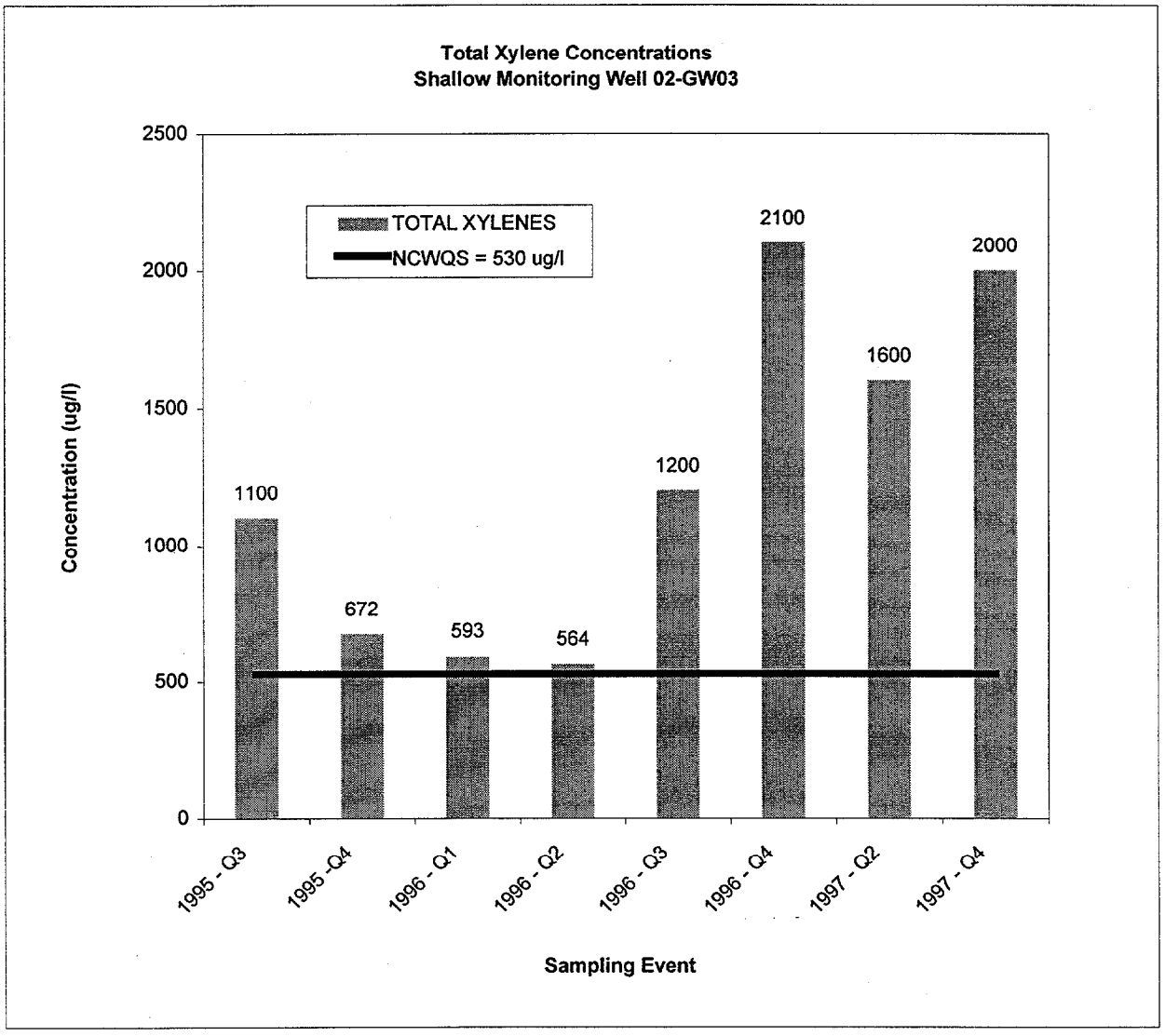
TREE LINE

SOURCE: LANTDIV, FEB. 1992

FIGURE 3
VOLATILE ORGANIC COMPOUNDS IN GROUNDWATER
OPERABLE UNIT NO. 5 – SITE 2
MONITORING AND O&M, CTO-0367
MARINE CORPS BASE, CAMP LEJEUNE
NORTH CAROLINA

