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MCAS EL TORO
SSIC NO. 5090.3

Final
Groundwater Monitoring Report
September 2001 Monitoring Round 14

for

Marine Corps Air Station El Toro, California

U.S. Navy Contract Number GS-10F-0227J
Delivery Order N68711-00-F-0102

Prepared for:

Department of the Navy
Southwest Division
Naval Facilities Engineering Command
1220 Pacific Highway
San Diego, California 92132

Prepared by:

CDM Federal Programs Corporation
3760 Convoy Street, Suite 210
San Diego, California 92111

14 February 2002

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Prepared by: Shelley Thibeault — 2/14/02

Shelley Thibeault
CDM Federal Programs Corporation
Environmental Scientist

Date

Approved by: Larry Davidson — 2/14/02

Larry Davidson, P.E.
CDM Federal Programs Corporation
Project Manager

Date

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DEPARTMENT OF THE NAVY
SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
1220 PACIFIC HIGHWAY
SAN DIEGO, CA 92132-5190

5090
Ser 06CC/0152
February 15, 2002

Ms. Triss Chesney
State of California Environmental Protection Agency
Department of Toxic Substances Control
Base Closure Unit – Southern California Operations
5796 Corporate Avenue
Cypress, CA 90630-4700

Dear Ms. Chesney:

Subject: DELIVERY OF THE FINAL GROUNDWATER MONITORING REPORT, SEPTEMBER 2001 MONITORING ROUND 14, MARINE CORPS AIR STATION, EL TORO, CALIFORNIA

We are pleased to transmit a copy of the subject document for your use. The document summarizes the results of the field sampling activities during the September 2001 sampling round (Round 14). Please do not hesitate to contact me at (619) 532-0765, or Mr. Marc Smits at (619) 532-0793 should you have any questions.

Sincerely,

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

Enclosure: 1. Final Groundwater Monitoring Report, September 2001 Monitoring Round 14 (CDM, February 2002)

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QUESTIONS MAY BE DIRECTED TO:

DIANE C. SILVA
RECORDS MANAGEMENT SPECIALIST
SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
1220 PACIFIC HIGHWAY
SAN DIEGO, CA 92132

TELEPHONE: (619) 532-3676

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Copy to:
Ms. Nicole Moutoux
U.S. EPAgency, Region IX
Hazardous Waste Management Unit
75 Hawthorne Street (SFD 8-2)
San Francisco, CA 94105-3901

Ms. Patricia Hannon (1 copy)
California RWQCB
Santa Ana Region
3737 Main Street, Suite 500
Riverside, CA 92501-3339

Ms. Polin Mondanlou (2 copies)
Environmental Remediation
Manager
MCAS El Toro LRA
Building 83
P.O. Box 53010
Irvine, CA 92619-3010

Mr. Wayne D. Lee (1 copy)
COMCABWEST AC/S Environment
Code 5AU
MCAS Miramar
P.O. Box 452013
San Diego, CA 92145-2013

Mr. Herb Levine (1 copy)
U.S. EPA, Region IX
Hazardous Waste Management Unit
75 Hawthorne Street (SFD 8-2)
San Francisco, CA 94105-3901

Ms Marcia Rudolph (1 copy)
RAB Subcommittee Chair

Mr. Jerry Werner (1 copy)
Restoration Advisory Board Co-Chair

Mr. Roy Herndon (1 copy)
Orange County Water District
10500 Ellis Avenue
Fountain Valley, CA 92708-8300

Mr. Daniel Jung (1 copy)
City of Irvine
P.O. Box 19575
Irvine, CA 92623-9575

Mr. Richard Bell (1 copy)
Irvine Ranch Water District
15600 Sand Canyon Avenue
Irvine, CA 92618

Mr. Crispin Wanyoike (1 copy)
Earth Tech Inc.
100 West Broadway, Suite 5000
Long Beach, CA 90802

Mr. Dhananjay Rawal (1 copy)
OHM Remediation Services Corp.
1202 Kettner Boulevard
San Diego, CA 92101

DEPARTMENT OF THE NAVY
SOUTHWEST DIVISION
NAVAL FACILITIES ENGINEERING COMMAND
1220 PACIFIC HIGHWAY
SAN DIEGO, CA 92132-5190

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Ms. Patricia Hannon
California Regional Water Quality Control Board
Santa Ana Region
3737 Main Street, Suite 500
Riverside, CA 92501-3339

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Hazardous Waste Management Unit
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Building 83
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Mr. Dhananjay Rawal (1 copy)
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Executive Summary

This groundwater monitoring report presents the results of sampling and groundwater level monitoring activities conducted during September 2001 at the Marine Corps Air Station (MCAS) El Toro in El Toro, California. The groundwater monitoring activities presented in this report address the fourteenth groundwater monitoring event (Round 14) conducted at MCAS El Toro since 1992. CDM Federal Programs Corporation (CDM) conducted Round 14 groundwater monitoring activities for the U.S. Department of the Navy, Southwest Division Naval Facilities Engineering Command (SWDIV).

The groundwater monitoring program currently includes sampling of wells at installation restoration program (IRP) Sites 1, 2, 3, 5, 16, 17, 18 and 24. Wells in the sampling program were selected in order to provide data to document conditions at these sites and for use in the evaluation of trends in contaminant concentrations and groundwater elevations. During Round 14, four wells from Site 16 were added to the program and five other wells were added in order to provide a comparison of analytical results between original wells and associated replacement wells that were installed in the summer of 2000. The results from the sampling of replacement and associated wells have been incorporated in the Final Technical Memorandum Replacement Well Installation and Groundwater Evaluation (Earth Tech 2001a).

Groundwater level measurements and samples were collected from 85 monitoring wells. Groundwater level measurements and groundwater samples were not collected from two monitoring wells due to inaccessibility (18_BGMP06E) and a damaged well cap (16_MW2).

The analyte list for Round 14 was selected by the Navy, as a result of discussions with the Base Realignment and Closure (BRAC) Cleanup Team, to be consistent with currently detectable contaminants at each of the sites and to provide data to supplement other ongoing studies at MCAS El Toro. Samples from all monitoring wells were analyzed for volatile organic contaminants (VOCs), the primary contaminants of concern. Samples collected from selected wells were also analyzed for radionuclides, metals, general chemistry parameters, and perchlorate during Round 14. These analytes are sampled on an annual basis. Samples were last analyzed for these parameters during June 2000 (Round 12).

The general pattern of groundwater flow in the shallow groundwater unit during Round 14 is essentially unchanged from flow patterns observed during Round 13 and are consistent with flow patterns observed during previous sampling rounds. The flow patterns observed in the principal aquifer during Round 14 are consistent with flow patterns observed during Round 13. Specific findings from the groundwater level monitoring include the following:

- Groundwater potentiometric elevations in the shallow groundwater unit increased an average of about 0.23 feet between Rounds 13 and 14 within the boundaries of MCAS El Toro. The increase is attributed to a slight increase in the recharge of the groundwater unit as a result of an increase in precipitation during the period of 01 October 2000 to 29 September 2001. The groundwater potentiometric elevations in the shallow groundwater unit west of the station boundary decreased between Rounds 13 and 14 an average of about 10 feet. This is attributed to an increase in production at off-station wells between Rounds 13 and 14. Despite these changes in groundwater elevation, the west to northwest direction of flow in the shallow groundwater unit remained unchanged from the patterns observed during Round 13 and previous sampling rounds.
- Groundwater potentiometric elevations in the principal aquifer decreased an average of approximately 31.7 feet between Rounds 13 and 14. The decrease is attributed to an increase in production of off-station wells located west and northwest of MCAS El Toro. Despite the decrease in groundwater level elevations observed during Round 14, the overall pattern of groundwater flow in the principal aquifer remained relatively unchanged from the pattern observed during Round 13 and previous sampling rounds.
- Vertical groundwater flow gradients are considered a major factor governing the distribution of VOCs in the shallow groundwater unit, the migration of VOCs from the shallow groundwater unit into the underlying principal aquifer near the west boundary of MCAS El Toro, and the distribution of VOCs in the principal aquifer west of MCAS El Toro. Although some variations in the vertical gradients from previous data were noted in the shallow groundwater unit along the western boundary of MCAS El Toro (from an upward gradient during Round 13 to a downward gradient during Round 14), the general overall vertical flow patterns remained consistent with the MCAS El Toro conceptual hydrogeological model illustrated in the Groundwater Monitoring Plan (GMP) (Bechtel National Inc. [BNI] 1999). VOC contamination remains in the upper part of the shallow groundwater unit within the Site 24 VOC source area. In the vicinity of the western boundary of MCAS El Toro, the VOC plume migrates downward to the bottom of the shallow groundwater unit in response to the transition from an upward/neutral to a downward vertical gradient in that area. Once the VOC plume enters the principal aquifer, its vertical distribution remains relatively consistent as it migrates westward in response to pumping of wells located west and northwest of MCAS El Toro.

Key findings from groundwater sampling activities and data evaluation during Round 14 are summarized as follows:

- Some VOCs were detected in samples collected from wells at Sites 3, 5, and 17 including tetrachloroethene (PCE), trichloroethane (TCE), Freon-113, 1,1-dichloroethene (DCE), benzene, bromodichloromethane, chloroform, cyclohexane, isopropylbenzene, and xylenes. With the exception of benzene in one Site 3 well, all of the detections were below the MCLs; most were qualified by the data validator as estimated. The sample collected from the Site 3 well, 04_DGMW66A, contained 150 µg/L of benzene. This was the first round of sampling during which this well was sampled. A JP5 pipeline in the vicinity of the well and/or a fuel source from IR Site 3 are possible sources of the benzene in the sample collected from well 04_DGMW66A. The JP5 pipeline is currently under investigation under a separate project. The concentration trends of benzene in this well will be monitored and evaluated in future rounds.
- Wells 02_DGMW61 and 02_NEW8A monitor a small PCE plume located along the western edge of Site 2 downgradient of the former operational landfill area. Well 02_DGMW60 monitors a small TCE plume located near the boundary of MCAS El Toro in an area where uncontrolled dumping formerly occurred. The concentrations of PCE and TCE in these monitoring wells located at Site 2 are comparable with those measured during the last sampling event at these wells (Round 12).
- Four wells at Site 16 were added to the monitoring program during Round 14. One of these four wells was not sampled due to a damaged well cap and micropurge connectors (16_MW2). The well will be repaired prior to the next round of monitoring. Results of samples collected from the remaining three wells indicate a localized plume containing VOCs (principally TCE) at concentrations up to 380 micrograms per liter (µg/L) exists beneath site 16 consistent with previous groundwater results from the remedial investigation/ feasibility study (RI/ FS) for site 16. Other VOCs detected include 1,1-dichloroethane (DCA), 1,2-DCE, chloroform, benzene and Freon-113. Concentrations of other VOCs were all below maximum contaminant levels (MCLs).
- As has been observed during Round 13 and previous rounds, the Round 14 analytical results for VOCs at Sites 18 and 24 indicate that TCE is the most frequently and widely distributed VOC found in groundwater samples. Other VOCs including PCE, 1,1-DCE, 1,2-DCE (total), carbon disulfide, carbon tetrachloride, chloroform, styrene, 1,1,2-trichloroethane (TCA), 1,2-dichloropropane, dichlorodifluoromethane, methyl acetate, vinyl chloride, and Freon 113 were also detected in samples collected from wells within Sites 18 and 24.

- The overall shape and horizontal extent of the TCE plume for the principal aquifer (Site 18) during Round 14 remains consistent with the conditions observed during Round 13. One data anomaly was noted, however, as discussed in Sections 3.2.1.4 and 3.2.1.5. An evaluation of results from Westbay well 18_MCAS01 indicates that a field or laboratory error resulted from a switch of samples or sample identification numbers for ports 18_MCAS01-3 and 18_MCAS01-5. Using the results as reported by the laboratory would completely reconfigure the TCE plumes in both the shallow groundwater unit and principal aquifer within this portion of the plume, resulting in inconsistencies with the results from all previous sampling rounds. VOCs data from future sampling rounds will be evaluated to confirm whether a field or laboratory error has occurred at this well during Round 14. Due to the uncertainty, the results for these two ports were not considered while configuring the plume for Round 14 or in the evaluation of VOCs trends.
- While the overall shape and horizontal extent of the TCE plume in the shallow groundwater unit in Round 14 remained consistent with the conditions observed during previous sampling Round 13, the TCE concentration detected in the sample collected from well 09_DBMW45 decreased from 580 μg/L during Round 13 to 360 μg/L during Round 14, resulting in minor changes to the 500 μg/L - contour in the Site 24 VOC source area. No other significant changes in concentrations were noted.
- Groundwater samples were collected and analyzed for total gross alpha and total gross beta particle activity at 21 wells during Round 14, located at Sites 2, 3, and 5. Results from these analyses are comparable to the previous sampling round (Round 12). An evaluation of radionuclides in groundwater concluded that radionuclides in groundwater at MCAS El Toro are naturally occurring (Earth Tech 2001b).
- Results of metals analyses for samples collected from 23 monitoring wells located at Sites 2, 3, 5, and 17 indicate elevated concentrations above MCLs for manganese and nickel in several monitoring wells and elevated levels of aluminum above the secondary MCL in two Site 2 wells. These results are consistent with those obtained during Round 12. Based on an evaluation of metals conducted for MCAS El Toro in 1998, metals are not considered chemicals of potential concern (Bechtel 1998) but continue to be sampled to evaluate site conditions.
- Results of general chemistry parameter analyses for samples collected from eight monitoring wells located at Sites 2, 3, 5, 17, and 24 indicate elevated levels of total dissolved solids (TDS) above the MCL in almost all of the wells sampled. Elevated chloride, nitrate/nitrite, and sulfate (above MCLs) were detected in

groundwater samples from wells located at Site 24. General chemistry parameter results are consistent with results observed during Round 12.

- Groundwater samples collected from 14 monitoring wells during Round 14, located at Sites 1, 3, and 5 were analyzed for perchlorate. All samples had concentrations of perchlorate below the California provisional action level of 18 μg/L except for the sample collected from well 01_MW201 (310 μg/L). Eight of the wells sampled for perchlorate during Round 14 were newly constructed replacement wells with no historical results for comparison purposes; however, at all of the sites except for Site 1, similar concentrations of perchlorate were found at wells previously sampled at MCAS El Toro. Generally perchlorate has been found at levels less than 15 μg/L except for at Site 1. Perchlorate data from Round 14 is intended to supplement perchlorate studies currently underway for MCAS El Toro.

Once the monitoring well program is established for the post-ROD activities, the wells from the petroleum site groundwater monitoring program should be consolidated with the IR site monitoring program. The integration of these two groundwater monitoring programs would greatly improve the efficiency of groundwater sample collection and provide an overall cost savings. Additional benefits would be to provide a basewide perspective of the groundwater conditions and cleanup progress.

At present, the groundwater monitoring program consists of sampling at wells located at IR sites to monitor the concentration of contaminants, in addition to collection of hydrogeological data to evaluate groundwater conditions over time. The program is designed to evolve to ensure that the data collected provides a clear understanding of current conditions and incorporates any changes at the IR sites (e.g., additional wells) that should be incorporated into the program. Any changes to the existing program including wells to be sampled, parameters to be analyzed for, and/or sampling methodologies will be discussed with the regulatory agencies and addressed in future groundwater monitoring reports.

