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SSIC #5090.3

Southwest Division
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Contracts Department
1220 Pacific Highway
San Diego, California 92132-5190

Contract No. N68711-92-D-4670

COMPREHENSIVE LONG-TERM ENVIRONMENTAL ACTION NAVY

CLEAN II

FINAL
TECHNICAL MEMORANDUM
MULTIPHASE EXTRACTION PILOT STUDY
INSTALLATION RESTORATION PROGRAM SITE 16
MARINE CORPS AIR STATION
EL TORO, CALIFORNIA

CTO-0178/0252
May 2002

Prepared by:

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John Scholfield, CTO Leader

CLEAN II Program
Bechtel Job No. 22214
Contract No. N68711-92-D-4670
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May 22, 2002

Contracting Officer
Naval Facilities Engineering Command
Southwest Division
Mr. Richard Selby, Code 02R1
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San Diego, CA 92132-5190

Subject: Final Technical Memorandum Multiphase Extraction Pilot Study
Installation Restoration Program Site 16
MCAS El Toro, California - Dated May 2002

Dear Mr. Selby:

It is our pleasure to submit copies of Final Technical Memorandum Multiphase Extraction Pilot Study Installation Restoration Program Site 16, Marine Corps Air Station, El Toro, California, prepared under Contract Task Order (CTO) 0178 and Contract No. N68711-92-D-4670. We gratefully acknowledge the high level of cooperation and team work demonstrated by personnel from Southwest Division in preparation of these documents.

We appreciate the opportunity to be of service to you on this project. If you have any questions or would like further information, please contact John Scholfield, CTOL, at (619) 744-3093 or me at (619) 744-3004.

Sincerely,

Thurman L. Heironimus, R.G.
Project Manager

TLH/sp

Enclosures: Final Technical Memorandum Multiphase Extraction Pilot Study
Installation Restoration Program Site 16, MCAS, El Toro, California
Dated May 2002

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Southwest Division
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CTO #: 0178
LOCATION: MCAS El Toro

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5090
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May 20, 2002

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Dear Ms. Moutoux:

Submitted for your use is the Final Technical Memorandum for the Multi-Phase Extraction (MPE) Pilot Study, IRP Site 16, El Toro, California. This document presents the results from the two-week MPE pilot study conducted in October 2000 as well as additional data collected subsequent to the initial pilot study. The data included in this document has been incorporated into the Final Feasibility Study (FS) for Site 16 and has been useful in evaluating the various process options applicable to Site 16.

Should you have any questions on the document, please contact Mr. Marc Smits at (619) 532-0793.

Sincerely,

DEAN GOULD
Base Realignment and Closure
Environmental Coordinator
By direction of the Commander

Enclosure: 1. Final Technical Memorandum MPE Pilot Study, IRP Site 16, MCAS El Toro, California – Dated May 2002

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ACRONYMS/ABBREVIATIONS

acfm	actual cubic feet per minute
ARCH	air rotary casing hammer
bgs	below ground surface
BNI	Bechtel National, Inc.
°C	degrees Celsius
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
cfm	cubic feet per minute
CLEAN	Comprehensive Long-Term Environmental Action Navy
CPT	cone penetrometer test
CTO	Contract Task Order
DCA	dichloroethane
DQO	data quality objective
EROI	effective radius of influence
°F	degrees Fahrenheit
FID	flame ionization detector
FS	feasibility study
FSP	field sampling plan
GAC	granular activated carbon
gpm	gallons per minute
IRP	Installation Restoration Program
°K	degrees Kelvin
µg/kg	micrograms per kilogram
µg/L	micrograms per liter
MCAS	Marine Corps Air Station
MCL	maximum contaminant level
MPE	multiphase extraction
NFA	no further action
OU	operable unit
PAH	polynuclear aromatic hydrocarbon
PID	photoionization detector

PVC	polyvinyl chloride
RI	Remedial Investigation
ROI	radius of influence
rpm	revolutions per minute
RWQCB	(California) Regional Water Quality Control Board
SCAQMD	South Coast Air Quality Management District
SOP	standard operating procedure
Station	MCAS El Toro
SVE	soil vapor extraction
SVOC	semivolatile organic compound
SWDIV	Southwest Division Naval Facilities Engineering Command
TCE	trichloroethene
TM	technical memorandum
TPH	total petroleum hydrocarbons
U.S. EPA	United States Environmental Protection Agency
VGAC	vapor-phase granular activated carbon
VOC	volatile organic compound

Section 1
INTRODUCTION

This technical memorandum (TM) presents the results of multiphase extraction (MPE) pilot testing conducted from 17 October through 27 December 2000 at Installation Restoration Program (IRP) Site 16 at the Marine Corps Air Station (MCAS) El Toro (Station) in Orange County, California. Bechtel National, Inc. (BNI), has prepared this TM on behalf of the United States Department of the Navy, Southwest Division Naval Facilities Engineering Command (SWDIV), in accordance with Contract Task Order (CTO)-0178 issued under the Comprehensive Long-Term Environmental Action Navy (CLEAN) II Program, Contract No. N-68711-92-D-4670.

The MPE fieldwork was conducted in accordance with the United States Environmental Protection Agency (U.S. EPA) Guidance for Conducting Treatability Studies Under Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) (U.S. EPA 1992a) and the final Phase II Work Plan for the MPE Pilot Study, Operable Unit (OU)-3 IRP Site 16, Crash Crew Training Pit No. 2 MCAS El Toro (Work Plan) (BNI 2000a). MPE was the recommended technology presented in the draft Phase II Feasibility Study (FS) OU-3 IRP Site 16, Crash Crew Training Pit No. 2 MCAS El Toro (draft FS Report) (BNI 2000b). Therefore, the MPE pilot testing was conducted to evaluate the effectiveness of MPE technology at Site 16.

1.1 PURPOSE OF THE TECHNICAL MEMORANDUM

This TM has been prepared to present the results of the MPE Pilot Study conducted at Site 16 as proposed in the Work Plan. Contained in the TM are a summary of: the MPE Pilot Study data quality objectives (DQOs), well installation and sampling, site conditions, MPE pilot testing description and implementation, and MPE pilot testing results and evaluation.

The draft FS Report presented two remedial alternatives (2a through e and 3a through e) to address contaminated soil and groundwater at Site 16 (BNI 2000b). Both alternatives used MPE with various treatment and/or disposal options for extracted vapor and groundwater. The primary objective of the pilot study was to evaluate the effectiveness of the MPE technology and collect additional site-specific information to support a final remedy for Site 16.

1.2 REMEDIAL TECHNOLOGY DESCRIPTION

MPE is a U.S. EPA presumptive remedy for volatile organic compounds (VOCs) in soil and groundwater (U.S. EPA 1997). MPE is an enhancement of soil vapor extraction (SVE) technology, which is one of the preferred U.S. EPA presumptive remedies for VOC-contaminated soil (U.S. EPA 1993a). MPE was developed primarily for remediation of VOCs in low- to moderate-permeability soils. It enhances VOC recovery by extracting soil vapor and groundwater simultaneously from the same well. The objective of MPE is to remove VOCs from the vadose zone before they further contaminate groundwater, while simultaneously remediating groundwater. During the process, the saturated zone is dewatered, allowing SVE to extract VOCs from previously

saturated soil. In addition, the vacuum applied to a well that is also pumping groundwater increases the water yield of the well, thereby increasing recovery of VOCs dissolved in groundwater.

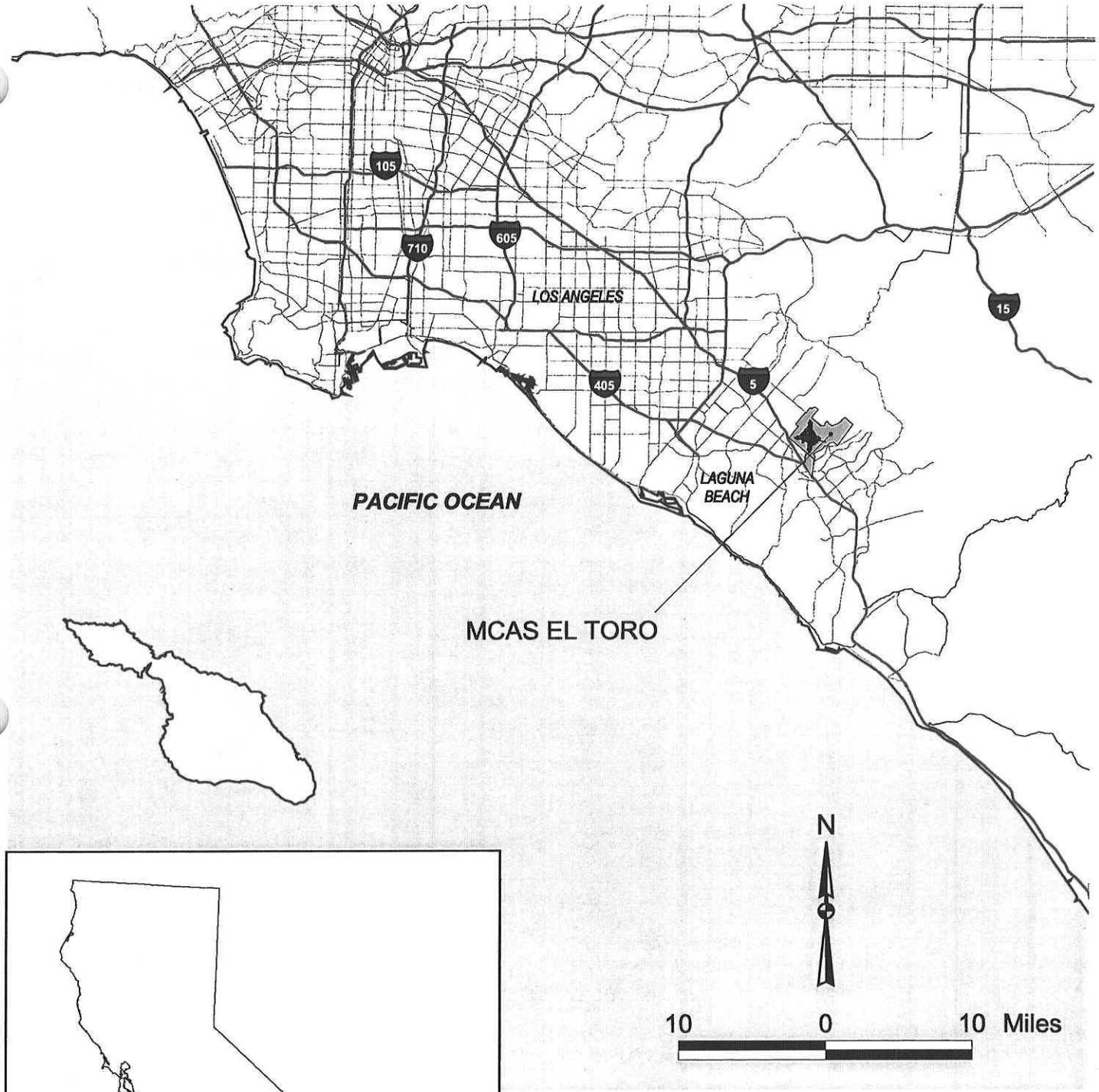
1.3 SITE BACKGROUND

Site 16, Crash Crew Pit No. 2, is located at the Station, in the center of the former airfield (Figures 1-1 and 1-2). The site contained three unlined firefighter-training pits (main pit, residual fluids pit, and handheld extinguisher pit), of which the main pit is still present. Site 16 encompasses approximately 1 acre and consists of three units: Unit 1, an approximately 320- by 260-foot area consisting of a buffer zone surrounding the three pits used for firefighter training exercises; Unit 2, the area of the three unlined earthen pits (main pit, residual fluids pit, and handheld extinguisher pit) situated within the boundary of Unit 1; and Unit 3, a low drainage swale located northwest of the pits, terminating at a storm drain inlet near the intersection of El Toro Boulevard and closed Runway 21. Site 16 was used by the Station crash crew between 1972 and 1985 as a training area for firefighters. During training exercises, the main pit was filled with water and covered with various mixtures of residual fuels and other combustible fluids (e.g., jet propellant grade 5 fuel, aviation gasoline, crankcase oil, and other wastes). The mixtures were then ignited and extinguished by the firefighters. Water was used as the primary means of extinguishing the fires during the practice sessions. The residual fluids pit, connected to the main pit by a buried pipe, served as a regulating and storage reservoir for the additional water applied to the main pit during each exercise.

1.4 TECHNICAL MEMORANDUM STRUCTURE

This TM is divided into six sections and five appendices, as follows.

- Section 1 provides the purpose of the pilot study, remedial technology description, site background information, as well as the structure of the TM.
- Section 2 presents the rationale for the locations of the pilot study wells, summarizes the construction details of these wells, and provides information on the initial sampling and surveying that was performed at the site prior to pilot testing activities.
- Section 3 presents the soil and groundwater conditions at Site 16, including geology/lithology and hydrogeologic conditions as well as distribution of contaminants prior to conducting the MPE Pilot Study.
- Section 4 presents the description and implementation of the MPE pilot study.
- Section 5 presents the results from the MPE Pilot Study and an evaluation of MPE at Site 16.
- Section 6 provides the references cited in this Work Plan.
- Appendix A contains the boring logs and well construction details of the wells installed for the MPE pilot testing activities.
- Appendix B contains the aquifer test analysis and AQTESOLV® plots of the aquifer testing performed during the MPE pilot testing activities.



OU-3 Site 16 Technical Memorandum

Figure 1-1

MCAS El Toro Station Vicinity Map

MCAS, El Toro, California

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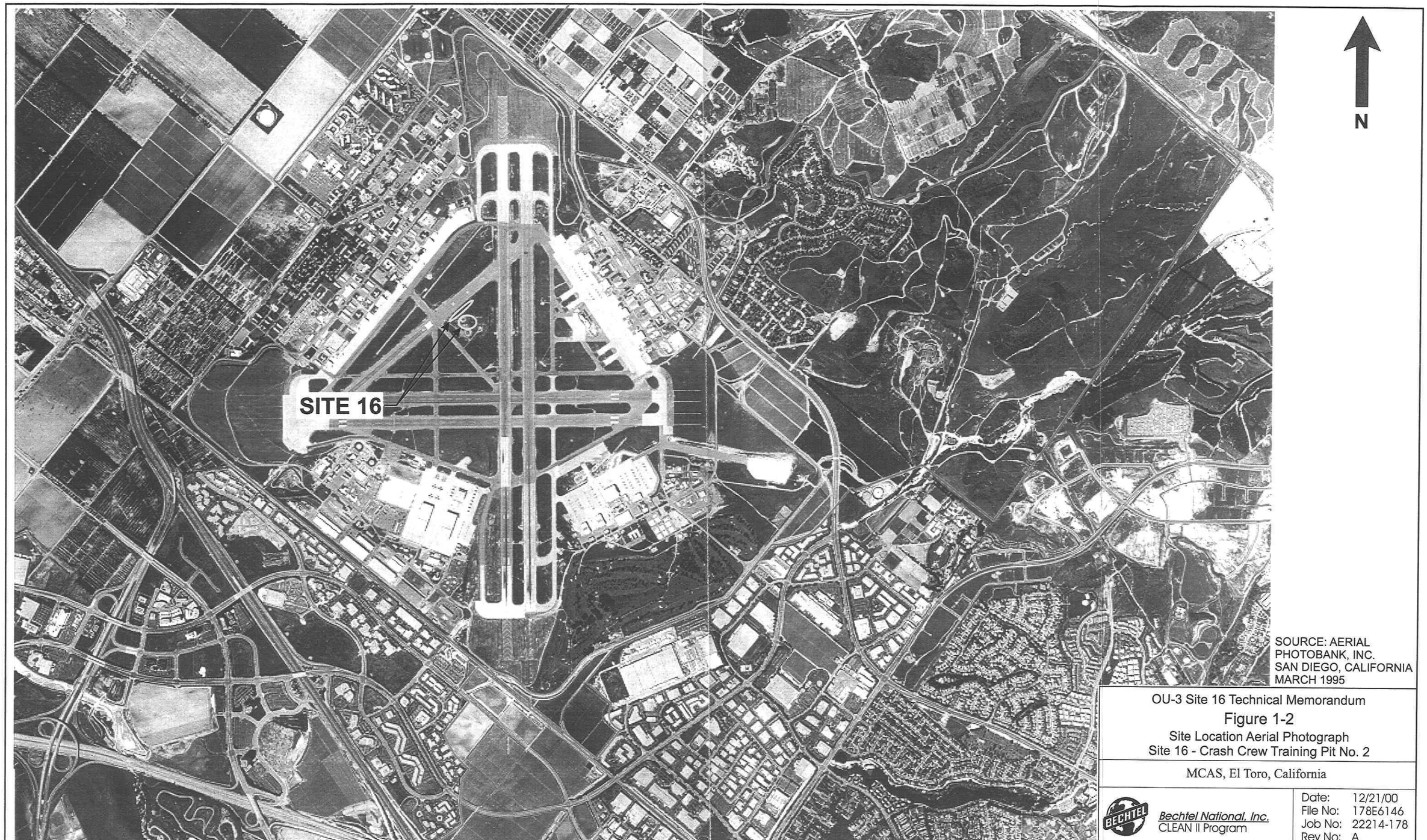
Job No.: 22214-178
Rev No.: A

- Appendix C contains the VOC mass removal estimates calculated from the initial and extended MPE pilot testing data.
- Appendix D contains analytical results and chain-of-custody forms from the MPE pilot testing activities.
- Appendix E contains the calculations used to estimate the effective SVE radius of influence (EROI) presented in the TM.



SOURCE: AERIAL PHOTOBANK, INC. SAN DIEGO, CALIFORNIA MARCH 1995

OU-3 Site 16 Technical Memorandum

Figure 1-2

Site Location Aerial Photograph
Site 16 - Crash Crew Training Pit No. 2

MCAS, El Toro, California

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Section 2
PILOT STUDY WELL INSTALLATION AND INITIAL SAMPLING

This section presents the rationale for well locations and summarizes the construction details of these wells. It also briefly reviews the initial groundwater and soil gas sampling conducted prior to starting the MPE testing and the site surveying performed to integrate the new wells into previous site surveys.

2.1 RATIONALE FOR WELL LOCATIONS

For the pilot study the following wells were installed: 16MPE1 (for MPE), 16GE1 (for groundwater extraction), 16MW4 and 16MW5 (for groundwater monitoring), 16MW6 and 16MW7 (for dual-purpose [vapor and groundwater] monitoring), and 16VM1 (for soil vapor monitoring) (Figure 2-1). In addition to these wells, four previously installed wells (16MW1, 16MW2, 16MW3, and 16_DBMW52) were also utilized during the study for monitoring purposes. The MPE well was located in the main pit, which is the source area of the soil and groundwater contamination at Site 16. The highest concentrations of VOCs in soil and groundwater are present beneath the main pit. Beneath the main pit, coarse-grained sediments above the water table have provided a preferential pathway for vapor flow. The associated dual-purpose and soil vapor monitoring wells (16MW6, 16MW7, and 16VM1, respectively) and 16MW1 were used to monitor soil gas and groundwater during pilot testing activities at 16MPE1. Well 16MPE1 is located in the main pit approximately 21 feet from observation well 16MW1 (located in the center of the main pit). The vapor monitoring well 16VM1 and dual-purpose wells 16MW6 and 16MW7 are located approximately 47, 45, and 64 feet, respectively, from 16MPE1. Wells 16MW3 and 16MW2 were utilized as upgradient and downgradient monitoring wells, respectively, during the study (Figure 2-1).

The groundwater extraction well (16GE1) is located approximately 210 feet northwest (hydraulically downgradient) of 16MPE1. Groundwater monitoring wells 16MW4 and 16MW5 are located approximately 40 feet northwest and 20 feet northeast, respectively, of 16GE1 (Figure 2-1). The Work Plan indicated that 16GE1 would be located 20 feet southwest of 16MW4 and 40 feet northwest of 16MW5. However, soil sampling data collected in the aquifer material during well drilling at these well locations (16MW4 and 16MW5) indicated that approximately 6- to 11-foot-thick permeable sand and gravelly sand lenses (below 165 feet below ground surface [bgs]) are present at the location of 16MW5 but not at 16MW4. Based on this information, the location of 16GE1 was moved from 20 feet southeast of 16MW4 to 20 feet southwest of 16MW5. Implementing this field modification (relocation of 16GE1) resulted in a highly productive groundwater extraction well, which may not have been the case had the well been situated in its Work Plan-prescribed location. The results of groundwater extraction at 16GE1 are discussed in Section 5.1.

2.2 WELL DRILLING, SOIL SAMPLING, AND LITHOLOGIC LOGGING

The seven wells installed for the MPE Pilot Study were drilled and installed using an air rotary casing hammer (ARCH) drilling rig with boring diameters of 10 inches (4-inch monitoring wells) and 14 inches (6-inch extraction wells). The wells were initially

drilled and sampled for lithologic logging using a hollow-stem auger rig, and then overdrilled for well installation using the ARCH drilling rig. Soil samples were collected for geologic logging purposes within the aquifer material at all well locations except 16VM1, for which drilling was not extended into the water table. The soil samples were collected continuously within the saturated zone (from approximately 160 feet to the bottom of each borehole). Sieve analyses of selected representative soil samples (performed by an off-site laboratory) were used as a guide to identify the appropriate screen slot size and filter pack for the wells. It was unnecessary to collect soil samples in the vadose zone during drilling of groundwater extraction and monitoring wells, due to the extensive soil sampling previously performed at Site 16. However, soil samples were collected in the vadose zone at 16VM1 to confirm the stratigraphy in the screened portion of that well (145 to 155 feet bgs). Soil samples collected were not submitted for chemical analyses by a laboratory.

The well borehole depths ranged from 156 feet bgs for 16VM1 to 195 feet bgs for the other six wells. The screened intervals of wells constructed for the MPE Pilot Study at Site 16 are presented in Table 2-1. Wells 16MPE1, 16MW6, and 16MW7 were installed with approximately 15 feet of screen above the water table to perform SVE and vapor monitoring from those locations. The actual depths of the screened intervals were determined at the time of well construction based on the lithologic and hydrogeologic data from each location. The lithologic logs for the seven wells are presented in Appendix A.

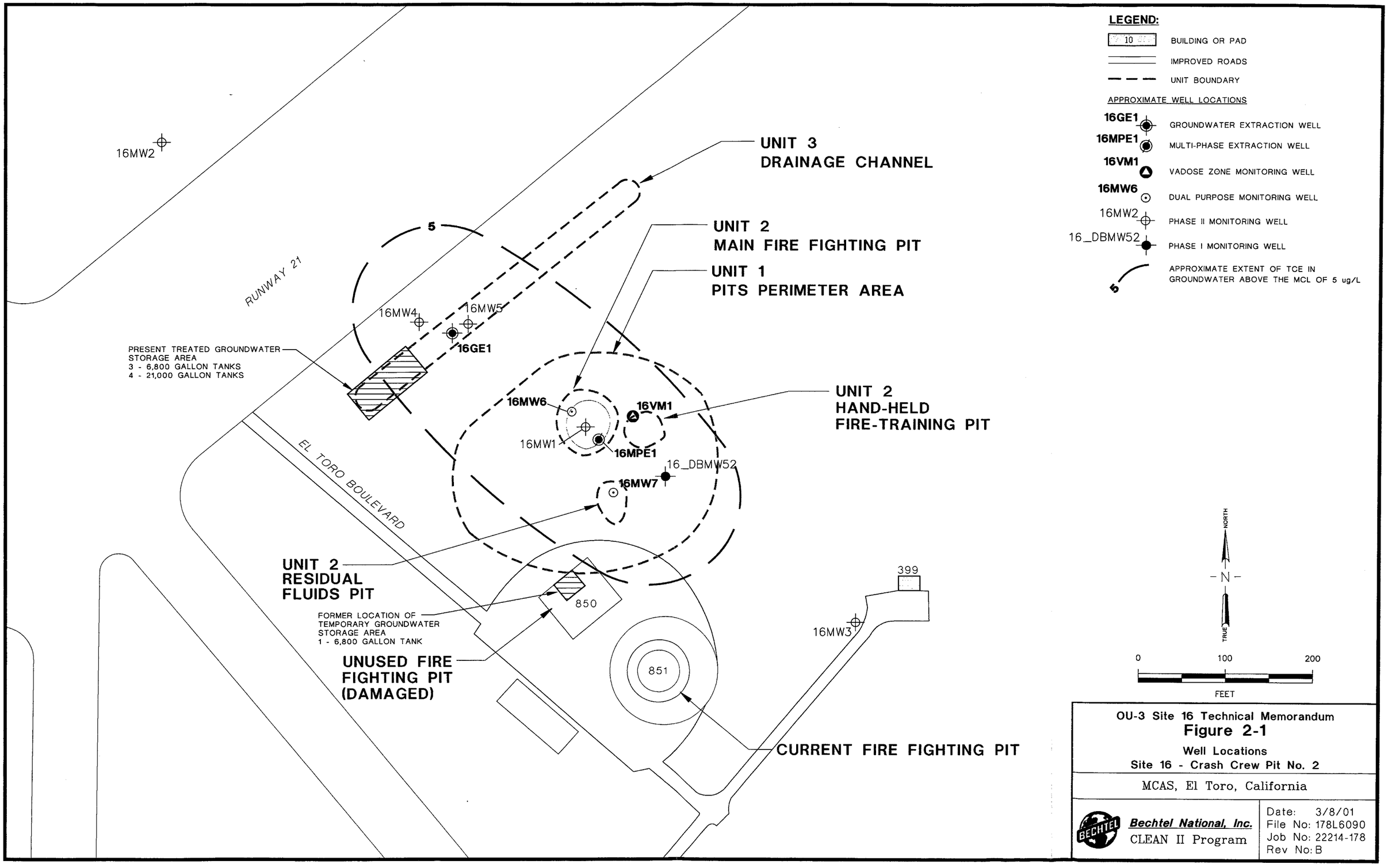
The monitoring wells were constructed with 4-inch-diameter Schedule 40 polyvinyl chloride (PVC) solid casing and 0.020-inch-slot, stainless steel, wire wrap screen. The MPE and groundwater extraction wells were constructed using 6-inch-diameter Schedule 80 PVC solid casing and 0.020-inch-slot, stainless steel, wire wrap screen. The filter pack and associated screen slot size used to construct the wells were based on sieve analyses of representative soil samples, the general hydrogeologic conditions, and wells previously constructed at the site. Well construction details are presented on the well logs in Appendix A.

2.3 WELL DEVELOPMENT

The groundwater wells installed for the MPE Pilot Study were developed after installation to improve the yield of the well and to restore the natural hydraulic properties of the formation that may have been disturbed during drilling. Development consisted of a combination of surging, bailing, and pumping while noting changes in turbidity and other parameters. A minimum of 5 well volumes of water was removed from each well. Development continued until the water was relatively free of suspended sediment.

2.4 INITIAL GROUNDWATER SAMPLING PRIOR TO PILOT TESTING

Before the start of pilot testing activities, groundwater samples were collected from all ten Site 16 groundwater wells (16MW1, 16MW2, 16MW3, 16MW4, 16MW5, 16MW6, 16MW7, 16GE1, 16MPE1, and 16_DBMW52). Groundwater sampling of the wells constructed for the MPE Pilot Study were sampled after a period of at least 24 hours


LEGEND:
BUILDING OR PAD
IMPROVED ROADS
UNIT BOUNDARY
APPROXIMATE WELL LOCATIONS
16GE1 GROUNDWATER EXTRACTION WELL
16MPE1 MULTI-PHASE EXTRACTION WELL
16VM1 VADOSE ZONE MONITORING WELL
16MW6 DUAL PURPOSE MONITORING WELL
16MW2 PHASE II MONITORING WELL
16_DBMW52 PHASE I MONITORING WELL
APPROXIMATE EXTENT OF TCE IN GROUNDWATER ABOVE THE MCL OF 5 ug/L
UNIT 3
DRAINAGE CHANNEL
UNIT 2
MAIN FIRE FIGHTING PIT
UNIT 1
PITS PERIMETER AREA
UNIT 2
HAND-HELD
FIRE-TRAINING PIT
UNIT 2
RESIDUAL
FLUIDS PIT
UNUSED FIRE
FIGHTING PIT
(DAMAGED)
CURRENT FIRE FIGHTING PIT
PRESENT TREATED GROUNDWATER STORAGE AREA
3 - 6,800 GALLON TANKS
4 - 21,000 GALLON TANKS
FORMER LOCATION OF TEMPORARY GROUNDWATER STORAGE AREA
1 - 6,800 GALLON TANK
RUNWAY 21
EL TORO BOULEVARD
16MW2
16MW4
16MW5
16GE1
16MW6
16VM1
16MW1
16MPE1
16_DBMW52
16MW7
16MW3
5
850
851
399
NORTH
TRUE
N
0
100
200
FEET
OU-3 Site 16 Technical Memorandum
Figure 2-1
Well Locations
Site 16 - Crash Crew Pit No. 2
MCAS, El Toro, California
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Job No: 22214-178
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Table 2-1
Summary of Multiphase Extraction Pilot Study Well Construction

Well ID	Total Depth[a] (feet bgs)	Screened Interval[a] (feet bgs)	Depth to Water (feet TOC)[b]	Approximate Screen Interval in Vadose Zone[c] (feet)	Well Casing Diameter[a] (inches)
16MPE1[d,e]	193.1	146.1 – 191.1	159.6	13.5	6
16GE1[d,e]	192.5	155.5 – 190.5	156.7	NA	6
16MW4[d,e]	192	155 – 190	156.8	NA	4
16MW5[d,e]	191.8	154.8 – 189.8	157.2	NA	4
16VM1[d,e]	155.3	144.9 – 154.9	—[f]	10	4
16MW6[d,e]	192	145 – 190	159.5	14.5	4
16MW7[d,e]	192	145 – 190	159.7	14.7	4
16MW1[e]	180.5	155 – 180	159.6	4.6	4
16_DBMW52[e]	222	182 – 222	161.6	0[g]	4
16MW2[e]	178.5	153 – 178	156.6	NA	4
16_DGMW81	216	176 – 216	165.5	NA	4
16MW3[e]	183.5	158 – 183	162.1	NA	4

Notes:
[a] for well construction details (new wells), refer to the well construction logs in Appendix A
[b] depth to static water measured in September 2000 prior to testing
[c] based on the pretest depth to static water measured in September 2000
[d] well was installed for the MPE Pilot Study
[e] groundwater sample was collected for the MPE Pilot Study
[f] well screen does not extend to the water table
[g] screen interval is below the depth to static water

Acronyms/Abbreviations:
bgs – below ground surface
MPE – multiphase extraction
NA – not applicable; well not used for soil vapor extraction testing
TOC – (below) top of casing

following the completion of well development activities. Groundwater sampling procedures and quality control are described in detail in the Work Plan Attachment A and in CLEAN Standard Operating Procedure (SOP) 8 (BNI 2002).

Wells were purged and sampled using a 2-inch Grundfos® Redi-Flo2 variable-speed, electric, submersible pump. The equipment necessary to perform micropurging as described in the Work Plan (BNI 2000a) was not available; therefore, the submersible pump provided by the drilling contractor was used. This pump was decontaminated and rebuilt following purging of each well. The Redi-Flo2 submersible pump was operated at the lowest possible pumping rate, which was approximately 0.3 gallon per minute (gpm), except for wells 16MW5, 16GE1, and 16MPE1, which were purged at approximately 0.5 gpm. Although the pumping rates were slightly higher than those generally recommended for micropurging, drawdown was minimized and field parameters stabilized, indicating that the purging was successful. Wells 16GE1 and 16MW5 were higher-yield wells that sustained minimal drawdown of less than 0.4 foot during purging at the slightly higher rate. Well 16MPE1 was purged using low-yield well procedures as described in SOP 8. It is recommended that future groundwater samples collected as part of any remedial action at Site 16 be collected using micropurging techniques from well-dedicated bladder pumps.

The purged well water was stored in a 6,800-gallon poly-tank (with secondary containment) at the Site 16 waste staging area located approximately 150 feet south of the main pit. Purged water was subsequently run through the groundwater treatment system and piped to the tanks located at the on-site treated-groundwater storage area located approximately 200 feet northwest of the main pit (Figure 2-1).

For each well, a groundwater sample was collected after field parameters had stabilized (pH measurements within 0.5 of the two previous values, and temperature, electrical conductance, and dissolved oxygen stabilized to within 10 percent of previous measurements), and the total volume of purged water was greater than 1 pump system volume (internal volume of pump and discharge tubing). Field parameters were generally recorded at 5-minute intervals. The pump was decontaminated after each use. The groundwater samples from all ten wells were analyzed for VOCs (U.S. EPA Method 8021B), semivolatile organic compounds (SVOCs) (U.S. EPA Method 8270C), and total petroleum hydrocarbons (TPH) (U.S. EPA Method 8015-M). Sampling results are presented in Section 5.

2.5 INITIAL SOIL GAS SAMPLING

Soil gas sampling was conducted in wells 16MPE1, 16MW1, 16MW6, 16MW7, and 16VM1 prior to starting the SVE test to establish initial VOC concentrations in soil. Prior to collecting a sample, a portable vacuum pump was used to purge a minimum of 1 well volume of soil gas from each well to purge stagnant air in the well so that sampled soil gas would be representative of the formation around the well. A sealed, airtight PVC well cap equipped with a quick-connect fitting was used during purging and sampling. The soil gas samples were collected in 1-liter Tedlar™ bags using a vacuum chamber/vacuum pump unit. New polypropylene tubing was used for each well during

purging and sampling. Soil gas sampling procedures and quality control are presented in the Work Plan (Attachment A, Section 5.4) and summarized below (BNI 2000a).

Soil gas samples were collected and analyzed from wells and from the treatment system influent stream (16MPE1) and the treatment system effluent stream (samples were collected from sample ports located at the inlet and outlet of the vapor-phase granular activated carbon [VGAC] canisters) during the SVE and MPE pilot testing. Soil gas samples to be analyzed for VOCs were collected in Tedlar bags. Soil gas samples to be analyzed for fixed gases were collected in Summa® canisters. Samples were used for laboratory analyses and field photoionization detector (PID) measurements. All soil gas samples collected in Tedlar bags for laboratory analysis were analyzed for VOCs by U.S. EPA Method 8021B. Soil gas samples collected in Summa canisters were analyzed for oxygen, nitrogen, and carbon dioxide by American Society for Testing and Materials Method D-1946 and for methane by flame ionization detector (FID)-gas chromatography.

For sampling from the vacuum side of the blower, Tedlar bags were filled using the following procedure.

1. Open the valve of the Tedlar bag (one turn maximum) and connect it to the sample tubing inside the vacuum chamber. Seal the vacuum chamber. Assure that the vacuum chamber sample valve is in the closed position.
2. Connect the sample line from the SVE system to the vacuum chamber sample valve. Connect the portable vacuum pump to the sample chamber vacuum port and energize the vacuum pump.
3. Open the vacuum chamber sample valve and wait for approximately 60 seconds or until the bag appears to be filled. Close the sample valve. Disconnect the vacuum from the sample chamber.
4. Open the chamber and inspect the Tedlar bag. If it is full, close the Tedlar bag valve and place the bag in an ice chest (not chilled). If it is not full, repeat the steps above to collect additional sample volume, and allow longer time in the vacuum chamber before removing it.

For sampling from the positive-pressure (effluent) side of the blower, the Tedlar bag was connected directly to the sample port on the SVE system piping via sample tubing. The bag was then filled as described above.

Soil gas sampling from monitoring wells not undergoing SVE was performed using a sealed, airtight well cap equipped with a vapor sample port. The vacuum integrity of the sampling system was checked prior to and after sampling. A portable vacuum pump was used to purge a minimum of 1 well volume from each well prior to collecting a sample. Teflon® or polypropylene tubing was used during purging and sampling. The tubing was disposed after sampling from each well. The soil gas samples were collected in Tedlar bags within a vacuum chamber using the same procedure described above for sampling from the treatment system.

2.6 SITE SURVEY

The locations and elevations of all seven wells installed for the MPE Pilot Study at Site 16 were surveyed by a professional licensed land surveyor. Elevations and positions of the wells were measured to the nearest 0.1 foot. Elevations and positions were measured using the same benchmarks as were used for the existing wells to allow correlation of groundwater elevation data.

Section 3
INITIAL SITE CONDITIONS

This section presents the site conditions as obtained from data collected prior to conducting MPE pilot testing (i.e., aquifer, SVE, and MPE testing). Included in this section are soil and groundwater conditions at Site 16, including geology, lithology, and hydrogeology; the analytical results of the initial soil gas and groundwater sampling following well installation for the MPE Pilot Study; and the distribution of contaminants.

3.1 VADOSE ZONE AND GROUNDWATER CONDITIONS

The geology of Site 16 consists of Quaternary alluvial and marine deposits. Holocene deposits consist of fine-grained overbank deposits and coarse-grained stream channel deposits. These soils are derived from the Santa Ana Mountains to the east and conformably overlie Pleistocene interbedded fine-grained lagoonal and nearshore marine deposits. Pleistocene deposits unconformably overlie semiconsolidated marine sandstones, siltstones, and conglomerates of the late Miocene to late Pliocene, which are considered to be bedrock in the area (JEG 1993).

Lithologic data from the soil borings and cone penetrometer test (CPT) logs from Site 16 indicate that the alluvial sediments at this site consist of interbedded, lenticular strata composed of clay, silt, clayey to silty sand, and fine- to coarse-grained sand with traces of gravel. The gravel lenses within the sand and silt units are probably associated with stream channel deposits. The predominant lithologic types are silts, clays, and silty sand, with some sand.

A notable feature of Site 16 is the frequency and thickness of sand strata directly beneath the location of the main burn pit in the vadose zone. Although finer-grained strata predominate at Site 16, the sand and silty sand strata appear thicker beneath the main pit in the vadose zone. Laterally from the pit, the silty sand and sand strata appear generally reduced in thickness, and the finer-grained strata are more prevalent. The presence of an apparently greater proportion of sand throughout the unsaturated zone beneath the main burn pit may have provided a preferential pathway for the migration of liquids in the burn pit downward to the water table (BNI 2000b).

The Station lies within the Irvine Forebay I Groundwater Subbasin, which has been designated by the California Regional Water Quality Control Board (RWQCB) Santa Ana Region as a public water supply source (RWQCB 1995). Regional aquifers in this basin tend to be composed of discontinuous lenses of clayey and silty sands and fine-grained gravels contained within a complex assemblage of sandy clays and sandy silts. Two general aquifer systems have been identified near the station: a shallow aquifer zone and a lower principal aquifer in bedrock.

The shallow aquifer is present beneath Site 16 at a depth of about 160 to 165 feet bgs. Generally, the shallow aquifer zone lithology is similar to that of the vadose zone (interbedded, lenticular strata composed of silts, clays, and silty sand [separately and mixed], and sand). However, a greater percentage of finer grained sands and silts are present in the saturated zone in the area of the main pit. Downgradient of the main pit,

thicker and more permeable sand layers were encountered in the shallow aquifer in the vicinity of wells 16GE1 and 16MW5.

The local hydraulic gradient has been influenced strongly by the pumping of irrigation wells located west of the Station, which results in a westerly groundwater gradient at the site. Based on the most recent groundwater monitoring data collected in September 2000, the groundwater gradient across the site is approximately 0.006 feet per foot toward the northwest (Figure 3-1).

3.2 INITIAL SAMPLING RESULTS AND CONTAMINANT DISTRIBUTION

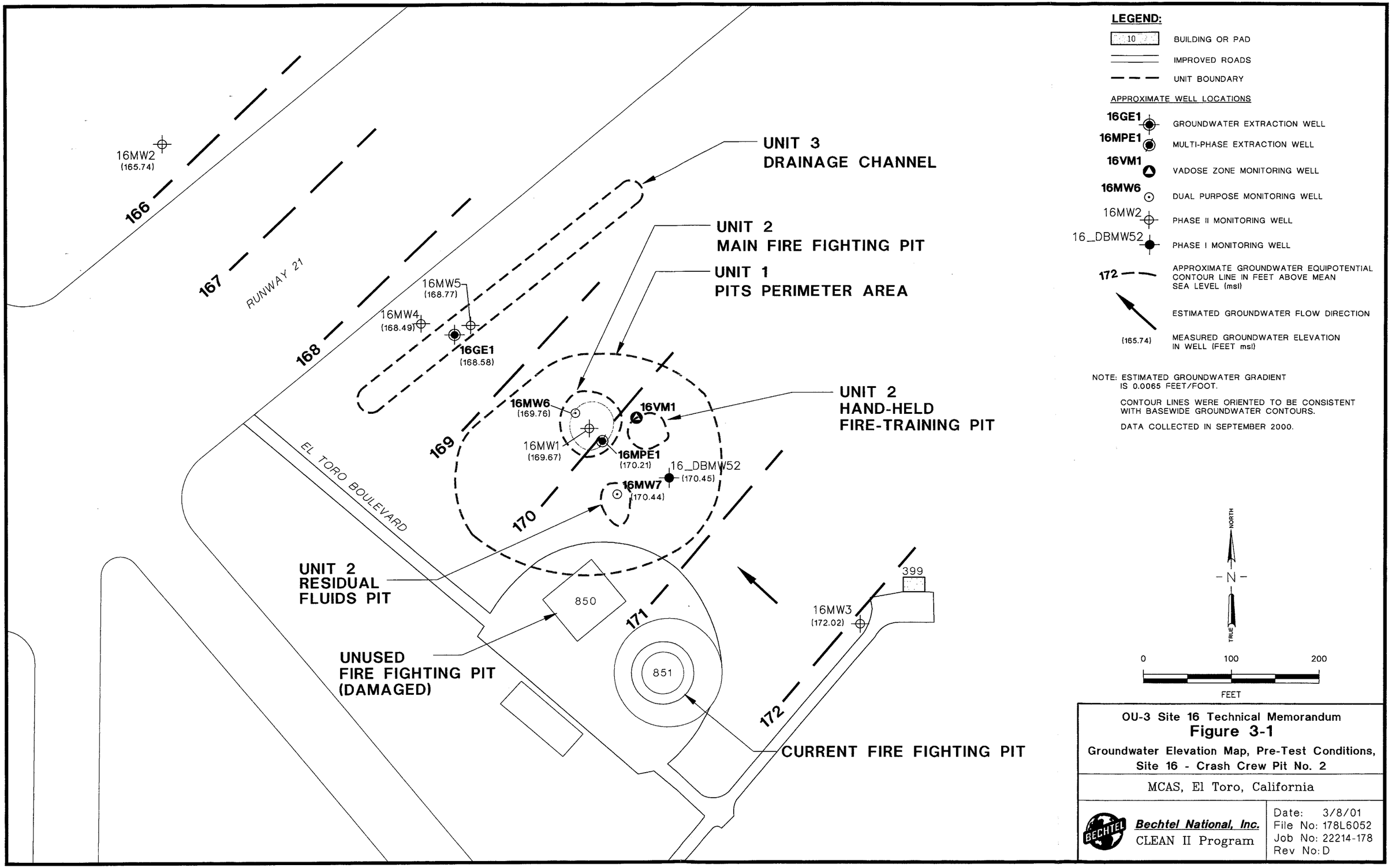
The following sections supplement contaminant distribution information previously presented in the Remedial Investigation (RI) Report, draft FS Report, and Work Plan for Site 16 with the analytical results from pre-pilot testing soil gas and groundwater sampling. Site 16 is divided into three units (Units 1, 2, and 3). The discussions below concerning the vadose zone address only Units 1 and 2. Because Unit 3 was recommended for no further action (NFA) in the RI Report and is not associated with the VOC source area at Site 16, it is not addressed in the discussions below. Figure 3-2 illustrates the sampling locations at Site 16. Figure 3-3 shows the trichloroethene (TCE) concentrations, including updated soil gas and groundwater concentrations obtained from the initial sampling conducted before pilot testing at the site.

3.2.1 Nature and Extent of Vadose Zone Contamination

This section provides an update of the vadose zone contamination information previously presented in the Work Plan with the results of the pre-pilot testing soil gas sampling. The cross section of the site represented in Figure 3-3 shows the TCE concentrations including updated soil gas and groundwater concentrations obtained from the initial sampling conducted before pilot testing at the site.

3.2.1.1 PREVIOUS VADOSE ZONE RESULTS

The field-screening and fixed-base laboratory analytical results for soil samples collected in shallow soil at Units 1 and 2 during the RI in January 1996 indicated the presence of VOCs, SVOCs, polynuclear aromatic hydrocarbons (PAHs), and petroleum hydrocarbons above detection limits. These classes of chemicals were reported most frequently and at the highest concentrations in the main pit. They were also reported in the residual fluids pit but at lower concentrations. The class of chemicals reported most frequently and at the highest concentrations were petroleum hydrocarbons. The VOCs most often reported above detection limits were ethylbenzene, toluene, TCE, and xylenes, and they are present throughout the deeper subsurface-soil interval from 10 feet bgs into the water table (approximately 160 feet bgs). SVOCs, PAHs, and petroleum hydrocarbons were identified in soil samples to a depth of approximately 132 feet bgs beneath the main pit (BNI 1997).



OU-3 Site 16 Technical Memorandum

Figure 3-1

Groundwater Elevation Map, Pre-Test Conditions, Site 16 - Crash Crew Pit No. 2

MCAS, El Toro, California

Bechtel National, Inc.
CLEAN II Program

Date: 3/8/01
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Job No: 22214-178
Rev No: D

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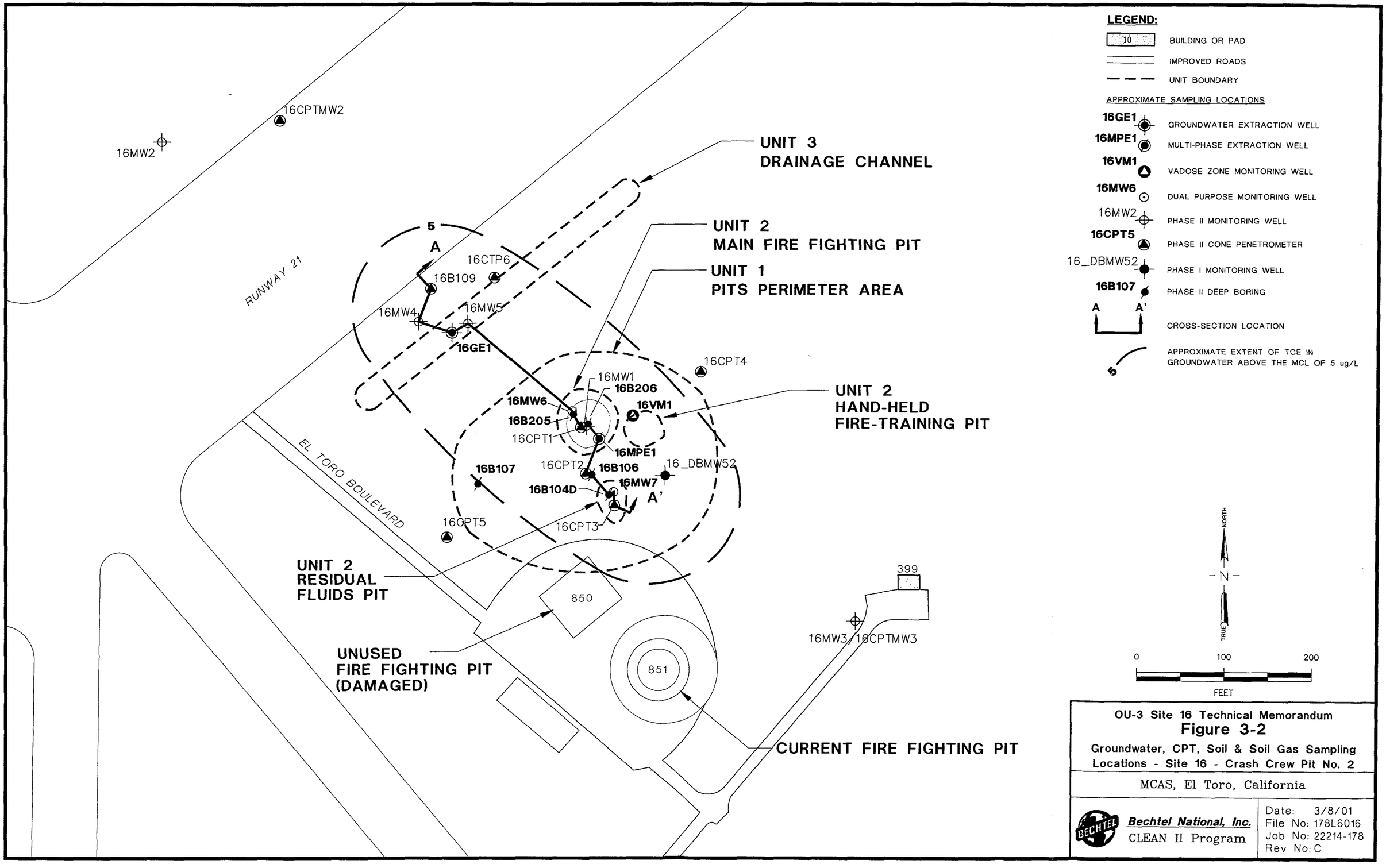

OU-3 Site 16 Technical Memorandum

Figure 3-2

Groundwater, CPT, Soil & Soil Gas Sampling Locations - Site 16 - Crash Crew Pit No. 2

MCAS, El Toro, California

Bechtel National, Inc.
CLEAN II Program

Date: 3/8/01
File No: 178L6016
Job No: 22214-178
Rev No: C

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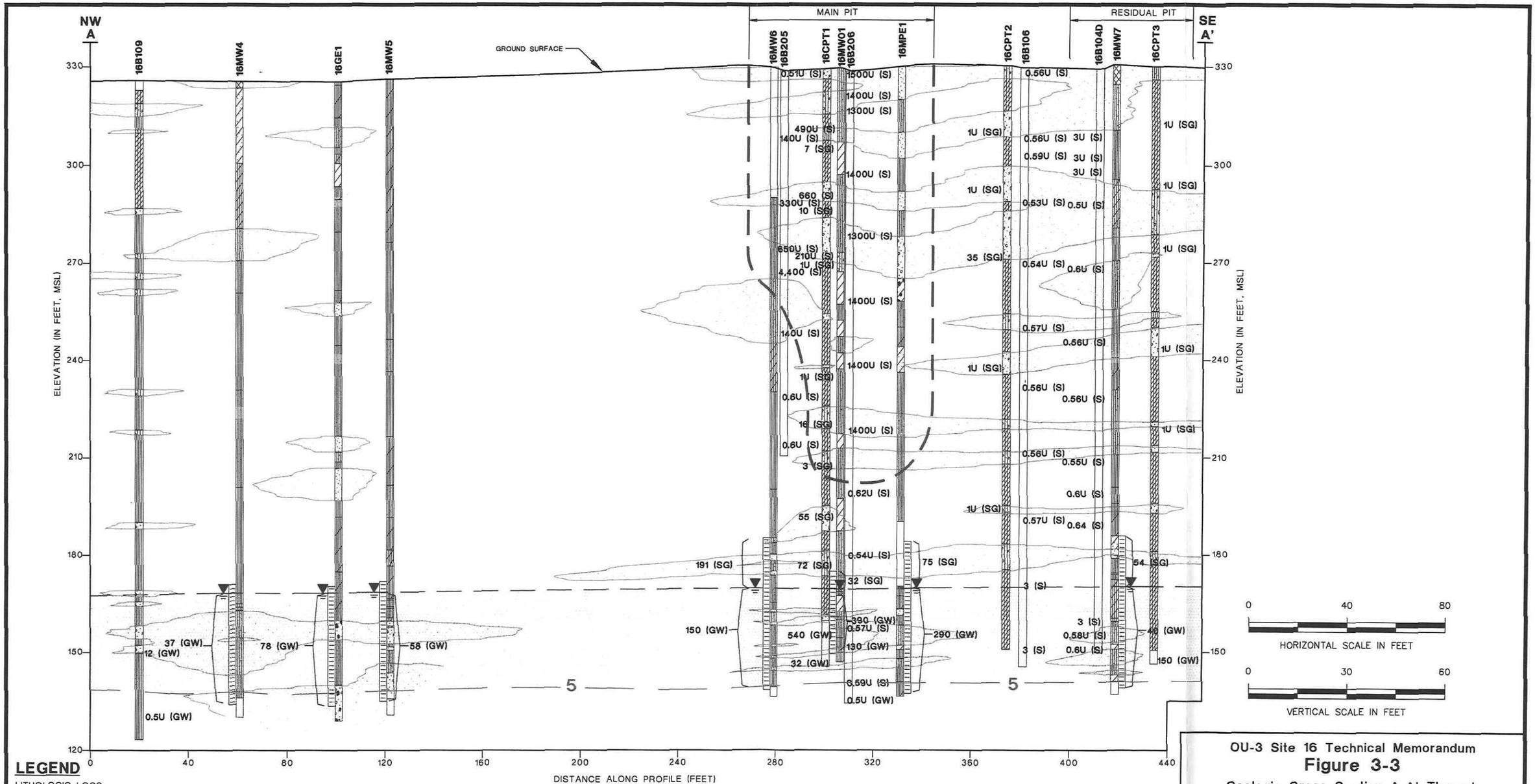

LEGEND

LITHOLOGIC LOGS:

- SP
- SW
- SC
- ML
- SM
- CL
- GW
- GP
- INTERVAL NOT LOGGED OR SHOWN
- SANDY SILT
- CLAYEY SILT
- SAND AND SILTY SAND, INTERBEDDED
- CLAY AND SILT, INTERBEDDED (REFER TO INDIVIDUAL LOGS IN APPENDIX FOR DETAILS)

GENERAL LITHOLOGIC UNITS:

- PREDOMINANTLY COARSE-GRAINED SANDS, & SILTY SANDS
- PREDOMINANTLY FINE-GRAINED SILTS, AND CLAYS

- ESTIMATED EXTENT OF TCE GROUNDWATER CONTAMINATION ABOVE 5 ug/L
- 5 — ESTIMATED 5 ug/L ISOCONCENTRATION CONTOUR FOR TCE
- INTERPRETED LITHOLOGIC CONTACT
- INTERPRETED WATER TABLE
- WELL SCREEN INTERVAL
- APPROXIMATE WATER LEVEL IN MONITORING WELL
- ESTIMATED EXTENT OF PETROLEUM HYDROCARBONS IN SOIL ABOVE 500 mg/kg (NOTE: RESULTS NOT SHOWN FOR CLARITY)

TCE SAMPLE RESULTS:

(S)	SOIL SAMPLE (ug/kg)
(SG)	SOIL GAS SAMPLE (ug/L)
(GW)	GROUNDWATER SAMPLE (ug/L)
U	SAMPLE RESULT LESS THAN DETECTION LIMIT

OU-3 Site 16 Technical Memorandum

Figure 3-3

Geologic Cross Section A-A' Through Pilot Test Area

MCAS, El Toro, California

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Rev No: H

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In May through June 1999, soil gas samples were collected from varying depths at six locations at Site 16. The results of the on-site analyses of soil gas samples indicated that concentrations of total VOCs in soil gas at the depths/locations sampled ranged from 828 to less than 1 microgram per liter (µg/L). The highest concentrations of total VOCs (828 µg/L) were reported at SG-01 (16CPT1) at 154 feet bgs (advanced through the center of the main pit). The VOCs reported in soil gas samples included trichlorofluoromethane, 1,1,2-trichloro-1,2,2-trifluoroethane (Freon 113), 1,1-dichloroethane (DCA), cis-1,2-dichloroethene, TCE, benzene, toluene, ethylbenzene, m- and p-xylenes, and o-xylene. The results of the soil gas sampling indicate that the highest concentrations of TCE in soil gas at Site 16 are beneath the main pit (the primary source area). In addition, below approximately 100 feet, these concentrations increase with depth beneath the main pit with the highest concentrations reported at 154 feet bgs. In contrast, the highest concentrations of petroleum hydrocarbons and TCE in soil are present above approximately 100 feet bgs (BNI 2000b).

3.2.1.2 INITIAL PILOT STUDY SOIL GAS RESULTS

Soil gas samples were collected from wells 16MPE1, 16MW1, 16MW6, 16MW7, and 16VM1 prior to starting the SVE test to establish initial VOC concentrations in soil. Prior to collecting a sample, a portable vacuum pump was used to purge a minimum of 1 well volume of soil gas from each well to purge stagnant soil gas from the well. The depths of the soil gas samples were generally between 145 and 160 feet bgs, corresponding to the well screen intervals open to the vadose zone near the water table for each well. The soil gas samples were collected in Tedlar bags from an airtight well cap through a quick-connect sampling port. The samples were delivered to Environmental Support Technologies for analysis on a 24-hour turnaround time.

The total VOC results ranged from 898 µg/L for 16MW6 to 129 µg/L for 16MW7. The only VOCs reported were Freon 11, Freon 113, and TCE. The highest concentrations of these three VOCs (30, 497, and 191 µg/L, respectively) were all reported in the sample from 16MW6. Table 3-1 presents the VOC analytical results, and Figure 3-4 shows the TCE results in soil gas near the water table in the vicinity of the main pit.

3.2.2 Nature and Extent of Saturated Zone Contamination

This section provides an update of the groundwater contamination information previously presented in the Work Plan with the results of the pre-pilot testing groundwater sampling.

3.2.2.1 PREVIOUS GROUNDWATER RESULTS

Groundwater is encountered at Site 16 at approximately 160 feet bgs beneath the main pit. The analytical results of the groundwater sampling (16MW1, 16MW2, and 16MW3), performed at Site 16 in July 1999, indicated that VOCs present in groundwater at concentrations exceeding 1 µg/L included chloroform, 1,2-DCA, methylene chloride, and TCE (BNI 2000b). Also reported at a concentration less than 1 µg/L was toluene. HydroPunch® sampling performed in May 1999 indicated that benzene, ethylbenzene, and xylenes were also present in groundwater at Site 16 at concentrations less than 15 µg/L (BNI 2000b).

Table 3-1
Summary of Analytical Results for Initial Soil Gas Samples

Sample ID	Sample Location (Well ID)	Date/Time of Collection	ANALYTE CONCENTRATION (in micrograms per liter) Total VOCs	F-11	F-113	TCE
1788200	16MW6	10/04/00 11:53	900	30	580	290
1788201	16VM1	10/04/00 12:14	557	21	460	76
1788202	16MW7	10/04/00 12:38	129	<* 5	75	54
1788203	16MW1	10/04/00 12:48	152	< 5	120	32
1788204	16MPE1	10/04/00 13:33	238.6	3.6	160	75

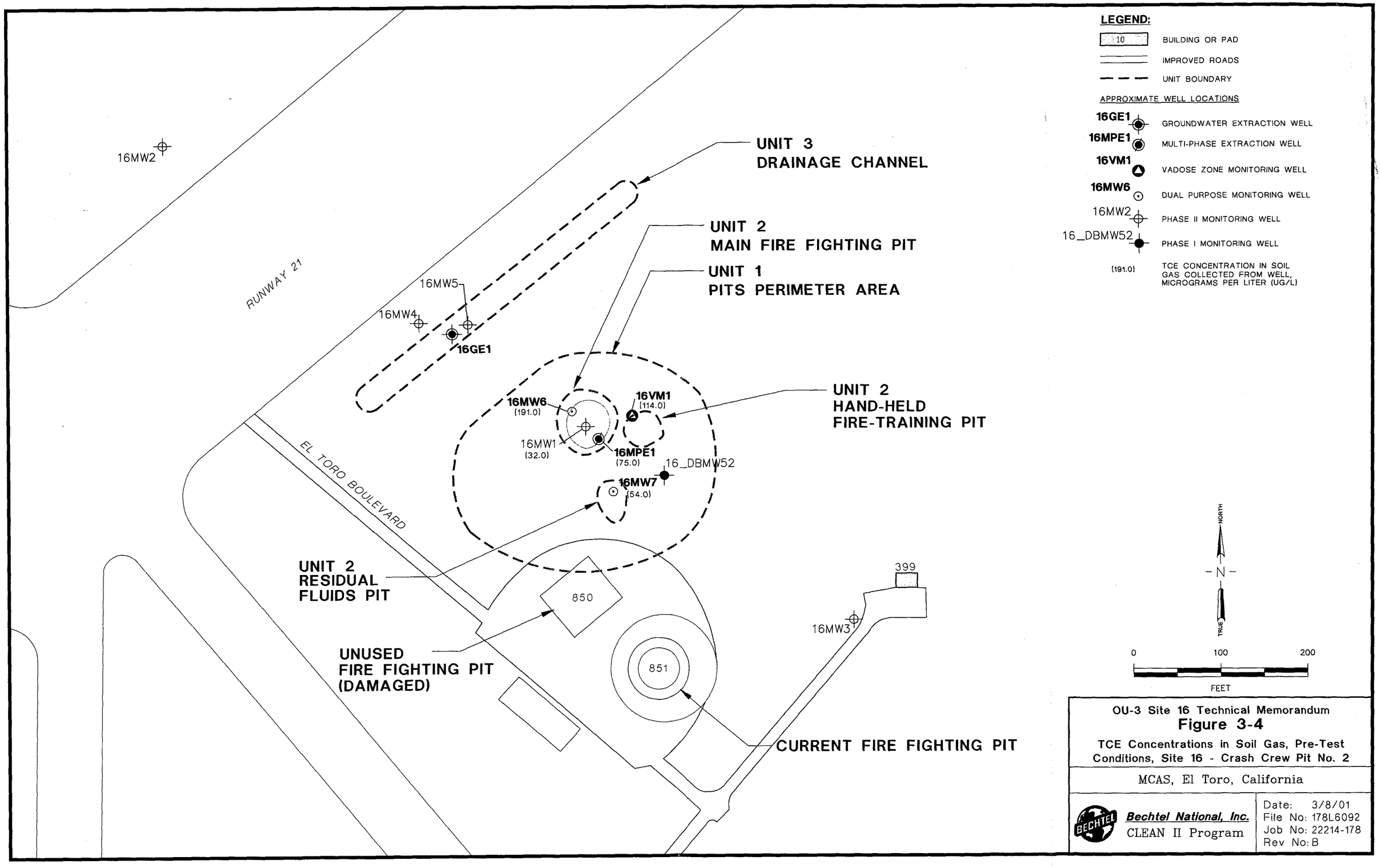
Note:
* less-than symbol indicates the result is less than the detection limit indicated

Acronyms/Abbreviations:
F-11 – Freon 11 (trichlorofluoromethane)
F-113 – Freon 113 (1,1,2-trichloro-1,2,2-trifluoroethane)
TCE – trichloroethene
VOC – volatile organic compound

The VOC for which the highest concentrations in groundwater have been reported at Site 16 is TCE. TCE was reported at a concentration of 540 µg/L in a HydroPunch sample from 16CPT1 at 175 feet bgs and at a concentration of 400 µg/L in well 16MW1. Both these sample locations are directly beneath the main burn pit. The sample results also indicated that TCE concentrations diminish within a relatively short distance downgradient, as evidenced by the 0.55-µg/L concentration in 16MW2, located approximately 500 feet downgradient of the main burn pit. Groundwater data collected from HydroPunch sampling indicated that VOCs were not reported below a vertical depth of approximately 30 feet below the water table at the locations sampled. Although several VOCs have been reported in groundwater at Site 16, because TCE is the most prevalent contaminant and was reported at concentrations higher than those of other VOCs (by 1 order of magnitude or greater), delineation of the VOC groundwater plume beneath Site 16 has been based on concentrations of TCE (BNI 2000b).

3.2.2.2 INITIAL PILOT STUDY GROUNDWATER RESULTS

Groundwater samples were collected from wells 16MW1, 16MW2, 16MW3, 16MW4, 16MW5, 16MW6, 16MW7, 16GE1, 16MPE1, and 16_DBMW52 prior to the start of MPE pilot testing. Groundwater samples were analyzed by a fixed-base laboratory for VOCs (U.S. EPA Method 8021B), SVOCs (U.S. EPA Method 8270C, and TPH (U.S. EPA Method 8015-M) prior to starting the aquifer testing to establish initial concentrations in groundwater (Table 3-2). The highest reported VOC concentration was for TCE, for which results ranged from 390 µg/L at 16MW1 to less than 0.5 µg/L at 16MW2. Figure 3-5 shows the concentrations of TCE reported for the groundwater sampling prior to the pilot testing activities.



OU-3 Site 16 Technical Memorandum

Figure 3-4

TCE Concentrations in Soil Gas, Pre-Test Conditions, Site 16 - Crash Crew Pit No. 2

MCAS, El Toro, California

Bechtel National, Inc.
CLEAN II Program

Date: 3/8/01
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Table 3-2
Summary of Analytical Results for Initial Groundwater Samples
(results in micrograms per liter)

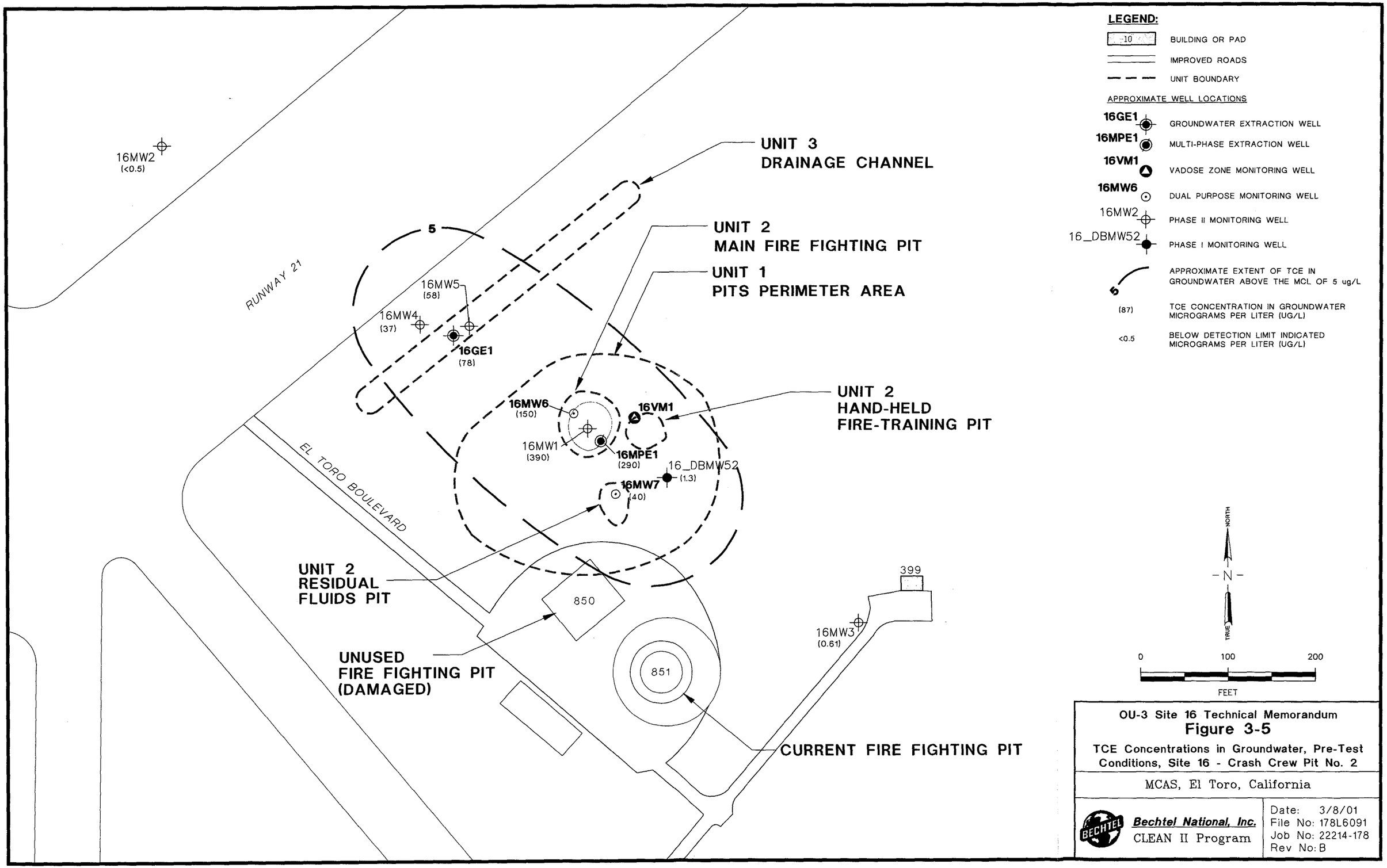
	WELL ID/SAMPLE ID/SAMPLING DATE										
Analyte	**16GE1 1788003 09/13/00**	**16MPE1 1788014 09/15/00**	**16MW1 1788010 09/14/00**	**16MW2 1788004 09/13/00**	**16MW3 1788005 09/13/00**	**16MW4 1788000 09/12/00**	**16MW5 1788001 09/12/00**	**16MW6 1788009 09/14/00**	**16MW7 1788012 09/15/00**	**16MW7 1788013-FD 09/15/00**	**16_DBMW52 1788008 09/14/00**
Volatile Organic Compounds											
Chloroform	0.53	3 J	20	<* 0.5	< 0.5	0.2 J	0.4 J	6.3	0.5 J	0.51	< 0.5
1,1-dichloroethane	< 0.5	< 5	3 J	< 0.5	< 0.5	< 0.5	< 0.5	2 J	< 1	< 0.5	< 0.5
1,2-dichloroethane	< 0.5	< 5	< 5	0.3 J	< 0.5	0.2 J	< 0.5	< 2.5	< 1	< 0.5	< 0.5
Ethylbenzene	0.3 J	< 5	< 5	0.4 J	< 0.5	0.2 J	0.2 J	< 2.5	< 1	< 0.5	< 0.5
Methylene chloride	< 1	6 J	6 J	< 1	< 1	< 1	< 1	4 J	1 J	< 1	< 1
Tetrachloroethene	< 0.5	< 5	< 5	< 0.5	< 0.5	1.2	< 0.5	< 2.5	< 1	< 0.5	< 0.5
Toluene	0.4 J	< 5	71	0.92	0.71	0.9	0.4 J	91	0.6 J	0.69	0.96
Trichloroethene	78	290	390	< 0.5	0.61	37	58	150	40	40	1.3
1,1,2-trichloro-1,2,2-trifluoroethane	1.9	28	24	< 0.5	3.8	5.7	6.7	7.4	5.5	6	11
m-, p-xylene	0.5 J	< 5	< 5	0.93	0.5 J	0.51	0.5 J	< 2.5	< 1	< 0.5	< 0.5
o-xylene	0.4 J	< 5	< 5	0.81	0.4 J	0.4 J	0.4 J	< 2.5	< 1	< 0.5	< 0.5
Total Petroleum Hydrocarbons – Fuel Fingerprinting											
Diesel	< 100	< 100	210	300	< 160	< 180	< 100	230	< 130	< 150	< 200
Gasoline	150	< 100	550	740	430	430	140	410	290	360	550
Semivolatile Organic Compounds											
Benzoic acid	5 J	< 24 J	54 J	80	46	20 J	5 J	29 J	10 J	20 J	36 J
bis(2-ethylhexyl)phthalate	< 9.5	< 9.5	< 9.5	< 9.5	< 9.5	< 9.5	< 9.5	< 9.5	< 9.5	< 9.5	21
Chrysene	0.5 J	< 9.5	< 9.5	< 9.5	< 9.5	< 9.5	< 9.5	< 9.5	< 9.5	< 9.5	< 9.5
Phenol	2 J	< 9.5	15	19	13	7 J	3 J	5 J	7 J	7 J	17

Note:
* less-than symbol indicates the result is less than the detection limit indicated

Data Qualifier:
J – estimated value

than 0.5 µg/L at 16MW2. Figure 3-5 shows the concentrations of TCE reported for the groundwater sampling prior to the pilot testing activities.

The most recently reported groundwater sampling data support past evaluations of TCE in groundwater at Site 16. The area containing concentrations of TCE in groundwater above its maximum contaminant level (MCL) of 5 µg/L (the TCE plume) extends from approximately 200 feet southeast of the main pit (upgradient) to approximately 330 feet northwest of the main pit (downgradient) (Figure 3-5). The average lateral width of the plume is approximately 200 feet and the vertical thickness of the plume is estimated to be a maximum of 30 feet.



OU-3 Site 16 Technical Memorandum

Figure 3-5

TCE Concentrations in Groundwater, Pre-Test Conditions, Site 16 - Crash Crew Pit No. 2

MCAS, El Toro, California

Bechtel National, Inc.
CLEAN II Program

Date: 3/8/01
File No: 178L6091
Job No: 22214-178
Rev No: B

Section 4
MPE PILOT TESTING DESCRIPTION AND IMPLEMENTATION

This section describes the test equipment, test preparation requirements, and procedures that were used during installation, start-up, and implementation of the MPE pilot testing.

4.1 SUMMARY OF MPE PILOT TESTING

MPE is an enhancement of SVE technology developed primarily for remediation of soil vapor and groundwater simultaneously from the same well. This technology was proposed to be utilized at IRP Site 16 in the draft FS Report, along with conventional groundwater extraction at downgradient locations. The MPE Pilot Study was to be performed to determine whether MPE has the ability to effectively remove VOCs in soil and groundwater and/or prevent further migration of VOCs in groundwater at Site 16.

The MPE pilot testing was conducted at the newly installed MPE well (16MPE1). Aquifer tests to evaluate groundwater extraction rates and aquifer parameters were performed at the newly installed groundwater extraction well (16GE1) and at 16MPE1.