FIGURE 4

TOTAL XYLENE RESULTS FROM 02-GW03
OPERABLE UNIT NO. 5 - SITE 2
MONITORING AND O&M SUPPORT, CTO-0367
MCB, CAMP LEJEUENE, NORTH CAROLINA



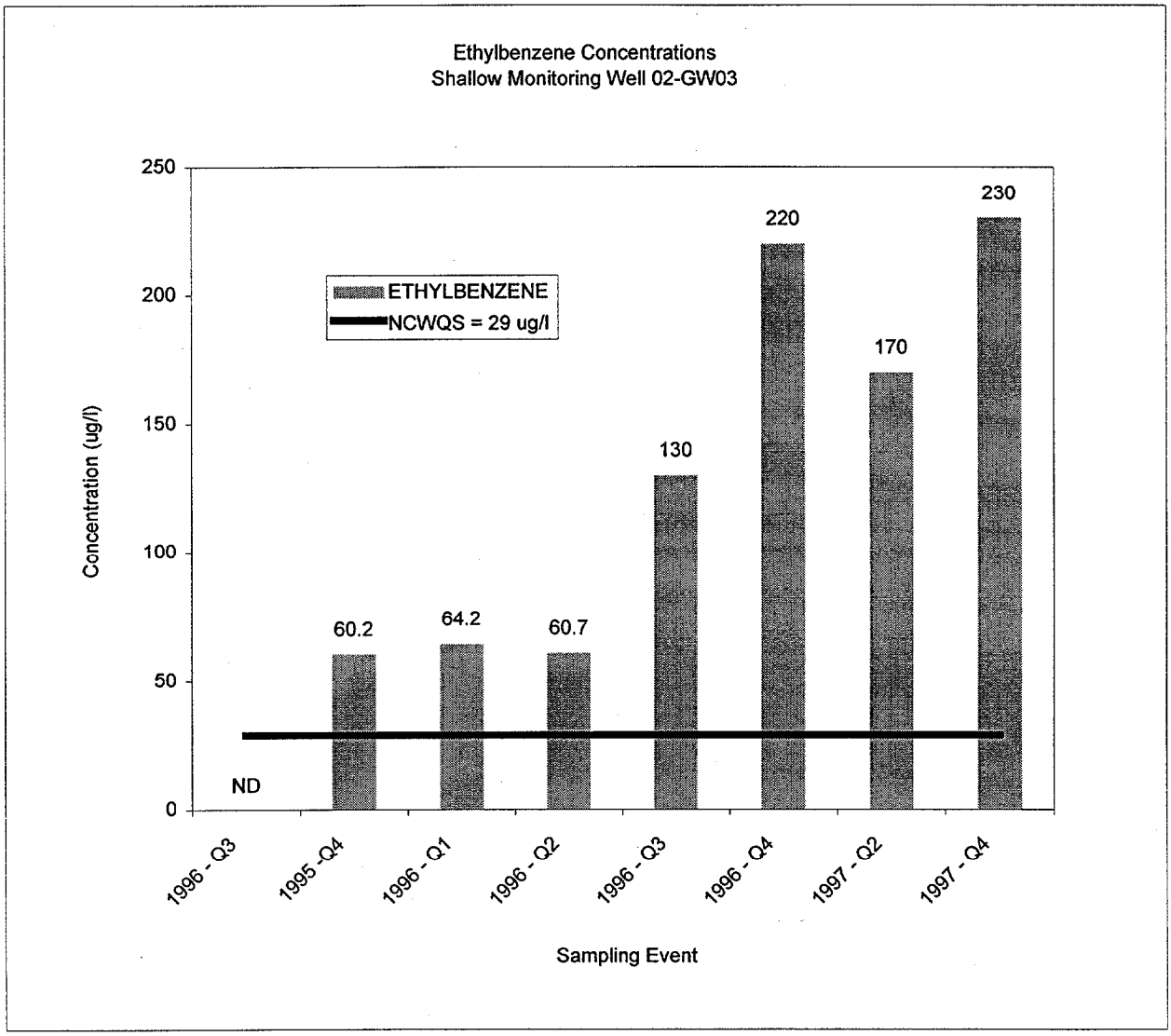
Q1 - Quarter 1 (January - March)
Q2 - Quarter 2 (April - June)
Q3 - Quarter 3 (July - September)
Q4 - Quarter 4 (October - December)