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Acronyms and Abbreviations

ASTM	American Society for Testing and Materials
APCL	Applied P & Ch Laboratory
BCT	BRAC Cleanup Team
bgs	below ground surface
BNI	Bechtel National Inc.
BRAC	Base Realignment and Closure
°C	degrees Celsius
CDM	CDM Federal Programs Corporation
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CLP	(U.S. EPA) Contract Laboratory Program
COPC(s)	chemical(s) of potential concern
DCA	dichloroethane
DCE	dichloroethene
DO	dissolved oxygen
DQO	data quality objective
DVR	data validation report
DWR	Department of Water Resources
FS	feasibility study
Ft/ft	feet/foot
GMP	groundwater monitoring plan
gpm	gallons per minute
GSA	General Services Administration
ID	identification
IRP	Installation Restoration Program
IRWD	Irvine Ranch Water District
J	estimated value (data validation qualifier)
JEG	Jacobs Engineering Group Inc.
MCAS	Marine Corps Air Station
MCL(s)	maximum contaminant level(s)
µg/L	micrograms per liter
µS/cm	microsiemens per centimeter
mg/L	milligrams per liter
mL	milliliter
mL/min	milliliters per minute

Acronyms and Abbreviations (continued)

MPE	multi-phase extraction
MSL	mean sea level
MS/MSD	matrix spike/matrix spike duplicate
MTBE	methyl-tertiary butyl ether
mV	millivolt
NA	not applicable
NFESC	Naval Facilities Engineering Service Center
ND	not detected
NFA	no further action
NM	not measured
NR	not reported
NTU	nephelometric turbidity units
OCWD	Orange County Water District
ORP	oxidation-reduction potential
OU	operable unit
PARCC	precision, accuracy, representativeness, completeness, and comparability
PCE	tetrachloroethene
pCi/L	picoCuries per liter
PP	proposed plan
QA	quality assurance
QAPP	quality assurance project plan
QC	quality control
R	rejected value (data validation qualifier)
RCRA	Resource Conservation and Recovery Act
RA	remedial action
RD	remedial design
RFA	RCRA facility assessment
ROD	record of decision
RPD	relative percent difference
RI	remedial investigation
SAP	sampling and analysis plan
SOPs	standard operating procedures
SC	specific conductivity
SOW	statement of work
SDG	sample delivery group

Acronyms and Abbreviations (continued)

SWDIV	Southwest Division Naval Facilities Engineering Command
SVE	soil vapor extraction
SVOC(s)	semi-volatile organic compounds(s)
TCA	trichloroethane
TCE	trichloroethane
TDS	total dissolved solids
TOC	top of casing
U	nondetect (data validation qualifier)
UJ	nondetect, with estimated detection limit (data validation qualifier)
U.S. EPA	United States Environmental Protection Agency
UST	underground storage tank
VOC(s)	volatile organic compound(s)
WL	water level

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Section 1
Introduction

The results of groundwater monitoring activities conducted during September 2001 at the Marine Corps Air Station (MCAS) El Toro in El Toro, California (see Figure 1-1) are presented in this groundwater monitoring report. The groundwater monitoring activities described in this report were performed for the U.S. Department of the Navy, Southwest Division Naval Facilities Engineering Command (SWDIV) by CDM Federal Programs Corporation (CDM) under General Services Administration (GSA) Contract No. GS-10F-0227J, Delivery Order No. N68711-00-F-0102.

The groundwater sampling and analysis activities described in this report address the fourteenth groundwater monitoring event (Round 14) conducted at MCAS El Toro since 1992. CDM performed the monitoring activities during September 2001.

1.1 Objectives and Overview

In 1985, during routine groundwater sampling performed by the Orange County Water District (OCWD), trichloroethene (TCE) was identified in groundwater from an agricultural well located west of MCAS El Toro. A subsequent investigation by OCWD concluded that MCAS El Toro was the source of the groundwater contamination (Herndon and Reilly 1989). In 1990, the United States Environmental Protection Agency (U.S. EPA) placed MCAS El Toro on the National Priorities List requiring action under the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as a result of the identified contamination (later identified as Site 18). The Navy agreed to conduct remedial investigation (RI)/feasibility studies (FS) of 25 previously identified sites.

In 1992, the Navy initiated a comprehensive Installation Restoration Program (IRP) and CERCLA investigation at MCAS El Toro to investigate, evaluate, and, if necessary, remediate contamination resulting from historical operations. A total of 25 IRP sites have been identified at MCAS El Toro since the inception of the program. Site 23 was subsequently closed during the Resource Conservation and Recovery Act (RCRA) facility assessment (RFA) conducted at MCAS El Toro. The other sites were grouped into three Operable Units (OU-1, OU-2, and OU-3). OU-2 was subsequently divided into three subunits (OU-2A, OU-2B, and OU-2C) and was revised to include Site 24 (volatile organic compound [VOC] source area). RIs have been completed for OU-1 (JEG 1996), OU-2A (BNI 1997a), OU-2B (BNI 1997b,c), OU-2C (BNI 1997d,e), and OU-3 (BNI 1997f). Based on these RIs, no further action (NFA) was recommended for OU-2A Site 25 and OU-3 Sites 4, 6, 9, 10, 13, 15, 19, 20, 21, and 22. A NFA record of decision

(ROD) closing these 11 sites was signed in September 1997 (SWDIV 1997). A Draft NFA ROD for Sites 7 and 14 was signed in June 2001.

Further action was recommended for ten sites: Sites 2, 3, 5, 8, 11, 12, 16, 17, 18, and 24. Figure 1-2 is a regional site map showing the locations of the IRP sites and OUs currently under investigation. Groundwater contamination was identified at four of these ten sites (Sites 2, 16, 18 and 24) and was identified as an area of potential concern at landfill Sites 3, 5, and 17.

The IRP sites that are currently the primary focus of groundwater monitoring include Site 18 (Regional Groundwater Investigation), Site 24 (VOC source area), and the four on-Station landfills (Sites 2, 3, 5, and 17). Two additional sites, Site 1 and 16, have confirmed detections of contaminants in the groundwater; however, these sites are currently being investigated under the RI/FS process, which includes sampling and groundwater level measurements of wells. One well from Site 1 and four wells from Site 16 were included in monitoring Round 14 to supplement the RI/FS investigations for these sites.

The following is the current status of the groundwater investigations and other IRP site investigations being conducted at MCAS El Toro:

Site 1 – An RI is currently being conducted at Site 1. Several wells within the site have been sampled as part of the RI. One well is currently being sampled under the groundwater monitoring program to monitor trends at the site.

Site 2 - The remedial design (RD) is currently being prepared for this site. Wells in the existing groundwater program will be monitored until the remedial action is initiated. Wells for the remedial action will be monitored based on the requirements for long-term operation of the final remedy.

Sites 3 and 5 – The RD is currently being prepared for these sites. The wells in the current program, including the replacement wells, will continue to be monitored until the final remedy is in place. Optimum monitoring locations will be selected for the remedial action.

Site 8, 11, 12 – These sites are currently in the ROD stage of the CERCLA process and consist of polychlorinated biphenyl (PCB) contamination in surface soil. Previous investigations have not identified any groundwater contamination at these sites.

Site 16 – This site is currently in the FS stage of the CERCLA process that is scheduled for completion in late Spring 2002. A pilot study was conducted to determine the effectiveness of a multi-phase extraction (MPE) system in removing contaminants from the soil and groundwater. Results from the pilot-study indicate that the system was effective in removing soil vapor but was not found to be effective in removing

contaminants from groundwater. The final remedy for Site 16 will be documented in the ROD. Selected wells from Site 16 have been added to the groundwater sampling program to evaluate trends at the site over time.

Site 17 - The RD is currently being prepared for this site. Wells in the existing groundwater program will be monitored until the remedial action is initiated. Wells for the remedial action will be monitored based on the requirements for long-term operation of the final remedy.

Site 18 - A proposed plan has been prepared outlining the final remedy for the site, and the ROD is currently being developed. The proposed final remedy is the implementation of the desalter project, a groundwater collection and treatment system, to be designed and operated by the OCWD and the Irvine Ranch Water District (IRWD). The final remedy will include development of a groundwater model for the final extraction well configuration and the installation of additional wells to clearly define and monitor the plume size, contaminant concentrations, and impact of the treatment system on groundwater quality over time.

Site 24 - A draft ROD is currently being prepared for Site 24 to document the approach for treatment of the groundwater. Elements of the final remedy include the collection of groundwater for treatment at the adjacent desalter treatment system.

Groundwater monitoring activities described in this report were conducted in general accordance with provisions of the Draft Final Groundwater Monitoring Plan (GMP) (BNI, 1999). The objectives of this groundwater monitoring report are to:

- Provide a brief background and describe the basis for groundwater monitoring activities at MCAS El Toro (Section 1).
- Summarize the history of the groundwater monitoring program and describe groundwater level monitoring activities and sample analyses performed for monitoring Round 14 (Section 2).
- Summarize the evaluation of water-level measurements and groundwater sample analytical results conducted during Round 14 as well as general trends in comparison to the last sampling Round 13 (Section 3).
- Present conclusions of the data evaluation (Section 4).

1.2 Physical Setting

MCAS El Toro is situated in a semiurban agricultural area in southern California, approximately 8 miles southeast of the city of Santa Ana and 12 miles northeast of the city of Laguna Beach (Figure 1-1). MCAS El Toro occupies 4,738 acres comprising runways, prior aircraft maintenance and training facilities, prior ground-support and

construction equipment maintenance facilities, housing, shopping facilities, and other prior support facilities.

In March 1993, MCAS El Toro was placed on the Base Closure and Realignment Act list of proposed military facilities considered for base closure and was formally selected for closure in September of that year. During 1998 and early 1999, all of the aircraft squadrons were transferred to other Marine Corps and Naval Air Stations. All remaining military operations ceased when MCAS El Toro formally closed on 02 July 1999.

1.3 Site Hydrogeology

MCAS El Toro is located in the Irvine Groundwater Subbasin and is underlain by unconsolidated alluvial sediments of Holocene and Pleistocene age. The alluvial sediments beneath MCAS El Toro, and the off-Station area to the west and northwest comprise three primary hydrogeologic units. These consist of a coarse-grained interval designated the shallow groundwater unit, a deeper coarse-grained interval designated the principal aquifer, and a fine-grained intermediate zone that appears to provide some hydraulic separation between the two aquifer zones. Low-permeability semiconsolidated materials underlie the principal aquifer zone. The contact between the principal aquifer and the underlying low-permeability materials is considered the base of the water-bearing zone in this area (Herndon and Reilly 1989). Groundwater in the shallow groundwater unit is present under unconfined "water table" conditions, while groundwater in the principal aquifer is typically present under confined conditions.

Groundwater elevations in the shallow groundwater unit range from 78 feet above mean sea level (MSL) in Irvine to approximately 275 feet above MSL along the margin of the Tustin Plain near the southeastern boundary of MCAS El Toro (see Figure 1-3 for the topography of MCAS El Toro). The direction of groundwater flow in the shallow unit is generally toward the northwest, except in the foothills area located at the northeast corner of MCAS El Toro where the groundwater flow is to the west (see Figures A.2A and A.2B in Appendix A). Groundwater elevations in the foothills area range from about 426 feet above MSL near the margin of the Tustin Plain up to approximately 624 feet above MSL at the northeastern boundary of MCAS El Toro.

The intermediate zone, which separates the shallow groundwater unit from the deeper principal aquifer consists of fine-grained alluvial sediments and ranges from approximately 70 to 140 feet thick (JEG 1996). Although the vertical thickness and low-permeability suggest that the intermediate zone acts as an aquitard throughout much of the Irvine Subbasin, subsurface data also indicate that it is not a single, continuous, extensive geologic unit (JEG 1996). Monitoring data documenting the movement of VOCs from the shallow groundwater unit to the principal aquifer also indicate that some hydraulic interconnection occurs through the intermediate zone.

The principal aquifer is the main water-production zone in the Irvine area. The saturated thickness of the principal aquifer ranges from less than 50 feet in the eastern portion of the Irvine Subbasin to approximately 1,000 feet in the western portion (see Figure 1-3) (JEG 1996). Groundwater elevations in the principal aquifer under static (nonpumping) conditions range from approximately 80 feet above MSL near the western end of the Irvine Subbasin to about 160 feet above MSL along its eastern margin beneath the western corner of MCAS El Toro. Beneath MCAS El Toro, the direction of groundwater flow is generally toward the northwest and becomes more westerly in the downgradient direction off MCAS El Toro. Figures A.2C and A.2D in Appendix A present groundwater potentiometric elevation contours and groundwater flow direction for the principal aquifer based on groundwater level measurements taken during Round 14 and Round 13, respectively.

1.4 Nature and Extent of Contamination

The Navy conducted a comprehensive evaluation of the groundwater data compiled from RIs conducted on the OUs as part of the GMP (BNI 1999). The GMP summarizes the nature and extent of VOC plumes in the shallow groundwater unit and the principal aquifer at various IRP sites.

The chemicals of potential concern (COPCs) in groundwater at MCAS El Toro identified during the RIs included VOCs, semi-volatile organic compounds (SVOCs), metals and radionuclides. However, based on the GMP evaluation, the list of COPCs was reduced to VOCs and radionuclides. The reported concentrations of metals in groundwater were determined to represent background conditions. Because no SVOCs were consistently reported in every sampling event for any single well, they were considered isolated occurrences most likely attributable to sampling and analysis errors (BNI 1999).

Radionuclides have been identified in groundwater at MCAS El Toro. Gross alpha and gross beta results exceeding maximum contaminant levels (MCLs) have been reported in groundwater at IRP Site 2 (OU-2B) and IRP Sites 3 and 5 (OU-2C). Radionuclides identified in groundwater at these sites were radium-226 (at all three sites), radium 228 (at Sites 3 and 5 only), and uranium (at Site 2 only) (BNI 1999). A subsequent evaluation of radionuclides concluded that radionuclides detected in groundwater at MCAS El Toro were naturally occurring (Earth Tech 2001b).

Perchlorate has also recently been identified in groundwater at MCAS El Toro. In 1998, the Navy conducted a station wide investigation to assess the presence and concentration of perchlorate in groundwater at MCAS El Toro. With the exception of a single sample collected at Site 1, only low concentrations ($\leq$ 13 milligrams per liter [mg/L]) of perchlorate were reported (BNI 1999).

The principal COPCs in groundwater are VOCs, primarily TCE, tetrachloroethene (PCE), 1,2 -dichloroethene (DCE), 1,1-DCE, and carbon tetrachloride. Other VOCs including 1,2-dichloroethane (DCA), 1,1,1-trichloroethane (TCA), 1,1,2-TCA, chloromethane, methylene chloride, bromodichloromethane, chlorodibromomethane, and chloroform have also been detected.

The four sites at MCAS El Toro with the highest concentration of VOCs are Site 2 (inactive landfill), Site 16 (Crash Crew Pit No. 2), Site 18 (Principal Aquifer), and Site 24 (VOC Source Area). The following is a summary of the nature and extent of the VOC plumes at these sites:

Site 2 - Two small plumes containing VOCs (mainly TCE and PCE) at concentrations of up to 200 micrograms per liter (μg/L) have been identified in saturated bedrock strata downgradient of the former landfill operation area (BNI 1999).