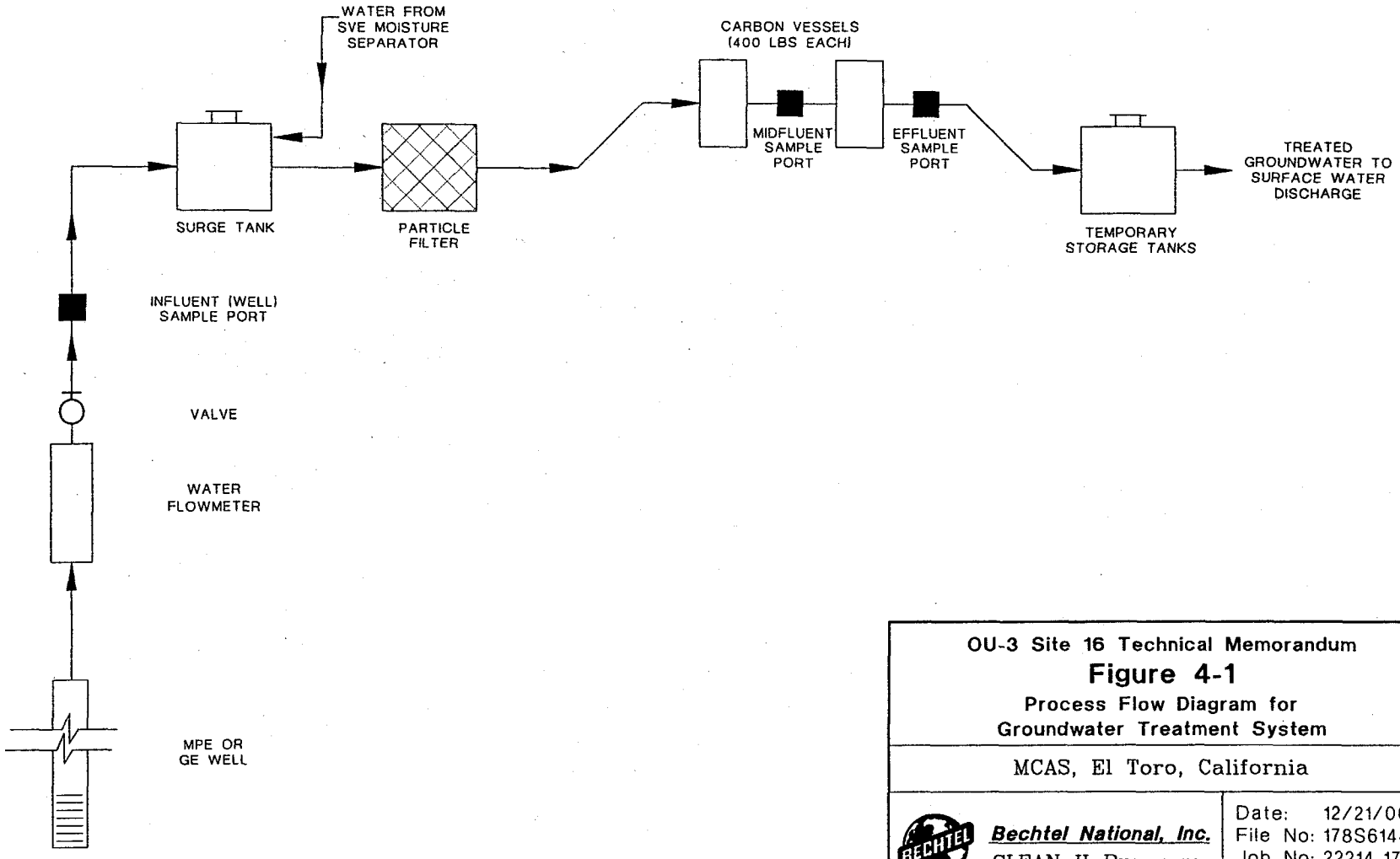
Process flow diagrams illustrate how the major components of the MPE pilot system were assembled prior to initiating the pilot test (Figures 4-1 and 4-2). The MPE pilot test system is a two-phase system that extracts groundwater and soil vapor as separate process streams. Groundwater extraction and SVE were tested separately and in conjunction with each other. The following sections describe each phase of this two-phase system (SVE and groundwater extraction) and the equipment required to perform the pilot testing, briefly explain how they were tested together to evaluate the MPE system at Site 16, and present information on objectives, equipment start-up, and implementation of the pilot study at Site 16.

4.2 MPE PILOT STUDY OBJECTIVES

The data collected from the MPE Pilot Study will be used to evaluate MPE technology that was presented as part of the alternatives in the draft FS Report. The soil remediation alternatives presented in the draft FS Report were developed for Site 16 with the goal of reducing the soil gas TCE concentrations below the concentration threshold that could potentially load groundwater to the TCE MCL of 5 μg/L. The alternatives also included groundwater extraction from the source area and downgradient of the source area to control the TCE-contaminated groundwater plume at Site 16. The MPE pilot testing results will also be used to refine the cleanup time estimates for remediation of TCE-contaminated soil and groundwater beneath Site 16. The evaluation of MPE technology as it pertains to the alternatives presented in the draft FS Report will be presented in the draft final and final FS Reports. This TM presents the results of the 2-week MPE Pilot Study and briefly addresses the effectiveness of MPE technology at Site 16.

The specific MPE Pilot Study objectives and DQOs (Table 4-1) were as follows:

- evaluate the implementability of using SVE to remove VOCs from contaminated soil beneath the main pit at Site 16;



OU-3 Site 16 Technical Memorandum

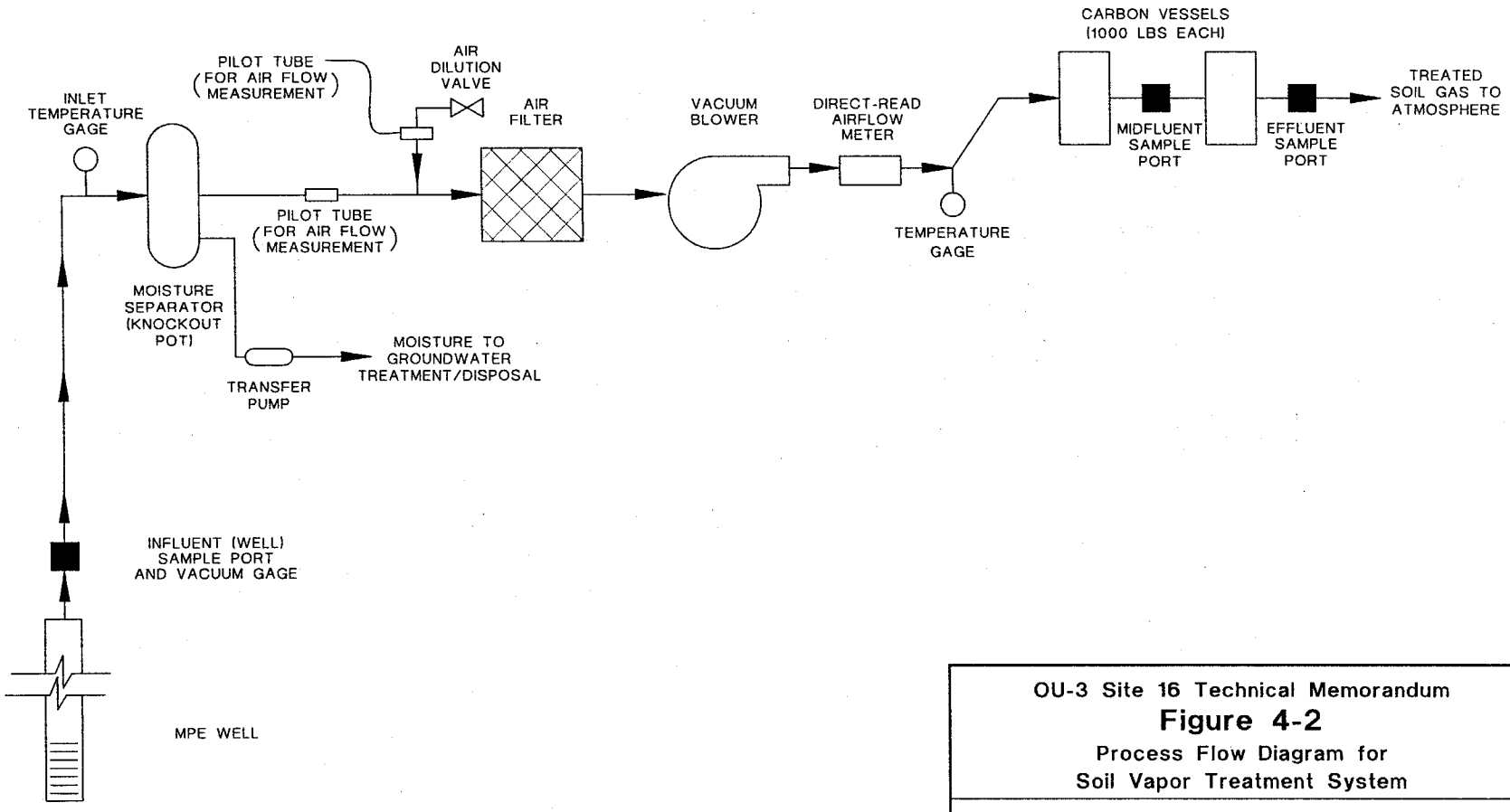
Figure 4-1

Process Flow Diagram for Groundwater Treatment System

MCAS, El Toro, California

Bechtel National, Inc.
CLEAN II Program

Date: 12/21/00
File No: 178S6144
Job No: 22214-178
Rev No: D



MPE - MULTI-PHASE EXTRACTION

OU-3 Site 16 Technical Memorandum

Figure 4-2

Process Flow Diagram for Soil Vapor Treatment System

MCAS, El Toro, California

Bechtel National, Inc.
CLEAN II Program

Date: 3/8/01
File No: 178S6143
Job No: 22214-178
Rev No: E

Table 4-1
Summary of Data Quality Objectives for the MPE Pilot Study at Site 16

Step	Process	Response
1	State the problem.	As a result of fire-fighting training activities, soil beneath Site 16 is contaminated with VOCs and petroleum hydrocarbons. The VOCs have also impacted groundwater, resulting in concentrations of VOCs in groundwater at Site 16 above MCLs. The VOC reported at the highest concentration and with the greatest frequency was TCE. The highest TCE concentration (540 µg/L) in groundwater at Site 16 was reported immediately below the main pit. The draft FS Report presented two potential remedial alternatives (2a through e and 3a through e) for Units 1 and 2 of Site 16. Both of these alternatives utilized MPE with various treatment and/or disposal options for extracted vapor and groundwater. The goal of this pilot study is to provide the additional data to allow treatment alternatives to be fully developed and evaluated; reduce cost and performance uncertainties for treatment alternatives to acceptable levels so that a remedy can be selected; and support the remedial design of a selected alternative.
2	Identify decisions that address the problem.	Does MPE as presented in the draft FS Report have the ability to prevent further migration of VOC-contaminated groundwater and/or remove, to the extent feasible, VOCs above MCLs dissolved in the shallow groundwater unit beneath Site 16? There are two steps to addressing this decision: aquifer testing and SVE/MPE testing, as described in Step 5.
3	Identify inputs that affect the decision.	Inputs necessary to make these decisions include identification of the alternatives presented in the draft FS Report; the list of chemicals of concern; the action levels for protection of human health and the environment; the locations of the soil and groundwater monitoring/extraction wells to be installed and/or utilized during pilot testing and associated geologic and hydrogeologic conditions; results of the chemical analysis of soil vapor and groundwater samples collected during the pilot study; and the evaluation of all data collected during the pilot study.
4	What are the study boundaries?	The field study is limited to the geographic area of Site 16 over an 8-week period. The physical boundaries of this study include Site 16 and the area of the TCE plume. Figure 3-1 shows the site boundary. See Section 6 of the Work Plan for the schedule for field activities.
5	Identify decision rules.	Decision rules are required to explicitly state the types of inputs and logical basis for choosing an action during the pilot study. The following decision rules form the approach for completing this project. **Aquifer Testing** 1) The aquifer step-drawdown pumping tests will be conducted at wells 16MPE1 and 16GE1 for approximately 12 hours to help select the pumping rate for the constant rate testing at these wells. If the 12-hour test is not sufficient to calculate a rate for the constant-rate pumping tests, then the step-drawdown tests may be extended for a longer period of time, as determined by the site hydrogeologist, to collect the required data.

(table continues)

Table 4-1 (continued)

Step	Process	Response
5	Identify decision rules.	2) Constant-rate tests will be conducted for an initial duration of approximately 2 days. The aquifer test data will be reviewed as they are collected from extraction and observation wells to allow the hydrogeologist to monitor the test progress. If necessary, the hydrogeologist may make adjustments to the aquifer test based on these field interpretations, where appropriate, to collect the required data to evaluate the test and groundwater extraction at Site 16. 3) The aquifer constant-rate pumping test will be conducted at a rate that is not likely to exceed well yield for the duration of the test, based on the results of the step-drawdown test. If for any reason this rate cannot be maintained at the prescribed constant rate or if sufficient data have been accumulated, then the recovery phase of the aquifer test will begin. If necessary, the constant-rate test may be restarted at a lower pumping rate after equilibrium conditions are established. 4) To begin the recovery phase of the aquifer test, the pump will be shut off, the data logger restarted, and water levels will continue to be monitored. If the water level recovers to 90 percent of its static level (or as directed by hydrogeologist), then the recovery phase of the test may be terminated. **SVE/MPE Testing** 5) If sufficient data to estimate the aquifer parameters have been obtained from the aquifer testing, then an approximately 24-hour SVE pilot test will be conducted at 16MPE1 to obtain baseline VOC concentrations and vapor flow rates prior to implementing MPE. 6) If the SVE pilot test is successful (i.e., data collected during the SVE test are sufficient to be used to estimate the radius of influence and VOC concentrations at 16MPE1), then the MPE pilot test will be conducted (groundwater extraction in conjunction with SVE) beneath the TCE hot spot to evaluate MPE at Site 16. If pilot testing is unsuccessful, then the pilot study will end. 7) The MPE pilot test will be conducted for 2 weeks. If, after these 2 weeks, sufficient analytical and physical data have been collected to evaluate MPE, then the MPE pilot test will be ended.
6	Limits on uncertainty.	The purpose of Step 6 is to specify the tolerance limits for decision errors, which are used by the decision makers to establish performance goals for the data collection design. The sampling proposed for the pilot study is judgmentally based; therefore, no limits on uncertainty have been specified. Confidence and power limits associated with statistically based sampling designs do not apply directly to judgmentally located samples. Decision errors must still be considered for judgmental samples; however, they will not be evaluated statistically. The decision errors associated with judgmental sampling are based on sample design errors and measurement errors. Assuming the best possible professional judgment was utilized in conjunction with existing data from Site 16 to develop the judgmental sampling regime for the pilot study, the most important decision errors will be associated with field and laboratory techniques involved with collection and analysis of the data. Thus, careful application of field and laboratory techniques is critical because corroborative data from multiple sample locations may not be available nor will they be statistically evaluated.

(table continues)

Table 4-1 (continued)

Step	Process	Response
7	Optimize the design.	This step in the DQO process is used to identify the most resource-effective sampling and analysis design for generating data expected to satisfy the DQOs. Historical site activities, previous site investigation results, the RI/FS documents, and regulatory agency comments were used to formulate the proposed sampling approach for the MPE Pilot Study at Site 16. During pilot testing, influent and effluent soil vapor and groundwater samples will be collected and analyzed. Soil vapor and groundwater samples will be analyzed prior to, during, and subsequent to treatment to evaluate mass removal rates as well as treatment technology efficiency. For details on sampling methods and procedures, see Section 5 of the Work Plan.

Acronyms/Abbreviations:
DQO – data quality objective
FS – feasibility study
µg/L – micrograms per liter
MCL – maximum contaminant level
MPE – multiphase extraction
RI – remedial investigation
SVE – soil vapor extraction
TCE – trichloroethene
VOC – volatile organic compound

- evaluate SVE radius of influence (ROI) for 16MPE1;
- estimate the mass of VOCs removed from the contaminated soil during the pilot test;
- evaluate VOC concentrations in soil gas during vacuum extraction and estimate the VOC removal rate and assess the overall effectiveness of SVE at 16MPE1;
- establish operating parameters (vacuum and airflow) needed to optimize SVE performance;
- evaluate whether one well (16MPE1) is sufficient to remediate contaminated soil at Site 16;
- evaluate the implementability of recovering contaminated groundwater beneath Site 16;
- evaluate groundwater extraction ROI;
- estimate the mass of VOCs removed from the contaminated groundwater during the pilot test;
- estimate the dissolved VOC removal rate and the overall effectiveness of groundwater extraction at the test wells;
- establish operating parameters (groundwater extraction rate and drawdown) needed to optimize groundwater extraction performance;

- evaluate whether MPE can accomplish removal of contaminant mass at sufficient rates to demonstrate that if carried out over a longer time period, MPE has the potential to achieve significant remediation and meet the remediation goals described in the draft FS Report; and
- collect sufficient data to estimate overall effectiveness, cost, and implementability of the full-scale operation of an MPE system at Site 16.

4.3 AQUIFER TESTING

This section describes the aquifer testing equipment used, test preparation performed, and procedures employed during aquifer testing. Two types of aquifer tests were conducted at 16GE1 and 16MPE1: step-drawdown tests and constant-rate tests. Step-drawdown tests were used to estimate longer-term pumping rates and well yield. A step-drawdown groundwater extraction test increases the pumping rate in a stepwise fashion so data can be collected to measure the aquifer's response to varying pumping rates and to estimate specific capacity of the well. The step-drawdown testing (performed in two separate tests totaling approximately 9 hours) at 16GE1 was performed at groundwater extraction rates of approximately 4, 8, 10.5, 15, and 20 gpm. The step-drawdown testing at 16MPE1 (approximately 4 hours) was performed at groundwater extraction rates of 0.4, 0.6, and 1 gpm.

The step-drawdown tests at 16GE1 and 16MPE1 were followed by constant-rate groundwater extraction tests (approximately 36 and 46 hours, respectively). The constant-rate tests used groundwater extraction rates of approximately 0.45 and 16 gpm for 16MPE1 and 16GE1, respectively. These rates were chosen by plotting the step-drawdown testing data on semilog graphs, extrapolating terminal drawdowns, and selecting a pumping rate that was projected to provide the maximum desired drawdown that would give sufficient data for the proposed duration of the constant-rate tests (36 hours or greater) and would not draw the water level down to the pump intake. Discussion and evaluation of the step-drawdown and constant-rate aquifer tests are presented in Section 5.1.

4.3.1 Aquifer Test Equipment

The general equipment and operation specifications that were used for aquifer testing and groundwater extraction during MPE pilot testing are described in this section. This equipment includes submersible pumps, flowmeters and controllers, power supply, water-level monitoring equipment, and the water treatment and storage system.

Groundwater extraction conducted for aquifer testing and MPE pilot testing was performed utilizing Grundfos Redi-Flo2 and Redi-Flo3 submersible pumps. These pumps provided a range of pumping rates from 0.45 to 20 gpm. A Grundfos Redi-Flo3 submersible pump was utilized for the step-drawdown and constant-rate pumping tests at 16GE1. A Grundfos Redi-Flo2 submersible pump was utilized for the step-drawdown and constant-rate pumping tests at 16MPE1 and a Grundfos Redi-Flo3 submersible pump was utilized for the MPE pilot testing at 16MPE1. For optimal efficiency during the

testing, the Redi-Flo3 used for the MPE test was controlled via a CU300 status box and accompanying remote-control device. All submersible pumps used during the MPE Pilot Study were fitted with check valves to prevent backflow into the well.

The submersible pumps used for groundwater extraction during the aquifer testing (step-drawdown and constant rate) at 16GE1 and 16MPE1 were powered by a 110/220-volt 50-kilowatt portable generator utilizing propane fuel. The submersible pump used for MPE pilot testing at 16MPE1 was powered by an on-site transformer. This power source was brought to the site via overhead electrical power lines from a nearby Station transformer. All electric lines and transformers brought to and assembled by contractors on-site were in compliance with National Electrical Code requirements.

To facilitate measurement of groundwater extracted during aquifer/MPE pilot testing, flowmeters capable of providing accurate discharge measurements, with a sufficient measurement range for each aquifer test, were utilized. A Great Plains Industries in-line flowmeter (model 048316M) was used for aquifer testing (step-drawdown and constant rate) at 16GE1. A Blue-White Industries Model F-400N variable-area, acrylic flowmeter with a range of 0.1 to 1.0 gpm was used for aquifer testing (step-drawdown and constant rate) and MPE pilot testing at 16MPE1. With the exception of the acrylic flowmeters, which were purchased new, flowmeters were periodically checked manually for accuracy using a bucket and stopwatch. Flow rates were maintained using the pump control box and a manual ball valve to effectively keep the rate from varying more than 5 percent.

A multiport data logger (In-situ Hermit 3000) with associated pressure transducers installed in the extraction and monitoring wells was used to measure water levels during aquifer testing at 16GE1 and 16MPE1. For aquifer testing at 16GE1, pressure transducers were installed in 16GE1, 16MW4, and 16MW5. For aquifer testing at 16MPE1, pressure transducers were installed in 16MPE1, 16MW1, 16MW6, 16MW7, and 16_DBMW52. The data logger recorded water-level drawdown readings electronically from the pressure transducers in the wells. These readings were downloaded in the field using a laptop computer for evaluation and processing in AQTESOLV for Windows (Version 3.01.004) by HydroSOLVE, Inc., a computer software program used for processing aquifer testing data.

A portable, trailer-mounted treatment system consisting of a surge tank, particulate filter, transfer pump, and two 400-gallon capacity granular activated carbon (GAC) canisters connected in series were used to reduce VOC concentrations in discharged groundwater to below the laboratory reporting limit (0.5 µg/L) (Figure 4-1). A 250-gallon surge tank was used to provide short-term storage capacity and help remove suspended sediment before treatment. Secondary containment of the groundwater treatment system was used in case of a leak in the system. Water sample ports were installed at influent and effluent locations so that the effectiveness of the treatment system could be monitored. The treatment system also included automatic shutoff valves to prevent tank overflows should the transfer pump fail or the storage tanks become full. The treated groundwater produced during the aquifer testing is currently (March 2001) being stored on-site in three 6,800-gallon tanks and four 21,000-gallon storage tanks connected in series.

4.3.2 Aquifer Pretest Preparation

Before the start of each aquifer test, all wells at Site 16 were sampled to assess initial pretest VOC concentrations in groundwater. The results of this groundwater sampling are presented in Section 3.

4.3.2.1 MEASURE BACKGROUND WATER LEVEL

Water levels in all observation wells at Site 16 were measured a minimum of once a day for 3 days before the installation of the pump and after the completion of the recovery phase of the aquifer test in a given well. In some cases, the data logger and transducers were used to monitor background levels. All wells at Site 16 were also measured immediately prior to each constant-rate test to obtain initial test conditions. At least one well located outside the potential pumping influence was also measured once a day before, during, and after all aquifer tests to serve as a background reference.

4.3.2.2 SET UP AQUIFER TEST HARDWARE

The pump was installed in the extraction wells at least 24 hours prior to the start of the initial aquifer test at each well. The groundwater extraction pumps were installed with pump inlet depths of approximately 187.5 and 188.5 feet bgs in 16MPE1 and 16GE1, respectively. The pumps were located near the bottoms of the wells to allow for maximum drawdown. Prior to installation of the pump for the 16MPE1 aquifer test, a special sealed wellhead manifold was installed to facilitate subsequent MPE testing (refer to Section 4.5). The pump discharge was connected to the groundwater treatment system and storage tank (Figure 4-1). Pressure transducers were installed in wells 16GE1, 16MW4, and 16MW5 for the aquifer testing at 16GE1, and in wells 16MPE1, 16MW1, 16MW6, 16MW7, and 16_DBMW52 for the aquifer testing at 16MPE1. Transducers were installed a minimum of 2 feet above the pump inlet in the extraction wells (16GE1 and 16MPE1) and at approximately 170 to 175 feet bgs (10 to 15 feet below the static water level) in the observation wells to assure submergence throughout the test. Pressure transducer response was verified by raising and lowering the transducers in the wells and checking the depth reading with a hand-operated water-level meter and tape measure.

Before beginning the aquifer tests, the pump, transducers, and data logger were checked for correct operation. Sufficient time was allowed for the well to recover from pump operation testing before beginning the aquifer test (24 hours or water level recovered to predisturbed condition).

4.3.2.3 MEASURE BAROMETRIC PRESSURE

Barometric pressure was recorded before, during, and after each aquifer test. Pressure readings were recorded concurrently with the water-level readings using an internal barometric pressure sensor in the data logger. This was important for evaluating the potential effects of barometric pressure changes on water levels during the test. Ambient weather conditions were noted throughout the test.

4.3.3 Aquifer Testing Procedures

This section describes the general test preparations and procedures that were followed for conducting the aquifer testing. Groundwater samples were collected only from the extraction well during the constant rate aquifer tests in 16GE1 and 16MPE1. The frequency of sampling and the analyses conducted are described Section 4.7.

- Prior to each aquifer test, the data logger and the pressure transducers were checked to confirm that they were functioning. The pump and data logger were then started simultaneously and a stable discharge rate was quickly established. The indicated discharge rate was then checked manually. The pumping rate was measured and recorded during the aquifer tests at least once an hour. By checking the flow rate frequently, it could be adjusted if it varied by more than 5 percent.
- The cycle of water-level recording measurements was started whenever an extraction or recovery test was commenced, and at the start of each step during a step test. The actual intervals recorded by the data logger generally met or exceeded the maximum recommended time intervals for aquifer test water-level measurements in the pumping well, according to the U.S. EPA aquifer test procedures (U.S. EPA 1993b).
- Handheld water-level meters were used to check the correctness of the data logger readings and for measurement of water levels in more distant observation wells. Manual measurements were completed at least once an hour for the constant-rate testing, or as directed by the hydrogeologist.
- Aquifer test data were plotted on semilog graphs as they accumulated for extraction and observation wells to allow the hydrogeologist to monitor the test progress and make adjustments based on field interpretations, where appropriate. Data recorded by the data logger were periodically downloaded on-site to a laptop computer during the tests to facilitate evaluating test progress.
- To begin the recovery phase of the aquifer test, the pump was shut off and the data logger restarted (to increase the frequency of readings). Water levels were measured by hand to verify correct operation of the pressure transducers. The recovery phase of the test was terminated after the water level recovered to a minimum of 90 percent of its static level in both the pumping and monitoring wells.

4.3.4 Aquifer Step-Drawdown Testing

Step-drawdown tests were performed at 16GE1 and 16MPE1 to select the pumping rate for the constant-rate tests. The step-drawdown testing (two separate tests totaling approximately 9 hours) at 16GE1 was performed at groundwater extraction rates of 4, 8, 10.5, 15, and 20 gpm. The step-drawdown testing at 16MPE1 (approximately 4 hours) was performed at groundwater extraction rates of 0.4, 0.6, and 1 gpm.

Water-level data from the extraction well were plotted on semilog graphs during the tests to assure that each step had stabilized and could be interpreted (i.e., the straight line section on the semilog graph could be extrapolated) before proceeding to the next step. A discussion of the step testing is provided in Section 5.1.1.

4.3.5 Constant-Rate Testing

Constant-rate tests were also performed on wells 16GE1 and 16MPE1 for approximately 36 and 46 hours, respectively. The constant pumping rate for 16GE1 of approximately 16 gpm and for 16MPE1 of 0.45 gpm were selected based on the step-test data. The constant-rate test data were used to estimate aquifer properties and ROI (Section 5). Water levels for each test were measured in the monitoring wells (in addition to the extraction well) to interpret the test and provide the required data. For the test in well 16GE1, water levels in monitoring wells MW4, MW5, and MW6 were measured. For the test in well 16MPE1, water levels in monitoring wells 16MW1, 16MW6, 16MW7, and 16_DBMW52 were measured.

4.3.6 Groundwater Treatment and Disposal

After passing through the groundwater GAC treatment system (Section 4.3.1), the treated groundwater was pumped into three 6,800-gallon tanks and four 21,000-gallon storage tanks connected in series. This water is being stored on-site. The treated water was recently sampled and analyzed for various parameters to profile the water. Discharge of water will be to Bee Canyon Wash via a storm drain located on-site. Substantive permit requirements will be met prior to discharge of treated water.

4.4 SOIL VAPOR EXTRACTION SYSTEM

This section describes the equipment utilized, test preparation performed, and procedures followed for the SVE system. The SVE system was used to extract soil vapor from 16MPE1 during the initial baseline 24-hour SVE test. The SVE equipment and procedures were then used in conjunction with the groundwater extraction equipment described above and procedures for the MPE test.

The general equipment and operation specifications used during the SVE testing are described in this section. This equipment included a vacuum blower, knockout drum, flowmeters, pressure gauges, and air pollution control equipment. The SVE system was provided by Pure-Effect, Inc., of Anaheim, California.

The vacuum blower utilized for the SVE testing was a Tuthill Corporation Model 4009, 15-horsepower, positive-displacement, rotary-lobe-type blower rotating at 1,750 revolutions per minute (rpm). The blower instrumentation included a vacuum gauge and temperature gauge on the inlet side and a pressure gauge and temperature gauge on the discharge side. A dilution air bypass valve used to control the vapor extraction rate from the well was installed upstream of the blower.

A knockout drum was installed upstream of the vacuum blower to separate water droplets entrained in soil air. The volume of the drum was approximately 100 gallons. The drum was equipped with a valve and associated pump that was capable of transferring the separated water into the on-site groundwater extraction treatment system (Figure 4-2). The pump was equipped with an automated on and off switch and high-water-level switch that would shut off the SVE system should the pump fail.

Vacuum was measured at the extraction and vapor monitoring wells using Dwyer Magnehelic® vacuum gauges. A gauge with the appropriate scale for each well response was used. In addition to the vacuum gauges, an absolute pressure transducer was placed in the 16MPE1 (extraction well) to monitor the vacuum applied at the well. A second gauge pressure transducer, which was zeroed to the well vacuum using a junction vent box and tubing, was submerged in the well to monitor groundwater response to the applied vacuum.

Flowmeters within the range of expected airflow were specified. The instruments were chosen so as to not constrict flow given the blower specifications. Vapor flow from the well was monitored using a 3-inch diameter, Air Monitor Corporation, self-averaging, LO-*flo* Pitot Transverse Station. Differential velocity flow vacuum readings were taken at the station and converted to airflow in cubic feet per minute (cfm) using a chart and equation supplied by the manufacturer. A Dwyer DS-300-2 pitot tube flow sensor was used to monitor flow from the dilution air bypass valve, when open. An equation for airflow through a pipe in the manufacturer's operating instructions was used to calculate airflow in cfm from the measured differential velocity pressure, air inlet temperature, and other piping parameters. An Ametek-Rotron direct-read analog airflow gauge (20 to 250 standard cubic feet per minute) installed in line after the blower was used to measure total flow (well airflow plus dilution airflow). This gauge also served to check the pitot tube flow measurements. Generally, the measurements between the gauge and two flow sensors compared favorably (approximately within 2 to 4 percent).

A portable, skid-mounted SVE and vapor treatment system provided by Pure Effect, Inc., of Anaheim, California was used for the testing. This portable rental system included the blower and knockout drum previously described, along with a particulate filter and two vapor GAC canisters, installed in series. The carbon canisters contained approximately 1,000 pounds of vapor GAC each. The system was capable of reducing VOC concentrations to below the levels required by the South Coast Air Quality Management District (SCAQMD) various-locations air discharge permit that was provided by the treatment system vendor. Vapor sample ports were installed at the well (influent sample), between the two carbon canisters (midfluent sample), and on the stack venting the treated air to the atmosphere (effluent, or stack, sample) (Figure 4-2).

Prior to mobilization of the SVE treatment system, the on-Station power transformer closest to Site 16 was evaluated for its compatibility with the vacuum blower. The on-site power supply was determined to be sufficient to run the vacuum blower and all other required equipment for the SVE and MPE testing (e.g., groundwater and transfer pumps, lights). However, since this transformer was approximately 300 feet from the treatment

system location, temporary power poles and overhead wiring were installed from the site transformer to the treatment system location at 16MPE1. The SVE system vendor subcontracted with an electrician to supply and install this wiring. Temporary power transformer boxes and electrical outlets were installed by the vendor at the treatment system location and wired into the SVE system.

4.4.1 SVE System Preparation

The following preparation was needed before the start of the initial baseline SVE test and the subsequent MPE test.

4.4.1.1 SET UP HARDWARE

Prior to connection to 16MPE1, the vacuum blower was connected to the power supply and operated for a short period (a few minutes) to check for excessive vibration, proper alignment, excessive noise level, and correct operation. The blower was then shut down and piped to 16MPE1.

Prior to piping the blower to 16MPE1, a sealed wellhead manifold was constructed that allowed vapor extraction at the wellhead (through a tee coupling) while simultaneously pumping groundwater (for the subsequent MPE test). This manifold was carefully sealed to the wellhead casing and to all other downhole equipment (e.g., pump piping and wiring, water-level monitoring equipment) using compression fittings and inert pure silicone sealant to prevent ambient air leaks during SVE operation. The flowmeter and pitot tubes previously described and a manual vacuum monitoring port were installed. A sealed slip cap with a quick-connect coupling (for the Magnehelic gauge) was installed on each of the monitoring wells to be monitored for negative pressure. An inert pure silicone sealant was used to form a tight seal between the manifold/slip caps and the wells.

Two pressure transducers were installed in 16MPE1. One absolute pressure transducer was suspended in the airspace of the well (for vacuum measurements), and one was submerged in the groundwater. The submerged transducer consisted of a gauge transducer vented (normalized) to the vacuum in well 16MPE1 since an absolute transducer was not available with sufficient cable length. The transducers were connected to the data logger and checked for proper operation before the start of the testing.

4.4.1.2 MEASURE BAROMETRIC PRESSURE

Barometric pressure was recorded before, during, and after each test using an internal barometric pressure sensor in the data logger, as described in the section on aquifer test preparation.

4.4.2 General SVE System Testing Procedures

This section describes the SVE system general testing procedures that were used for the SVE and MPE testing. During SVE, when water levels were not drawn down by pumping, care was taken to avoid drawing water in the extraction well above the top of the well screen under vacuum, which would cause soil airflow to cease. The following information was recorded during the SVE testing:

- negative pressure (vacuum) in extraction and monitoring wells,
- soil gas extraction rate,
- concentration of VOCs in the soil gas, and
- water produced in the "knockout" pot.

Flow data were collected under negative pressures (vacuum) ranging from approximately 20 to 82 inches water gauge static pressure in the vapor extraction well. The maximum operating vacuum was a function of subsurface site conditions, capabilities of the blower, and piping diameter and type, and it was also determined by the temperature at the blower discharge. Excessive temperature could compromise the effectiveness of the carbon to remove VOCs. A valve on the blower inlet line that was open to ambient air was used to control the vacuum in the extraction well. Flow measurements were recorded at the same frequency as the negative pressure measurements.

The negative pressures in extraction and monitoring wells were measured manually at the wellheads and recorded at approximate 15- to 30-minute intervals until steady conditions were achieved. After that point, vacuum was measured a minimum of twice a day. After the first week, vacuum was measured daily. The transducer in the extraction well was programmed to measure vacuum at maximum intervals of 5 minutes during SVE and 15 minutes during MPE (logarithmically increasing measurement frequency). The barometric pressure at the site was also recorded at the same intervals throughout the tests using the data logger.

Soil gas samples were collected for field screening and laboratory analysis. Sample collection and laboratory analysis are described in Section 4.8. A portable PID calibrated to isobutylene was used to monitor organic vapor concentrations from the extraction well (16MPE1) in the field daily during the initial days of the test, and as needed during the later portion of the test. In order to monitor and control carbon-adsorption breakthrough, the VOC concentrations in the treated air were measured in the GAC canister effluent using the portable PID. After completion of the test, the unit was shut down. Any remaining water in the knockout pot was drained and transferred to the surge tank of the groundwater treatment system through the transfer pump and piping.

4.4.3 Initial Baseline SVE Test Procedures

The initial 24-hour SVE test was conducted approximately 1.5 weeks prior to the MPE test. The procedures described below were performed after the SVE test preparation (Section 4.4.2). The SVE test was conducted at three successively higher vacuum

settings to evaluate a range of negative pressures and resulting flow rates of 16MPE1. Details on soil gas sampling and analysis are presented in Section 4.8. The following list outlines the procedures used for the initial 24-hour SVE test.

1. Initially measured and recorded the depth to water and time of measurement in the following wells: 16MPE1, 16MW1, 16MW6, and 16MW7 (Figure 3-1).
2. Equipped wells 16MV1, 16MW6, 16MW7, and 16MW1 with a sealed slip cap and sealed vacuum measuring point.
3. Prior to start-up, collected initial condition soil vapor samples from MPE1, 16MV1, 16MW1, 16MW6, and 16MW7 for laboratory analysis to assess ambient conditions before testing.
4. Energized the vacuum blower and adjusted vacuum to approximately 20 inches water gauge at the wellhead.
5. Recorded airflow, wellhead vacuum, discharge pressure, and operating temperature.
6. Collected test start-up influent and effluent soil gas samples from 16MPE1 as described in Section 4.8 for laboratory analysis to assess initial test soil gas concentrations. Collected samples from the well and GAC effluent to be used for PID measurements in the field.
7. Recorded vacuum using 0- to 1-inch to 1- to 50-inch water gauge Magnehelic gauges in the monitoring wells at approximate 15- to 30-minute intervals until steady-state conditions were observed.
8. Increased vacuum to 45 inches water gauge at wellhead, as directed by the project hydrogeologist.
9. Repeated steps 5 and 7. Collected soil vapor sample from well at appropriate time during middle of test.
10. Once steady-state conditions were observed, increased vacuum to maximum obtainable by blower (82 inches of water). The maximum vacuum in inches of water was not greater than the length of screen that was initially above the water table before the test began. If the vacuum were to exceed this screen length, airflow would cease.
11. Repeated steps 5 and 7.
12. Before the end of the test, collected influent and effluent soil gas samples from 16MPE1 for laboratory analysis to assess final SVE test soil gas concentrations. Collected samples from the well and GAC effluent to be used for PID measurements in the field.
13. Deenergized the SVE system. The MPE test was not started immediately after the SVE test to allow the subsurface to return to ambient conditions.
14. Drained knockout pot, if necessary.

4.4.4 Process Control

During the pilot tests, the field crew controlled the vapor extraction rate and recorded the operating parameters and measurements in the field logbooks. The parameters that were measured and the minimum frequency with which they were recorded are listed in Table 4-2.

4.5 MPE PILOT TESTING

Following successful completion of the constant-rate groundwater extraction and initial baseline SVE testing at 16MPE1, an MPE test was conducted at 16MPE1.

4.5.1 General MPE Testing Procedures

The MPE test consisted of performing SVE in conjunction with groundwater pumping at 16MPE1, using the procedures for aquifer testing and SVE testing indicated in the previous sections. The rate of groundwater extraction and the soil vapor flow rate were determined by the project hydrogeologist utilizing data from the aquifer pumping test and the response of 16MPE1 to an applied vacuum (refer to Section 5 for the chosen rates). The MPE test was initially performed at constant groundwater pumping and airflow rates for the same duration (at a minimum) as the constant-rate aquifer test in 16MPE1. However, after that duration had been reached, only the airflow rate was varied near the end of the test in order to evaluate potential well yield under varying SVE conditions and potential changes in soil gas concentrations. The groundwater flow and airflow rates were kept constant during most of the MPE test in order to evaluate declining soil gas concentrations. The initial duration of the MPE testing was planned to be 2 weeks; however, based on favorable results from the MPE testing, the testing was continued until 07 March 2001, as discussed in Section 5.4.

Well monitoring used a combination of the vacuum and water-level monitoring points discussed in the previous sections. Vacuum monitoring was conducted on the same wells and at the same frequency as described in Section 4.4.3. The two pressure transducers installed in 16MPE1 remained in place for the MPE test. Water levels were measured in monitoring wells 16MW1, 16MW6, 16MW7, and 16_DBMW52 using transducers, and well 16MW5 was measured manually, although measurements in this well were stopped based on the lack of a response and other ongoing test observations. This is the same network monitored during the aquifer test. Pressure transducer measurements were conducted at the same frequency as indicated for the aquifer test. PID measurements of SVE treatment system effluent were performed as indicated in Table 4-2. Groundwater and soil gas sampling for laboratory analysis was conducted as described in Sections 4.7 and 4.8.

Table 4-2
SVE System Operating Parameter Measurements

Parameter	Method	Frequency	Remarks
Meteorological Conditions			
Barometric pressure	Barometer	Maximum 15 minutes[a]	Via barometric pressure sensor in data logger
Temperature	Thermometer	Daily	From field measurement
Vacuum Blower			
Inlet pressure	Vacuum gauge	Daily or when pressure is adjusted	
Inlet temperature	Temperature indicator	Daily or when pressure is adjusted	
Flow rate	Flowmeter or pitot tube	15 minutes until steady state; twice daily thereafter[b]	
Discharge pressure	Pressure gauge	Daily or when pressure is adjusted	
Discharge temperature	Temperature indicator	Daily or when pressure is adjusted	
GAC effluent	PID/FID	Daily or when pressure is adjusted	
Water in knockout drum	Draining	As needed	
Vapor Extraction Well			
Pressure	Field vacuum gauge	15 to 30 minutes until steady state; twice daily thereafter[b]	During the SVE and MPE test, pressure also measured via pressure transducer in the well airspace
VOCs	PID/FID	Daily[c]	VOC analyses were also performed as indicated on Tables 4-6 and 4-7
Monitoring Wells			
Pressure	Field vacuum gauge	15 to 30 minutes until steady state; twice daily thereafter[b]	
Groundwater level	Water-level probe	Daily[d]	During the MPE test, water levels were measured via pressure transducers at the aquifer test frequency

(table continues)

Table 4-2 (continued)

Notes:
[a] barometric pressure was measured at the same frequency as the water levels in the wells using the data logger
[b] measured daily after the first week due to steady-state conditions
[c] based on field and laboratory data, frequency was reduced during later portions of the MPE test
[d] for the 24-hour initial SVE test, the daily water levels will be measured once at start-up and once just before shutdown

Acronyms/Abbreviations:
FID – flame ionization detector
GAC – granular activated carbon
MPE – multiphase extraction
PID – photoionization detector
SVE – soil vapor extraction
VOC – volatile organic compound

4.5.2 Summary of MPE Start-up and Operating Procedures

The MPE pilot test was proposed to be operated at the maximum vacuum obtained during the initial baseline SVE test and at the same pumping rate as used for the aquifer test. However, the test was operated at a lower vacuum than maximum for most of the test to allow for unexpected field conditions and to better maintain the vacuum at a constant rate. The vacuum was increased to maximum later in the test to further evaluate MPE. The following list outlines the procedures that were followed during the MPE pilot test operation.

1. Immediately prior to test start-up, measured and recorded the initial depth to water and time of measurement in all wells at Site 16. Recorded barometric pressure.
2. Started the groundwater pump and data logger (adjusted pumping rate to the same constant rate used during the aquifer test). Simultaneously energized the vacuum blower and adjusted vacuum to the vacuum chosen during the SVE test.
3. Recorded initial vacuum in 16MPE1 and in the monitoring wells, and airflow, discharge pressure, and operating temperature in 16MPE1.
4. Manually measured water levels in well 16MW5 (designated for manual monitoring).
5. Collected initial soil gas and groundwater samples from 16MPE1 and the treatment systems.
6. Periodically measured and recorded water levels manually during the test in wells with transducers to check the transducer readings.
7. Recorded PID/flame ionization detector (FID) measurements from the influent side of the SVE system and the effluent side of the carbon canisters daily initially, and as necessary during the later portion of the testing.

8. Recorded airflow at 16MPE1, vacuum at the extraction and monitoring wells, discharge pressure, and operating temperature throughout the test at the frequency of measurements indicated on Table 4-2.
9. After the first 2 days of operation (or the equivalent duration of the aquifer test), evaluated test progress and considered modifying the soil vapor and groundwater extraction rates to optimize the MPE system. The test parameters were not modified at that time. Reevaluated test progress periodically; adjusted vacuum to the maximum 10 days into the test.
10. Collected groundwater samples daily from 16MPE1 during the first week and every other day during the second week of the test, and treatment system samples weekly. Collected soil gas samples daily from 16MPE1 and weekly from the treatment system effluent during the test.
11. On the last day of the test, repeated step 10 for sampling the well.
12. Recorded final vacuum measurements in the designated wells.
13. At SWDIV's request, continued the MPE pilot test after the initially proposed 14 days (Section 5.4).

4.6 SUMMARY OF TEST MONITORING

This section summarizes the wells that were monitored for the aquifer, SVE, and MPE pilot tests as described in the previous sections. Table 4-3 presents the wells that were considered to be necessary for monitoring to meet the objectives of each test. The well monitoring networks were subject to modification based on field conditions.

4.7 GROUNDWATER SAMPLING

Groundwater sampling was conducted prior to starting the first test and during the pilot testing. Sampling following pilot testing completion has not yet been conducted due to ongoing testing (Section 5.4). Analytes tested included VOCs, SVOCs, TPH, and various treatability parameters. The treatability parameters were selected based on U.S. EPA guidelines for conducting treatability studies under CERCLA (U.S. EPA 1992a) and U.S. Army Corps of Engineers guidelines contained in the MPE engineering manual (U.S. Army Corps of Engineers 1999), with consideration for the applicability of individual parameters to Site 16 conditions and test objectives. Table 4-4 summarizes the groundwater sampling program for the MPE pilot testing. Table 4-5 summarizes the analysis, sample type, and purpose of the required samples.

Groundwater sampling procedures and quality control are described in detail in the Field Sampling Plan (FSP) in the Work Plan (BNI 2000a), and in CLEAN SOP 8. For each well, a groundwater sample was collected after the well had been purged and temperature, pH, and specific conductance had stabilized as discussed in Section 2.4. For new wells, groundwater samples were collected after waiting at least 48 hours following completion of well development. Samples of groundwater from the treatment system were collected from a sample port valve while the treatment system was operating. In addition to

Table 4-3
Summary of Wells Monitored During the Pilot Testing

Test	Wells Monitored	Parameter	Method	Frequency
All tests	Background well[a]	Water levels	Water-level meter	Daily during entire pilot testing period
16GE1 aquifer step test	16GE1	Water levels	Transducer	Logarithmic[b]; restart for each step
16GE1 constant-rate aquifer test	16GE1, 16MW4, 16MW5	Water levels	Transducers	Logarithmic; restart at recovery phase
16GE1 constant-rate aquifer test	16MW6	Water levels	Water-level meter	Logarithmic
16MPE1 aquifer step test	16MPE1	Water levels	Transducer	Logarithmic; restart for each step
16MPE1 constant-rate aquifer test	16MPE1, 16MW1, 16MW6, 16MW7, 16_DBMW52	Water levels	Transducers	Logarithmic; restart at recovery phase
	16MW5	Water levels	Water-level meter	Logarithmic
16MPE1 initial SVE test	16MW1, 16MW6, 16MW7, 16MW5	Water levels and vacuum	Water-level meter and Magnehelic® gauges	Water levels: prior to test start-up Vacuum (except 16MW5): 15 to 30 min. until stabilized; then twice daily
	16MPE1	Water levels and vacuum	Absolute pressure transducers (2)[c] and Magnehelic gauge	15 to 30 min. until stabilized; then twice daily[d]
	16MV1	Vacuum	Magnehelic gauge	15 to 30 min. until stabilized; then twice daily
16MPE1 MPE test	16MW1, 16MW6, 16MW7	Water levels and vacuum	Transducers and Magnehelic gauges	Water levels: logarithmic Vacuum: 15 to 30 min. until stabilized; then twice daily; daily after 1 week
	16MPE1	Water levels and vacuum	Absolute pressure transducers (2)[c] and Magnehelic gauges	Water levels: logarithmic Vacuum: 15 to 30 min. until stabilized; then twice daily; daily after 1 week
	16_DBMW52	Water levels	Transducer	Logarithmic
	16MW5	Water levels	Water-level meter	Water levels: logarithmic (discontinued as no response recorded)
	16MV1	Vacuum	Magnehelic gauge	15 to 30 min. until stabilized; then twice daily

(table continues)

Table 4-3 (continued)

Notes:

[a] background wells outside the pumping area of influence were 16_DGMW81 for 16GE1, and 16MW3 for 16MPE1

[b] refer to Section 4.3.3 and Table 4-1 in the Work Plan

[c] one transducer was suspended in the airspace a few feet below the surface, and one transducer was submerged near the top of the pump; since absolute pressure transducers were not available with sufficient cable length for the submerged transducer, a gauge transducer that was vented to the extraction well was used

[d] the frequency is a minimum requirement; more frequent monitoring was programmed into the data logger (a 5-minute maximum)

Acronyms/Abbreviations:

min. – minutes
MPE – multiphase extraction
SVE – soil vapor extraction

Table 4-4
Summary of Groundwater Sampling Program

Test	Sample Location	Analyte(s)	Frequency	Total Samples
Wells				
Pretest initial sampling	All groundwater wells at Site 16	VOCs, SVOCs, TPH	Once (initial sampling)	10
Constant-rate aquifer tests	Extraction wells	VOCs	Beginning and end of test[a]	4[b]
MPE test	Extraction well	VOCs	Once a day first week, three samples thereafter, and end of test	9[c]
Treatment System				
Constant-rate tests	Influent to and effluent from GAC canisters	Treatment parameters,[d] VOCs	End of test	4[b]
MPE test	Influent to and effluent from GAC canisters	VOCs	Beginning, middle, and end of test[c,e]	6[c,e]
Constant-rate and MPE tests	Midfluent between the GAC canisters	VOCs	End of constant-rate test in 16MPE1; beginning and middle of MPE test; or as needed[f]	3[c]

Notes:
[a] a sample could not be collected at the end of the 16GE1 test due to unexpected equipment problems (generator failure)
[b] two samples collected per test
[c] since the test was extended longer than 2 weeks (refer to Section 5.4), additional samples (not indicated in table) were collected after the second week of pumping and before test termination
[d] treatment parameters included biochemical oxygen demand, chemical oxygen demand, alkalinity, total dissolved solids, total suspended solids, total organic carbon, calcium, magnesium, manganese, sodium, potassium, iron, and hardness (refer to Table 4-5 for details)
[e] additional samples were collected as needed for VOC analysis only to monitor carbon breakthrough of the second GAC canister
[f] midfluent samples were collected primarily to monitor carbon breakthrough of the first GAC canister

Acronyms/Abbreviations:
GAC – granular activated carbon
MPE – multiphase extraction
SVOC – semivolatile organic compound
TPH – total petroleum hydrocarbons
VOC – volatile organic compound

Table 4-5
Groundwater Sample Analysis, Sample Type, and Purpose

Chemical Parameter	Chemical Analysis	Container	Purpose of Analysis
Wells			
VOCs	U.S. EPA Method 8021B	Three 40-mL VOA vials; pH < 2 with HCl; no headspace; cool, 4 °C	To evaluate concentrations of VOCs in groundwater to estimate mass, mass removal, and treatment requirements
SVOCs	U.S. EPA Method 8270	Two 1-liter amber glass bottles; cool, 4 °C	To evaluate concentrations of SVOCs in groundwater (if present)
TPH	U.S. EPA Method 8015-M	Two 1-liter amber glass bottles; pH < 2 with HCl; cool, 4 °C	To evaluate concentrations of petroleum hydrocarbons in groundwater (if present)
Treatment Parameters			
BOD	U.S. EPA Method 405.1	1-liter polyethylene bottle; no headspace; cool, 4 °C	To indicate the quantity of biologically oxidizable material (i.e., electron donors) present; to assess whether the BOD level in extracted water will meet discharge requirements, if any
COD	U.S. EPA Method 410	125-mL polyethylene bottle; pH < 2 with HCl or H_2SO_4; cool, 4 °C	To indicate the quantity of chemically oxidizable material present; to assess the availability of electron donors
Alkalinity	U.S. EPA Method 310.1	250-mL polyethylene bottle; cool, 4 °C	To assess whether conditions are too acidic or alkaline to support abundant microbial populations and whether or not carbon dioxide will be generated as a result of aerobic degradation
TDS	U.S. EPA Method 160.1	250-mL polyethylene bottle; cool, 4 °C	To assess salinity
TSS	U.S. EPA Method 160.2	250-mL polyethylene bottle; cool, 4 °C	To assess the amount of solids in the extracted groundwater for treatment requirements
TOC	U.S. EPA Method 415.1	40-mL amber vial; pH < 2 with H_2SO_4; cool, 4 °C	To indicate the ability of organic compounds to partition to the solid or aqueous phases; may be used to assess availability of electron donors

(table continues)

Table 4-5 (continued)

Chemical Parameter	Chemical Analysis	Container	Purpose of Analysis
Iron	U.S. EPA Method 6010B	1-liter polyethylene bottle; pH < 2 with HNO_3; cool, 4 °C	To indicate the presence of either reductive or oxidative conditions and to indicate need for treatment of iron in extracted groundwater; ferrous iron may be used to assess whether ferric iron is being used as an electron acceptor
Calcium, magnesium, manganese, sodium, potassium	U.S. EPA Method 6010B	1-liter polyethylene bottle; pH < 2 with HNO_3; cool, 4 °C	To indicate the presence of cations/ anions which could precipitate in any treatment process
Hardness	U.S. EPA Method 130.1	250-mL polyethylene bottle; pH < 2 with HNO_3; cool, 4 °C	To indicate alkalinity and tendency for scale formation

Acronyms/Abbreviations:
- °C – degrees Celsius
- BOD – biochemical oxygen demand
- COD – chemical oxygen demand
- HCl – hydrochloric acid
- HNO_3 – nitric acid
- H_2SO_4 – sulfuric acid
- mL – milliliter
- SVOC – semivolatile organic compound
- TDS – total dissolved solids
- TOC – total organic carbon
- TPH – total petroleum hydrocarbons (gasoline and diesel)
- TSS – total suspended solids
- U.S. EPA – United States Environmental Protection Agency
- VOA – volatile organic analysis
- VOC – volatile organic compound

samples collected for treatment system parameters, VOC samples were collected from between (midfluent) and after (effluent) the GAC canisters on an as-needed basis in order to prevent potential carbon breakthrough from occurring during the test.

4.8 SOIL GAS SAMPLING

Soil gas sampling was conducted prior to starting the SVE test to establish initial VOC concentrations in soil and during the tests to track the effects of the pilot testing on VOC concentrations. Sampling following pilot testing completion has not yet been conducted due to ongoing testing (Section 5.4). Soil gas samples were also collected to comply with SCAQMD air emissions discharge requirements for VOCs. Table 4-6 summarizes the soil gas sampling program for the MPE pilot testing. Table 4-7 summarizes the analysis, sample type, and purpose of the required samples.

Table 4-6
Summary of Soil Gas Sampling Program

Test	Sample Location	Analyte(s)	Frequency	Total Samples
Wells				
Pretest initial sampling	16MPE1, 16MV1, 16MW1, 16MW6, 16MW7	VOCs, fixed gases	Once (initial sampling); fixed gases from 16MPE1 only	5
Baseline SVE test	MPE1	VOCs	Beginning, middle, and end of test[a]	3
MPE test	MPE1	VOCs	Daily[b]	10[b]
Treatment System				
Baseline SVE test	Effluent from VGAC canisters	VOCs	Beginning and end of test	2
MPE test	Effluent from VGAC canisters	VOCs	Beginning, middle, and end of test [b,c]	3 [b,c]
SVE and MPE tests	Midfluent between the VGAC canisters	VOCs	Beginning and middle of MPE test, or as needed[d]	2

Notes:
[a] once each step
[b] since the test was extended longer than 2 weeks (refer to Section 5.4), additional samples (not indicated in table) were collected less frequently than daily after the second week of SVE and before test termination
[c] additional samples were collected as needed to monitor carbon breakthrough of the second GAC canister
[d] midfluent samples are collected primarily to monitor carbon breakthrough of the first GAC canister; additional samples were analyzed on an as-needed basis

Acronyms/Abbreviations:
GAC – granular activated carbon
MPE – multiphase extraction
SVE – soil vapor extraction
VGAC – vapor-phase granular activated carbon
VOC – volatile organic compound

Table 4-7
Soil Gas Sample Analysis, Sample Type, and Purpose

Chemical Parameter	Chemical Analysis	Container	Purpose of Analysis
VOCs	U.S. EPA Method 8021B	Tedlar™ bag	To evaluate concentrations of VOCs in soil gas to estimate mass, mass removal, and treatment requirements
Methane and fixed gases	ASTM D-1945	Summa® canister	To evaluate concentrations of methane and fixed gases in soil gas to assess biological activity in the vadose zone

Acronyms/Abbreviations:
ASTM – American Society for Testing and Materials
U.S. EPA – United States Environmental Protection Agency
VOC – volatile organic compound

Soil gas sampling procedures and quality control are summarized in Attachment A (Section 5.4) of the Work Plan (BNI 2000a). Sampling procedures were in compliance with all applicable rules and regulations. The soil gas samples were collected in Tedlar bags, with the exception of the fixed gas samples, which were collected in a Summa canister. In addition to soil gas samples collected for laboratory analysis, samples were collected for field screening with a PID.

Section 5
MPE PILOT TESTING RESULTS AND EVALUATION

The pilot study data were analyzed in accordance with the Work Plan (BNI 2000a) to fulfill the MPE pilot study objectives (Section 4.1). The implementability of a full-scale MPE system and its potential to achieve significant remediation and meet remediation goals will be evaluated as part of the draft final FS Report.

5.1 AQUIFER TESTS AT WELLS 16GE1 AND 16MPE1

Aquifer testing was evaluated by estimating aquifer characteristics (transmissivity, storativity, and specific capacity) and VOC removal rates (Section 5.6). This evaluation was used to assess the effectiveness of downgradient groundwater extraction in the VOC plume and as a baseline for the MPE test. Aquifer characteristics will be used to estimate the capture zone of each extraction well. Capture zone evaluations will be presented in the draft final FS Report. Estimates of aquifer characteristics can also be used to assist in the selection of additional well sites during remedial design.

5.1.1 Aquifer Step-Drawdown Testing

Step-drawdown tests were performed, one in each extraction well, to measure the aquifer's response to induced stress through pumping. Step-drawdown data yielded estimates for specific capacity and aided in the selection of the aquifer pumping rates for the constant-rate tests. Well efficiency estimates are presented in Section 5.1.2.

As discussed in Section 4, the step-drawdown testing in well 16GE1 was performed at successively increasing extraction rates of 4, 8, 10.5, 15, and 20 gpm. Two separate tests were conducted. Figure 5-1 illustrates the step-test water-level drawdown curves for 16GE1.

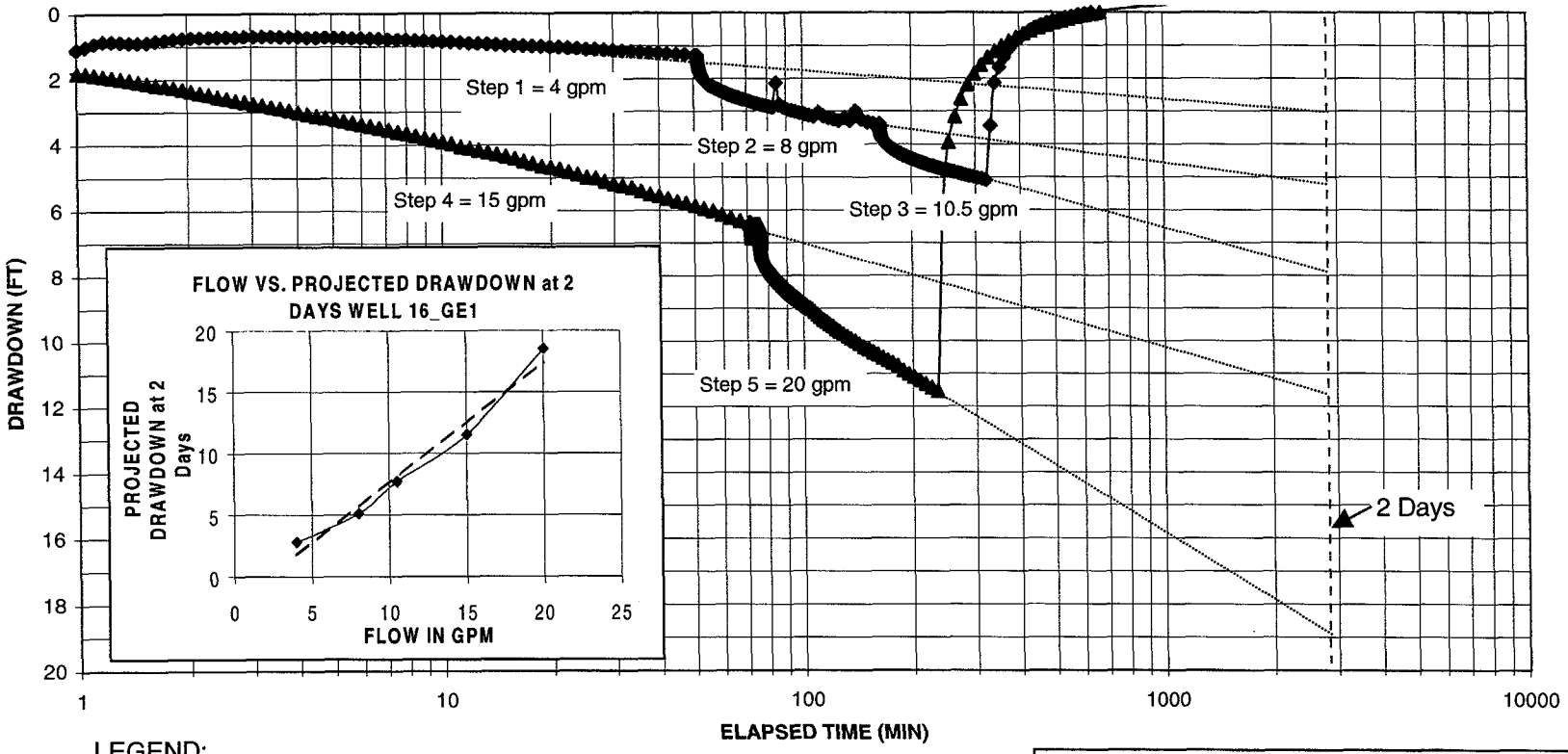
The step-drawdown test in well 16MPE1 was performed at successively increasing extraction rates of 0.4, 0.6, and 1 gpm. Figure 5-2 illustrates the step-test water level drawdown curves for 16MPE1.

5.1.1.1 SPECIFIC CAPACITY

The specific capacity of a well is its flow rate divided by the drawdown. Specific capacity decreases with increasing drawdown for a confined aquifer that has been dewatered or in an unconfined aquifer, because the saturated aquifer thickness has been reduced (Driscoll 1986). The specific capacities at the end of the first and last pumping steps for each extraction well are presented in Table 5-1. Based on the step-test data, the yield of well 16MPE1 is approximately 1 to 2 orders of magnitude lower than well 16GE1.

5.1.1.2 SELECTED PUMPING RATE FOR CONSTANT-RATE TESTS

Aquifer step testing aided in the selection of the flow rate for the constant-rate and MPE testing. Each step was run long enough to extrapolate the drawdown data to a terminal drawdown. The drawdown data were plotted on a semilog graph for each test (Figures 5-1 and 5-2). The pumping rates for the constant-rate tests were chosen to



LEGEND:

—◆— GE1 - first test

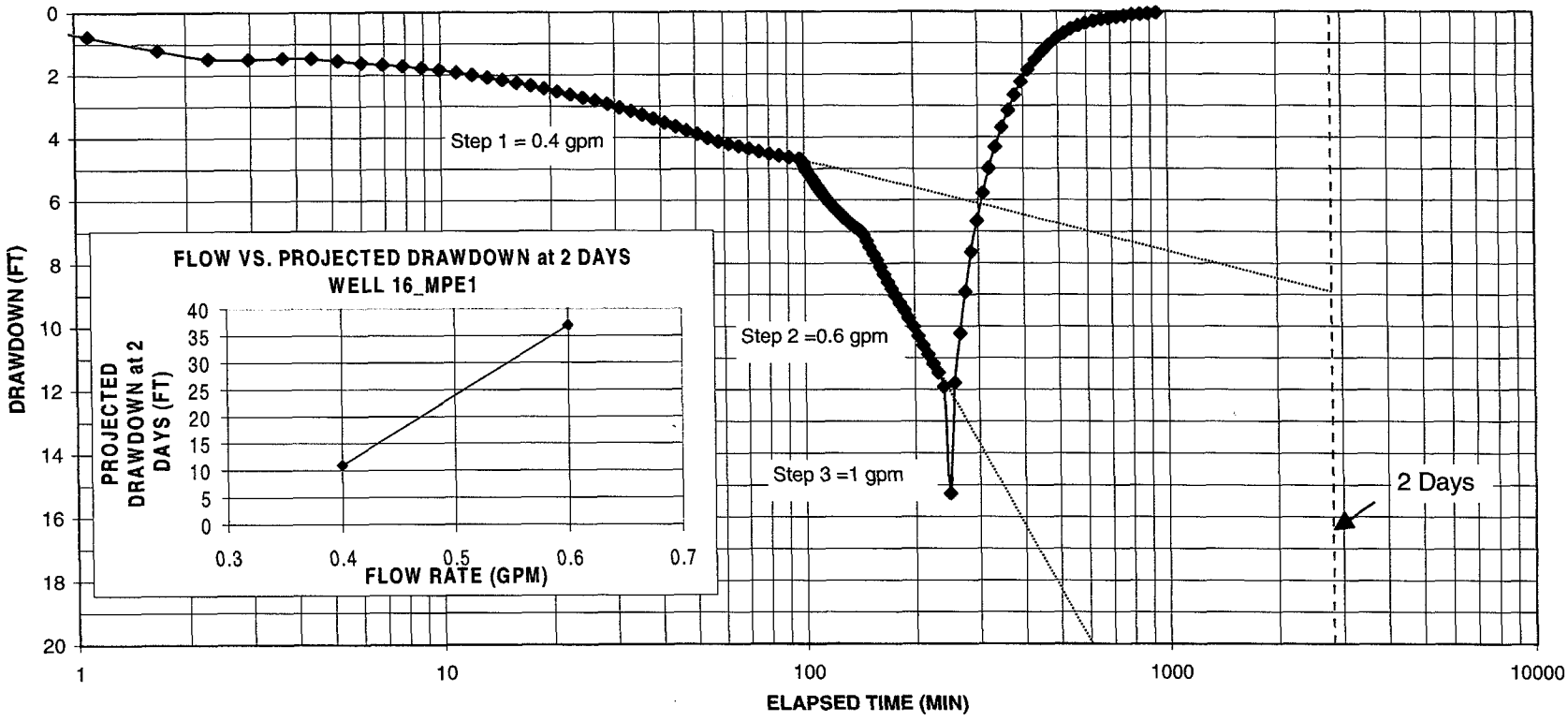
—▲— GE1 - second test

OU-3 Site 16 Technical Memorandum
Figure 5-1
Step-Test Drawdown in Well 16GE1
Site 16 - Crash Crew Pit No. 2

MCAS El Toro, California

Bechtel National, Inc.
CLEAN II Program

Date: 2/1/00
File No.: fig5-1.xls
Job No.: 22214-178
Rev. No.: A



LEGEND

—◆— 16_MPE1

OU-3 Site 16 Technical Memorandum
Figure 5-2
Step-Test Drawdown in Well 16MPE1
Site 16 - Crash Crew Pit No. 2

MCAS El Toro, California

Bechtel National, Inc.
CLEAN II Program

Date: 2/5/00
File No.: fig5-2.xls
Job No.: 22214-178
Rev. No.: A

Table 5-1
Summary of Specific Capacities During Step Tests

Well	Test	Extraction Rate (gpm)	Drawdown at End of Pumping Period (feet)	Specific Capacity (gpm/foot of drawdown)
16GE1	Step 1	4	1.3	3.1
16GE1	Step 5	20	11.53	1.7
16MPE1	Step 1	0.4	4.77	0.08
16MPE1	Step 2	0.6	11.92	0.05

Acronyms/Abbreviations:
gpm – gallons per minute
gpm/foot – gallons per minute per foot

provide the maximum desired drawdown that would give sufficient data for the proposed duration of the constant-rate tests but would not draw the water level down to the pump intake. Figures 5-1 and 5-2 show the initially proposed 2-day duration of each constant-rate test, and the projected drawdown at 2 days plotted as a function of pumping rate.

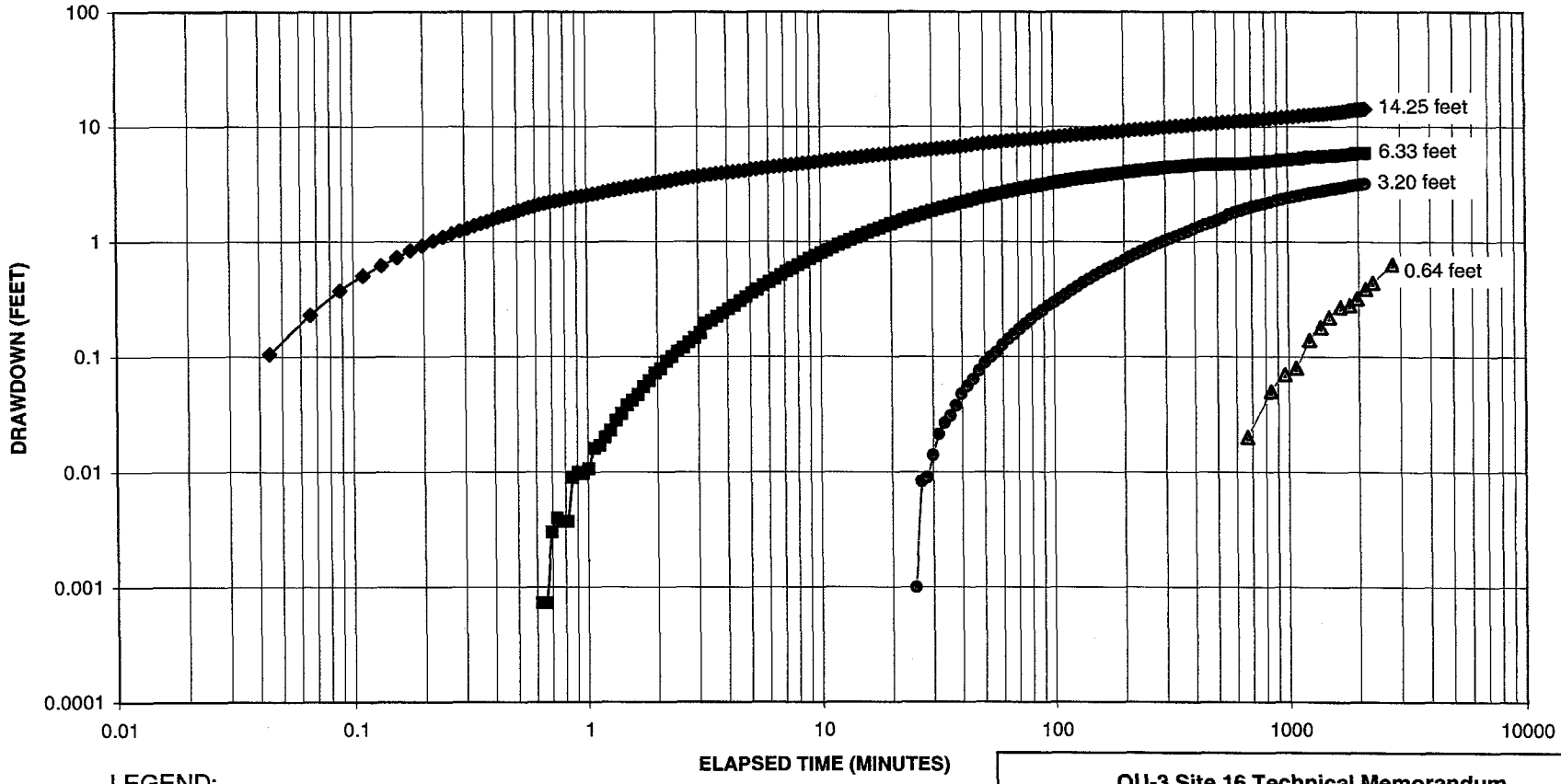
In 16GE1, the pump intake was set at approximately 188.5 feet bgs, which translated to a maximum allowable drawdown of approximately 31.5 feet (with a static water level of approximately 157 feet bgs). Based on the relatively high yield of this well and good initial response at the monitoring wells, it was not necessary to maximize drawdown for constant-rate testing. Therefore, a rate of approximately 16 gpm was chosen for the constant-rate test, which was projected to result in a drawdown of approximately 13 feet after 2 days of pumping (Figure 5-1).

In 16MPE1, the pump intake was set at approximately 187.5 feet bgs, which translated to a maximum allowable drawdown of approximately 27.5 feet (with a static water level of approximately 160 feet bgs). Due to its low yield, drawdown in well 16MPE1 was found to be relatively sensitive to small changes in flow rate. Therefore, a slightly conservative 0.45 gpm flow rate was chosen for the constant-rate test (slightly greater than the first step rate), which was estimated to result in a drawdown of approximately 17 feet after 2 days of pumping (Figure 5-2).