Notes:
Federal Maximum Contaminant Level (MCL) = 10,000 micrograms per liter (ug/l)
North Carolina Water Quality Standard (NCWQS) = 530 micrograms per liter (ug/l)

Contaminant	Mean Detection	Median Detection	Detection Frequency	Detections Above Standards
TOTAL XYLENES	1229	1150	8/8	8/8

FIGURE 5

ETHYLBENZENE RESULTS FROM 02-GW03
OPERABLE UNIT NO. 5 - SITE 2
MONITORING AND O&M SUPPORT, CTO-0367
MCB, CAMP LEJEUENE, NORTH CAROLINA



Q1 - Quarter 1 (January - March)
Q2 - Quarter 2 (April - June)
Q3 - Quarter 3 (July - September)
Q4 - Quarter 4 (October - December)

Notes:
Federal Maximum Contaminant Level (MCL) = 700 micrograms per liter (ug/l)
North Carolina Water Quality Standard (NCWQS) = 29 micrograms per liter (ug/l)

Contaminant	Mean Detection (ug/l)	Median Detection (ug/l)	Detection Frequency	Detections Above Standards
ETHYLBENZENE	117	97.1	7/8	7/8

ATTACHMENTS

ATTACHMENT A
CHAIN-OF-CUSTODY DOCUMENTATION

Chain of Custody Record

QUA-4149-1

CHAIN OF CUSTODY NUMBER

* 0 0 0 3 6 0 - 0 0 1 *

Quanterra

Client: Baker Environmental, Inc.	Project Manager: Jamie McKinney	Date: 10/06/1997
Address: Airport Office Park Bldg 3	Telephone Number (Area Code)/Fax Number: (412) 269-6000	Lab Location: QUANTERRA - KNOXVILL
City: 420 Rouser Rd; State: PA; Zip Code: 15108	Site Contact: Baker Environmental, Inc.	
Project Number/Name: Camp LeJeune	Carrier/Waybill Number:	

Page 1 of 1

Contract/Purchase Order/Quote Number

CONTRACT / PURCHASE ORDER # : QUOTE: 21108

Analysis: MS8260LL

Sample I.D. Number and Description	1997 Date	Time	Sample Type	Containers Volume	Containers Type	Containers No.	Preservative	Condition on Receipt/Comments	MS8260LL
IR02-GW03-97D	10-23	1205	WATER	40mL	VIAL	3	1:1 HCL		X
IR02-GW03IW-97D	10-23	1405	WATER	40mL	VIAL	3	1:1 HCL		X
IR02-GW05-97D	10-22	1700	WATER	40mL	VIAL	3	1:1 HCL		X
IR02-GW07-97D	10-23	0838	WATER	40mL	VIAL	3	1:1 HCL		X
IR02-GW08-97D	10-23	1415	WATER	40mL	VIAL	3	1:1 HCL		X
IR02-GW10-97D	10-23	1510	WATER	40mL	VIAL	3	1:1 HCL		X
IR02-GW11-97D	10-22	1735	WATER	40mL	VIAL	3	1:1 HCL		X
IRØ2-GW12-97D	10-23	0910	Water	"	"	3	"		X
IRØ2-TBØ1-97D	10-23	1630	Blank	"	"	2	"		X

Special Instructions

Possible Hazard Identification: ☐ Non-Hazard ☐ Flammable ☐ Skin Irritant ☐ Poison B ☐ Unknown

Sample Disposal: ☐ Return To Client ☒ Disposal By Lab ☐ Archive For ____ Months (A fee may be assessed if samples are retained longer than 3 months)

Turn Around Time Required: ☒ Normal ☐ Rush ☐ Other ____

QC Level: ☐ I. ☐ II. ☐ III.