Site 16 - A small plume containing VOCs (principally TCE) at reported concentrations up to 380 μg/L (based on data from Round 14) was identified beneath Site 16 at a depth of approximately 170 feet below ground surface (bgs).

Site 18 - A VOCs plume (principally TCE) with maximum concentrations of about 15 μg/L (as measured during Round 14) has been identified in the principal aquifer west of MCAS El Toro, extending downgradient for approximately 3 miles (see Figure B.3A in Appendix B). Site 24 on MCAS El Toro is the source area for the VOCs in this plume. Downward migration of VOCs from the shallow groundwater unit to the principal aquifer likely results from a downward vertical gradient developed by groundwater withdrawals at production wells located west of MCAS El Toro. In general the size of the plume and reported VOC concentrations within it appear to be stable. Very little change was observed from Round 13 (February 2001) to Round 14 (September 2001) (refer to Figures B.3A and B.3B).

Site 24 - The Site 24 plume within the shallow groundwater unit beneath MCAS El Toro (see Figure B.3A) consists of VOCs (predominately TCE, with less frequent concentrations of PCE, carbon tetrachloride, 1,1-DCE, and 1,2-DCE) at concentrations of up to about 780 μg/L (based on data from Round 14). VOCs are generally present uniformly throughout the upper 40 feet of the shallow groundwater unit, but migrate to the bottom of the shallow groundwater unit (about 160 to 220 feet bgs) near the southwestern boundary of MCAS El Toro and further west of MCAS El Toro. The downward migration likely results from a downward vertical gradient developed as a result of groundwater withdrawals in the underlying principal aquifer. Overall the plume appears to be stable. Only slight changes in the plume configuration were observed from Round 13 to Round 14 in the VOC source area (see Figures B.3A and B.3B). Previous rounds have shown slight decreases in TCE concentrations near the

upgradient end of the plume and slight increases in TCE concentrations near the west boundary of MCAS El Toro (BNI 1999).

1.5 Background on Groundwater Monitoring Program

The objectives of the groundwater monitoring program have changed over time based on the requirements of the IRP. As part of the OU-1, OU-2A, OU-2C and OU-3 RI/FS conducted at MCAS El Toro between 1992 and 1997, a network of on- and off-station monitoring locations (single wells, cluster wells, and Westbay multiports) were installed and sampling was conducted to determine groundwater flow patterns and to evaluate groundwater quality. Two rounds of groundwater sampling and analyses were performed under the CLEAN I program in 1992 (Round 1) and in 1993 (Round 2).

When groundwater contamination was discovered in several areas, additional rounds of sampling (Rounds 3 through 7) were conducted between 1995 and 1997 under the CLEAN II program with the objectives of monitoring potential impacts of IRP sites on groundwater quality, identifying COPCs, monitoring the extent and movement of existing plumes, evaluating changes in groundwater over time and providing data necessary to determine groundwater flow direction and hydraulic gradients. These rounds were conducted in accordance with an initial RI/FS Groundwater Monitoring Plan that was developed in 1995. The plan was modified continually to reflect additions of new wells, deletions of wells where contaminants were not reported, and evaluation of information gathered.

The draft final GMP (BNI 1999) was developed to assess groundwater conditions during the time remaining until implementation of final remedies at IRP Sites 2, 3, 5, 17, 18, and 24 and during the subsequent post-closure care period. Groundwater monitoring Rounds 8 through 11 were conducted in general accordance with the provisions of the draft final GMP, with modifications as necessary.

Modifications to the number of wells sampled and the analyses conducted at each well were implemented during Round 12. Wells were removed from the sampling list that would generate redundant data, were outside of the plume area, or were located within formerly closed sites. Analytical testing of samples collected from each well during Round 12 was selected to be consistent with contaminants at each of the sites and to support base-wide evaluations of contaminants. The groundwater monitoring report for Round 12 (CDM 2001) describes changes to the groundwater monitoring program in detail.

The monitoring program currently being implemented is intended as an interim program until the ROD phase for each of the sites being evaluated has been completed and the post-ROD design process has been initiated. The current groundwater monitoring program consists of one well at Site 1, wells at landfill Sites 2, 3, 5, and 17,

and wells at sites where groundwater plumes are known to exist (Sites 18 and 24). During Round 14, four wells from Site 16 were added to the monitoring program based on recommendations from the Base Closure Team (BCT). During the summer of 2000, monitoring wells were installed to replace wells with submerged screens. These replacement wells were incorporated into the current groundwater monitoring program for sampling during Round 13 and were also sampled during Round 14. Modifications from the Draft Final GMP conducted during Round 14 are presented in Section 2.2 of this report.

Groundwater sampling Rounds 1 to 13 were performed as follows:

Round	Date	Report Reference	Comments
1	1992-1993	JEG 1994	Phase I RI
2	1992-1993	JEG 1994	Phase I RI
3	Jan.-Feb. 1996	CDM 1996a	182 Wells/Ports
4	Nov.-Dec. 1996	CDM 1997a	182 Wells/Ports
5	March 1997	CDM 1997b	182 Wells/Ports
6	July 1997	CDM 1997c	80 Wells/Ports
7	Oct. 1997	CDM 1998	80 Wells/Ports
8	Oct. 1998	CDM 2000a	115 Wells/Ports
9	Jan.-Feb 1999	CDM 2000b	23 Wells/Ports
10	Apr.-May 1999	CDM 2000b	46 Wells/Ports
11	July-Aug. 1999	CDM 2000b	115 Wells/Ports
12	June 2000	CDM 2001a	55 Wells/Ports
13	February 2001	CDM 2001b	78 Wells/Ports

MCAS EL TORO TUSTIN, CALIFORNIA		**SITE VICINITY MAP** Groundwater Monitoring Report, Sampling Round 14 MCAS El Toro, California	FIGURE **1-1**
CDM Federal Programs Corporation	DATE: 12/01 FN: 001_1-1		
MODIFIED BY: J. Brown	PROJECT NO. 1801-001		

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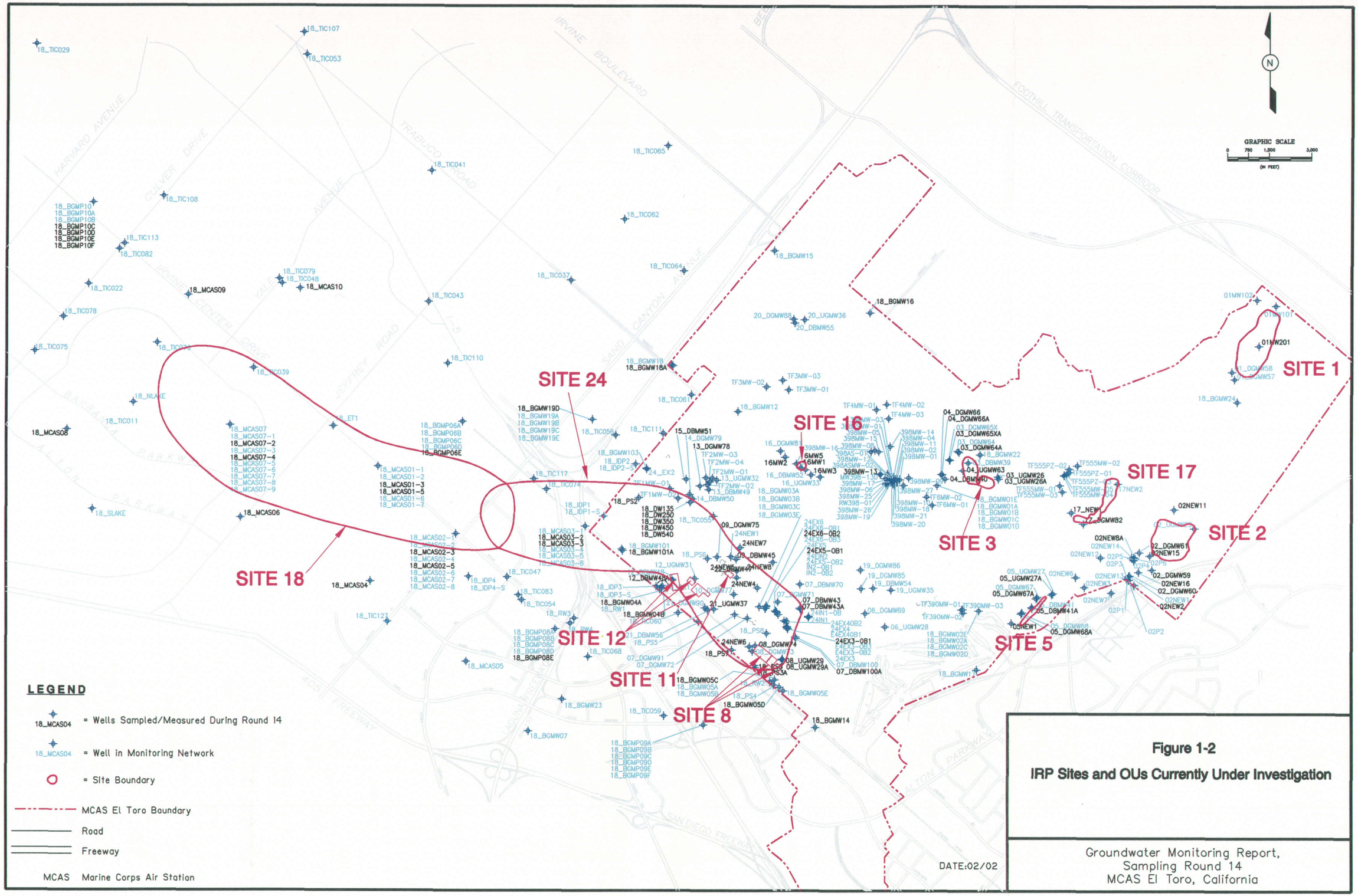

Figure 1-2

IRP Sites and OUs Currently Under Investigation

Groundwater Monitoring Report,
Sampling Round 14
MCAS El Toro, California

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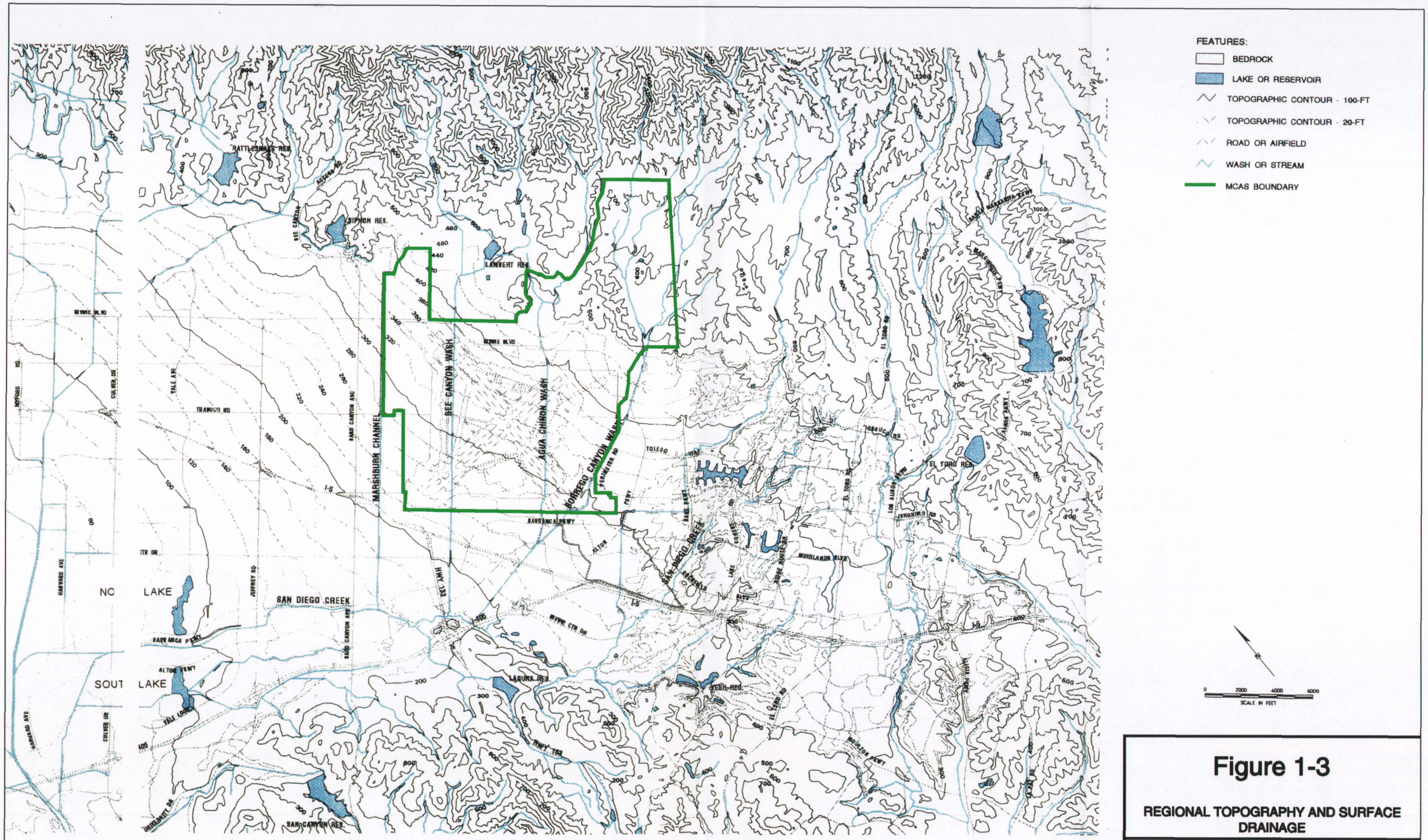

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Figure 1-3

REGIONAL TOPOGRAPHY AND SURFACE DRAINAGE

Groundwater Monitoring Report,
Sampling Round 14
MCAS El Toro, California

Section 2
Results of Monitoring Round 14

This section summarizes historical groundwater monitoring activities and groundwater monitoring activities conducted during September 2001 (Round 14) at MCAS El Toro, including groundwater sampling and groundwater level monitoring. A summary list including well type, well construction, sampling system, and groundwater level measurements for monitoring wells scheduled for sampling during Round 14 is included in Table 2-1. The locations of these wells are shown on Figure 2-1.

2.1 History of Groundwater Monitoring Program

Groundwater monitoring has been conducted at MCAS El Toro in support of RI/FS activities since 1992 (see Section 1.5). The groundwater monitoring activities described in this report were conducted in general accordance with provisions of the GMP (BNI 1999) and modifications to the groundwater monitoring program made during Round 12, except as noted in Section 2.2. The GMP provides the rationale for conducting groundwater monitoring activities at MCAS El Toro during the period remaining prior to final remedies at Sites 2, 3, 5, 17, 18, and 24.