5.1.2 Aquifer Constant-Rate Testing

Constant-rate aquifer test data were the basis for estimating aquifer characteristics (transmissivity, storativity) and VOC removal rates. Extraction well capture zones will be evaluated in the draft final FS Report using the MODFLOW computer model developed for Site 16.

The aquifer test drawdown data were plotted on semilog and log-log graphs for evaluation of aquifer characteristics. These plots also facilitated evaluation of the aquifer response to pumping and the site hydrogeology. As discussed in Section 4, well 16GE1 was pumped at a constant rate of approximately 16 gpm. Figure 5-3 shows the resulting



LEGEND:

- MW4
- MW5
- MW6
- GE1 - Extraction Well

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Figure 5-3
Water Level Drawdown During 16GE1 Constant-Rate Aquifer Test

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extraction and monitoring well drawdown curves for the 16GE1 test. Well 16MPE1 was pumped at an average constant rate of approximately 0.45 gpm. Figure 5-4 shows the resulting extraction and monitoring well drawdown curves for the 16MPE1 test.

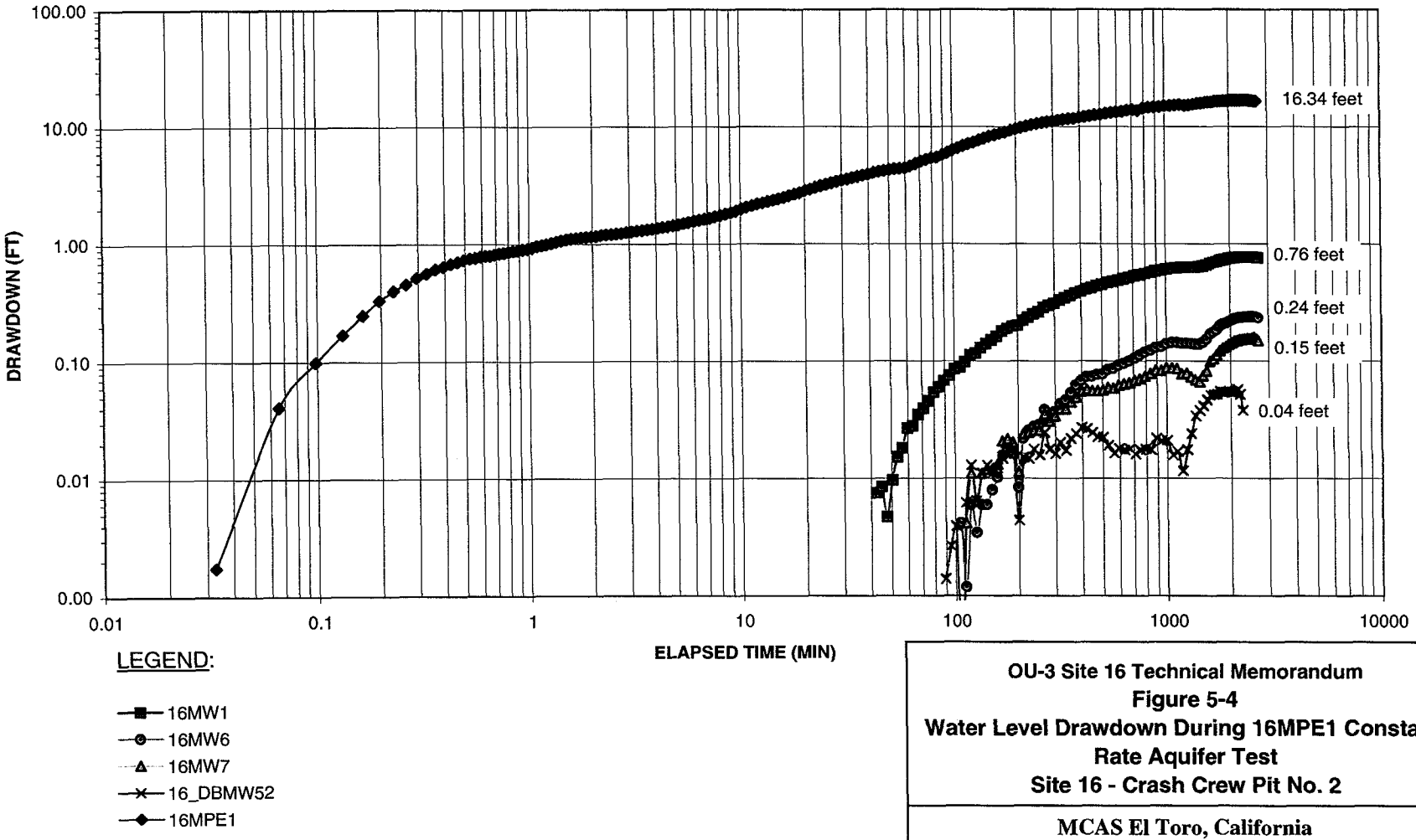
5.1.2.1 SPECIFIC CAPACITY

The specific capacity for the constant-rate tests may be used to aid in the selection of long-term pumping rates during remediation system design. The specific capacity of a well is its flow rate divided by the drawdown. The specific capacities at the end of the constant-rate tests for each extraction well are presented in Table 5-2. Based on these data, the yield of well 16GE1 is approximately 2 orders of magnitude higher than that of well 16MPE1. This is consistent with the thicker and more permeable sands and gravelly sands that were encountered in wells 16GE1 and 16MW5. The long-term specific capacity would be lower than the values in Table 5-2 should pumping continue for extended periods (e.g., several months). This should be considered during remediation system design.

5.1.2.2 AQUIFER PARAMETERS AND TEST EVALUATION

Aquifer parameters that were estimated from the water-level drawdown curves (Figures 5-3 and 5-4) are transmissivity and storage coefficient. Aquifer transmissivity is the product of hydraulic conductivity and aquifer thickness. It is a measure of an aquifer's ability to transmit water. The storage coefficient, or storativity, is the amount of water released from storage per unit surface area of aquifer per unit decline in hydraulic head. Storativity values are unitless. Higher values indicate a drainage of pore space that is termed a specific yield. Specific-yield values result from an aquifer that is partially confined or unconfined and its values can be close to the porosity of the aquifer. Estimates of aquifer transmissivity can be used for contaminant fate and transport modeling and estimating well capture zones as part of the draft final FS Report.

The AQTESOLV (Version 3.01.004) for Windows aquifer test analysis software package developed by HydroSOLVE, Inc., was used to analyze the drawdown data. AQTESOLV uses interactive, graphical curve-matching techniques to calculate analytical solutions for confined, unconfined, leaky (semiconfined), and fractured aquifer data. Various confined, unconfined, and leaky aquifer analytical solutions were applied to the pumping data from the monitoring wells. Pumping data from the extraction wells were not used because well inefficiencies can result in underestimation of transmissivity. For the recovery portion of the test at each well, including the extraction wells, the Theis solution for recovery was applied. First, the type curve for each solution was visually matched to the time versus drawdown data plot for each monitoring well. Then AQTESOLV was directed to calculate the analytical solution by statistical "best fit" automatic curve matching. Details on the AQTESOLV analysis, along with the AQTESOLV solution output plots and data, are presented in Appendix B, Aquifer Test Analysis and AQTESOLV Plots.



OU-3 Site 16 Technical Memorandum
Figure 5-4
Water Level Drawdown During 16MPE1 Constant-Rate Aquifer Test
Site 16 - Crash Crew Pit No. 2

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Table 5-2
Summary of Specific Capacities During Constant-Rate Tests

Well	Weighted Average Extraction Rate (gpm)*	Drawdown at End of Test (feet)	Specific Capacity (gpm/foot of drawdown)
16GE1	15.95	14.27	1.12
16MPE1	0.45	16.34	0.03

Note:
* weighted average is the time-weighted average of the manually recorded (instantaneous) flow rates from the flowmeter

Acronyms/Abbreviations:
gpm – gallons per minute
gpm/foot – gallons per minute per foot

Table 5-3 summarizes the aquifer parameter results based on the AQTESOLV calculations. The Hantush-Jacob analytical solution for leaky aquifers resulted in the best match to the test data overall during the pumping phase at all wells. Assumptions for the Hantush-Jacob solution also best reflect the Site 16 hydrogeologic conditions, which consist generally of higher permeability sand lenses interbedded with lower permeability silts and clays, which act locally as confining layers.

In general, the transmissivity in the 16MPE1 area is approximately 1 order of magnitude below that of the 16GE1 area wells. The storage coefficients at Site 16 are consistent with an aquifer that exhibits the mixed characteristics of a layered system. The storage coefficients are within the range of the minimum values expected for an unconfined aquifer and the maximum values expected for a confined aquifer. Storage coefficients are generally 0.01 to 0.3 for unconfined aquifers, and less than 0.01 for confined aquifers (Freeze and Cherry 1979; Bouwer 1978). The lower storage coefficient for well 16MW5 may be due to two permeable sand and gravelly sand layers (present in 16MW5 and 16GE1), which are bounded by lower permeability silts. These permeable layers likely supply the vast majority of the water to these wells. The boring logs for these two wells are contained in Appendix A. Therefore, over the duration of the test these layers exhibited a greater tendency toward confined aquifer characteristics relative to the strata present in the area of 16MW4, or the wells in the 16MPE1 area, which intersected thinner and less extensive confined sand lenses.

5.1.2.3 WELL EFFICIENCY

Well efficiency can be generally defined as the amount of drawdown theoretically predicted in the pumping well divided by the actual drawdown in the pumping well. Low well efficiency can be a result of poor well construction methods and development and/or hydrogeologic conditions. Efficiency data can be used to refine the well construction and development. During remediation system design, optimizing the well efficiency may

Table 5-3
Summary of Aquifer Parameters From Constant-Rate Pumping Tests

Well	Data Type	Analytical Method	Aquifer Type	Transmissivity (ft^2/min)	Storage Coefficient (dimensionless)
16MPE1 Test					
16MW1	Transducer	Hantush-Jacob	Leaky, no aquitard storage	0.012	0.011
16MW1	Transducer, recovery	Theis Recovery	Confined	0.018	[a]
16MW6	Transducer	Hantush-Jacob	Leaky, no aquitard storage	0.034	0.017
16MW6	Transducer, recovery	Theis Recovery	Confined	0.027	[a]
16MW7	Transducer	[b]	[b]	[b]	[b]
16MPE1	Transducer, recovery	Theis Recovery	Confined	0.012	[a]
16GE1 Test					
16MW4	Transducer	Hantush-Jacob	Leaky, no aquitard storage	0.121	0.038
16MW4	Transducer, recovery	Theis Recovery	Confined	0.117	[a]
16MW5	Transducer	Hantush-Jacob	Leaky, no aquitard storage	0.140	0.005
16MW5	Transducer, recovery	Theis Recovery	Confined	0.146	[a]
16MW6	Manual	Hantush-Jacob	Leaky, no aquitard storage	0.036	0.013
16GE1	Transducer, recovery	Theis Recovery	Confined	0.135	[a]

Notes:
[a] the storage coefficient cannot be calculated using the Theis Recovery method
[b] drawdown curves did not adequately match the theoretical curves due to minimal drawdown and data scatter

Acronym/Abbreviation:
ft^2/min – square feet per minute

result in cost savings due to a reduction in the number of extraction wells required for remediation.

To evaluate well efficiency, graphs of drawdown as a function of distance from the extraction well were prepared for 16GE1 and 16MPE1 (Figure 5-5). Best-fit lines were drawn through the monitoring well data collected near the end of each test and projected to the extraction well borehole radius. The projected drawdown at the extraction well divided by the measured drawdown provides an estimate of the well efficiency, assuming a homogeneous confined aquifer and a fully penetrating well (Driscoll 1986).

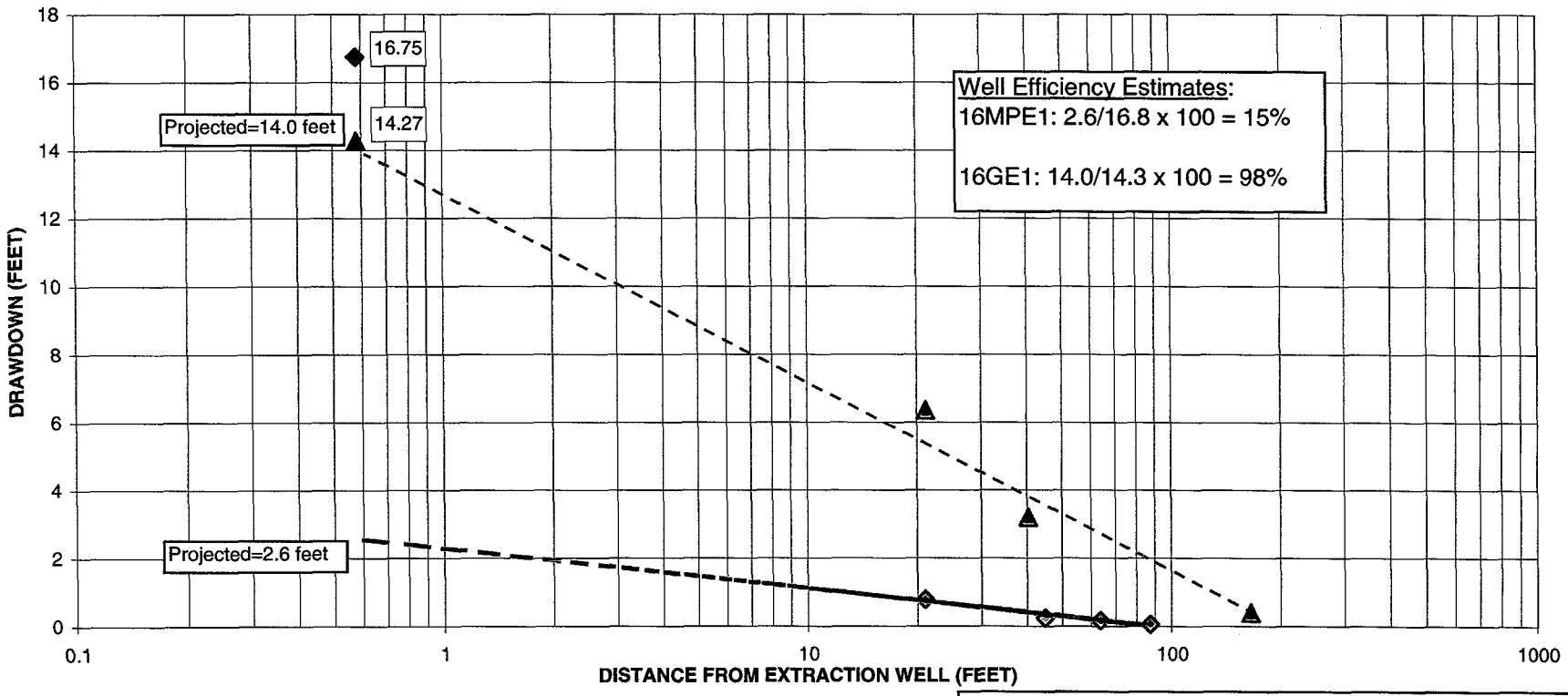
Since only a few, relatively thin silty sand layers yield most of the water to well 16MPE1, the efficiency of this well appears very low (15 percent) (Figure 5-5). This is typical for a well in a low-yield, layered groundwater system in which the screened interval intercepts only a few thin, permeable strata, while the majority of the strata yield little to no water. This highlights the importance of considering well efficiency and localized lithology during remediation design for Site 16, since aquifer dewatering may be much less than the extraction well indicates.

The well efficiency of 16GE1 is significantly greater due to the two thicker, higher yield sands crossed by the well screen (Figure 5-5). The actual efficiency is very high, but probably somewhat less than the estimated 98 percent efficiency. This may be attributed to the difference in the thickness and permeability of the individual layers intercepted by the three observation wells used for the 16GE1 plot. Since the thicker, higher yield sands encountered at 16GE1 were intercepted by only one of the 16GE1 monitoring wells, the drawdowns for these wells together are not directly related to distance from 16GE1, resulting in some uncertainty in the best-fit line. In contrast, the four observation wells used for the 16MPE1 plot are completed in similar strata, resulting in greater confidence in the best-fit line.

5.1.2.4 EXTRACTION WELL CAPTURE ZONES

To obtain a preliminary estimate of the capture zone, a semilog graph of drawdown versus distance from the extraction well can be produced, and a best-fit straight line can be drawn through the data and extrapolated to zero drawdown. However, this method is limited in that it does not account for the groundwater gradient. Extraction well capture zones will be estimated in the draft final FS Report using computer modeling software and a revision of the existing site model that incorporates the aquifer parameters and other site-specific data for each extraction well that were obtained during this pilot testing. Hypothetical capture zones will be calculated for selected time intervals of remediation. The capture zones will be used to assess whether the number and locations of wells estimated for remediation in the draft FS Report are sufficient to capture the VOC plume. These data will be included in the draft final FS Report.

A cursory review of the drawdown responses during the two tests indicates that well 16GE1 has a significantly larger capture zone than 16MPE1. During the 16GE1 test, a maximum drawdown of approximately 0.6 foot was detected in well 16MW6, located in the main pit approximately 165 feet from 16GE1 (Figure 5-5). By comparison,



LEGEND

◇ 16MPE1 Observation Wells

▲ 16GE1 Observation Wells

◆ 16MPE1 Extraction Well

▲ 16GE1 Extraction Well

- - - - Logarthmic Best-Fit to 16MPE1 Observation Wells

- - - - Logarthmic Best-Fit to 16GE1 Observation Wells

NOTES:
16MPE1 data from 2379 minutes into the test
16GE1 data from 2139 minutes into the test

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Figure 5-5
Well Efficiency Estimates During Constant-Rate Aquifer Tests
Site 16 - Crash Crew Pit No. 2

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drawdown was effectively zero approximately 90 feet from 16MPE1 during the constant-rate test.

5.1.2.5 VOC CONCENTRATIONS IN GROUNDWATER

As discussed in Section 4, groundwater samples were collected during the constant-rate tests from the extraction wells and from the treatment system to verify that VOCs had been removed from the groundwater through the groundwater treatment system. The results for wells 16GE1 and 16MPE1 are presented on Tables 5-4 and 5-5, respectively. The TCE concentrations in both wells during the testing were lower than the initial sample results (presented in Section 3). These data were used for the mass removal calculations in Section 5.6. The MPE test analytical results in Table 5-5 are discussed in Section 5.3.3. The metals and general chemistry results in Table 5-4 are discussed below.

5.1.2.6 EVALUATION OF TREATABILITY PARAMETERS

Treatability parameters provide data needed to evaluate the conditions that affect remediation of the VOCs in the subsurface. This information supports evaluation of MPE effectiveness, and the treatability data can be used to facilitate future remedial design of the treatment systems. During the testing, treatment system components were inspected visually for chemical precipitates or biological activity. Observed on some downhole equipment, such as the pressure transducers and groundwater pumps, were thin, brown deposits. These may have been fine sediment and/or iron-related bacteria, which were described as part of the Site 24 groundwater pilot tests (BNI 1998). After extended pumping periods, suspended fines were noted to slowly build up inside the 16MPE1 acrylic flowmeter, which required periodic cleaning as a result.

Treatability parameters included selected metals and general chemistry. The results of treatability parameter analyses for 16GE1 and 16MPE1 are presented in Tables 5-4 and 5-6, respectively. One sample was collected from each extraction well and its corresponding treated effluent. The treatability data will be used to further evaluate the various treatment alternatives presented in the draft final FS Report.

Groundwater quality can influence treatment system design, such as the size of equipment and required treatment components. In addition, treatment system components have the potential to become clogged due to chemical, biological, and/or physical processes. The potential for fouling of the GAC canisters will be evaluated in the draft final FS Report using the influent and effluent treatability parameter results.

5.2 SOIL VAPOR EXTRACTION TEST AT WELL 16MPE1

Evaluation of SVE test results included estimating the SVE ROI, the VOC concentrations prior to MPE, VOC mass removal rates, and optimal vapor extraction rates. The data evaluation methods below were also used for the MPE test, and the baseline SVE test results were compared to the MPE test results (Section 5.3).

Table 5-4
Groundwater Analytical Results During Constant-Rate Testing in Well 16GE1

		LOCATION/SAMPLE ID/DATE			
Analytes	**Units**	**16GE1 1788100 09/21/00**	**16GE1 1788102 09/22/00**	**16GE1-dup 1788103 09/22/00**	**Treated Effluent 1788104 09/22/00**
Volatile Organic Compounds					
1,1,2-trichloro-1,2,2-trifluoroethane	µg/L	3.1	3.8	3.3	<[a] 0.5
Toluene	µg/L	4.8	0.96	1.3	< 0.5
Trichloroethene	µg/L	33	13	12	< 0.5
Trichlorofluoromethane	µg/L	< 0.5	< 0.5	0.2 J	< 0.5
Metals					
Calcium	µg/L	—[b]	132,000	134,000	136,000
Iron	µg/L	—	228	202	< 12.2
Magnesium	µg/L	—	101,000	102,000	104,000
Manganese	µg/L	—	15.9	14.1	24.8
Sodium	µg/L	—	111,000	110,000	114,000
General Chemistry					
Alkalinity (as $CaCO_3$)	mg/L	—	229	224	237
Biochemical oxygen demand	mg/L	—	< 4	< 4	< 4
Chemical oxygen demand	mg/L	—	5	< 5	< 5
Hardness	mg/L	—	747	755	768
Total dissolved solids	mg/L	—	1,300	1,300	1,280
Total suspended solids	mg/L	—	< 5	< 5	< 5
Total organic carbon	mg/L	—	0.8	0.6	0.1

Notes:
[a] less-than symbol indicates result is less than the detection limit indicated
[b] dash indicates sample was not analyzed

Acronyms/Abbreviations:
$CaCO_3$ – calcium carbonate
dup – duplicate sample
µg/L – micrograms per liter
mg/L – milligrams per liter

Data Qualifier:
J – estimated value

5.2.1 Soil Vapor Extraction Rate

The SVE test was conducted at three successively increasing steps of vacuum/average flow rate of approximately 20 inches of water/38 actual cubic feet per minute (acfm); 43 inches of water/83 acfm; and 82 inches of water/160 acfm. Figure 5-6 illustrates the observed vacuum responses during the SVE test. The multiple vapor extraction rates used during the initial SVE test were used to select an optimum flow rate for the MPE test by plotting flow rate versus applied vacuum at well 16MPE1 (Figure 5-7). This figure also shows MPE test data, which are discussed in Section 5.3. The figure shows a clear linear relationship between applied vacuum and vapor flow rate, indicating that the maximum potential flow rate (as dictated by the formation permeability) had not been reached with the SVE system used. Vapor flow rates can be limited by the permeability of the formation, such that further increases in vacuum do not result in an appreciable increase in flow rate.

Based on the graph and the approximately 15 feet of vadose zone well screen in well 16MPE1 under static conditions, it was concluded that the maximum possible vacuum sustainable by the blower (about 83 inches, or 6.9 feet of water) could be used for the MPE test. However, a lower vacuum of approximately 65 inches of water was initially selected to allow for any unexpected conditions during MPE and to allow some flexibility in maintaining the vacuum at the desired level during the test.

5.2.2 SVE Effective Radius of Influence

Two terms used to describe the extent of the effect of SVE are ROI and EROI. ROI can be estimated using graphical methods by plotting vacuum versus distance from the MPE well on a semilog graph. A best-fit straight line is then drawn through the data points and extrapolated to zero vacuum. Typically, a percentage of the vacuum extraction rate (e.g., 1 percent) or a fixed value (e.g., 0.1-inch vacuum) is used to define the ROI. However, the effective zone of remediation may be less than the ROI estimated in this manner because vacuum propagation and air velocity decrease substantially with distance from the extraction well (U.S. EPA 1992b). Therefore, vacuum propagation through the subsurface was evaluated to estimate an EROI, which is a more realistic measure of ROI.

The EROI is defined as the radius at which a critical airflow velocity is reached (Stumpf 1992). This critical airflow velocity was assumed to be 0.02 foot per minute, which is the more conservative value referenced by Stumpf (1992). The estimated radius, or EROI, at which this velocity was predicted to occur at Site 16 due to SVE at well 16MPE1 was calculated for the three stepped applied vacuum/flow rates. In addition, an EROI was also estimated for the maximum vacuum/flow attained during an extended portion of the MPE test after the blower was modified (Section 5.4). EROI was estimated using methods described by Johnson, Kemblowski, and Colthart (1990) and Johnson, Stanley, et al. (1990), which account for various soil parameters, well construction, and recorded vapor flow rate and vacuum. In addition, the ROI is also required as input to the analysis. The ROI for this purpose was assumed to be the distance at which 1 percent of the applied vacuum at the extraction well occurred.

Table 5-5
Groundwater Analytical Results for VOCs Detected During Pilot Testing in Well 16MPE1

	LOCATION/SAMPLE ID (178XXXX)/DATE																				
Analyte	Well 8106 09/28/00	Well 8108 09/29/00	Effluent 8109 09/29/00	Midfluent 8110 09/29/00	Well 8112 09/30/00	Well 8112A 10/17/00	Midfluent 8113A 10/17/00	Effluent 8115 10/17/00	Well 8116 10/18/00	Well 8118 10/19/00	Well 8121 10/20/00	Well-Dup 8122 10/20/00	Well 8124 10/23/00	Midfluent 8125 10/23/00	Effluent 8126 10/23/00	Well 8128 10/25/00	Well 8131 10/27/00	Well 8133 11/16/00	Effluent 8134 11/16/00	Well 8135 12/27/00	Effluent 8136 12/27/00
Benzene	0.3 J	0.3 J	<* 0.5	< 0.5	0.4 J	0.5 J	< 0.5	< 0.5	0.4 J	0.5 J	0.5 J	0.5 J	0.5 J	< 0.5	< 0.5	0.5 J	0.5	0.5	< 0.5	0.3 J	< 0.5
Chloroform	3	1.7	< 0.5	< 0.5	1.8	4.5 J	< 0.5	< 0.5	2.4	2.5	2.6	2.6	2.6	< 0.5	< 0.5	2.4	2.5	3.8	< 0.5	3.0	< 0.5
Chloromethane	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.5 J	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.2 J	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Dichlorodifluoromethane	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.2 J	0.3 J	0.3 J	0.2 J	< 0.5	< 0.5	0.2 J	0.2 J	< 0.5	< 0.5	< 0.5	< 0.5
1,1-dichloroethane	0.3 J	< 0.5	< 0.5	< 0.5	< 0.5	1 J	< 0.5	< 0.5	0.3 J	0.2 J	0.3 J	0.3 J	0.3 J	< 0.5	< 0.5	0.2 J	0.2 J	0.3 J	< 0.5	0.2 J	< 0.5
1,1-dichloroethene	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	0.2 J	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Ethylbenzene	0.2 J	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
Toluene	110	40	< 0.5	< 0.5	25	14 J	< 0.5	< 0.5	1.3	1.3	1.1	0.99	2.5	< 0.5	< 0.5	0.96	0.4 J	0.5 J	< 0.5	0.4 J	< 0.5
Trichloroethene	160	220	< 0.5	< 0.5	230	240	< 0.5	< 0.5	240	260	260	250	250	< 0.5	< 0.5	250	250	280	< 0.5	240	< 0.5
1,1,2-trichloro-1,2,2-trifluoroethane	21	32	< 0.5	< 0.5	34	12 J	< 0.5	< 0.5	35	37	37	36	32	< 0.5	< 0.5	33	36	41	< 0.5	20	< 0.5
m-, p-xylene	0.5 J	< 1	< 1	< 1	< 1	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5
o-xylene	0.4 J	0.2 J	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5	< 0.5

Note:
* less-than symbol indicates result is less than the detection limit

Acronyms/Abbreviations:
dup – duplicate sample
µg/L – micrograms per liter
mg/L – milligrams per liter
VOC – volatile organic compound

Data Qualifier:
J – estimated value

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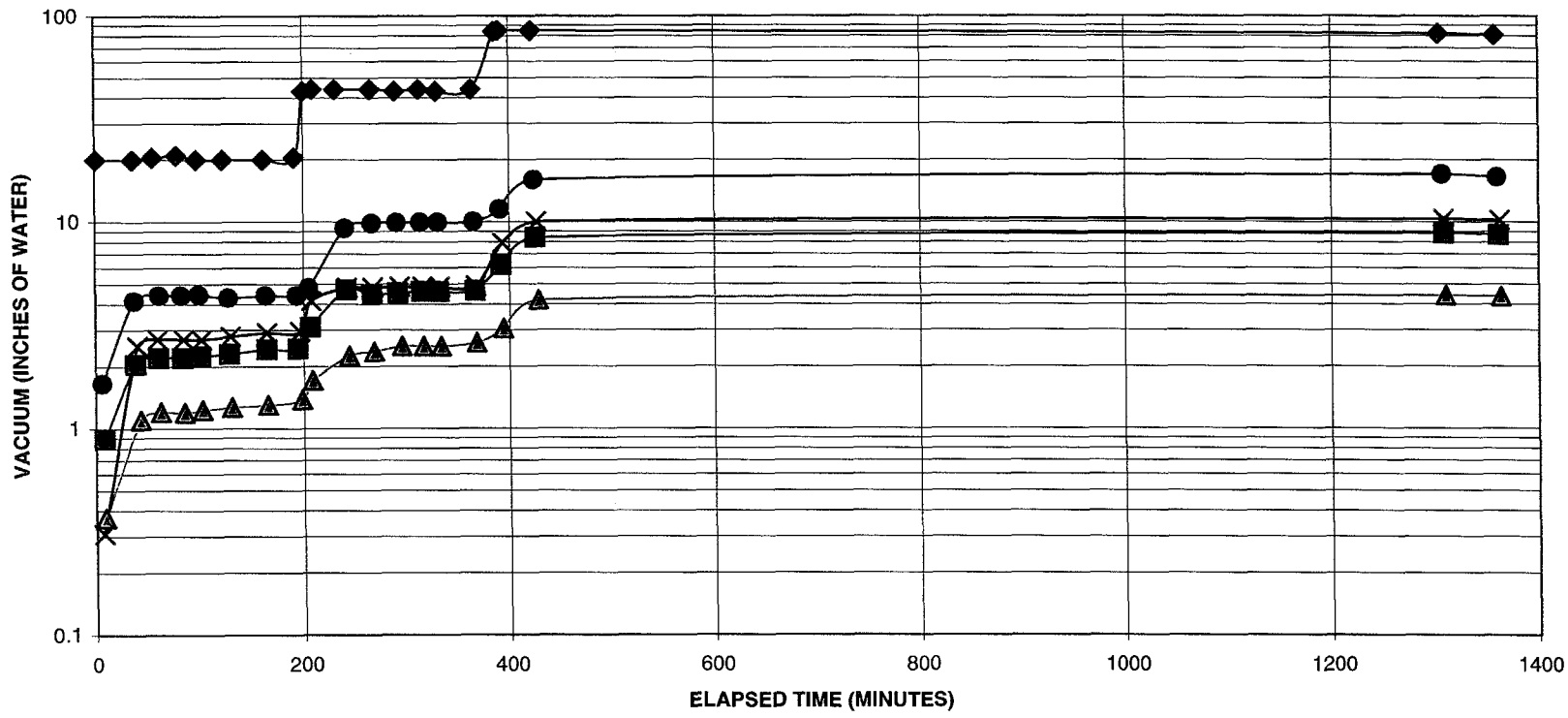
Table 5-6
Groundwater Analytical Results for General Chemistry and Metals During Pilot Testing in 16MPE1

Analyte	Units	LOCATION/SAMPLE ID/DATE 16MPE1 1788108 09/29/00	Treated Effluent 1788109 09/29/00
Metals			
Calcium	µg/L	219,000	220,000
Iron	µg/L	573	<* 23.1
Magnesium	µg/L	167,000	164,000
Manganese	µg/L	145	446
Potassium	µg/L	< 4,610	< 5,190
Sodium	µg/L	87,100	90,100
General Chemistry			
Alkalinity (as $CaCO_3$)	mg/L	167	233
Biochemical oxygen demand	mg/L	< 4	< 4
Chemical oxygen demand	mg/L	14	< 5
Hardness	mg/L	1,240	1,220
Total dissolved solids	mg/L	1,760	1,790
Total suspended solids	mg/L	45	5.0
Total organic carbon	mg/L	1.7	0.2

Note:
* less-than symbol indicates result is less than detection limit indicated

Acronyms/Abbreviations:
$CaCO_3$ – calcium carbonate
µg/L – micrograms per liter
mg/L – milligrams per liter



LEGEND:

- 16MW1
- 16MW6
- 16MW7
- 16VM1
- 16MPE1- SVE Well

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Figure 5-6
Vacuum Response During SVE in 16MPE1
Site 16 - Crash Crew Pit No. 2

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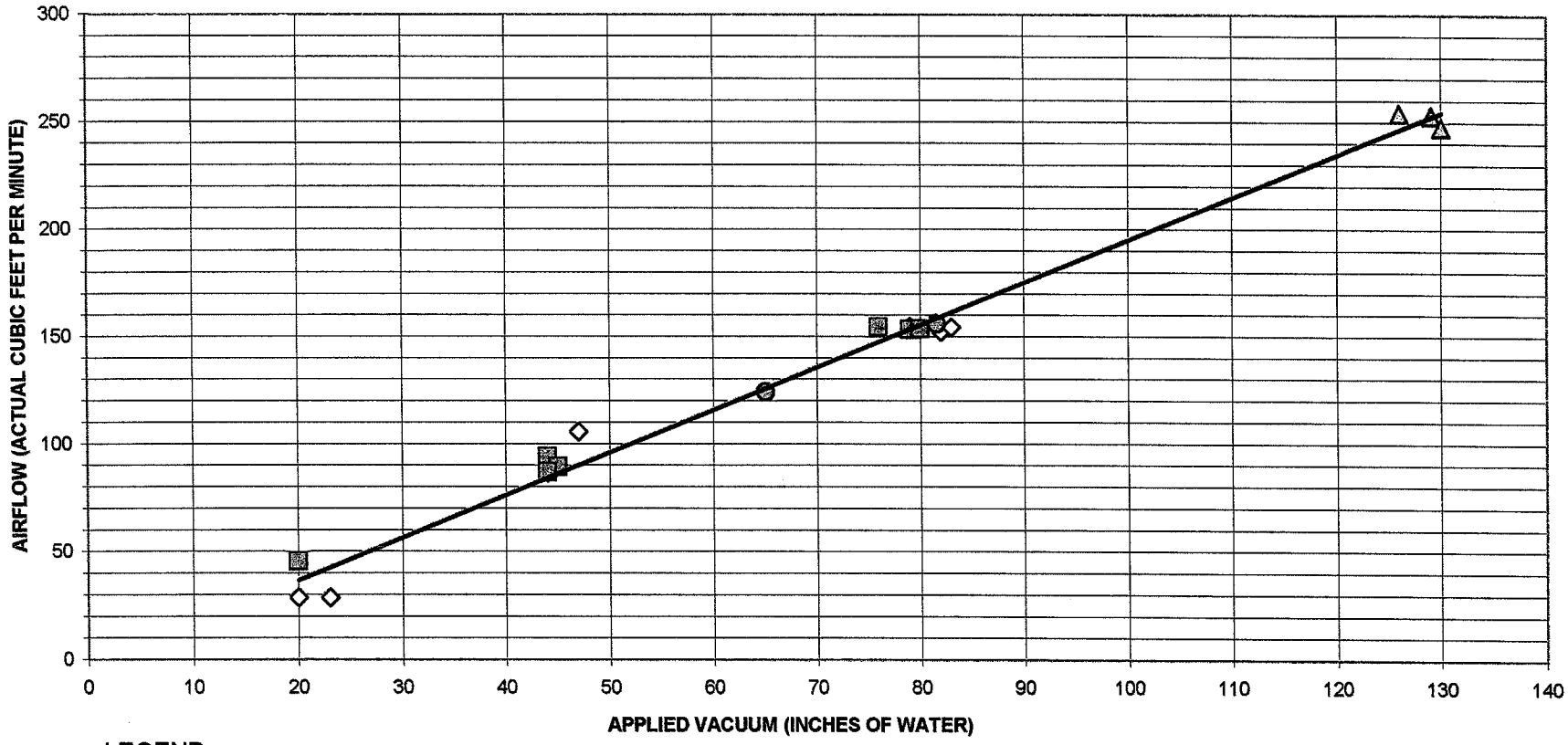

LEGEND:

- ◇ 16MPE1(SVE): 10/11/00
- ▨ 16MPE1(SVE): 10/10/00
- ○ MPE Test Data (average)
- △ 16MPE1(MPE): max capacity, 12/21-12/27
- —— Linear Best-Fit Trendline (all data: y=1.98x-2.48)

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Figure 5-7
Soil Vapor Extraction Rate as a Function of Applied Vacuum in 16MPE1

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Semilog plots of monitoring well vacuum versus distance were used to estimate these ROI values for each vacuum/flow rate (Figure 5-8). The scatter in the data points at each time period is attributed to the heterogeneous lithology.

Details of these calculations and the assumptions are presented in Appendix E. Table 5-7 summarizes the EROI estimates for well 16MPE1 at Site 16. Soil permeability is also included in Table 5-7 since it is calculated as part of the EROI estimates. Figure 5-9 illustrates the EROI extent relative to the main pit and soil gas concentrations. It is important to note that the EROI is an overall value for the vadose zone based on four monitoring wells, and that individual wells will indicate a higher (e.g., 16VM1) or lower (e.g., 16MW7) EROI depending on whether they intersect higher or lower permeability units.

The MPE conceptual design presented in the draft FS Report estimated that one SVE well would be required to remediate VOCs in soil vapor beneath Site 16. This estimate will be reevaluated in the draft final FS Report utilizing the EROI estimates in this section to assess whether more than one well is required.

5.2.3 VOC Concentrations in Soil Gas

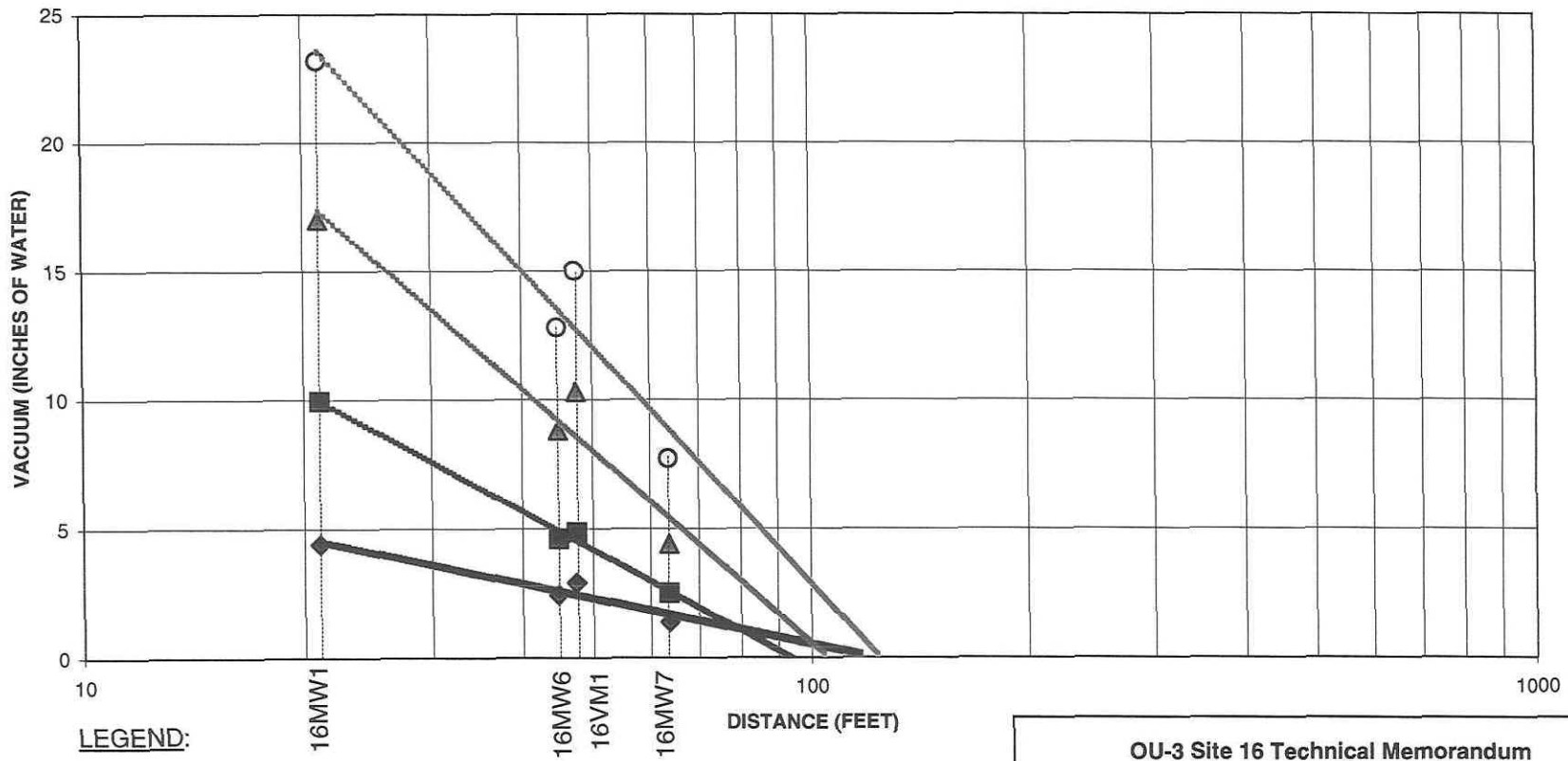
As discussed in Section 4, soil gas samples were collected during the baseline SVE test from the extraction well (16MPE1) and from the treatment system to verify that VOCs had been removed from the soil vapor via carbon. One soil gas sample was collected from the well during each of the three SVE steps. The final analytical results are presented on Table 5-8. The final laboratory data were reviewed and samples in which concentrations of a particular analyte were reported out of calibration range were diluted and reanalyzed. No laboratory quality control issues were identified in the final laboratory results. The TCE concentrations during the SVE test were approximately 2 to 4 times higher than the pretest TCE concentration in 16MPE1 (Figure 3-4). This may be due to the greater volume of soil gas extracted at a higher vacuum relative to the purged volume during pretest sampling, which may allow contact with a greater volume of contaminated soil. These data were used for the mass removal calculations in Section 5.4. The MPE test analytical results in Table 5-8 are discussed in Section 5.3.3.

5.3 MPE PILOT TESTING AT WELL 16MPE1

MPE allows SVE to access normally saturated soil and remove volatile contaminants that are adsorbed to soil or dissolved in residual water. MPE can also increase the yield of an extraction well, resulting in higher allowable pumping rates and therefore larger capture zones. MPE testing results were compared to SVE and conventional groundwater extraction results to evaluate the additional benefit of MPE.

5.3.1 Groundwater Extraction and SVE Rates

MPE has the potential to increase groundwater extraction and SVE rates above what would be expected if groundwater extraction or SVE were performed individually. Since MPE essentially can increase well yield by lowering the pressure in the well, increased



LEGEND:

- ◆ SVE: TIME=195 MIN; VACUUM=20 IN.
- ■ SVE: TIME=331 MIN; VACUUM=44 IN.
- ▲ SVE: TIME=1310 MIN; VACUUM=82 IN.
- ○ MPE: TIME=102653 MIN; VACUUM=126 IN.
- Log. (SVE: TIME=195 MIN; VACUUM=20 IN.)
- Log. (SVE: TIME=331 MIN; VACUUM=44 IN.)
- Log. (SVE: TIME=1310 MIN; VACUUM=82 IN.)
- Log. (MPE: TIME=102653 MIN; VACUUM=126 IN.)

OU-3 Site 16 Technical Memorandum
Figure 5-8
Observation Well SVE Vacuum as a Function of Distance from Extraction Well 16MPE1
Site 16 - Crash Crew Pit No. 2

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Table 5-7
Summary of SVE Estimated Effective Radius of Influence

Test	Applied Vacuum (inches of water)	Well Flow (acfm)[a]	Soil Permeability (darcy)[b]	EROI (feet)
SVE – Step 1	20.5	38.1	5.5	33
SVE – Step 2	45.5	82.7	5.25	67
SVE – Step 3	82	159.9	5.11	115
MPE – maximum[c]	126	254.4	4.99	155

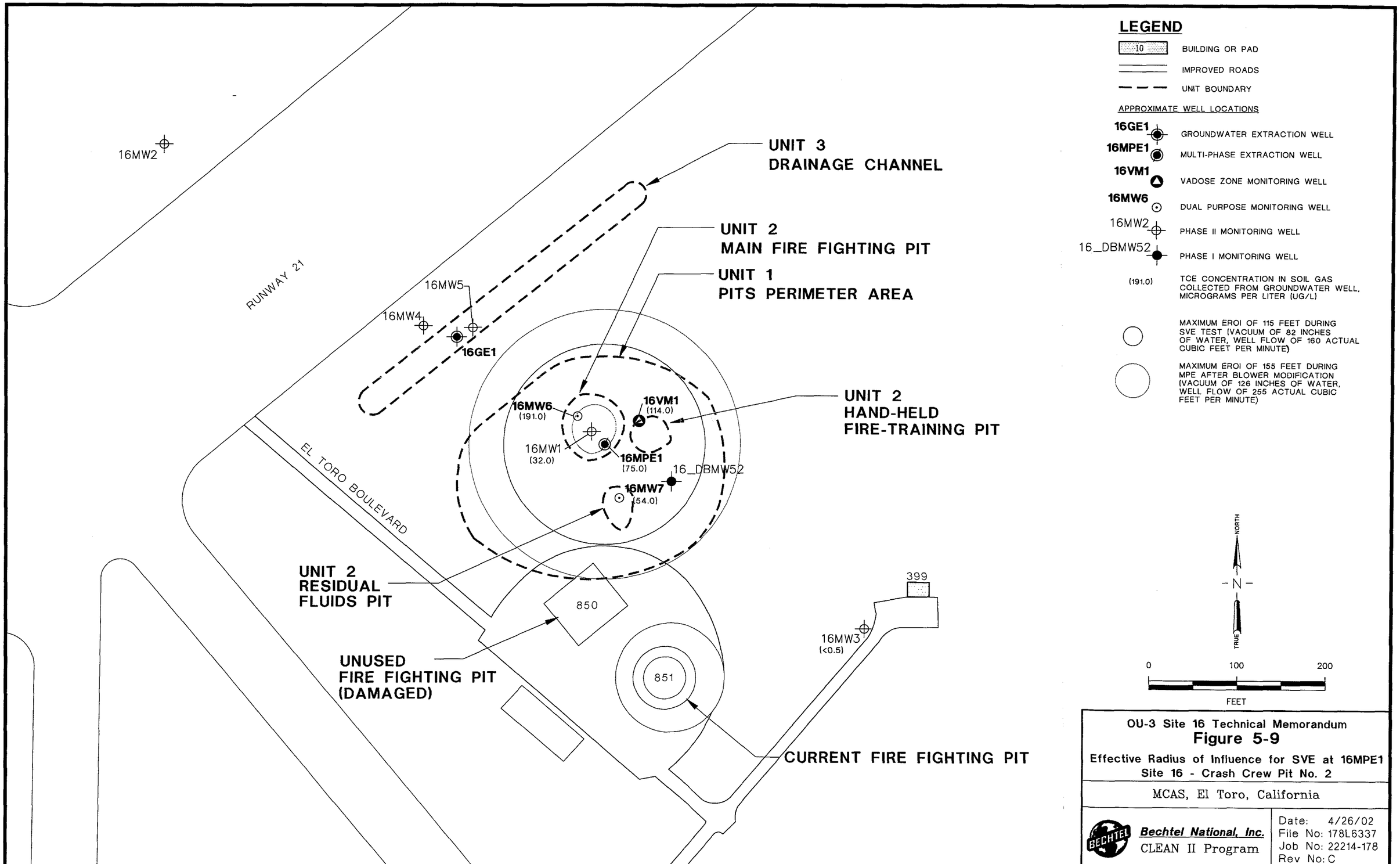
Notes:
[a] refer to Appendix E for calculations
[b] 1 darcy = 9.87×10^{-9} cm^2
[c] refer to Section 5.4

Acronyms/Abbreviations:
acfm – actual cubic feet per minute
cm^2 – square centimeter
EROI – effective radius of influence
MPE – multiphase extraction
SVE – soil vapor extraction

VOC recovery rates in groundwater can occur. MPE increases well yield by increasing the total differential pressure head in the extraction well. The increase in total head differential relative to conventional pumping is equivalent to the applied vacuum at the well.

For the duration of the MPE test, the groundwater pumping rate was maintained at a constant 0.45 gpm for comparison to the constant-rate test data and to evaluate the effects of varying the vacuum. Figure 5-10 illustrates the applied vacuum and water-level drawdown during the 2-week MPE test. Direct comparison to the constant-rate conventional aquifer test was made using only the first 2 days of MPE test data. Figure 5-11 shows a comparison of the conventional constant-rate test drawdown and the MPE test drawdown. The selected vacuum was initially 65 inches of water (5.4 feet), as discussed in Section 5.2.1. The vacuum was increased to the maximum blower capacity of approximately 83 inches of water 10 days into the test (Figure 5-10).

Figure 5-10 shows a sharp decrease and then subsequent increase in well drawdown from 6 to 8 feet from about 8,700 to 8,800 minutes into the test. This phenomenon resulted from temporarily stopping the groundwater extraction pump to clean the acrylic rotameter flow gauge. It was necessary to clean the gauge because silt accumulation on the inside of the gauge made the flow gauge difficult to read and also slightly impeded the float in the meter. If left unchecked, the silt would eventually have seriously impeded the float in the meter and would have restricted the flow of groundwater through the system. Figure 5-10 also shows only a slight increase in the water level when the vacuum was increased at approximately 14,400 minutes. The lack of sudden obvious corresponding rise in the water level in response to the increase in vacuum appears to be



OU-3 Site 16 Technical Memorandum

Figure 5-9

Effective Radius of Influence for SVE at 16MPE1
Site 16 - Crash Crew Pit No. 2

MCAS, El Toro, California

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Table 5-8
Soil Gas Analytical VOC Results During SVE and MPE Testing in Well 16MPE1

Sample ID	Sample Location	Date/Time of Collection	ANALYTE CONCENTRATION (micrograms per liter)											
			Total VOCs	F-11	F-113	1,1-DCA	cis-1,2-DCE	Benzene	TCE	Toluene	PCE	Ethylbenzene	Total Xylenes	Chloroform
SVE Test														
1788205	16MPE1	10/05/2000 12:13	437	22	260	<[a] 1	< 1	< 1	120	< 1	< 1	< 1	< 1	< 1
1788206	Effluent (stack)	10/05/2000 12:26	ND	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1788207	16MPE1	10/05/2000 17:55	751	21	520	< 2	< 2	< 2	210	< 2	< 2	< 2	< 2	< 2
1788208	16MPE1	10/06/2000 10:20	660	30	300	< 5	< 5	< 5	330	< 5	< 5	< 5	< 5	< 5
1788209	16MPE1 – dup	10/06/2000 10:22	716	36	330	< 5	< 5	< 5	350	< 5	< 5	< 5	< 5	< 5
1788210	Effluent (stack)	10/06/2000 10:30	ND	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1788211[b]														
MPE Test														
1788212	16MPE1	10/17/2000 10:07	223.3	4.3	89	< 2	< 2	< 2	130	< 2	< 2	< 2	< 2	< 2
1788213	Midfluent	10/17/2000 10:23	ND	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1788214	Effluent (stack)	10/17/2000 10:26	ND	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1788215	16MPE1	10/18/2000 11:55	445.8	10	130	< 1	< 1	1.9	290	3.2	< 1	3.6	7.1	< 1
1788216	16MPE1	10/19/2000 12:55	310.5	1.9	66	1.6	2.7	2.7	220	3.8	< 1	3.7	8.1	< 1
1788217	16MPE1	10/20/2000 10:08	149.3	1.3	41	< 1	1.8	1.7	95	2.6	< 1	2.7	3.2	< 1
1788218	16MPE1 – dup	10/20/2000 10:10	192.9	1.4	46	1.2	2.1	1.7	130	2.5	< 1	2.9	5.1	< 1
1788219	16MPE1	10/23/2000 14:05	52	< 1	20	< 1	< 1	< 1	32	< 1	< 1	< 1	< 1	< 1
1788220	Midfluent	10/23/2000 14:10	ND	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1788221	Effluent (stack)	10/23/2000 14:15	ND	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1	< 1
1788222	16MPE1	10/24/2000 14:45	75.2	1.2	30	< 1	< 1	< 1	44	< 1	< 1	< 1	< 1	< 1
1788223	16MPE1	10/25/2000 12:00	222.6	4.3	92	< 1	1.5	1.3	120	1.3	< 1	2.2	< 1	< 1
1788224	16MPE1	10/26/2000 11:50	157.4	2.8	62	< 1	< 1	< 1	91	< 1	< 1	1.6	< 1	< 1
1788225	16MPE1	10/27/2000 10:20	84	< 2	35	< 2	< 2	< 2	49	< 2	< 2	< 2	< 2	< 2
1788226	16MPE1	10/27/2000 12:20	191.3	3.3	78	< 2	< 2	< 2	110	< 2	< 2	< 2	< 2	< 2
1788227	16MPE1	10/30/2000 12:50	7.8	< 1	3.5	< 1	< 1	< 1	4.3	< 1	< 1	< 1	< 1	< 1
1788228	16MPE1	11/01/2000 13:35	74.1	1.1	31	< 1	< 1	< 1	42	< 1	< 1	< 1	< 1	< 1
1788229	16MPE1	11/03/2000 10:30	172.4	2.5	72	< 1	< 1	< 1	94	1.6	< 1	1	1.3	< 1
1788230	16MPE1	11/06/2000 13:10	152.2	2.4	65	< 1	< 1	< 1	79	1.9	< 1	2.1	1.8	< 1
1788231	16MPE1	11/09/2000 09:55	178	< 1	81	< 1	< 1	< 1	97	< 1	< 1	< 1	< 1	< 1
1788232	16MPE1	11/14/2000 12:42	22	< 2	7	< 2	< 2	< 2	15	< 2	< 2	< 2	< 2	< 2
1788233	16MPE1 – dup	11/14/2000 12:45	142.1	< 1	67	< 1	< 1	< 1	72	1.7	< 1	< 1	1.4	< 1
1788234	Midfluent	11/14/2000 12:55	400	< 2	150	< 2	< 2	< 2	250	< 2	< 2	< 2	< 2	< 2
1788235[c]	Effluent (stack)[b]	11/14/2000 14:17	208.4	1.6	160	< 1	< 1	< 1	45	< 1	< 1	< 1	< 1	1.8

(table continues)

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Table 5-8 (continued)

Sample ID	Sample Location	Date/Time of Collection	ANALYTE CONCENTRATION (micrograms per liter)											
			Total VOCs	F-11	F-113	1,1-DCA	cis-1,2-DCE	Benzene	TCE	Toluene	PCE	Ethylbenzene	Total Xylenes	Chloroform
1788236	16MPE1	11/16/2000 12:50	104.1	< 1	47	< 1	< 1	< 1	54	1.3	< 1	< 1	1.8	< 1
1788237[c]	Effluent (stack)	11/16/2000 12:55	223.6	< 1	120	< 1	1.9	< 1	100	< 1	< 1	< 1	< 1	1.7
1788238	16MPE1	11/21/2000 12:30	127.9	1.7	53	< 1	1.6	1.8	61	3.5	< 1	2.9	2.4	< 1
1788239	16MPE1	11/27/2000 13:30	70.3	< 1	29	< 1	< 1	< 1	39	1.1	< 1	< 1	1.2	< 1
1788240	16MPE1	11/30/2000 08:45	107.7	< 1	45	< 1	1.1	< 1	59	1.5	< 1	< 1	1.1	< 1
1788241	16MPE1	12/04/2000 13:31	62.2	< 1	25	< 1	< 1	< 1	36	1.2	< 1	< 1	< 1	< 1
1788242	16MPE1	12/13/2000 13:56	16.4	< 1	5.4	< 1	< 1	< 1	11	< 1	< 1	< 1	< 1	< 1
1788243	16MPE1	12/18/2000 10:55	28.3	< 1	8.9	< 1	< 1	< 1	18	1.4	< 1	< 1	< 1	< 1
1788244	16MPE1	12/21/2000 15:08	58	< 1	23	< 1	1.5	< 1	28	1.9	< 1	1.5	2.1	< 1
1788245	16MPE1 – dup	12/21/2000 15:10	87.7	1	33	< 1	1.8	1	41	3.5	< 1	2.8	3.6	< 1
1788246[c]	Effluent (stack)	12/21/2000 15:15	57.9	1.9	55	< 1	< 1	< 1	1	< 1	< 1	< 1	< 1	< 1

Notes:
[a] less-than symbol indicates result is less than the detection limit indicated
[b] sample 1788211 was only analyzed for oxygen + argon, nitrogen, carbon dioxide, and methane; the results were as follows: oxygen + argon = 3.34 % v/v, nitrogen = 81.3 %v/v, carbon dioxide = 15.2 % v/v, methane = 820 ppm; the sample was collected while the SVE system was running after formal shutdown of the SVE test
[c] due to large amounts of moisture present in extracted vapors and failure of the knockout pot pump to operate efficiently, vapor-phase carbon breakthrough occurred subsequently; vapor-phase carbon was changed out with new carbon on 08 December 2000; however, the problem was not resolved until January 2001 when the knockout pump was replaced; during this period, however, effluent levels were within permitted discharge levels

Acronyms/Abbreviations:
DCA – dichloroethane
DCE – dichloroethene
dup – duplicate
F-11 – Freon 11 (trichlorofluoromethane)
F-113 – Freon 113 (1,1,2-trichloro-1,2,2-trifluoroethane)
MPE – multiphase extraction
ND – not detected
% v/v – percent volume per volume
ppm – parts per million
SVE – soil vapor extraction
TCE – trichloroethene
VOC – volatile organic compound

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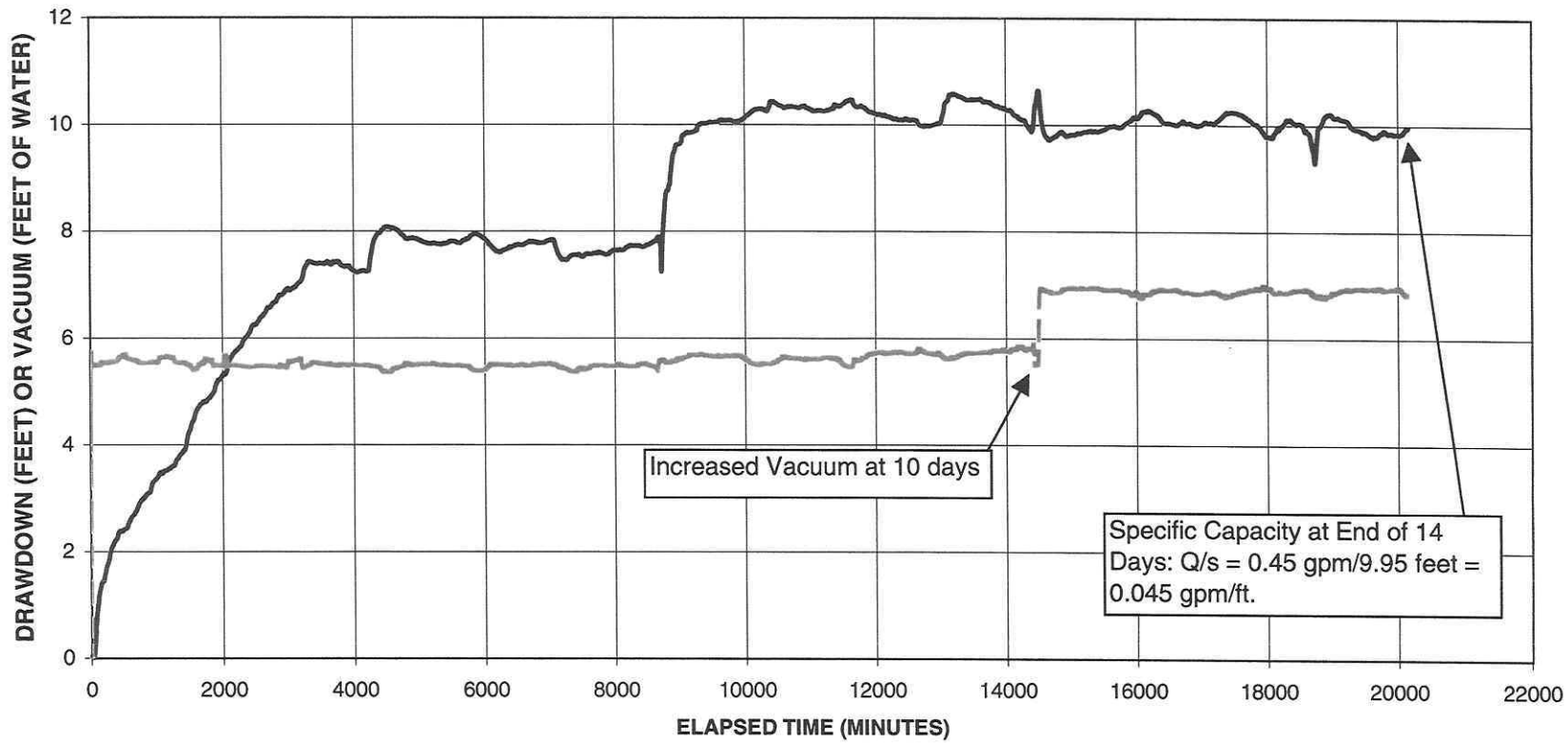

LEGEND:

MPE TEST DRAWDOWN

MPE TEST VACUUM

OU-3 Site 16 Technical Memorandum
Figure 5-10
MPE Test Vacuum and Drawdown in 16MPE1
Site 16 - Crash Crew Pit No. 2

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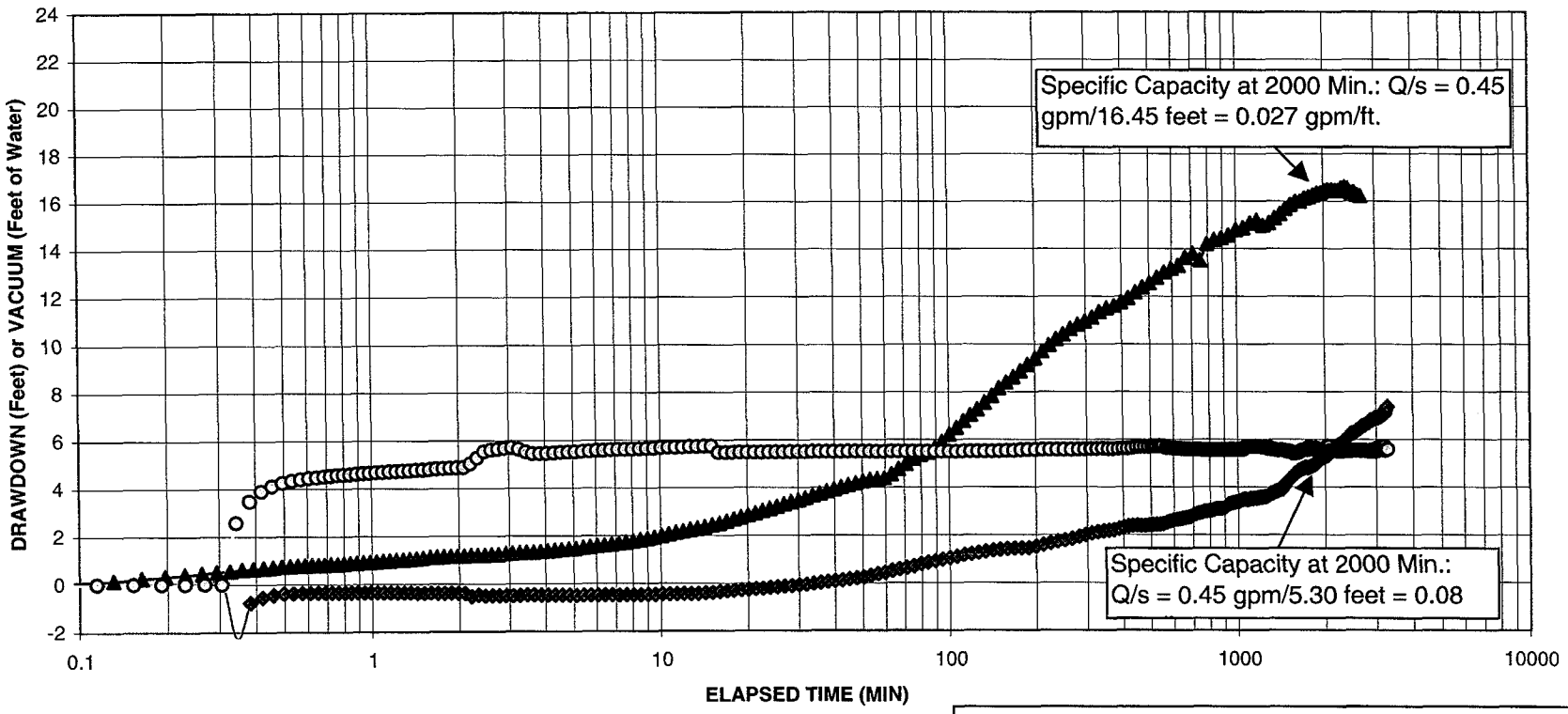

LEGEND:

- MPE TEST DRAWDOWN
- CONSTANT-RATE TEST DRAWDOWN
- MPE TEST VACUUM

OU-3 Site 16 Technical Memorandum
Figure 5-11
Comparison of Conventional and MPE Pumping Drawdown in 16MPE1
Site 16 - Crash Crew Pit No. 2

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partly due to the pumping rate. First, note that, based on the general trends of the water level line, an approximately 0.5-foot rise in the water level was recorded. The pump was set at a constant speed (rpm) such that when the vacuum was increased, the pump was extracting water against a lower hydraulic head, resulting in a slight increase in the pumping rate (at the constant pump speed) and a corresponding decline in the water level. This decline in the water level appears to have been sufficient to mostly offset the water level rise due to the vacuum increase. In addition, during the testing, the water level in well 16MPE1 was found to be very sensitive to small changes in groundwater extraction rate due to the low well yield. A change of only about 0.02 or 0.03 gpm would produce measurable changes in water level.

Under the given test conditions, the data on Figure 5-11 indicate that MPE at Site 16 can significantly increase well yield in the main pit area, allowing for greater sustained pumping rates and therefore greater groundwater capture zones. Based on data at approximately 2,000 minutes elapsed time for both tests and specific capacity estimates, MPE with 65 inches of vacuum at 0.45 gpm resulted in an approximately threefold increase in well yield over conventional pumping (0.08/0.027 = 2.96) (Figure 5-11). However, this factor does not represent the increased yield from MPE that can be expected in the long term (e.g., several months). This factor is expected to decline over extended pumping periods as the saturated zone dewaters further and the specific capacity decreases. At the end of the 2-week MPE test, specific capacity in 16MPE1 declined to 0.045 gpm/foot of drawdown (Figure 5-10). Therefore, during remedial design a more conservative increase in well yield due to MPE should be assumed.

The well airflow rates during MPE were similar to the rates during SVE alone for a given vacuum, as indicated by the SVE and MPE data on Figure 5-7 (all data lie on the best-fit line). It is likely that the saturated zone had not sufficiently dewatered due to well inefficiency and relatively low permeability in the vicinity of 16MPE1. This limited drawdown in the aquifer to generally less than 2 feet (Figure 5-5). Pumping from additional wells and maximizing pumping rate during long-term MPE would increase dewatering and would potentially further increase the effectiveness of the SVE. The aquifer testing, SVE, and MPE data can be used to optimize (maximize) the groundwater and SVE rates during future remedial design.

5.3.2 Effective SVE Radius of Influence and MPE Groundwater Capture Zone

The SVE EROI during the MPE test was the same as during the SVE-only test (for equivalent vacuums) because applied vacuum, airflow, and the monitoring well vacuum distribution were the same.

As discussed in the previous section, MPE has been shown to increase effective well yield at Site 16 in extraction well 16MPE1. This allows the well to be pumped at a higher flow rate, which results in a larger groundwater capture zone than during conventional groundwater extraction and an apparent increase in transmissivity. The actual transmissivity of the aquifer is constant, but the apparent transmissivity is higher

than that for a standard pumping well. During this MPE test, the pumping rate was kept constant at the same rate as the conventional test for comparison purposes. Therefore, apparent transmissivity using a higher flow rate (and resulting increased drawdown in the monitoring wells) could not be calculated for this test. However, the estimated increase in well yield and pumping rate from the previous section can be used to evaluate the potential increased capture zone during MPE. As part of the draft final FS Report, the existing MODFLOW software package and site model will be used with the site-specific aquifer parameters and estimated long-term MPE pumping rate to estimate the MPE capture zone.

5.3.3 VOC Concentrations in Soil Gas and Groundwater

The initial vapor and groundwater sample results were used along with the results of subsequent samples taken during and at the end of the SVE and MPE tests to assess the VOC concentrations in soil gas and groundwater.

Table 5-8 presents the soil gas analytical results from the SVE and subsequent MPE test. These results indicate a general decline in TCE concentrations and total VOC concentrations over the time of the testing. Plots of VOC and TCE concentrations with time are presented in the next section on mass removal. These data may be used in the draft final FS Report to estimate the time required for groundwater cleanup.

Table 5-9 presents the groundwater analytical results during the MPE test. The concentrations of TCE and other detected analytes remained consistent throughout the constant-rate and MPE test in 16MPE1. Plots of VOC and TCE concentrations with time are presented in Section 5.7 (Figures 5-12 through 5-15). These data may be used in the draft final FS Report to estimate the time required for groundwater cleanup.

5.4 MPE PILOT TEST CONTINUATION

The MPE test was extended beyond the initially proposed 2 weeks until 07 March 2001 at the direction of SWDIV. This section covers the period through 27 December 2000, at which time the MPE system was temporarily turned off. During this continued test period, soil gas and groundwater samples were collected, and water-level drawdown, groundwater pumping rates, SVE vacuum, and airflow rates continued to be monitored. At 65 days into the test the blower was upgraded by adding larger flywheels and drive belts to maximize the blower's capability to extract soil gas. The total well flow, however, had to be limited to the maximum allowed by the SVE system permit.

The blower upgrade allowed a maximum of approximately 130 inches (of water) of applied vacuum and a resulting 254 acfm of airflow from 16MPE1. These data correlate well on the vacuum/flow best-fit line (Figure 5-7). Figure 5-8 shows the vacuum as a function of distance as a result of the higher applied vacuum. These data were used to estimate the increased EROI, using the methods discussed in Section 5.2. Figure 5-9 illustrates the increased EROI extent as a result of this higher vacuum.