Project Specific Requirements (Specify)

	Date	Time		Date	Time
1. Relinquished By: [signature]	10-23-97	1630	1. Received By: FedEx	10-23-97	1636
2. Relinquished By			2. Received By		
3. Relinquished By			3. Received By		

Comments

DISTRIBUTION: WHITE - Stays with the Sample; CANARY - Returned to Client with Report; PINK - Field Copy

ATTACHMENT B
MONITORING PROGRAM ANALYTICAL RESULTS

GROUNDWATER ANALYTICAL RESULTS
OCTOBER 1997
OPERABLE UNIT NO. 5 - SITE 2
MONITORING AND O&M SUPPORT, CTO-0367
MCB, CAMP LEJEUNE, NORTH CAROLINA
VOLATILES ORGANICS

SAMPLE ID	IR02-GW03-97D	IR02-GW03IW-97D	IR02-GW05-97D	IR02-GW07-97D	IR02-GW08-97D	IR02-GW10-97D	IR02-GW11-97D	IR02-GW12-97D
DATE SAMPLED	10-23-1997	10-23-1997	10-22-1997	10-23-1997	10-23-1997	10-23-1997	10-22-1997	10-23-1997
VOLATILES (ug/L)								
Chloromethane	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Bromomethane	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Vinyl chloride	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Chloroethane	50 U	10 U	10 U	10 U	10 U	10 U	10 U	10 U
Methylene chloride	6 J	5 U	5 U	5 U	2.6 J	2.8 J	5 U	5 U
Acetone	100 U	20 U	20 U	6.9 J	20 U	20 U	7.3 J	20 U
Carbon disulfide	25 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethene	25 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1-Dichloroethane	25 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethene (total)	25 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chloroform	25 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloroethane	25 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
2-Butanone	100 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
1,1,1-Trichloroethane	25 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Carbon tetrachloride	25 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromodichloromethane	25 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,2-Dichloropropane	25 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
cis-1,3-Dichloropropene	25 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Trichloroethene	25 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Dibromochloromethane	25 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
1,1,2-Trichloroethane	25 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Benzene	25 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
trans-1,3-Dichloropropene	25 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Bromoform	25 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
4-Methyl-2-pentanone	100 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
2-Hexanone	100 U	20 U	20 U	20 U	20 U	20 U	20 U	20 U
Tetrachloroethene	6.6 J	10	5 U	5 U	7.7	3.5 J	5 U	8.6
1,1,2,2-Tetrachloroethane	25 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Toluene	7.9 J	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Chlorobenzene	25 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Ethylbenzene	230	5 U	5 U	5 U	5 U	5 U	5 U	3.2 J
Styrene	25 U	5 U	5 U	5 U	5 U	5 U	5 U	5 U
Xylenes (total)	2000	1.6 J	5 U	5 U	5 U	5 U	5 U	49

ATTACHMENT C
ANALYTICAL LABORATORY DATA SHEETS

BAKER ENVIRONMENTAL, INC.

Lab Name:QUANTERRA

SDG Number:

Matrix: (soil/water) WATER
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Lab Sample ID:H7J240147 001