2.2 Modifications to the Groundwater Monitoring Program

The Round 14 groundwater monitoring wells were selected in order to provide data to document the conditions at selected sites and for use in the evaluation of trends in contaminant concentrations and groundwater elevations. The monitoring program currently being conducted is intended as an interim program until the RODs for the sites being evaluated have been completed and the post-ROD design process commences. During Round 12, the groundwater monitoring program was revised to support the remedies for sites where groundwater releases have been identified. Revisions to the groundwater monitoring program were detailed in the Groundwater Monitoring Report for Round 12 (CDM 2001a). The post-ROD activities for these sites will include construction of additional wells at the sites, which will be incorporated into the monitoring program.

The groundwater monitoring program currently includes one monitoring well from Site 1 and multiple wells from Sites 2, 3, 5, 16 (four wells added during Round 14), 17, 18, and 24.

The Round 14 groundwater monitoring program was modified by the Navy, with recommendations from the BCT, from the wells and parameters presented in Table 3-7 of the GMP (BNI 1999) to provide representative sampling of the sites based on new

information not available at the time the GMP was prepared. Round 14 included all of the wells sampled during Round 13 with the addition of 9 other monitoring wells. The following general modifications were made to the sampling program in the GMP for the Round 14 activities:

- Groundwater level measurements were scheduled to be made in 87 monitoring wells (90 wells listed in GMP);
- Analytical testing was reduced to concentrate on the main contaminants of concern, VOCs, at the Site 18/24 plume (GMP included measuring natural attenuation parameters); and
- Groundwater sampling was scheduled to be conducted at 87 monitoring wells, including 15 replacement monitoring wells (GMP lists 106 wells/ports to sample).

In addition to the modifications noted, four wells from Site 16 were added to the program to continue to evaluate VOC concentrations identified in the RI/FS. Five other wells were added to the program to provide a comparison of analytical results between original wells and replacement wells that were installed in the summer of 2000. Two monitoring wells were not sampled during Round 14. Well 18_BGMP06E was not sampled because it was inaccessible due to dense vegetation. Consequently, the vehicle with sampling equipment could not safely reach the well. . Well 16_MW2 was not sampled due to a damaged wellhead. The well is located in an unpaved area near the runway and was damaged by tractor equipment that clears vegetation. Consequently all micropurge connectors on the wellhead were not useable. Efforts will be made to coordinate removal of vegetation and repair of the damaged wellhead prior to the next round of sampling.

The above modifications resulted in collection of groundwater level measurements and groundwater samples at a total of 85 wells (87 wells were scheduled for sampling). Table 2-2 lists the explanations for changes in the monitoring well sampling schedule during Round 14. The modifications are also discussed in greater detail in Section 2.2.3.

2.2.1 Groundwater Level Measurements

The number of wells from which groundwater level measurements were to be made was reduced from the GMP based on previous data and changes in the groundwater monitoring requirements since the GMP was prepared. Groundwater potentiometric maps have been prepared for each of the monitoring rounds conducted at MCAS El Toro. Appendix A, Water Level Data includes groundwater elevation maps from Rounds 13 and 14. These maps indicate that the overall groundwater flow direction is not varying over time (see Figures A.2A and A.2B). Additionally, the number of groundwater wells necessary to evaluate the overall trend of contaminants has been

reduced based on a review of past data. Therefore, the wells in which groundwater level measurements will be made have been selected to be consistent with the wells selected for groundwater sampling.

A groundwater level was not taken at 18_BGMP06E because the well was inaccessible due to dense vegetation. Consequently, the vehicle with sampling equipment could not safely reach the well. A groundwater level was not taken at 16_MW2 due to a damaged wellhead. The well is located in an unpaved area near the runway and was damaged by tractor equipment used to clear vegetation. Consequently all micropurge connectors on the wellhead were not useable.

2.2.2 Analytical Testing

The analytical testing for Round 14 was selected by the Navy to be consistent with current contaminants at each of the sites. These evaluations were initiated after the GMP was prepared; therefore, they were not addressed in the plan. All samples are analyzed for VOCs on a semi-annual basis. Samples from selected wells are analyzed for radionuclides (gross alpha/beta), dissolved metals, general chemistry parameters, and perchlorate on an annual basis. The main modification from the GMP for analytical testing is the deletion of general chemistry parameters, perchlorate, and natural attenuation parameters for selected wells. Natural attenuation analysis was identified in the GMP for Sites 18 and 24; however, the potential uses of natural attenuation will be evaluated during the development of the remedial design and not during this interim monitoring period.

2.2.3 Groundwater Sampling

Groundwater monitoring wells selected to be sampled were reduced from the number presented in the GMP because the final remedy for each of the sites will include construction of additional wells to support the remedy for each site. The intended purpose of the interim rounds of sampling is to continue to monitor the concentrations and evaluate trends of contaminates in the groundwater. Following the substantial completion of the remedial design documents for these sites, the Navy will propose additional wells to add to the program for long-term monitoring. The following presents information regarding sampling at each of the sites in the current program:

Site 1: Five Site 1 wells are listed in the GMP for sampling. However, because Site 1 is currently being investigated under the RI/FS process, all of the wells are not necessary for sampling under the groundwater monitoring program until the RI/FS is completed. During Round 13, the BCT requested that one upgradient well (01_MW201) be added to the list of wells to be sampled. This well was also included in the sampling program for Round 14.

Site 2: One upgradient well was removed from the sampling list provided in the GMP. The number of wells selected for monitoring at Site 2 was based on further investigations of Site 2 and additional wells that have been constructed since the GMP was prepared. None of the Site 2 wells were sampled during Round 13 due to EPA concerns regarding the micropurge sampling method, but all were sampled during Round 14 and will be included in subsequent sampling rounds.

Site 3: Two wells were removed from the sampling list provided in the GMP. The Navy has constructed replacement wells at Site 3 to better characterize table. During Round 13, these replacement wells were incorporated into the monitoring program. For Round 14, the same wells were sampled. Wells 03_UGMW26 and 04_DGMW66 were sampled in addition to their replacement wells (03_UGMW26A and 04_DGMW66A) to provide a comparison of analytical results between the original monitoring wells and their replacements (see Section 2.2.4 for additional information).

Site 5: One well was removed from the sampling list provided in the GMP. Replacement wells have been constructed at Site 5. Wells 05_DBMW41A, 05_DGMW67A, 05_DGMW68A, and 05_UGMW27A were sampled as replacements for wells 05_DBMW41, 05_DGMW67, 05_DGMW68, and 05_UGMW27, respectively.

Site 16: Site 16 was not part of the sampling program outlined in the GMP. The Navy added four Site 16 monitoring wells (16_MW1, 16_MW2, 16_MW3, and 16_MW5) to be sampled during Round 14 to evaluate data trends at the site over time. Due to a damaged well cap, well 16_MW2 was not sampled during Round 14 as planned.

Site 17: One well was removed from the sampling list provided in the GMP. A final ROD is currently being developed for Site 17. Following completion of the ROD, the Navy will identify additional wells to sample that will support the selected remedy.

Site 18 and 24: The main reduction in wells for these sites is in the number of Westbay wells being sampled. The Westbay wells have been reduced becaue sampling data from a select number of the ports can provide sufficient data to evaluate the overall trend for the plume. Based on past data, the concentrations and movement of the overall plume has not changed dramatically over time; therefore, representative wells have been selected at Site 18 to allow for evaluation of the plume. The same wells were sampled during Round 14 as were sampled during Round 13. Wells 07_DBMW43, 08_UGMW29, and 18_PS3 were sampled in addition to their replacement wells (07_DBMW43A, 08_UGMW29A, and 18_PS3A) to provide a comparison of analytical results between samples collected from the original wells and their replacements (see section 2.2.4 for additional information). A groundwater sample was not collected at 18_BGMP06E during Round 14 because the well was inaccessible due to dense vegetation.

2.2.4 Replacement Wells

The Navy constructed replacement monitoring wells at fifteen locations during the summer of 2000. These new wells replace wells in which the screened interval was submerged by several feet of water, and allow for collection of samples from at or near the groundwater interface. With the exception of monitoring well 18_BGMW101A, none of the replacement wells have dedicated pumps. All 15 of the replacement wells were sampled during Round 14. A list of all replacement wells is presented in Table 2-3.

During Round 14, five wells were added to the monitoring program to provide a comparison of analytical results between the original wells and their replacements. A comparison of concentrations of VOCs for these wells is presented in Table 2-4. This data was provided to the contractor conducting the replacement wells evaluation.

The evaluation summarized in the Final Technical Memorandum - *Replacement Well Installation and Groundwater Evaluation* concluded that for areas where groundwater may be impacted with petroleum hydrocarbons, monitoring wells should be screened across the water table as these compounds tend to be concentrated at the water table, especially in source areas. Submerged screens are not appropriate for monitoring hydrocarbon compounds. For areas impacted with chlorinated hydrocarbons TCE and PCE, the submerged screens did not have a significant effect on the concentrations of these chlorinated compounds. A review of soil types exposed to the screened intervals of the wells suggested that the stratigraphy exposed to the well screen is a more important factor (with regard to TCE and PCE concentrations) than the relationship of the screen to the water table (Earth Tech 2001a).

2.3 Inspection and Well Maintenance

During Round 14 groundwater monitoring activities, wells to be sampled were inspected to determine if any maintenance was required. Well 16_MW2 needs to be repaired as damage to the wellhead, including all micropurge connectors, has made it impossible to sample the well. Vegetation needs to be removed from around 18_BGMP06E to provide access by samplers, vehicles, and equipment. Maintenance on these wells will be conducted to ensure these wells will be sampled in subsequent rounds.

2.4 Groundwater Level Measurements

Groundwater level measurements during Round 14 were made at 85 monitoring wells/ports. Groundwater level measurements taken during Round 14 are included in Table 2-1. A summary of groundwater level measurements and groundwater elevations made during the current round as well as previous rounds is included in Appendix A. Groundwater elevation contour maps for the shallow groundwater unit and the principal aquifer are also included in Appendix A (Figures A.2A through A.2D).

Hydrographs prepared for selected wells that represent the general trend of potentiometric elevations in the shallow groundwater unit and in the principal aquifer are included in Appendix A.

2.5 Sampling

Groundwater quality data is presented in Appendix B of this report. Groundwater sampling for Round 14 was conducted at MCAS El Toro during September 10 through 26, 2001, and included collection of groundwater samples from 85 monitoring wells.

The following sampling methods were used during Round 14:

- Low-flow purging and sampling procedures were used at 49 single and cluster wells equipped with dedicated bladder pumps.
- Conventional three-well volume purging and sampling with a portable submersible pump was used at 23 monitoring wells that are not equipped with dedicated sampling equipment.
- Sampling using Westbay equipment was conducted at 13 ports from a total of six Westbay wells.

Purging and sampling of the wells equipped with dedicated bladder pumps (micropurge method) was performed at a constant pumping rate of approximately 100 milliliters per minute (mL/min.). Groundwater levels were monitored continuously during purging to ensure that minimal drawdown ($\leq$ 0.3 feet) was maintained. With the exception of monitoring well 07_DBMW48, measured drawdown of less than 0.3 feet was observed during low-flow purging. Drawdown measured during purging of 07_DGMW48 was 0.38 feet. In addition to drawdown, field parameter data including measurements of temperature, pH, specific conductivity (SC), oxidation-reduction potential (ORP), and dissolved oxygen (DO), were monitored continuously and logged at three- to five-minute intervals during purging using a flow-through cell (QED Model R-FC5000). Turbidity was measured at approximately three- to five-minute intervals using a portable turbidity meter. Groundwater samples were collected only after at least one pump system volume had been purged from each well and three consecutive field parameter readings for pH, temperature, and specific conductivity taken at three minute intervals had stabilized as indicated by less than a 10 percent change in the measured parameters. The pump system volume, specific to each well, represents the volume of the pump bladders (395 milliliters [mL]) plus the volume of the discharge tubing connecting the pump to the well cap (9.5 mL per foot times the tubing length).

Single and cluster monitoring wells that were not equipped with a dedicated bladder pump system were purged and sampled using a decontaminated electric submersible pump. A three-inch diameter variable-speed Grundfos pump was used for this

purpose. Purging was performed at pumping rates ranging from about 3 to 10 gallons per minute (gpm). The pumping rate and the drawdown were measured at multiple intervals during purging. A constant pumping rate was maintained at each well during purging unless the measured groundwater level approached the depth of the pump intake, necessitating a reduction in the pumping rate to reduce drawdown. During purging, field parameters (temperature, pH, SC, DO, and ORP) were measured continuously using a Horiba U-22 Water Quality Monitoring System with a flow-through cell. Measurements were logged at timed intervals. Turbidity was also measured at intervals using a portable turbidity meter. Samples were collected once the field parameters (pH, temperature, SC) had stabilized (less than a 10 percent change in the last three measured sets of parameters) and after purging a minimum of three well volumes from each well. For sample collection, the discharge rate was reduced to between 200 and 500 mL/min. The temporary pump and piping used for purging and sampling were decontaminated prior to and after purging and sampling of each well.

Multiple-port Westbay wells were sampled using Westbay equipment. A field team member trained and certified by Westbay recorded groundwater level measurements and collected groundwater samples from the Westbay wells. All groundwater level measurements were recorded from individual ports as potentiometric surface-pressure data prior to collection of groundwater samples. The ports were not purged because the Westbay sampling system is closed to the atmosphere; therefore, the groundwater collected from the sampling port is representative of the aquifer. The laboratory sample bottles were filled with groundwater brought to the surface in Westbay system sample containers filled directly from the sample ports. One set of field parameters (temperature, pH, SC, DO, and ORP) was measured prior to filling the laboratory sample bottles. The Westbay sample containers and all downhole equipment used for sampling were decontaminated prior to and after sampling of each Westbay port.

The field parameter measurements and purging and sampling log sheets are presented in Appendix C.

2.6 Sample Analysis

As described in Section 2.2, analytical testing was modified from the GMP during Round 12 in order to be consistent with contaminants present at each of the sites. The groundwater monitoring report for Round 12 (CDM 2001a) describes in detail these changes to the groundwater monitoring program. Table 2-5 presents a summary of the wells sampled for Round 14 and the laboratory analyses performed on the samples collected from each well. More complete information on the sampling and analyses performed for Round 14 is included in Table B.1A in Appendix B.

VOCs. VOCs are the primary COPCs at MCAS El Toro. All 85 samples were analyzed for VOCs using the United States Environmental Protection Agency (U.S. EPA) Contract Laboratory Program (CLP) Method (OLM 04.2).

Radionuclides. Twenty-one groundwater samples were analyzed for gross alpha and gross beta particle activity using U.S. EPA Method 900 during Round 14. Samples were collected from selected monitoring wells at Sites 2, 3, and 5 to support basewide evaluations for these analytes.

Metals. Twenty-three groundwater samples were analyzed for target metals using U.S. EPA CLP Method (ILM 0.40) during Round 14. Samples were collected from selected monitoring wells at Sites 2, 3, 5, and 17 to support basewide evaluation of metals in groundwater. Based on metals data from previous samples, the Navy selected the wells to be sampled during Round 14.

General Chemistry. Other parameters including nitrate/nitrite-N, bicarbonate, carbonate, alkalinity, chloride, sulfate and total dissolved solids (TDS), were analyzed to assess general water quality Eight groundwater samples were analyzed for these parameters during Round 14 using U.S. EPA Methods 300, 310.1, 160.1, and 353.2. Samples were collected from selected monitoring wells at Sites 2, 3, 5, 17, and 18.