VOC mass removal in soil gas and groundwater was also estimated during the continued test period through 27 December 2000. These data are presented on Table 5-9 (soil gas)

Table 5-9
Summary of VOC Mass Removed in Soil Gas

Sample Date and Time	Elapsed Time Into Test (minutes)	Elapsed Time (days)	Flow (acfm)	Flow (scfm)	Volume of Air Removed (ft^3)	Cumulative Volume of Air Removed (ft^3)	TCE (µg/L)	TCE Mass Removed (lb)	Cumulative TCE Mass Removed (lb)	Freon 113 (µg/L)	Freon 113 Mass Removed (lb)	Cumulative Freon 113 Mass Removed (lb)	Total VOCs (µg/L)	VOCs Mass Removed (lb)	Cumulative VOC Mass Removed (lb)
SVE Test (started on 10/05/00 at 11:54)															
10/05/00 12:13	199[a]	0.14[a]	37.9	35.9	7,144	7,144	120	0.05	0.05	260	0.12	0.12	437	0.19	0.19
10/05/00 17:55	186[a]	0.13[a]	85.6	76.5	14,229	21,373	210	0.19	0.24	520	0.46	0.58	751	0.67	0.86
10/06/00 10:22	1,044[a]	0.73[a]	163.8	131.9	137,704	159,077	350	3.01	3.25	330	2.84	3.42	716	6.16	7.02
Multiphase Extraction (MPE) Test (started on 10/17/00 at 09:40)															
10/17/00 10:07	27	0.02	130.6	110.5	2,983	2,983	130	0.02	3.27	89	0.02	3.44	223.3	0.04	7.06
10/18/00 11:55	1,575	1.09	122.8	104.4	161,611	164,594	290	2.12	5.39	130	1.10	4.54	445.8	3.38	10.44
10/19/00 12:55	3,075	2.14	123.6	105.4	158,100	322,694	220	2.52	7.91	66	0.97	5.51	310.5	3.73	14.17
10/20/00 10:08	4,348	3.02	126.3	107.1	136,338	459,032	95	1.34	9.25	41	0.46	5.97	149.3	1.96	16.13
10/20/00 10:10	4,350	3.02	122.8	104.1	208	459,240	130	0.00	9.25	46	0.00	5.97	192.9	0.00	16.13
10/23/00 14:05	8,905	6.18	126.0	107.1	487,841	947,081	32	2.47	11.72	20	1.01	6.98	52	3.73	19.86
10/24/00 14:45	10,385	7.21	129.6	109.8	162,504	1,109,585	44	0.39	12.11	30	0.25	7.23	75.2	0.65	20.51
10/25/00 12:00	11,660	8.10	130.7	110.5	140,887	1,250,472	120	0.72	12.83	92	0.54	7.77	222.6	1.31	21.82
10/26/00 11:50	13,090	9.09	128.5	109.3	156,299	1,406,771	91	1.03	13.86	62	0.75	8.52	157.4	1.85	23.67
10/27/00 10:20	14,440	10.03	124.1	106.4	143,640	1,550,411	49	0.63	14.49	35	0.43	8.95	84	1.08	24.75
10/27/00 12:20	14,560	10.11	137.9	113.4	13,608	1,564,019	110	0.07	14.56	78	0.05	9.00	191.3	0.12	24.87
10/30/00 12:50	18,910	13.13	154.7	126.3	549,405	2,113,424	4.3	1.96	16.52	3.5	1.40	10.40	7.8	3.41	28.28
Extended MPE Test (continuation of MPE Test)															
11/01/00 13:55	21,855	15.18	154.3	125.4	369,303	2,482,727	42	0.53	17.05	31	0.40	10.80	74.1	0.94	29.22
11/03/00 10:30	24,530	17.03	157.2	127.6	341,330	2,824,057	94	1.45	18.50	72	1.10	11.90	172.4	2.63	31.85
11/06/00 13:10	29,010	20.15	157.0	127.7	572,096	3,396,153	79	3.09	21.59	65	2.45	14.35	152.2	5.80	37.65
11/09/00 09:55	33,135	23.01	157.1	127.7	526,763	3,922,916	97	2.89	24.48	81	2.40	16.75	178	5.43	43.08
11/14/00 12:42	40,502	28.13	156.3	126.6	932,662	4,855,578	15	3.26	27.74	7	2.56	19.31	22	5.82	48.90
11/14/00 12:45	40,505	28.13	156.3	126.8	380	4,855,958	72	0.00	27.74	67	0.00	19.31	142.1	0.00	48.90
11/16/00 12:50	43,390	30.13	157.1	127.3	367,260	5,223,218	54	1.44	29.18	47	1.31	20.62	104.1	2.82	51.72
11/21/00 13:35	50,635	35.16	159.1	128.7	924,066	6,147,284	61	3.32	32.50	53	2.88	23.50	127.9	6.69	58.41
11/27/00 13:30	59,270	41.16	158.7	128.2	1,115,340	7,262,624	39	3.48	35.98	29	2.86	26.36	70.3	6.90	65.31
11/30/00 08:45	63,305	43.96	156.0	126.1	508,814	7,771,438	59	1.56	37.54	45	1.18	27.54	107.7	2.83	68.14
12/04/00 13:31	69,351	48.16	154.5	124.7	753,936	8,525,374	36	2.24	39.78	25	1.65	29.19	62.2	4.00	72.14
12/13/00 13:56	82,336	57.18	154.4	123.7	1,606,244	10,131,618	11	2.36	42.14	5.4	1.52	30.71	16.4	3.94	76.08
12/18/00 10:55	89,355	62.05	157.0	125.2	878,779	11,010,397	18	0.80	42.94	8.9	0.39	31.10	28.3	1.23	77.31
12/21/00 15:08	93,928	65.23	157.4	126.8	579,856	11,590,253	28	0.83	43.77	23	0.58	31.68	58	1.56	78.87
12/21/00 15:10	93,930	65.23	157.4	126.8	254	11,590,507	41	0.00	43.77	33	0.00	31.68	87.7	0.00	78.87
12/27/00 16:38[b]	102,658	71.29	251.7	174.0	1,518,672	13,109,179	41[b]	3.89	47.66	33	3.13	34.81	88	8.33	87.20

Notes:
[a] the times for the SVE test are the duration of each step of the test
[b] sample could not be analyzed at the end of the test; therefore, the previous sample results were used to calculate mass removed to the end of each test

Acronyms/Abbreviations:
acfm – actual cubic feet per minute
Freon 113 – 1,1,2-trichloro-1,2,2-trifluoroethane
ft^3 – cubic feet
lb – pound
µg/L – micrograms per liter
scfm – standard cubic feet per minute
SVE – soil vapor extraction
TCE – trichloroethene
VOC – volatile organic compound

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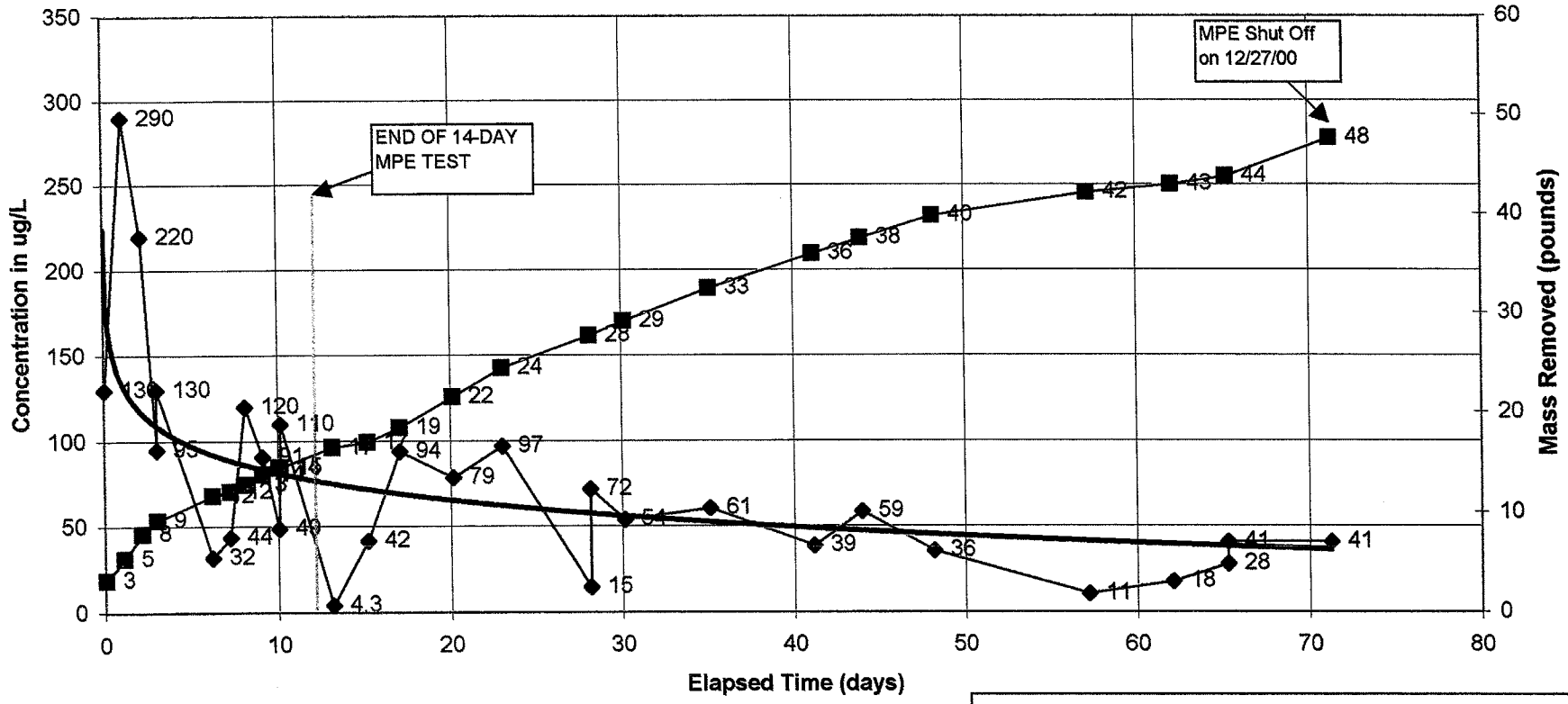

LEGEND:

- TCE Concentration in 16MPE1
- TCE Cumulative Mass Removed in 16MPE1
- Logarithmic Best-Fit (TCE Concentration in 16MPE-1)

OU-3 Site 16 Technical Memorandum
Figure 5-12
TCE Concentrations and Mass Removed in Soil Gas
Site 16 - Crash Crew Pit No. 2

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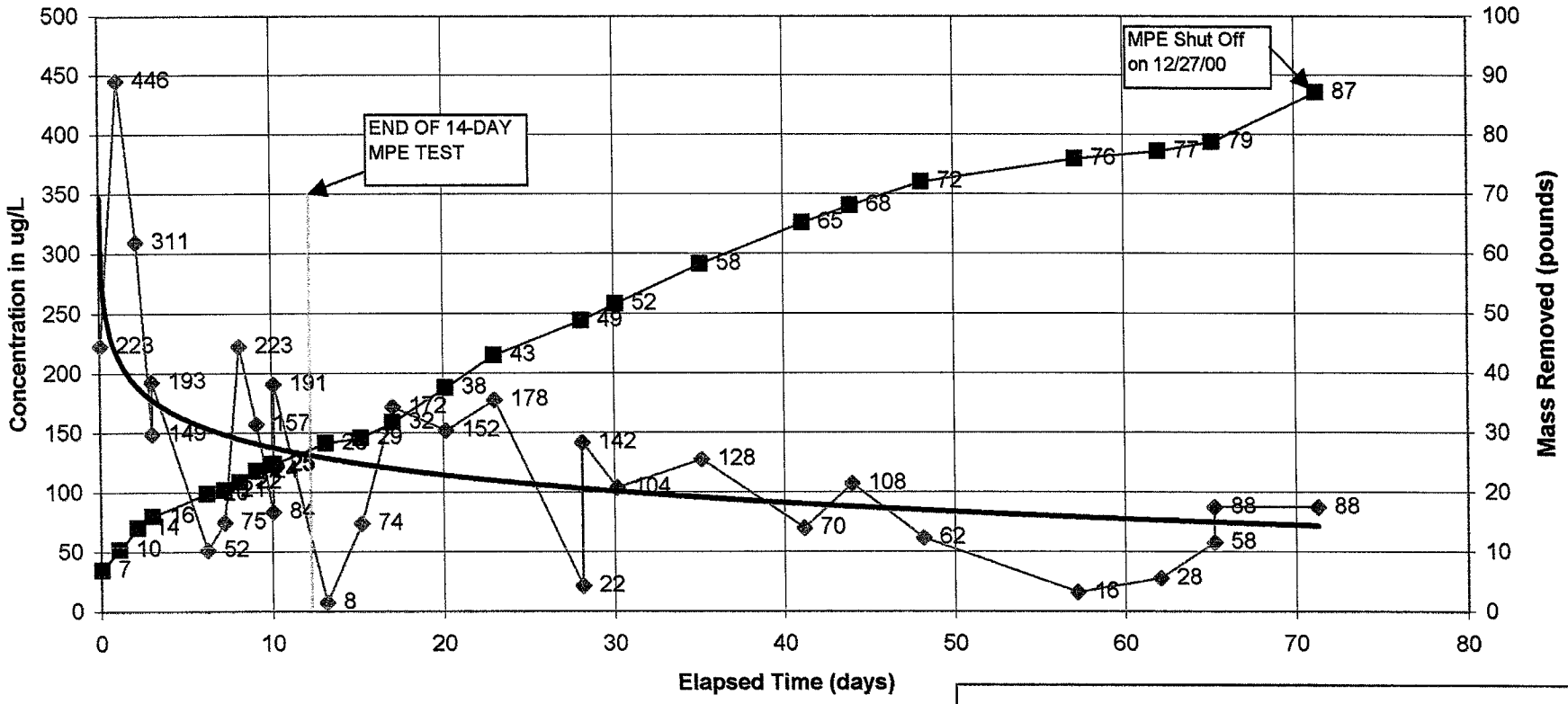
Date: 4/23/02
File No: fig5-12 to 5-13.xls
Job No: 22214-178
Rev. No: B



LEGEND:

- VOC Concentration in 16MPE1
- VOC Cumulative Mass Removed in 16MPE1
- Logarithmic Best-Fit (VOC Concentration in 16MPE1)

OU-3 Site 16 Technical Memorandum
Figure 5-13
VOC Concentrations and Mass Removed in Soil Gas
Site 16 - Crash Crew Pit No. 2

MCAS El Toro, California

Bechtel National, Inc.
CLEAN II Program

Date: 4/23/02
File No.: fig5-12 to 5-13.xls
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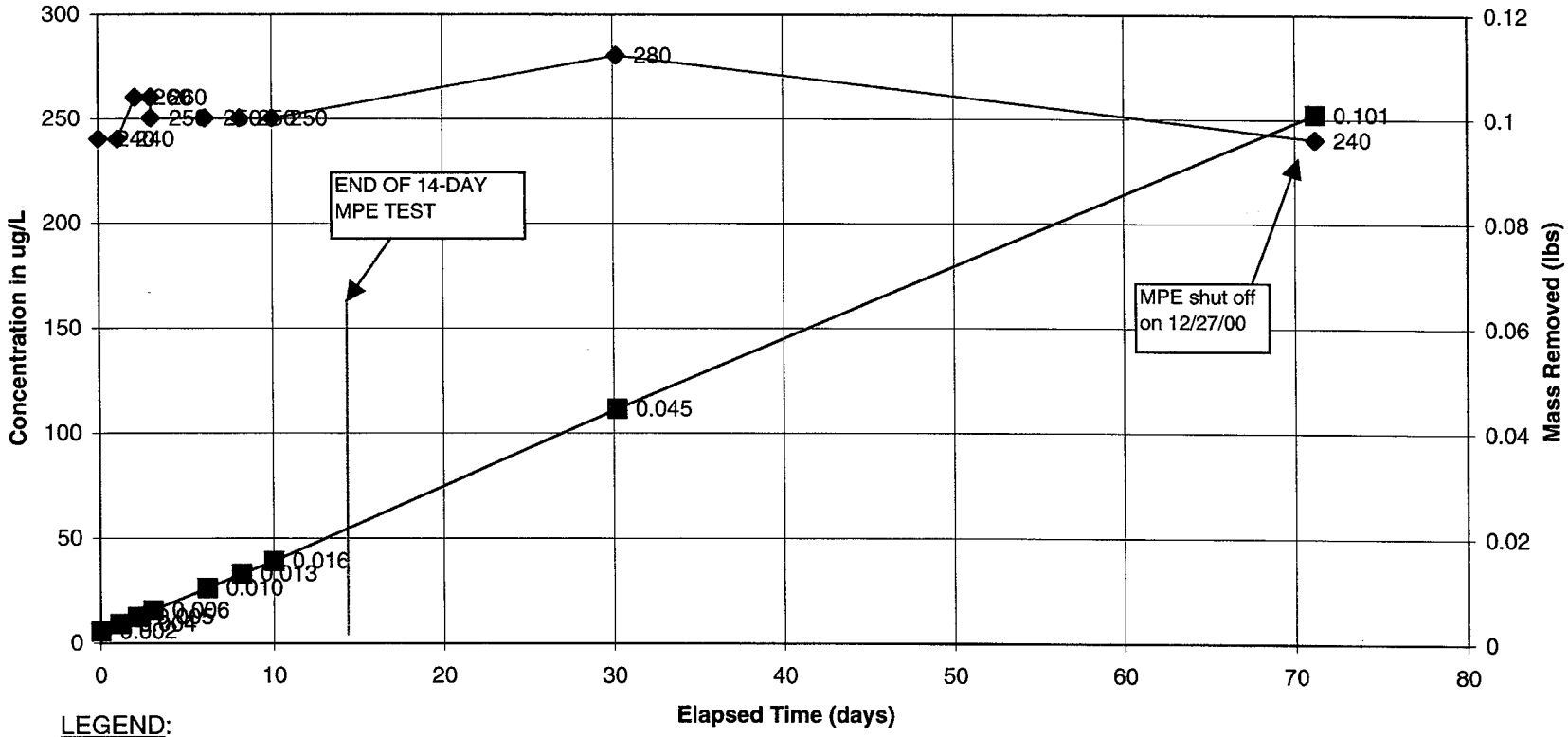
Rev. No. B

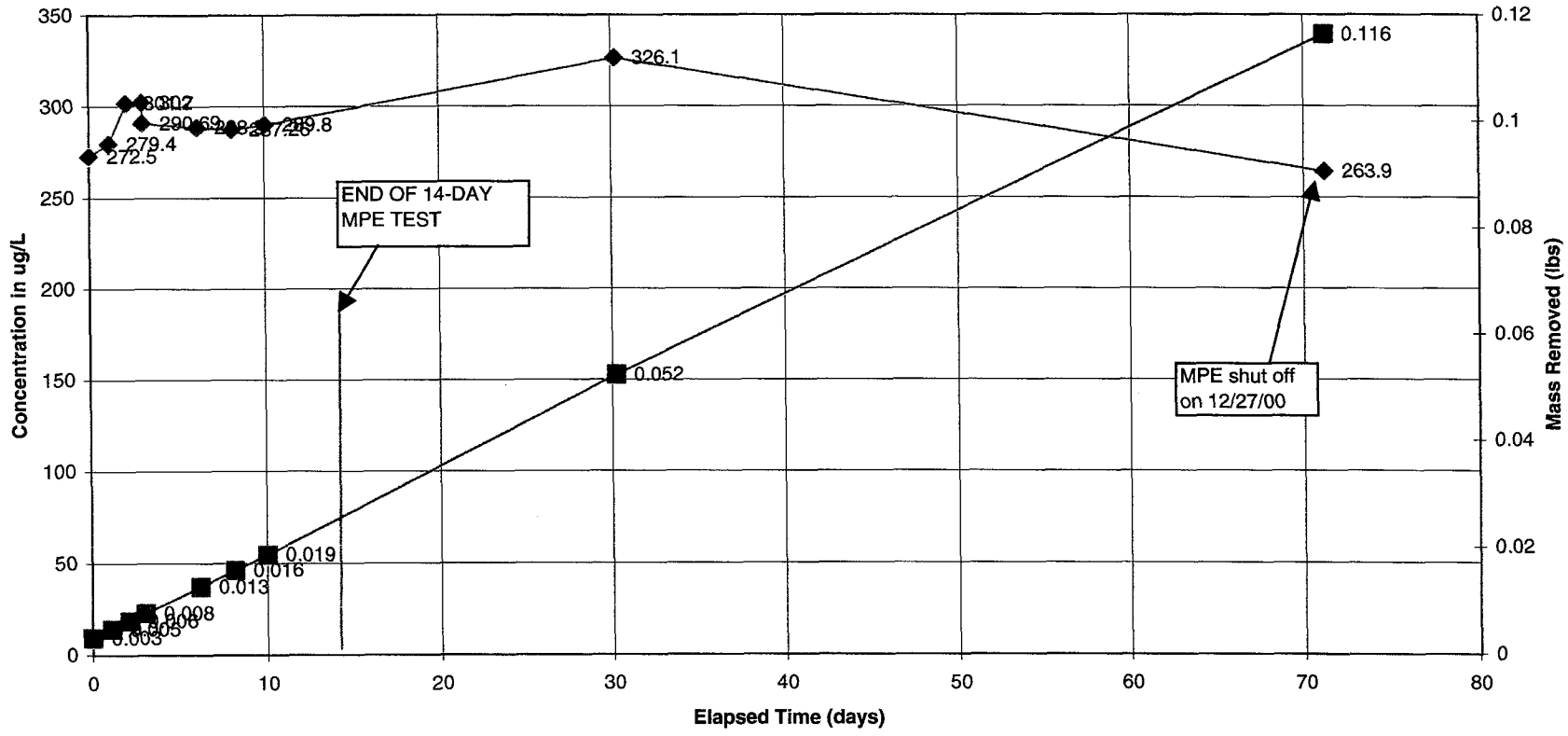


OU-3 Site 16 Technical Memorandum
Figure 5-14
TCE Concentrations and Mass Removed in Groundwater
Site 16 - Crash Crew Pit No. 2

MCAS El Toro, California

Bechtel National, Inc.
CLEAN II Program

Date:	2/5/01
File No.:	fig5-14.xls
Job No.:	22214-178
Rev. No.:	A



LEGEND:

—◆— VOC Concentration in 16MPE1

—■— VOC Cumulative Mass Removed in 16MPE1

OU-3 Site 16 Technical Memorandum
Figure 5-15
VOC Concentrations and Mass Removed in Groundwater
Site 16 - Crash Crew Pit No. 2

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Date:	2/5/01
File No.:	fig5-15.xls
Job No.:	22214-178
Rev. No.:	A

and Table 5-10 (groundwater). A total of approximately 87 pounds of VOCs in soil gas and approximately 0.12 pound of VOCs in groundwater was removed during the pilot testing. The mass removal rate and concentration trends of TCE and total VOCs in soil gas and groundwater through 27 December 2000 are depicted on Figures 5-12 through 5-15. These figures indicate that VOC concentrations in soil gas continued to decline, possibly approaching an asymptotic value, while VOC concentrations in groundwater remained relatively constant.

These additional data collected during the continued testing will be used in the draft final FS Report to evaluate whether one MPE well is sufficient, as estimated in the conceptual design of MPE presented in the draft FS Report. In addition, these data will be used to further evaluate the mass removal rates and potential time of remediation, and the implementability and cost of SVE/MPE at the site. These additional evaluations will be presented as part of the draft final FS Report.

5.5 HYDROGEOLOGIC SUMMARY

Based on lithologic logs, CPT logs from the RI investigations, water-level data, and aquifer testing and analysis, the conceptual hydrogeologic model for Site 16 is best characterized as a heterogeneous, semiconfined, leaky aquifer. The lithologic materials consist primarily of silty to sandy clay and clayey to sandy silt interbedded with fine to coarse sand. Individual strata range from very limited lateral extent to locally extensive, and grain size and permeability can vary laterally within an individual layer (e.g., between wells 16GE1 and 16MW4). The primary water-yielding (aquifer) units are thin, lenticular, silty to clean fine to coarse sands with occasional gravels, and generally range in thickness from about 0.5 to 5 feet. The finer grained silts and clays generally act as confining layers that yield water much more slowly.

The upper 30 feet of the aquifer system in the area of Site 16 exhibits distinct differences between the main pit area (VOC source area), and the downgradient area in the vicinity of well 16GE1. At wells 16GE1 and 16MW5, two distinct sand/gravelly sand layers approximately 6 to 11 feet thick are present. These two layers account for the order-of-magnitude greater yield of well 16GE1 compared to 16MPE1. At the location of extraction well 16MPE1, clean sand lenses like those observed at 16GE1 are generally absent; the saturated strata consist primarily of sandy silts and clayey to silty sands ranging from about 0.5 to 5 feet thick.

5.6 VOC MASS REMOVAL RATES

The amount of mass removed was estimated using VOC vapor concentrations and airflow rate, dissolved VOC concentrations in groundwater and pumping rates, and times of operation as described in the previous sections. These results were compared to the SVE and constant-rate aquifer test mass removal rates.

5.6.1 Mass Removal in Soil Gas

The VOC mass removal rates were estimated by multiplying the recorded vapor flow rate by the time of operation by the VOC concentrations obtained from the laboratory analyses of vapor samples collected from the extraction vapor stream. Table 5-9

summarizes the VOC mass removed, and also presents the mass removed of TCE and Freon 113, which were the two analytes with the highest VOC concentrations. These two analytes accounted for over 90 percent of the total VOC mass removed in soil gas. The SVE test and the 2-week MPE test together removed approximately 16.6 pounds of TCE, 10.4 pounds of Freon 113, and 28.3 pounds of total VOCs in soil gas.

Figures 5-12 and 5-13 show the cumulative TCE and VOC mass removed over time, respectively, along with the TCE and VOC concentration trends. Logarithmic best-fit lines through the concentration data depict the general downward trend in TCE and total VOC concentrations as VOC mass is removed from the vadose zone. The logarithmic decline indicates that the concentrations will eventually reach an asymptotic low value. Variability in the concentrations about this best-fit trend are attributed primarily to site heterogeneity as areas of higher or lower concentrations move through the interbedded layers and are subsequently extracted by the SVE system, and also to variability in the laboratory analysis. Table 5-11 presents the estimated mass removal rates based on the later portion of the 14-day test (after approximately 6 days) on the graph. These rates would be expected to decline during extended SVE (several weeks or months).

The mass removal rate can be used to estimate the time required to remove a given mass of VOCs. The amount of time required to remove a given amount of VOCs from the site is a measure of the effectiveness of SVE. The pilot test results and field observations will also be used to evaluate the implementability and cost of SVE/MPE at the site. These additional evaluations will be presented as part of the draft final FS Report. Additional VOCs removed after 14 days that are presented on Table 5-9 and Figures 5-12 and 5-13 are discussed in Section 5.4.

5.6.2 Mass Removal in Groundwater

The VOC mass removal rates were estimated by multiplying the recorded pumping rates by the time of operation by the VOC concentrations obtained from the laboratory analyses of groundwater samples collected from the extracted groundwater at the wellhead. Tables 5-10 and 5-12 summarize the VOC mass removed from wells 16MPE1 and 16GE1, respectively. These tables also present the mass removed of TCE and Freon 113, which were the two analytes with the highest VOC concentrations. These two analytes accounted for over 90 percent of the total VOC mass removed in groundwater. The 16GE1 constant-rate test, the 16MPE1 constant-rate test, and the 2-week MPE test combined removed approximately 0.021 pound of TCE, 0.0031 pound of Freon 113, and 0.026 pound of total VOCs in groundwater.

Figures 5-14 and 5-15 show the cumulative TCE and VOC mass removed, respectively, over time in well 16MPE1, along with the TCE and VOC concentration trends. Well 16GE1 data are limited (two sample times, not including the duplicate) and is therefore not shown on a graph. TCE and VOC concentrations, and therefore the mass removal rate (the flow was the same), remained similar throughout the constant-rate and MPE testing. This is primarily attributed to the relatively low pumping rate and small mass

Table 5-10
Summary of VOC Mass Removed in Groundwater in 16MPE1

Sample Date and Time	Elapsed Time into Test (minutes)	Elapsed Time (days)	Flow (gpm)	Volume of Water Removed (gal)	Cumulative Volume of Water Removed (gal)	TCE (µg/L)	TCE Mass Removed (lb)	Cumulative TCE Mass Removed (lb)	Freon 113 (µg/L)	Freon 113 Mass Removed (lb)	Cumulative Freon 113 Mass Removed (lb)	Total VOCs (µg/L)	VOCs Mass Removed (lb)	Cumulative VOC Mass Removed (lb)
Constant-Rate Test (started on 09/28/00 at 13:30)														
09/28/00 15:43	133	0.1	0.59	78	78	160	1.05E-04	1.05E-04	21	1.38E-05	1.38E-05	295.7	1.94E-04	1.94E-04
09/29/00 12:38	1,388	1.0	0.43	540	618	220	8.56E-04	9.61E-04	32	1.19E-04	1.33E-04	294.2	1.33E-03	1.52E-03
09/30/00 12:35	2,825	2.0	0.45	647	1,265	230	1.21E-03	2.17E-03	34	1.78E-04	3.11E-04	291.2	1.58E-03	3.10E-03
MPE Test (started on 10/17/00 at 09:40)														
10/17/00 9:49	9	0.0	0.45	4	1,269	240	8.11E-06	2.18E-03	12	4.06E-07	3.12E-04	272.5	9.21E-06	3.11E-03
10/18/00 12:25	1,605	1.1	0.45	718	1,987	240	1.44E-03	3.62E-03	35	1.41E-04	4.52E-04	279.4	1.65E-03	4.77E-03
10/19/00 12:20	3,040	2.1	0.45	646	2,633	260	1.35E-03	4.97E-03	37	1.94E-04	6.46E-04	301.7	1.57E-03	6.33E-03
10/20/00 10:00	4,340	3.0	0.44	572	3,205	260	1.24E-03	6.21E-03	37	1.77E-04	8.23E-04	302	1.44E-03	7.77E-03
10/20/00 10:05	4,345	3.0	0.45	2	3,207	250	4.79E-06	6.21E-03	36	6.85E-07	8.24E-04	290.69	5.56E-06	7.78E-03
10/23/00 13:04	8,844	6.1	0.45	2,025	5,232	250	4.22E-03	1.04E-02	32	5.74E-04	1.40E-03	288.3	4.89E-03	1.27E-02
10/25/00 13:05	11,725	8.1	0.45	1,296	6,528	250	2.71E-03	1.31E-02	33	3.52E-04	1.75E-03	287.26	3.11E-03	1.58E-02
10/27/00 10:00	14,420	10.0	0.44	1,186	7,714	250	2.47E-03	1.56E-02	36	3.41E-04	2.09E-03	289.8	2.86E-03	1.86E-02
Extended MPE Test (continuation of MPE Test)														
11/16/00 14:45	43,505	30.2	0.45	13,088	20,802	280	2.89E-02	4.46E-02	41	4.21E-03	6.30E-03	326.1	3.36E-02	5.23E-02
12/27/00 13:50	102,490	71.2	0.44	25,953	46,755	240	5.63E-02	1.01E-01	20	6.61E-03	1.29E-02	263.9	6.39E-02	1.16E-01

Acronyms/Abbreviations:
- gal – gallon
- gpm – gallons per minute
- lb – pound
- µg/L – micrograms per liter
- MPE – multiphase extraction
- TCE – trichloroethene
- VOC – volatile organic compound

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Table 5-11
Estimated Mass VOC and TCE Mass Removal Rates During the MPE Test

Medium	Analyte	Mass Removal Rate (lb/day)
Soil Gas*	TCE	0.72
Soil Gas*	Total VOCs	1.15
Groundwater	TCE	0.0013
Groundwater	Total VOCs	0.0016

Note:
* soil gas rates were calculated during the final 8 days of the test when the removal rates were more stable

Acronyms/Abbreviations:
lb/day – pounds per day
MPE – multiphase extraction
TCE – trichloroethene
VOC – volatile organic compound

removed. Table 5-12 presents the estimated mass removal rates in groundwater, calculated using the graph. These rates would be expected to decline during extended groundwater extraction (several weeks or months).

The mass removal rate can be used to estimate the time required to remove a given mass of VOCs from groundwater. The pilot test results and field observations will be used to evaluate the implementability and cost of MPE at the site. These additional evaluations will be presented as part of the draft final FS Report.

5.6.3 VOC Mass Removal Comparison

The mass removal estimates during the MPE pilot testing indicate that given the test parameters and geologic conditions, MPE is much more effective at Site 16 in removing VOCs than groundwater extraction alone. In order to compare MPE mass removal from soil gas versus groundwater extraction, the 2-week MPE test data for VOCs were used. Total VOCs removed from 16MPE1 during the 2 weeks of MPE testing (excluding the 1-day SVE test) were approximately 21 pounds in soil gas, versus approximately 0.022 pound during the same period in groundwater. The relatively low groundwater mass removal rate may be partially attributed to the low sustainable pumping rate of 0.45 gpm during the test. However, increasing the pumping rate based on the increased yield estimates for MPE will still not significantly increase the groundwater removal rate relative to the soil gas mass removal rate. In addition, air is less viscous and is typically more efficient than water in removing VOCs, given equivalent geologic conditions.

5.7 MPE PILOT STUDY DQOs

The following sections summarize the results of the DQOs presented in the Work Plan. The purpose of the pilot study was to collect data to evaluate MPE for collection and

treatment of VOCs in soil and groundwater at Site 16 (BNI 2000a). Table 5-13 summarizes the DQOs and results.

5.7.1 Step 1 – State the Problem

As a result of fire-fighting training activities, soil beneath Site 16 is contaminated with VOCs, PAHs, and petroleum hydrocarbons. The VOCs have also impacted groundwater at the site; VOC concentrations in groundwater now exceed MCLs. The VOC reported at the highest concentration and with the greatest frequency was TCE. Several VOCs have been reported in groundwater at Site 16. However, because TCE is the most prevalent contaminant and it is reported at higher concentrations (by one order of magnitude or greater) than the other VOCs in groundwater, delineation of the VOC groundwater plume beneath Site 16 is based on concentrations of TCE.

The results of the initial groundwater sampling conducted at Site 16 prior to the MPE pilot testing indicated that the highest TCE concentration in groundwater was 390 μg/L reported from 16MW1 immediately below the main pit. The results of the initial soil gas sampling conducted prior to the MPE pilot testing indicated that the highest TCE concentration in soil gas was 191 μg/L reported from 16MW6, also located immediately below the main pit. For more information on the distribution of contaminants in soil and groundwater at Site 16, see Section 3.

The draft FS Report presented two remedial alternatives (2a through e and 3a through e). Both alternatives utilized MPE with various treatment and/or disposal options for extracted vapor and groundwater. The primary objective of this pilot study was to evaluate the effectiveness of the MPE technology at Site 16.

5.7.2 Step 2 – Identify the Decision

For the Site 16 MPE Pilot Study, the following decision was considered. Does MPE have the ability to effectively remove VOCs in soil and groundwater and/or prevent further migration of VOCs in groundwater? This TM focuses on the removal of VOCs in soil and groundwater. Data collected during the pilot study will also be utilized to predict ability of the MPE system to prevent further migration of VOCs in groundwater. This evaluation will be presented in the draft final FS Report.

5.7.3 Step 3 – Identify the Inputs to the Decision

Inputs that affected the decision listed in Step 2 are:

- identification of the alternatives (i.e., remedial technology) presented in the draft FS Report to be evaluated,
- identification of chemicals of concern and associated actions levels for protection of human health,
- locations of the soil and groundwater monitoring/extraction wells to be installed and/or utilized during the pilot study and associated geologic and hydrogeologic conditions,

Table 5-12
Summary of VOC Mass Removed in Groundwater in 16GE1

Sample Date and Time	Elapsed Time Into Test (minutes)	Elapsed Time (days)	Flow (gpm)	Volume of Water Removed (gal)	Cumulative Volume of Water Removed (gal)	TCE (µg/L)	TCE Mass Removed (lb)	Cumulative TCE Mass Removed (lb)	Freon 113 (µg/L)	Freon 113 Mass Removed (lb)	Cumulative Freon 113 Mass Removed (lb)	Total VOCs (µg/L)	VOCs Mass Removed (lb)	Cumulative VOC Mass Removed (lb)
Constant-Rate Test (started on 09/21/00 at 11:40)														
09/21/2000 11:15	5	0.00347	16.05	80	80	33	2.21E-05	2.21E-05	3.1	2.08E-06	2.08E-06	40.9	2.74E-05	2.74E-05
09/22/2000 12:40	1,530	1.06	15.9	24,248	24,328	13	4.65E-03	4.68E-03	3.8	6.98E-04	7.00E-04	17.76	5.94E-03	5.96E-03
09/22/2000 12:55	1,545	1.07	15.9	238	24,566	12	2.49E-05	4.70E-03	3.3	7.07E-06	7.07E-04	16.8	3.44E-05	6.00E-03
09/22/2000 23:31	2,181	1.51	16	10,176	34,742	12*	1.02E-03	5.72E-03	3.3*	2.80E-04	9.88E-04	16.8*	1.43E-03	7.42E-03

Note:
* since a sample could not be collected at the end of the test, the previous sample results were used to calculate mass removed from 09/22/00 at 12:55 to the end of the test

Acronyms/Abbreviations:
gal – gallon
gpm – gallons per minute
lb – pound
µg/L – micrograms per liter
TCE – trichloroethene
VOC – volatile organic compound

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Table 5-13
Site 16 DQOs Results

DQO Decision	Pilot Study Well Installation (Section 2)	Initial Site Conditions (Section 3)	MPE Pilot Testing Implementation (Section 4)	MPE Pilot Testing Results and Evaluation (Section 5)
Does MPE have the ability to effectively remove VOCs in soil and groundwater and/or prevent further migration of VOCs in groundwater?	MPE, groundwater extraction, groundwater/SVE monitoring, and vapor monitoring wells were installed as indicated in the WP to evaluate MPE technology at Site 16. The well design/locations provided the appropriate sampling points to enable evaluation of the effectiveness of MPE technology to remove VOCs from the soil and groundwater at Site 16.	Groundwater samples were collected from 10 wells (7 new, 3 existing) located throughout the site to evaluate concentrations of VOCs, SVOCs, and TPH in groundwater. Soil gas samples were collected from 5 wells located within or adjacent to the main pit to evaluate soil gas concentrations. Both sampling events provided the information necessary to evaluate initial site conditions so that the effectiveness of MPE technology could be assessed at Site 16.	The MPE Pilot Study was implemented as indicated in the WP. Aquifer testing and SVE pilot testing were conducted to determine the appropriate groundwater extraction and applied vacuum for the MPE system. The MPE system provided good quality data to evaluate the technology at Site 16.	An evaluation of MPE technology was performed based on the results of the pilot testing. Groundwater extraction and SVE VOCs concentrations as well as resulting mass removal rates were calculated. The MPE proved to be very effective in removing VOCs from soil at the site. Groundwater extraction, though not as productive as SVE in removing VOCs, can help prevent further plume migration downgradient of 16GE1 while that well is pumped. Groundwater plume capture will be evaluated in the final FS Report. The MPE Pilot Study will be extended an additional 5 months to evaluate the long-term effects of operating the MPE system at Site 16.

Acronyms/Abbreviations:
- DQO – data quality objective
- FS – feasibility study
- MPE – multiphase extraction
- SVE – soil vapor extraction
- SVOC – semivolatile organic compound
- TPH – total petroleum hydrocarbons
- VOC – volatile organic compound
- WP – Work Plan

- results of the chemical analyses of soil vapor and groundwater samples collected during the MPE Pilot Study, and
- evaluation of all data collected during the MPE Pilot Study.

5.7.4 Step 4 – Define the Study Boundary

The physical boundaries of this study included IRP Site 16 and the area of the TCE soil and groundwater contamination. The temporal boundaries of the MPE Pilot Study were originally proposed be the approximate 8-week period over which the well installation and testing was scheduled to be conducted. Due to the immediate effectiveness of the SVE system, the MPE Pilot Study was extended an additional 5 months to evaluate the long-term effects of the system. The purpose of this draft TM is to present the results of the 2-week MPE Pilot Study as indicated in the Work Plan. However, in an effort to provide updated site data, this report also includes some overall VOC concentrations and mass removal information through 27 December 2000. The final TM will be included in the final FS Report for Site 16 and will include the entire extended MPE Pilot Study.

5.7.5 Step 5 – Develop a Decision Rule

Decision rules are required to explicitly state the types of inputs and the logical basis for choosing an action during the MPE Pilot Study. The following decision rules/resulting actions formed the approach and direction of the pilot study. Figure 2-1 shows the locations of pilot-testing wells.

Aquifer testing:

Decision Rule

1. The aquifer step-drawdown pumping tests were conducted at wells 16MPE1 and 16GE1 for approximately 12 hours to help select the pumping rate for the constant-rate testing at these wells. If the 12-hour test was not sufficient to calculate a rate for the constant-rate pumping tests, then the step-drawdown tests may be extended for a longer period of time as determined by the site hydrogeologist to collect the required data.

Resulting Action

The aquifer step-drawdown pumping tests were conducted for approximately 8 hours, which was a sufficient amount of time to select an appropriate pumping rate for the constant-rate testing at 16MPE1 and 16GE1. The constant-rate pumping tests at 16MPE1 and 16GE1 were conducted at rates of approximately 0.5 and 16 gpm, respectively.

Decision Rule

2. The constant-rate tests were conducted for an initial minimum duration of approximately 36 hours. The aquifer test data were reviewed as they were collected from extraction and monitoring wells, which allowed the hydrogeologist to monitor the test progress.

Resulting Action

The aquifer constant-rate pumping tests at 16MPE1 and 16GE1 were conducted at rates of 0.45 and 15 gpm, respectively. The hydrogeologist reviewed the aquifer data as they were collected; however, it was unnecessary to make adjustments to the aquifer test extraction rates based on these field interpretations.

Decision Rule

3. The aquifer constant-rate pumping test was conducted at a rate that was not likely to exceed well yield for the duration of the test, based on the results of the step-drawdown test. If for any reason this rate cannot be maintained at the prescribed constant rate, or if sufficient data have been accumulated, then the recovery phase of the aquifer test will begin. If necessary, the constant-rate test may be restarted at a lower pumping rate after equilibrium conditions are established.

Resulting Action

Both constant-rate tests were successfully conducted at the prescribed rates (16GE1, 16 gpm; and 16MPE1, 0.45 gpm); it was unnecessary to restart these tests at a lower rate.

Decision Rule

4. To begin the recovery phase of the aquifer test, the pump will be shut off and the data logger restarted and water levels will continue to be monitored. As with the constant-rate test, water levels will be measured by hand to assure correct operation of the pressure transducers. If the water level recovers to 90 percent of its static level (or as directed by the hydrogeologist), then the recovery phase may be terminated.

Resulting Action

The recovery phase of the aquifer test was conducted until the water level recovered in 90 percent of monitoring wells.

SVE/MPE Testing:

Decision Rule

5. If sufficient data to estimate the aquifer parameters have been obtained from the aquifer testing, then an approximately 24-hour SVE pilot test will be conducted at 16MPE1 to obtain baseline VOC concentrations and vapor flow rates prior to implementing MPE.

Resulting Action

A 24-hour SVE pilot test was conducted and baseline VOC concentrations and vapor flow rates were obtained for the MPE system.

Decision Rule

6. If the SVE pilot testing is successful (i.e., if data collected during the SVE pilot testing are sufficient to be used to estimate the ROI and VOC concentrations at 16MPE1), then the MPE pilot test will be conducted (groundwater extraction in conjunction with SVE) beneath the TCE hot spot to evaluate MPE at Site 16. If SVE pilot testing is unsuccessful, the pilot study will be complete.

Resulting Action

The MPE pilot test was conducted.

Decision Rule

7. If, after 2 weeks of pilot testing, sufficient analytical and physical data have been collected to evaluate MPE, then the pilot test will end.

Resulting Action

Two weeks of pilot testing was conducted and sufficient analytical and physical data were collected. The SVE portion of the pilot testing was very effective in removing VOCs and the pilot study was extended to 07 March 2001.

For details on the procedures and protocols for the pilot study, see Section 4 and the FSP (Attachment A of the Work Plan).

5.7.6 Step 6 – Specify Tolerance Limits on Decision Errors

The purpose of Step 6 is to specify the tolerance limits for decision errors, which are used by the decision makers to establish performance goals for the data collection design. However, the sampling design for the MPE Pilot Study is based on judgment; therefore, no statistical limit on uncertainty has been specified.

The purpose of a judgmental sampling design is to provide answers to more specific questions or issues where considerable information on parameters of a population already exists. Confidence and power limits associated with statistically based sampling designs do not apply directly to judgmentally located samples. Decision errors must still be considered for judgmental samples; however, they are not evaluated statistically.

The decision errors associated with judgmental sampling are based on sample design errors and measurement errors. Assuming the best possible professional judgment was used in conjunction with existing site data to develop the judgmental sampling regime for the pilot study, the most important decision errors will be associated with field and laboratory techniques involved with collection and analysis of the data. Thus, careful application of field and laboratory techniques is critical because corroborative data from multiple sample locations may not be available nor will they be statistically evaluated. For details on sampling methods and procedures, see Attachment A of the Work Plan. The Quality Assurance Project Plan (Attachment B of the Work Plan) addresses quality requirements for analytical laboratory testing data.

5.7.7 Step 7 – Optimize the Design

The sampling design was developed to optimize resources and generate data to satisfy the pilot study DQOs. Historical site activities, previous site investigation results, the RI/FS documents (BNI 1997, 2000b), and regulatory agency comments were used to formulate the sampling approach for the MPE Pilot Study.

During the pilot study, influent and effluent soil vapor and groundwater samples will be collected and analyzed. Soil vapor and groundwater samples will be analyzed before and after treatment to evaluate mass removal rates as well as MPE technology efficiency. For details on sampling methods and procedures, see Section 5 of the FSP (Attachment A of the Work Plan).

5.8 SUMMARY OF RESULTS OF THE MPE PILOT STUDY

The draft FS Report presented two remedial alternatives (2a through e and 3a through e). Both alternatives utilized MPE with various treatment and/or disposal options for extracted vapor and groundwater. The goal of the MPE Pilot Study at Site 16 was to collect data to evaluate MPE for collection and treatment of VOCs in soil and groundwater at Site 16 (BNI 2000a). This goal was accomplished by conducting groundwater extraction downgradient from the main pit and SVE and groundwater extraction separately and in unison in the area of the main pit at Site 16. The DQOs that were developed for this pilot study are presented on Table 4-1 and the DQO results are presented on Table 5-9.

The specific MPE Pilot Study objectives as presented in Section 4.2 are presented below with notations where the information and/or evaluation is or will be presented:

- evaluate the implementability of using SVE to remove VOCs from contaminated soil beneath the main pit at Site 16 *(The data for VOCs extracted in soil gas via the SVE during the pilot study are presented in Section 5.6. An evaluation of the implementability of SVE to effectively remove VOCs from contaminated soil at Site 16 will be presented in the draft final FS Report)*;
- evaluate SVE ROI for 16MPE1 *(An evaluation of the SVE ROI for 16MPE1 is presented in Section 5.2.2)*;
- estimate the mass of VOCs removed from the contaminated soil during the pilot test *(An estimate of the mass of VOCs removed from contaminated soil during the pilot study is presented in Section 5.6)*;
- evaluate VOC concentrations in soil gas during vacuum extraction and estimate the VOC removal rate and assess the overall effectiveness of SVE at 16MPE1 *(An evaluation of VOC concentrations in extracted soil gas and an estimate of the VOC removal rate are presented in Section 5.6. An assessment of the overall effectiveness of SVE at 16MPE1 includes evaluation of SVE rate, ROI, and VOC concentrations in soil gas and is presented in Section 5.2. These data will be further evaluated in the draft final FS Report)*;
- establish operating parameters (vacuum and airflow) needed to optimize SVE performance *(The operating parameters needed to optimize the SVE*

performance are SVE rates and mass removal rates and are presented in Sections 5.2.1, 5.3.1, and 5.6);

- evaluate whether one well (16MPE1) is sufficient to remediate contaminated soil at Site 16 *(This evaluation will be presented in the draft final FS Report utilizing data presented in this TM in conjunction with groundwater modeling)*;
- evaluate the implementability of recovering contaminated groundwater beneath Site 16 *(This evaluation will be included in the draft final FS Report. The data that will be utilized in this evaluation are presented in Sections 5.1.2, 5.3.1, and 5.6)*;
- evaluate groundwater extraction ROI *(The preliminary evaluation is presented in Section 5.1.2.4, and a complete capture zone evaluation will be presented in the final FS)*;
- estimate the mass of VOCs removed from the contaminated groundwater during the pilot test *(This estimate is presented in Section 5.6)*;
- estimate the dissolved VOC removal rate and the overall effectiveness of groundwater extraction at the test wells *(An estimate of the dissolved VOC removal rate and overall effectiveness of groundwater extraction at 16GE1 and 16MPE1 are presented in Section 5.6)*;
- establish operating parameters (groundwater extraction rate and drawdown) needed to optimize groundwater extraction performance *(The operating parameters [groundwater extraction rate and drawdown] needed to optimize groundwater extraction performance were established and are presented in Section 5.1)*;
- evaluate whether MPE can accomplish removal of contaminant mass at sufficient rates to demonstrate that if carried out over a longer time period, MPE has the potential to achieve significant remediation and meet the remediation goals described in the draft FS Report *(This evaluation will be performed utilizing pilot study data and the results will be presented in the draft final FS Report)*; and
- collect sufficient data to estimate overall effectiveness, cost, and implementability of the full-scale operation of an MPE system at Site 16 *(Sufficient data were collected during the pilot study to estimate the overall effectiveness, cost, and implementability of the full-scale operation of an MPE system at Site 16. The evaluation of full-scale operation of an MPE system at Site 16 will be addressed in the draft final FS Report).*

The MPE was originally planned to be conducted for 2 weeks at Site 16. During the pilot study, MPE proved to be very effective in removing VOCs from soil beneath Site 16. However, MPE VOC mass removal rates for groundwater were not as efficient as those for soil. The MPE Pilot Study was extended an additional 5 months (to 07 March 2001), to evaluate the long-term effects of operating the MPE system at Site 16. The additional data collected will be helpful in determining whether MPE is effective in preventing further migration of VOCs in groundwater. These data will be used for inputs into the groundwater flow model, results of which will be presented in the draft final FS Report.

Section 6
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APPENDIX A

BORING LOGS AND
WELL CONSTRUCTION DETAILS

Appendix A
BORING LOGS AND WELL CONSTRUCTION DETAILS

This appendix presents the summary of the borings logs and associated well construction details for the wells constructed as part of the MPE Pilot Study for IRP Site 16. This appendix includes soil boring logs, well construction details, and an associated guide to identify graphic symbols on the boring logs. The boring logs and well construction details are provided on the following pages for the seven wells (16GE1, 16MPE1, 16MW4, 16MW5, 16MW6, 16MW7, 16VM1) that were constructed for the MPE Pilot Study at IRP Site 16.

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BORING LOGS

LITHOLOGIC SYMBOLS:

- CLAY (CL)
- SANDY CLAY (CL)
- SILTY CLAY (CL)
- SILT (ML)
- SANDY SILT (ML)
- CLAYEY SILT (ML)
- CLAYEY to SANDY SILT (ML)
- GRAVELLY CLAY (CL)
- SILTY SAND (SM)
- SAND (SW)
- SAND (SP)
- GRAVELLY SAND (SW)
- CLAYEY SAND (SC)
- SANDY GRAVEL (GW)
- GRAVELLY FILL
- LITHOLOGIC CONTACT
- APPROXIMATE LITHOLOGIC CONTACT

WELL AND SAMPLING SYMBOLS:

- CONCRETE
- CEMENT/BENTONITE or CEMENT
- BENTONITE CHIPS or PELLETS
- TRANSITION SAND SEAL
- FILTER SAND
- WELL SCREEN
- BOTTOM FILL (SLOUGH)
- WATER LEVEL IN WELL
- STANDARD PENETRATION TEST SPLIT-SPOON SAMPLER

Bechtel National, Inc. Navy CLEAN II Program			
SYMBOL EXPLANATION			
MCAS EL TORO, CA SITE 16			
BECHTEL	Job Number	Drawing No.	Rev.
	22214-178		1

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BOREHOLE LOG

PROJECT and JOB NUMBER	SHEET NO.	HOLE NO.
CLEAN II	1 of 4	16GE1

DRILLER	SITE and LOCATION	OVERBURDEN	BEGUN
West Hazmat	Site 16, Crash Crew Pit No. 2, MCAS, El Toro	NA	8-23-00

DRILL MAKE AND MODEL	COORDINATES	LOGGED BY:	ROCK (FT)	COMPLETED
Schramm T660H	N 2,193,101.6 E 6,110,555.0	P. Wiegand	NA	8-28-00

HOLE SIZE DIAMETER	GROUND EL. & GROUNDWATER DEPTH/EL.	CHECKED BY:	TOTAL DEPTH	UPDATE
14 in	325.4 ▽ / ▼ /	S. Blanchard	197.0	3-15-01

Organic Vapor Reading (ppm)	Core RQD %	Core / Soil Recovery (%)	Core Length / Sampler Advance	Blow Counts or Recovery (ft)	Core Run No. / Sampler Type	Elevation in feet	Depth in Feet	Graphics	Sample Recovery	Description and Classification	Remarks:
						324.4	1			SILT (ML): loose, dry, surface soil	
							2–10			Clayey SILT (ML): Dark brown to brown (7.5YR4/2), slightly moist, low plasticity	Hand augered to 5 feet. Drill cuttings used to describe lithology
						314.4	11			Sandy SILT (ML): Brown (10YR5/3), loose, dry, very fine sand	
							12–13			Grades to a silty fine sand	
						311.4	14			SILTY SAND (SM): Dark yellowish brown (10YR4/4), loose, dry, very fine to fine grained	
							15–19				
						305.4	20			Clayey SILT (ML): Dark brown (10YR4/3), slightly moist to dry, low plasticity	
							21				
						303.4	22			Silty CLAY (CL): Dark brown (10YR4/3), slightly moist, low plasticity	
							23–24				
						300.4	25			CLAY (CL): Dark brown (10YR3/3), moist, moderate plasticity	
							26–31			Grades to a fine sandy clay between 27 and 29 feet	
						293.4	32			Clayey to Sandy SILT (ML): Dark yellowish brown (10YR4/4), moist, very fine to fine sand	
							33–35				
						289.4	36			Sandy SILT (ML): Dark brown (7.5YR4/4), slightly moist, very fine to fine sand	
							37–42				
							43–45			Becomes moist, approximately 20% fine to medium sand	
						279.4	46			SILT (ML): Dark brown (10YR4/3), slightly moist, very little (<2%) to no fine sand	
							47–49				

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: Site 16, Crash Crew Pit No. 2 MCAS, El Toro

HOLE NO. 16GE1

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BOREHOLE LOG

PROJECT and JOB NUMBER: CLEAN II

SHEET NO.: 2 of 4

HOLE NO.: 16GE1

Organic Vapor Reading (ppm)	Core RQD %	Core / Soil Recovery (%)	Core Length / Sampler Advance	Blow Counts or Recovery (ft)	Core Run No. / Sampler Type	Elevation in feet	Depth in Feet	Graphics	Sample Recovery	Description and Classification	Remarks:
							51–63			Increased fine sand content to approximately 10%	
						261.4	64–67			SILT (ML): Dark yellowish brown (10YR4/4), slightly moist, slightly clayey to slightly sandy, very fine grained sand, scattered gravel (approximately 2 to 5%) up to 1/2-inch diameter, subangular to subrounded	
						257.4	68–71			SAND (SP): Yellowish brown (10YR4/4) to dark yellowish brown (10YR4/4), slightly moist, very fine to fine grained, slightly silty, occasional granules up to approximately 1/8-inch diameter	
						253.4	72–80			SILT (ML): Dark yellowish brown (10YR4/4), moist, clayey, low plasticity	
						244.4	81–106			Sandy SILT (ML): Dark yellowish brown (10YR4/6), slightly moist, fine to medium sand, calcareous Scattered granules and occasional subrounded gravel to approximately 1/4-inch diameter	

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: Site 16, Crash Crew Pit No. 2 MCAS, El Toro

HOLE NO.: 16GE1

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BOREHOLE LOG

PROJECT and JOB NUMBER	SHEET NO.	HOLE NO.
CLEAN II	3 of 4	16GE1

Organic Vapor Reading (ppm)	Core RQD %	Core / Soil Recovery (%)	Core Length / Sampler Advance	Blow Counts or Recovery (ft)	Core Run No. / Sampler Type	Elevation in feet	Depth in Feet	Graphics	Sample Recovery	Description and Classification	Remarks:
						216.4	108–113			SAND (SP): Brown (10YR5/3) to yellowish brown (10YR5/4), dry, fine to coarse grained (mostly fine to medium grained), scattered gravel and cobbles, subrounded to rounded	
						211.4	114–116			SILTY SAND (SM): Brown (10YR5/3), slightly moist, very fine to medium grained, scattered subrounded to rounded gravel to 1/4-inch diameter	
						208.4	117–118			Clayey to Sandy SILT (ML): Brown (10YR5/3), very fine to fine grained sand , scattered very small gravel to 1/4-inch diameter, approximately 15% clay and 10% sand content	
						206.4	119–128			SAND (SP): Brown (10YR5/3) to Yellowish brown (10YR5/4), slightly moist, very fine to fine grained, slightly silty, scattered granules and gravel to 1/4-inch diameter Silt stringer, brown (10YR5/3), estimated to be 2 to 3-inches thick	
						196.4	129–133			SILT (ML): Brown (10YR5/3), slightly moist	
						191.4	134–150			Clayey SILT (ML): Grayish brown (10YR5/2) to brown (10YR5/3), slightly moist, about 5% fine to medium sand and scattered pebbles to approximately 1/2-inch diameter	
						174.4	151–164			Clayey to Sandy SILT (ML): Dark brown (10YR4/3) to dark yellowish borwn (10YR4/4), moist, very fine to fine grained sand, scattered gravel to approximately 1/4-inch diameter Sand content increases to approximately 15%, fine to medium grained	

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: Site 16, Crash Crew Pit No. 2 MCAS, El Toro

HOLE NO. 16GE1

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BOREHOLE LOG

PROJECT and JOB NUMBER	SHEET NO.	HOLE NO.
CLEAN II	4 of 4	16GE1

Organic Vapor Reading (ppm)	Core RQD %	Core / Soil Recovery (%)	Core Length / Sampler Advance	Blow Counts or Recovery (ft)	Core Run No. / Sampler Type	Elevation in feet	Depth in Feet	Graphics	Sample Recovery	Description and Classification	Remarks:
						159.4	166			Sandy GRAVEL (GW): Brown (10YR4/3), wet, approximately 1/4- to 3/4-inch diameter gravel, fine to medium grained sand, angular to subangular, some silt and clay	First groundwater encountered at approximately 167 to 168 feet
						153.4	172			Sandy SILT (ML): Yellowish brown (10YR4/4), saturated, fine grained sand	
										Fine to medium grained sand	
						139.4	186			Gravelly SAND (SW): saturated, fine to coarse grained sand, 1/4- to 1/2-inch diameter gravel, subangular, trace silt	
										Trace 1/4-inch diameter gravel, increased silt	Heaving sands encountered
						128.4	197				

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: Site 16, Crash Crew Pit No. 2 MCAS, El Toro

HOLE NO. 16GE1

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BOREHOLE LOG

PROJECT and JOB NUMBER	SHEET NO.	HOLE NO.
CLEAN II	1 of 4	16MPE1

DRILLER	SITE and LOCATION	OVERBURDEN	BEGUN
West Hazmat	Site 16, Crash Crew Pit No. 2, MCAS, El Toro	NA	8-30-00

DRILL MAKE AND MODEL	COORDINATES	LOGGED BY:	ROCK (FT)	COMPLETED
Schramm T660H	N 2,192,978.3 E 6,110,723.8	D. Parker/P. Wiegand	NA	9-6-00

HOLE SIZE DIAMETER	GROUND EL. & GROUNDWATER DEPTH/EL.	CHECKED BY:	TOTAL DEPTH	UPDATE
14 in	329.9 ▽ / ▼ /	S. Blanchard	194.0	3-14-01

Organic Vapor Reading (ppm)	Core RQD %	Core / Soil Recovery (%)	Core Length / Sampler Advance	Blow Counts or Recovery (ft)	Core Run No. / Sampler Type	Elevation in feet	Depth in Feet	Graphics	Sample Recovery	Description and Classification	Remarks:
							1–9			SAND (SP): Very dark grayish brown (10YR3/2), moist, fine to medium grained, some silt	Hand augered to 5 feet. Drill cuttings used to describe lithology from ground surface to 140 feet bgs, and from 185.5 feet bgs to the bottom of the borehole. Hydrocarbon odor
						319.9	10–19			SILTY SAND (SM): Dark grayish brown (2.5Y4/2), moist, fine to medium grained sand	Strong hydrocarbon/VOC odor
						309.9	20–27			SAND (SP): Dark grayish brown (10YR4/2), moist, fine to medium grained Some silt	Strong hydrocarbon/VOC odor
						301.9	28–37			SILT (ML): Dark grayish brown (10YR4/2), moist, trace fine sand, trace clay	Strong hydrocarbon/VOC odor
						291.9	38–43			SAND (SP): Dark grayish brown (2.5Y4/2), moist, fine to medium grained	Hydrocarbon/VOC odor
						285.9	44–49			SILTY SAND (SM): Very dark grayish brown (2.5Y3/2), moist, fine grained sand	

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: Site 16, Crash Crew Pit No. 2 MCAS, El Toro

HOLE NO. 16MPE1

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BOREHOLE LOG

PROJECT and JOB NUMBER	SHEET NO.	HOLE NO.
CLEAN II	2 of 4	16MPE1

Organic Vapor Reading (ppm)	Core RQD %	Core / Soil Recovery (%)	Core Length / Sampler Advance	Blow Counts or Recovery (ft)	Core Run No. / Sampler Type	Elevation in feet	Depth in Feet	Graphics	Sample Recovery	Description and Classification	Remarks:
						277.9	52			SAND (SW): Grayish brown (10YR5/2), moist, fine to coarse grained, subangular	VOC odor
							53–64			Some silt, trace gravel (approximately 1-inch diameter)	
						264.9	65–71			Gravelly CLAY (CL): Brown (10YR4/3), moist, gravel is approximately 1/4-inch diameter, subangular	Hydrocarbon/VOC odor
						257.9	72–79			Sandy SILT (ML): Yellowish brown (10YR5/6), moist, fine grained sand, trace 1/2-inch diameter gravel	Hydrocarbon/VOC odor
						249.9	80–85			Clayey SILT (ML): Yellowish brown (10YR5/4), moist, trace fine sand	
						243.9	86–93			Sandy CLAY (CL): Dark yellowish brown (10YR4/6), moist, fine grained sand, trace coarse grained sand and gravel (1/4-inch diameter)	
						235.9	94–99			Sandy SILT (ML): Dark yellowish brown (10YR4/6), moist, fine to coarse grained sand, some gravel (1/4 to 1-inch diameter), subrounded grains, some clay	
							100–106			Dark yellowish brown (10YR4/4), medium to coarse grained sand, some gravel (1/4 to 1/2-inch diameter), subrounded to subangular grains, trace clay Below 100 feet, varying amounts of sand and gravel in the silt/clay matrix with depth	

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: Site 16, Crash Crew Pit No. 2 MCAS, El Toro

HOLE NO. 16MPE1

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BOREHOLE LOG

PROJECT and JOB NUMBER	SHEET NO.	HOLE NO.
CLEAN II	3 of 4	16MPE1

Organic Vapor Reading (ppm)	Core RQD %	Core / Soil Recovery (%)	Core Length / Sampler Advance	Blow Counts or Recovery (ft)	Core Run No. / Sampler Type	Elevation in feet	Depth in Feet	Graphics	Sample Recovery	Description and Classification	Remarks:
							108–139			Gravel up to 1-inch diameter; Fine to coarse grained sand; Increased sand and gravel content; potentially a SILTY SAND (SM); Decreased sand content	
						189.9	140			No cuttings; not logged	From 140 to 160 feet, no cuttings emanated from the borehole due to drilling conditions (drilling water injection was ceased to prevent clay from smearing across the vadose zone well screen interval)
							141–159				
		100	1.5	NA	SPT	169.5	160			SILTY SAND (SM): Pale brown (10YR6/3), wet, fine to coarse grained, subangular	
		100	1.5	NA	SPT	169.1	161				
		100	1.5	NA	SPT	166.9	162–164			Sandy SILT (ML): Yellowish brown (10YR5/4), stiff, wet, fine grained sand	

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: Site 16, Crash Crew Pit No. 2 MCAS, El Toro

HOLE NO. 16MPE1

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BOREHOLE LOG

PROJECT and JOB NUMBER: **CLEAN II**

SHEET NO.: **4 of 4**

HOLE NO.: **16MPE1**

Organic Vapor Reading (ppm)	Core RQD %	Core / Soil Recovery (%)	Core Length / Sampler Advance	Blow Counts or Recovery (ft)	Core Run No. / Sampler Type	Elevation in feet	Depth in Feet	Graphics	Sample Recovery	Description and Classification	Remarks:
		100	1.5	NA	SPT		165			Clayey SILT (ML): Yellowish brown (10YR5/4), very stiff, wet, some fine grained sand	
		100	1.5	NA	SPT		166			Dark grayish brown (10YR4/2), mottled	
		100	1.5	NA	SPT	162.9	167			CLAYEY SAND (SC): Brown (10YR5/3), dense, saturated, fine grained sand, trace medium grained sand	
		100	1.5	NA	SPT		168				
		100	1.5	NA	SPT	160.9	169			Sandy SILT (ML): Brown (10YR5/3), very stiff, saturated, fine grained sand	
		100	1.5	NA	SPT		170			Increased sand content	
		100	1.5	NA	SPT		171				
		100	1.5	NA	SPT	157.9	172			SILTY SAND (SM) and CLAYEY SAND (SC): Light yellowish brown (10YR6/4), dense, saturated, fine to coarse grained sand, pockets of clean sand in sampler	
		100	1.5	NA	SPT		173				
		33	1.5	NA	SPT		174			No pockets of clean sand	
		33	1.5	NA	SPT		175				
		100	1.5	NA	SPT		176			Mottled (5%)	
		100	1.5	NA	SPT	151.7	177			CLAY (CL): Grayish brown (10YR5/2), hard, moist, silty, variegated with pale brown stringers, becomes sandy with depth	
		100	1.5	NA	SPT	150.3	178			Sandy SILT (ML): Grayish brown (10YR5/2), firm, moist, fine to coarse grained sand, with scattered gravel to 1/2-inch diameter	
		100	1.5	NA	SPT		179				
		44	1.5	NA	SPT	147.5	180			SILTY SAND (SM): Grayish brown (2.5YR5/2), wet, fine to coarse grained sand, scattered gravel with pebbles to approximately 1-inch diameter	
		100	1.5	NA	SPT		181			Sand grades to a fine sand between approximately 184.5 and 185 feet	
						144.9	182			Sandy SILT (ML): Brown (10YR5/3), firm, moist to wet, very fine to fine grained sand, scattered medium to coarse grained sand (<2%)	
							183			Grades to silty fine sand between 187 and 188 feet, then grades to sandy silt below 188 feet	
							184			From 188.25 to 188.75 feet, clayey silt, hard, with subangular gravel up to approximately 1-inch diameter	
							185			Clayey SILT (ML): Brown to grayish brown (10YR5/3 to 10YR5/2), hard, moist, trace sand	NOTE: NA = not available
							186				
							187				
							188				
						140.4	189				
							190				
							191				
							192				
							193				
						135.9	194				

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: **Site 16, Crash Crew Pit No. 2 MCAS, El Toro**

HOLE NO.: **16MPE1**

Report form CTO178_NAVY_FBL-2 Time: 4:33:54 PM

~~DRAFT~~ FINAL

BOREHOLE LOG

PROJECT and JOB NUMBER	SHEET NO.	HOLE NO.
CLEAN II	1 of 4	16MW4

DRILLER	SITE and LOCATION	OVERBURDEN	BEGUN
West Hazmat	Site 16, Crash Crew Pit No. 2, MCAS, El Toro	NA	7-31-00

DRILL MAKE AND MODEL	COORDINATES	LOGGED BY:	ROCK (FT)	COMPLETED
CME-85	N 2,193,114.4 E 6,110,516.9	D. Parker	NA	7-31-00

HOLE SIZE DIAMETER	GROUND EL. & GROUNDWATER DEPTH/EL.	CHECKED BY:	TOTAL DEPTH	UPDATE
10 in	325.5 ▽ 161.0 / 164.5 7/31/00 ▼ /	S. Blanchard	196.0	3-14-01

Organic Vapor Reading (ppm)	Core RQD %	Core / Soil Recovery (%)	Core Length / Sampler Advance	Blow Counts or Recovery (ft)	Core Run No. / Sampler Type	Elevation in feet	Depth in Feet	Graphics	Sample Recovery	Description and Classification	Remarks:
						323.5	1–24			Gravelly FILL	Hand augered to 5 feet.
										Sandy CLAY (CL): Dark grayish brown (10YR4/2), moist, fine to medium grained sand, low plasticity	Borehole reamed to 10 in. diameter and overdrilled to from 190 to 196 feet for well installation using a Schramm T660H drill rig. Drill cuttings used to describe lithology from ground surface to 160 feet bgs.
						300.5	25–44			Silty CLAY (CL): Brown (7.5YR5/4), moist, low plasticity, trace fine sand	
						280.5	45–49			SILTY SAND (SM): Brown (7.5YR5/4), moist, fine to coarse grained sand, subangular	

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: Site 16, Crash Crew Pit No. 2 MCAS, El Toro

HOLE NO.: 16MW4

Report form: CTO179_NAVY_FBL-2 Time: 4:34:18 PM

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BOREHOLE LOG

PROJECT and JOB NUMBER	SHEET NO.	HOLE NO.
CLEAN II	2 of 4	16MW4

Organic Vapor Reading (ppm)	Core RQD %	Core / Soil Recovery (%)	Core Length / Sampler Advance	Blow Counts or Recovery (ft)	Core Run No. / Sampler Type	Elevation in feet	Depth in Feet	Graphics	Sample Recovery	Description and Classification	Remarks:
						270.5	55			Sandy SILT (ML): Brown (7.5YR5/2), moist, medium grained sand, some clay	
						260.5	65			SILT (ML): Brown (7.5YR4/4), moist, some fine sand, trace clay	
						230.5	95			Sandy SILT (ML): Brown (10YR5/4), moist, fine to medium grained sand	

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: Site 16, Crash Crew Pit No. 2 MCAS, El Toro

HOLE NO. 16MW4

Report form: CTO178_NAVY_FBL-2 Time: 4:34:19 PM

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BOREHOLE LOG

PROJECT and JOB NUMBER: **CLEAN II**

SHEET NO.: **3 of 4**

HOLE NO.: **16MW4**

Organic Vapor Reading (ppm)	Core RQD %	Core / Soil Recovery (%)	Core Length / Sampler Advance	Blow Counts or Recovery (ft)	Core Run No. / Sampler Type	Elevation in feet	Depth in Feet	Graphics	Sample Recovery	Description and Classification	Remarks:
							108–124			Becomes strong brown (7.5YR4/6), fine grained sand, trace clay	
						200.5	125			SILT (ML): Brown (7.5YR5/4), moist, some medium sand	
							126–139				
							140–154			Becomes dark brown (7.5YR4/4), ~10 to 15% fine to medium grained sand, few scattered granules	
							155–159			Becomes dark brown (10YR4/3), ~10% fine to medium grained sand, occasional granules	
		100	1.5	ND	SPT	164.5	160–161			Becomes sandy, brown (10YR5/3), scattered brown inclusions	First water encountered at 161 feet.
		100	1.5	ND	SPT	163.5	162			SILTY SAND (SM): Brown (10YR5/3), fine to medium grained sand, wet	
		100	1.5	ND	SPT	162.5	163–164				

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: **Site 16, Crash Crew Pit No. 2 MCAS, El Toro**

HOLE NO.: **16MW4**

Report form: CTO173_NAVY_FBL-2 Time: 4:34:20 PM

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BOREHOLE LOG

PROJECT and JOB NUMBER	SHEET NO.	HOLE NO.
CLEAN II	4 of 4	16MW4

Organic Vapor Reading (ppm)	Core RQD %	Core / Soil Recovery (%)	Core Length / Sampler Advance	Blow Counts or Recovery (ft)	Core Run No. / Sampler Type	Elevation in feet	Depth in Feet	Graphics	Sample Recovery	Description and Classification	Remarks:
		100	1.5	ND	SPT		165			Sandy SILT (ML): Brown (10YR5/3), wet, ~25% fine to medium grained sand	
		100	1.5	ND	SPT		166			SILTY SAND (SM): Brown (7.5YR5/2) to pale brown (10YR6/3), variegated fine silty sand at top grading to medium to coarse sand	
		100	1.5	ND	SPT		167–169			At 164.5 to 166 feet, Dark yellowish brown (10YR4/4), very fine to fine grained sand	Sample from 169 to 174 feet analyzed for grain size distribution; sample no. 1788303
		100	1.5	ND	SPT		170–171			At 166 to 169 feet, Grayish brown (10YR5/2) to brown (10YR5/3), very fine to medium grained	
		100	1.5	ND	SPT	154.0	172			At 169 to 171.5 feet, Grayish brown (2.5YR5/2), fine to coarse grained sand, wet, silt stringer at 170 to 170.5 feet	
		100	1.5	ND	SPT	153.0	173–174			SILT (ML): Brown (10YR5/3), wet, with ~25%very fine to fine grained sand	
		100	1.5	ND	SPT		175			SILTY SAND (SM): Brown (10YR5/3), wet, fine to medium grained sand, variegated, with white (calcareous?) stringers from about 175 to 183 feet	
		100	1.5	ND	SPT		176–179				
		100	1.5	ND	SPT		180–182				
		100	1.5	ND	SPT	142.5	183			SILT (ML) to SILTY SAND (SM): Brown (10YR5/3), wet, very fine to fine sandy silt and silty very fine to fine sand; variegated, with white (calcareous?) stringers; grades between silt and sand	
		100	1.5	ND	SPT		184–186				
		100	1.5	ND	SPT		187				
		100	1.5	ND	SPT	137.5	188			SILTY SAND (SM): Brown (10YR5/3), very fine to fine grained sand, slightly silty	
						136.0	189			Not Logged	
							190–195				Overdrilled to 196 feet to install well.
						129.5	196				

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: Site 16, Crash Crew Pit No. 2 MCAS, El Toro

HOLE NO. 16MW4

Report form: CTO178_NAVY_FBL-2 Time: 4:34:21 PM

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BOREHOLE LOG

PROJECT and JOB NUMBER: CLEAN II		SHEET NO.: 1 of 4	HOLE NO.: 16MW5
DRILLER: West Hazmat	SITE and LOCATION: Site 16, Crash Crew Pit No. 2, MCAS, El Toro	OVERBURDEN: NA	BEGUN: 8-1-00
DRILL MAKE AND MODEL: CME-85	COORDINATES: N 2,193,112.4 E 6,110,573.3 / LOGGED BY: D. Parker/P. Weigand	ROCK (FT): NA	COMPLETED: 8-1-00
HOLE SIZE DIAMETER: 10 in	GROUND EL. & GROUNDWATER DEPTH/EL.: 326.2 ▽ 167.0 / 159.2 8/1/00 ▼ / / CHECKED BY: S. Blanchard	TOTAL DEPTH: 196.0	UPDATE: 3-14-01