Sample WT/Vol: 5 / mL
Work Order: CDLHE101
Dilution factor: 5

Date Received: 10/24/97
Date Extracted:11/03/97
Date Analyzed: 11/03/97

QC Batch: 7307261

Client Sample Id: IR02-GW03-97D

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
74-87-3	Chloromethane	50	U
74-83-9	Bromomethane	50	U
75-01-4	Vinyl chloride	50	U
75-00-3	Chloroethane	50	U
75-09-2	**Methylene chloride**	**6.0**	**J**
67-64-1	Acetone	100	U
75-15-0	Carbon disulfide	25	U
75-35-4	1,1-Dichloroethene	25	U
75-34-3	1,1-Dichloroethane	25	U
540-59-0	1,2-Dichloroethene (total)	25	U
67-66-3	Chloroform	25	U
107-06-2	1,2-Dichloroethane	25	U
78-93-3	2-Butanone	100	U
71-55-6	1,1,1-Trichloroethane	25	U
56-23-5	Carbon tetrachloride	25	U
75-27-4	Bromodichloromethane	25	U
78-87-5	1,2-Dichloropropane	25	U
10061-01-5	cis-1,3-Dichloropropene	25	U
79-01-6	Trichloroethene	25	U
124-48-1	Dibromochloromethane	25	U
79-00-5	1,1,2-Trichloroethane	25	U
71-43-2	Benzene	25	U
10061-02-6	trans-1,3-Dichloropropene	25	U
75-25-2	Bromoform	25	U
108-10-1	4-Methyl-2-pentanone	100	U
591-78-6	2-Hexanone	100	U
127-18-4	**Tetrachloroethene**	**6.6**	**J**
79-34-5	1,1,2,2-Tetrachloroethane	25	U

BAKER ENVIRONMENTAL, INC.

Lab Name:QUANTERRA

SDG Number:

Matrix: (soil/water) WATER
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Lab Sample ID:H7J240147 001

Sample WT/Vol: 5 / mL
Work Order: CDLHE101
Dilution factor: 5

Date Received: 10/24/97
Date Extracted:11/03/97
Date Analyzed: 11/03/97

QC Batch: 7307261

Client Sample Id: IR02-GW03-97D

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
108-88-3	**Toluene**	**7.9**	**J**
108-90-7	Chlorobenzene	25	U
100-41-4	**Ethylbenzene**	**230**	
100-42-5	Styrene	25	U
1330-20-7	**Xylenes (total)**	**2000**	

BAKER ENVIRONMENTAL, INC.

Lab Name:QUANTERRA

SDG Number:

Matrix: (soil/water) WATER
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Lab Sample ID:H7J240147 002

Sample WT/Vol: 5 / mL
Work Order: CDLHF101
Dilution factor: 1

Date Received: 10/24/97
Date Extracted:11/03/97
Date Analyzed: 11/03/97

QC Batch: 7307261

Client Sample Id: IR02-GW03IW-97D

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene chloride	5.0	U
67-64-1	Acetone	20	U
75-15-0	Carbon disulfide	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
540-59-0	1,2-Dichloroethene (total)	5.0	U
67-66-3	Chloroform	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
75-27-4	Bromodichloromethane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
79-01-6	Trichloroethene	5.0	U
124-48-1	Dibromochloromethane	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
71-43-2	Benzene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
75-25-2	Bromoform	5.0	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	**Tetrachloroethene**	**10**	
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U

BAKER ENVIRONMENTAL, INC.

Lab Name:QUANTERRA

SDG Number:

Matrix: (soil/water) WATER
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Lab Sample ID:H7J240147 002

Sample WT/Vol: 5 / mL
Work Order: CDLHF101
Dilution factor: 1

Date Received: 10/24/97
Date Extracted:11/03/97
Date Analyzed: 11/03/97

QC Batch: 7307261

Client Sample Id: IR02-GW03IW-97D

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
108-88-3	Toluene	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
100-42-5	Styrene	5.0	U
1330-20-7	**Xylenes (total)**	**1.6**	**J**

BAKER ENVIRONMENTAL, INC.