Perchlorate. Groundwater samples from 14 monitoring wells were analyzed for perchlorate during Round 14. The perchlorate analyses were performed using U.S. EPA Method 300 (modified). Samples were collected from selected monitoring wells at Sites 1, 3, and 5. Analyses of samples for Round 14 were conducted to support the base wide evaluation of this analyte.

2.7 Quality Assurance/ Quality Control

Sampling procedures for Round 14 at MCAS El Toro followed the amended Final Sampling and Analysis Plan (SAP) and Quality Assurance Project Plan (QAPP) prepared for the MCAS El Toro groundwater sampling program (CDM 1996b), and the Work Plan Addendum for Groundwater Monitoring (CDM 2000c).

The data quality assessment program includes field quality control (QC) samples (field duplicates, equipment rinsates, and a field blanks), laboratory QC samples, data review/verification, and data validation. A detailed description of the Quality Assurance (QA)/QC program, procedures performed for Round 14, and results of QC sample analyses is included in Appendix E.

Table 2-1
Summary of Groundwater Monitoring Well Completion and Pump Installation Data and Water Level Data for Monitoring Round 14, September 2001
MCAS El Toro

Well Identification	Well Completion [1]	Well Type	Well TOC Elevation [2] (feet MSL)	Well Depth (feet bgs)	Casing Diameter (inches)	Screen Interval (feet bgs)	Depth of WL Probe	Sampling System [3,4]	Date Measured	Groundwater Level [5] (feet bgs)	Groundwater Elevation
SITE 1											
01-MW201	Shallow	single	665.99	62	4	27-57	42.06	bladder pump	10-Sep-01	41.96	624.02
SITE 2											
02_DGMW59	Shallow	single	506.91	94	4	69–89	67.19	bladder pump	10-Sep-01	60.45	446.46
02_DGMW60	Shallow	single	499.28	105	4	80–100	77.19	bladder pump	10-Sep-01	66.31	432.97
02_DGMW61	Shallow	single	514.85	105	4	80–100	57.19	bladder pump	10-Sep-01	49.82	465.03
02NEW11	Shallow	single	533.85	70	4	45–65	36	bladder pump	10-Sep-01	32.54	501.31
02NEW15	Shallow	single	502.33	70	4	25–65	36.33	bladder pump	10-Sep-01	32.09	470.24
02NEW16	Shallow	single	491.78	70	4	25–65	45.33	bladder pump	10-Sep-01	44.21	447.57
02NEW2	Shallow	single	494.68	100	4	75–95	78.19	bladder pump	10-Sep-01	68.95	425.73
02NEW8A	Shallow	single	512.88	109	4	84–104	57	bladder pump	10-Sep-01	48.26	464.62
SITE 3											
03_DGMW64A	Shallow	single	418.28	255	4	210-250	NA	None	11-Sep-01	218.77	199.51
03_DGMW65XA	Shallow	single	411.9	248	5	201-235	NA	None	11-Sep-01	212.28	199.62
03_UGMW26	Shallow	single	420.05	275	5	230-270	229.25	bladder pump	10-Sep-01	209.9	210.15
03_UGMW26A	Shallow	single	420.05	240	5	195-235	NA	None	11-Sep-01	207.24	212.81
04_DBMW40	Shallow	single	400.04	265	4	220–260	222.19	bladder pump	10-Sep-01	198.97	201.07
04_DGMW66	Shallow	single	401.1	295	5	250-290	223.19	bladder pump	10-Sep-01	200.14	200.96
04_DGMW66A	Shallow	single	399.09	235	5	190-230	NA	None	11-Sep-01	200.38	198.71
04_UGMW63	Shallow	single	404.11	280	5	235–275	220.19	bladder pump	10-Sep-01	197.33	206.78
SITE 5											
05_DBMW41A	Shallow	single	424.77	190	4	145-185	NA	None	19-Sep-01	157.15	267.62
05_DGMW67A	Shallow	single	428.56	195	5	150-190	NA	None	20-Sep-01	160.85	267.71
05_DGMW68A	Shallow	single	416.95	192	5	146-186	NA	None	20-Sep-01	160.85	256.1
05_UGMW27A	Shallow	single	437.86	200	4	155-195	NA	None	10-Sep-01	163.94	273.92
05NEW1	Shallow	single	407.77	208	5	163–203	179.25	bladder pump	10-Sep-01	157.49	250.28

Table 2-1
Summary of Groundwater Monitoring Well Completion and Pump Installation Data and Water Level Data for Monitoring Round 14, September 2001
MCAS El Toro

Well Identification	Well Completion [1]	Well Type	Well TOC Elevation [2] (feet MSL)	Well Depth (feet bgs)	Casing Diameter (inches)	Screen Interval (feet bgs)	Depth of WL Probe	Sampling System [3,4]	Date Measured	Groundwater Level [5] (feet bgs)	Groundwater Elevation
SITE 16											
16_MW_1	Shallow	single	329.22	181	4	155-180	166.25	bladder pump	24-Sep-01	157.4	171.82
16_MW_2	Shallow	single	322.35	178	4	153-178	164.25	bladder pump	NM	NM	NM
16_MW_3	Shallow	single	334.16	184	4	158-183	172.25	bladder pump	24-Sep-01	163.21	170.95
16_MW_5	Shallow	single	326.17	190	4	155-190	NA	None	20-Sep-01	156.4	170.13
SITE 17											
17_DGMW82	Shallow	single	551.36	260	4	235-255	198.19	bladder pump	10-Sep-01	173.15	378.21
17NEW1	Shallow	single	431.93	231	5	186–226	194.19	bladder pump	10-Sep-01	172.9	259.03
SITE 18											
18_BGMP10C	Principal	multiport	58.24	MP well	NA	752-762	NA	Westbay System	13-Sep-01	NA	-39.24
18_BGMP10D	Principal	multiport	58.24	MP well	NA	563-573	NA	Westbay System	13-Sep-01	NA	-27.83
18_BGMP10E	Principal	multiport	58.24	MP well	NA	429-439	NA	Westbay System	13-Sep-01	NA	11.41
18_BGMP10F	Principal	multiport	58.24	MP well	NA	218-229	NA	Westbay System	13-Sep-01	NA	63.18
18_BGMW04A	Principal	cluster well	243.36	311	5	286–306	104.33	bladder pump	10-Sep-01	91.77	151.59
18_DW350	Principal	cluster well	269.11	350	4	310–350	132.33	bladder pump	10-Sep-01	127.76	141.35
18_DW450	Principal	cluster well	269.12	454	4	420–450	132.33	bladder pump	10-Sep-01	121.72	147.4
18_DW540	Principal	cluster well	269.53	541	4	490–540	132.33	bladder pump	10-Sep-01	117.21	152.32
18_MCAS01-5	Principal	multiport	140.13	591	NA	330-340	NA	Westbay System	24-Sep-01	NA	69.85
18_MCAS02-5	Principal	multiport	160.6	660	NA	420-430	NA	Westbay System	12-Sep-01	NA	99.29
18_MCAS04	Principal	single	144.54	275	4	181-238	NA	None	7-Sep-01	28.53	116.01
18_MCAS06	Principal	single	115.15	286	4	167-222	NA	None	7-Sep-01	24.05	91.1
18_MCAS07-4	Principal	multiport	101.19	1152	NA	190-200	NA	Westbay System	24-Sep-01	NA	-12.0
18_MCAS08	Principal	single	85.28	435	4	392–410	NA	None	7-Sep-01	125.94	-40.66
18_MCAS09	Principal	single	77.15	450	4	372-445	NA	None	7-Sep-01	47.26	29.89
18_MCAS10	Principal	single	106.35	389	4	355-375	NA	None	7-Sep-01	56.4	49.95

Table 2-1
Summary of Groundwater Monitoring Well Completion and Pump Installation Data and Water Level Data for Monitoring Round 14, September 2001
MCAS El Toro

Well Identification	Well Completion [1]	Well Type	Well TOC Elevation [2] (feet MSL)	Well Depth (feet bgs)	Casing Diameter (inches)	Screen Interval (feet bgs)	Depth of WL Probe	Sampling System [3,4]	Date Measured	Groundwater Level [5] (feet bgs)	Groundwater Elevation
SITE 24											
07_DBMW100A	Shallow	single	286.44	138	4	92-132	NA	None	6-Sep-01	97.91	188.53
07_DBMW43	Shallow	single	292.56	195	4	150-190	127.33	bladder pump	11-Sep-01	110.76	181.8
07_DBMW43A	Shallow	single	292.56	146	4	101-141	NA	None	6-Sep-01	107.25	185.31
08_DGMW74	Shallow	single	264.75	135	4	90—130	101.33	bladder pump	7-Sep-01	79.88	184.87
08_UGMW29	Shallow	single	271.94	140	4	95-135	103.33	bladder pump	7-Sep-01	81	190.94
08_UGMW29A	Shallow	single	271.94	115	4	75-105	NA	None	6-Sep-01	82.43	189.51
09_DBMW45	Shallow	single	280	162	4	117—157	133.19	bladder pump	10-Sep-01	111.22	168.78
09_DGMW75	Shallow	single	271	159	4	114—154	127.19	bladder pump	10-Sep-01	105.24	165.76
12_DBMW48A	Shallow	single	247.81	146	4	74-104	NA	None	7-Sep-01	85.9	161.91
13_DGMW78	Shallow	single	276.14	172	4	127—167	139.33	bladder pump	10-Sep-01	117.11	159.03
15_DBMW51	Shallow	single	269.26	170	4	125—165	135.21	bladder pump	10-Sep-01	112.09	157.17
18_BGMP08E	Shallow	multiport	195.7	MP well	NA	63-73	NA	Westbay System	13-Sep-01	NA	127.72
18_BGMP06E	Shallow	multiport	175.41	MP well	NA	105-115	NA	Westbay System	NM	NM	NM
18_BGMW04B	Shallow	cluster well	243.58	215	4	190—210	99.25	bladder pump	10-Sep-01	80.02	163.56
18_BGMW05C	Shallow	cluster well	269.39	250	5	225—245	97.5	bladder pump	10-Sep-01	76.59	192.8
18_BGMW05D	Shallow	cluster well	270.42	138	6	83—133	98.33	bladder pump	10-Sep-01	77.24	193.18
18_BGMW101A	Shallow	single	232.8	105	4	68-98	94.77	bladder pump	10-Sep-01	76.21	156.59
18_BGMW14	Shallow	single	268.67	120	4	75—115	86.19	bladder pump	10-Sep-01	66.16	202.51
18_BGMW16	Shallow	single	376.67	268	5	223—263	230.19	bladder pump	10-Sep-01	206.28	170.39
18_BGMW18A	Shallow	single	276.49	154	4	114-148	NA	None	10-Sep-01	123.89	152.6
18_BGMW19D	Shallow	cluster well	232.54	175	5	150—170	105.19	bladder pump	11-Sep-01	83.63	148.91
18_DW135	Shallow	cluster well	268.9	135	4	115—135	131.33	bladder pump	10-Sep-01	109.44	159.46
18_DW250	Shallow	cluster well	268.82	254	4	215—250	130.33	bladder pump	10-Sep-01	112.78	156.04
18_MCAS01-3	Shallow	multiport	140.13	MP well	NA	210—220	NA	Westbay System	24-Sep-01	NA	98.71
18_MCAS02-3	Shallow	multiport	160.6	MP well	NA	200—210	NA	Westbay System	12-Sep-01	NA	118.99

Table 2-1
Summary of Groundwater Monitoring Well Completion and Pump Installation Data and Water Level Data for Monitoring Round 14, September 2001
MCAS El Toro

Well Identification	Well Completion [1]	Well Type	Well TOC Elevation [2] (feet MSL)	Well Depth (feet bgs)	Casing Diameter (inches)	Screen Interval (feet bgs)	Depth of WL Probe	Sampling System [3,4]	Date Measured	Groundwater Level [5] (feet bgs)	Groundwater Elevation
18_MCAS03-2	Shallow	multiport	216.22	MP well	NA	160-170	NA	Westbay System	11-Sep-01	NA	148.77
18_MCAS03-3	Shallow	multiport	216.22	MP well	NA	220–230	NA	Westbay System	11-Sep-01	NA	144.18
18_MCAS07-2	Shallow	multiport	101.19	MP well	NA	190–200	NA	Westbay System	24-Sep-01	NA	78.54
18_PS2	Shallow	single	246.73	133	4	103–133	115.33	bladder pump	10-Sep-01	94.91	151.82
18_PS3	Shallow	single	266.47	122	4	102-122	NA	None	11-Sep-01	179.28	87.19
18_PS3A	Shallow	single	266.47	110.5	4	70-105	NA	None	10-Sep-01	75.85	190.62
18_PS7	Shallow	single	260	127	4	106–126	100.33	bladder pump	10-Sep-01	81.57	178.43
21_UGMW37	Shallow	single	257.87	135	4	89-130	NA	None	7-Sep-01	84.89	172.98
22_DBMW47	Shallow	single	277.83	161	4	116–156	129.25	bladder pump	7-Sep-01	106.72	171.11
24EX3OB1	Shallow	single	288.84	155	4	105–150	125.33	bladder pump	7-Sep-01	103.22	185.62
24EX5OB1	Shallow	single	283.91	155	4	105–150	123.33	bladder pump	7-Sep-01	100.89	183.02
24EX6OB2	Shallow	single	282.96	156	4	106–151	125.33	bladder pump	7-Sep-01	103.02	179.94
24NEW4	Shallow	single	281.8	154	4	108–148	125.33	bladder pump	7-Sep-01	102.81	178.99
24NEW5	Shallow	single	279.2	255	5	230–250	128.5	bladder pump	7-Sep-01	111.28	167.92
24NEW6	Shallow	single	265.6	190	5	165–185	99.56	bladder pump	7-Sep-01	78.36	187.24
24NEW7	Shallow	single	285.1	164	4	118–158	136.33	bladder pump	7-Sep-01	114.4	170.7
24NEW8	Shallow	single	291.5	168	4	122–162	140.33	bladder pump	7-Sep-01	117.26	174.24
398MW-13	Shallow	single	368.87	243	4	193-243	NA	None	11-Sep-01	185.5	183.37

Notes:
1 Identifies the wells/ports that monitor either the Shallow Groundwater Unit or Principal Aquifer.
2 Well elevations of top of casing (TOC) in feet above mean sea level (MSL); bgs = below ground surface.
3 Bladder pumps are equipped with dedicated groundwater level (WL) probes for measuring height of water column above probes; measurements subsequently converted to groundwater elevations.
4 Wells without dedicated systems are sampled with temporary submersible pumps.
5 Depth to groundwater measurements below TOC from September 2001; rounded off to nearest 0.01 foot.