Organic Vapor Reading (ppm)	Core RQD %	Core / Soil Recovery (%)	Core Length / Sampler Advance	Blow Counts or Recovery (ft)	Core Run No. / Sampler Type	Elevation in feet	Depth in Feet	Graphics	Sample Recovery	Description and Classification	Remarks:
							1			Clayey SILT (ML): Dark grayish brown (10YR4/2), moist, trace fine grained sand, low plasticity	Hand augered to 5 feet.
							2				
							3				
							4				
							5				Borehole reamed to 10 in. diameter and overdrilled to from 190 to 196 feet for well installation using a Schramm T660H drill rig.
							6				
							7				
							8				
							9				
							10				Drill cuttings used to describe lithology from ground surface to 160 feet bgs.
							11				
							12				
							13				
							14				
							15				
							16				
							17				
							18				
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							47				
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							49				

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: Site 16, Crash Crew Pit No. 2 MCAS, El Toro

HOLE NO.: 16MW5

Report form: CTO178_NAVY_FBL-2 Time: 4:34:43 PM

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BOREHOLE LOG

PROJECT and JOB NUMBER	SHEET NO.	HOLE NO.
CLEAN II	2 of 4	16MW5

Organic Vapor Reading (ppm)	Core RQD %	Core / Soil Recovery (%)	Core Length / Sampler Advance	Blow Counts or Recovery (ft)	Core Run No. / Sampler Type	Elevation in feet	Depth in Feet	Graphics	Sample Recovery	Description and Classification	Remarks:
						276.2	51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78 79			SILT (ML): Dark brown (10YR4/3), moist, some fine grained sand, trace clay	
						246.2	80 81 82 83 84 85 86 87 88 89			Sandy SILT (ML): Dark yellowish brown (10YR4/4), moist, fine to medium grained sand, subrounded	
						236.2	90 91 92 93 94 95 96 97 98 99 100 101 102 103 104 105 106			SILT (ML): Dark yellowish brown (10YR3/4), moist, some fine grained sand, trace clay	

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: Site 16, Crash Crew Pit No. 2 MCAS, El Toro

HOLE NO. 16MW5

Report form CTO178_NAVY_FBL-2 Time: 4:34:44 PM

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BOREHOLE LOG

PROJECT and JOB NUMBER: CLEAN II

SHEET NO.: 3 of 4

HOLE NO.: 16MW5

Organic Vapor Reading (ppm)	Core RQD %	Core / Soil Recovery (%)	Core Length / Sampler Advance	Blow Counts or Recovery (ft)	Core Run No. / Sampler Type	Elevation in feet	Depth in Feet	Graphics	Sample Recovery	Description and Classification	Remarks:
						216.2	110			Clayey SILT (ML): Dark brown (10YR4/3), moist, trace fine grained sand, low plasticity	
						201.2	125			Sandy SILT (ML): Dark brown (7.5YR4/2), moist, fine grained sand, trace medium grained sand, some clay	
							130			With some coarse grained, subangular sand	
						191.2	135			Clayey SILT (ML): Dark brown (10YR4/3), moist, some fine to medium sand, low plasticity	
						181.2	145			Silty CLAY (CL): Yellowish brown (10YR5/4), moist, trace fine grained sand, moderate plasticity	
						176.2	150			Clayey SILT (ML): Brown (10YR4/3), moist, trace fine sand, low plasticity	
		100	1.5	NA	SPT	166.2 / 165.7	160			SILT (ML): Brown (10YR5/3), very stiff, moist, trace fine grained sand	
		100	1.5	10-10-12	SPT	163.7	162			Sandy SILT (ML): Yellowish brown (10YR5/4), very stiff, moist, fine grained sand	
		100	1.5	10-10-18	SPT	163.2	163				

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: Site 16, Crash Crew Pit No. 2 MCAS, El Toro

HOLE NO.: 16MW5

Report form: CTO178_NAVY_FBL-2 Time: 4:34:45 PM

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BOREHOLE LOG

PROJECT and JOB NUMBER: **CLEAN II**

SHEET NO.: **4 of 4**

HOLE NO.: **16MW5**

Organic Vapor Reading (ppm)	Core RQD %	Core / Soil Recovery (%)	Core Length / Sampler Advance	Blow Counts or Recovery (ft)	Core Run No. / Sampler Type	Elevation in feet	Depth in Feet	Graphics	Sample Recovery	Description and Classification	Remarks:
		100	1.5	6-8-11	SPT		165			SILT (ML): Brown (10YR4/3), very stiff, moist, trace fine sand	
		100	1.5	7-9-12	SPT	160.2	166			Sandy SILT (ML): Dark yellowish brown (10YR4/4), moist, fine to medium grained sand	
						159.2 ▽	167				
		100	1.5	8-8-11	SPT	157.7	168			SILTY SAND (SM): Brown (10YR4/3), moist, fine grained sand	
						157.2	169				
		100	1.5	9-12-14	SPT		170			SAND (SP): Pale brown (10YR6/3), saturated, fine grained sand, trace medium grained sand, poorly sorted	Sample from 170 to 175 feet analyzed for grain size distribution; sample no. 1788300
		100	1.5	12-13-14	SPT		171			SILT (ML)	
		100	1.5	8-12-13	SPT		172			SAND (SW): Very pale brown (10YR7/4), saturated, fine to coarse grained, well sorted, subrounded, trace gravel ~1.5 in. dia.	
						152.2	173				
						151.2	174			SILT streamer, 4 in. thick	
		100	1.5	9-11-15	SPT	150.2	175			Sandy SILT (ML): Pale Brown (10YR6/3), very stiff, wet, fine to medium grained sand, subrounded	Sample from 175 to 180 feet analyzed for grain size distribution; sample no. 1788301
		100	1.5	9-15-20	SPT		176			SAND (SW): Light yellowish brown (10YR6/4), medium dense, saturated, fine to coarse grained, subrounded	
		100	1.5	9-10-18	SPT		177			Sandy SILT (ML): Light yellowish brown (10YR6/4), very stiff, moist, fine to medium grained, subrounded, carbonate stringers	
						146.2	178				
		100	1.5	11-13-16	SPT		179			SILTY SAND (SM): Brownish yellow (10YR6/6), medium dense, saturated, fine grained, trace medium to coarse grained, carbonate stringers	
		100	1.5	12-15-17	SPT		180				
		100	1.5	17-17-20	SPT	143.2	181			SAND (SW): Pale brown (10YR6/3), medium dense to dense, saturated, fine to coarse grained, subangular, some 1/4 to 3/4 in. dia. gravel	
		100	1.5	13-16-19	SPT		182				
		100	1.5	12-14-21	SPT		183				Sample from 186 to 191 feet analyzed for grain size distribution; sample no. 1788302
		100	1.5	15-15-21	SPT		184				
		100	1.5	NA	SPT		185				
						135.2	186				
							187			Not Logged	Overdrilled to 196 feet to install well
							188				
							189				
							190				
							191				
							192				
							193				
							194				
							195				
						130.2	196				NOTE: NA = not available

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: **Site 16, Crash Crew Pit No. 2 MCAS, El Toro**

HOLE NO.: **16MW5**

DRAFT FINAL

BOREHOLE LOG

PROJECT and JOB NUMBER: CLEAN II		SHEET NO.: 1 of 4	HOLE NO.: 16MW6
DRILLER: West Hazmat	SITE and LOCATION: Site 16, Crash Crew Pit No. 2, MCAS, El Toro	OVERBURDEN: NA	BEGUN: 8-3-00
DRILL MAKE AND MODEL: CME-85	COORDINATES: N 2,193,010.7 E 6,110,692.9 / LOGGED BY: D. Parker	ROCK (FT): NA	COMPLETED: 8-3-00
HOLE SIZE DIAMETER: 10 in	GROUND EL. & GROUNDWATER DEPTH/EL.: 329.8 ▽ / ▼ / / CHECKED BY: S. Blanchard	TOTAL DEPTH: 194.0	UPDATE: 3-14-01

Organic Vapor Reading (ppm)	Core RQD %	Core / Soil Recovery (%)	Core Length / Sampler Advance	Blow Counts or Recovery (ft)	Core Run No. / Sampler Type	Elevation in feet	Depth in Feet	Graphics	Sample Recovery	Description and Classification	Remarks:
							1–39			Not Logged	Hand augered to 5 feet. Borehole reamed to 10 in. diameter and overdrilled to from 191 to 194 feet for well installation using a Schramm T660H drill rig. Drill cuttings used to describe lithology from ground surface to 145 feet bgs.
						289.8	40–49			Sandy SILT (ML): Dark grayish brown (10YR4/2), moist, fine to medium grained sand	Hydrocarbon/VOC odor

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: Site 16, Crash Crew Pit No. 2 MCAS, El Toro

HOLE NO.: 16MW6

Report form: CTO178_NAVY_FBL-2 Time: 4:35:09 PM

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BOREHOLE LOG

PROJECT and JOB NUMBER	SHEET NO.	HOLE NO.
CLEAN II	2 of 4	16MW6

Organic Vapor Reading (ppm)	Core RQD %	Core / Soil Recovery (%)	Core Length / Sampler Advance	Blow Counts or Recovery (ft)	Core Run No. / Sampler Type	Elevation in feet	Depth in Feet	Graphics	Sample Recovery	Description and Classification	Remarks:
							51–64			Very dark grayish brown, fine to coarse grained sand	Hydrocarbon/VOC odor
						264.8	65–74			SILTY SAND (SM): Very dark grayish brown (10YR3/2), moist, fine to coarse grained sand, trace clay, trace gravel	Hydrocarbon/VOC odor
							75–84			Dark yellowish brown (10YR4/4, moist, medium grained sand, trace fine gravel	VOC odor
						244.8	85–99			Silty CLAY (CL): Yellowish brown (10YR5/4), moist, moderate plasticity, trace fine grained sand	VOC odor
						229.8	100–106			SILT (ML): Yellowish brown (10YR5/4), moist, trace fine sand, trace clay	VOC odor

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: Site 16, Crash Crew Pit No. 2 MCAS, El Toro

HOLE NO. 16MW6

Report form CTO178_NAVY_FBL-2 Time: 4:35:10 PM

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BOREHOLE LOG

PROJECT and JOB NUMBER: **CLEAN II**

SHEET NO.: **3 of 4**

HOLE NO.: **16MW6**

Organic Vapor Reading (ppm)	Core RQD %	Core / Soil Recovery (%)	Core Length / Sampler Advance	Blow Counts or Recovery (ft)	Core Run No. / Sampler Type	Elevation in feet	Depth in Feet	Graphics	Sample Recovery	Description and Classification	Remarks:
							108–129			Dark brown (10YR4/3), some fine sand	VOC odor
						199.8	130–144			Sandy SILT (ML): Brown (10YR5/3), moist, fine to medium grained sand	
		100	1.5	10-12-13	SPT	184.8	145–146			SILTY SAND (SM): Light yellowish brown (10YR6/4), medium dense, moist, fine to medium grained sand	
		100	1.5	10-12-30	SPT	183.3	147–149			Sandy SILT (ML): Dark yellowish brown (10YR4/6), very stiff, moist, fine grained sand	
		100	1.5	8-12-14	SPT						
		100	1.5	11-14-15	SPT	179.8	150–151			SAND (SP): Light yellowish brown (10YR6/4), medium dense, moist, fine grained, trace coarse grained, trace silt	
		100	1.5	10-11-15	SPT	177.8	152			Sandy SILT (ML): Dark brown (10YR3/3), very stiff, moist, fine grained sand	
		100	1.5	14-17-19	SPT	176.8	153–154			SILTY SAND (SM): Yellowish brown (10YR5/6), dense, moist, fine to medium grained sand, subangular	
		100	1.5	16-18-20	SPT	174.5	155			SAND (SW): Brownish yellow (10YR6/6), dense, wet, fine to coarse grained, angular, some gravel (0.5 to 1.5 inches in diameter), trace silt	
		100	1.5	17-19-20	SPT	173.3	156–157				
		100	1.5	19-20-22	SPT		158–159			Sandy SILT (ML): Yellowish brown (10YR5/6), hard, moist, fine to medium grained sand	
		100	1.5	15-15-20	SPT		160–161			Some clay, low plasticity	
		100	1.5	14-17-21	SPT		162–164				

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: **Site 16, Crash Crew Pit No. 2 MCAS, El Toro**

HOLE NO.: **16MW6**

Report form: CTO178_NAVY_FBL-2 Time: 4:35:12 PM

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BOREHOLE LOG

PROJECT and JOB NUMBER: **CLEAN II**

SHEET NO.: **4 of 4**

HOLE NO.: **16MW6**

Organic Vapor Reading (ppm)	Core RQD %	Core / Soil Recovery (%)	Core Length / Sampler Advance	Blow Counts or Recovery (ft)	Core Run No. / Sampler Type	Elevation in feet	Depth in Feet	Graphics	Sample Recovery	Description and Classification	Remarks:
		100	1.5	17-19-22	SPT	164.8	165			SILT (ML): Dark yellowish brown (10YR4/4), hard, moist, trace clay, white nodules (5-10%)	
		100	1.5	16-19-21	SPT	162.5	166				
		100	1.5	18-19-21	SPT	161.8	167			SAND (SP): Pale brown (10YR6/3), dense, wet, fine to mediujm grained, trace silt	
		100	1.5	18-18-21	SPT	158.8	168			SILTY SAND (SM): Pale brown (10YR6/3), dense, wet, fine to medium grained sand, increasing silt content with depth	Sample from 170 to 175 feet analyzed for grain size distribution; sample no. 1788305
		100	1.5	15-18-20	SPT	157.8	169			SAND (SW): Light yellowish brown (10YR6/4), dense, saturated, fine to coarse grained	
		100	1.5	16-16-19	SPT		170			Sandy SILT (ML): Pale brown (10YR6/3), hard, wet, fine grained sand	
		100	1.5	14-16-19	SPT		171			Saturated, increased sand content	
		100	1.5	15-18-19	SPT		172				
		100	1.5	17-19-22	SPT	151.8 151.3	173			SAND (SW): Pale brown (10YR6/3), dense, saturated, fine to coarse grained, subrounded	
		100	1.5	17-19-20	SPT		174			SILT (ML): Brown (10YR5/3), hard, wet, some fine grained sand, trace clay, 15% white nodules and stripes	
		100	1.5	18-20-23	SPT	148.3 147.5	175			SILTY SAND (SM): Brown (10YR5/3), dense, saturated, fine grained sand, trace medium grained sand	
		100	1.5	17-19-21	SPT		176			Sandy SILT (ML): Yellowish brown (10YR5/4), very stiff, wet, fine to medium grained sand, subangular grains	
		100	1.5	18-20-21	SPT	144.8 143.8	177			SILTY SAND (SM): Brown (10YR5/3)dense, saturatedfine grained sand, trace coarse grained sand	
		100	1.5	17-18-23	SPT		178			SILT (ML): Brown (10YR5/3), hard, moist, some fine grained sand, some clay, low plasticity, approximately 20% white nodules	
		100	1.5	19-19-22	SPT		179				
		100	1.5	19-20-23	SPT		180				
						138.8	181			Not Logged	Overdrilled to 194 feet to install well
							182				
							183				
						135.8	184				

NOTE:
NA = not available

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: **Site 16, Crash Crew Pit No. 2 MCAS, El Toro**

HOLE NO.: **16MW6**

Report form: CTO178_NAVY_FBL-2 Time: 4:35:13 PM

~~DRAFT~~ FINAL 8/13

BOREHOLE LOG

PROJECT and JOB NUMBER: CLEAN II		SHEET NO.: 1 of 4	HOLE NO.: 16MW7
DRILLER: West Hazmat	SITE and LOCATION: Site 16, Crash Crew Pit No. 2, MCAS, El Toro	OVERBURDEN: NA	BEGUN: 8-2-00
DRILL MAKE AND MODEL: CME-85	COORDINATES: N 2,192,916.9 E 6,110,740.7 / LOGGED BY: D. Parker	ROCK (FT): NA	COMPLETED: 8-2-00
HOLE SIZE DIAMETER: 10 in	GROUND EL. & GROUNDWATER DEPTH/EL.: 330.3 ▽ / ▼ / / CHECKED BY: S. Blanchard	TOTAL DEPTH: 194.0	UPDATE: 3-14-01

Organic Vapor Reading (ppm)	Core RQD %	Core / Soil Recovery (%)	Core Length / Sampler Advance	Blow Counts or Recovery (ft)	Core Run No. / Sampler Type	Elevation in feet	Depth in Feet	Graphics	Sample Recovery	Description and Classification	Remarks:
							1–5			Gravelly FILL	Hand augered to 5 feet.
						324.3	6–19			SILTY SAND (SM): Dark gray (10YR4/1), moist, fine to medium grained sand	Borehole reamed to 10 in. diameter and overdrilled to from 191 to 194 feet for well installation using a Schramm T660H drill rig. Drill cuttings used to describe lithology from ground surface to 145 feet bgs. Moderate petroleum hydrocarbon odor. Dark gray color appears to be discoloration from petroleum hydrocarbons.
						310.3	20–34			Sandy SILT (ML): Very dark gray (10YR3/1), moist, fine grained sand, trace clay	
						295.3	35–49			Silty CLAY (CL): Dark gray (10YR4/1), moist, moderate plasticity	Strong hydrocarbon odor

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: Site 16, Crash Crew Pit No. 2 MCAS, El Toro

HOLE NO.: 16MW7

Report form CTO178_NAVY_FBL-2 Time: 4:35:39 PM

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BOREHOLE LOG

PROJECT and JOB NUMBER: **CLEAN II**

SHEET NO.: **2 of 4**

HOLE NO.: **16MW7**

Organic Vapor Reading (ppm)	Core RQD %	Core / Soil Recovery (%)	Core Length / Sampler Advance	Blow Counts or Recovery (ft)	Core Run No. / Sampler Type	Elevation in feet	Depth in Feet	Graphics	Sample Recovery	Description and Classification	Remarks:
						280.3	51–59			SILT (ML): Dark gray (10YR4/1), moist, trace sand	Strong hydrocarbon odor
						270.3	60–74			SILTY SAND (SM): Yellowish brown (10YR5/4), moist, fine to medium grained sand	Slight hydrocarbon odor
						255.3	75–89			SILT (ML): Dark yellowish brown (10YR4/6), moist, trace fine to medium grained sand	
						240.3	90–99			Clayey SILT (ML): Dark grayish brown (10YR4/2), moist, low plasticity, trace fine grained sand	
						230.3	100–106			SILTY SAND (SM): Yellowish brown (10YR5/4), moist, fine to medium grained sand	

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: **Site 16, Crash Crew Pit No. 2 MCAS, El Toro**

HOLE NO.: **16MW7**

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BOREHOLE LOG

PROJECT and JOB NUMBER: **CLEAN II**

SHEET NO.: **3 of 4** | HOLE NO.: **16MW7**

Organic Vapor Reading (ppm)	Core RQD %	Core / Soil Recovery (%)	Core Length / Sampler Advance	Blow Counts or Recovery (ft)	Core Run No. / Sampler Type	Elevation in feet	Depth in Feet	Graphics	Sample Recovery	Description and Classification	Remarks:
						210.3	120			SILT (ML): Grayish brown (10YR5/2), moist, some fine grained sand	Hydrocarbon odor
						200.3	130			Sandy SILT (ML): Grayish brown (10YR5/2), moist, fine to medium grained sand	Hydrocarbon odor
						195.3	135			Clayey SILT (ML): Brown (10YR5/3), moist, low plasticity, trace fine grained sand	Hydrocarbon odor Hydrocarbon odor
		100	1.5	9-11-12	SPT	185.3	145			Sandy CLAY (CL): Yellowish brown (10YR5/6), very stiff, moist, fine grained sand, trace silt	
		100	1.5	12-14-17	SPT		146				
		100	1.5	8-11-17	SPT		147				
						181.3	148			SAND (SP): Very pale brown (10YR7/4), medium dense, moist, fine grained, trace medium and coarse sand, subangular	
		100	1.5	14-15-19	SPT	179.3	149				
		100	1.5	10-14-16	SPT	178.3	150			CLAY (CL): Brown (10YR5/3), very stiff, moist, moderate plasticity, some silt, 1/4-inch gravel	
		100	1.5	14-15-20	SPT		151			Sandy SILT (ML): Dark yellowish brown (10YR4/6), very stiff, moist, fine grained sand	
		100	1.5	11-18-21	SPT		152				
		100	1.5	10-18-21	SPT	173.8 173.3	153			SILTY SAND (SM): Yellowish brown (10YR5/5), medium dense, wet, fine grained sand, trace medium and coarse grained sand	
		100	1.5	14-16-20	SPT	171.8	154			Sandy SILT (ML): Dark yellowish brown (10YR4/6), very stiff, moist, fine grained sand, increasing clay content with depth	
		100	1.5	15-18-21	SPT		155				
		100	1.5	14-18-21	SPT		156			Silty CLAY (CL): Yelloish brown (10YR4/4), hard, moist, trace medium grained sand, moderate plasticity	
		100	1.5	17-19-22	SPT		157				

Depth in Feet: 108, 109, 110, 111, 112, 113, 114, 115, 116, 117, 118, 119, 120, 121, 122, 123, 124, 125, 126, 127, 128, 129, 130, 131, 132, 133, 134, 135, 136, 137, 138, 139, 140, 141, 142, 143, 144, 145, 146, 147, 148, 149, 150, 151, 152, 153, 154, 155, 156, 157, 158, 159, 160, 161, 162, 163, 164

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: **Site 16, Crash Crew Pit No. 2 MCAS, El Toro**

HOLE NO.: **16MW7**

Report form CTO178_NAVY_FBL_2 Time: 4:35:41 PM

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BOREHOLE LOG

PROJECT and JOB NUMBER: **CLEAN II**

SHEET NO.: **4 of 4**

HOLE NO.: **16MW7**

Organic Vapor Reading (ppm)	Core RQD %	Core / Soil Recovery (%)	Core Length / Sampler Advance	Blow Counts or Recovery (ft)	Core Run No. / Sampler Type	Elevation in feet	Depth in Feet	Graphics	Sample Recovery	Description and Classification	Remarks:
		100	1.5	15-16-22	SPT		165			Softer	
							166			With some white nodules	
		100	1.5	18-19-20	SPT		167			Increased moisture	
							168				
		100	1.5	7-18-20	SPT		169				
							170				
		100	1.5	15-16-18	SPT	159.8	171			SILTY SAND (SM): Yellowish brown (10YR5/6), dense, saturated, fine grained	
						158.8	172			Sandy SILT (ML): Yellowish brown (10YR5/6), hard, wet, fine grained sand, some clay, trace coarse grained sand	
		100	1.5	15-16-19	SPT	157.3	173			SILTY SAND (SM): Yellowish brown (10YR5/4), dense, wet, fine to medium grained sand, trace clay	
		100	1.5	18-20-21	SPT		174				
							175				
		100	1.5	15-17-21	SPT		176				
		100	1.5	15-16-20	SPT		177			Fine grained sand, saturated	
						152.3	178			SAND (SW): Pale brown (10YR6/3), saturated, fine to coarse grained, subangular	
		100	1.5	17-19-22	SPT	151.8	179				
						150.3	180			CLAY (CL): Dark grayish brown (10YR4/2), hard, moist, 30% to 40% mottled with white stringers	
		100	1.5	15-16-20	SPT		181				
		100	1.5	18-20-21	SPT		182			SILTY SAND (SM): Yellowish brown (10YR5/1), dense, wet, fine to medium grained sand, trace clay	
							183				
		100	1.5	15-18-20	SPT		184			Increased clay content, saturated	
						145.3	185			Sandy SILT (ML): Yellowish brown (10YR5/4), hard, wet, fine grained sand, trace clay, 5% white mottling	
		100	1.5	17-18-21	SPT		186				
						143.8	187			SILTY SAND (SM): Brown (10YR5/3), dense, saturated, fine to medium grained sand	
		100	1.5	16-19-20	SPT	142.3	188				
		100	1.5	18-19-22	SPT		189			CLAY (CL): Very dark grayish brown (10YR3/2), hard, moist, approximately 20% white stringers	
						140.3	190			Not Logged	
							191				Overdrilled to 194 feet to install well
							192				
							193				
						136.3	194				

NOTE:
NA = not available

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: **Site 16, Crash Crew Pit No. 2 MCAS, El Toro**

HOLE NO.: **16MW7**

Report form: CTO178_NAVY_FBL-2 Time: 4:35:42 PM

~~DRAFT~~ FINAL 8/3

BOREHOLE LOG

PROJECT and JOB NUMBER: CLEAN II		SHEET NO.: 1 of 3	HOLE NO.: 16VM1
DRILLER: West Hazmat	SITE and LOCATION: Site 16, Crash Crew Pit No. 2, MCAS, El Toro	OVERBURDEN: NA	BEGUN: 8-1-00
DRILL MAKE AND MODEL: CME-85	COORDINATES: N 2,193,005.1 E 6,110,762.9 / LOGGED BY: D. Parker	ROCK (FT): NA	COMPLETED: 8-1-00
HOLE SIZE DIAMETER: 10 in	GROUND EL. & GROUNDWATER DEPTH/EL.: 332.5 ▽ / ▼ / / CHECKED BY: S. Blanchard	TOTAL DEPTH: 156.0	UPDATE: 3-14-01

Organic Vapor Reading (ppm)	Core RQD %	Core / Soil Recovery (%)	Core Length / Sampler Advance	Blow Counts or Recovery (ft)	Core Run No. / Sampler Type	Elevation in feet	Depth in Feet	Graphics	Sample Recovery	Description and Classification	Remarks:
							1–4			SAND (SP): Brown (10YR5/3), moist, fine to medium grained	Hand augered to 5 feet.
						327.5	5–29			SILT (ML): Dark yellowish brown (10YR4/4), some find sand, trace clay	Borehole reamed to 10 in. diameter and overdrilled to from 154.5 to 156 feet for well installation using a Schramm T660H drill rig. Drill cuttings used to describe lithology from ground surface to 145 feet bgs.
						302.5	30–49			Clayey SILT (ML), Dark brown (10YR3/3), moist, trace medium grained sand	

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: Site 16, Crash Crew Pit No. 2 MCAS, El Toro

HOLE NO.: 16VM1

Report.form CTO178_NAVY_FBL-2 Time: 4:36:05 PM

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BOREHOLE LOG

PROJECT and JOB NUMBER	SHEET NO.	HOLE NO.
CLEAN II	2 of 3	16VM1

Organic Vapor Reading (ppm)	Core RQD %	Core / Soil Recovery (%)	Core Length / Sampler Advance	Blow Counts or Recovery (ft)	Core Run No. / Sampler Type	Elevation in feet	Depth in Feet	Graphics	Sample Recovery	Description and Classification	Remarks:
						282.5	51–69			SAND (SW): Dark brown (7.5YR4/4), moist, fine to coarse grained, subangular, trace fine gravel (1/4-inch diameter)	
						262.5	70–89			SILTY SAND (SM): Dark brown (7.5YR3/4), fine to medium grained sand, subangular, moist, trace clay	
						242.5	90–99			SILT (ML): Dark yellowish brown (10YR4/4), moist, some clay, low plasticity, trace fine sand	
						232.5	100–106			Sandy SILT (ML): Yellowish brown (10YR5/4), moist, fine grained sand, trace coarse sand	

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: Site 16, Crash Crew Pit No. 2 MCAS, El Toro

HOLE NO. 16VM1

Report form CTO178_NAVY_FBL-2 Time: 4:36:06 PM

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BOREHOLE LOG

PROJECT and JOB NUMBER: **CLEAN II**

SHEET NO.: **3 of 3**

HOLE NO.: **16VM1**

Organic Vapor Reading (ppm)	Core RQD %	Core / Soil Recovery (%)	Core Length / Sampler Advance	Blow Counts or Recovery (ft)	Core Run No. / Sampler Type	Elevation in feet	Depth in Feet	Graphics	Sample Recovery	Description and Classification	Remarks:
							108–144			Trace gravel, 1/2 inch diameter Dark brown (7.5YR4/4), fine grained sand Trace clay	
		100	1.5	10-12-12	SPT	187.5	145–146			SAND (SP): Light yellowish brown (10YR6/4), moist, fine grained, some silt, medium dense	
		100	1.5	11-15-10	SPT	185.5	147–149			Sandy SILT (ML): Brown (10YR5/3), very stiff, moist, fine grained sand, trace medium grained sand, trace clay	
		100	1.5	9-15-16	SPT						
		100	1.5	12-12-15	SPT	182.5	150–151			SAND (SW): Brownish yellow (10YR6/6), medium dense, moist, fine to coarse grained, angular	
		100	1.5	NA	SPT	180.7 180.0	152–153			SILT (ML): Light yellowish brown (10YR6/4), very stiff, moist, trace fine sand	
		100	1.5	NA	SPT	179.5 178.0	154–156			SAND (SW): Very pale brown (10YR7/4), medium dense, moist, fine to coarse grained, angular SAND (SP): Very pale brown (7.5YR4/6), medium dense, moist, fine grained, trace coarse sand, fine gravel (1/4-inch diameter)	NOTE: NA = not available

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: **Site 16, Crash Crew Pit No. 2 MCAS, El Toro**

HOLE NO.: **16VM1**

Report form: CTO175_NAVY_FBL-2 Time: 4:36:07 PM

WELL CONSTRUCTION DETAILS

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Well Log

Project Name	Job Number	Sheet Number	Well Number
CLEAN II	22214-178	1 of 2	16GE1

Project Site and Location	Started	Completed
Site 16, Crash Crew Pit No. 2 MCAS, El Toro	08-23-00	08-28-00

Water Depth (ft. toc)	Date	Elevation (ft. msl)	Coordinates	Logged By	TD of Well (ft.)	TD of Hole (ft.)
156.69	9-13-00	168.6	N 2,193,101.6 E 6,110,555.0	P. Wiegand	192.5	197

Ground Elevation (ft. msl)	Top of Casing Elevation (ft. msl)	Checked By	Hole Dia. (in.)	Updated
325.366	325.27	S. Blanchard	14	03-14-01

Well Construction Details	Depth in Feet	Elevation in Feet	Geologic Description and Classification
BLANK CASING 6-inch diameter schedule 80 PVC **SURFACE SEAL** Concrete **GROUT SEAL** Colton Type I/II Portland Cement with 5% bentonite	2.0	323.4	
		324.4	SILT (ML)
			Clayey SILT (ML)
	5		
	10	314.4	
		311.4	Sandy SILT (ML)
	15		SILTY SAND (SM)
		305.4	
	20	303.4	Clayey SILT (ML)
		300.4	Silty CLAY (CL)
	25		CLAY (CL)
	30	293.4	
			Clayey to Sandy SILT (ML)
	35	289.4	
Centralizer at 36 feet	36.0		Sandy SILT (ML)
	40		
	45	279.4	
			SILT (ML)
	50		
	55		
	60		
		261.4	
	65		SILT (ML)
		257.4	
	70		SAND (SP)
		253.4	
			SILT (ML)
	75	249.4	
Centralizer at 76 feet	76.0		
	80	244.4	
			Sandy SILT (ML)
	85		
	90		
	95		

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS	SITE and LOCATION	HOLE NO.
	Site 16, Crash Crew Pit No. 2 MCAS, El Toro	16GE1

Report.Form CTO-178_MWL Time: 4:24:20 PM

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Well Log	Project Name	Job Number	Sheet Number	Well Number
	CLEAN II	22214-178	2 of 2	16GE1

Well Construction Details	Depth in Feet	Well Graphics	Elevation in Feet	Graphics	Geologic Description and Classification
	105				
			216.4		
	110				SAND (SP)
			211.4		
	115	116.0 / 209.4	208.4		SILTY SAND (SM)
			206.4		Clayey to Sandy SILT (ML)
Centralizer at 116 feet	120				SAND (SP)
	125				
			196.4		
	130				SILT (ML)
			191.4		
	135				Clayey SILT (ML)
	140				
	145	146.0 / 179.4			
		146.5 / 178.9			
Centralizer at 146 feet					
BENTONITE SEAL	150	151.0 / 174.4	174.4		
Pure Gold medium bentonite chips		152.0 / 173.4			Clayey to Sandy SILT (ML)
TRANSITION SAND					
#0/30 Monterey sand	155	155.5 / 169.9			
FILTER PACK		156.0 / 169.4			
# 2/16 Monterey sand					
WELL SCREEN	160				
6-inch diameter stainless steel wire wrap, 0.020 in. slots					
Centralizer at 166 feet	165		159.4		
					Sandy GRAVEL (GW)
	170		153.4		
					Sandy SILT (ML)
	175				
	180				
	185		139.4		
					Gravelly SAND (SW)
	190	190.5 / 134.9			
SUMP		191.0 / 134.4			
6-inch diameter, stainless steel		192.5 / 132.9			
	195	194.0 / 131.4			
Centralizer at 191 feet		197.0 / 128.4	128.4		

Refer to 16GE1 Borehole Log for Geologic Description and Classification Details.

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS	SITE and LOCATION	HOLE NO.
	Site 16, Crash Crew Pit No. 2 MCAS, El Toro	16GE1

Report Form CTO-178_MWL Time: 4:24:22 PM

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Well Log

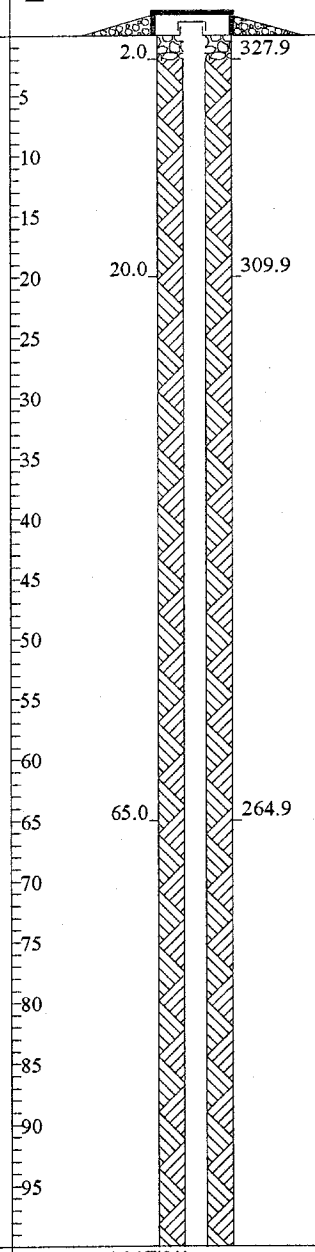
Project Name	Job Number	Sheet Number	Well Number
CLEAN II	22214-178	1 of 2	16MPE1

Project Site and Location	Started	Completed
Site 16, Crash Crew Pit No. 2 MCAS, El Toro	08-30-00	09-06-00

Water Depth (ft. toc)	Date	Elevation (ft. msl)	Coordinates	Logged By	TD of Well (ft.)	TD of Hole (ft.)
159.57	9-14-00	170.2	N 2,192,978.3 E 6,110,723.8	D. Parker/P. Wiegand	193.1	194

Ground Elevation (ft. msl)	Top of Casing Elevation (ft. msl)	Checked By	Hole Dia. (in.)	Updated
329.866	329.78	S. Blanchard	14	03-14-01

Well Construction Details	Depth in Feet	Elevation in Feet	Geologic Description and Classification
BLANK CASING 6-inch diameter schedule 80 PVC **SURFACE SEAL** Concrete **GROUT SEAL** Colton Type I/II Portland Cement with 5% bentonite	2.0	327.9	SAND (SP)
		319.9	SILTY SAND (SM)
	20.0	309.9	SAND (SP)
Centralizer at 20 feet		301.9	SILT (ML)
		291.9	SAND (SP)
		285.9	SILTY SAND (SM)
		277.9	SAND (SW)
	65.0	264.9	Gravelly CLAY (CL)
Centralizer at 65 feet		257.9	Sandy SILT (ML)
		249.9	Clayey SILT (ML)
		243.9	Sandy CLAY (CL)
		235.9	Sandy SILT (ML)



SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: Site 16, Crash Crew Pit No. 2 MCAS, El Toro

HOLE NO. 16MPE1

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Well Log	Project Name	Job Number	Sheet Number	Well Number
	CLEAN II	22214-178	2 of 2	16MPE1

Well Construction Details	Depth in Feet	Well Graphics	Elevation in Feet	Graphics	Geologic Description and Classification
Centralizer at 105 feet	105	105.0 / 224.9			
	110				
	115				
	120				
	125				
	130				
	135	138.6 / 191.3	189.9		
BENTONITE SEAL Pure Gold medium bentonite chips	140	141.5 / 188.4			Not Logged
TRANSITION SAND #0/30 Monterey sand		142.5 / 187.4			
FILTER PACK # 2/16 Monterey sand	145	146.0 / 183.9; 146.1 / 183.8			
Centralizer at 146 feet	150				
WELL SCREEN 6-inch diameter stainless steel wire wrap, 0.020 in. slots	155				
	160		169.5		
			169.1		SILTY SAND (SM)
			166.9		Sandy SILT (ML)
	165	166.0 / 163.9	162.9		Clayey SILT (ML)
Centralizer at 166 feet			160.9		CLAYEY SAND (SC)
	170		157.9		Sandy SILT (ML)
					SILTY SAND (SM) and CLAYEY SAND (SC)
	175		151.7		
			150.3		CLAY (CL)
	180		147.5		Sandy SILT (ML)
			144.9		SILTY SAND (SM)
	185				Sandy SILT (ML)
			140.4		
	190	191.0 / 138.9; 191.1 / 138.8			Clayey SILT (ML)
Centralizer at 191 feet		193.1 / 136.8	135.9		
SUMP 6-inch diameter, stainless steel		194.0 / 135.9			

Refer to 16MPE1 Borehole Log for Geologic Description and Classification Details.

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS	SITE and LOCATION	HOLE NO.
	Site 16, Crash Crew Pit No. 2 MCAS, El Toro	16MPE1

Report.Form: CTO-178_MWL Time: 4:42:22 PM

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Well Log

Project Name	Job Number	Sheet Number	Well Number
CLEAN II	22214-178	1 of 2	16MW4

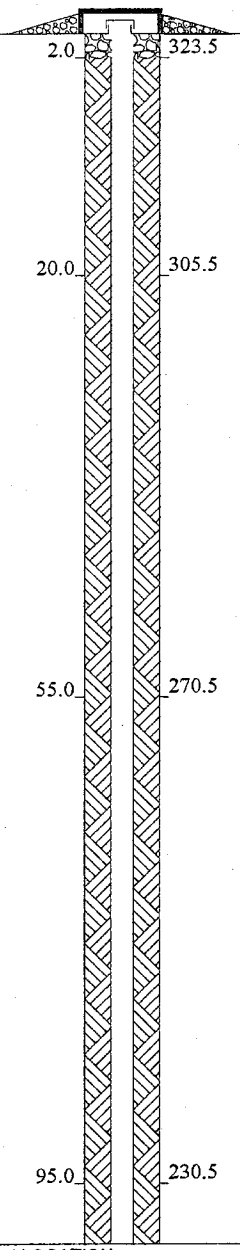
Project Site and Location	Started	Completed
Site 16, Crash Crew Pit No. 2 MCAS, El Toro	07-31-00	07-31-00

Water Depth (ft. toc)	Date	Elevation (ft. msl)	Coordinates	Logged By	TD of Well (ft.)	TD of Hole (ft.)
156.77	9-12-00	168.5	N 2,193,114.4 E 6,110,516.9	D. Parker	192	196

Ground Elevation (ft. msl)	Top of Casing Elevation (ft. msl)	Checked By	Hole Dia. (in.)	Updated
325.45	325.26	S. Blanchard	10	03-14-01

Well Construction Details	Depth in Feet	Elevation in Feet	Geologic Description and Classification
BLANK CASING 4 inch diameter schedule 40 PVC	2.0	323.5	Gravelly FILL
SURFACE SEAL Concrete		323.5	Sandy CLAY (CL)
GROUT SEAL Cement/bentonite	5, 10, 15, 20	305.5	
Centralizer at 20 feet	20.0		
	25	300.5	Silty CLAY (CL)
	30, 35, 40, 45	280.5	
	50		SILTY SAND (SM)
	55	270.5	Sandy SILT (ML)
Centralizer at 50 feet	55.0		
	60, 65	260.5	SILT (ML)
	70, 75, 80, 85, 90, 95	230.5	
Centralizer at 95 feet	95.0		Sandy SILT (ML)

Well Graphics



SEE EXPLANATION PAGE for GRAPHIC SYMBOLS	SITE and LOCATION	HOLE NO.
	Site 16, Crash Crew Pit No. 2 MCAS, El Toro	16MW4

Report Form: CTO-178_MWL Time: 4:25:29 PM

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Well Log	Project Name	Job Number	Sheet Number	Well Number
	CLEAN II	22214-178	2 of 2	16MW4

Well Construction Details	Depth in Feet	Well Graphics	Elevation in Feet	Graphics	Geologic Description and Classification
	105				
	110				
	115				
	120				
	125		200.5		SILT (ML)
	130				
	135				
	140				
	145	145.0 – 180.5			
BENTONITE SEAL Pure Gold medium bentonite chips					
	150	150.5 – 175.0			
TRANSITION SAND #0/30 Monterey sand		153.0 – 172.5			
FILTER PACK # 2/16 Monterey sand	155	155.0 – 170.5			
Centralizer at 155 feet **WELL SCREEN** 4 inch diameter stainless steel wire wrap, 0.020 in. slots	160		164.5		
			163.5		SILTY SAND (SM)
			162.5		SILT (ML)
	165				SILTY SAND (SM)
	170		154.0		
		172.5 – 153.0	153.0		SILT (ML)
Centralizer at 173 feet	175				SILTY SAND (SM)
	180				
			142.5		SILT (ML) to SILTY SAND (SM)
	185		137.5		
	190	190.0 – 135.5	136.0		SILTY SAND (SM)
SUMP 4 inch diameter, stainless steel		192.0 – 133.5			Not Logged
	195	196.0 – 129.5	129.5		

Refer to 16MW4 Borehole Log for Geologic Description and Classification Details.

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS	SITE and LOCATION	HOLE NO.
	Site 16, Crash Crew Pit No. 2 MCAS, El Toro	16MW4

Report Form CTO-178_MWL Time: 4:25:30 PM

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Well Log

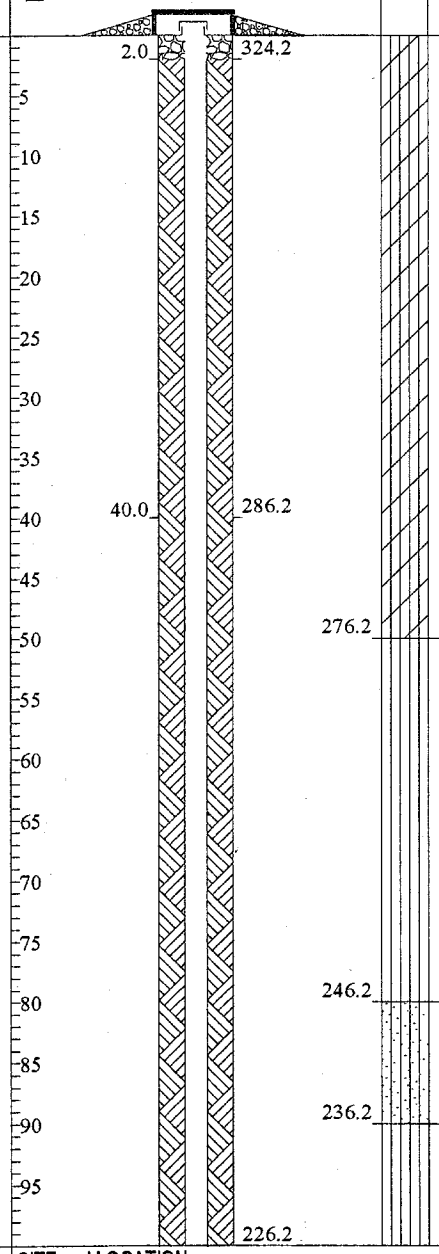
Project Name	Job Number	Sheet Number	Well Number
CLEAN II	22214-178	1 of 2	16MW5

Project Site and Location	Started	Completed
Site 16, Crash Crew Pit No. 2 MCAS, El Toro	08-01-00	08-01-00

Water Depth (ft. toc)	Date	Elevation (ft. msl)	Coordinates	Logged By	TD of Well (ft.)	TD of Hole (ft.)
157.23	9-12-00	168.8	N 2,193,112.4 E 6,110,573.3	D. Parker/P. Weigand	191.8	196

Ground Elevation (ft. msl)	Top of Casing Elevation (ft. msl)	Checked By	Hole Dia. (in.)	Updated
326.169	326.00	S. Blanchard	10	03-14-01

Well Construction Details	Depth in Feet	Well Graphics	Elevation in Feet	Graphics	Geologic Description and Classification
SURFACE SEAL Concrete **BLANK CASING** 4 inch diameter schedule 40 PVC **GROUT SEAL** Cement/bentonite	2.0		324.2		Clayey SILT (ML)
Centralizer at 40 feet	40.0		286.2		
			276.2		SILT (ML)
			246.2		Sandy SILT (ML)
			236.2		SILT (ML)
			226.2		



SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: Site 16, Crash Crew Pit No. 2 MCAS, El Toro

HOLE NO. 16MW5

Report Form: CTO-178_MWL Time: 4:25:57 PM

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Well Log	Project Name	Job Number	Sheet Number	Well Number
	CLEAN II	22214-178	2 of 2	16MW5

Well Construction Details	Depth in Feet	Well Graphics	Elevation in Feet	Graphics	Geologic Description and Classification
Centralizer at 100 feet	100.0				
	105				
	110		216.2		Clayey SILT (ML)
	115				
	120				
	125		201.2		Sandy SILT (ML)
	130				
	135		191.2		Clayey SILT (ML)
	140				
	145	144.5	181.7 / 181.2		Silty CLAY (CL)
BENTONITE SEAL Pure Gold medium bentonite chips					
	150	150.0	176.2 / 176.2		Clayey SILT (ML)
TRANSITION SAND #0/30 Monterey sand		152.0	174.2		
FILTER PACK # 2/16 Monterey sand	155	154.8 / 155.0	171.4 / 171.2		
WELL SCREEN 4 inch diameter stainless steel wire wrap, 0.020 in. slots					
	160		166.2		
Centralizer at 155 feet			165.7		SILT (ML)
			163.7		Sandy SILT (ML)
	165		163.2		SILT (ML)
			160.2		Sandy SILT (ML)
			159.2		SILTY SAND (SM)
	170		157.7		SAND (SP)
		172.5	153.7 / 157.2		SILT (ML)
			152.2		SAND (SW)
Centralizer at 173 feet	175		151.2		Sandy SILT (ML)
			150.2		SAND (SW)
			146.2		Sandy SILT (ML)
	180		143.2		SILTY SAND (SM)
					SAND (SW)
	185				
	190	189.8 / 191.8	136.4 / 134.4		
SUMP 4 inch diameter, stainless steel			135.2		Not Logged
	195	196.0	130.2		

Refer to 16MW5 Borehole Log for Geologic Description and Classification Details.

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS	SITE and LOCATION	HOLE NO.
	Site 16, Crash Crew Pit No. 2 MCAS, El Toro	16MW5

Report Form: CTO-178_MWL Time: 4:25:59 PM

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Well Log

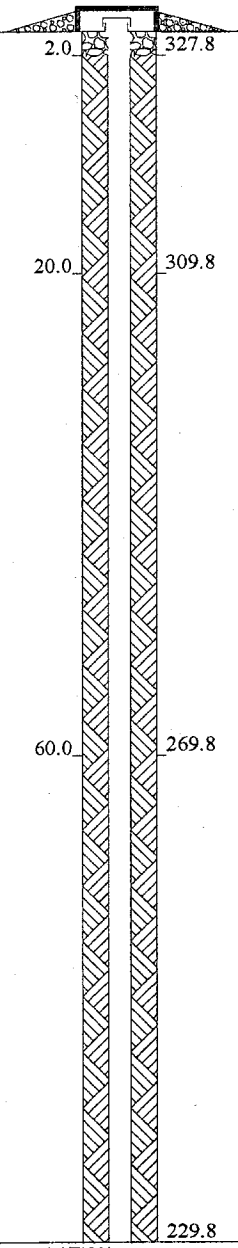
Project Name	Job Number	Sheet Number	Well Number
CLEAN II	22214-178	1 of 2	16MW6

Project Site and Location	Started	Completed
Site 16, Crash Crew Pit No. 2 MCAS, El Toro	08-03-00	08-03-00

Water Depth (ft. toc)	Date	Elevation (ft. msl)	Coordinates	Logged By	TD of Well (ft.)	TD of Hole (ft.)
159.49	9-14-00	169.8	N 2,193,010.7 E 6,110,692.9	D. Parker	192	194

Ground Elevation (ft. msl)	Top of Casing Elevation (ft. msl)	Checked By	Hole Dia. (in.)	Updated
329.797	329.25	S. Blanchard	10	03-14-01

Well Construction Details	Depth in Feet	Well Graphics	Elevation in Feet	Graphics	Geologic Description and Classification
SURFACE SEAL Concrete **BLANK CASING** 4 inch diameter schedule 40 PVC **GROUT SEAL** Cement/bentonite	2.0		327.8		Not Logged
Centralizer at 20 feet	20.0		309.8		
			289.8		Sandy SILT (ML)
Centralizer at 60 feet	60.0		269.8		
			264.8		SILTY SAND (SM)
			244.8		Silty CLAY (CL)
			229.8		



SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: Site 16, Crash Crew Pit No. 2 MCAS, El Toro

HOLE NO. 16MW6

Report Form: CTO-178_MWL Time: 4:26:28 PM

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Well Log

Project Name	Job Number	Sheet Number	Well Number
CLEAN II	22214-178	2 of 2	16MW6

Well Construction Details	Depth in Feet	Well Graphics	Elevation in Feet	Graphics	Geologic Description and Classification
Centralizer at 100 feet	100.0				SILT (ML)
	105				
	110				
	115				
	120				
	125				
	130		199.8		Sandy SILT (ML)
BENTONITE SEAL Pure Gold medium bentonite chips	135	135.0	194.8		
TRANSITION SAND #0/30 Monterey sand	140	140.0	189.8		
FILTER PACK # 2/16 Monterey sand		142.5	187.3		
WELL SCREEN 4 inch diameter stainless steel wire wrap, 0.020 in. slots	145	145.0	184.8		
			184.8		
			183.3		SILTY SAND (SM)
			179.8		Sandy SILT (ML)
	150		177.8		SAND (SP)
Centralizer at 145 feet			176.8		Sandy SILT (ML)
	155		174.5		SILTY SAND (SM)
			173.3		SAND (SW)
					Sandy SILT (ML)
	160				
			164.8		
	165		162.5		SILT (ML)
		168.0	161.8		SAND (SP)
Centralizer at 168 feet	170		158.8		SILTY SAND (SM)
			157.8		SAND (SW)
					Sandy SILT (ML)
	175				
			151.8		
			151.3		SAND (SW)
	180		148.3		SILT (ML):
			147.5		SILTY SAND (SM)
			144.8		Sandy SILT (ML)
	185		143.8		SILTY SAND (SM)
					SILT (ML)
	190	190.0	139.8		
SUMP 4 inch diameter, stainless steel		192.0	137.8		
		194.0	135.8		Not Logged

Refer to 16MW6 Borehole Log for Geologic Description and Classification Details.

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: **Site 16, Crash Crew Pit No. 2 MCAS, El Toro**

HOLE NO.: **16MW6**

Report Form: CTO-178_MWL Time: 4:26:30 PM

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Well Log

Project Name	Job Number	Sheet Number	Well Number
CLEAN II	22214-178	1 of 2	16MW7

Project Site and Location	Started	Completed
Site 16, Crash Crew Pit No. 2 MCAS, El Toro	08-02-00	08-02-00

Water Depth (ft. toc)	Date	Elevation (ft. msl)	Coordinates	Logged By	TD of Well (ft.)	TD of Hole (ft.)
159.65	9-15-00	170.4	N 2,192,916.9 E 6,110,740.7	D. Parker	192	194

Ground Elevation (ft. msl)	Top of Casing Elevation (ft. msl)	Checked By	Hole Dia. (in.)	Updated
330.296	330.09	S. Blanchard	10	03-14-01

Well Construction Details	Depth in Feet	Elevation in Feet	Geologic Description and Classification
SURFACE SEAL Concrete	2.0	328.3	Gravelly FILL
BLANK CASING 4 inch diameter schedule 40 PVC	5	324.3	SILTY SAND (SM)
GROUT SEAL Cement/bentonite	10, 15, 20	310.3	Sandy SILT (ML)
Centralizer at 40 feet	25, 30	30.0 / 300.3	
	35	295.3	Silty CLAY (CL)
	40, 45, 50	280.3	SILT (ML)
Centralizer at 70 feet	55, 60	60.0 / 270.3	SILTY SAND (SM)
	65, 70	255.3	
	75, 80, 85		SILT (ML)
Centralizer at 100 feet	90, 95	90.0 / 240.3	Clayey SILT (ML)
		230.3	

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS

SITE and LOCATION: Site 16, Crash Crew Pit No. 2 MCAS, El Toro

HOLE NO. 16MW7

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Well Log	Project Name	Job Number	Sheet Number	Well Number
	CLEAN II	22214-178	2 of 2	16MW7

Well Construction Details	Depth in Feet	Well Graphics	Elevation in Feet	Graphics	Geologic Description and Classification
					SILTY SAND (SM)
	105				
	110				
	115				
	120	120.0	210.3	210.3	
Centralizer at 130 feet					SILT (ML)
	125				
	130			200.3	
					Sandy SILT (ML)
	135	135.0	195.3	195.3	
BENTONITE SEAL Pure Gold medium bentonite chips					Clayey SILT (ML)
	140	140.0	190.3		
TRANSITION SAND #0/30 Monterey sand		142.5	187.8		
FILTER PACK # 2/16 Monterey sand	145	145.0	185.3	185.3	
WELL SCREEN 4 inch diameter stainless steel wire wrap, 0.020 in. slots					Sandy CLAY (CL)
				181.3	
	150	150.0	180.3	179.3	SAND (SP)
				178.3	CLAY (CL)
Centralizer at 160 feet					Sandy SILT (ML)
	155			173.8	
				173.3	SILTY SAND (SM)
	160			171.8	Sandy SILT (ML)
					Silty CLAY (CL)
	165				
	170			159.8	
				158.8	SILTY SAND (SM)
				157.3	Sandy SILT (ML)
	175				SILTY SAND (SM)
				152.3	
	180	180.0	150.3	151.8	SAND (SW)
				150.3	CLAY (CL)
Centralizer at 191 feet					SILTY SAND (SM)
	185			145.3	
				143.8	Sandy SILT (ML)
				142.3	SILTY SAND (SM)
	190	190.0	140.3	140.3	CLAY (CL)
SUMP 4 inch diameter, stainless steel		192.0	138.3		Not Logged
		194.0	136.3	136.3	

Refer to 16MW7 Borehole Log for Geologic Description and Classification Details.

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS	SITE and LOCATION	HOLE NO.
	Site 16, Crash Crew Pit No. 2 MCAS, El Toro	16MW7

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Well Log

Project Name	Job Number	Sheet Number	Well Number
CLEAN II	22214-178	1 of 2	16VM1

Project Site and Location	Started	Completed
Site 16, Crash Crew Pit No. 2 MCAS, El Toro	08-01-00	08-01-00

Water Depth (ft. toc) Date Elevation (ft. msl)	Coordinates	Logged By	TD of Well (ft.)	TD of Hole (ft.)
	N 2,193,005.1 E 6,110,762.9	D. Parker	155.3	156

Ground Elevation (ft. msl)	Top of Casing Elevation (ft. msl)	Checked By	Hole Dia. (in.)	Updated
332.459	332.26	S. Blanchard	10	03-14-01

Well Construction Details	Depth in Feet	Well Graphics	Elevation in Feet	Graphics	Geologic Description and Classification
BLANK CASING 4 inch diameter schedule 40 PVC **SURFACE SEAL** Concrete **GROUT SEAL** Cement/bentonite	2.0		330.5		SAND (SP)
	5		327.5		SILT (ML)
	10				
	15				
Centralizer at 20 feet	20	20.0	312.5		
	25				
	30		302.5		Clayey SILT (ML)
	35				
	40				
	45				
	50		282.5		SAND (SW)
	55				
Centralizer at 60 feet	60	60.0	272.5		
	65				
	70		262.5		SILTY SAND (SM)
	75				
	80				
	85				
	90		242.5		SILT (ML)
	95				
			232.5	232.5	

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS	SITE and LOCATION	HOLE NO.
	Site 16, Crash Crew Pit No. 2 MCAS, El Toro	16VM1

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Well Log	Project Name	Job Number	Sheet Number	Well Number
	CLEAN II	22214-178	2 of 2	16VM1

Well Construction Details	Depth in Feet	Well Graphics	Elevation in Feet	Graphics	Geologic Description and Classification
Centralizer at 100 feet	100.0				Sandy SILT (ML)
	105				
	110				
	115				
	120				
	125				
	130				
BENTONITE SEAL Pure Gold medium bentonite chips	135	135.0	197.5		
FILTER PACK # 2/16 Monterey sand	140	140.0	192.5		
		144.0	188.5		
Centralizer at 144 feet	145	144.9	187.6	187.5	
WELL SCREEN 4 inch diameter stainless steel wire wrap, 0.020 in. slots	150			185.5	SAND (SP)
				182.5	Sandy SILT (ML)
				180.7	SAND (SW)
				180.0	SILT (ML)
SUMP 4 inch diameter, stainless steel	155	154.9	177.6	179.5	SAND (SW)
		155.3	177.2	178.0	SAND (SP)
		156.0	176.5		

Refer to 16VM1 Borehole Log for Geologic Description and Classification Details.

SEE EXPLANATION PAGE for GRAPHIC SYMBOLS	SITE and LOCATION	HOLE NO.
	Site 16, Crash Crew Pit No. 2 MCAS, El Toro	16VM1

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APPENDIX B

AQUIFER TEST ANALYSIS AND AQTESOLV PLOTS

Appendix B
AQUIFER TEST ANALYSIS AND AQTESOLV PLOTS

This appendix presents the aquifer parameter analysis that was performed to support the evaluation of the aquifer testing presented in Section 5.1. The analysis was performed using AQTESOLV for Windows (Version 3.01.004), an aquifer test analysis software package developed by HydroSOLVE, Inc. AQTESOLV uses interactive, graphical curve-matching techniques to calculate analytical solutions for confined, unconfined, leaky, and fractured aquifers. The software was used to obtain aquifer transmissivities and storage coefficients at Site 16. Included in this appendix are descriptions of the analyses performed and the AQTESOLV output plots and summary test analysis reports for each well.

As described in Section 5, two constant-rate aquifer tests were conducted at Site 16. The tests are summarized in Table B-1.

Water level, barometric pressure, and pump discharge measurements taken in extraction and monitoring wells during each constant-rate aquifer test were used to estimate transmissivity and storage coefficient using AQTESOLV. Testing procedures, test equipment, and setup are described in Section 4 of the Technical Memorandum.

Evaluation of each test using AQTESOLV involved the following steps.

1. Compile the time versus drawdown data collected at each well monitored during the test and the time versus residual drawdown data collected at each well during the subsequent recovery period. Correct the data for barometric pressure effects.
2. Evaluate the discharge rate data collected during the test to assess whether these data can be defined by a single average value or whether variations in the discharge rate were sufficient to define separate discharge rates for different segments of the test duration.
3. Define the physical conditions of the test setup including the aquifer saturated thickness, whether the wells fully or partially penetrate the aquifer, the relationship between vertical and horizontal hydraulic conductivity, and the distance between the pumped well and the associated monitoring wells.
4. Input the data from Steps 1 through 3 into AQTESOLV. Review the data to identify anomalous or erroneous values, based on professional judgment coupled with review of field notes in the logbooks. Edit the data file as necessary to transform values that could be explained and for which a transformation was justified. Eliminate remaining anomalous/erroneous values (by setting the AQTESOLV data point weighting factor to zero).
5. For the pumping portion of the test at each well, select the AQTESOLV analytical method (e.g., Theis, Hantush-Jacob, etc.) that best reflects the conceptual groundwater model for Site 16 (refer to Section 5.5 of the Technical Memorandum) and the physical conditions specific to that well. Visually match the type curve for the selected method to the time versus drawdown data plot for each monitoring well, then use AQTESOLV to derive the "best fit" solution using statistical automatic curve matching.

Table B-1
Summary of Constant-Rate Aquifer Tests

Extraction Well and Location	Test Period	Dates of Test	Average Pumping Rate (gpm)	Test Duration (hours)	Observation Wells
16GE1 – Downgradient	Pumping	09/21/00 – 09/22/00	15.9	36	16MW4, 16MW5, 16MW6
	Recovery	09/22/00 – 09/26/00	NA	NA	16MW4, 16MW5
16MPE1 – Main Burn Pit	Pumping	09/28/00 – 09/30/00	0.45	45.5	16MW1, 16MW6, 16MW7, 16_DBMW52
	Recovery	09/30/00 – 10/04/00	NA	NA	Same as pumping

Acronyms/Abbreviations:
gpm – gallons per minute
NA – not applicable

6. For the recovery portion of the test at each well, select the AQTESOLV Theis solution for recovery. Visually match the type curve to the time versus residual drawdown data plot for the extraction well and each monitoring well, then use AQTESOLV to derive the "best fit" solution using statistical automatic curve matching.
7. Review the analytical results for each well evaluation to visually verify that the automatic curve match is acceptable and that the calculated hydraulic parameters (transmissivity and storage coefficient) are reasonable estimates (based on professional judgment) in view of the site conditions.

B1 BAROMETRIC PRESSURE EFFECT CORRECTION

Barometric pressure changes can cause water level fluctuations that would adversely affect aquifer test analyses. An increase in barometric pressure results in a water level decline (increase in drawdown), and vice versa. It was clear from the test data, by comparing background water levels with barometric measurements, that water levels at Site 16 are affected by barometric pressure fluctuations. These fluctuations showed a cyclic daily pattern, as well as weather-influenced fluctuations. Therefore, all of the drawdown data were corrected prior to importing into AQTESOLV to eliminate water level fluctuations due to barometric pressure changes that were superimposed on the pumping drawdown. A visible smoothing of the drawdown curves resulted from this correction. This correction was performed as follows:

$$\textit{barometric corrected drawdown}_{\,i} = (\textit{barometric pressure}_{\,datum} - \textit{barometric pressure}_{\,i}) + \textit{drawdown}_{\,i}$$

where all values are in feet, and:

i = time at each data point
datum = initial barometric pressure reading

B2 ASSUMPTIONS FOR THE ANALYSIS

The following assumptions apply to analysis of both tests.

B2.1 Aquifer Conditions

As discussed in Section 5.6, the saturated zone beneath Site 16 is described as a heterogeneous, semiconfined, leaky aquifer consisting of interbedded clays, silts, and permeable sands. The analytical solutions used in AQTESOLV assume an infinite, homogeneous, and isotropic aquifer. However, such conditions rarely exist in nature and are not present at MCAS El Toro Site 16. In addition, insufficient data were available to reliably quantify any difference in the magnitudes of horizontal versus vertical hydraulic conductivity. Therefore, it was assumed that isotropic conditions existed as a whole (i.e., on a larger scale) in the aquifer for the purpose of the aquifer test analyses. This assumption results in aquifer parameters that represent the entire aquifer, although individual layers will have higher (sands) or lower (silts, clays) permeabilities.

The lithology at Site 16 is generally characterized by vertical gradations between the finer and coarser materials. Due to this vertical gradation, attempting to accurately delineate and quantify the individual water-yielding strata was not feasible. Therefore, the entire saturated interval screened in each well was assumed to represent the aquifer for the purposes of the analyses (the wells were assumed to fully penetrate the aquifer). The exception to this was well 16MW1, which has approximately two-thirds of the saturated interval assumed to represent the aquifer thickness based on the 16MPE1 saturated interval. Therefore, 16MW1 was assumed to partially penetrate the aquifer in AQTESOLV.

B2.2 Analytical Model

Using the assumptions discussed above, and based on preliminary analyses using various potentially valid solutions, drawdown data for the wells were analyzed using the Hantush-Jacob type-curve solution for pumping tests in leaky aquifers with no storage in the aquitard (Hantush and Jacob 1955). This solution also can account for partially penetrating wells (Hantush 1961a,b). Selection of this solution over others included in AQTESOLV was based on the conceptual hydrogeologic model for Site 16 and on visual evaluation of the "best fit" type curve to the test data for each well. The AQTESOLV for Windows User's Guide summarizes the Hantush-Jacob equations, assumptions, and general conceptual diagram for the solution.

Pumping drawdown data from the extraction wells (16MPE1 and 16GE1) were not evaluated due to hydraulic head losses that occur in extraction wells as a result of well inefficiency. This causes drawdown measured inside the well casing to be greater than the actual aquifer drawdown immediately outside the well. Therefore, use of the pumping well data can result in anomalously low aquifer transmissivity estimates. However, these conditions do not occur during drawdown recovery after the pump has been shut off, so the recovery data in the pumping wells were evaluated. The Theis

solution for recovery (Theis 1935), which is the only recovery solution available in AQTESOLV, was used to analyze the recovery data for all wells.

B3 DATA DESCRIPTION FOR CONSTANT-RATE TEST AT 16GE1

Pretest background water level measurements were taken at wells 16GE1, 16MW4, and 16MW5 between 14 and 19 September 2000 using the transducers and data logger and at wells 16MW2, 16MW6, and 16_DGMW81 between 14 and 21 September 2000 using an electric well sounder. Although water levels fluctuated up to several tenths of a foot during this period in response to changes in barometric pressure, the overall trend of the data was flat, suggesting relatively stable conditions for the test.

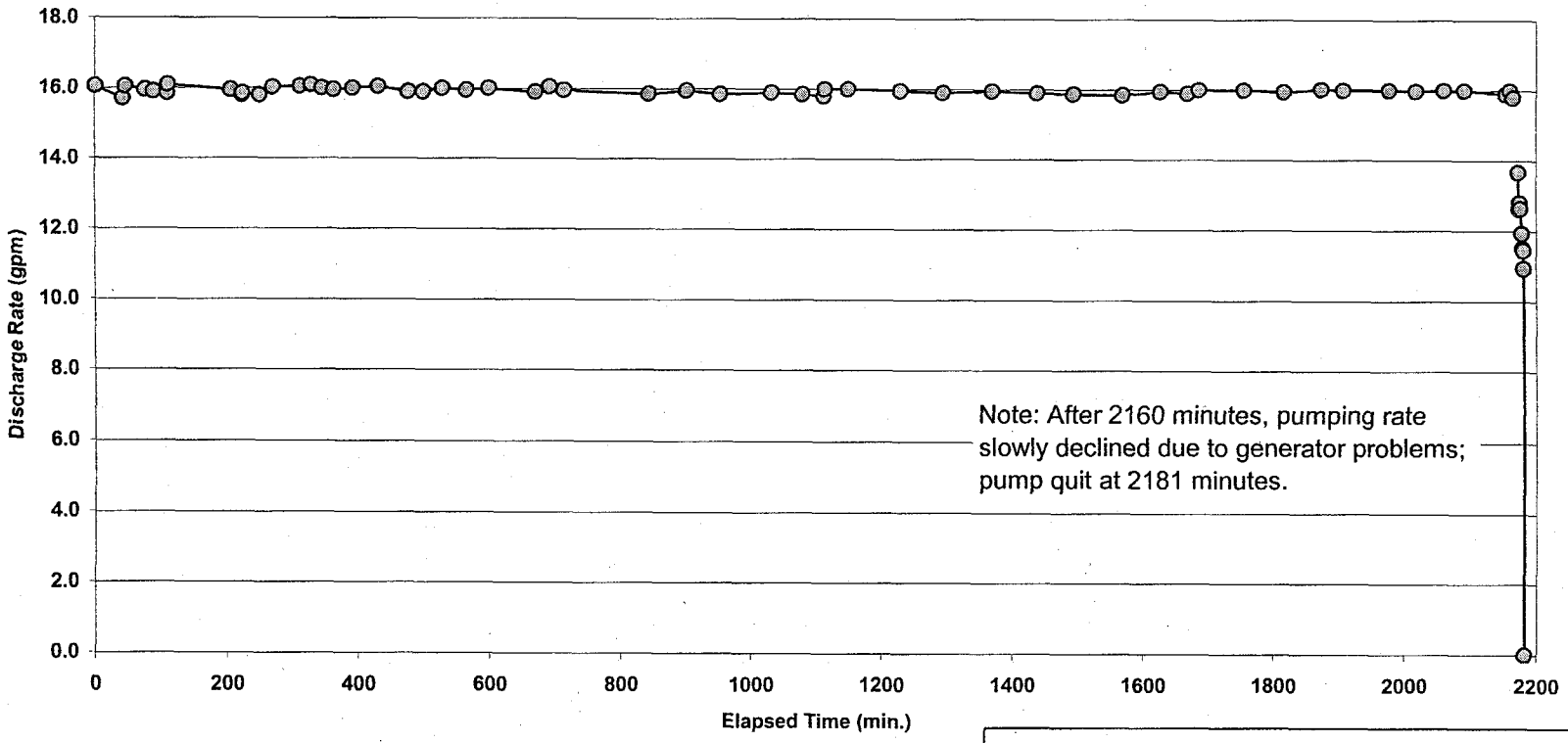
The manually measured instantaneous discharge rates measured during most of the test (up to 2,160 minutes elapsed time) remained very consistent, between 15.7 and 16.1 gpm (Figure B-1). The average time-weighted flow rate calculated from these measurements was 15.95 gpm. This average rate compares favorably with the 15.73 gpm rate calculated using data from an inline impeller-driven totalizing flowmeter. However, during the final 16 minutes of the test (after 2,160 minutes), the discharge rate declined due to progressive failure of the generator.

Table B-2 summarizes the well and test data for the 16GE1 test.

Editing and transformation of some drawdown data were necessary prior to being imported to AQTESOLV for analysis. Editing consisted of eliminating data points recorded at each well during the early part of the pumping test before measurable drawdown was observed, and at the end of the test (after 2,160 minutes elapsed time) when the pumping rate decreased significantly as the generator failed.

Transformation of the recovery data was also necessary to account for the abrupt and unexpected start of recovery when the generator failed. Due to the abrupt termination of pumping, a period of approximately 30 seconds elapsed between pump shutdown and the point at which the hydrogeologist on-site was able to restart the data logger for recovery monitoring. Because the data logger records changes in water level relative to the initial reading at the beginning of each logging cycle, the recovery data were initialized to a partially recovered water level value rather than the maximum drawdown at the end of pumping. Therefore, transformations of the elapsed time and recovery water levels (by comparing the recorded initial hydraulic heads at the start of the pumping and recovery cycles) were performed.

At 16MW5, drawdown data points for the period between 421 and 631 minutes elapsed time were assigned a weighting factor of 0 in AQTESOLV (i.e., were not considered in the calculations). These data points, although shown in the time versus drawdown plot, were not used to analyze the data in well 16MW5 because they represent transducer measurements that progressively diverged from the corresponding manual drawdown measurements. After 631 minutes elapsed time, the difference between the two sets of measurements became relatively constant (at an approximate value of 0.45 foot). Therefore, a transformation was performed by adding 0.45 foot to the original transducer data, and then the transformed data were included in the analysis.



OU-3 Site 16 Technical Memorandum
Figure B-1
Discharge Rates During 16GE1 Constant-Rate Aquifer Test
Site 16 - Crash Crew Pit No. 2

MCAS El Toro, California

Bechtel National, Inc.
CLEAN II Program

Date: 3/8/01
File No.: figs_app_b.xls
Job No.: 22214-178
Rev. No.: A

Table B-2
Well 16GE1 Aquifer Test Data Summary

Well No.	Distance From Pumped Well (feet)	Screened Interval (feet MSL)	Static Water Level (feet MSL)	Total Drawdown (feet)	Number of Drawdown Measurements*
16GE1	0	169.76 – 134.76	168.18	14.25	175
16MW2	400.3	169.35 – 144.35	165.83	Background water level data	
16MW4	40.3	170.26 – 135.26	168.00	3.20	83
16MW5	21.2	171.20 – 136.20	168.30	6.36	144
16MW6	165.1	184.24 – 139.24	169.80	0.39	11
16_DGMW81	573.6	147 – 107	165.53	Background water level data	

Note:
* the number of measurements for well 16GE1 represents the total number of drawdown measurements taken during the test up to the point where the generator began to fail; while the data logger also recorded 175 data points at wells 16MW4 and 16MW5, many of the early data points are not counted because drawdown had not yet been observed in these wells; for well 16MW6, the value reflects the number of manual drawdown measurements obtained

Acronym/Abbreviation:
MSL – mean sea level

B4 16GE1 AQTESOLV ANALYSIS RESULTS

The AQTESOLV analysis results of the drawdown data for the 16GE1 test observation wells are summarized in Table B-3. The AQTESOLV analysis results for the recovery data from wells 16GE1, 16MW4, and 16MW5 are also summarized in Table B-3. No values are presented for storativity from recovery data because this parameter cannot be calculated using the Theis recovery method. Time versus drawdown plots generated in AQTESOLV and the associated AQTESOLV analytical reports for monitoring wells 16MW4, 16MW5, and 16MW6 are presented at the end of this appendix. With the exception of early drawdown data from wells 16MW4 (0 to 0.4 foot) and 16MW5 (0 to 0.3 foot), the data and the type curves are in very good agreement. Such differences may reflect a greater than average pumping rate during the initial minutes of the test, transducer sensitivity that limits data resolution when the pressure (drawdown) difference is small, and/or release of water from storage that is not instantaneous as the analytical method assumes.