Lab Name:QUANTERRA

SDG Number:

Matrix: (soil/water) WATER
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Lab Sample ID:H7J240147 003

Sample WT/Vol: 5 / mL
Work Order: CDLHG101
Dilution factor: 1

Date Received: 10/24/97
Date Extracted:11/03/97
Date Analyzed: 11/03/97

QC Batch: 7307261

Client Sample Id: IR02-GW05-97D

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene chloride	5.0	U
67-64-1	Acetone	20	U
75-15-0	Carbon disulfide	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
540-59-0	1,2-Dichloroethene (total)	5.0	U
67-66-3	Chloroform	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
75-27-4	Bromodichloromethane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
79-01-6	Trichloroethene	5.0	U
124-48-1	Dibromochloromethane	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
71-43-2	Benzene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
75-25-2	Bromoform	5.0	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U

BAKER ENVIRONMENTAL, INC.

Lab Name:QUANTERRA

SDG Number:

Matrix: (soil/water) WATER
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Lab Sample ID:H7J240147 003

Sample WT/Vol: 5 / mL
Work Order: CDLHG101
Dilution factor: 1

Date Received: 10/24/97
Date Extracted:11/03/97
Date Analyzed: 11/03/97

QC Batch: 7307261

Client Sample Id: IR02-GW05-97D

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
108-88-3	Toluene	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
100-42-5	Styrene	5.0	U
1330-20-7	Xylenes (total)	5.0	U

BAKER ENVIRONMENTAL, INC.

Lab Name:QUANTERRA

SDG Number:

Matrix: (soil/water) WATER
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Lab Sample ID:H7J240147 004

Sample WT/Vol: 5 / mL
Work Order: CDLHH101
Dilution factor: 1

Date Received: 10/24/97
Date Extracted:11/03/97
Date Analyzed: 11/03/97

QC Batch: 7307261

Client Sample Id: IR02-GW07-97D

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene chloride	5.0	U
67-64-1	**Acetone**	**6.9**	**J**
75-15-0	Carbon disulfide	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
540-59-0	1,2-Dichloroethene (total)	5.0	U
67-66-3	Chloroform	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
75-27-4	Bromodichloromethane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
79-01-6	Trichloroethene	5.0	U
124-48-1	Dibromochloromethane	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
71-43-2	Benzene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
75-25-2	Bromoform	5.0	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U

BAKER ENVIRONMENTAL, INC.

Lab Name:QUANTERRA

SDG Number:

Matrix: (soil/water) WATER
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Lab Sample ID:H7J240147 004

Sample WT/Vol: 5 / mL
Work Order: CDLHH101
Dilution factor: 1

Date Received: 10/24/97
Date Extracted:11/03/97
Date Analyzed: 11/03/97

QC Batch: 7307261

Client Sample Id: IR02-GW07-97D

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L		Q
108-88-3	Toluene		5.0	U
108-90-7	Chlorobenzene		5.0	U
100-41-4	Ethylbenzene		5.0	U
100-42-5	Styrene		5.0	U
1330-20-7	Xylenes (total)		5.0	U

BAKER ENVIRONMENTAL, INC.

Lab Name:QUANTERRA

SDG Number:

Matrix: (soil/water) WATER
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Lab Sample ID:H7J240147 005

Sample WT/Vol: 5 / mL
Work Order: CDLHJ101
Dilution factor: 1

Date Received: 10/24/97
Date Extracted:11/03/97
Date Analyzed: 11/03/97

QC Batch: 7307261

Client Sample Id: IR02-GW08-97D

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	**Methylene chloride**	**2.6**	**J**
67-64-1	Acetone	20	U
75-15-0	Carbon disulfide	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
540-59-0	1,2-Dichloroethene (total)	5.0	U
67-66-3	Chloroform	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
75-27-4	Bromodichloromethane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
79-01-6	Trichloroethene	5.0	U
124-48-1	Dibromochloromethane	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
71-43-2	Benzene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
75-25-2	Bromoform	5.0	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	**Tetrachloroethene**	**7.7**	
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U

BAKER ENVIRONMENTAL, INC.