NA = Not Applicable
MCAS = Marine Corps Air Station
NM = Not Measured
MP = Multiport

Table 2-2
Summary of Changes to the Groundwater Monitoring Program
Monitoring Round 14, September 2001
MCAS El Toro

Well Id	Well Completion	Screen Interval (feet bgs)	Sampling System	WL	Sampled	Date Sampled	Changes in Sampling Program for Round 14
SITE 1							
01-MW201	Shallow	27-57	bladder pump	X	X	25-Sep-01	None.
SITE 2							
02_DGMW59	Shallow	69–89	bladder pump	X	X	25-Sep-01	None.
02_DGMW60	Shallow	80–100	bladder pump	X	X	25-Sep-01	None.
02_DGMW61	Shallow	80–100	bladder pump	X	X	25-Sep-01	None.
02NEW11	Shallow	45–65	bladder pump	X	X	25-Sep-01	None.
02NEW15	Shallow	25–65	bladder pump	X	X	25-Sep-01	None.
02NEW16	Shallow	25–65	bladder pump	X	X	25-Sep-01	None.
02NEW2	Shallow	75–95	bladder pump	X	X	25-Sep-01	None.
02NEW8A	Shallow	84–104	bladder pump	X	X	25-Sep-01	None.
SITE 3							
03_DGMW64A	Shallow	210-250	None	X	X	17-Sep-01	None.
03_DGMW65XA	Shallow	201-235	None	X	X	17-Sep-01	None.
03_UGMW26	Shallow	230-270	bladder pump	X	X	20-Sep-01	Well added for Round 14 to compare analytical results between original well and replacement well.
03_UGMW26A	Shallow	195-235	None	X	X	20-Sep-01	None.
04_DBMW40	Shallow	220–260	bladder pump	X	X	20-Sep-01	None.
04_DGMW66	Shallow	250-290	bladder pump	X	X	20-Sep-01	Well added for Round 14 to compare analytical results between original well and replacement well.
04_DGMW66A	Shallow	190-230	None	X	X	20-Sep-01	None.
04_UGMW63	Shallow	235–275	bladder pump	X	X	20-Sep-01	None.

Table 2-2
Summary of Changes to the Groundwater Monitoring Program
Monitoring Round 14, September 2001
MCAS El Toro

Well Id	Well Completion	Screen Interval (feet bgs)	Sampling System	WL	Sampled	Date Sampled	Changes in Sampling Program for Round 14
SITE 5							
05_DBMW41A	Shallow	145-185	None	X	X	19-Sep-01	None.
05_DGMW67A	Shallow	150-190	None	X	X	19-Sep-01	None.
05_DGMW68A	Shallow	146-186	None	X	X	20-Sep-01	None.
05_UGMW27A	Shallow	155-195	None	X	X	24-Sep-01	None.
05NEW1	Shallow	163 – 203	bladder pump	X	X	19-Sep-01	None.
SITE 16							
16_MW_1	Shallow	155-180	bladder pump	X	X	24-Sep-01	Well added to sampling program during Round 14.
16_MW_2	Shallow	153-178	bladder pump	NS	NS	NS	Well added during Round 14. Well not sampled due to damaged well cap micropurge connectors
16_MW_3	Shallow	158-183	bladder pump	X	X	24-Sep-01	Well added to sampling program during Round 14.
16_MW_5	Shallow	155-190	None	X	X	20-Sep-01	Well added to sampling program during Round 14.
SITE 17							
17_DGMW82	Shallow	235-255	bladder pump	X	X	20-Sep-01	None.
17NEW1	Shallow	186 – 226	bladder pump	X	X	20-Sep-01	None.
SITE 18							
18_BGMP10C	Principal	752-762	Westbay System	X	X	13-Sep-01	None.
18_BGMP10D	Principal	563-573	Westbay System	X	X	13-Sep-01	None.
18_BGMP10E	Principal	429-439	Westbay System	X	X	13-Sep-01	None.
18_BGMP10F	Principal	218-229	Westbay System	X	X	13-Sep-01	None.

Table 2-2
Summary of Changes to the Groundwater Monitoring Program
Monitoring Round 14, September 2001
MCAS El Toro

Well Id	Well Completion	Screen Interval (feet bgs)	Sampling System	WL	Sampled	Date Sampled	Changes in Sampling Program for Round 14
18_BGMW04A	Principal	286–306	bladder pump	X	X	19-Sep-01	None.
18_DW350	Principal	310–350	bladder pump	X	X	21-Sep-01	None.
18_DW450	Principal	420–450	bladder pump	X	X	21-Sep-01	None.
18_DW540	Principal	490–540	bladder pump	X	X	21-Sep-01	None.
18_MCAS01-5	Principal	330-340	Westbay System	X	X	24-Sep-01	None.
18_MCAS02-5	Principal	420-430	Westbay System	X	X	12-Sep-01	None.
18_MCAS04	Principal	181-238	None	X	X	24-Sep-01	None.
18_MCAS06	Principal	167-222	None	X	X	24-Sep-01	None.
18_MCAS07-4	Principal	190-200	Westbay System	X	X	24-Sep-01	None.
18_MCAS08	Principal	392–410	None	X	X	21-Sep-01	None.
18_MCAS09	Principal	372-445	None	X	X	18-Sep-01	None.
18_MCAS10	Principal	355-375	None	X	X	21-Sep-01	None.
SITE 24							
07_DBMW100A	Shallow	92-132	None	X	X	18-Sep-01	None.
07_DBMW43	Shallow	150-190	bladder pump	X	X	18-Sep-01	Well added for Round 14 to compare analytical results between original well and replacement well.
07_DBMW43A	Shallow	101-141	None	X	X	17-Sep-01	None.
08_DGMW74	Shallow	90–130	bladder pump	X	X	18-Sep-01	None.
08_UGMW29	Shallow	95-135	bladder pump	X	X	18-Sep-01	Well added for Round 14 to compare analytical results between original well and replacement well.
08_UGMW29A	Shallow	75-105	None	X	X	18-Sep-01	None.
09_DBMW45	Shallow	117–157	bladder pump	X	X	17-Sep-01	None.

Table 2-2
Summary of Changes to the Groundwater Monitoring Program
Monitoring Round 14, September 2001
MCAS El Toro

Well Id	Well Completion	Screen Interval (feet bgs)	Sampling System	WL	Sampled	Date Sampled	Changes in Sampling Program for Round 14
09_DGMW75	Shallow	114 – 154	bladder pump	X	X	17-Sep-01	None.
12_DBMW48A	Shallow	74-104	None	X	X	14-Sep-01	None.
13_DGMW78	Shallow	127 – 167	bladder pump	X	X	21-Sep-01	None.
15_DBMW51	Shallow	125 – 165	bladder pump	X	X	21-Sep-01	None.
18_BGMP08E	Shallow	63-73	Westbay System	X	X	13-Sep-01	None.
18_BGMP06E	Shallow	105-115	Westbay System	NS	NS	NS	Well not sampled because it was inaccessible due to dense vegetation.
18_BGMW04B	Shallow	190 – 210	bladder pump	X	X	19-Sep-01	None.
18_BGMW05C	Shallow	225 – 245	bladder pump	X	X	19-Sep-01	None.
18_BGMW05D	Shallow	83 – 133	bladder pump	X	X	19-Sep-01	None.
18_BGMW101A	Shallow	68-98	bladder pump	X	X	19-Sep-01	None.
18_BGMW14	Shallow	75 – 115	bladder pump	X	X	24-Sep-01	None.
18_BGMW16	Shallow	223 – 263	bladder pump	X	X	24-Sep-01	None.
18_BGMW18A	Shallow	114-148	None	X	X	17-Sep-01	None.
18_BGMW19D	Shallow	150 – 170	bladder pump	X	X	24-Sep-01	None.
18_DW135	Shallow	115 – 135	bladder pump	X	X	21-Sep-01	None.
18_DW250	Shallow	215 – 250	bladder pump	X	X	21-Sep-01	None.
18_MCAS01-3	Shallow	210 – 220	Westbay System	X	X	24-Sep-01	None.
18_MCAS02-3	Shallow	200 – 210	Westbay System	X	X	12-Sep-01	None.
18_MCAS03-2	Shallow	160-170	Westbay System	X	X	11-Sep-01	None.
18_MCAS03-3	Shallow	220 – 230	Westbay System	X	X	11-Sep-01	None.
18_MCAS07-2	Shallow	190 – 200	Westbay System	X	X	24-Sep-01	None.
18_PS2	Shallow	103 – 133	bladder pump	X	X	19-Sep-01	None.

Table 2-2
Summary of Changes to the Groundwater Monitoring Program
Monitoring Round 14, September 2001
MCAS El Toro

Well Id	Well Completion	Screen Interval (feet bgs)	Sampling System	WL	Sampled	Date Sampled	Changes in Sampling Program for Round 14
18_PS3	Shallow	102-122	None	X	X	25-Sep-01	Well added for Round 14 to compare analytical results between original well and replacement well.
18_PS3A	Shallow	70-105	None	X	X	18-Sep-01	None.
18_PS7	Shallow	106–126	bladder pump	X	X	25-Sep-01	None.
21_UGMW37	Shallow	89-130	None	X	X	14-Sep-01	None.
22_DBMW47	Shallow	116–156	bladder pump	X	X	17-Sep-01	None.
24EX3OB1	Shallow	105–150	bladder pump	X	X	18-Sep-01	None.
24EX5OB1	Shallow	105–150	bladder pump	X	X	18-Sep-01	None.
24EX6OB2	Shallow	106–151	bladder pump	X	X	18-Sep-01	None.
24NEW4	Shallow	108–148	bladder pump	X	X	18-Sep-01	None.
24NEW5	Shallow	230–250	bladder pump	X	X	18-Sep-01	None.
24NEW6	Shallow	165–185	bladder pump	X	X	19-Sep-01	None.
24NEW7	Shallow	118–158	bladder pump	X	X	19-Sep-01	None.
24NEW8	Shallow	122–162	bladder pump	X	X	18-Sep-01	None.
398MW-13	Shallow	193-243	None	X	X	14-Sep-01	None.
			Totals:	85	85		

Notes:
Changes are in relation to the previous sampling Round 13.
bgs = below ground surface
MCAS = Marine Corps Air Station
WL = Water Level

Table 2-3
Summary of Replacement Wells Constructed During Summer 2000
MCAS El Toro

Replacement Well ID	Nearby Existing Well	Location
Near UST Group 651		
18_BGMW18A	18_BGMW18	Near Main Entrance and West of UST Group 651
Near or Adjacent to IRP Site 24		
07_DBMW100A	07_DBMW100	IRP Site 24 Vicinity
07_DBMW43A	07_DBMW43	IRP Site 24 Vicinity
08_UGMW29A	08_UGMW29	IRP Site 24 Vicinity
18_PS3A	18_PS3	IRP Site 24 Vicinity
IRP Site 3, IRP Site 5, and Other Areas		
03_DGMW64A	03_DGMW64	IRP Site 3 Vicinity
03_DGMW65XA	03_DGMW65X	IRP Site 3 Vicinity
03_UGMW26A	03_UGMW26	IRP Site 3 Vicinity
04_DGMW66A	04_DGMW66	IRP Site 3 Vicinity
05_UGMW27A	05_UGMW27	IRP Site 5 Vicinity
05_DBMW41A	05_DBMW41	IRP Site 5 Vicinity
05_DGMW67A	05_DGMW67	IRP Site 5 Vicinity
05_DGMW68A	05_DGMW68	IRP Site 5 Vicinity
12_DBMW48A	12_DBMW48	IRP Sites 12/24 Vicinity
18_BGMW101A	18_BGMW101	IRP Site 24 Vicinity
18_BGMW18A	18_BGMW18	IRP Site 24 Vicinity

Notes:
Table 2-1 includes well completion information for these wells.
IRP = Installation Restoration Program
MCAS = Marine Corps Air Station
UST = underground storage tank

Table 2-4
VOCs in Groundwater Samples from Original Wells in Comparison to Groundwater Samples from Replacement Wells MCAS El Toro

Sample Identification	Sampling System	Sample Date	TCE (µg/L)	PCE (µg/L)	CCl_4 (µg/L)	1,1-DCE (µg/L)	1,2-DCE (total) (µg/L)	Chloroform (µg/L)	Benzene (µg/L)
03_UGMW26	D	20-Sep-01	1	1	1 U	1 U	1 U	1 U	1 U
03_UGMW26A	ND	20-Sep-01	1 U	1 U	1 U	1 U	1 U	0.4 J	1 U
04_DGMW66	D	20-Sep-01	1 U	1 U	1 U	1 UJ	1 UJ	1 U	1 U
04_DGMW66A	ND	20-Sep-01	1 U	1 U	1 U	1 U	1 U	1 U	150
07_DBMW43	D	18-Sep-01	1 U	1 U	1 U	1 U	1 U	1 U	1 U
07_DBMW43A	ND	17-Sep-01	31	1 U	2	0.6 J	1 U	0.6 J	1 U
08_UGMW29	D	18-Sep-01	16	1 U	1 U	1 U	1 U	0.6 J	1 U
08_UGMW29A	ND	18-Sep-01	46	1 U	1 U	1 U	1 U	2	1 U
18_PS3	ND	25-Sep-01	3	3	1 U	1 U	1 U	1 U	1 U
18_PS3A	ND	18-Sep-01	10	7	1 U	1 U	0.3 J	0.3 J	1 U

Notes:
MCAS = Marine Corps Air Station
µg/L = micrograms per liter
U = not detected
UJ = not detected, estimated detection limit
J = estimated concentration
D = dedicated pump system
ND = non-dedicated pump system
CCl_4 = carbon tetrachloride
1,1-DCE = 1,1-dichloroethene
1,2-DCE = 1,2-dichloroethene
PCE = tetrachloroethylene
TCE = trichloroethylene

Table 2-5
Summary of Groundwater Sampling and Analyses - Round 14
MCAS El Toro

Well Id	Sampling System	Date Sampled	VOCs	Gross Alpha/Beta	Metals (filtered)	General Chemistry	Perchlorate	QC Samples
SITE 1								
01-MW201	bladder pump	25-Sep-01	X				X	
SITE 2								
02_DGMW59	bladder pump	25-Sep-01	X	X	X			
02_DGMW60	bladder pump	25-Sep-01	X	X	X			
02_DGMW61	bladder pump	25-Sep-01	X	X	X			
02NEW11	bladder pump	25-Sep-01	X	X	X			
02NEW15	bladder pump	25-Sep-01	X	X	X			Duplicate
02NEW16	bladder pump	25-Sep-01	X	X	X	X		
02NEW2	bladder pump	25-Sep-01	X	X	X			
02NEW8A	bladder pump	25-Sep-01	X	X	X			
SITE 3								
03_DGMW64A	None	17-Sep-01	X	X	X	X	X	
03_DGMW65XA	None	17-Sep-01	X	X	X	X	X	
03_UGMW26	bladder pump	20-Sep-01	X	X	X		X	
03_UGMW26A	None	20-Sep-01	X	X	X		X	
04_DBMW40	bladder pump	20-Sep-01	X	X	X		X	
04_DGMW66	bladder pump	20-Sep-01	X	X	X		X	Duplicate
04_DGMW66A	None	20-Sep-01	X	X	X		X	
04_UGMW63	bladder pump	20-Sep-01	X	X	X		X	
SITE 5								
05_DBMW41A	None	19-Sep-01	X	X	X		X	
05_DGMW67A	None	19-Sep-01	X	X	X		X	
05_DGMW68A	None	20-Sep-01	X	X	X		X	
05_UGMW27A	None	24-Sep-01	X	X	X		X	Duplicate
05NEW1	bladder pump	19-Sep-01	X	X	X	X	X	
SITE 16								
16_MW_1	bladder pump	24-Sep-01	X					Duplicate
16_MW_2	bladder pump	Not Sampled	NS					
16_MW_3	bladder pump	24-Sep-01	X					
16_MW_5	None	20-Sep-01	X					
SITE 17								
17_DGMW82	bladder pump	20-Sep-01	X		X	X		
17NEW1	bladder pump	20-Sep-01	X		X	X		