The transmissivity values presented in Table B-3 are in general agreement. The comparable transmissivity values for wells 16GE1, 16MW4, and 16MW5 reflect the relatively consistent subsurface conditions present in the vicinity of these three wells. The lower transmissivity for well 16MW6, located in the main burn pit, can be attributed to the finer-grained nature and generally lower permeability of the subsurface sediments present in that area. The 16MW6 parameters calculated using the 16GE1 test data compare very well with the parameters calculated using the 16MPE1 test data (refer to

Table B-3
Summary of Well 16GE1 Aquifer Test Analyses

Well No.	Measurement Type	Analytical Method	Aquifer Type	Transmissivity (ft^2/min)	Storativity (dimensionless)
16MW4	Transducer, drawdown	Hantush-Jacob	Leaky, no aquitard storage	0.121	0.038
16MW4	Transducer, recovery	Theis recovery	Confined	0.117	N/A
16MW5	Transducer, drawdown	Hantush-Jacob	Leaky, no aquitard storage	0.140	0.005
16MW5	Transducer, recovery	Theis recovery	Confined	0.146	N/A
16MW6	Manual, drawdown	Hantush-Jacob	Leaky, no aquitard storage	0.036	0.013
16GE1	Transducer, recovery	Theis recovery	Confined	0.135	N/A

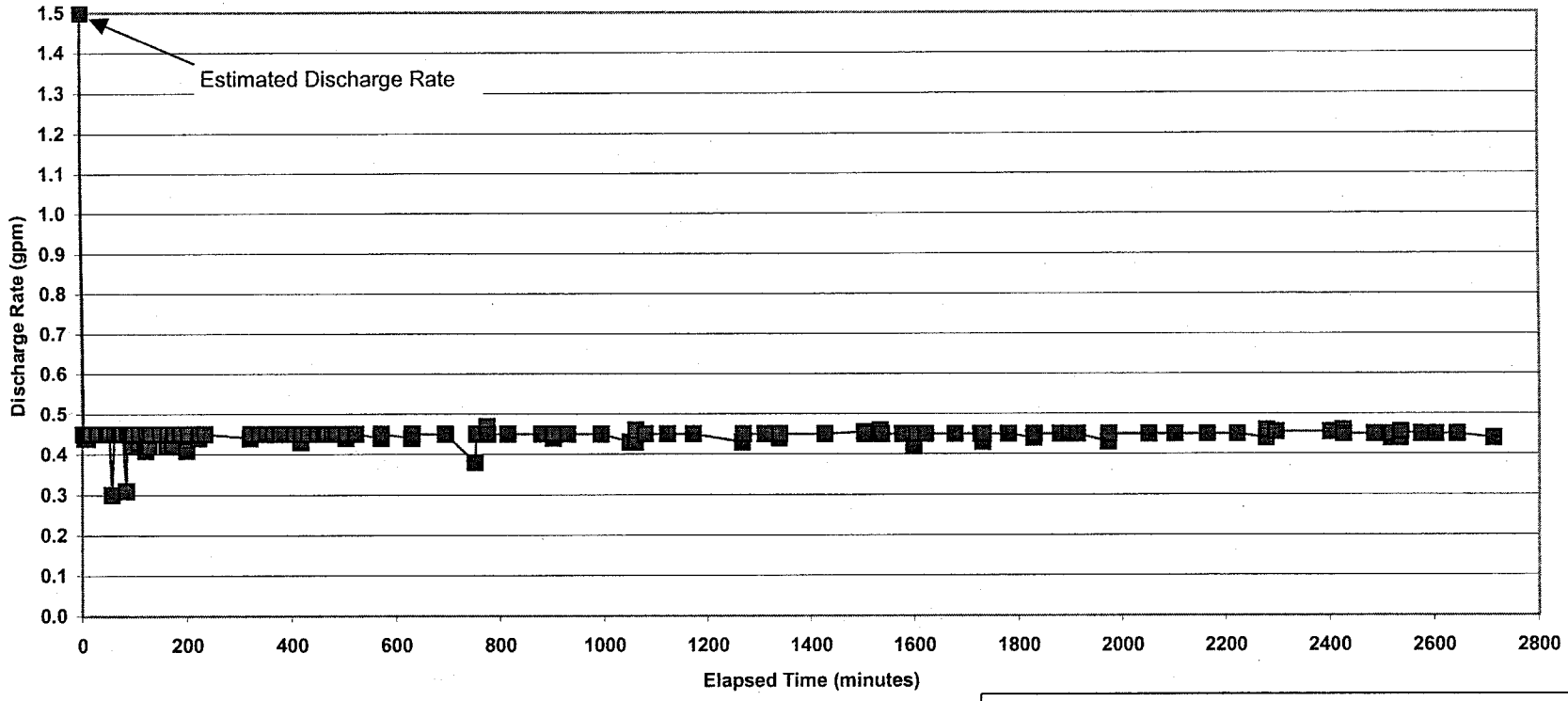
Acronyms/Abbreviations:
ft^2/min – square feet per minute
N/A – not applicable

the following sections). The storativity values for wells in the vicinity of 16GE1 vary by an order of magnitude. An explanation for this difference is offered in Section 5.1.2. Because the solutions summarized in Table B-3 rely on a series of assumptions, which at best approximate the actual site conditions, the transmissivity and storativity values should be considered estimates.

B5 DATA DESCRIPTION FOR CONSTANT-RATE TEST AT 16MPE1

Pretest background water level measurements were taken at wells 16MW1, 16MW6, and 16MW7 between 25 and 28 September 2000 and at upgradient background well 16MW3 between 26 and 30 September 2000 using an electric well sounder. The water levels in these wells fluctuated less than 0.25 foot during the background monitoring, and the overall water level trend was relatively flat, suggesting relatively stable conditions for the test. Water level fluctuations due to daily barometric variations were not readily apparent due to the larger frequency of the measurements.

The manually measured instantaneous discharge rates remained relatively constant, fluctuating between about 0.41 and 0.47 gpm (Figure B-2). Exceptions were during the initial 2 minutes of the test, between about 52 and 57 minutes elapsed time, between 77 and 84 minutes elapsed time, and between 695 and 752 minutes elapsed time. During the initial 2 minutes the discharge rate began at an estimated 1.5 gpm and then declined to and stabilized at the planned test rate of 0.45 gpm. This was a result of the relatively low flow rate which caused the piping (160 feet to the surface) to gradually become fully charged and pressurized on the upstream side of the discharge control valve. For the remaining three periods identified, the discharge rate briefly declined to 0.30, 0.31, and



OU-3 Site 16 Technical Memorandum
Figure B-2
Discharge Rates During 16MPE1 Constant-Rate Aquifer Test
Site 16 - Crash Crew Pit No. 2

MCAS El Toro, California

Bechtel National, Inc.
CLEAN II Program

Date: 3/8/01
File No.: figs_app_b.xls
Job No.: 22214-178
Rev. No.: A

0.38 gpm, respectively. The average time-weighted flow rate calculated from the instantaneous measurements for the entire test was 0.45 gpm. Corresponding measurements could not be obtained using the impeller-driven totalizing flowmeters because they were not designed to operate at a discharge rate of less than 1 gpm.

The generally low aquifer permeability in the vicinity of the main burn pit resulted in drawdown that was sensitive to small changes in the discharge rate. Therefore, to account for such changes when analyzing the aquifer test data, all of the instantaneous discharge measurements, rather than single average value, were imported to AQTESOLV for the analyses. Table B-4 summarizes the well and test data for the 16MPE1 test.

Drawdown and recovery data collected at monitoring wells 16MW1 and 16MW6 and recovery data from well 16MPE1 were suitable for determining aquifer hydraulic characteristics. Although approximately 0.16 foot of drawdown was observed at well 16MW7 during the aquifer test, fluctuations and/or scatter in the measurements of up to 25 percent of the total drawdown rendered the data unusable, and the data obtained from well 16MW7 were not included in the AQTESOLV analyses.

For the data that were used (16MW1, 16MW6, and 16MPE1), editing of some data were necessary prior to being imported to AQTESOLV for analysis. Editing consisted of eliminating data points recorded at each well during the early part of the pumping test before measurable drawdown was observed. No data transformations were performed for the 16MPE1 test data.

For 16MW6, drawdown data points for the period between 1,119 and 1,659 minutes elapsed time were assigned a weighting factor of 0 (i.e., were not considered in the calculations). These data points, although shown in the time versus drawdown plot, were not used to analyze the data in well 16MW6. Their departure from the trend of the remaining data (an apparent slight decrease in drawdown) could not be adequately explained, although it may be a barometric pressure-induced anomaly.

B6 16MPE1 AQTESOLV ANALYSIS RESULTS

The AQTESOLV analysis results of the drawdown data for these wells are summarized in Table B-5. The AQTESOLV analysis results for the recovery data from wells 16MW14, 16MW6, and 16MPE1 are also summarized in Table B-5. No values are presented for storativity from recovery data because this parameter cannot be calculated using the Theis recovery method. Time versus drawdown plots generated in AQTESOLV for these wells and the associated AQTESOLV analytical reports are presented at the end of this appendix. With the exception of early drawdown data (0 to 0.07 foot at well 16MW1 and 0 to 0.01 foot at well 16MW6), the data and the type curves are in very good agreement. Possible explanations for the early drawdown data differences are described in the 16GE1 analysis section. In addition, the low pumping rate relative to the volume of water initially contained in the well casing suggests that casing storage may have had a significant effect during the early portion of the 16MPE1 test.

Table B-4
Well 16MPE1 Aquifer Test Data Summary

Well No.	Distance From Pumped Well (feet)	Screened Interval (feet MSL)	Static Water Level (feet MSL)	Total Drawdown (feet)	Number of Drawdown Measurements[a]
16MPE1	0	183.68 – 138.68	169.84	16.75	178
16MW1	21.0	174.22 – 149.22	169.62	0.78	82
16MW3	363.9	176.16 – 151.16	174.45	Background water level data	
16MW6	44.8	184.24 – 139.24	169.68	0.24	65
16MW7	63.6	185.08 – 140.08	170.30	0.16	66[b]
16_DGMW52	87.2	150 – 110	170.30	0.06	0

Notes:
[a] the number of measurements for well 16MPE1 represents the total number of drawdown measurements taken during the test; while the data logger also recorded 178 data points at wells 16MW1, 16MW6, and 16MW7, many of the early data points are not counted because drawdown had not yet been observed in these wells; for well 16_DBMW52, 178 data points were also recorded; however, the water level rose slightly throughout the test period so no drawdown was observed
[b] the data from well 16MW7 were not analyzed in AQTESOLV

Acronym/Abbreviation:
MSL – mean sea level

Table B-5
Summary of Well 16MPE1 Aquifer Test Analyses

Well No.	Measurement Type	Analytical Method	Aquifer Type	Transmissivity (ft^2/min)	Storativity (dimensionless)
16MW1	Transducer, drawdown	Hantush-Jacob	Leaky, no aquitard storage	0.012	0.011
16MW1	Transducer, recovery	Theis recovery	Confined	0.018	N/A
16MW6	Transducer, drawdown	Hantush-Jacob	Leaky, no aquitard storage	0.034	0.017
16MW6	Transducer, recovery	Theis recovery	Confined	0.027	N/A
16MPE1	Transducer, recovery	Theis recovery	Confined	0.012	N/A

Acronyms/Abbreviations:
ft^2/min – square feet per minute
N/A – not applicable

The transmissivity and storativity values presented in Table B-5 are in general agreement. The calculated transmissivity values vary by less than one-quarter order of magnitude. A smaller range of variation is observed for the storativity values. The very consistent transmissivity values for wells 16MPE1, 16MW1, and 16MW6 reflect the relatively consistent subsurface conditions present in the vicinity of these wells within the main burn pit at Site 16. In addition, the parameters for well 16MW6 from the 16MPE1 test data compare very well with the parameters for this well from the well 16GE1 test data. Because the solutions summarized in Table B-5 rely on a series of assumptions which at best approximate the actual site conditions, the transmissivity and storativity values should be considered estimates.

B7 REFERENCES

Hantush, M. S. and C. E. Jacob. 1955. Non-Steady Radial Flow in an Infinite Leaky Aquifer. Am. Geophys. Union Trans., Vol. 36, pp. 95-100.

Hantush, M. S. 1961a. Drawdown Around a Partially Penetrating Well. Jour. of the Hyd. Div., Proc. of the Am. Soc. of Civil Eng., Vol. 87, No. HY4, pp. 83-98.

Hantush, M. S. 1961b. Aquifer Tests on Partially Penetrating Wells. Jour. of the Hyd. Div., Proc. of the Am. Soc. of Civil Eng., Vol. 87, No. HY5, pp. 171-194.

Theis, C.V. 1935. The Relation Between the Lowering of the Piezometric Surface and the Rate and Duration of Discharge of a Well Using Groundwater Storage. Am. Geophys. Union Trans., Vol. 16, pp. 519-524.

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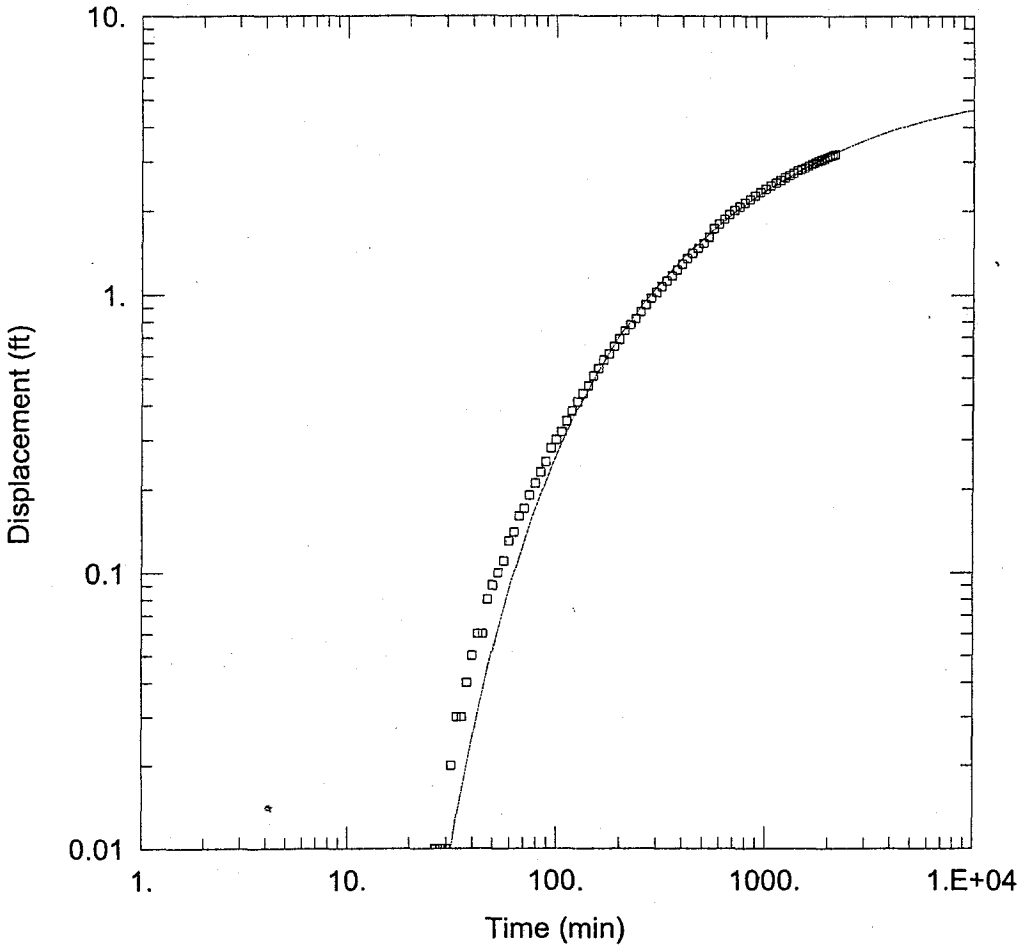
AQTESOLV PLOTS AND SUMMARY SHEETS



16GE1 CONSTANT RATE TEST

Data Set: L:\...\16MW4.aqt
Date: 02/13/01 Time: 11:33:06

PROJECT INFORMATION

Company: Bechtel Navy CLEAN
Client: SWDIV
Project: CTO-178
Test Location: MCAS El Toro Site 16
Test Well: 16GE1
Test Date: 9/21/2000

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
16GE1	6.111E+006	2.193E+006

Observation Wells

Well Name	X (ft)	Y (ft)
▫ 16MW4	6.111E+006	2.193E+006

SOLUTION

Aquifer Model: Leaky
Solution Method: Hantush-Jacob

T = 0.1205 ft^2/min
r/B = 0.1983
b = 33.41 ft

S = 0.03754
Kz/Kr = 1.

ata Set: L:\CleanII\CTO\ELTORO\CTO178\PILOT STUDY\TEST DATA\ge1_constantrate\Aqtesolv analyses\16
itle: 16GE1 Constant Rate Test
Date: 02/13/01
Time: 11:33:38

PROJECT INFORMATION

Company: Bechtel Navy CLEAN
Client: SWDIV
Project: CTO-178
Location: MCAS El Toro Site 16
Test Date: 9/21/2000
Test Well: 16GE1

AQUIFER DATA

Saturated Thickness: 33.41 ft
Anisotropy Ratio (Kz/Kr): 1.

PUMPING WELL DATA

Number of pumping wells: 1

Pumping Well No. 1: 16GE1

X Location: 6.111E+06 ft
Y Location: 2.193E+06 ft

Fully Penetrating Well

No. of pumping periods: 54

Pumping Period Data

Time (min)	Rate (cu. ft/min)	Time (min)	Rate (cu. ft/min)	Time (min)	Rate (cu. ft/min)
0.	2.145	431.	2.145	1296.	2.125
1.	2.145	477.	2.125	1371.	2.132
43.	2.099	500.	2.125	1440.	2.125
46.	2.145	529.	2.139	1495.	2.121
76.	2.132	566.	2.132	1570.	2.119
89.	2.125	600.	2.139	1628.	2.132
110.	2.119	671.	2.125	1670.	2.125
110.3	2.152	692.	2.145	1687.	2.139
206.	2.132	714.	2.132	1756.	2.139
223.5	2.112	844.	2.119	1817.	2.132
223.8	2.119	902.	2.132	1874.	2.143
250.	2.112	954.	2.119	1907.	2.139
270.	2.143	1033.	2.125	1977.	2.139
312.	2.145	1081.	2.119	2018.	2.136
328.	2.152	1114.	2.112	2060.	2.139
345.	2.139	1115.	2.139	2091.	2.139
363.	2.132	1151.	2.139	2154.	2.125
392.	2.139	1231.	2.132	2160.	2.139

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: 16MW4

X Location: 6.111E+06 ft
Y Location: 2.193E+06 ft

Fully Penetrating Well

No. of observations: 85

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
1.	0.	125.9	0.41	668.4	1.94
1.	0.	133.4	0.44	708.	2.01
26.67	0.01	141.3	0.47	749.9	2.07
28.24	0.01	149.7	0.51	794.4	2.14
29.91	0.01	158.5	0.54	841.4	2.2
31.68	0.02	167.9	0.58	891.3	2.27
33.55	0.03	177.9	0.61	944.1	2.34
35.54	0.03	188.4	0.65	1000.1	2.4
37.64	0.04	199.6	0.69	1059.3	2.47
39.87	0.05	211.4	0.74	1119.3	2.53
42.23	0.06	223.9	0.78	1179.3	2.58
44.73	0.06	237.2	0.82	1239.3	2.64
47.37	0.08	251.2	0.87	1299.3	2.69
50.18	0.09	266.1	0.92	1359.3	2.74
53.15	0.1	281.9	0.97	1419.3	2.79
56.29	0.11	298.6	1.02	1479.3	2.82
59.62	0.13	316.3	1.07	1539.3	2.86
63.15	0.14	335.	1.12	1599.3	2.9
66.89	0.16	354.9	1.17	1659.3	2.94
70.85	0.17	375.9	1.23	1719.3	2.97
75.05	0.19	398.2	1.29	1779.3	3.01
79.49	0.21	421.8	1.35	1839.3	3.04
84.2	0.23	446.7	1.41	1899.3	3.07
89.18	0.25	473.2	1.47	1959.3	3.11
94.46	0.28	501.2	1.53	2019.3	3.14
100.1	0.3	530.9	1.61	2079.3	3.17
106.	0.32	562.4	1.73	2139.3	3.2
112.3	0.35	595.7	1.8		
118.9	0.38	631.	1.87		

SOLUTION

Aquifer Model: Leaky
Solution Method: Hantush-Jacob

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	0.1265	ft^2/min
S	0.03605	
r/B	0.1984	
Kz/Kr	1.	
b	33.41	ft

AUTOMATIC ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	Std. Error	
T	0.1205	0.002844	ft^2/min
S	0.03754	0.0002577	
r/B	0.1983	0.02936	
Kz/Kr	1.	not estimated	
b	33.41	not estimated	ft

Parameter Correlations

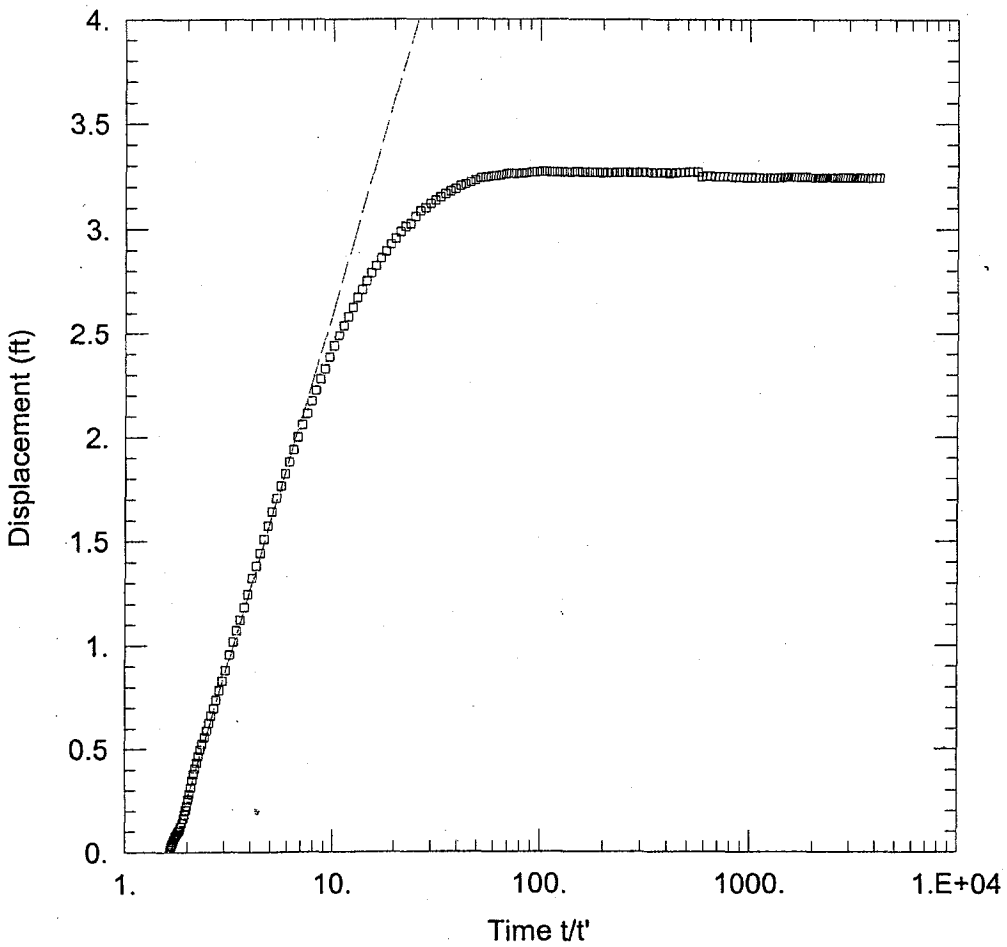
T	S	r/B

T	1.00	0.11	-0.97
S	0.11	1.00	-0.31
r/B	-0.97	-0.31	1.00

Residual Statistics

for weighted residuals

Sum of Squares . . . . . 0.08754 ft^2
Variance . . . . . 0.001068 ft^2
Std. Deviation . . . . . 0.03267 ft
Mean . . . . . 0.006268 ft
No. of Residuals . . . . . 85.
No. of Estimates 3



16GE1 CONSTANT RATE TEST

Data Set: L:\...\16MW4_rec.aqt
Date: 02/20/01 Time: 06:04:50

PROJECT INFORMATION

Company: Bechtel Navy CLEAN
Client: SWDIV
Project: CTO-178
Test Location: MCAS El Toro Site 16
Test Well: 16GE1
Test Date: 9/21/2000

AQUIFER DATA

Saturated Thickness: 33.41 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
16GE1	6.111E+006	2.193E+006

Observation Wells

Well Name	X (ft)	Y (ft)
▫ 16MW4	6.111E+006	2.193E+006

SOLUTION

Aquifer Model: Confined Solution Method: Theis (Recovery)

T = 0.1171 ft^2/min S' = 1.668

Data Set: L:\CleanII\CTO\ELTORO\CTO178\PILOT STUDY\TEST DATA\ge1_constantrate\Aqtesolv analyses\16
Title: 16GE1 Constant Rate Test
Date: 02/20/01
Time: 06:05:04

PROJECT INFORMATION

Company: Bechtel Navy CLEAN
Client: SWDIV
Project: CTO-178
Location: MCAS El Toro Site 16
Test Date: 9/21/2000
Test Well: 16GE1

AQUIFER DATA

Saturated Thickness: 33.41 ft
Anisotropy Ratio (Kz/Kr): 1.

PUMPING WELL DATA

Number of pumping wells: 1

Pumping Well No. 1: 16GE1

X Location: 6.111E+06 ft
Y Location: 2.193E+06 ft

Fully Penetrating Well

No. of pumping periods: 57

Pumping Period Data

Time (min)	Rate (cu. ft/min)	Time (min)	Rate (cu. ft/min)	Time (min)	Rate (cu. ft/min)
0.	1.	392.	2.139	1296.	2.125
0.	2.145	431.	2.145	1371.	2.132
0.	1.	477.	2.125	1440.	2.125
1.	2.145	500.	2.125	1495.	2.121
43.	2.099	529.	2.139	1570.	2.119
46.	2.145	566.	2.132	1628.	2.132
76.	2.132	600.	2.139	1670.	2.125
89.	2.125	671.	2.125	1687.	2.139
110.	2.119	692.	2.145	1756.	2.139
110.3	2.152	714.	2.132	1817.	2.132
206.	2.132	844.	2.119	1874.	2.143
223.5	2.112	902.	2.132	1907.	2.139
223.8	2.119	954.	2.119	1977.	2.139
250.	2.112	1033.	2.125	2018.	2.136
270.	2.143	1081.	2.119	2060.	2.139
312.	2.145	1114.	2.112	2091.	2.139
328.	2.152	1115.	2.139	2154.	2.125
345.	2.139	1151.	2.139	2160.	2.139
363.	2.132	1231.	2.132	2183.5	0.

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: 16MW4

X Location: 6.111E+06 ft
Y Location: 2.193E+06 ft

Fully Penetrating Well

No. of observations: 279

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
26.67	0.01	2184.2	3.243	2231.4	3.219
28.24	0.01	2184.3	3.246	2234.2	3.21
29.91	0.01	2184.3	3.245	2237.1	3.202
31.68	0.02	2184.3	3.245	2240.3	3.188
33.55	0.03	2184.3	3.245	2243.6	3.177
35.54	0.03	2184.3	3.245	2247.1	3.164
37.64	0.04	2184.4	3.245	2250.9	3.149
39.87	0.05	2184.4	3.245	2254.8	3.134
42.23	0.06	2184.4	3.245	2259.	3.118
44.73	0.06	2184.4	3.245	2263.5	3.097
47.37	0.08	2184.4	3.244	2268.2	3.082
50.18	0.09	2184.5	3.243	2273.2	3.056
53.15	0.1	2184.5	3.245	2278.4	3.022
56.29	0.11	2184.5	3.245	2284.	3.009
59.62	0.13	2184.6	3.245	2290.	2.983
63.15	0.14	2184.6	3.245	2296.2	2.954
66.89	0.16	2184.6	3.245	2302.9	2.927
70.85	0.17	2184.7	3.245	2309.9	2.892
75.05	0.19	2184.7	3.248	2317.4	2.859
79.49	0.21	2184.7	3.245	2325.3	2.823
84.2	0.23	2184.8	3.246	2333.7	2.789
89.18	0.25	2184.8	3.246	2342.5	2.75
94.46	0.28	2184.8	3.246	2351.9	2.709
100.1	0.3	2184.9	3.246	2361.9	2.672
106.	0.32	2184.9	3.246	2372.4	2.624
112.3	0.35	2185.	3.246	2383.6	2.58
118.9	0.38	2185.1	3.244	2395.4	2.536
125.9	0.41	2185.1	3.244	2407.9	2.486
133.4	0.44	2185.2	3.242	2421.2	2.437
141.3	0.47	2185.2	3.244	2435.2	2.385
149.7	0.51	2185.3	3.244	2450.1	2.328
158.5	0.54	2185.4	3.244	2465.9	2.28
167.9	0.58	2185.5	3.244	2482.6	2.224
177.9	0.61	2185.5	3.244	2500.3	2.173
188.4	0.65	2185.6	3.246	2519.	2.112
199.6	0.69	2185.7	3.244	2538.8	2.059
211.4	0.74	2185.8	3.246	2559.9	1.999
223.9	0.78	2185.9	3.246	2582.2	1.938
237.2	0.82	2186.	3.246	2605.7	1.879
251.2	0.87	2186.2	3.248	2630.7	1.823
266.1	0.92	2186.3	3.248	2657.2	1.765
281.9	0.97	2186.4	3.248	2685.2	1.706
298.6	1.02	2186.6	3.248	2714.9	1.641
316.3	1.07	2186.7	3.248	2746.4	1.573
335.	1.12	2186.9	3.251	2779.7	1.51
354.9	1.17	2187.	3.251	2815.	1.442
375.9	1.23	2187.2	3.248	2852.4	1.382
398.2	1.29	2187.4	3.27	2892.	1.324
421.8	1.35	2187.6	3.27	2933.9	1.246
446.7	1.41	2187.8	3.27	2978.4	1.185
473.2	1.47	2188.	3.268	3025.4	1.122
501.2	1.53	2188.3	3.268	3075.3	1.07
530.9	1.61	2188.5	3.266	3128.1	1.017
562.4	1.73	2188.8	3.263	3184.	0.955
595.7	1.8	2189.1	3.268	3243.3	0.8812
631.	1.87	2189.4	3.265	3303.3	0.8294
668.4	1.94	2189.7	3.265	3363.3	0.7834
708.	2.01	2190.	3.266	3423.3	0.737
749.9	2.07	2190.4	3.268	3483.3	0.6949

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
794.4	2.14	2190.7	3.268	3543.3	0.6609
841.4	2.2	2191.1	3.265	3603.3	0.6259
891.3	2.27	2191.6	3.265	3663.3	0.5869
944.1	2.34	2192.	3.268	3723.3	0.5544
1000.1	2.4	2192.5	3.268	3783.3	0.5231
1059.3	2.47	2193.	3.268	3843.3	0.4961
1119.3	2.53	2193.5	3.265	3903.3	0.4648
1179.3	2.58	2194.1	3.265	3963.3	0.4331
1239.3	2.64	2194.6	3.265	4023.3	0.4055
1299.3	2.69	2195.3	3.268	4083.3	0.3789
1359.3	2.74	2195.9	3.268	4143.3	0.347
1419.3	2.79	2196.6	3.268	4203.3	0.3129
1479.3	2.82	2197.4	3.268	4263.3	0.2813
1539.3	2.86	2198.2	3.27	4323.3	0.2559
1599.3	2.9	2199.	3.269	4383.3	0.2237
1659.3	2.94	2199.9	3.268	4443.3	0.2035
1719.3	2.97	2200.8	3.266	4503.3	0.1817
1779.3	3.01	2201.8	3.269	4563.3	0.161
1839.3	3.04	2202.9	3.268	4623.3	0.1395
1899.3	3.07	2204.	3.27	4683.3	0.1243
1959.3	3.11	2205.2	3.27	4743.3	0.1096
2019.3	3.14	2206.4	3.267	4803.3	0.1019
2079.3	3.17	2207.8	3.267	4863.3	0.09806
2139.3	3.2	2209.2	3.264	4923.3	0.08899
2184.	3.243	2210.7	3.262	4983.3	0.08126
2184.	3.243	2212.2	3.261	5043.3	0.07579
2184.1	3.243	2213.9	3.261	5103.3	0.06685
2184.1	3.243	2215.7	3.259	5163.3	0.05805
2184.1	3.243	2217.5	3.253	5223.3	0.04958
2184.1	3.243	2219.5	3.25	5283.3	0.03944
2184.1	3.245	2221.6	3.248	5343.3	0.03231
2184.2	3.245	2223.8	3.242	5403.3	0.02564
2184.2	3.243	2226.2	3.239	5463.3	0.0129
2184.2	3.245	2228.7	3.229	5523.3	4.E-05

SOLUTION

Aquifer Model: Confined
Solution Method: Theis (Recovery)

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	0.1171	ft^2/min
S'	1.668	

AUTOMATIC ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	Std. Error	
T	0.1171	0.0005608	ft^2/min
S'	1.668	0.005339	

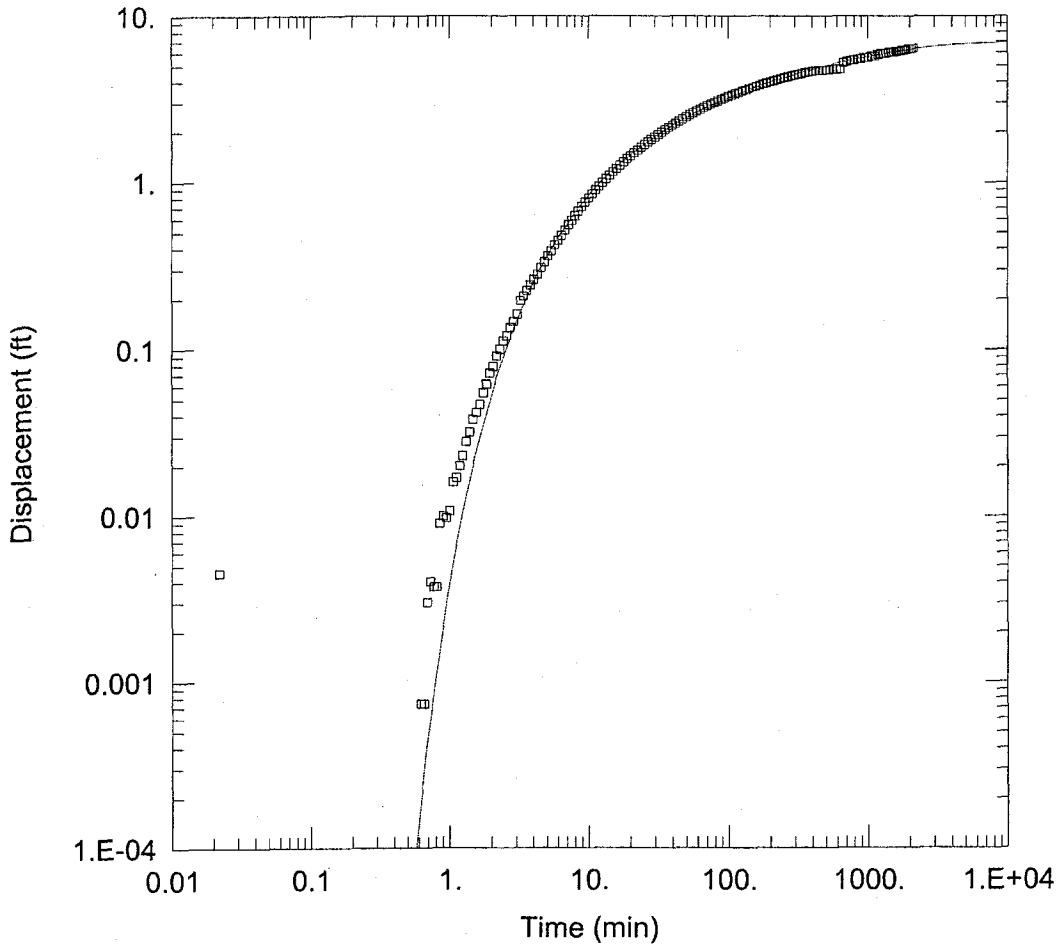
Parameter Correlations

	T	S'
T	1.00	-0.74
S'	-0.74	1.00

Residual Statistics

for weighted residuals

Sum of Squares . . . . . 0.03211 ft^2
Variance . . . . . 0.0005633 ft^2
Std. Deviation . . . . . 0.02373 ft
Mean . . . . . -8.585E-16 ft
No. of Residuals . . . . . 59.
No. of Estimates 2



WELL 16GE1 CONSTANT RATE TEST

Data Set: L:\...\16MW5_adjusted.aqt
Date: 02/13/01 Time: 11:39:19

PROJECT INFORMATION

Company: Bechtel Navy CLEAN
Client: SWDIV
Project: CTO-178
Test Location: MCAS El Toro Site 16
Test Well: 16GE1
Test Date: 9/21/00

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
16GE1	6.111E+006	2.193E+006

Observation Wells

Well Name	X (ft)	Y (ft)
▫ 16MW5	6.111E+006	2.193E+006

SOLUTION

Aquifer Model: Leaky
Solution Method: Hantush-Jacob

T = 0.1396 ft^2/min
r/B = 0.06506
b = 33.47 ft

S = 0.005144
Kz/Kr = 1.

Data Set: L:\CleanII\CTO\ELTORO\CTO178\PILOT STUDY\TEST DATA\ge1_constantrate\Aqtesolv analyses\16
Title: Well 16GE1 Constant Rate Test
Date: 02/13/01
Time: 11:39:25

PROJECT INFORMATION

Company: Bechtel Navy CLEAN
Client: SWDIV
Project: CTO-178
Location: MCAS El Toro Site 16
Test Date: 9/21/00
Test Well: 16GE1

AQUIFER DATA

Saturated Thickness: 33.47 ft
Anisotropy Ratio (Kz/Kr): 1.

PUMPING WELL DATA

Number of pumping wells: 1

Pumping Well No. 1: 16GE1

X Location: 6.111E+06 ft
Y Location: 2.193E+06 ft

Fully Penetrating Well

No. of pumping periods: 54

Pumping Period Data

Time (min)	Rate (cu. ft/min)	Time (min)	Rate (cu. ft/min)	Time (min)	Rate (cu. ft/min)
0.	2.145	431.	2.145	1296.	2.125
1.	2.145	477.	2.125	1371.	2.132
43.	2.099	500.	2.125	1440.	2.125
46.	2.145	529.	2.139	1495.	2.121
76.	2.132	566.	2.132	1570.	2.119
89.	2.125	600.	2.139	1628.	2.132
110.	2.119	671.	2.125	1670.	2.125
110.3	2.152	692.	2.145	1687.	2.139
206.	2.132	714.	2.132	1756.	2.139
223.5	2.112	844.	2.119	1817.	2.132
223.8	2.119	902.	2.132	1874.	2.143
250.	2.112	954.	2.119	1907.	2.139
270.	2.143	1033.	2.125	1977.	2.139
312.	2.145	1081.	2.119	2018.	2.136
328.	2.152	1114.	2.112	2060.	2.139
345.	2.139	1115.	2.139	2091.	2.139
363.	2.132	1151.	2.139	2154.	2.125
392.	2.139	1231.	2.132	2160.	2.139

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: 16MW5

X Location: 6.111E+06 ft
Y Location: 2.193E+06 ft

Fully Penetrating Well

No. of observations: 151

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.022	0.004532	10.06	0.8	188.4	3.943
0.6258	0.000734	10.65	0.845	199.6	4.
0.659	0.000734	11.28	0.894	211.4	4.06
0.6942	0.003	11.94	0.942	223.9	4.118
0.7315	0.004	12.65	0.991	237.2	4.173
0.771	0.003734	13.39	1.042	251.2	4.231
0.8128	0.003734	14.18	1.092	266.1	4.288
0.8572	0.009	15.02	1.148	281.9	4.35
0.9042	0.01	15.91	1.2	298.6	4.409
0.954	0.009734	16.85	1.257	316.3	4.454
1.007	0.01073	17.84	1.315	335.	4.498
1.063	0.016	18.9	1.371	354.9	4.555
1.122	0.017	20.01	1.429	375.9	4.598
1.184	0.02	21.19	1.487	398.2	4.633
1.251	0.023	22.45	1.548	421.8	4.663
1.321	0.028	23.77	1.609	446.7	4.684
1.396	0.032	25.18	1.672	473.2	4.696
1.474	0.038	26.67	1.734	501.2	4.713
1.558	0.04173	28.24	1.795	530.9	4.731
1.647	0.04673	29.91	1.859	562.4	4.745
1.74	0.05473	31.68	1.926	595.7	4.756
1.84	0.06173	33.55	1.993	631.	4.762
1.945	0.07173	35.54	2.057	668.4	5.23
2.057	0.07873	37.64	2.122	708.	5.309
2.175	0.091	39.87	2.183	749.9	5.399
2.3	0.1	42.23	2.248	794.4	5.408
2.433	0.112	44.73	2.315	841.4	5.502
2.573	0.1197	47.37	2.387	891.3	5.513
2.722	0.134	50.18	2.457	944.1	5.608
2.879	0.1457	53.15	2.527	1000.1	5.616
3.046	0.1607	56.29	2.593	1059.3	5.707
3.223	0.1941	59.62	2.663	1119.3	5.717
3.41	0.2066	63.15	2.732	1179.3	5.826
3.609	0.2243	66.89	2.8	1239.3	5.928
3.819	0.2411	70.85	2.868	1299.3	5.935
4.042	0.2608	75.05	2.934	1359.3	5.944
4.277	0.2805	79.49	3.001	1419.3	6.024
4.527	0.3068	84.2	3.068	1479.3	6.024
4.792	0.3325	89.18	3.131	1539.3	6.027
5.072	0.3605	94.46	3.197	1599.3	6.108
5.369	0.3853	100.1	3.261	1659.3	6.116
5.684	0.4195	106.	3.325	1719.3	6.125
6.017	0.4483	112.3	3.391	1779.3	6.212
6.37	0.479	118.9	3.457	1839.3	6.222
6.743	0.5163	125.9	3.52	1899.3	6.231
7.139	0.5555	133.4	3.58	1959.3	6.329
7.559	0.589	141.3	3.64	2019.3	6.339
8.003	0.628	149.7	3.704	2079.3	6.35
8.474	0.668	158.5	3.766	2139.3	6.36
8.972	0.713	167.9	3.827		
9.5	0.7573	177.9	3.885		

SOLUTION

Aquifer Model: Leaky
Solution Method: Hantush-Jacob

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	0.1484	ft^2/min
S	0.004557	
r/B	0.03286	
Kz/Kr	1.	
b	33.47	ft

AUTOMATIC ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	Std. Error	
T	0.1396	0.0006237	ft^2/min
S	0.005144	3.333E-05	
r/B	0.06506	0.001788	
Kz/Kr	1.	not estimated	
b	33.47	not estimated	ft

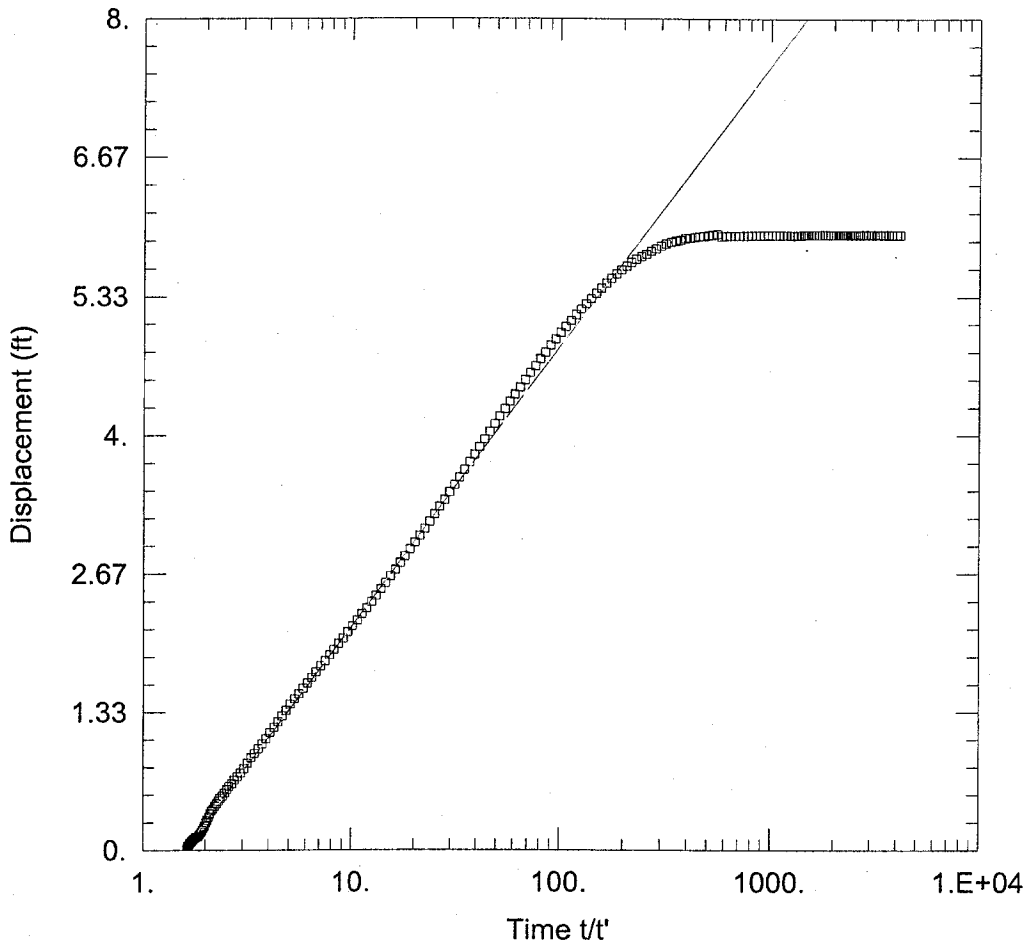
Parameter Correlations

	T	S	r/B
T	1.00	-0.80	-0.93
S	-0.80	1.00	0.63
r/B	-0.93	0.63	1.00

Residual Statistics

for weighted residuals

Sum of Squares . . . . . 0.153 ft^2
Variance . . . . . 0.001109 ft^2
Std. Deviation . . . . . 0.0333 ft
Mean . . . . . 0.001294 ft
No. of Residuals . . . . . 141.
No. of Estimates 3



WELL 16GE1 CONSTANT RATE TEST

Data Set: L:\...\16MW5_rec.aqt
Date: 02/20/01 Time: 06:08:51

PROJECT INFORMATION

Company: Bechtel Navy CLEAN
Client: SWDIV
Project: CTO-178
Test Location: MCAS El Toro Site 16
Test Well: 16GE1
Test Date: 9/21/00

AQUIFER DATA

Saturated Thickness: 33.47 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
16GE1	6.111E+006	2.193E+006

Observation Wells

Well Name	X (ft)	Y (ft)
▫ 16MW5	6.111E+006	2.193E+006

SOLUTION

Aquifer Model: Confined Solution Method: Theis (Recovery)

T = 0.1456 ft^2/min S' = 1.581

Data Set: L:\CleanII\CTO\ELTORO\CTO178\PILOT STUDY\TEST DATA\ge1_constantrate\Aqtesolv analyses\16
Title: Well 16GE1 Constant Rate Test
Date: 02/20/01
Time: 06:09:15

PROJECT INFORMATION

Company: Bechtel Navy CLEAN
Client: SWDIV
Project: CTO-178
Location: MCAS El Toro Site 16
Test Date: 9/21/00
Test Well: 16GE1

AQUIFER DATA

Saturated Thickness: 33.47 ft
Anisotropy Ratio (Kz/Kr): 1.

PUMPING WELL DATA

Number of pumping wells: 1

Pumping Well No. 1: 16GE1

X Location: 6.111E+06 ft
Y Location: 2.193E+06 ft

Fully Penetrating Well

No. of pumping periods: 57

Pumping Period Data

Time (min)	Rate (cu. ft/min)	Time (min)	Rate (cu. ft/min)	Time (min)	Rate (cu. ft/min)
0.	1.	392.	2.139	1296.	2.125
0.	2.145	431.	2.145	1371.	2.132
0.	1.	477.	2.125	1440.	2.125
1.	2.145	500.	2.125	1495.	2.121
43.	2.099	529.	2.139	1570.	2.119
46.	2.145	566.	2.132	1628.	2.132
76.	2.132	600.	2.139	1670.	2.125
89.	2.125	671.	2.125	1687.	2.139
110.	2.119	692.	2.145	1756.	2.139
110.3	2.152	714.	2.132	1817.	2.132
206.	2.132	844.	2.119	1874.	2.143
223.5	2.112	902.	2.132	1907.	2.139
223.8	2.119	954.	2.119	1977.	2.139
250.	2.112	1033.	2.125	2018.	2.136
270.	2.143	1081.	2.119	2060.	2.139
312.	2.145	1114.	2.112	2091.	2.139
328.	2.152	1115.	2.139	2154.	2.125
345.	2.139	1151.	2.139	2160.	2.139
363.	2.132	1231.	2.132	2183.5	0.

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: 16MW5

X Location: 6.111E+06 ft
Y Location: 2.193E+06 ft

Fully Penetrating Well

No. of observations: 342

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.8572	0.01	562.4	4.74	2199.9	5.265
0.9042	0.01	595.7	4.76	2200.8	5.209
0.954	0.01	631.	4.76	2201.8	5.157
1.007	0.01	668.4	4.78	2202.9	5.1
1.063	0.02	708.	4.86	2204.	5.044
1.122	0.02	749.9	4.95	2205.2	4.985
1.184	0.02	794.4	4.96	2206.4	4.923
1.251	0.02	841.4	5.05	2207.8	4.863
1.321	0.03	891.3	5.06	2209.2	4.797
1.396	0.03	944.1	5.16	2210.7	4.734
1.474	0.04	1000.1	5.17	2212.2	4.667
1.558	0.04	1059.3	5.26	2213.9	4.601
1.647	0.05	1119.3	5.27	2215.7	4.533
1.74	0.05	1179.3	5.38	2217.5	4.462
1.84	0.06	1239.3	5.48	2219.5	4.392
1.945	0.07	1299.3	5.49	2221.6	4.323
2.057	0.08	1359.3	5.49	2223.8	4.252
2.175	0.09	1419.3	5.57	2226.2	4.183
2.3	0.1	1479.3	5.57	2228.7	4.107
2.433	0.11	1539.3	5.58	2231.4	4.033
2.573	0.12	1599.3	5.66	2234.2	3.961
2.722	0.13	1659.3	5.67	2237.1	3.886
2.879	0.15	1719.3	5.67	2240.3	3.813
3.046	0.16	1779.3	5.76	2243.6	3.74
3.223	0.19	1839.3	5.77	2247.1	3.668
3.41	0.21	1899.3	5.78	2250.9	3.593
3.609	0.22	1959.3	5.88	2254.8	3.521
3.819	0.24	2019.3	5.89	2259.	3.45
4.042	0.26	2079.3	5.9	2263.5	3.376
4.277	0.28	2139.3	5.91	2268.2	3.311
4.527	0.31	2184.	5.928	2273.2	3.236
4.792	0.33	2184.	5.928	2278.4	3.167
5.072	0.36	2184.1	5.928	2284.	3.098
5.369	0.39	2184.1	5.929	2290.	3.031
5.684	0.42	2184.1	5.928	2296.2	2.964
6.017	0.45	2184.1	5.928	2302.9	2.898
6.37	0.48	2184.1	5.93	2309.9	2.831
6.743	0.52	2184.2	5.93	2317.4	2.768
7.139	0.56	2184.2	5.928	2325.3	2.704
7.559	0.59	2184.2	5.93	2333.7	2.64
8.003	0.63	2184.2	5.928	2342.5	2.576
8.474	0.67	2184.3	5.93	2351.9	2.516
8.972	0.71	2184.3	5.93	2361.9	2.456
9.5	0.76	2184.3	5.93	2372.4	2.395
10.06	0.8	2184.3	5.928	2383.6	2.335
10.65	0.85	2184.3	5.928	2395.4	2.277
11.28	0.89	2184.4	5.928	2407.9	2.219
11.94	0.94	2184.4	5.93	2421.2	2.16
12.65	0.99	2184.4	5.928	2435.2	2.106
13.39	1.04	2184.4	5.928	2450.1	2.043
14.18	1.09	2184.4	5.926	2465.9	1.992
15.02	1.15	2184.5	5.928	2482.6	1.936
15.91	1.2	2184.5	5.928	2500.3	1.882
16.85	1.26	2184.5	5.928	2519.	1.827
17.84	1.32	2184.6	5.928	2538.8	1.776
18.9	1.37	2184.6	5.928	2559.9	1.721
20.01	1.43	2184.6	5.927	2582.2	1.665
21.19	1.49	2184.7	5.928	2605.7	1.613
22.45	1.55	2184.7	5.931	2630.7	1.564

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
23.77	1.61	2184.7	5.928	2657.2	1.509
25.18	1.67	2184.8	5.928	2685.2	1.459
26.67	1.73	2184.8	5.928	2714.9	1.408
28.24	1.8	2184.8	5.927	2746.4	1.351
29.91	1.86	2184.9	5.927	2779.7	1.297
31.68	1.93	2184.9	5.927	2815.	1.241
33.55	1.99	2185.	5.927	2852.4	1.186
35.54	2.06	2185.1	5.925	2892.	1.135
37.64	2.12	2185.1	5.925	2933.9	1.076
39.87	2.18	2185.2	5.923	2978.4	1.026
42.23	2.25	2185.2	5.925	3025.4	0.9791
44.73	2.31	2185.3	5.925	3075.3	0.9356
47.37	2.39	2185.4	5.923	3128.1	0.8935
50.18	2.46	2185.5	5.923	3184.	0.841
53.15	2.53	2185.5	5.923	3243.3	0.7862
56.29	2.59	2185.6	5.925	3303.3	0.7464
59.62	2.66	2185.7	5.922	3363.3	0.7094
63.15	2.73	2185.8	5.924	3423.3	0.6761
66.89	2.8	2185.9	5.922	3483.3	0.6419
70.85	2.87	2186.	5.921	3543.3	0.6139
75.05	2.93	2186.2	5.921	3603.3	0.5839
79.49	3.	2186.3	5.919	3663.3	0.5519
84.2	3.07	2186.4	5.918	3723.3	0.5244
89.18	3.13	2186.6	5.918	3783.3	0.5011
94.46	3.2	2186.7	5.917	3843.3	0.4761
100.1	3.26	2186.9	5.918	3903.3	0.4498
106.	3.33	2187.	5.917	3963.3	0.4251
112.3	3.39	2187.2	5.911	4023.3	0.3995
118.9	3.46	2187.4	5.932	4083.3	0.3799
125.9	3.52	2187.6	5.926	4143.3	0.352
133.4	3.58	2187.8	5.921	4203.3	0.3189
141.3	3.64	2188.	5.917	4263.3	0.2883
149.7	3.7	2188.3	5.912	4323.3	0.2639
158.5	3.77	2188.5	5.905	4383.3	0.2327
167.9	3.83	2188.8	5.897	4443.3	0.2115
177.9	3.88	2189.1	5.892	4503.3	0.1907
188.4	3.94	2189.4	5.878	4563.3	0.173
199.6	4.	2189.7	5.867	4623.3	0.1545
211.4	4.06	2190.	5.858	4683.3	0.1433
223.9	4.12	2190.4	5.841	4743.3	0.1296
237.2	4.17	2190.7	5.822	4803.3	0.1269
251.2	4.23	2191.1	5.794	4863.3	0.1271
266.1	4.29	2191.6	5.77	4923.3	0.119
281.9	4.35	2192.	5.742	4983.3	0.1113
298.6	4.41	2192.5	5.719	5043.3	0.1028
316.3	4.45	2193.	5.694	5103.3	0.09485
335.	4.5	2193.5	5.663	5163.3	0.08905
354.9	4.55	2194.1	5.629	5223.3	0.07858
375.9	4.6	2194.6	5.591	5283.3	0.06844
398.2	4.63	2195.3	5.554	5343.3	0.06431
421.8	4.66	2195.9	5.512	5403.3	0.05464
446.7	4.68	2196.6	5.465	5463.3	0.0459
473.2	4.7	2197.4	5.418	5523.3	0.03704
501.2	4.71	2198.2	5.369	5583.3	0.03044
530.9	4.73	2199.	5.316	5643.3	0.01058

SOLUTION

Aquifer Model: Confined
Solution Method: Theis (Recovery)

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	0.1456	ft^2/min
S'	1.581	

AUTOMATIC ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	Std. Error	
T	0.1456	0.0004714	ft^2/min
S'	1.581	0.006336	

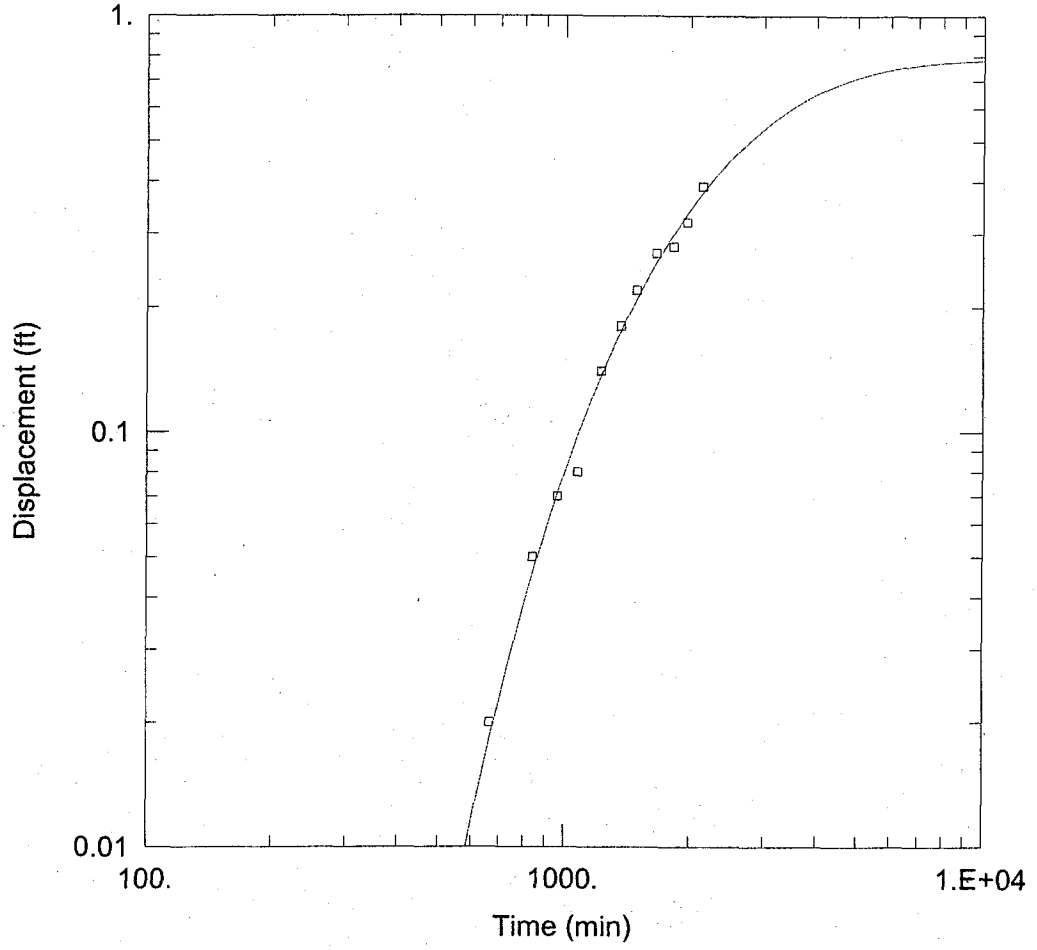
Parameter Correlations

	T	S'
T	1.00	-0.76
S'	-0.76	1.00

Residual Statistics

for weighted residuals

Sum of Squares . . . . . 0.06059 ft^2
Variance . . . . . 0.0007574 ft^2
Std. Deviation . . . . . 0.02752 ft
Mean . . . . . -2.786E-15 ft
No. of Residuals . . . . . 82.
No. of Estimates 2



WELL 16GE1 CONSTANT RATE TEST

Data Set: L:\...\16MW6_m.aqt
Date: 02/13/01 Time: 11:43:08

PROJECT INFORMATION

Company: Bechtel Navy CLEAN
Client: SWDIV
Project: CTO-178
Test Location: MCAS El Toro Site 16
Test Well: 16GE1
Test Date: 0/21/00

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
16GE1	6.111E+006	2.193E+006

Observation Wells

Well Name	X (ft)	Y (ft)
▫ 16MW6	6.111E+006	2.193E+006

SOLUTION

Aquifer Model: Leaky
Solution Method: Hantush-Jacob

T = 0.03634 ft^2/min
r/B = 2.25
b = 33.47 ft

S = 0.01327
Kz/Kr = 1.

Data Set: L:\CleanII\CTO\ELTORO\CTO178\PILOT STUDY\TEST DATA\ge1_constantrate\Aqtesolv analyses\16
Title: Well 16GE1 Constant Rate Test
Date: 02/13/01
Time: 11:43:31

PROJECT INFORMATION

Company: Bechtel Navy CLEAN
Client: SWDIV
Project: CTO-178
Location: MCAS El Toro Site 16
Test Date: 0/21/00
Test Well: 16GE1

AQUIFER DATA

Saturated Thickness: 33.47 ft
Anisotropy Ratio (Kz/Kr): 1.

PUMPING WELL DATA

Number of pumping wells: 1

Pumping Well No. 1: 16GE1

X Location: 6.111E+06 ft
Y Location: 2.193E+06 ft

Fully Penetrating Well

No. of pumping periods: 54

Pumping Period Data

Time (min)	Rate (cu. ft/min)	Time (min)	Rate (cu. ft/min)	Time (min)	Rate (cu. ft/min)
0.	2.145	431.	2.145	1296.	2.125
1.	2.145	477.	2.125	1371.	2.132
43.	2.099	500.	2.125	1440.	2.125
46.	2.145	529.	2.139	1495.	2.121
76.	2.132	566.	2.132	1570.	2.119
89.	2.125	600.	2.139	1628.	2.132
110.	2.119	671.	2.125	1670.	2.125
110.3	2.152	692.	2.145	1687.	2.139
206.	2.132	714.	2.132	1756.	2.139
223.5	2.112	844.	2.119	1817.	2.132
223.8	2.119	902.	2.132	1874.	2.143
250.	2.112	954.	2.119	1907.	2.139
270.	2.143	1033.	2.125	1977.	2.139
312.	2.145	1081.	2.119	2018.	2.136
328.	2.152	1114.	2.112	2060.	2.139
345.	2.139	1115.	2.139	2091.	2.139
363.	2.132	1151.	2.139	2154.	2.125
392.	2.139	1231.	2.132	2160.	2.139

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: 16MW6

X Location: 6.111E+06 ft
Y Location: 2.193E+06 ft

Fully Penetrating Well

No. of observations: 11

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
665.	0.02	1224.	0.14	1827.	0.28
840.	0.05	1367.	0.18	1964.	0.32
964.	0.07	1490.	0.22	2140.	0.39
1075.	0.08	1662.	0.27		

SOLUTION

Aquifer Model: Leaky
Solution Method: Hantush-Jacob

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	0.121	ft^2/min
S	0.03314	
r/B	0.1	
Kz/Kr	1.	
b	33.47	ft

AUTOMATIC ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	Std. Error	
T	0.03634	0.04009	ft^2/min
S	0.01327	0.01168	
r/B	2.25	1.32	
Kz/Kr	1.	not estimated	
b	33.47	not estimated	ft

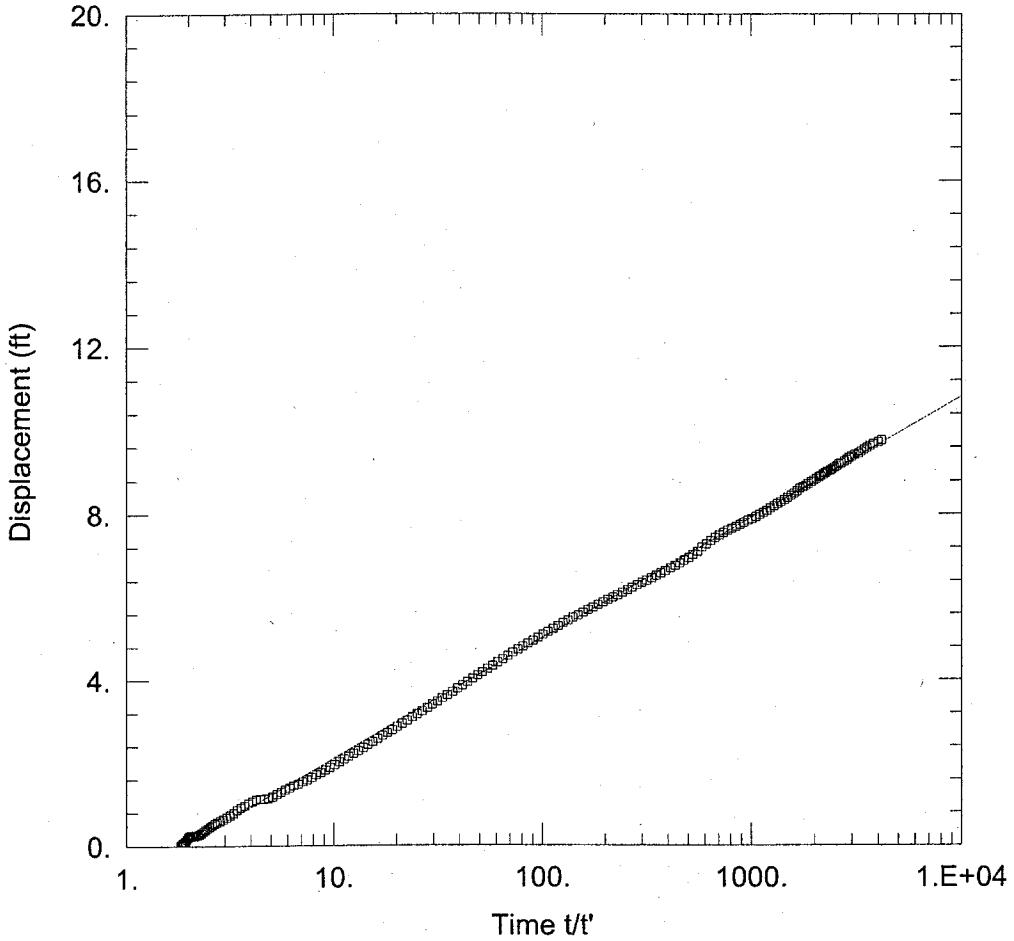
Parameter Correlations

	T	S	r/B
T	1.00	1.00	-1.00
S	1.00	1.00	-1.00
r/B	-1.00	-1.00	1.00

Residual Statistics

for weighted residuals

Sum of Squares . . . . . 0.001464 ft^2
Variance . . . . . 0.000183 ft^2
Std. Deviation . . . . . 0.01353 ft
Mean . . . . . 2.184E-05 ft
No. of Residuals . . . . . 11.
No. of Estimates 3



16GE1 CONSTANT RATE TEST

Data Set: L:\...\16GE1_REC.aqt
Date: 02/20/01 Time: 06:02:59

PROJECT INFORMATION

Company: Bechtel Navy CLEAN
Client: SWDIV
Project: CTO-178
Test Location: MCAS El Toro Site 16
Test Well: 16GE1
Test Date: 9/21/2000

AQUIFER DATA

Saturated Thickness: 33.41 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
16GE1	6.111E+006	2.193E+006

Observation Wells

Well Name	X (ft)	Y (ft)
▫ 16GE1	6.111E+006	2.193E+006

SOLUTION

Aquifer Model: Confined Solution Method: Theis (Recovery)

T = 0.1348 ft^2/min S' = 1.906

Data Set: L:\CleanII\CTO\ELTORO\CTO178\PILOT STUDY\TEST DATA\ge1_constantrate\Aqtesolv analyses\16
Title: 16GE1 Constant Rate Test
Date: 02/20/01
Time: 06:02:42

PROJECT INFORMATION

Company: Bechtel Navy CLEAN
Client: SWDIV
Project: CTO-178
Location: MCAS El Toro Site 16
Test Date: 9/21/2000
Test Well: 16GE1

AQUIFER DATA

Saturated Thickness: 33.41 ft
Anisotropy Ratio (Kz/Kr): 1.