Lab Name:QUANTERRA

SDG Number:

Matrix: (soil/water) WATER
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Lab Sample ID:H7J240147 005

Sample WT/Vol: 5 / mL
Work Order: CDLHJ101
Dilution factor: 1

Date Received: 10/24/97
Date Extracted:11/03/97
Date Analyzed: 11/03/97

QC Batch: 7307261

Client Sample Id: IR02-GW08-97D

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
108-88-3	Toluene	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
100-42-5	Styrene	5.0	U
1330-20-7	Xylenes (total)	5.0	U

BAKER ENVIRONMENTAL, INC.

Lab Name:QUANTERRA

SDG Number:

Matrix: (soil/water) WATER
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Lab Sample ID:H7J240147 006

Sample WT/Vol: 5 / mL
Work Order: CDLHK101
Dilution factor: 1

Date Received: 10/24/97
Date Extracted:11/03/97
Date Analyzed: 11/04/97

QC Batch: 7307261

Client Sample Id: IR02-GW10-97D

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	**Methylene chloride**	**2.8**	**J**
67-64-1	Acetone	20	U
75-15-0	Carbon disulfide	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
540-59-0	1,2-Dichloroethene (total)	5.0	U
67-66-3	Chloroform	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
75-27-4	Bromodichloromethane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
79-01-6	Trichloroethene	5.0	U
124-48-1	Dibromochloromethane	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
71-43-2	Benzene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
75-25-2	Bromoform	5.0	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	**Tetrachloroethene**	**3.5**	**J**
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U

BAKER ENVIRONMENTAL, INC.

Lab Name:QUANTERRA

SDG Number:

Matrix: (soil/water) WATER
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Lab Sample ID:H7J240147 006

Sample WT/Vol: 5 / mL
Work Order: CDLHK101
Dilution factor: 1

Date Received: 10/24/97
Date Extracted:11/03/97
Date Analyzed: 11/04/97

QC Batch: 7307261

Client Sample Id: IR02-GW10-97D

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
108-88-3	Toluene	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
100-42-5	Styrene	5.0	U
1330-20-7	Xylenes (total)	5.0	U

BAKER ENVIRONMENTAL, INC.

Lab Name:QUANTERRA

SDG Number:

Matrix: (soil/water) WATER
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Lab Sample ID:H7J240147 007

Sample WT/Vol: 5 / mL
Work Order: CDLHL101
Dilution factor: 1

Date Received: 10/24/97
Date Extracted:11/03/97
Date Analyzed: 11/04/97

QC Batch: 7307261

Client Sample Id: IR02-GW11-97D

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene chloride	5.0	U
67-64-1	**Acetone**	**7.3**	**J**
75-15-0	Carbon disulfide	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
540-59-0	1,2-Dichloroethene (total)	5.0	U
67-66-3	Chloroform	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
75-27-4	Bromodichloromethane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
79-01-6	Trichloroethene	5.0	U
124-48-1	Dibromochloromethane	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
71-43-2	Benzene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
75-25-2	Bromoform	5.0	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U

BAKER ENVIRONMENTAL, INC.

Lab Name:QUANTERRA

SDG Number:

Matrix: (soil/water) WATER
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Lab Sample ID:H7J240147 007

Sample WT/Vol: 5 / mL
Work Order: CDLHL101
Dilution factor: 1

Date Received: 10/24/97
Date Extracted:11/03/97
Date Analyzed: 11/04/97

QC Batch: 7307261

Client Sample Id: IR02-GW11-97D

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
108-88-3	Toluene	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
100-42-5	Styrene	5.0	U
1330-20-7	Xylenes (total)	5.0	U

BAKER ENVIRONMENTAL, INC.

Lab Name:QUANTERRA

SDG Number:

Matrix: (soil/water) WATER
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Lab Sample ID:H7J240147 008

Sample WT/Vol: 5 / mL
Work Order: CDLHM101
Dilution factor: 1

Date Received: 10/24/97
Date Extracted:11/03/97
Date Analyzed: 11/04/97

QC Batch: 7307261

Client Sample Id: IR02-GW12-97D

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	Methylene chloride	5.0	U
67-64-1	Acetone	20	U
75-15-0	Carbon disulfide	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
540-59-0	1,2-Dichloroethene (total)	5.0	U
67-66-3	Chloroform	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
75-27-4	Bromodichloromethane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
79-01-6	Trichloroethene	5.0	U
124-48-1	Dibromochloromethane	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
71-43-2	Benzene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
75-25-2	Bromoform	5.0	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	**Tetrachloroethene**	**8.6**	
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U

BAKER ENVIRONMENTAL, INC.