Table 2-5
Summary of Groundwater Sampling and Analyses - Round 14
MCAS El Toro

Well Id	Sampling System	Date Sampled	VOCs	Gross Alpha/Beta	Metals (filtered)	General Chemistry	Perchlorate	QC Samples
SITE 18								
18_BGMP10C	Westbay	13-Sep-01	X					
18_BGMP10D	Westbay	13-Sep-01	X					FB/ER
18_BGMP10E	Westbay	13-Sep-01	X					
18_BGMP10F	Westbay	13-Sep-01	X					
18_BGMW04A	bladder pump	19-Sep-01	X					
18_DW350	bladder pump	21-Sep-01	X					
18_DW450	bladder pump	21-Sep-01	X					Duplicate
18_DW540	bladder pump	21-Sep-01	X					
18_MCAS01-5	Westbay	24-Sep-01	X					
18_MCAS02-5	Westbay	12-Sep-01	X					Duplicate
18_MCAS04	None	24-Sep-01	X					
18_MCAS06	None	24-Sep-01	X					ER
18_MCAS07-4	Westbay	24-Sep-01	X					
18_MCAS08	None	21-Sep-01	X					
18_MCAS09	None	18-Sep-01	X					
18_MCAS10	None	21-Sep-01	X					
SITE 24								
07_DBMW100A	None	18-Sep-01	X					
07_DBMW43	bladder pump	18-Sep-01	X					
07_DBMW43A	None	17-Sep-01	X					
08_DGMW74	bladder pump	18-Sep-01	X					
08_UGMW29	bladder pump	18-Sep-01	X					
08_UGMW29A	None	18-Sep-01	X					
09_DBMW45	bladder pump	17-Sep-01	X					
09_DGMW75	bladder pump	17-Sep-01	X					
12_DBMW48A	None	14-Sep-01	X					
13_DGMW78	bladder pump	21-Sep-01	X					Duplicate
15_DBMW51	bladder pump	21-Sep-01	X					
18_BGMP08E	Westbay	13-Sep-01	X					
18_BGMPO6E	Westbay	Not Sampled	NS					
18_BGMW04B	bladder pump	19-Sep-01	X					
18_BGMW05C	bladder pump	19-Sep-01	X					
18_BGMW05D	bladder pump	19-Sep-01	X					

Table 2-5
Summary of Groundwater Sampling and Analyses - Round 14
MCAS El Toro

Well Id	Sampling System	Date Sampled	VOCs	Gross Alpha/Beta	Metals (filtered)	General Chemistry	Perchlorate	QC Samples
18_BGMW101A	bladder pump	19-Sep-01	X					
18_BGMW14	bladder pump	24-Sep-01	X					
18_BGMW16	bladder pump	24-Sep-01	X			X		
18_BGMW18A	None	17-Sep-01	X			X		
18_BGMW19D	bladder pump	24-Sep-01	X					Duplicate
18_DW135	bladder pump	21-Sep-01	X					
18_DW250	bladder pump	21-Sep-01	X					
18_MCAS01-3	Westbay	24-Sep-01	X					
18_MCAS02-3	Westbay	12-Sep-01	X					
18_MCAS03-2	Westbay	11-Sep-01	X					
18_MCAS03-3	Westbay	11-Sep-01	X					
18_MCAS07-2	Westbay	24-Sep-01	X					
18_PS2	bladder pump	19-Sep-01	X					
18_PS3	None	25-Sep-01	X					
18_PS3A	None	18-Sep-01	X					
18_PS7	bladder pump	25-Sep-01	X					
21_UGMW37	None	14-Sep-01	X					
22_DBMW47	bladder pump	17-Sep-01	X					
24EX3OB1	bladder pump	18-Sep-01	X					
24EX5OB1	bladder pump	18-Sep-01	X					
24EX6OB2	bladder pump	18-Sep-01	X					
24NEW4	bladder pump	18-Sep-01	X					Duplicate
24NEW5	bladder pump	18-Sep-01	X					
24NEW6	bladder pump	19-Sep-01	X					
24NEW7	bladder pump	19-Sep-01	X					
24NEW8	bladder pump	18-Sep-01	X					
398MW-13	None	14-Sep-01	X					
		Totals:	85	21	23	8	14	12

Notes:
Table B.1A in Appendix B shows complete sample analyses including methods for Round 14
ER = Equipment Rinsate
FB = ASTM Water field blank
MCAS = Marine Corps Air Station
NS = Not sampled due to damaged well cap (16_MW2) and inaccessibility (18_BGMP06E).
QC = quality control
VOCs = volatile organic compounds

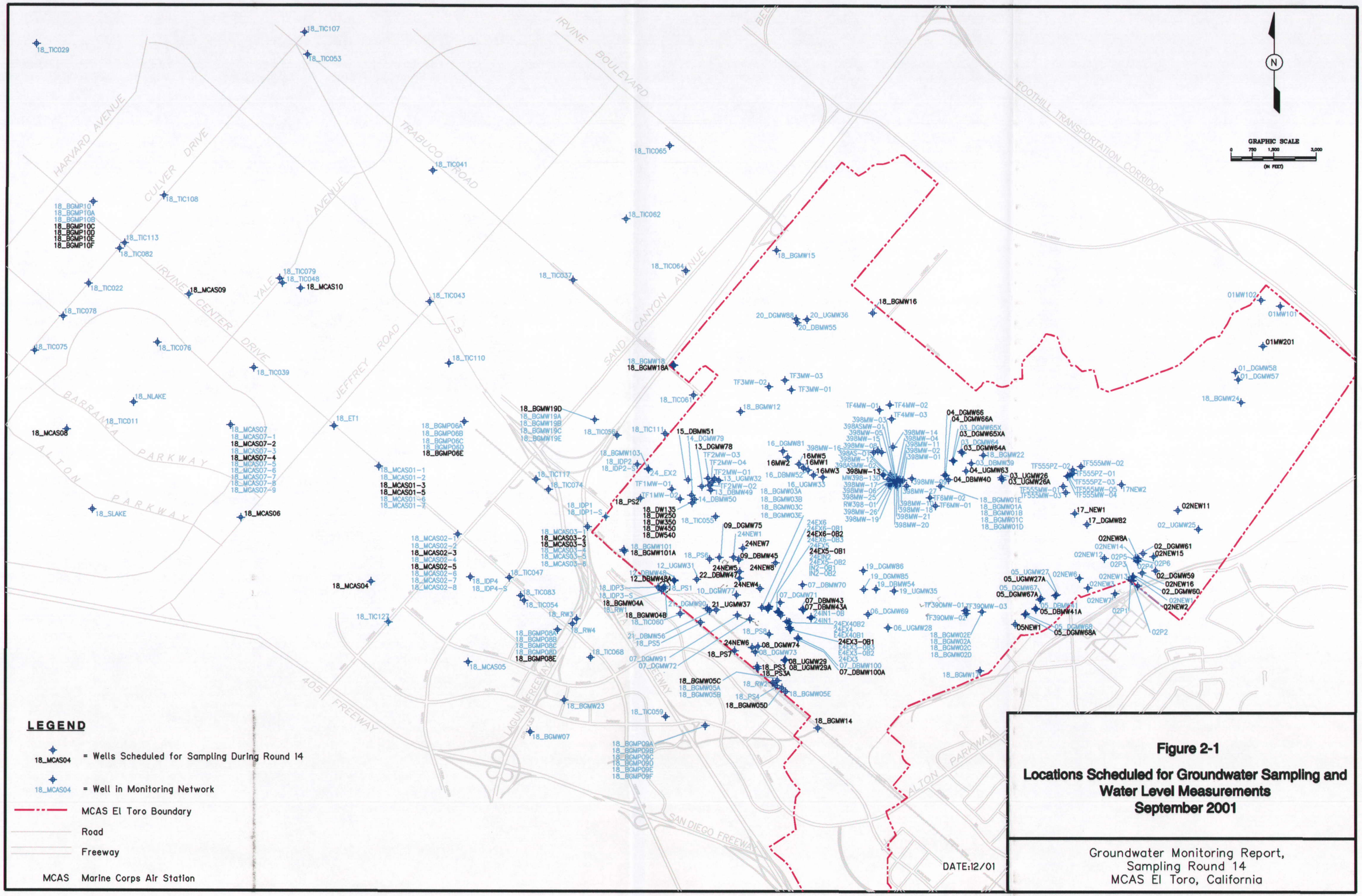

Figure 2-1

Locations Scheduled for Groundwater Sampling and Water Level Measurements September 2001

Groundwater Monitoring Report,
Sampling Round 14
MCAS El Toro, California

Section 3
Data Evaluation

Groundwater monitoring activities at MCAS El Toro for Round 14 included measurement of groundwater levels and collection of groundwater samples at 85 monitoring wells completed in the shallow groundwater unit and principal aquifer. This section presents the evaluation of data collected during Round 14. Also discussed are changes in groundwater flow patterns and plume configurations during Round 14 in comparison to previous sampling rounds.

3.1 General Groundwater Flow Patterns

This section summarizes groundwater elevation results and discusses trends in potentiometric elevations and horizontal hydraulic gradients for the shallow groundwater unit and principal aquifer during Round 14 as well as Round 13. Also discussed are vertical hydraulic gradients and general trends in groundwater flow conditions observed during groundwater level/potentiometric elevation monitoring.

The groundwater level data from Round 14 include measurements taken at 69 shallow groundwater monitoring locations and 16 principal aquifer monitoring locations representing conventional single screen monitoring wells, cluster wells, and Westbay wells. The Round 14 groundwater level data and historical field measurements are presented in Appendix A (Tables A.1A, A.1B, and A.1C).

3.1.1 Horizontal Flow

The evaluation of groundwater level and potentiometric elevation monitoring conducted at MCAS El Toro during the past 9 years indicated that on a regional scale, groundwater flows in a northwest to west-northwesterly direction in both the shallow groundwater unit and the principal aquifer. The groundwater level data collected during Rounds 13 and 14 support these conclusions for the shallow aquifer and support the historical trend of a northwest to west-northwesterly direction for groundwater flow.

3.1.1.1 Shallow Groundwater Unit

Groundwater potentiometric elevations in the shallow groundwater unit changed very slightly between Round 13 (February 2001) and Round 14 (September 2001). Groundwater potentiometric elevation increased between Round 13 and Round 14 an average of about 0.23 feet within the boundaries of MCAS El Toro. The groundwater potentiometric elevation west of the boundary of MCAS El Toro decreased between Round 13 and Round 14 an average of about 10 feet. Selected hydrographs

(groundwater elevation verses time) illustrating this trend are included as Figures 3-1A through 3-1F. Additional hydrographs for monitoring wells measured during Round 14 are included in Appendix A. The observed increase in groundwater elevations between Round 13 and Round 14 are most likely due to a slight increase in the recharge of the groundwater unit (as a result of an increase in precipitation). The observed decrease in groundwater elevations west of the MCAS El Toro boundary is attributable to the increase in production at off-station wells between February 2001 and June 2001 (production data from July 2001 through September 2001 was not available for all wells), as discussed in Section 3.1.1.2. For the current 2001 water-year at the time of sampling (01 October 2000 through 30 September 2001) the annual precipitation at two reporting stations nearest to MCAS El Toro (Santa Ana and Laguna Beach) was 101% and 126% of normal, respectively (California Department of Water Resources [DWR] 2001).

Potentiometric elevation maps for the shallow groundwater unit for Round 14 (September 2001) and Round 13 (February 2001) are presented in Appendix A as Figures A.2A and A.2B, respectively. The general pattern of groundwater flow in the shallow groundwater unit during Round 14 is essentially unchanged from the flow patterns observed during Round 13.

During Round 14, the horizontal hydraulic gradient was steepest (averaging 0.08 foot/foot (ft/ft) in the foothills areas [eastern portion of MCAS El Toro]) in the vicinity of Site 2. The gradient decreases to an average of 0.03 ft/ft underlying MCAS El Toro in the vicinity of Sites 5 and 17. The gradient further decreases to about 0.01 ft/ft in the area of Site 3 and to an average of about 0.005 ft/ft in the vicinity of Site 24. The steeper gradient observed in the vicinity of Sites 2, 5, and 17 reflects the proximity of these sites to the foothills recharge areas. As the spacing between successive equipotential elevation contours on Figure A.2A illustrates, the hydraulic gradient decreases gradually from east to west with increasing distance from the recharge area. This same pattern of decreasing hydraulic gradient is illustrated in Figure A.2B for Round 13.

3.1.1.2 Principal Aquifer

The evaluation of groundwater flow patterns presented in the GMP (BNI 1999) indicated that the groundwater elevations and flow patterns in the principal aquifer are influenced locally by the operation of production wells located downgradient of MCAS El Toro. Round 14 groundwater level data and flow patterns support this conclusion.

Groundwater potentiometric elevations in the principal aquifer generally decreased between Round 13 and Round 14. Groundwater potentiometric elevations decreased an average of 31.7 feet between Round 13 and Round 14. Selected hydrographs illustrating this trend are included as Figures 3-2A through 3-2D. Additional selected hydrographs of monitoring wells measured during Round 14 are included in Appendix A.

As shown by the hydrographs (Figures 3-2A through 3-2C), potentiometric groundwater elevations in the principal aquifer over time tend to fluctuate over a much greater range than those wells completed in the shallow groundwater unit. The decrease of potentiometric elevations observed for Round 14 reflects the general increase in production of groundwater from wells located west and northwest of MCAS El Toro, as shown in Table 3-1 and Figure 3-3. Table 3-1 presents a summary of monthly withdrawals at production wells 18_ET1, IRWD-78, 18_TIC106, 18_TIC107, 18_TIC111, 18_TIC 113, 18_NLAKE, and the Irvine Subbasin wells for 1998 through June/September 2001. Data for some of the wells was only available through June 2001. Figure 3-3 illustrates a general pattern of production totals over time for the wells within and adjacent to Site 18 and the Irvine Subbasin wells. The Site 18 production wells and the Irvine Subbasin wells follow the same general production rate pattern. A comparison of 1998 through June 2001 production totals indicates that the lowest production rates occur between November and March of each year, except for the Site 18 production wells during November 1999 through March 2000. The lower production rates during this period correspond to an increase in groundwater elevations at wells located within the vicinity of the production wells. Similarly, when an increase in production occurs during the months of April through September, groundwater elevations decrease.

Although groundwater levels have fluctuated greatly over time in wells completed within the principal aquifer, the overall pattern of groundwater flow, in a northwesterly direction, remained relatively unchanged between Rounds 13 and 14, as illustrated in Appendix A Figures A.2C and A.2D. The only changes in the overall pattern of groundwater flow are localized areas of drawdown, presumably caused by the increased production at off-base wells.