PUMPING WELL DATA

Number of pumping wells: 1

Pumping Well No. 1: 16GE1

X Location: 6.111E+06 ft
Y Location: 2.193E+06 ft

Fully Penetrating Well

No. of pumping periods: 56

Pumping Period Data

Time (min)	Rate (cu. ft/min)	Time (min)	Rate (cu. ft/min)	Time (min)	Rate (cu. ft/min)
0.	1.	431.	2.145	1371.	2.132
0.	2.145	477.	2.125	1440.	2.125
1.	2.145	500.	2.125	1495.	2.121
43.	2.099	529.	2.139	1570.	2.119
46.	2.145	566.	2.132	1628.	2.132
76.	2.132	600.	2.139	1670.	2.125
89.	2.125	671.	2.125	1687.	2.139
110.	2.119	692.	2.145	1756.	2.139
110.3	2.152	714.	2.132	1817.	2.132
206.	2.132	844.	2.119	1874.	2.143
223.5	2.112	902.	2.132	1907.	2.139
223.8	2.119	954.	2.119	1977.	2.139
250.	2.112	1033.	2.125	2018.	2.136
270.	2.143	1081.	2.119	2060.	2.139
312.	2.145	1114.	2.112	2091.	2.139
328.	2.152	1115.	2.139	2154.	2.125
345.	2.139	1151.	2.139	2160.	2.139
363.	2.132	1231.	2.132	2183.5	0.
392.	2.139	1296.	2.125		

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: 16GE1

X Location: 6.111E+06 ft
Y Location: 2.193E+06 ft

Fully Penetrating Well

No. of observations: 360

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.022	0.12	125.9	8.52	2189.1	6.626
0.044	0.11	133.4	8.6	2189.4	6.573
0.066	0.23	141.3	8.69	2189.7	6.513
0.088	0.38	149.7	8.77	2190.	6.454
0.11	0.51	158.5	8.86	2190.4	6.394
0.132	0.62	167.9	8.94	2190.7	6.342
0.154	0.73	177.9	9.02	2191.1	6.284
0.176	0.84	188.4	9.11	2191.6	6.228
0.198	0.92	199.6	9.18	2192.	6.165
0.22	1.02	211.4	9.28	2192.5	6.105
0.242	1.1	223.9	9.37	2193.	6.04
0.264	1.17	237.2	9.44	2193.5	5.987
0.286	1.24	251.2	9.54	2194.1	5.931
0.308	1.3	266.1	9.62	2194.6	5.871
0.33	1.38	281.9	9.8	2195.3	5.812
0.352	1.44	298.6	9.91	2195.9	5.747
0.374	1.5	316.3	10.01	2196.6	5.687
0.396	1.56	335.	10.11	2197.4	5.62
0.418	1.63	354.9	10.19	2198.2	5.555
0.44	1.69	375.9	10.29	2199.	5.497
0.4622	1.74	398.2	10.4	2199.9	5.428
0.4857	1.8	421.8	10.49	2200.8	5.366
0.5105	1.86	446.7	10.6	2201.8	5.294
0.5368	1.92	473.2	10.68	2202.9	5.225
0.5648	1.98	501.2	10.76	2204.	5.154
0.5945	2.03	530.9	10.91	2205.2	5.083
0.6258	2.1	562.4	11.01	2206.4	5.012
0.659	2.16	595.7	11.12	2207.8	4.939
0.6942	2.21	631.	11.24	2209.2	4.867
0.7315	2.25	668.4	11.35	2210.7	4.794
0.771	2.28	708.	11.45	2212.2	4.721
0.8128	2.35	749.9	11.56	2213.9	4.645
0.8572	2.41	794.4	11.68	2215.7	4.566
0.9042	2.46	841.4	11.8	2217.5	4.488
0.954	2.49	891.3	11.89	2219.5	4.41
1.007	2.53	944.1	12.02	2221.6	4.331
1.063	2.59	1000.1	12.13	2223.8	4.253
1.122	2.64	1059.3	12.24	2226.2	4.173
1.184	2.69	1119.3	12.42	2228.7	4.098
1.251	2.75	1179.3	12.56	2231.4	4.016
1.321	2.82	1239.3	12.67	2234.2	3.938
1.396	2.87	1299.3	12.77	2237.1	3.856
1.474	2.93	1359.3	12.87	2240.3	3.781
1.558	2.98	1419.3	12.98	2243.6	3.699
1.647	3.05	1479.3	13.09	2247.1	3.621
1.74	3.11	1539.3	13.2	2250.9	3.541
1.84	3.17	1599.3	13.32	2254.8	3.464
1.945	3.22	1659.3	13.42	2259.	3.388
2.057	3.29	1719.3	13.58	2263.5	3.309
2.175	3.35	1779.3	13.68	2268.2	3.228
2.3	3.41	1839.3	13.79	2273.2	3.161
2.433	3.47	1899.3	13.93	2278.4	3.083
2.573	3.53	1959.3	14.02	2284.	3.006
2.722	3.6	2019.3	14.11	2290.	2.932
2.879	3.65	2079.3	14.19	2296.2	2.855
3.046	3.7	2139.3	14.25	2302.9	2.774
3.223	3.78	2184.	9.763	2309.9	2.704
3.41	3.84	2184.	9.725	2317.4	2.64
3.609	3.89	2184.1	9.677	2325.3	2.568

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
3.819	3.95	2184.1	9.63	2333.7	2.493
4.042	4.	2184.1	9.587	2342.5	2.426
4.277	4.05	2184.1	9.544	2351.9	2.352
4.527	4.11	2184.1	9.494	2361.9	2.278
4.792	4.16	2184.2	9.451	2372.4	2.214
5.072	4.23	2184.2	9.419	2383.6	2.147
5.369	4.29	2184.2	9.378	2395.4	2.076
5.684	4.35	2184.2	9.337	2407.9	2.012
6.017	4.41	2184.3	9.296	2421.2	1.947
6.37	4.48	2184.3	9.257	2435.2	1.878
6.743	4.53	2184.3	9.214	2450.1	1.822
7.139	4.6	2184.3	9.18	2465.9	1.759
7.559	4.66	2184.3	9.137	2482.6	1.706
8.003	4.72	2184.4	9.107	2500.3	1.641
8.474	4.79	2184.4	9.072	2519.	1.585
8.972	4.85	2184.4	9.038	2538.8	1.536
9.5	4.92	2184.4	9.008	2559.9	1.481
10.06	4.99	2184.4	8.979	2582.2	1.439
10.65	5.05	2184.5	8.941	2605.7	1.392
11.28	5.12	2184.5	8.908	2630.7	1.341
11.94	5.2	2184.5	8.878	2657.2	1.287
12.65	5.25	2184.6	8.844	2685.2	1.234
13.39	5.32	2184.6	8.801	2714.9	1.176
14.18	5.39	2184.6	8.766	2746.4	1.135
15.02	5.46	2184.7	8.723	2779.7	1.124
15.91	5.54	2184.7	8.677	2815.	1.119
16.85	5.6	2184.7	8.641	2852.4	1.106
17.84	5.67	2184.8	8.611	2892.	1.065
18.9	5.76	2184.8	8.542	2933.9	1.018
20.01	5.83	2184.8	8.491	2978.4	0.9599
21.19	5.89	2184.9	8.443	3025.4	0.9129
22.45	5.97	2184.9	8.387	3075.3	0.8564
23.77	6.04	2185.	8.34	3128.1	0.7795
25.18	6.12	2185.1	8.286	3184.	0.728
26.67	6.2	2185.1	8.243	3243.3	0.6788
28.24	6.27	2185.2	8.189	3303.3	0.6336
29.91	6.35	2185.2	8.135	3363.3	0.5946
31.68	6.43	2185.3	8.079	3423.3	0.5629
33.55	6.51	2185.4	8.032	3483.3	0.5301
35.54	6.59	2185.5	7.98	3543.3	0.4911
37.64	6.67	2185.5	7.933	3603.3	0.4571
39.87	6.75	2185.6	7.879	3663.3	0.4181
42.23	6.86	2185.7	7.838	3723.3	0.3836
44.73	6.97	2185.8	7.788	3783.3	0.3429
47.37	7.05	2185.9	7.745	3843.3	0.3039
50.18	7.14	2186.	7.694	3903.3	0.2762
53.15	7.23	2186.2	7.65	3963.3	0.2649
56.29	7.31	2186.3	7.603	4023.3	0.2525
59.62	7.4	2186.4	7.547	4083.3	0.2361
63.15	7.49	2186.6	7.482	4143.3	0.239
66.89	7.57	2186.7	7.426	4203.3	0.2561
70.85	7.65	2186.9	7.35	4263.3	0.2527
75.05	7.74	2187.	7.268	4323.3	0.2261
79.49	7.82	2187.2	7.194	4383.3	0.1933
84.2	7.9	2187.4	7.088	4443.3	0.1565
89.18	7.99	2187.6	7.01	4503.3	0.1173
94.46	8.09	2187.8	6.939	4563.3	0.09301
100.1	8.16	2188.	6.874	4623.3	0.07048
106.	8.25	2188.3	6.81	4683.3	0.04668
112.3	8.35	2188.5	6.751	4743.3	0.02741
118.9	8.42	2188.8	6.69	4803.3	0.008147

SOLUTION

Aquifer Model: Confined
Solution Method: Theis (Recovery)

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	0.1348	ft^2/min
S'	1.906	

AUTOMATIC ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	Std. Error	
T	0.1348	0.0002616	ft^2/min
S'	1.906	0.01672	

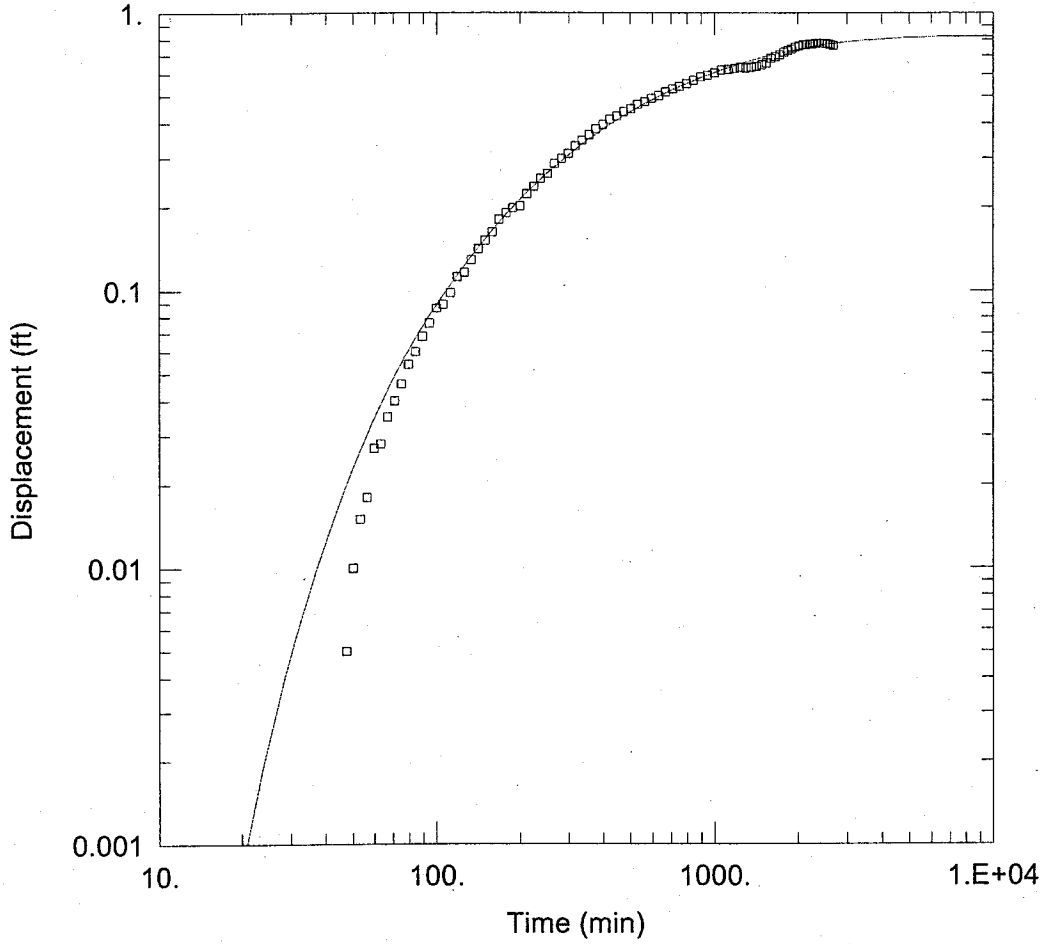
Parameter Correlations

	T	S'
T	1.00	-0.83
S'	-0.83	1.00

Residual Statistics

for weighted residuals

Sum of Squares . . . . . 1.266 ft^2
Variance . . . . . 0.006957 ft^2
Std. Deviation . . . . . 0.08341 ft
Mean . . . . . 8.725E-12 ft
No. of Residuals . . . . . 184.
No. of Estimates 2



WELL 16MPE1 CONSTANT RATE TEST

Data Set: L:\...\16MW1.aqt
Date: 02/20/01 Time: 06:12:46

PROJECT INFORMATION

Company: Bechtel Navy CLEAN
Client: SWDIV
Project: CTO-178
Test Location: MCAS El Toro Site 16
Test Well: 16MPE1
Test Date: 9/28/00

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
16MPE1	6.111E+006	2.193E+006

Observation Wells

Well Name	X (ft)	Y (ft)
▫ 16MW1	6.111E+006	2.193E+006

SOLUTION

Aquifer Model: Leaky
Solution Method: Hantush-Jacob

T = 0.01181 ft^2/min
r/B = 0.4495
b = 31.2 ft

S = 0.01085
Kz/Kr = 1.

Data Set: L:\CleanII\CTO\ELTORO\CTO178\PILOT STUDY\TEST DATA\mpe1_constantrate\Aqtesolv Analyses\
Title: Well 16MPE1 Constant Rate Test
Date: 02/20/01
Time: 06:13:09

PROJECT INFORMATION

Company: Bechtel Navy CLEAN
Client: SWDIV
Project: CTO-178
Location: MCAS El Toro Site 16
Test Date: 9/28/00
Test Well: 16MPE1

AQUIFER DATA

Saturated Thickness: 31.2 ft
Anisotropy Ratio (Kz/Kr): 1.

PUMPING WELL DATA

Number of pumping wells: 1

Pumping Well No. 1: 16MPE1

X Location: 6.111E+06 ft
Y Location: 2.193E+06 ft

Fully Penetrating Well

No. of pumping periods: 122

Pumping Period Data

Time (min)	Rate (cu. ft/min)	Time (min)	Rate (cu. ft/min)	Time (min)	Rate (cu. ft/min)
0.25	0.2005	352.	0.0602	1427.	0.0602
2.	0.0602	365.	0.0602	1503.	0.0608
5.	0.0588	377.	0.0602	1504.	0.0602
7.	0.0602	405.	0.0602	1531.	0.0602
9.	0.0602	417.	0.0575	1534.	0.0615
10.	0.0588	419.	0.0602	1537.	0.0602
12.	0.0602	432.	0.0602	1577.	0.0602
16.	0.0602	448.	0.0602	1599.	0.0561
28.	0.0602	462.	0.0602	1604.	0.0602
30.	0.0602	467.	0.0602	1622.	0.0602
47.	0.0602	477.	0.0602	1678.	0.0602
52.	0.0602	484.	0.0602	1727.	0.0602
57.	0.0401	504.	0.0588	1731.	0.0575
62.	0.0602	505.	0.0602	1732.	0.0602
72.	0.0602	522.	0.0602	1780.	0.0602
77.	0.0602	571.	0.0588	1829.	0.0588
84.	0.0414	572.	0.0602	1830.	0.0602
86.	0.0602	630.	0.0588	1880.	0.0602
92.	0.0602	631.	0.0602	1898.	0.0602
95.	0.0561	695.	0.0602	1913.	0.0602
97.	0.0602	752.	0.0508	1972.	0.0575
108.	0.0575	755.	0.0602	1973.	0.0602
109.	0.0602	775.	0.0628	2051.	0.0602
121.	0.0548	776.	0.0602	2101.	0.0602
122.	0.0602	815.	0.0602	2164.	0.0602
127.	0.0561	880.	0.0602	2222.	0.0602
130.	0.0602	902.	0.0588	2278.	0.0588
149.	0.0602	903.	0.0602	2279.	0.0615
162.	0.0561	930.	0.0602	2297.	0.0608
164.	0.0602	994.	0.0602	2401.	0.0608

Time (min)	Rate (cu. ft/min)	Time (min)	Rate (cu. ft/min)	Time (min)	Rate (cu. ft/min)
172.	0.0561	1050.	0.0575	2425.	0.0615
174.	0.0602	1060.	0.0575	2426.	0.0602
188.	0.0602	1061.	0.0615	2486.	0.0602
199.	0.0548	1079.	0.0602	2518.	0.0588
202.	0.0602	1122.	0.0602	2519.	0.0602
222.	0.0588	1172.	0.0602	2535.	0.0588
224.	0.0602	1267.	0.0575	2536.	0.0608
234.	0.0602	1269.	0.0602	2576.	0.0602
320.	0.0588	1311.	0.0602	2602.	0.0602
322.	0.0602	1339.	0.0588	2643.	0.0602
338.	0.0602	1340.	0.0602		

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: 16MW1

X Location: 6.111E+06 ft
Y Location: 2.193E+06 ft

Partially Penetrating Well
Depth To Top Of Screen: 0. ft
Depth To Bottom Of Screen: 19.9 ft

No. of observations: 82

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
47.4	0.005	237.2	0.252	1179.3	0.629
50.2	0.01	251.3	0.263	1239.3	0.635
53.17	0.015	266.2	0.286	1299.3	0.632
56.32	0.018	281.9	0.298	1359.3	0.635
59.65	0.027	298.6	0.31	1419.3	0.64
63.18	0.028	316.3	0.331	1479.3	0.648
66.92	0.035	335.	0.346	1539.3	0.659
70.88	0.04	354.9	0.363	1599.3	0.684
75.07	0.046	375.9	0.381	1659.3	0.692
79.52	0.054	398.2	0.395	1719.3	0.704
84.22	0.06	421.8	0.412	1779.3	0.719
89.21	0.068	446.8	0.423	1839.3	0.729
94.49	0.076	473.2	0.438	1899.3	0.738
100.1	0.086	501.3	0.449	1959.3	0.749
106.	0.089	531.	0.466	2019.3	0.758
112.3	0.098	562.4	0.477	2079.3	0.763
118.9	0.112	595.7	0.49	2139.3	0.766
126.	0.116	631.	0.502	2199.3	0.769
133.4	0.129	668.4	0.517	2259.3	0.77
141.3	0.141	708.	0.531	2319.3	0.775
149.7	0.151	750.	0.542	2379.3	0.775
158.6	0.162	794.4	0.555	2439.3	0.773
168.	0.18	841.5	0.571	2499.3	0.773
177.9	0.19	891.3	0.586	2559.3	0.771
188.4	0.198	944.1	0.594	2619.3	0.767
199.6	0.201	1000.1	0.606	2679.3	0.761
211.4	0.222	1059.3	0.62		
224.	0.236	1119.3	0.623		

SOLUTION

Aquifer Model: Leaky
Solution Method: Hantush-Jacob

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	0.009332	ft^2/min
S	0.01051	
r/B	0.6	
Kz/Kr	1.	
b	31.2	ft

AUTOMATIC ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	Std. Error	
T	0.01181	0.0004255	ft^2/min
S	0.01085	0.0001129	
r/B	0.4495	0.02478	
Kz/Kr	1.	not estimated	
b	31.2	not estimated	ft

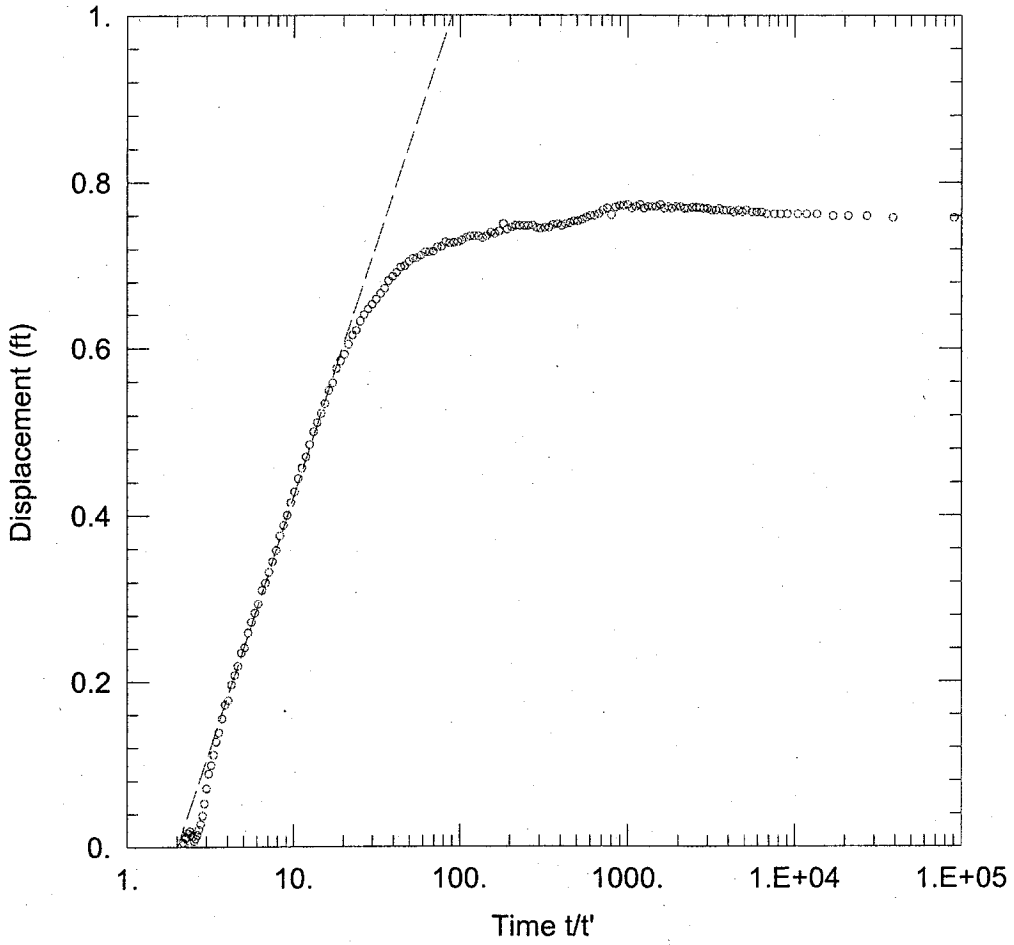
Parameter Correlations

	T	S	r/B
T	1.00	0.10	-0.99
S	0.10	1.00	-0.20
r/B	-0.99	-0.20	1.00

Residual Statistics

for weighted residuals

Sum of Squares . . . . . 0.01495 ft^2
Variance . . . . . 0.0001892 ft^2
Std. Deviation . . . . . 0.01376 ft
Mean . . . . . -0.001088 ft
No. of Residuals . . . . . 82.
No. of Estimates 3



WELL 16MPE1 CONSTANT RATE TEST

Data Set: L:\...\16mw1_REC.aqt
Date: 02/20/01 Time: 06:17:07

PROJECT INFORMATION

Company: Bechtel Navy CLEAN
Client: SWDIV
Project: CTO-178
Test Location: MCAS El Toro Site 16
Test Well: 16MPE1
Test Date: 9/28/00

AQUIFER DATA

Saturated Thickness: 31.2 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
16MPE1	6.111E+006	2.193E+006

Observation Wells

Well Name	X (ft)	Y (ft)
○ 16MW1	6.111E+006	2.193E+006

SOLUTION

Aquifer Model: Confined Solution Method: Theis (Recovery)

T = 0.01814 ft^2/min S' = 2.011

Data Set: L:\CleanII\CTO\ELTORO\CTO178\PILOT STUDY\TEST DATA\mpe1_constantrate\Aqtesolv Analyses\
Title: Well 16MPE1 Constant Rate Test
Date: 02/20/01
Time: 06:17:19

PROJECT INFORMATION

Company: Bechtel Navy CLEAN
Client: SWDIV
Project: CTO-178
Location: MCAS El Toro Site 16
Test Date: 9/28/00
Test Well: 16MPE1

AQUIFER DATA

Saturated Thickness: 31.2 ft
Anisotropy Ratio (Kz/Kr): 1.

PUMPING WELL DATA

Number of pumping wells: 1

Pumping Well No. 1: 16MPE1

X Location: 6.111E+06 ft
Y Location: 2.193E+06 ft

Fully Penetrating Well

No. of pumping periods: 2

Pumping Period Data

Time (min)	Rate (cu. ft/min)	Time (min)	Rate (cu. ft/min)
0.	0.06	2730.6	0.

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: 16MW1

X Location: 6.111E+06 ft
Y Location: 2.193E+06 ft

Partially Penetrating Well
Depth To Top Of Screen: 0. ft
Depth To Bottom Of Screen: 19.9 ft

No. of observations: 254

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
47.4	0.005	2730.7	0.7597	2760.5	0.7274
50.2	0.01	2730.8	0.7597	2762.3	0.7264
53.17	0.015	2730.8	0.7597	2764.2	0.7279
56.32	0.018	2730.8	0.762	2766.2	0.7224
59.65	0.027	2730.8	0.762	2768.3	0.7216
63.18	0.028	2730.9	0.762	2770.5	0.7166
66.92	0.035	2730.9	0.762	2772.8	0.7156
70.88	0.04	2730.9	0.762	2775.3	0.7159
75.07	0.046	2731.	0.762	2778.	0.7116
79.52	0.054	2731.	0.762	2780.8	0.7086
84.22	0.06	2731.1	0.7642	2783.8	0.7079

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
89.21	0.068	2731.1	0.7642	2786.9	0.7042
94.49	0.076	2731.1	0.7642	2790.2	0.6989
100.1	0.086	2731.2	0.7665	2793.8	0.6974
106.	0.089	2731.2	0.7642	2797.5	0.6912
112.3	0.098	2731.2	0.7665	2801.5	0.6864
118.9	0.112	2731.3	0.7642	2805.7	0.6814
126.	0.116	2731.3	0.7665	2810.1	0.6719
133.4	0.129	2731.3	0.7665	2814.8	0.6662
141.3	0.141	2731.3	0.7665	2819.8	0.6592
149.7	0.151	2731.4	0.7688	2825.1	0.6529
158.6	0.162	2731.4	0.7665	2830.7	0.6469
168.	0.18	2731.5	0.7665	2836.6	0.6399
177.9	0.19	2731.5	0.7688	2842.9	0.6322
188.4	0.198	2731.6	0.7688	2849.5	0.6209
199.6	0.201	2731.6	0.7698	2856.6	0.6154
211.4	0.222	2731.7	0.7698	2864.	0.6042
224.	0.236	2731.7	0.7698	2871.9	0.5919
237.2	0.252	2731.8	0.7688	2880.3	0.5842
251.3	0.263	2731.9	0.7688	2889.2	0.5754
266.2	0.286	2731.9	0.771	2898.6	0.5579
281.9	0.298	2732.	0.771	2908.5	0.5489
298.6	0.31	2732.1	0.7688	2919.	0.5336
316.3	0.331	2732.2	0.771	2930.2	0.5216
335.	0.346	2732.3	0.7688	2942.	0.5106
354.9	0.363	2732.4	0.7733	2954.6	0.4999
375.9	0.381	2732.5	0.771	2967.8	0.4846
398.2	0.395	2732.6	0.771	2981.9	0.4696
421.8	0.412	2732.7	0.771	2996.8	0.4566
446.8	0.423	2732.8	0.7688	3012.5	0.4439
473.2	0.438	2732.9	0.7733	3029.2	0.4279
501.3	0.449	2733.1	0.771	3046.9	0.4149
531.	0.466	2733.2	0.7688	3065.6	0.3996
562.4	0.477	2733.3	0.7733	3085.5	0.3876
595.7	0.49	2733.5	0.772	3106.5	0.3752
631.	0.502	2733.7	0.772	3128.8	0.3576
668.4	0.517	2733.8	0.7698	3152.4	0.3438
708.	0.531	2734.	0.7607	3177.4	0.3318
750.	0.542	2734.2	0.7688	3203.8	0.3188
794.4	0.555	2734.4	0.7665	3231.9	0.3104
841.5	0.571	2734.7	0.762	3261.6	0.2936
891.3	0.586	2734.9	0.7597	3293.	0.2828
944.1	0.594	2735.2	0.7597	3326.3	0.2716
1000.1	0.606	2735.4	0.7574	3361.6	0.2586
1059.3	0.62	2735.7	0.7552	3399.	0.2408
1119.3	0.623	2736.	0.7532	3438.6	0.2347
1179.3	0.629	2736.3	0.7532	3480.6	0.2187
1239.3	0.635	2736.6	0.7509	3525.	0.2077
1299.3	0.632	2737.	0.7499	3572.1	0.196
1359.3	0.635	2737.4	0.7476	3621.9	0.1772
1419.3	0.64	2737.8	0.7499	3674.7	0.1715
1479.3	0.648	2738.2	0.7486	3730.7	0.1549
1539.3	0.659	2738.6	0.7454	3789.9	0.1379
1599.3	0.684	2739.1	0.7454	3849.9	0.1268
1659.3	0.692	2739.6	0.7441	3909.9	0.1111
1719.3	0.704	2740.1	0.7454	3969.9	0.09886
1779.3	0.719	2740.7	0.7479	4029.9	0.08826
1839.3	0.729	2741.3	0.7476	4089.9	0.07073
1899.3	0.738	2741.9	0.7476	4149.9	0.05246
1959.3	0.749	2742.6	0.7476	4209.9	0.03759
2019.3	0.758	2743.3	0.7476	4269.9	0.02705
2079.3	0.763	2744.	0.7456	4329.9	0.02065
2139.3	0.766	2744.8	0.7431	4389.9	0.01425
2199.3	0.769	2745.6	0.7499	4449.9	0.009778

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2259.3	0.77	2746.5	0.7411	4509.9	0.00698
2319.3	0.775	2747.5	0.7378	4569.9	0.01245
2379.3	0.775	2748.5	0.7394	4629.9	0.01465
2439.3	0.773	2749.5	0.7351	4689.9	0.01865
2499.3	0.773	2750.6	0.7328	4749.9	0.01612
2559.3	0.771	2751.8	0.7351	4809.9	0.01692
2619.3	0.767	2753.1	0.7351	4869.9	0.01092
2679.3	0.761	2754.4	0.7351	4929.9	0.01012
2730.6	0.7597	2755.8	0.7331	4989.9	0.003522
2730.7	0.7574	2757.3	0.7304	5049.9	0.005522
2730.7	0.7574	2758.9	0.7281		

SOLUTION

Aquifer Model: Confined
Solution Method: Theis (Recovery)

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	0.01814	ft^2/min
S'	2.011	

AUTOMATIC ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	Std. Error	
T	0.01814	8.809E-05	ft^2/min
S'	2.011	0.01436	

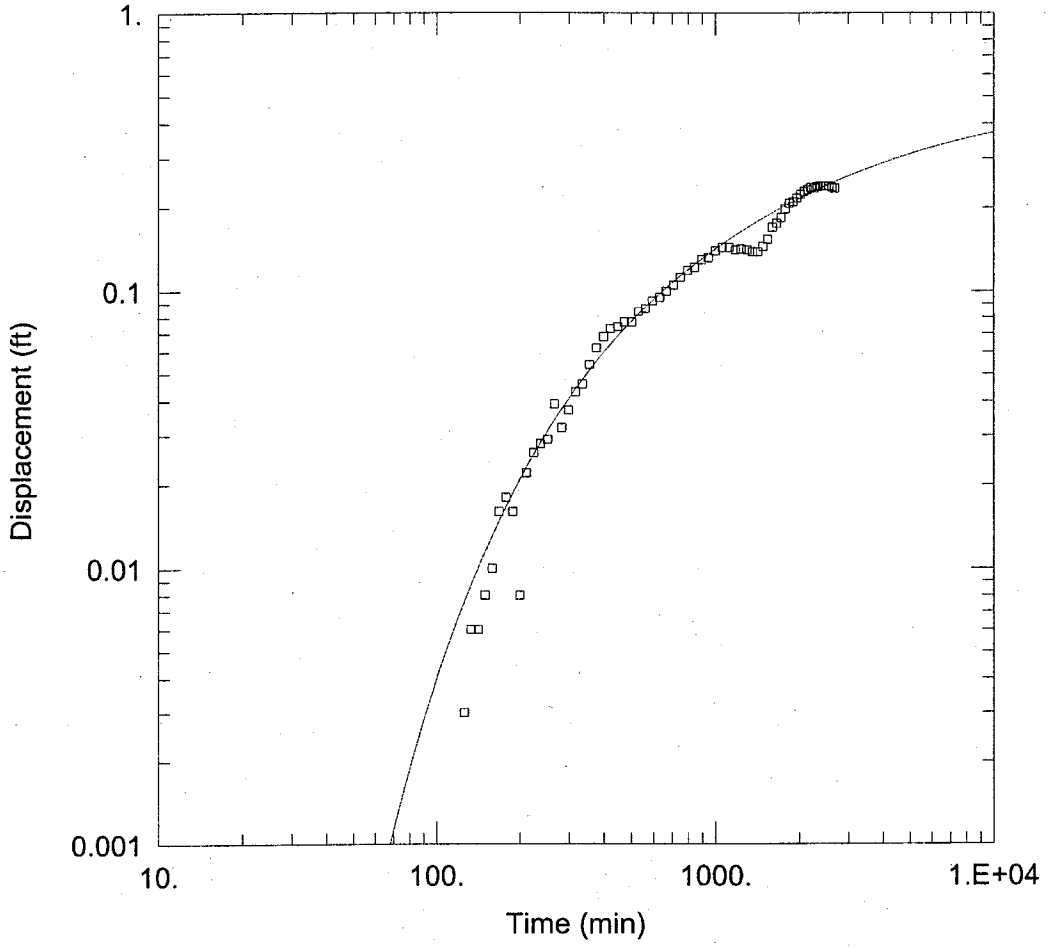
Parameter Correlations

	T	S'
T	1.00	-0.95
S'	-0.95	1.00

Residual Statistics

for weighted residuals

Sum of Squares . . . . . 0.0003282 ft^2
Variance . . . . . 1.094E-05 ft^2
Std. Deviation . . . . . 0.003308 ft
Mean . . . . . 1.475E-17 ft
No. of Residuals . . . . . 32.
No. of Estimates 2



WELL 16MPE1 CONSTANT RATE TEST

Data Set: L:\...\16MW6.aqt
Date: 02/20/01 Time: 06:22:05

PROJECT INFORMATION

Company: Bechtel Navy CLEAN
Client: SWDIV
Project: CTO-178
Test Location: MCAS El Toro Site 16
Test Well: 16MPE1
Test Date: 9/28/00

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
16MPE1	6.111E+006	2.193E+006

Observation Wells

Well Name	X (ft)	Y (ft)
▫ 16MW6	6.111E+006	2.193E+006

SOLUTION

Aquifer Model: Leaky
Solution Method: Hantush-Jacob

T = 0.0343 ft^2/min
r/B = 0.2509
b = 31.2 ft

S = 0.01698
Kz/Kr = 1.

Data Set: L:\CleanII\CTO\ELTORO\CTO178\PILOT STUDY\TEST DATA\mpe1_constantrate\Aqtesolv Analyses\
Title: Well 16MPE1 Constant Rate Test
Date: 02/20/01
Time: 06:22:25

PROJECT INFORMATION

Company: Bechtel Navy CLEAN
Client: SWDIV
Project: CTO-178
Location: MCAS El Toro Site 16
Test Date: 9/28/00
Test Well: 16MPE1

AQUIFER DATA

Saturated Thickness: 31.2 ft
Anisotropy Ratio (Kz/Kr): 1.

PUMPING WELL DATA

Number of pumping wells: 1

Pumping Well No. 1: 16MPE1

X Location: 6.111E+06 ft
Y Location: 2.193E+06 ft

Fully Penetrating Well

No. of pumping periods: 122

Pumping Period Data

Time (min)	Rate (cu. ft/min)	Time (min)	Rate (cu. ft/min)	Time (min)	Rate (cu. ft/min)
0.25	0.2005	352.	0.0602	1427.	0.0602
2.	0.0602	365.	0.0602	1503.	0.0608
5.	0.0588	377.	0.0602	1504.	0.0602
7.	0.0602	405.	0.0602	1531.	0.0602
9.	0.0602	417.	0.0575	1534.	0.0615
10.	0.0588	419.	0.0602	1537.	0.0602
12.	0.0602	432.	0.0602	1577.	0.0602
16.	0.0602	448.	0.0602	1599.	0.0561
28.	0.0602	462.	0.0602	1604.	0.0602
30.	0.0602	467.	0.0602	1622.	0.0602
47.	0.0602	477.	0.0602	1678.	0.0602
52.	0.0602	484.	0.0602	1727.	0.0602
57.	0.0401	504.	0.0588	1731.	0.0575
62.	0.0602	505.	0.0602	1732.	0.0602
72.	0.0602	522.	0.0602	1780.	0.0602
77.	0.0602	571.	0.0588	1829.	0.0588
84.	0.0414	572.	0.0602	1830.	0.0602
86.	0.0602	630.	0.0588	1880.	0.0602
92.	0.0602	631.	0.0602	1898.	0.0602
95.	0.0561	695.	0.0602	1913.	0.0602
97.	0.0602	752.	0.0508	1972.	0.0575
108.	0.0575	755.	0.0602	1973.	0.0602
109.	0.0602	775.	0.0628	2051.	0.0602
121.	0.0548	776.	0.0602	2101.	0.0602
122.	0.0602	815.	0.0602	2164.	0.0602
127.	0.0561	880.	0.0602	2222.	0.0602
130.	0.0602	902.	0.0588	2278.	0.0588
149.	0.0602	903.	0.0602	2279.	0.0615
162.	0.0561	930.	0.0602	2297.	0.0608
164.	0.0602	994.	0.0602	2401.	0.0608

Time (min)	Rate (cu. ft/min)	Time (min)	Rate (cu. ft/min)	Time (min)	Rate (cu. ft/min)
172.	0.0561	1050.	0.0575	2425.	0.0615
174.	0.0602	1060.	0.0575	2426.	0.0602
188.	0.0602	1061.	0.0615	2486.	0.0602
199.	0.0548	1079.	0.0602	2518.	0.0588
202.	0.0602	1122.	0.0602	2519.	0.0602
222.	0.0588	1172.	0.0602	2535.	0.0588
224.	0.0602	1267.	0.0575	2536.	0.0608
234.	0.0602	1269.	0.0602	2576.	0.0602
320.	0.0588	1311.	0.0602	2602.	0.0602
322.	0.0602	1339.	0.0588	2643.	0.0602
338.	0.0602	1340.	0.0602		

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: 16MW6

X Location: 6.111E+06 ft
Y Location: 2.193E+06 ft

Partially Penetrating Well
Depth To Top Of Screen: 0. ft
Depth To Bottom Of Screen: 29.8 ft

No. of observations: 65

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
126.	0.003	446.8	0.074	1479.3	0.145
133.4	0.006	473.2	0.077	1539.3	0.154
141.3	0.006	501.3	0.077	1599.3	0.17
149.7	0.008	531.	0.084	1659.3	0.176
158.6	0.01	562.4	0.086	1719.3	0.184
168.	0.016	595.7	0.092	1779.3	0.198
177.9	0.018	631.	0.095	1839.3	0.207
188.4	0.016	668.4	0.1	1899.3	0.21
199.6	0.008	708.	0.105	1959.3	0.216
211.4	0.022	750.	0.112	2019.3	0.223
224.	0.026	794.4	0.119	2079.3	0.228
237.2	0.028	841.5	0.122	2139.3	0.232
251.3	0.029	891.3	0.13	2199.3	0.236
266.2	0.039	944.1	0.132	2259.3	0.235
281.9	0.032	1000.1	0.14	2319.3	0.238
298.6	0.037	1059.3	0.144	2379.3	0.239
316.3	0.043	1119.3	0.144	2439.3	0.239
335.	0.046	1179.3	0.141	2499.3	0.239
354.9	0.054	1239.3	0.142	2559.3	0.239
375.9	0.062	1299.3	0.141	2619.3	0.237
398.2	0.068	1359.3	0.139	2679.3	0.235
421.8	0.073	1419.3	0.139		

SOLUTION

Aquifer Model: Leaky
Solution Method: Hantush-Jacob

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	0.0343	ft^2/min

S	0.01698	
r/B	0.2509	
Kz/Kr	1.	
b	31.2	ft

AUTOMATIC ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	Std. Error	
T	0.0343	0.002693	ft^2/min
S	0.01698	0.0004028	
r/B	0.2509	0.1127	
Kz/Kr	1.	not estimated	
b	31.2	not estimated	ft

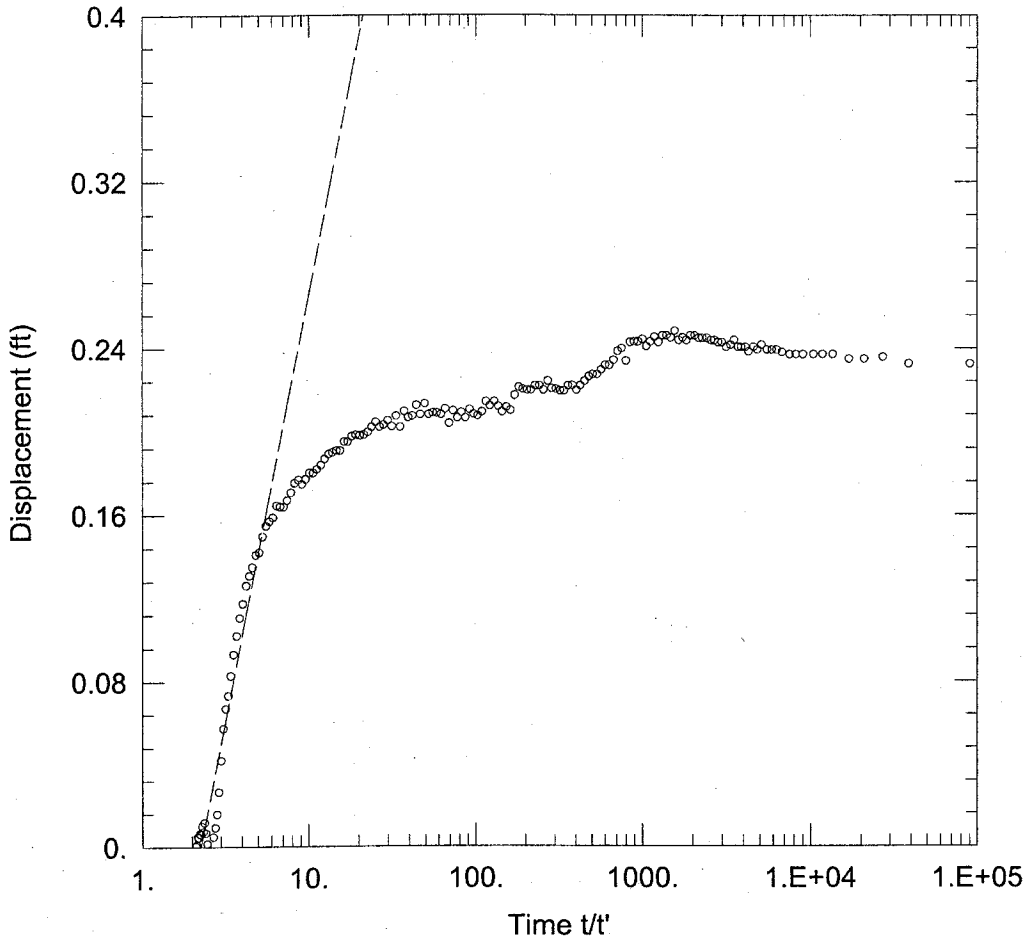
Parameter Correlations

	T	S	r/B
T	1.00	0.78	-0.98
S	0.78	1.00	-0.87
r/B	-0.98	-0.87	1.00

Residual Statistics

for weighted residuals

Sum of Squares . . . . . 0.001367 ft^2
Variance . . . . . 2.679E-05 ft^2
Std. Deviation . . . . . 0.005176 ft
Mean . . . . . -0.0001757 ft
No. of Residuals . . . . . 54.
No. of Estimates 3



WELL 16MPE1 CONSTANT RATE TEST

Data Set: L:\...\16mw6_REC.aqt
Date: 02/20/01 Time: 06:31:30

PROJECT INFORMATION

Company: Bechtel Navy CLEAN
Client: SWDIV
Project: CTO-178
Test Location: MCAS El Toro Site 16
Test Well: 16MPE1
Test Date: 9/28/00

AQUIFER DATA

Saturated Thickness: 31.2 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
16MPE1	6.111E+006	2.193E+006

Observation Wells

Well Name	X (ft)	Y (ft)
◦ 16MW6	6.111E+006	2.193E+006

SOLUTION

Aquifer Model: Confined Solution Method: Theis (Recovery)

T = 0.02663 ft^2/min S' = 2.271

Data Set: L:\CleanII\CTO\ELTORO\CTO178\PILOT STUDY\TEST DATA\mpe1_constantrate\Aqtesolv Analyses\
Title: Well 16MPE1 Constant Rate Test
Date: 02/20/01
Time: 06:31:48

PROJECT INFORMATION

Company: Bechtel Navy CLEAN
Client: SWDIV
Project: CTO-178
Location: MCAS El Toro Site 16
Test Date: 9/28/00
Test Well: 16MPE1

AQUIFER DATA

Saturated Thickness: 31.2 ft
Anisotropy Ratio (Kz/Kr): 1.

PUMPING WELL DATA

Number of pumping wells: 1

Pumping Well No. 1: 16MPE1

X Location: 6.111E+06 ft
Y Location: 2.193E+06 ft

Fully Penetrating Well

No. of pumping periods: 2

Pumping Period Data

Time (min)	Rate (cu. ft/min)	Time (min)	Rate (cu. ft/min)
0.	0.06	2730.6	0.

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: 16MW6

X Location: 6.111E+06 ft
Y Location: 2.193E+06 ft

Partially Penetrating Well
Depth To Top Of Screen: 0. ft
Depth To Bottom Of Screen: 29.8 ft

No. of observations: 236

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
126.	0.003	2731.1	0.2392	2770.5	0.2036
133.4	0.006	2731.1	0.2392	2772.8	0.2106
141.3	0.006	2731.2	0.2415	2775.3	0.2079
149.7	0.008	2731.2	0.2392	2778.	0.2086
158.6	0.01	2731.2	0.2405	2780.8	0.2086
168.	0.016	2731.3	0.2382	2783.8	0.2079
177.9	0.018	2731.3	0.2405	2786.9	0.2132
188.4	0.016	2731.3	0.2405	2790.2	0.2079
199.6	0.008	2731.3	0.2405	2793.8	0.2124
211.4	0.022	2731.4	0.2438	2797.5	0.2072
224.	0.026	2731.4	0.2415	2801.5	0.2064

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
237.2	0.028	2731.5	0.2405	2805.7	0.2094
251.3	0.029	2731.5	0.2428	2810.1	0.2019
266.2	0.039	2731.6	0.2428	2814.8	0.2072
281.9	0.032	2731.6	0.2438	2819.8	0.2022
298.6	0.037	2731.7	0.2438	2825.1	0.2049
316.3	0.043	2731.7	0.2448	2830.7	0.2029
335.	0.046	2731.8	0.2448	2836.6	0.2019
354.9	0.054	2731.9	0.2448	2842.9	0.2042
375.9	0.062	2731.9	0.246	2849.5	0.2019
398.2	0.068	2732.	0.246	2856.6	0.1994
421.8	0.073	2732.1	0.2438	2864.	0.1982
446.8	0.074	2732.2	0.245	2871.9	0.1979
473.2	0.077	2732.3	0.2438	2880.3	0.1982
501.3	0.077	2732.4	0.2483	2889.2	0.1974
531.	0.084	2732.5	0.245	2898.6	0.1949
562.4	0.086	2732.6	0.246	2908.5	0.1949
595.7	0.092	2732.7	0.246	2919.	0.1906
631.	0.095	2732.8	0.2428	2930.2	0.1906
668.4	0.1	2732.9	0.2453	2942.	0.1896
708.	0.105	2733.1	0.243	2954.6	0.1889
750.	0.112	2733.2	0.2408	2967.8	0.1866
794.4	0.119	2733.3	0.2443	2981.9	0.1836
841.5	0.122	2733.5	0.243	2996.8	0.1816
891.3	0.13	2733.7	0.243	3012.5	0.1799
944.1	0.132	2733.8	0.2428	3029.2	0.1799
1000.1	0.14	2734.	0.2337	3046.9	0.1769
1059.3	0.144	2734.2	0.2398	3065.6	0.1746
1119.3	0.144	2734.4	0.2385	3085.5	0.1766
1179.3	0.141	2734.7	0.234	3106.5	0.1752
1239.3	0.142	2734.9	0.2317	3128.8	0.1706
1299.3	0.141	2735.2	0.2317	3152.4	0.1668
1359.3	0.139	2735.4	0.2294	3177.4	0.1638
1419.3	0.139	2735.7	0.2272	3203.8	0.1638
1479.3	0.145	2736.	0.2272	3231.9	0.1644
1539.3	0.154	2736.3	0.2262	3261.6	0.1586
1599.3	0.17	2736.6	0.2239	3293.	0.1568
1659.3	0.176	2737.	0.2219	3326.3	0.1546
1719.3	0.184	2737.4	0.2196	3361.6	0.1496
1779.3	0.198	2737.8	0.2219	3399.	0.1418
1839.3	0.207	2738.2	0.2216	3438.6	0.1407
1899.3	0.21	2738.6	0.2194	3480.6	0.1347
1959.3	0.216	2739.1	0.2194	3525.	0.1307
2019.3	0.223	2739.6	0.2201	3572.1	0.126
2079.3	0.228	2740.1	0.2204	3621.9	0.1172
2139.3	0.232	2740.7	0.2239	3674.7	0.1105
2199.3	0.236	2741.3	0.2196	3730.7	0.1019
2259.3	0.235	2741.9	0.2216	3789.9	0.09291
2319.3	0.238	2742.6	0.2216	3849.9	0.08278
2379.3	0.239	2743.3	0.2196	3909.9	0.07312
2439.3	0.239	2744.	0.2196	3969.9	0.06686
2499.3	0.239	2744.8	0.2201	4029.9	0.05726
2559.3	0.239	2745.6	0.2209	4089.9	0.04173
2619.3	0.237	2746.5	0.2171	4149.9	0.02646
2679.3	0.235	2747.5	0.2098	4209.9	0.01559
2730.6	0.2347	2748.5	0.2114	4269.9	0.009054
2730.7	0.2324	2749.5	0.2091	4329.9	0.00465
2730.7	0.2324	2750.6	0.2118	4569.9	0.001448
2730.7	0.2357	2751.8	0.2141	4629.9	0.00665
2730.8	0.2347	2753.1	0.2121	4689.9	0.01165
2730.8	0.2347	2754.4	0.2141	4749.9	0.007118
2730.8	0.237	2755.8	0.2091	4809.9	0.009916
2730.8	0.237	2757.3	0.2074	4869.9	0.005916
2730.9	0.237	2758.9	0.2081	4929.9	0.006118

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
2730.9	0.237	2760.5	0.2104	4989.9	0.004522
2730.9	0.237	2762.3	0.2064	5049.9	0.004522
2731.	0.237	2764.2	0.2089	5109.9	0.000788
2731.	0.238	2766.2	0.2064	5169.9	0.000256
2731.1	0.2392	2768.3	0.2096		

SOLUTION

Aquifer Model: Confined
Solution Method: Theis (Recovery)

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	
T	0.02663	ft^2/min
S'	2.271	

AUTOMATIC ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	Std. Error	
T	0.02663	0.002288	ft^2/min
S'	2.271	0.05069	

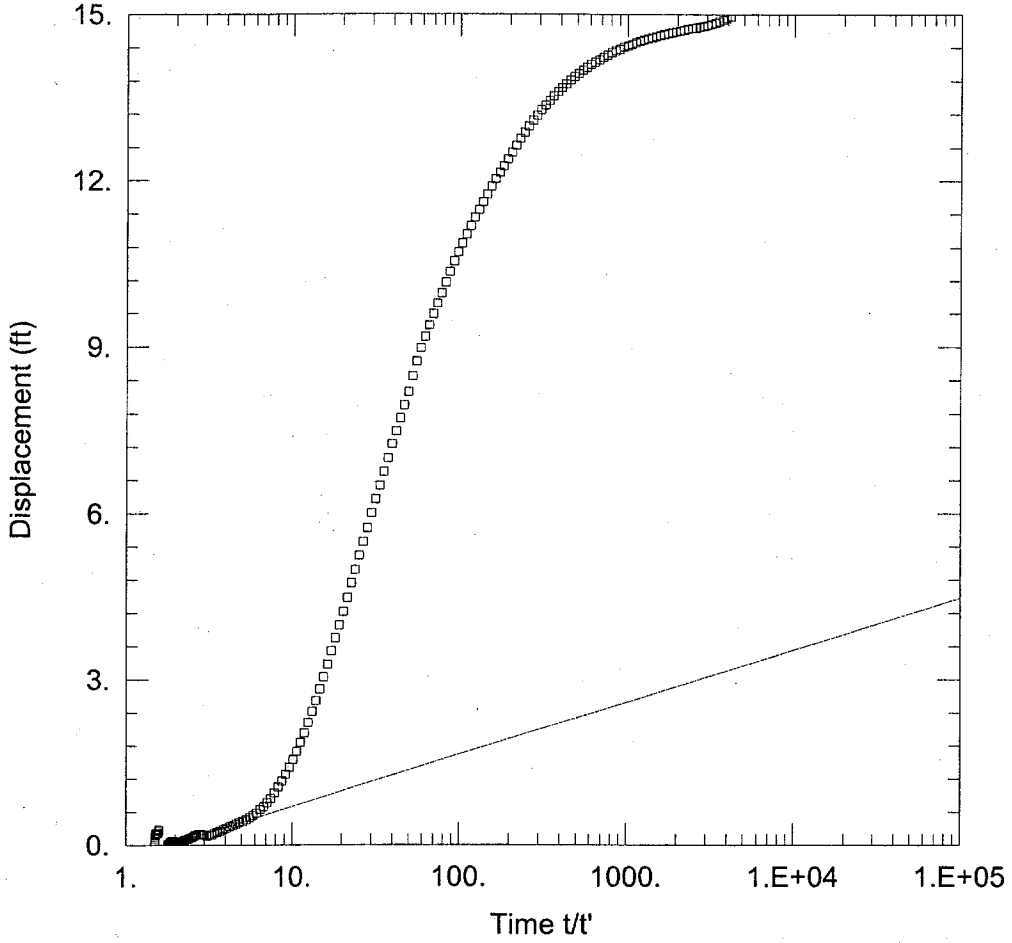
Parameter Correlations

	T	S'
T	1.00	-0.69
S'	-0.69	1.00

Residual Statistics

for weighted residuals

Sum of Squares . . . . . 0.004022 ft^2
Variance . . . . . 0.0001915 ft^2
Std. Deviation . . . . . 0.01384 ft
Mean . . . . . -2.202E-17 ft
No. of Residuals . . . . . 23.
No. of Estimates 2



WELL 16MPE1 CONSTANT RATE TEST

Data Set: L:\...\16MPE1_REC.aqt
Date: 02/20/01 Time: 06:18:59

PROJECT INFORMATION

Company: Bechtel Navy CLEAN
Client: SWDIV
Project: CTO-178
Test Location: MCAS El Toro Site 16
Test Well: 16MPE1
Test Date: 9/28/00

AQUIFER DATA

Saturated Thickness: 31.2 ft Anisotropy Ratio (Kz/Kr): 1.

WELL DATA

Pumping Wells

Well Name	X (ft)	Y (ft)
16MPE1	6.111E+006	2.193E+006

Observation Wells

Well Name	X (ft)	Y (ft)
▫ 16MPE1	6.111E+006	2.193E+006

SOLUTION

Aquifer Model: Confined Solution Method: Theis (Recovery)

T = 0.01165 ft^2/min S' = 1.826

Data Set: L:\CleanII\CTO\ELTORO\CTO178\PILOT STUDY\TEST DATA\mpe1_constantrate\Aqtesolv Analyses\
Title: Well 16MPE1 Constant Rate Test
Date: 02/20/01
Time: 06:19:18

PROJECT INFORMATION

Company: Bechtel Navy CLEAN
Client: SWDIV
Project: CTO-178
Location: MCAS El Toro Site 16
Test Date: 9/28/00
Test Well: 16MPE1

AQUIFER DATA

Saturated Thickness: 31.2 ft
Anisotropy Ratio (Kz/Kr): 1.

PUMPING WELL DATA

Number of pumping wells: 1

Pumping Well No. 1: 16MPE1

X Location: 6.111E+06 ft
Y Location: 2.193E+06 ft

Fully Penetrating Well

No. of pumping periods: 2

Pumping Period Data

Time (min)	Rate (cu. ft/min)	Time (min)	Rate (cu. ft/min)
0.0327	0.06	2730.6	0.

OBSERVATION WELL DATA

Number of observation wells: 1

Observation Well No. 1: 16MPE1

X Location: 6.111E+06 ft
Y Location: 2.193E+06 ft

Fully Penetrating Well

No. of observations: 383

Observation Data

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.0327	0.002	298.6	10.98	2747.5	12.02
0.0653	0.041	316.3	11.16	2748.5	11.89
0.098	0.099	335.	11.39	2749.5	11.75
0.1307	0.169	354.9	11.56	2750.6	11.61
0.1633	0.249	375.9	11.64	2751.8	11.47
0.196	0.331	398.2	11.8	2753.1	11.33
0.2287	0.4	421.8	11.98	2754.4	11.18
0.2613	0.453	446.8	12.21	2755.8	11.03
0.294	0.517	473.2	12.42	2757.3	10.87
0.3267	0.562	501.3	12.58	2758.9	10.71
0.3593	0.612	531.	12.84	2760.5	10.54
0.392	0.642	562.4	13.06	2762.3	10.35
0.4247	0.677	595.7	13.22	2764.2	10.16

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
0.4573	0.703	631.	13.35	2766.2	9.967
0.49	0.733	668.4	13.7	2768.3	9.781
0.5227	0.748	708.	13.86	2770.5	9.587
0.5553	0.763	750.	13.58	2772.8	9.385
0.588	0.776	794.4	14.29	2775.3	9.182
0.6207	0.793	841.5	14.46	2778.	8.975
0.6533	0.795	891.3	14.53	2780.8	8.738
0.6865	0.813	944.1	14.64	2783.8	8.47
0.7217	0.828	1000.1	14.86	2786.9	8.185
0.759	0.837	1059.3	14.94	2790.2	7.948
0.7985	0.854	1119.3	15.14	2793.8	7.719
0.8403	0.867	1179.3	15.25	2797.5	7.486
0.8847	0.876	1239.3	15.04	2801.5	7.253
0.9317	0.894	1299.3	15.16	2805.7	6.999
0.9815	0.904	1359.3	15.4	2810.1	6.753
1.034	0.927	1419.3	15.58	2814.8	6.502
1.09	0.953	1479.3	15.81	2819.8	6.256
1.149	0.968	1539.3	15.98	2825.1	6.006
1.212	0.992	1599.3	16.14	2830.7	5.738
1.278	1.01	1659.3	16.13	2836.6	5.484
1.349	1.038	1719.3	16.27	2842.9	5.237
1.423	1.068	1779.3	16.31	2849.5	4.983
1.502	1.087	1839.3	16.4	2856.6	4.741
1.586	1.105	1899.3	16.47	2864.	4.473
1.674	1.118	1959.3	16.49	2871.9	4.223
1.768	1.131	2019.3	16.6	2880.3	3.981
1.867	1.144	2079.3	16.64	2889.2	3.747
1.973	1.152	2139.3	16.65	2898.6	3.514
2.084	1.165	2199.3	16.63	2908.5	3.268
2.202	1.183	2259.3	16.62	2919.	3.043
2.328	1.191	2319.3	16.73	2930.2	2.827
2.46	1.206	2379.3	16.75	2942.	2.62
2.6	1.217	2439.3	16.68	2954.6	2.417
2.749	1.232	2499.3	16.51	2967.8	2.222
2.907	1.247	2559.3	16.52	2981.9	2.032
3.074	1.269	2619.3	16.38	2996.8	1.859
3.251	1.291	2679.3	16.34	3012.5	1.699
3.438	1.305	2730.6	16.32	3029.2	1.548
3.636	1.324	2730.7	16.27	3046.9	1.406
3.846	1.338	2730.7	16.18	3065.6	1.28
4.069	1.365	2730.7	16.09	3085.5	1.163
4.305	1.385	2730.8	15.99	3106.5	1.055
4.555	1.402	2730.8	15.9	3128.8	0.9467
4.819	1.425	2730.8	15.81	3152.4	0.8477
5.1	1.45	2730.8	15.72	3177.4	0.7697
5.396	1.483	2730.9	15.65	3203.8	0.6967
5.711	1.52	2730.9	15.57	3231.9	0.6447
6.044	1.559	2730.9	15.5	3261.6	0.5797
6.397	1.593	2731.	15.43	3293.	0.5367
6.771	1.621	2731.	15.36	3326.3	0.4977
7.167	1.653	2731.1	15.3	3361.6	0.4587
7.586	1.703	2731.1	15.24	3399.	0.4287
8.031	1.742	2731.1	15.18	3438.6	0.4067
8.501	1.792	2731.2	15.12	3480.6	0.3807
9.	1.843	2731.2	15.07	3525.	0.3507
9.528	1.9	2731.2	15.03	3572.1	0.3287
10.09	1.973	2731.3	15.	3621.9	0.3027
10.68	2.043	2731.3	14.96	3674.7	0.2817
11.31	2.119	2731.3	14.93	3730.7	0.2507
11.97	2.181	2731.3	14.9	3789.9	0.2297
12.68	2.228	2731.4	14.87	3849.9	0.2077
13.42	2.29	2731.4	14.84	3909.9	0.1817
14.21	2.349	2731.5	14.82	3969.9	0.1727

Time (min)	Displacement (ft)	Time (min)	Displacement (ft)	Time (min)	Displacement (ft)
15.05	2.413	2731.5	14.8	4029.9	0.1647
15.94	2.479	2731.6	14.78	4089.9	0.1857
16.87	2.563	2731.6	14.77	4149.9	0.1907
17.87	2.65	2731.7	14.75	4209.9	0.1987
18.92	2.721	2731.7	14.75	4269.9	0.1947
20.04	2.818	2731.8	14.73	4329.9	0.1817
21.22	2.905	2731.9	14.72	4389.9	0.1727
22.47	3.006	2731.9	14.7	4449.9	0.1557
23.8	3.097	2732.	14.68	4509.9	0.1387
25.2	3.188	2732.1	14.67	4569.9	0.1297
26.69	3.287	2732.2	14.65	4629.9	0.1167
28.27	3.376	2732.3	14.63	4689.9	0.1037
29.94	3.458	2732.4	14.62	4749.9	0.1037
31.71	3.547	2732.5	14.6	4809.9	0.0957
33.58	3.642	2732.6	14.57	4869.9	0.0867
35.57	3.737	2732.7	14.56	4929.9	0.0737
37.67	3.824	2732.8	14.53	4989.9	0.0647
39.9	3.917	2732.9	14.51	5049.9	0.0607
42.25	4.02	2733.1	14.48	5109.9	0.0567
44.75	4.102	2733.2	14.46	5169.9	0.0437
47.4	4.177	2733.3	14.43	5229.9	0.0307
50.2	4.259	2733.5	14.41	5289.9	0.0127
53.17	4.323	2733.7	14.37	5349.9	0.000699
56.32	4.353	2733.8	14.34	5409.9	0.004699
59.65	4.384	2734.	14.31	5469.9	0.0307
63.18	4.551	2734.2	14.26	5529.9	0.0517
66.92	4.784	2734.4	14.22	5589.9	0.0697
70.88	5.	2734.7	14.18	5649.9	0.0737
75.07	5.201	2734.9	14.14	5709.9	0.0647
79.52	5.363	2735.2	14.1	5769.9	0.0567
84.22	5.453	2735.4	14.04	5829.9	0.0517
89.21	5.671	2735.7	13.99	5889.9	0.0387
94.49	5.933	2736.	13.93	5949.9	0.0257
100.1	6.233	2736.3	13.88	6009.9	0.0177
106.	6.52	2736.6	13.81	6069.9	0.0127
112.3	6.792	2737.	13.74	6129.9	0.004699
118.9	7.054	2737.4	13.68	7329.9	0.2767
126.	7.295	2737.8	13.6	7389.9	0.2467
133.4	7.571	2738.2	13.53	7449.9	0.2207
141.3	7.869	2738.6	13.44	7509.9	0.2167
149.7	8.175	2739.1	13.36	7569.9	0.2077
158.6	8.423	2739.6	13.27	7629.9	0.2037
168.	8.657	2740.1	13.18	7689.9	0.2117
177.9	8.907	2740.7	13.08	7749.9	0.2077
188.4	9.17	2741.3	12.98	7809.9	0.1987
199.6	9.404	2741.9	12.87	7869.9	0.1987
211.4	9.724	2742.6	12.76	7929.9	0.1907
224.	9.985	2743.3	12.63	7989.9	0.1727
237.2	10.23	2744.	12.51	8049.9	0.1477
251.3	10.45	2744.8	12.38	8109.9	0.1127
266.2	10.68	2745.6	12.26	8169.9	0.0437
281.9	10.85	2746.5	12.14		

SOLUTION

Aquifer Model: Confined
Solution Method: Theis (Recovery)

VISUAL ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate

T	0.008582	ft^2/min
S'	2.338	

AUTOMATIC ESTIMATION RESULTS

Estimated Parameters

Parameter	Estimate	Std. Error	
T	0.01165	0.0003588	ft^2/min
S'	1.826	0.0302	

Parameter Correlations

	T	S'
T	1.00	-0.75
S'	-0.75	1.00

Residual Statistics

for weighted residuals

Sum of Squares . . . . . 0.05123 ft^2
Variance . . . . . 0.001025 ft^2
Std. Deviation . . . . . 0.03201 ft
Mean . . . . . 1.645E-17 ft
No. of Residuals . . . . . 52.
No. of Estimates 2

APPENDIX C

MASS REMOVAL ESTIMATES

Appendix C
MASS REMOVAL ESTIMATES

This appendix describes the analytical methods used to estimate the VOC mass removed during the MPE pilot testing. The amount of mass removed was estimated using VOC vapor concentrations and airflow rate, dissolved VOC concentrations in groundwater and pumping rates, and times of operation.

C1 SOIL GAS VOC MASS REMOVAL

The VOC mass removal rates in soil gas were estimated by multiplying the time of operation for each period, the average vapor flow rate for each period, and the average VOC concentration for each period. The VOC concentrations were obtained from the laboratory analyses of vapor samples collected from the extraction vapor stream. The mass of the two analytes with the highest VOC concentrations, TCE and Freon 113, were calculated separately. These two analytes accounted for approximately 93 percent, on average, of the total VOC mass removed in soil gas. The average vapor flow rates and average VOC concentrations were calculated by taking the average of the initial and final values for each period. The period for a given sample was defined as the time between the previous sample (time *t-1*) and the given sample (time *t*): Period = Time $_t$ – Time $_{t-1}$. Mass removed was calculated using the SVE step test and MPE test data.

The vapor flow rate was recorded near the wellhead in actual cubic feet per minute (acfm). Conversion of the flow rate to standard cubic feet per minute (scfm) was necessary to account for the air pressure differential from sea level to the site elevation, the applied vacuum at the well, and the vapor stream temperature. The following equation combining the two corrections was used (Kuo 1998; USACE 1995):

$$Qscfm = Qacfm \times \left(\frac{Patm - Vac}{Pstd}\right) \times \left(\frac{460 + {}^{\circ}Fstd}{460 + {}^{\circ}F}\right)$$

where

Qscfm = airflow in standard cubic feet per minute (scfm)
Qacfm = airflow in actual cubic feet per minute (acfm), measured at wellhead
Patm = measured atmospheric pressure, inches water absolute = 403.62 inches water (average during testing)
Pstd = atmospheric pressure under standard conditions (at sea level), inches water absolute = 406.63 inches water
Vac = measured vacuum at wellhead, inches water absolute (*Patm* absolute minus *Vac* gauge)
460° = conversion to degrees Rankine
°*Fstd* = temperature under standard conditions, degrees Fahrenheit = 68 °F
°*F* = temperature of the influent vapor stream, degrees Fahrenheit (between 52 and 64 degrees, with an average of 57 degrees F)

Table C-1 shows the VOC mass removed calculations for total VOCs, TCE, and Freon 113.

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Table C-1
Summary of VOC Mass Removed in Soil Gas

Sample Date and Time	Elapsed Time Into Test (minutes)	Elapsed Time (days)	Flow[a] (acfm)	Flow[a,b] (scfm)	Volume of Air Removed[c] (ft^3)	Cumulative Volume of Air Removed (ft^3)	TCE (µg/L)	TCE Mass Removed[d] (lb)	Cumulative TCE Mass Removed (lb)	Freon 113 (µg/L)	Freon 113 Mass Removed[d] (lb)	Cumulative Freon 113 Mass Removed (lb)	Total VOCs (µg/L)	VOCs Mass Removed[d] (lb)	Cumulative VOC Mass Removed (lb)
SVE Test (started on 10/05/00 at 11:54)															
10/05/00 12:13	199[e]	0.14[e]	37.9	35.9	7,144	7,144	120	0.05	0.05	260	0.12	0.12	437	0.19	0.19
10/05/00 17:55	186[e]	0.13[e]	85.6	76.5	14,229	21,373	210	0.19	0.24	520	0.46	0.58	751	0.67	0.86
10/06/00 10:22	1,044[e]	0.73[e]	163.8	131.9	137,704	159,077	350	3.01	3.25	330	2.84	3.42	716	6.16	7.02
Multiphase Extraction (MPE) Test (started on 10/17/00 at 09:40)															
10/17/00 10:07	27	0.02	130.6	110.5	2,983	2,983	130	0.02	3.27	89	0.02	3.44	223.3	0.04	7.06
10/18/00 11:55	1,575	1.09	122.8	104.4	161,611	164,594	290	2.12	5.39	130	1.10	4.54	445.8	3.38	10.44
10/19/00 12:55	3,075	2.14	123.6	105.4	158,100	322,694	220	2.52	7.91	66	0.97	5.51	310.5	3.73	14.17
10/20/00 10:08	4,348	3.02	126.3	107.1	136,338	459,032	95	1.34	9.25	41	0.46	5.97	149.3	1.96	16.13
10/20/00 10:10	4,350	3.02	122.8	104.1	208	459,240	130	0.00	9.25	46	0.00	5.97	192.9	0.00	16.13
10/23/00 14:05	8,905	6.18	126.0	107.1	487,841	947,081	32	2.47	11.72	20	1.01	6.98	52	3.73	19.86
10/24/00 14:45	10,385	7.21	129.6	109.8	162,504	1,109,585	44	0.39	12.11	30	0.25	7.23	75.2	0.65	20.51
10/25/00 12:00	11,660	8.10	130.7	110.5	140,887	1,250,472	120	0.72	12.83	92	0.54	7.77	222.6	1.31	21.82
10/26/00 11:50	13,090	9.09	128.5	109.3	156,299	1,406,771	91	1.03	13.86	62	0.75	8.52	157.4	1.85	23.67
10/27/00 10:20	14,440	10.03	124.1	106.4	143,640	1,550,411	49	0.63	14.49	35	0.43	8.95	84	1.08	24.75
10/27/00 12:20	14,560	10.11	137.9	113.4	13,608	1,564,019	110	0.07	14.56	78	0.05	9.00	191.3	0.12	24.87
10/30/00 12:50	18,910	13.13	154.7	126.3	549,405	2,113,424	4.3	1.96	16.52	3.5	1.40	10.40	7.8	3.41	28.28
Extended MPE Test (continuation of MPE Test)															
11/01/00 13:55	21,855	15.18	154.3	125.4	369,303	2,482,727	42	0.53	17.05	31	0.40	10.80	74.1	0.94	29.22
11/03/00 10:30	24,530	17.03	157.2	127.6	341,330	2,824,057	94	1.45	18.50	72	1.10	11.90	172.4	2.63	31.85
11/06/00 13:10	29,010	20.15	157.0	127.7	572,096	3,396,153	79	3.09	21.59	65	2.45	14.35	152.2	5.80	37.65
11/09/00 09:55	33,135	23.01	157.1	127.7	526,763	3,922,916	97	2.89	24.48	81	2.40	16.75	178	5.43	43.08
11/14/00 12:42	40,502	28.13	156.3	126.6	932,662	4,855,578	15	3.26	27.74	7	2.56	19.31	22	5.82	48.90
11/14/00 12:45	40,505	28.13	156.3	126.8	380	4,855,958	72	0.00	27.74	67	0.00	19.31	142.1	0.00	48.90
11/16/00 12:50	43,390	30.13	157.1	127.3	367,260	5,223,218	54	1.44	29.18	47	1.31	20.62	104.1	2.82	51.72
11/21/00 13:35	50,635	35.16	159.1	128.7	924,066	6,147,284	61	3.32	32.50	53	2.88	23.50	127.9	6.69	58.41
11/27/00 13:30	59,270	41.16	158.7	128.2	1,115,340	7,262,624	39	3.48	35.98	29	2.86	26.36	70.3	6.90	65.31
11/30/00 08:45	63,305	43.96	156.0	126.1	508,814	7,771,438	59	1.56	37.54	45	1.18	27.54	107.7	2.83	68.14
12/04/00 13:31	69,351	48.16	154.5	124.7	753,936	8,525,374	36	2.24	39.78	25	1.65	29.19	62.2	4.00	72.14
12/13/00 13:56	82,336	57.18	154.4	123.7	1,606,244	10,131,618	11	2.36	42.14	5.4	1.52	30.71	16.4	3.94	76.08
12/18/00 10:55	89,355	62.05	157.0	125.2	878,779	11,010,397	18	0.80	42.94	8.9	0.39	31.10	28.3	1.23	77.31
12/21/00 15:08	93,928	65.23	157.4	126.8	579,856	11,590,253	28	0.83	43.77	23	0.58	31.68	58	1.56	78.87
12/21/00 15:10	93,930	65.23	157.4	126.8	254	11,590,507	41	0.00	43.77	33	0.00	31.68	87.7	0.00	78.87
12/27/00 16:38	102,658	71.29	251.7	174.0	1,518,672	13,109,179	41[b]	3.89	47.66	33	3.13	34.81	88	8.33	87.20

Notes:
- [a] average flow for the period
- [b] calculated using the equation and parameters in Section C1
- [c] volume of air removed = flow (scfm) x elapsed time in minutes for the period calculated
- [d] mass removed (lb) = (volume of air removed [ft^3]) x (average concentration [µg/L] during period) x (28.32 L/ft^3) x (1 g/1E+06 µg) x (2.203E-03 lb/1 g)
- [e] the times for the SVE test are the duration of each step of the test

Acronyms/Abbreviations:
- acfm – actual cubic feet per minute
- Freon 113 – 1,1,2-trichloro-1,2,2-trifluoroethane
- ft^3 – cubic feet
- g – gram
- lb – pound
- L/ft^3 – liters per cubic feet
- µg – microgram
- µg/L – micrograms per liter
- scfm – standard cubic feet per minute
- SVE – soil vapor extraction
- TCE – trichloroethene
- VOC – volatile organic compound

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C2 GROUNDWATER VOC MASS REMOVAL

The VOC mass removal rates in groundwater were estimated by multiplying the time of operation for each period, the average recorded pumping rate for each period, and the average VOC concentration for each period. The VOC concentrations were obtained from the laboratory analyses of groundwater samples collected from the extracted groundwater at the wellhead. The mass of the two analytes with the highest VOC concentrations, TCE and Freon 113, were calculated separately. These two analytes accounted for approximately 91 percent (16GE1) to 98 percent (16MPE1), on average, of the total VOC mass removed in groundwater. The average groundwater flow rates and average VOC concentrations were calculated by taking the average of the initial and final values for each period. The period for a given sample was defined as the time between the previous sample (time t-1) and the given sample (time t): Period = Time $_t$ – Time $_{t-1}$. Mass removed was calculated using the 16GE1 constant-rate test, and the 16MPE1 constant-rate and MPE tests.

Tables C-2 and C-3 show the VOC mass removed calculations for TCE, Freon 113, and total VOCs for wells 16GE1 and 16MPE1, respectively.

C3 REFERENCES

Kuo, J. 1998. Practical Design Calculations for Groundwater and Soil Remediation. Lewis Publishers, CRC Press LLC.

United States Army Corps of Engineers. 1995. Engineering and Design, Soil Vapor Extraction and Bioventing. Engineer Manual 1110-1-4001. 30 November.

USACE. *See* United States Army Corps of Engineers.