Lab Name:QUANTERRA

SDG Number:

Matrix: (soil/water) WATER
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Lab Sample ID:H7J240147 008

Sample WT/Vol: 5 / mL
Work Order: CDLHM101
Dilution factor: 1

Date Received: 10/24/97
Date Extracted:11/03/97
Date Analyzed: 11/04/97

QC Batch: 7307261

Client Sample Id: IR02-GW12-97D

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
108-88-3	Toluene	5.0	U
108-90-7	Chlorobenzene	5.0	U
100-41-4	**Ethylbenzene**	**3.2**	**J**
100-42-5	Styrene	5.0	U
1330-20-7	**Xylenes (total)**	**49**	

BAKER ENVIRONMENTAL, INC.

Lab Name:QUANTERRA

SDG Number:

Matrix: (soil/water) WATER
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Lab Sample ID:H7J240147 009

Sample WT/Vol: 5 / mL
Work Order: CDLHN101
Dilution factor: 1

Date Received: 10/24/97
Date Extracted:11/03/97
Date Analyzed: 11/03/97

QC Batch: 7307261

Client Sample Id: IR02-TB01-97D

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
74-87-3	Chloromethane	10	U
74-83-9	Bromomethane	10	U
75-01-4	Vinyl chloride	10	U
75-00-3	Chloroethane	10	U
75-09-2	**Methylene chloride**	**1.6**	**J**
67-64-1	Acetone	20	U
75-15-0	Carbon disulfide	5.0	U
75-35-4	1,1-Dichloroethene	5.0	U
75-34-3	1,1-Dichloroethane	5.0	U
540-59-0	1,2-Dichloroethene (total)	5.0	U
67-66-3	Chloroform	5.0	U
107-06-2	1,2-Dichloroethane	5.0	U
78-93-3	2-Butanone	20	U
71-55-6	1,1,1-Trichloroethane	5.0	U
56-23-5	Carbon tetrachloride	5.0	U
75-27-4	Bromodichloromethane	5.0	U
78-87-5	1,2-Dichloropropane	5.0	U
10061-01-5	cis-1,3-Dichloropropene	5.0	U
79-01-6	Trichloroethene	5.0	U
124-48-1	Dibromochloromethane	5.0	U
79-00-5	1,1,2-Trichloroethane	5.0	U
71-43-2	Benzene	5.0	U
10061-02-6	trans-1,3-Dichloropropene	5.0	U
75-25-2	Bromoform	5.0	U
108-10-1	4-Methyl-2-pentanone	20	U
591-78-6	2-Hexanone	20	U
127-18-4	Tetrachloroethene	5.0	U
79-34-5	1,1,2,2-Tetrachloroethane	5.0	U

BAKER ENVIRONMENTAL, INC.

Lab Name:QUANTERRA

SDG Number:

Matrix: (soil/water) WATER
Method: SW846 8260A
Volatile Organics, GC/MS (8260A)

Lab Sample ID:H7J240147 009

Sample WT/Vol: 5 / mL
Work Order: CDLHN101
Dilution factor: 1

Date Received: 10/24/97
Date Extracted:11/03/97
Date Analyzed: 11/03/97

QC Batch: 7307261

Client Sample Id: IR02-TB01-97D

CAS NO.	COMPOUND	CONCENTRATION UNITS: (ug/L or ug/kg) ug/L	Q
108-88-3	**Toluene**	**0.67**	**J**
108-90-7	Chlorobenzene	5.0	U
100-41-4	Ethylbenzene	5.0	U
100-42-5	Styrene	5.0	U
1330-20-7	Xylenes (total)	5.0	U