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Table C-2
Calculations of VOC Mass Removed in Groundwater in 16GE1

Sample Date and Time	Elapsed Time Into Test (minutes)	Elapsed Time (days)	Flow[a] (gpm)	Volume of Water Removed[b] (gal)	Cumulative Volume of Water Removed (gal)	TCE (µg/L)	TCE Mass Removed[c] (lb)	Cumulative TCE Mass Removed (lb)	Freon 113 (µg/L)	Freon 113 Mass Removed[c] (lb)	Cumulative Freon 113 Mass Removed (lb)	Total VOCs (µg/L)	VOCs Mass Removed[c] (lb)	Cumulative VOC Mass Removed (lb)
Constant-Rate Test (started on 09/21/00 at 11:40)														
09/21/00 11:15	5	0.00347	16.05	80	80	33	2.21E-05	2.21E-05	3.1	2.08E-06	2.08E-06	40.9	2.74E-05	2.74E-05
09/22/00 12:40	1,530	1.06	15.9	24,248	24,328	13	4.65E-03	4.68E-03	3.8	6.98E-04	7.00E-04	17.76	5.94E-03	5.96E-03
09/22/00 12:55	1,545	1.07	15.9	238	24,566	12	2.49E-05	4.70E-03	3.3	7.07E-06	7.07E-04	16.8	3.44E-05	6.00E-03
09/22/00 23:31	2,181	1.51	16	10,176	34,742	12[d]	1.02E-03	5.72E-03	3.3[d]	2.80E-04	9.88E-04	16.8[d]	1.43E-03	7.42E-03

Notes:
[a] average flow for the period
[b] volume of water removed = flow (gpm) x elapsed time for the period calculated
[c] mass removed (lb) = (volume of water removed [gal]) x (7.48 gal/ft^3) x (average concentration [µg/L] during period) x (28.32 L/ft^3) x (1 g/1E+06 µg) x (2.203E-03 lb/1 g)
[d] since a sample could not be collected at the end of the test, the previous sample results were used to calculate mass removed from 09/22/00 at 12:55 to the end of the test

Acronyms/Abbreviations:
g – gram
gal – gallon
gal/ft^3 – gallons per cubic foot
gpm – gallons per minute
lb – pound
L/ft^3 – liters per cubic foot
µg – microgram
µg/L – micrograms per liter
TCE – trichloroethene
VOC – volatile organic compound

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Table C-3
Calculations of VOC Mass Removed in Groundwater in 16MPE1

Sample Date and Time	Elapsed Time Into Test (minutes)	Elapsed Time (days)	Flow[a] (gpm)	Volume of Water Removed[b] (gal)	Cumulative Volume of Water Removed (gal)	TCE (µg/L)	TCE Mass Removed[c] (lb)	Cumulative TCE Mass Removed (lb)	Freon 113 (µg/L)	Freon 113 Mass Removed[c] (lb)	Cumulative Freon 113 Mass Removed (lb)	Total VOCs (µg/L)	VOCs Mass Removed[c] (lb)	Cumulative VOC Mass Removed (lb)
Constant-Rate Test (started on 09/28/00 at 13:30)														
09/28/00 15:43	133	0.1	0.59	78	78	160	1.05E-04	1.05E-04	21	1.38E-05	1.38E-05	295.7	1.94E-04	1.94E-04
09/29/00 12:38	1,388	1.0	0.43	540	618	220	8.56E-04	9.61E-04	32	1.19E-04	1.33E-04	294.2	1.33E-03	1.52E-03
09/30/00 12:35	2,825	2.0	0.45	647	1,265	230	1.21E-03	2.17E-03	34	1.78E-04	3.11E-04	291.2	1.58E-03	3.10E-03
MPE Test (started on 10/17/00 at 09:40)														
10/17/00 09:49	9	0.0	0.45	4	1,269	240	8.11E-06	2.18E-03	12	4.06E-07	3.12E-04	272.5	9.21E-06	3.11E-03
10/18/00 12:25	1,605	1.1	0.45	718	1,987	240	1.44E-03	3.62E-03	35	1.41E-04	4.52E-04	279.4	1.65E-03	4.77E-03
10/19/00 12:20	3,040	2.1	0.45	646	2,633	260	1.35E-03	4.97E-03	37	1.94E-04	6.46E-04	301.7	1.57E-03	6.33E-03
10/20/00 10:00	4,340	3.0	0.44	572	3,205	260	1.24E-03	6.21E-03	37	1.77E-04	8.23E-04	302	1.44E-03	7.77E-03
10/20/00 10:05	4,345	3.0	0.45	2	3,207	250	4.79E-06	6.21E-03	36	6.85E-07	8.24E-04	290.69	5.56E-06	7.78E-03
10/23/00 13:04	8,844	6.1	0.45	2,025	5,232	250	4.22E-03	1.04E-02	32	5.74E-04	1.40E-03	288.3	4.89E-03	1.27E-02
10/25/00 13:05	11,725	8.1	0.45	1,296	6,528	250	2.71E-03	1.31E-02	33	3.52E-04	1.75E-03	287.26	3.11E-03	1.58E-02
10/27/00 10:00	14,420	10.0	0.44	1,186	7,714	250	2.47E-03	1.56E-02	36	3.41E-04	2.09E-03	289.8	2.86E-03	1.86E-02
Extended MPE Test														
11/16/00 14:45	43,505	30.2	0.45	13,088	20,802	280	2.89E-02	4.46E-02	41	4.21E-03	6.30E-03	326.1	3.36E-02	5.23E-02
12/27/00 13:50[d]	**102,490**	**71.2**	**0.44**	**25,953**	**46,755**	**240**	**5.63E-02**	**1.01E-01**	**20**	**6.61E-03**	**1.29E-02**	**263.9**	**6.39E-02**	**1.16E-01**

Notes:
- [a] average flow for the period
- [b] volume of water removed = flow (gpm) x elapsed time for the period calculated
- [c] mass removed (lb) = (volume of water removed [gal]) x (7.48 gal/ft^3) x (average concentration [µg/L] during period) x (28.32 L/ft^3) x (1 g/1E+06 µg) x (2.203E-03 lb/1 g)
- [d] unvalidated data in this row

Acronyms/Abbreviations:
- g – gram
- gal – gallon
- gal/ft^3 – gallons per cubic foot
- gpm – gallons per minute
- lb – pound
- L/ft^3 – liters per cubic foot
- µg – microgram
- µg/L – micrograms per liter
- MPE – multiphase extraction
- TCE – trichloroethene
- VOC – volatile organic compound

APPENDIX D

ANALYTICAL RESULTS AND CHAIN-OF-CUSTODY FORMS

Appendix D
ANALYTICAL RESULTS AND CHAIN-OF-CUSTODY FORMS

This appendix presents the analytical results and chain-of-custody forms for the samples collected during the MPE Pilot Study. This appendix includes two sections of analytical data:

- the electronic database printout of the validated and verified groundwater samples analyzed by Columbia Analytical Services, Inc., and validated by Laboratory Data Consultants, Inc., from 09 September through 27 December 2000; and
- the data result tables for each sample set, quality assurance/quality control report for each sample set, and associated chain of custody for each sample set of the soil gas samples analyzed by Environmental Support Technologies, Inc., from 05 October through 27 December 2000.

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User-Specified Query Criteria

Date Printed: 07-Mar-01

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

SAMPLING EVENT

178003

STATION ID

16-MW-01
16-MW-02
16-MW-03
16_DBMW52

With the exception of SITE ID, the fields presented above represent fields the user accessed prior to performing the query. For the available fields that were not accessed, all of the possible criteria were considered.

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
Pay Item : VOCS														
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	1,1,1-TRICHLOROETHANE	5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	24 UG/L	D		000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	1,1,2-TRICHLOROETHANE	5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	1,1-DICHLOROETHANE	3 UG/L	JD	J	000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	1,1-DICHLOROETHENE	5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	1,2-DICHLOROBENZENE	5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	1,2-DICHLOROETHANE	5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	1,2-DICHLOROPROPANE	5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	1,3-DICHLOROBENZENE	5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	1,4-DICHLOROBENZENE	5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	50 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	BENZENE	5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	BROMODICHLOROMETHANE	5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	BROMOFORM	5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	BROMOMETHANE	5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	CARBON TETRACHLORIDE	5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	CHLOROBENZENE	5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	CHLORODIBROMOMETHANE	5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	CHLOROETHANE	5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	CHLOROFORM	20 UG/L	D		000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	CHLOROMETHANE	5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	DICHLORODIFLUOROMETHANE	5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	ETHYLBENZENE	5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	META-,PARA-XYLENE	5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	METHYLENE CHLORIDE	6 UG/L	JD	J	000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	O-XYLENE	5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	TETRACHLOROETHENE	5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	TOLUENE	71 UG/L	D		000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	TRICHLOROETHENE	390 UG/L	D		000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	TRICHLOROFLUOROMETHANE	5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-01	GW	REG	161.5	178801003	EPA 8260B	U	VINYL CHLORIDE	5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	1,1,1-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	1,1,2-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	1,1-DICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	1,1-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	1,2-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	1,2-DICHLOROETHANE	0.3 UG/L	J	J	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	1,2-DICHLOROPROPANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	1,3-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	1,4-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	BENZENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	BROMODICHLOROMETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	BROMOFORM	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	BROMOMETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	CARBON TETRACHLORIDE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	CHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	CHLORODIBROMOMETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	CHLOROETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	CHLOROFORM	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	CHLOROMETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	DICHLORODIFLUOROMETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	ETHYLBENZENE	0.4 UG/L	J	J	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	META-,PARA-XYLENE	0.93 UG/L			000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	METHYLENE CHLORIDE	1 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	O-XYLENE	0.81 UG/L			000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	TETRACHLOROETHENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	TOLUENE	0.92 UG/L			000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	TRICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	TRICHLOROFLUOROMETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-02	GW	REG	160	178800401	EPA 8260B	U	VINYL CHLORIDE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	1,1,1-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	3.8 UG/L			000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	1,1,2-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	1,1-DICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	1,1-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	1,2-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	1,2-DICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	1,2-DICHLOROPROPANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	1,3-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	1,4-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	BENZENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	BROMODICHLOROMETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	BROMOFORM	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	BROMOMETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	CARBON TETRACHLORIDE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	CHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	CHLORODIBROMOMETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	CHLOROETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	CHLOROFORM	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	CHLOROMETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	DICHLORODIFLUOROMETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	ETHYLBENZENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	META-,PARA-XYLENE	0.5 UG/L	J	J	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	METHYLENE CHLORIDE	1 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	O-XYLENE	0.4 UG/L	J	J	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	TETRACHLOROETHENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	TOLUENE	0.71 UG/L			000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	TRICHLOROETHENE	0.61 UG/L			000 REG	9/13/2000	9/27/2000	9/27/2000
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	TRICHLOROFLUOROMETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16-MW-03	GW	REG	165	178800501	EPA 8260B	U	VINYL CHLORIDE	0.5 UG/L	U	U	000 REG	9/13/2000	9/27/2000	9/27/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	1,1,1-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	0.5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	11 UG/L			000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	1,1,2-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	1,1-DICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	1,1-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	1,2-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	1,2-DICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	1,2-DICHLOROPROPANE	0.5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	1,3-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	1,4-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	BENZENE	0.5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	BROMODICHLOROMETHANE	0.5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	BROMOFORM	0.5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	BROMOMETHANE	0.5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	CARBON TETRACHLORIDE	0.5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	CHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	CHLORODIBROMOMETHANE	0.5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	CHLOROETHANE	0.5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	CHLOROFORM	0.5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	CHLOROMETHANE	0.5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	DICHLORODIFLUOROMETHANE	0.5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	ETHYLBENZENE	0.5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	META-,PARA-XYLENE	0.5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	METHYLENE CHLORIDE	1 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	O-XYLENE	0.5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	TETRACHLOROETHENE	0.5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	TOLUENE	0.96 UG/L			000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	TRICHLOROETHENE	1.3 UG/L			000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	TRICHLOROFLUOROMETHANE	0.5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800803	EPA 8260B	U	VINYL CHLORIDE	0.5 UG/L	U	U	000 REG	9/14/2000	9/28/2000	9/28/2000
Pay Item : TPH-FUEL FINGERPRINTING														
16-MW-01	GW	REG	161.5	178801007	EPA 8015B	U	DIESEL	210 UG/L	Z		000 REG	9/14/2000	9/19/2000	10/10/2000
16-MW-01	GW	REG	161.5	178801007	EPA 8015B	U	GASOLINE	550 UG/L	Z		000 REG	9/14/2000	9/19/2000	10/10/2000
16-MW-01	GW	REG	161.5	178801007	EPA 8015B	U	MOTOR OIL	250 UG/L	J	U	000 REG	9/14/2000	9/19/2000	10/10/2000
16-MW-02	GW	REG	160	178800407	EPA 8015B	U	DIESEL	300 UG/L	Z		000 REG	9/13/2000	9/19/2000	10/10/2000
16-MW-02	GW	REG	160	178800407	EPA 8015B	U	GASOLINE	740 UG/L	Z		000 REG	9/13/2000	9/19/2000	10/10/2000
16-MW-02	GW	REG	160	178800407	EPA 8015B	U	MOTOR OIL	250 UG/L	J	U	000 REG	9/13/2000	9/19/2000	10/10/2000
16-MW-03	GW	REG	165	178800506	EPA 8015B	U	DIESEL	160 UG/L	Z	U	000 REG	9/13/2000	9/19/2000	10/10/2000
16-MW-03	GW	REG	165	178800506	EPA 8015B	U	GASOLINE	430 UG/L	Z		000 REG	9/13/2000	9/19/2000	10/10/2000
16-MW-03	GW	REG	165	178800506	EPA 8015B	U	MOTOR OIL	250 UG/L	J	U	000 REG	9/13/2000	9/19/2000	10/10/2000
16_DBMW52	GW	REG	162.5	178800806	EPA 8015B	U	DIESEL	200 UG/L	Z	U	000 REG	9/14/2000	9/19/2000	10/10/2000
16_DBMW52	GW	REG	162.5	178800806	EPA 8015B	U	GASOLINE	550 UG/L	Z		000 REG	9/14/2000	9/19/2000	10/10/2000
16_DBMW52	GW	REG	162.5	178800806	EPA 8015B	U	MOTOR OIL	250 UG/L	J	U	000 REG	9/14/2000	9/19/2000	10/10/2000
Pay Item : SVOCS WITH TICS														
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	1,2,4-TRICHLOROBENZENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	1,2-DICHLOROBENZENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	1,3-DICHLOROBENZENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	1,4-DICHLOROBENZENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	2,4,5-TRICHLOROPHENOL	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	2,4,6-TRICHLOROPHENOL	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	2,4-DICHLOROPHENOL	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	2,4-DIMETHYLPHENOL	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	2,4-DINITROPHENOL	24 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	2,4-DINITROTOLUENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	2,6-DINITROTOLUENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	2-CHLORONAPHTHALENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	2-CHLOROPHENOL	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	2-ETHYL-HEXANOIC ACID	65 UG/L	JN	NJ	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	2-METHYLNAPHTHALENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	2-METHYLPHENOL	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	2-NITROANILINE	24 UG/L	U	UJ	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	2-NITROPHENOL	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	3,3'-DICHLOROBENZIDINE	24 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	3-NITROANILINE	24 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	4,6-DINITRO-2-METHYLPHENOL	24 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	4-BROMOPHENYL PHENYL ETH	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	4-CHLORO-3-METHYLPHENOL	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	4-CHLOROANILINE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	4-CHLOROPHENYL PHENYL ET	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	4-METHYLPHENOL	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	4-NITROANILINE	24 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	4-NITROPHENOL	24 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	ACENAPHTHENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	ACENAPHTHYLENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	ACETOPHENONE	4.8 UG/L	JN	NJ	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	ANILINE	24 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	ANTHRACENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	BENZ(A)ANTHRACENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	BENZO(A)PYRENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	BENZO(B)FLUORANTHENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	BENZO(G,H,I)PERYLENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	BENZO(K)FLUORANTHENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	BENZOIC ACID	54 UG/L		J	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	BENZYL ALCOHOL	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	BIS(2-CHLOROETHOXY)METHA	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	BIS(2-CHLOROETHYL)ETHER	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	BIS(2-CHLOROISOPROPYL)ETH	9.5 UG/L	U	UJ	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	BIS(2-ETHYLHEXYL)PHTHALATE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	BISPHENOL A	73 UG/L	JN	NJ	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	BUTYL BENZYL PHTHALATE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	CHRYSENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	DI-N-BUTYL PHTHALATE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	DI-N-OCTYL PHTHALATE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	DIBENZ(A,H)ANTHRACENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	DIBENZOFURAN	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	DIETHYL PHTHALATE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	DIMETHYL PHTHALATE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	FLUORANTHENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	FLUORENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	HEXACHLOROBENZENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	HEXACHLOROBUTADIENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	HEXACHLOROCYCLOPENTADIE	9.5 UG/L	U	UJ	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	HEXACHLOROETHANE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	INDENO(1,2,3-CD)PYRENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	ISOPHORONE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	N-NITROSO-DI-N-PROPYLAMINE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	N-NITROSODIMETHYLAMINE	24 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	N-NITROSODIPHENYLAMINE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	NAPHTHALENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	NITROBENZENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	P-TERT-BUTYLBENZOIC ACID	14 UG/L	JN	NJ	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	PENTACHLOROPHENOL	24 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	PHENANTHRENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	PHENOL	15 UG/L			000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	PHTHALIDE	56 UG/L	JN	NJ	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	PYRENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	UNKNOWN	4.7 UG/L	J	J	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	UNKNOWN	4.9 UG/L	J	J	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	UNKNOWN	4.4 UG/L	J	J	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	UNKNOWN SUBSTITUTED ALCO	41 UG/L	J	J	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	UNKNOWN SUBSTITUTED ALCO	14 UG/L	J	J	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	UNKNOWN SUBSTITUTED ALCO	53 UG/L	J	J	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	UNKNOWN SUBSTITUTED ALCO	45 UG/L	J	J	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-01	GW	REG	161.5	178801004	EPA 8270C	U	UNKNOWN SUBSTITUTED ALCO	140 UG/L	J	J	000 REG	9/14/2000	9/18/2000	9/29/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	1,2,4-TRICHLOROBENZENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	1,2-DICHLOROBENZENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	1,3-DICHLOROBENZENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	1,4-DICHLOROBENZENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	2,4,5-TRICHLOROPHENOL	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	2,4,6-TRICHLOROPHENOL	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	2,4-DICHLOROPHENOL	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	2,4-DIMETHYLPHENOL	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	2,4-DINITROPHENOL	24 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	2,4-DINITROTOLUENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	2,6-DINITROTOLUENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	2-CHLORONAPHTHALENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	2-CHLOROPHENOL	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	2-ETHYL-1-HEXANOL	150 UG/L	JN	NJ	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	2-ETHYL-HEXANOIC ACID	95 UG/L	JN	NJ	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	2-METHYLNAPHTHALENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	2-METHYLPHENOL	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	2-NITROANILINE	24 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	2-NITROPHENOL	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	3,3'-DICHLOROBENZIDINE	24 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	3-NITROANILINE	24 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	4,6-DINITRO-2-METHYLPHENOL	24 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	4-BROMOPHENYL PHENYL ETH	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	4-CHLORO-3-METHYLPHENOL	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	4-CHLOROANILINE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	4-CHLOROPHENYL PHENYL ET	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	4-METHYLPHENOL	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	4-NITROANILINE	24 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	4-NITROPHENOL	24 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	ACENAPHTHENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	ACENAPHTHYLENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	ACETOPHENONE	6.1 UG/L	JN	NJ	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	ANILINE	24 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	ANTHRACENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	BENZ(A)ANTHRACENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	BENZAMIDE, N-PROPYL-	5.8 UG/L	JN	NJ	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	BENZO(A)PYRENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	BENZO(B)FLUORANTHENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	BENZO(G,H,I)PERYLENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	BENZO(K)FLUORANTHENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	BENZOIC ACID	80 UG/L			000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	BENZYL ALCOHOL	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	BIS(2-CHLOROETHOXY)METHA	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	BIS(2-CHLOROETHYL)ETHER	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	BIS(2-CHLOROISOPROPYL)ETH	9.5 UG/L	U	UJ	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	BIS(2-ETHYLHEXYL)PHTHALATE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	BISPHENOL A	110 UG/L	JN	NJ	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	BUTYL BENZYL PHTHALATE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	CHRYSENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	DI-N-BUTYL PHTHALATE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	DI-N-OCTYL PHTHALATE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	DIBENZ(A,H)ANTHRACENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	DIBENZOFURAN	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	DIETHYL PHTHALATE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	DIMETHYL PHTHALATE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	ETHANOL, 1-METHOXY-, BENZO	5.6 UG/L	JN	NJ	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	FLUORANTHENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	FLUORENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	HEXACHLOROBENZENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	HEXACHLOROBUTADIENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	HEXACHLOROCYCLOPENTADIE	9.5 UG/L	U	UJ	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	HEXACHLOROETHANE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	INDENO(1,2,3-CD)PYRENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	ISOPHORONE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	N-NITROSO-DI-N-PROPYLAMINE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	N-NITROSODIMETHYLAMINE	24 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	N-NITROSODIPHENYLAMINE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	NAPHTHALENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	NITROBENZENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	P-TERT-BUTYLBENZOIC ACID	18 UG/L	JN	NJ	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	PENTACHLOROPHENOL	24 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	PHENANTHRENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	PHENOL	19 UG/L			000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	PHTHALIDE	80 UG/L	JN	NJ	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	PYRENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	UNKNOWN	5.8 UG/L	J	J	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	UNKNOWN ALCOHOL	18 UG/L	J	J	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	UNKNOWN ALCOHOL	86 UG/L	J	J	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	UNKNOWN ALCOHOL	57 UG/L	J	J	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	UNKNOWN ALCOHOL	5.8 UG/L	J	J	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-02	GW	REG	160	178800405	EPA 8270C	U	UNKNOWN ALCOHOL	63 UG/L	J	J	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	1,2,4-TRICHLOROBENZENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	1,2-DICHLOROBENZENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	1,3-DICHLOROBENZENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	1,4-DICHLOROBENZENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	2,4,5-TRICHLOROPHENOL	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	2,4,6-TRICHLOROPHENOL	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	2,4-DICHLOROPHENOL	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	2,4-DIMETHYLPHENOL	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	2,4-DINITROPHENOL	24 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	2,4-DINITROTOLUENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	2,6-DINITROTOLUENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	2-CHLORONAPHTHALENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	2-CHLOROPHENOL	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	2-ETHYL-1-HEXANOL	130 UG/L	JN	NJ	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	2-ETHYL-HEXANOIC ACID	52 UG/L	JN	NJ	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	2-METHYLNAPHTHALENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	2-METHYLPHENOL	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	2-NITROANILINE	24 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	2-NITROPHENOL	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	3,3'-DICHLOROBENZIDINE	24 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	3-NITROANILINE	24 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	4,6-DINITRO-2-METHYLPHENOL	24 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	4-BROMOPHENYL PHENYL ETH	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	4-CHLORO-3-METHYLPHENOL	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	4-CHLOROANILINE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	4-CHLOROPHENYL PHENYL ET	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	4-METHYLPHENOL	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	4-NITROANILINE	24 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	4-NITROPHENOL	24 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	ACENAPHTHENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	ACENAPHTHYLENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	ANILINE	24 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	ANTHRACENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	BENZ(A)ANTHRACENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	BENZO(A)PYRENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	BENZO(B)FLUORANTHENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	BENZO(G,H,I)PERYLENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	BENZO(K)FLUORANTHENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	BENZOIC ACID	46 UG/L			000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	BENZYL ALCOHOL	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	BIS(2-CHLOROETHOXY)METHA	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	BIS(2-CHLOROETHYL)ETHER	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	BIS(2-CHLOROISOPROPYL)ETH	9.5 UG/L	U	UJ	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	BIS(2-ETHYLHEXYL)PHTHALATE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	BISPHENOL A	78 UG/L	JN	NJ	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	BUTYL BENZYL PHTHALATE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	CHRYSENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	DI-N-BUTYL PHTHALATE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	DI-N-OCTYL PHTHALATE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	DIBENZ(A,H)ANTHRACENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	DIBENZOFURAN	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	DIETHYL PHTHALATE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	DIMETHYL PHTHALATE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	FLUORANTHENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	FLUORENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	HEXACHLOROBENZENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	HEXACHLOROBUTADIENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	HEXACHLOROCYCLOPENTADIE	9.5 UG/L	U	UJ	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	HEXACHLOROETHANE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	INDENO(1,2,3-CD)PYRENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	ISOPHORONE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	N-NITROSO-DI-N-PROPYLAMINE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	N-NITROSODIMETHYLAMINE	24 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	N-NITROSODIPHENYLAMINE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	NAPHTHALENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	NITROBENZENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	PENTACHLOROPHENOL	24 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	PHENANTHRENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	PHENOL	13 UG/L			000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	PHTHALIDE	42 UG/L	JN	NJ	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	PYRENE	9.5 UG/L	U	U	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	UNKNOWN	6.4 UG/L	J	J	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	UNKNOWN	5.1 UG/L	J	J	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	UNKNOWN	4 UG/L	J	J	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	UNKNOWN ALCOHOL	42 UG/L	J	J	000 REG	9/13/2000	9/16/2000	9/28/2000
16-MW-03	GW	REG	165	178800504	EPA 8270C	U	UNKNOWN ALCOHOL	40 UG/L	J	J	000 REG	9/13/2000	9/16/2000	9/28/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	1,2,4-TRICHLOROBENZENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	1,2-DICHLOROBENZENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	1,3-DICHLOROBENZENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	1,4-DICHLOROBENZENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	2,4,5-TRICHLOROPHENOL	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	2,4,6-TRICHLOROPHENOL	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	2,4-DICHLOROPHENOL	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	2,4-DIMETHYLPHENOL	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	2,4-DINITROPHENOL	24 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	2,4-DINITROTOLUENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	2,6-DINITROTOLUENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	2-CHLORONAPHTHALENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	2-CHLOROPHENOL	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	2-ETHYL-HEXANOIC ACID	53 UG/L	JN	NJ	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	2-HEXENAL, 2-ETHYL-	8.1 UG/L	JN	NJ	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	2-METHYLNAPHTHALENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	2-METHYLPHENOL	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	2-NITROANILINE	24 UG/L	U	UJ	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	2-NITROPHENOL	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	3,3'-DICHLOROBENZIDINE	24 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	3-NITROANILINE	24 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	4,6-DINITRO-2-METHYLPHENOL	24 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	4-BROMOPHENYL PHENYL ETH	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	4-CHLORO-3-METHYLPHENOL	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	4-CHLOROANILINE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	4-CHLOROPHENYL PHENYL ET	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	4-METHYLPHENOL	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	4-NITROANILINE	24 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	4-NITROPHENOL	24 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	ACENAPHTHENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	ACENAPHTHYLENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	ANILINE	24 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	ANTHRACENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	BENZ(A)ANTHRACENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	BENZO(A)PYRENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	BENZO(B)FLUORANTHENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	BENZO(G,H,I)PERYLENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	BENZO(K)FLUORANTHENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	BENZOIC ACID	36 UG/L		J	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	BENZYL ALCOHOL	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	BIS(2-CHLOROETHOXY)METHA	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	BIS(2-CHLOROETHYL)ETHER	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	BIS(2-CHLOROISOPROPYL)ETH	9.5 UG/L	U	UJ	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	BIS(2-ETHYLHEXYL)PHTHALATE	21 UG/L			000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	BISPHENOL A	77 UG/L	JN	NJ	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	BUTYL BENZYL PHTHALATE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	CHRYSENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	DI-N-BUTYL PHTHALATE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	DI-N-OCTYL PHTHALATE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	DIBENZ(A,H)ANTHRACENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	DIBENZOFURAN	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	DIETHYL PHTHALATE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	DIMETHYL PHTHALATE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	FLUORANTHENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	FLUORENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	HEXACHLOROBENZENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	HEXACHLOROBUTADIENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	HEXACHLOROCYCLOPENTADIE	9.5 UG/L	U	UJ	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	HEXACHLOROETHANE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	INDENO(1,2,3-CD)PYRENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	ISOPHORONE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	N-NITROSO-DI-N-PROPYLAMINE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information: Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers: Lab	Val	Result Type	Date Information: Collect	Prepare	Analyze
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	N-NITROSODIMETHYLAMINE	24 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	N-NITROSODIPHENYLAMINE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	NAPHTHALENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	NITROBENZENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	PENTACHLOROPHENOL	24 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	PHENANTHRENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	PHENOL	17 UG/L			000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	PHTHALIDE	45 UG/L	JN	NJ	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	PYRENE	9.5 UG/L	U	U	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	UNKNOWN	150 UG/L	J	J	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	UNKNOWN	5.6 UG/L	J	J	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	UNKNOWN SUBSTITUTED ALCO	48 UG/L	J	J	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	UNKNOWN SUBSTITUTED ALCO	44 UG/L	J	J	000 REG	9/14/2000	9/18/2000	9/29/2000
16_DBMW52	GW	REG	162.5	178800805	EPA 8270C	U	UNKNOWN SUBSTITUTED ALCO	35 UG/L	J	J	000 REG	9/14/2000	9/18/2000	9/29/2000

User-Specified Query Criteria

Date Printed: 07-Mar-01

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

STATION ID

16GE1
16MPE1
16MPE1-TE
16MPE1-TM
16MW4
16MW5
16MW6
16MW7

With the exception of SITE ID, the fields presented above represent fields the user accessed prior to performing the query. For the available fields that were not accessed, all of the possible criteria were considered.

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information: Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers: Lab	Val	Result Type	Date Information: Collect	Prepare	Analyze
Pay Item : VOCS														
16GE1	GW	DUP		178810301	EPA 8260B	U	1,1,1-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	3.3 UG/L			000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	1,1,2-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	1,1-DICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	1,1-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	1,2-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	1,2-DICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	1,2-DICHLOROPROPANE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	1,3-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	1,4-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	BENZENE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	BROMODICHLOROMETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	BROMOFORM	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	BROMOMETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	CARBON TETRACHLORIDE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	CHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	CHLORODIBROMOMETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	CHLOROETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	CHLOROFORM	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	CHLOROMETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	DICHLORODIFLUOROMETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	ETHYLBENZENE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16GE1	GW	DUP		178810301	EPA 8260B	U	META-,PARA-XYLENE	1 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	METHYLENE CHLORIDE	1 UG/L	U	UJ	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	O-XYLENE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	TETRACHLOROETHENE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	TOLUENE	1.3 UG/L			000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	TRICHLOROETHENE	12 UG/L			000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	TRICHLOROFLUOROMETHANE	0.2 UG/L	J	J	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	DUP		178810301	EPA 8260B	U	VINYL CHLORIDE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	1,1,1-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	1.9 UG/L			000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	1,1,2-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	1,1-DICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	1,1-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	1,2-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	1,2-DICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	1,2-DICHLOROPROPANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	1,3-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	1,4-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	5 UG/L	U	U	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	BENZENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	BROMODICHLOROMETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	BROMOFORM	0.5 UG/L	U	U	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	BROMOMETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	CARBON TETRACHLORIDE	0.5 UG/L	U	U	000 REG	9/13/2000	9/26/2000	9/26/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	CHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	CHLORODIBROMOMETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	CHLOROETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	CHLOROFORM	0.53 UG/L			000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	CHLOROMETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	DICHLORODIFLUOROMETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	ETHYLBENZENE	0.3 UG/L	J	J	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	META-,PARA-XYLENE	0.5 UG/L	J	J	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	METHYLENE CHLORIDE	1 UG/L	U	U	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	O-XYLENE	0.4 UG/L	J	J	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	TETRACHLOROETHENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	TOLUENE	0.4 UG/L	J	J	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	TRICHLOROETHENE	78 UG/L			000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	TRICHLOROFLUOROMETHANE	0.5 UG/L	U	U	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG	155.5	178800301	EPA 8260B	U	VINYL CHLORIDE	0.5 UG/L	U	U	000 REG	9/13/2000	9/26/2000	9/26/2000
16GE1	GW	REG		178810001	EPA 8260B	U	1,1,1-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	0.5 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	3.1 UG/L			000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	1,1,2-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	1,1-DICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	1,1-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	1,2-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	1,2-DICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16GE1	GW	REG		178810001	EPA 8260B	U	1,2-DICHLOROPROPANE	0.5 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	1,3-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	1,4-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	5 UG/L	U	UJ	000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	BENZENE	0.5 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	BROMODICHLOROMETHANE	0.5 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	BROMOFORM	0.5 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	BROMOMETHANE	0.5 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	CARBON TETRACHLORIDE	0.5 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	CHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	CHLORODIBROMOMETHANE	0.5 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	CHLOROETHANE	0.5 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	CHLOROFORM	0.5 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	CHLOROMETHANE	0.5 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	DICHLORODIFLUOROMETHANE	0.5 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	ETHYLBENZENE	0.5 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	META-,PARA-XYLENE	0.5 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	METHYLENE CHLORIDE	1 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	O-XYLENE	0.5 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	TETRACHLOROETHENE	0.5 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	TOLUENE	4.8 UG/L			000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	TRICHLOROETHENE	33 UG/L			000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810001	EPA 8260B	U	TRICHLOROFLUOROMETHANE	0.5 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

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Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16GE1	GW	REG		178810001	EPA 8260B	U	VINYL CHLORIDE	0.5 UG/L	U	U	000 REG	9/21/2000	10/3/2000	10/3/2000
16GE1	GW	REG		178810203	EPA 8260B	U	1,1,1-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	3.8 UG/L			000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	1,1,2-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	1,1-DICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	1,1-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	1,2-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	1,2-DICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	1,2-DICHLOROPROPANE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	1,3-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	1,4-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	BENZENE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	BROMODICHLOROMETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	BROMOFORM	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	BROMOMETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	CARBON TETRACHLORIDE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	CHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	CHLORODIBROMOMETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	CHLOROETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	CHLOROFORM	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	CHLOROMETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	DICHLORODIFLUOROMETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	ETHYLBENZENE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16GE1	GW	REG		178810203	EPA 8260B	U	META-,PARA-XYLENE	1 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	METHYLENE CHLORIDE	1 UG/L	U	UJ	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	O-XYLENE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	TETRACHLOROETHENE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	TOLUENE	0.96 UG/L			000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	TRICHLOROETHENE	13 UG/L			000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	TRICHLOROFLUOROMETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810203	EPA 8260B	U	VINYL CHLORIDE	0.5 UG/L	U	U	000 REG	9/22/2000	9/30/2000	9/30/2000
16GE1	GW	REG		178810401	EPA 8260B	U	1,1,1-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	1,1,2-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	1,1-DICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	1,1-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	1,2-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	1,2-DICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	1,2-DICHLOROPROPANE	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	1,3-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	1,4-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	BENZENE	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	BROMODICHLOROMETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	BROMOFORM	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	BROMOMETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	CARBON TETRACHLORIDE	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000

ANALYTICAL RESULTS --- CTO: 0178

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Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16GE1	GW	REG		178810401	EPA 8260B	U	CHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	CHLORODIBROMOMETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	CHLOROETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	CHLOROFORM	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	CHLOROMETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	DICHLORODIFLUOROMETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	ETHYLBENZENE	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	META-,PARA-XYLENE	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	METHYLENE CHLORIDE	1 UG/L	U	UJ	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	O-XYLENE	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	TETRACHLOROETHENE	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	TOLUENE	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	TRICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	TRICHLOROFLUOROMETHANE	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16GE1	GW	REG		178810401	EPA 8260B	U	VINYL CHLORIDE	0.5 UG/L	U	U	000 REG	9/22/2000	10/5/2000	10/5/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	1,1,1-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	36 UG/L			000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	1,1,2-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	1,1-DICHLOROETHANE	0.3 UG/L	J	J	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	1,1-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	1,2-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	1,2-DICHLOROETHANE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16MPE1	GW	FD		178812202	EPA 8260B	U	1,2-DICHLOROPROPANE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	1,3-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	1,4-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	BENZENE	0.5 UG/L	J	J	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	BROMODICHLOROMETHANE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	BROMOFORM	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	BROMOMETHANE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	CARBON TETRACHLORIDE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	CHLOROBENZENE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	CHLORODIBROMOMETHANE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	CHLOROETHANE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	CHLOROFORM	2.6 UG/L			000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	CHLOROMETHANE	0.5 UG/L	U	UJ	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	DICHLORODIFLUOROMETHANE	0.3 UG/L	J	J	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	ETHYLBENZENE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	META-,PARA-XYLENE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	METHYLENE CHLORIDE	1 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	O-XYLENE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	TETRACHLOROETHENE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	TOLUENE	0.99 UG/L			000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	TRICHLOROETHENE	200 UG/L	E	R	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	TRICHLOROFLUOROMETHANE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16MPE1	GW	FD		178812202	EPA 8260B	U	VINYL CHLORIDE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	1,1,1-TRICHLOROETHANE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	35 UG/L	D	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	1,1,2-TRICHLOROETHANE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	1,1-DICHLOROETHANE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	1,1-DICHLOROETHENE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	1,2-DICHLOROBENZENE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	1,2-DICHLOROETHANE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	1,2-DICHLOROPROPANE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	1,3-DICHLOROBENZENE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	1,4-DICHLOROBENZENE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	50 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	BENZENE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	BROMODICHLOROMETHANE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	BROMOFORM	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	BROMOMETHANE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	CARBON TETRACHLORIDE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	CHLOROBENZENE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	CHLORODIBROMOMETHANE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	CHLOROETHANE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	CHLOROFORM	3 UG/L	JD	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	CHLOROMETHANE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	DICHLORODIFLUOROMETHANE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	ETHYLBENZENE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16MPE1	GW	FD		178812202	EPA 8260B	U	META-,PARA-XYLENE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	METHYLENE CHLORIDE	10 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	O-XYLENE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	TETRACHLOROETHENE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	TOLUENE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	TRICHLOROETHENE	250 UG/L	D		DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	TRICHLOROFLUOROMETHANE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	FD		178812202	EPA 8260B	U	VINYL CHLORIDE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	1,1,1-TRICHLOROETHANE	5 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	5 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	28 UG/L	D		000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	1,1,2-TRICHLOROETHANE	5 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	1,1-DICHLOROETHANE	5 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	1,1-DICHLOROETHENE	5 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	1,2-DICHLOROBENZENE	5 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	1,2-DICHLOROETHANE	5 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	1,2-DICHLOROPROPANE	5 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	1,3-DICHLOROBENZENE	5 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	1,4-DICHLOROBENZENE	5 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	50 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	BENZENE	5 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	BROMODICHLOROMETHANE	5 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	BROMOFORM	5 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	BROMOMETHANE	5 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	CARBON TETRACHLORIDE	5 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	CHLOROBENZENE	5 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	CHLORODIBROMOMETHANE	5 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	CHLOROETHANE	5 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	CHLOROFORM	3 UG/L	JD	J	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	CHLOROMETHANE	5 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	5 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	5 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	DICHLORODIFLUOROMETHANE	5 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	ETHYLBENZENE	5 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	META-,PARA-XYLENE	5 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	METHYLENE CHLORIDE	6 UG/L	JD	J	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	O-XYLENE	5 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	TETRACHLOROETHENE	5 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	TOLUENE	5 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	5 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	5 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	TRICHLOROETHENE	290 UG/L	D		000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	TRICHLOROFLUOROMETHANE	5 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG	146.1	178801402	EPA 8260B	U	VINYL CHLORIDE	5 UG/L	U	U	000 REG	9/15/2000	9/29/2000	9/29/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	1,1,1-TRICHLOROETHANE	5 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	5 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	20 UG/L	D	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	1,1,2-TRICHLOROETHANE	5 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	1,1-DICHLOROETHANE	5 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	1,1-DICHLOROETHENE	5 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	1,2-DICHLOROBENZENE	5 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	1,2-DICHLOROETHANE	5 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16MPE1	GW	REG		178810601	EPA 8260B	U	1,2-DICHLOROPROPANE	5 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	1,3-DICHLOROBENZENE	5 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	1,4-DICHLOROBENZENE	5 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	50 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	BENZENE	5 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	BROMODICHLOROMETHANE	5 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	BROMOFORM	5 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	BROMOMETHANE	5 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	CARBON TETRACHLORIDE	5 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	CHLOROBENZENE	5 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	CHLORODIBROMOMETHANE	5 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	CHLOROETHANE	5 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	CHLOROFORM	3 UG/L	JD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	CHLOROMETHANE	5 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	5 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	5 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	DICHLORODIFLUOROMETHANE	5 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	ETHYLBENZENE	5 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	META-,PARA-XYLENE	10 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	METHYLENE CHLORIDE	10 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	O-XYLENE	5 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	TETRACHLOROETHENE	5 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	TOLUENE	110 UG/L	D		DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	5 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	5 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	TRICHLOROETHENE	160 UG/L	D		DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810601	EPA 8260B	U	TRICHLOROFLUOROMETHANE	5 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16MPE1	GW	REG		178810601	EPA 8260B	U	VINYL CHLORIDE	5 UG/L	UD	R	DL1 REG	9/28/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	1,1,1-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	0.5 UG/L	U	U	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	21 UG/L			000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	1,1,2-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	1,1-DICHLOROETHANE	0.3 UG/L	J	J	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	1,1-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	1,2-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	1,2-DICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	1,2-DICHLOROPROPANE	0.5 UG/L	U	U	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	1,3-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	1,4-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	5 UG/L	U	U	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	BENZENE	0.3 UG/L	J	J	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	BROMODICHLOROMETHANE	0.5 UG/L	U	U	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	BROMOFORM	0.5 UG/L	U	U	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	BROMOMETHANE	0.5 UG/L	U	U	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	CARBON TETRACHLORIDE	0.5 UG/L	U	U	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	CHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	CHLORODIBROMOMETHANE	0.5 UG/L	U	U	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	CHLOROETHANE	0.5 UG/L	U	U	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	CHLOROFORM	3 UG/L			000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	CHLOROMETHANE	0.5 UG/L	U	U	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	DICHLORODIFLUOROMETHANE	0.5 UG/L	U	U	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	ETHYLBENZENE	0.2 UG/L	J	J	000 REG	9/28/2000	10/9/2000	10/9/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
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Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16MPE1	GW	REG		178810602	EPA 8260B	U	META-,PARA-XYLENE	0.5 UG/L	J	J	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	METHYLENE CHLORIDE	1 UG/L	U	U	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	O-XYLENE	0.4 UG/L	J	J	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	TETRACHLOROETHENE	0.5 UG/L	U	U	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	TOLUENE	130 UG/L	E	R	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	TRICHLOROETHENE	190 UG/L	E	R	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	TRICHLOROFLUOROMETHANE	0.5 UG/L	U	U	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810602	EPA 8260B	U	VINYL CHLORIDE	0.5 UG/L	U	U	000 REG	9/28/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	1,1,1-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	32 UG/L			000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	1,1,2-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	1,1-DICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	1,1-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	1,2-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	1,2-DICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	1,2-DICHLOROPROPANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	1,3-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	1,4-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	BENZENE	0.3 UG/L	J	J	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	BROMODICHLOROMETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	BROMOFORM	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	BROMOMETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	CARBON TETRACHLORIDE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16MPE1	GW	REG		178810802	EPA 8260B	U	CHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	CHLORODIBROMOMETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	CHLOROETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	CHLOROFORM	1.7 UG/L			000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	CHLOROMETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	DICHLORODIFLUOROMETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	ETHYLBENZENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	META-,PARA-XYLENE	1 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	METHYLENE CHLORIDE	1 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	O-XYLENE	0.2 UG/L	J	J	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	TETRACHLOROETHENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	TOLUENE	40 UG/L			000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	TRICHLOROETHENE	270 UG/L	E	R	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	TRICHLOROFLUOROMETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810802	EPA 8260B	U	VINYL CHLORIDE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	1,1,1-TRICHLOROETHANE	5 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	5 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	31 UG/L	D	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	1,1,2-TRICHLOROETHANE	5 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	1,1-DICHLOROETHANE	5 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	1,1-DICHLOROETHENE	5 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	1,2-DICHLOROBENZENE	5 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	1,2-DICHLOROETHANE	5 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16MPE1	GW	REG		178810803	EPA 8260B	U	1,2-DICHLOROPROPANE	5 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	1,3-DICHLOROBENZENE	5 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	1,4-DICHLOROBENZENE	5 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	50 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	BENZENE	5 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	BROMODICHLOROMETHANE	5 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	BROMOFORM	5 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	BROMOMETHANE	5 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	CARBON TETRACHLORIDE	5 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	CHLOROBENZENE	5 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	CHLORODIBROMOMETHANE	5 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	CHLOROETHANE	5 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	CHLOROFORM	5 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	CHLOROMETHANE	5 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	5 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	5 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	DICHLORODIFLUOROMETHANE	5 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	ETHYLBENZENE	5 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	META-,PARA-XYLENE	10 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	METHYLENE CHLORIDE	10 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	O-XYLENE	5 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	TETRACHLOROETHENE	5 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	TOLUENE	33 UG/L	D	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	5 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	5 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	TRICHLOROETHENE	220 UG/L	D		DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810803	EPA 8260B	U	TRICHLOROFLUOROMETHANE	5 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16MPE1	GW	REG		178810803	EPA 8260B	U	VINYL CHLORIDE	5 UG/L	UD	R	DL1 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	1,1,1-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	1,1,2-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	1,1-DICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	1,1-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	1,2-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	1,2-DICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	1,2-DICHLOROPROPANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	1,3-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	1,4-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	BENZENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	BROMODICHLOROMETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	BROMOFORM	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	BROMOMETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	CARBON TETRACHLORIDE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	CHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	CHLORODIBROMOMETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	CHLOROETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	CHLOROFORM	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	CHLOROMETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	DICHLORODIFLUOROMETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	ETHYLBENZENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16MPE1	GW	REG		178810913	EPA 8260B	U	META-,PARA-XYLENE	1 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	METHYLENE CHLORIDE	1 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	O-XYLENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	TETRACHLOROETHENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	TOLUENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	TRICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	TRICHLOROFLUOROMETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178810913	EPA 8260B	U	VINYL CHLORIDE	0.5 UG/L	U	U	000 REG	9/29/2000	10/10/2000	10/10/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	1,1,1-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	1,1,2-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	1,1-DICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	1,1-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	1,2-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	1,2-DICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	1,2-DICHLOROPROPANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	1,3-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	1,4-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	BENZENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	BROMODICHLOROMETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	BROMOFORM	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	BROMOMETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	CARBON TETRACHLORIDE	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16MPE1	GW	REG		178811001	EPA 8260B	U	CHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	CHLORODIBROMOMETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	CHLOROETHANE	0.5 UG/L	U	UJ	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	CHLOROFORM	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	CHLOROMETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	DICHLORODIFLUOROMETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	ETHYLBENZENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	META-,PARA-XYLENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	METHYLENE CHLORIDE	1 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	O-XYLENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	TETRACHLOROETHENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	TOLUENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	TRICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	TRICHLOROFLUOROMETHANE	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811001	EPA 8260B	U	VINYL CHLORIDE	0.5 UG/L	U	U	000 REG	9/29/2000	10/9/2000	10/9/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	1,1,1-TRICHLOROETHANE	25 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	25 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	36 UG/L	D	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	1,1,2-TRICHLOROETHANE	25 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	1,1-DICHLOROETHANE	25 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	1,1-DICHLOROETHENE	25 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	1,2-DICHLOROBENZENE	25 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	1,2-DICHLOROETHANE	25 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16MPE1	GW	REG		178811201	EPA 8260B	U	1,2-DICHLOROPROPANE	25 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	1,3-DICHLOROBENZENE	25 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	1,4-DICHLOROBENZENE	25 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	250 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	BENZENE	25 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	BROMODICHLOROMETHANE	25 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	BROMOFORM	25 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	BROMOMETHANE	25 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	CARBON TETRACHLORIDE	25 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	CHLOROBENZENE	25 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	CHLORODIBROMOMETHANE	25 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	CHLOROETHANE	25 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	CHLOROFORM	25 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	CHLOROMETHANE	25 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	25 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	25 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	DICHLORODIFLUOROMETHANE	25 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	ETHYLBENZENE	25 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	META-,PARA-XYLENE	25 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	METHYLENE CHLORIDE	160 UG/L	D	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	O-XYLENE	25 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	TETRACHLOROETHENE	25 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	TOLUENE	27 UG/L	D	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	25 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	25 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	TRICHLOROETHENE	230 UG/L	D		DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811201	EPA 8260B	U	TRICHLOROFLUOROMETHANE	25 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16MPE1	GW	REG		178811201	EPA 8260B	U	VINYL CHLORIDE	25 UG/L	UD	R	DL1 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	1,1,1-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	0.5 UG/L	U	U	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	34 UG/L			000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	1,1,2-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	1,1-DICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	1,1-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	1,2-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	1,2-DICHLOROETHANE	0.5 UG/L	U	U	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	1,2-DICHLOROPROPANE	0.5 UG/L	U	U	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	1,3-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	1,4-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	5 UG/L	U	UJ	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	BENZENE	0.4 UG/L	J	J	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	BROMODICHLOROMETHANE	0.5 UG/L	U	U	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	BROMOFORM	0.5 UG/L	U	U	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	BROMOMETHANE	0.5 UG/L	U	U	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	CARBON TETRACHLORIDE	0.5 UG/L	U	U	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	CHLOROBENZENE	0.5 UG/L	U	U	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	CHLORODIBROMOMETHANE	0.5 UG/L	U	U	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	CHLOROETHANE	0.5 UG/L	U	U	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	CHLOROFORM	1.8 UG/L			000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	CHLOROMETHANE	0.5 UG/L	U	U	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	DICHLORODIFLUOROMETHANE	0.5 UG/L	U	U	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	ETHYLBENZENE	0.5 UG/L	U	U	000 REG	9/30/2000	10/11/2000	10/11/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16MPE1	GW	REG		178811202	EPA 8260B	U	META-,PARA-XYLENE	0.5 UG/L	U	U	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	METHYLENE CHLORIDE	1 UG/L	U	U	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	O-XYLENE	0.5 UG/L	U	U	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	TETRACHLOROETHENE	0.5 UG/L	U	U	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	TOLUENE	25 UG/L			000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	TRICHLOROETHENE	200 UG/L	E	R	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	TRICHLOROFLUOROMETHANE	0.5 UG/L	U	U	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		178811202	EPA 8260B	U	VINYL CHLORIDE	0.5 UG/L	U	U	000 REG	9/30/2000	10/11/2000	10/11/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	1,1,1-TRICHLOROETHANE	25 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	25 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	20 UG/L	JD	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	1,1,2-TRICHLOROETHANE	25 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	1,1-DICHLOROETHANE	25 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	1,1-DICHLOROETHENE	25 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	1,2-DICHLOROBENZENE	25 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	1,2-DICHLOROETHANE	25 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	1,2-DICHLOROPROPANE	25 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	1,3-DICHLOROBENZENE	25 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	1,4-DICHLOROBENZENE	25 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	250 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	BENZENE	25 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	BROMODICHLOROMETHANE	25 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	BROMOFORM	25 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	BROMOMETHANE	25 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	CARBON TETRACHLORIDE	25 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16MPE1	GW	REG		1788112A02	EPA 8260B	U	CHLOROBENZENE	25 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	CHLORODIBROMOMETHANE	25 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	CHLOROETHANE	25 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	CHLOROFORM	25 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	CHLOROMETHANE	25 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	25 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	25 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	DICHLORODIFLUOROMETHANE	25 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	ETHYLBENZENE	25 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	META-,PARA-XYLENE	25 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	METHYLENE CHLORIDE	40 UG/L	JD	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	O-XYLENE	25 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	TETRACHLOROETHENE	25 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	TOLUENE	20 UG/L	JD	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	25 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	25 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	TRICHLOROETHENE	240 UG/L	D		DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	TRICHLOROFLUOROMETHANE	25 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A02	EPA 8260B	U	VINYL CHLORIDE	25 UG/L	U	R	DL1 REG	10/17/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	1,1,1-TRICHLOROETHANE	0.5 UG/L	U	UJ	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	0.5 UG/L	U	UJ	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	12 UG/L		J	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	1,1,2-TRICHLOROETHANE	0.5 UG/L	U	UJ	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	1,1-DICHLOROETHANE	1 UG/L		J	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	1,1-DICHLOROETHENE	0.5 UG/L	U	UJ	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	1,2-DICHLOROBENZENE	0.5 UG/L	U	UJ	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	1,2-DICHLOROETHANE	0.5 UG/L	U	UJ	000 REG	10/17/2000	10/27/2000	10/27/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16MPE1	GW	REG		1788112A03	EPA 8260B	U	1,2-DICHLOROPROPANE	0.5 UG/L	U	UJ	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	1,3-DICHLOROBENZENE	0.5 UG/L	U	UJ	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	1,4-DICHLOROBENZENE	0.5 UG/L	U	UJ	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	5 UG/L	U	UJ	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	BENZENE	0.5 UG/L	J	J	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	BROMODICHLOROMETHANE	0.5 UG/L	U	UJ	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	BROMOFORM	0.5 UG/L	U	UJ	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	BROMOMETHANE	0.5 UG/L	U	UJ	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	CARBON TETRACHLORIDE	0.5 UG/L	U	UJ	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	CHLOROBENZENE	0.5 UG/L	U	UJ	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	CHLORODIBROMOMETHANE	0.5 UG/L	U	UJ	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	CHLOROETHANE	0.5 UG/L	U	UJ	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	CHLOROFORM	4.5 UG/L		J	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	CHLOROMETHANE	0.5 UG/L	J	J	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	0.5 UG/L	U	UJ	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	0.5 UG/L	U	UJ	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	DICHLORODIFLUOROMETHANE	0.5 UG/L	U	UJ	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	ETHYLBENZENE	0.5 UG/L	U	UJ	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	META-,PARA-XYLENE	0.5 UG/L	U	UJ	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	METHYLENE CHLORIDE	1 UG/L	U	UJ	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	O-XYLENE	0.5 UG/L	U	UJ	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	TETRACHLOROETHENE	0.5 UG/L	U	UJ	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	TOLUENE	14 UG/L		J	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	0.5 UG/L	U	UJ	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	0.5 UG/L	U	UJ	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	TRICHLOROETHENE	180 UG/L	E	R	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		1788112A03	EPA 8260B	U	TRICHLOROFLUOROMETHANE	0.5 UG/L	U	UJ	000 REG	10/17/2000	10/27/2000	10/27/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16MPE1	GW	REG		1788112A03	EPA 8260B	U	VINYL CHLORIDE	0.5 UG/L	U	UJ	000 REG	10/17/2000	10/27/2000	10/27/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	1,1,1-TRICHLOROETHANE	5 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	5 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	32 UG/L	D	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	1,1,2-TRICHLOROETHANE	5 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	1,1-DICHLOROETHANE	5 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	1,1-DICHLOROETHENE	5 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	1,2-DICHLOROBENZENE	5 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	1,2-DICHLOROETHANE	5 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	1,2-DICHLOROPROPANE	5 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	1,3-DICHLOROBENZENE	5 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	1,4-DICHLOROBENZENE	5 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	50 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	BENZENE	5 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	BROMODICHLOROMETHANE	5 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	BROMOFORM	5 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	BROMOMETHANE	5 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	CARBON TETRACHLORIDE	5 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	CHLOROBENZENE	5 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	CHLORODIBROMOMETHANE	5 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	CHLOROETHANE	5 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	CHLOROFORM	3 UG/L	JD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	CHLOROMETHANE	5 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	5 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	5 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	DICHLORODIFLUOROMETHANE	5 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	ETHYLBENZENE	5 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16MPE1	GW	REG		178811601	EPA 8260B	U	META-,PARA-XYLENE	5 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	METHYLENE CHLORIDE	41 UG/L	XD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	O-XYLENE	5 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	TETRACHLOROETHENE	5 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	TOLUENE	5 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	5 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	5 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	TRICHLOROETHENE	240 UG/L	D		DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	TRICHLOROFLUOROMETHANE	5 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811601	EPA 8260B	U	VINYL CHLORIDE	5 UG/L	UD	R	DL1 REG	10/18/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	1,1,1-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	0.5 UG/L	U	U	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	35 UG/L			000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	1,1,2-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	1,1-DICHLOROETHANE	0.3 UG/L	J	J	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	1,1-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	1,2-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	1,2-DICHLOROETHANE	0.5 UG/L	U	U	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	1,2-DICHLOROPROPANE	0.5 UG/L	U	U	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	1,3-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	1,4-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	5 UG/L	U	U	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	BENZENE	0.4 UG/L	J	J	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	BROMODICHLOROMETHANE	0.5 UG/L	U	U	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	BROMOFORM	0.5 UG/L	U	U	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	BROMOMETHANE	0.5 UG/L	U	U	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	CARBON TETRACHLORIDE	0.5 UG/L	U	U	000 REG	10/18/2000	10/30/2000	10/30/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16MPE1	GW	REG		178811602	EPA 8260B	U	CHLOROBENZENE	0.5 UG/L	U	U	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	CHLORODIBROMOMETHANE	0.5 UG/L	U	U	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	CHLOROETHANE	0.5 UG/L	U	U	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	CHLOROFORM	2.4 UG/L			000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	CHLOROMETHANE	0.5 UG/L	U	U	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	DICHLORODIFLUOROMETHANE	0.5 UG/L	U	U	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	ETHYLBENZENE	0.5 UG/L	U	U	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	META-,PARA-XYLENE	0.5 UG/L	U	U	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	METHYLENE CHLORIDE	1 UG/L	U	U	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	O-XYLENE	0.5 UG/L	U	U	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	TETRACHLOROETHENE	0.5 UG/L	U	U	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	TOLUENE	1.3 UG/L			000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	TRICHLOROETHENE	200 UG/L	E	R	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	TRICHLOROFLUOROMETHANE	0.5 UG/L	U	U	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811602	EPA 8260B	U	VINYL CHLORIDE	0.5 UG/L	U	U	000 REG	10/18/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	1,1,1-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	0.5 UG/L	U	U	000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	37 UG/L			000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	1,1,2-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	1,1-DICHLOROETHANE	0.2 UG/L	J	J	000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	1,1-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	1,2-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	1,2-DICHLOROETHANE	0.5 UG/L	U	U	000 REG	10/19/2000	10/30/2000	10/30/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16MPE1	GW	REG		178811801	EPA 8260B	U	1,2-DICHLOROPROPANE	0.5 UG/L	U	U	000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	1,3-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	1,4-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	5 UG/L	U	U	000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	BENZENE	0.5 UG/L	J	J	000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	BROMODICHLOROMETHANE	0.5 UG/L	U	U	000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	BROMOFORM	0.5 UG/L	U	U	000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	BROMOMETHANE	0.5 UG/L	U	U	000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	CARBON TETRACHLORIDE	0.5 UG/L	U	U	000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	CHLOROBENZENE	0.5 UG/L	U	U	000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	CHLORODIBROMOMETHANE	0.5 UG/L	U	U	000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	CHLOROETHANE	0.5 UG/L	U	U	000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	CHLOROFORM	2.5 UG/L			000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	CHLOROMETHANE	0.5 UG/L	U	U	000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	DICHLORODIFLUOROMETHANE	0.2 UG/L	J	J	000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	ETHYLBENZENE	0.5 UG/L	U	U	000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	META-,PARA-XYLENE	0.5 UG/L	U	U	000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	METHYLENE CHLORIDE	1 UG/L	U	U	000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	O-XYLENE	0.5 UG/L	U	U	000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	TETRACHLOROETHENE	0.5 UG/L	U	U	000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	TOLUENE	1.3 UG/L			000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	TRICHLOROETHENE	210 UG/L	E	R	000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811801	EPA 8260B	U	TRICHLOROFLUOROMETHANE	0.5 UG/L	U	U	000 REG	10/19/2000	10/30/2000	10/30/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16MPE1	GW	REG		178811801	EPA 8260B	U	VINYL CHLORIDE	0.5 UG/L	U	U	000 REG	10/19/2000	10/30/2000	10/30/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	1,1,1-TRICHLOROETHANE	5 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	5 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	35 UG/L	D	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	1,1,2-TRICHLOROETHANE	5 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	1,1-DICHLOROETHANE	5 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	1,1-DICHLOROETHENE	5 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	1,2-DICHLOROBENZENE	5 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	1,2-DICHLOROETHANE	5 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	1,2-DICHLOROPROPANE	5 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	1,3-DICHLOROBENZENE	5 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	1,4-DICHLOROBENZENE	5 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	50 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	BENZENE	5 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	BROMODICHLOROMETHANE	5 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	BROMOFORM	5 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	BROMOMETHANE	5 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	CARBON TETRACHLORIDE	5 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	CHLOROBENZENE	5 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	CHLORODIBROMOMETHANE	5 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	CHLOROETHANE	5 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	CHLOROFORM	3 UG/L	JD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	CHLOROMETHANE	5 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	5 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	5 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	DICHLORODIFLUOROMETHANE	5 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	ETHYLBENZENE	5 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16MPE1	GW	REG		178811803	EPA 8260B	U	META-,PARA-XYLENE	5 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	METHYLENE CHLORIDE	33 UG/L	D	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	O-XYLENE	5 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	TETRACHLOROETHENE	5 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	TOLUENE	5 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	5 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	5 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	TRICHLOROETHENE	260 UG/L	D		DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	TRICHLOROFLUOROMETHANE	5 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178811803	EPA 8260B	U	VINYL CHLORIDE	5 UG/L	UD	R	DL1 REG	10/19/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	1,1,1-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	37 UG/L			000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	1,1,2-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	1,1-DICHLOROETHANE	0.3 UG/L	J	J	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	1,1-DICHLOROETHENE	0.2 UG/L	J	J	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	1,2-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	1,2-DICHLOROETHANE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	1,2-DICHLOROPROPANE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	1,3-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	1,4-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	BENZENE	0.5 UG/L	J	J	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	BROMODICHLOROMETHANE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	BROMOFORM	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	BROMOMETHANE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	CARBON TETRACHLORIDE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
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Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16MPE1	GW	REG		178812102	EPA 8260B	U	CHLOROBENZENE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	CHLORODIBROMOMETHANE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	CHLOROETHANE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	CHLOROFORM	2.6 UG/L			000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	CHLOROMETHANE	0.5 UG/L	U	UJ	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	DICHLORODIFLUOROMETHANE	0.3 UG/L	J	J	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	ETHYLBENZENE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	META-,PARA-XYLENE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	METHYLENE CHLORIDE	1 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	O-XYLENE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	TETRACHLOROETHENE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	TOLUENE	1.1 UG/L			000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	TRICHLOROETHENE	210 UG/L	E	R	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	TRICHLOROFLUOROMETHANE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	VINYL CHLORIDE	0.5 UG/L	U	U	000 REG	10/20/2000	11/1/2000	11/1/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	1,1,1-TRICHLOROETHANE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	36 UG/L	D	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	1,1,2-TRICHLOROETHANE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	1,1-DICHLOROETHANE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	1,1-DICHLOROETHENE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	1,2-DICHLOROBENZENE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	1,2-DICHLOROETHANE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16MPE1	GW	REG		178812102	EPA 8260B	U	1,2-DICHLOROPROPANE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	1,3-DICHLOROBENZENE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	1,4-DICHLOROBENZENE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	50 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	BENZENE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	BROMODICHLOROMETHANE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	BROMOFORM	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	BROMOMETHANE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	CARBON TETRACHLORIDE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	CHLOROBENZENE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	CHLORODIBROMOMETHANE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	CHLOROETHANE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	CHLOROFORM	3 UG/L	JD	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	CHLOROMETHANE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	DICHLORODIFLUOROMETHANE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	ETHYLBENZENE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	META-,PARA-XYLENE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	METHYLENE CHLORIDE	10 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	O-XYLENE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	TETRACHLOROETHENE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	TOLUENE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	TRICHLOROETHENE	260 UG/L	D		DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812102	EPA 8260B	U	TRICHLOROFLUOROMETHANE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16MPE1	GW	REG		178812102	EPA 8260B	U	VINYL CHLORIDE	5 UG/L	U	R	DL1 REG	10/20/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	1,1,1-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	0.5 UG/L	U	U	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	32 UG/L			000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	1,1,2-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	1,1-DICHLOROETHANE	0.3 UG/L	J	J	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	1,1-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	1,2-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	1,2-DICHLOROETHANE	0.5 UG/L	U	UJ	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	1,2-DICHLOROPROPANE	0.5 UG/L	U	U	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	1,3-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	1,4-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	5 UG/L	U	U	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	BENZENE	0.5 UG/L	J	J	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	BROMODICHLOROMETHANE	0.5 UG/L	U	U	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	BROMOFORM	0.5 UG/L	U	U	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	BROMOMETHANE	0.5 UG/L	U	U	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	CARBON TETRACHLORIDE	0.5 UG/L	U	U	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	CHLOROBENZENE	0.5 UG/L	U	U	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	CHLORODIBROMOMETHANE	0.5 UG/L	U	U	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	CHLOROETHANE	0.5 UG/L	U	U	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	CHLOROFORM	2.6 UG/L			000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	CHLOROMETHANE	0.2 UG/L	J	J	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	DICHLORODIFLUOROMETHANE	0.2 UG/L	J	J	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	ETHYLBENZENE	0.5 UG/L	U	U	000 REG	10/23/2000	11/2/2000	11/2/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16MPE1	GW	REG		178812401	EPA 8260B	U	META-,PARA-XYLENE	0.5 UG/L	U	U	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	METHYLENE CHLORIDE	1 UG/L	U	U	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	O-XYLENE	0.5 UG/L	U	U	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	TETRACHLOROETHENE	0.5 UG/L	U	U	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	TOLUENE	2.5 UG/L			000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	TRICHLOROETHENE	190 UG/L	E	R	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	TRICHLOROFLUOROMETHANE	0.5 UG/L	U	U	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812401	EPA 8260B	U	VINYL CHLORIDE	0.5 UG/L	U	U	000 REG	10/23/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	1,1,1-TRICHLOROETHANE	5 UG/L	U	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	5 UG/L	U	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	33 UG/L	D	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	1,1,2-TRICHLOROETHANE	5 UG/L	U	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	1,1-DICHLOROETHANE	5 UG/L	U	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	1,1-DICHLOROETHENE	5 UG/L	U	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	1,2-DICHLOROBENZENE	5 UG/L	U	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	1,2-DICHLOROETHANE	5 UG/L	U	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	1,2-DICHLOROPROPANE	5 UG/L	U	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	1,3-DICHLOROBENZENE	5 UG/L	U	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	1,4-DICHLOROBENZENE	5 UG/L	U	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	50 UG/L	U	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	BENZENE	5 UG/L	U	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	BROMODICHLOROMETHANE	5 UG/L	U	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	BROMOFORM	5 UG/L	U	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	BROMOMETHANE	5 UG/L	U	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	CARBON TETRACHLORIDE	5 UG/L	U	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

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Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16MPE1	GW	REG		178812403	EPA 8260B	U	CHLOROBENZENE	5 UG/L	U	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	CHLORODIBROMOMETHANE	5 UG/L	U	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	CHLOROETHANE	5 UG/L	U	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	CHLOROFORM	3 UG/L	JD	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	CHLOROMETHANE	5 UG/L	U	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	5 UG/L	U	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	5 UG/L	U	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	DICHLORODIFLUOROMETHANE	5 UG/L	U	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	ETHYLBENZENE	5 UG/L	U	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	META-,PARA-XYLENE	5 UG/L	U	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	METHYLENE CHLORIDE	5 UG/L	JD	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	O-XYLENE	5 UG/L	U	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	TETRACHLOROETHENE	5 UG/L	U	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	TOLUENE	3 UG/L	JD	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	5 UG/L	U	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	5 UG/L	U	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	TRICHLOROETHENE	250 UG/L	D		DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	TRICHLOROFLUOROMETHANE	5 UG/L	U	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812403	EPA 8260B	U	VINYL CHLORIDE	5 UG/L	U	R	DL1 REG	10/23/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	1,1,1-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	0.5 UG/L	U	U	000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	33 UG/L			000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	1,1,2-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	1,1-DICHLOROETHANE	0.2 UG/L	J	J	000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	1,1-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	1,2-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	1,2-DICHLOROETHANE	0.5 UG/L	U	UJ	000 REG	10/25/2000	11/2/2000	11/2/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16MPE1	GW	REG		178812801	EPA 8260B	U	1,2-DICHLOROPROPANE	0.5 UG/L	U	U	000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	1,3-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	1,4-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	5 UG/L	U	U	000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	BENZENE	0.5 UG/L	J	J	000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	BROMODICHLOROMETHANE	0.5 UG/L	U	U	000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	BROMOFORM	0.5 UG/L	U	U	000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	BROMOMETHANE	0.5 UG/L	U	U	000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	CARBON TETRACHLORIDE	0.5 UG/L	U	U	000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	CHLOROBENZENE	0.5 UG/L	U	U	000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	CHLORODIBROMOMETHANE	0.5 UG/L	U	U	000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	CHLOROETHANE	0.5 UG/L	U	U	000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	CHLOROFORM	2.4 UG/L			000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	CHLOROMETHANE	0.5 UG/L	U	UJ	000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	DICHLORODIFLUOROMETHANE	0.2 UG/L	J	J	000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	ETHYLBENZENE	0.5 UG/L	U	U	000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	META-,PARA-XYLENE	0.5 UG/L	U	U	000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	METHYLENE CHLORIDE	1 UG/L	U	U	000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	O-XYLENE	0.5 UG/L	U	U	000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	TETRACHLOROETHENE	0.5 UG/L	U	U	000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	TOLUENE	0.96 UG/L			000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	0.5 UG/L	U	U	000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	TRICHLOROETHENE	190 UG/L	E	R	000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812801	EPA 8260B	U	TRICHLOROFLUOROMETHANE	0.5 UG/L	U	U	000 REG	10/25/2000	11/2/2000	11/2/2000

ANALYTICAL RESULTS --- CTO: 0178

Data retrieved from BEIDMS on 07-Mar-01 at 11:29 AM

Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16MPE1	GW	REG		178812801	EPA 8260B	U	VINYL CHLORIDE	0.5 UG/L	U	U	000 REG	10/25/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	1,1,1-TRICHLOROETHANE	5 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	5 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	36 UG/L	D	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	1,1,2-TRICHLOROETHANE	5 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	1,1-DICHLOROETHANE	5 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	1,1-DICHLOROETHENE	5 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	1,2-DICHLOROBENZENE	5 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	1,2-DICHLOROETHANE	5 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	1,2-DICHLOROPROPANE	5 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	1,3-DICHLOROBENZENE	5 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	1,4-DICHLOROBENZENE	5 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	50 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	BENZENE	5 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	BROMODICHLOROMETHANE	5 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	BROMOFORM	5 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	BROMOMETHANE	5 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	CARBON TETRACHLORIDE	5 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	CHLOROBENZENE	5 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	CHLORODIBROMOMETHANE	5 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	CHLOROETHANE	5 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	CHLOROFORM	3 UG/L	JD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	CHLOROMETHANE	5 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	CIS-1,2-DICHLOROETHENE	5 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	CIS-1,3-DICHLOROPROPENE	5 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	DICHLORODIFLUOROMETHANE	5 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	ETHYLBENZENE	5 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000

Continue

ANALYTICAL RESULTS --- CTO: 0178

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Facility: MCASET
Site: 00016 CRASH CREW PIT #2

Station ID	Sample Information Matrix	Type	Top Depth	Container ID	Method Code	Filter Code	Analyte Name	Results	Qualifiers Lab	Val	Result Type	Date Information Collect	Prepare	Analyze
16MPE1	GW	REG		178812802	EPA 8260B	U	META-,PARA-XYLENE	5 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	METHYLENE CHLORIDE	5 UG/L	JD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	O-XYLENE	5 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	TETRACHLOROETHENE	5 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	TOLUENE	5 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	TRANS-1,2-DICHLOROETHENE	5 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	TRANS-1,3-DICHLOROPROPENE	5 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	TRICHLOROETHENE	250 UG/L	D		DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	TRICHLOROFLUOROMETHANE	5 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178812802	EPA 8260B	U	VINYL CHLORIDE	5 UG/L	UD	R	DL1 REG	10/25/2000	11/3/2000	11/3/2000
16MPE1	GW	REG		178813101	EPA 8260B	U	1,1,1-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	10/27/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178813101	EPA 8260B	U	1,1,2,2-TETRACHLOROETHANE	0.5 UG/L	U	U	000 REG	10/27/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178813101	EPA 8260B	U	1,1,2-TRICHLORO-1,2,2-TRIFLUO	36 UG/L			000 REG	10/27/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178813101	EPA 8260B	U	1,1,2-TRICHLOROETHANE	0.5 UG/L	U	U	000 REG	10/27/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178813101	EPA 8260B	U	1,1-DICHLOROETHANE	0.2 UG/L	J	J	000 REG	10/27/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178813101	EPA 8260B	U	1,1-DICHLOROETHENE	0.5 UG/L	U	U	000 REG	10/27/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178813101	EPA 8260B	U	1,2-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	10/27/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178813101	EPA 8260B	U	1,2-DICHLOROETHANE	0.5 UG/L	U	UJ	000 REG	10/27/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178813101	EPA 8260B	U	1,2-DICHLOROPROPANE	0.5 UG/L	U	U	000 REG	10/27/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178813101	EPA 8260B	U	1,3-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	10/27/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178813101	EPA 8260B	U	1,4-DICHLOROBENZENE	0.5 UG/L	U	U	000 REG	10/27/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178813101	EPA 8260B	U	2-CHLOROETHYL VINYL ETHER	5 UG/L	U	U	000 REG	10/27/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178813101	EPA 8260B	U	BENZENE	0.5 UG/L			000 REG	10/27/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178813101	EPA 8260B	U	BROMODICHLOROMETHANE	0.5 UG/L	U	U	000 REG	10/27/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178813101	EPA 8260B	U	BROMOFORM	0.5 UG/L	U	U	000 REG	10/27/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178813101	EPA 8260B	U	BROMOMETHANE	0.5 UG/L	U	U	000 REG	10/27/2000	11/2/2000	11/2/2000
16MPE1	GW	REG		178813101	EPA 8260B	U	CARBON TETRACHLORIDE	0.5 UG/L	U	U	000 REG	10/27/2000	11/2/2000	11/2/2000