3.1.2 Vertical Flow

Vertical groundwater flow within the shallow groundwater unit, between the shallow groundwater unit and the principal aquifer, and within the principal aquifer, can be characterized by comparing groundwater potentiometric elevations measured in the cluster wells and Westbay well ports.

Vertical flow patterns are considered a major factor governing the distribution of VOCs in the shallow groundwater unit beneath MCAS El Toro, the migration of VOCs from the shallow groundwater unit into the underlying principal aquifer west of the boundary of MCAS El Toro, and the distribution of VOCs in the principal aquifer to the west off of MCAS El Toro. Vertical flow gradients were calculated for Westbay wells and cluster wells measured during Round 14 for comparison with the Round 13 (February 2001) vertical flow gradients. Table 3-2 presents this comparison of vertical gradients during Rounds 14 and 13 within the shallow groundwater unit, between the shallow groundwater unit and the principal aquifer, and within the principal aquifer.

Within the shallow groundwater unit, near the Site 24 VOC source area, the vertical gradients along the western boundary of MCAS El Toro changed from an upward gradient during Round 13 to a downward vertical gradient during Round 14. Vertical gradients during Round 14 ranged from -0.004 ft/ft to -0.092 ft/ft. The increase in production at off-station wells from February 2001 through June/September 2001, as discussed in Section 3.1.1.2, has most likely influenced the vertical gradient along the western boundary of MCAS El Toro.

Between the shallow groundwater unit and the principal aquifer, near the western boundary of MCAS El Toro, the majority of vertical gradients are downward. For the well pairs included in Table 3-2, the vertical gradients either changed from an upward gradient in Round 13 to a downward gradient during Round 14 (18_DW250 and 18_DW350, 18_MCAS02-3 and 18_MCA02-5) or the downward gradient increased between the two sampling rounds (18_BGMW04B and 18BGMW04A, 18_MCAS01-3 and 18_MCAS01-5, 18_MCAS07-2 and 18_MCAS07-4). The vertical gradient during Round 14 between the shallow groundwater unit and principal aquifer range from -0.377 ft/ft to -0.094 ft/ft. The increase in groundwater extraction from production at off-station wells between February 2001 and June/September 2001, as discussed in Section 3.1.1.2, influenced this change in direction of vertical gradient. Off-station to the west, the magnitude of the downward vertical gradient increases progressively with proximity to the production wells owned by IRWD, The Irvine Company, and the Woodbridge Homeowner's Association. This same pattern of increasing gradient west of MCAS El Toro has also been observed during previous sampling rounds.

Two vertical gradients, each within the principal aquifer, were calculated for four well pairs at two monitoring locations: one well cluster and one Westbay well. There is a downward gradient within the principal aquifer at the most northwestern location outside of the MCAS El Toro boundary (18_BGMP10E and 18_BGMP10D, 18_BGMP10F and 18_BGMP10E) and an upward gradient within the principal aquifer at the western boundary of MCAS El Toro (18_DW350 and 18_DW450, 18_DW450 and 18_DW540). The vertical gradients of the on-base location decreased and the vertical gradient of the off-base location increased. Reasons for the changes in vertical gradients are attributed to differences in the screened interval and the pumping rate and operating schedules of off-station production wells.

Although some variations in the vertical gradient from previous data were noted in the shallow aquifer at the Site 24 VOC source area, the general vertical flow patterns remained consistent with the MCAS El Toro conceptual hydrogeological model illustrated in the GMP (BNI 1999). VOC contamination remains in the upper part of the shallow groundwater unit within the Site 24 VOC source area. In the vicinity of the western boundary of MCAS El Toro, contaminants in the VOC plume have migrated downward to the bottom of the shallow groundwater unit in response to the transition

from an upward or slight downward, to a downward vertical gradient in that area. Once the VOC plume enters the principal aquifer, its vertical distribution remains relatively consistent as it migrates westward in response to pumping of wells located west of MCAS El Toro.

3.2 Results of Groundwater Analyses

During Monitoring Round 14, groundwater samples were collected from 85 monitoring wells at MCAS El Toro. All wells were sampled for VOCs, and selected wells were analyzed for other parameters including gross alpha/beta activity, dissolved metals, general chemistry parameters, and perchlorate. This section summarizes the results of analyses from Round 14. A complete listing of Round 14 laboratory analytical results is included in Appendix B that also includes historical data for wells sampled during Round 14.

3.2.1 VOCs

During Round 14 groundwater samples collected from 85 monitoring wells/ports were analyzed for target compound list VOCs using methods described in Section 2.6. This section summarizes concentrations and distribution of VOCs reported in groundwater during Round 14 and evaluates these data in relation to historical VOC data compiled for Sites 1, 2, 3, 5, 16, 17, 18, and 24. During Round 14, VOCs were detected in samples collected from wells located at all of these sites, except for Site 1.

The primary VOC contaminants detected in groundwater at MCAS El Toro are TCE, PCE, 1,2-DCE, 1,1-DCE, chloroform, carbon tetrachloride, and benzene. Appendix B Table B.1B presents the results of VOC groundwater analyses for samples collected from monitoring wells during Round 14 and also includes historical VOC sampling results. The most frequently and widely distributed VOC found in groundwater samples is TCE. Figure 3-4 illustrates the Round 14 TCE plume configuration for the shallow groundwater unit and the principal aquifer overlain by Round 14 potentiometric elevation contours. Figure B.3A is a summary illustrating the September 2001 TCE groundwater results for all monitoring wells (shallow groundwater unit and principal aquifer) sampled during Round 14. Figure B.3B illustrates the Round 13 groundwater results for comparative purposes.

TCE concentrations at Sites 18 and 24 exceed the MCL as indicated in both Figures 3-4 and Figure B.3A. Small TCE plumes were also identified at Sites 2 and 16, which are also depicted in Figure B.3A. No TCE plumes are present at Sites 1, 3, 5, and 17 based on Round 14 results and results from previous monitoring rounds.

3.2.1.1 Sites 3, 5, and 17

Some VOCs were detected in wells from Sites 3, 5, and 17. Most of the detections have been qualified as estimated and are below the MCLs. This section briefly discusses results from Round 14 for these sites.

Several VOCs were identified in Site 3 samples during Round 14. Freon-113 and 1,1,-DCE were detected in 03_DGMW65XA. Benzene, isopropylbenzene, xylenes, and cyclohexane were detected in 04_DGMW66A. Bromodichloromethane and chloroform were detected in 03_DBMW64A. Chloroform, TCE, and PCE were detected in 03_UGMW26. With the exception of benzene, all of the concentrations of these detected analytes are below their respective MCLs, and many have been qualified as estimated. The sample collected from 04_DGMW66A contained benzene at a concentration of 150 µg/L. Round 14 was the first round of sampling in which this well was included. A JP5 pipeline that runs in the vicinity of this well and/or a fuel source at IR Site 3 are possible sources of the benzene in the sample collected from well 04_DGMW66A. The JP5 pipeline is currently under investigation under a separate project. The concentration trends of benzene will continue to be monitored and evaluated in future rounds.

TCE (in the sample collected from 05_DGMW67A) and chloroform and bromodichloromethane (in the sample collected from 05_UGMW27A) were the only VOCs identified in wells sampled at Site 5. All of these detections are less than the MCLs for these analytes and the detections for TCE and bromodichloromethane were qualified as estimated. These analytes have not previously been detected in samples collected at these wells. These are replacement wells that were first sampled under the groundwater monitoring program during Round 13. Concentrations of these analytes will be monitored and evaluated during future sampling rounds.

Freon-113 was detected in samples collected from both Site 17 wells during Round 14. These are new detections and the concentrations were qualified as estimated concentrations well below the MCL (1,200 µg/L) for this analyte.

3.2.1.2 Site 2

VOCs in groundwater at Site 2 (Magazine Road Landfill) are primarily associated with two small plumes. A small PCE plume located along the western edge of Site 2, downgradient of a former operational landfill, is monitored by wells 02_DGMW61 and 02_NEW8A. The concentrations of PCE in samples collected from these wells during Round 14 are 3 µg/L and 5 µg/L, respectively. No significant change in PCE concentrations between the last monitoring event for Site 2 (Round 12) and Round 14 was observed. A plot showing PCE, TCE, and 1,2-DCE concentrations versus time in these wells is presented in Figures 3-5A and 3-5B.

A small TCE plume is monitored by well 02_DGMW60. The concentration of TCE in samples collected from this well during Round 14 was 110 μg/L. This is an increase from the concentration (100 μg/L) measured during the last sampling event conducted at this well (Round 12). This small plume is depicted in Figures 3-4 and B.3A. Other VOCs were also detected in the sample collected from this well including PCE, 1,2-DCE, chloroform, 1,1,2-trichloroethane, and 1,2-DCA. Concentrations of these analytes are comparable to concentrations measured during Round 12. A plot showing TCE and PCE concentrations versus time for this well is presented in Figure 3-5C.

3.2.1.3 Site 16

Four Site 16 wells (16_MW1, 16_MW2, 16_MW 3, and 16_MW5) were added to the monitoring program during Round 14. As mentioned previously, well 16_MW2 was not sampled due to a damaged well cap. Analytical results for samples collected from the three wells indicate that a localized plume containing VOCs (principally TCE) at concentrations of up to 380 μg/L (based on data from Round 14) exists beneath Site 16. This plume is depicted in Figures 3-4 and B.3A. Other VOCs detected in samples collected from Site 16 wells include 1,1-DCA, 1,2-DCE, chloroform, benzene, and Freon-113. All of the concentrations of these analytes are below their respective MCLs.

3.2.1.4 Site 18

VOCs identified in samples from sixteen Site 18 wells included TCE, PCE, carbon disulfide, styrene, vinyl chloride, and dichlorodifluoromethane. VOCs were not detected in the samples collected from four of the sixteen monitoring wells (18_BGMP10F, 18_BGMW04A, 18_DW350, and 18_MCAS10) during Round 14 or previous rounds of sampling. In general, results from Round 14 indicate that concentrations and distribution of VOCs identified in the principal groundwater aquifer are similar to those levels of VOCs measured during Round 13. TCE continues to be the most frequently detected analyte. TCE concentrations for these wells are illustrated in Figure B.3A for Round 14 and in Figure B.3B for round 13.

<u>TCE</u>

The general extent and configuration of the TCE plume in the principal groundwater aquifer remained relatively unchanged from the configurations observed during Round 13 (see Figures B.3A and B.3B). One data anomaly was noted at Westbay well 18_MCAS01 (ports 18_MCAS01-3 and 18_MCAS01-5). In all previous sampling rounds TCE was detected in 18_MCAS01-5 (principal aquifer port) at concentrations ranging from 11 to 48 μg/L and most recently from 11 to 20 μg/L. During Round 14, the TCE concentration in this port decreased to 1 μg/L. Historically, concentrations of TCE in 18_MCAS01-3 (port in the shallow groundwater unit) have been less than 3 μg/L and most recently less than 1 μg/L. However, in Round 14 the TCE concentration increased

to 8 μg/L. Both results are inconsistent with all previous results for these wells and would cause the TCE plume configurations in both the principal aquifer and shallow groundwater unit to be significantly different than those configurations observed in all previous sampling rounds. Additionally, the vertical gradient between these wells did not change from vertical gradients observed in previous rounds. Possible explanations for this variation include field sampling or laboratory error resulting in the samples being inadvertently switched prior to analysis. VOCs data from future sampling rounds will be evaluated to confirm whether a field or laboratory error has occurred for this well during Round 14. The results for these two ports were not considered, due to their uncertainty, while configuring the plume for Round 14 or in the evaluation of VOCs trends.

TCE was not detected in the samples collected from nine of the sixteen Site 18 wells. Detected concentrations of TCE ranged from 1 μg/L to 15 μg/L, with two samples with TCE concentrations (15 μg/L in 18_MCAS07-4 and 9 μg/L in 18_MCAS02-5) above the MCL (5 μg/L). The TCE concentrations have remained relatively stable between Round 13 and Round 14 and are consistent with TCE concentrations from previous rounds. Plots of TCE and 1,2-DCE concentrations versus time for selected monitoring wells are included in Appendix B.

The configuration of the TCE plume in the principal aquifer has remained relatively unchanged over time. A slight decrease in the concentration of TCE in the principal aquifer at 18_MCAS01-5 has changed the plume configuration slightly; however, the overall configuration and extent of the plume remains consistent with previous sampling rounds. As with previous rounds, the stability of the plume may be attributed to plume capture from production wells located west and northwest of MCAS El Toro.

Other VOCs

Other VOCs identified in samples collected from Site 18 monitoring wells included PCE, 1,2-DCE, carbon disulfide, chloroform, styrene, vinyl chloride, and dichlorodifluoromethane. All of these contaminant concentrations are below the MCLs for these analytes and many have been qualified as estimated. During Round 13, vinyl chloride, at an estimated concentration of 8 μg/L, was detected in the sample collected from 18_BGMP10D. The concentration of vinyl chloride detected in the sample collected from this well has decreased to an estimated concentration of 0.4 μg/L during Round 14, which is below its MCL of 0.5 μg/L. Results from this well will be closely monitored in future rounds to evaluate trends of this contaminant.

3.2.1.5 Site 24

The VOCs detected in groundwater at Site 24 (VOC Source Area and Shallow Groundwater Unit) are summarized in Table B.1B in Appendix B. They include TCE,

PCE, 1,1-DCE, 1,2-DCE (total), carbon disulfide, carbon tetrachloride, chloroform, 1,2-dichloropropane, 1,1,2-TCA, styrene, and Freon 113. In general, results from Round 14 indicate that concentrations and distribution of VOCs identified in the shallow groundwater unit are similar to those concentrations of VOCs detected during Round 13. TCE continues to be the most frequently reported analyte in samples collected from the Site 24 wells. Appendix B Figures B.3A and B.3B illustrate the configuration of the TCE plume in the shallow groundwater unit based on analytical results from Round 14 and Round 13, respectively.

TCE

Only samples collected from 09_DGMW75 and 24_EX6OB2 were found to contain TCE at concentrations exceeding 500 µg/L (780 µg/L and 760 µg/L, respectively). These concentrations are similar to concentrations observed in samples collected during Round 13 from these wells. The concentration of TCE at 09_DGMW45 decreased from Round 13 to Round 14 (from 580 µg/L to 360 µg/L) resulting in a slight modification of the TCE plume configuration near the source area. A slight decrease in TCE concentration was noted in the sample collected from 24_NEW4 (from 25 µg/L in Round 13 to 16 µg/L in Round 14). A slight increase in TCE concentration was noted at 07_DBMW43A (from an estimated concentration of 9 µg/L in Round 13 to 31 µg/L in Round 14). TCE results for samples collected from all other Site 24 wells had no significant changes from results observed during Round 13. Plots of TCE and 1,2-DCE concentrations versus time for monitoring wells 09_DGMW75, 24_EX6OB2, 09_DBMW45, and 24_NEW4 are presented in Figures 3-7A through 3-7C, and selected Site 24 well plots are included in Appendix B.

The decrease in TCE concentration near the source area (well 09_DBMW45) may be due to the effectiveness of the soil vapor extraction (SVE) system installed and operated at Site 24. The system was operated between May 1999 and January 2000 to test the systems capacity to remove contaminants from the soil. A decrease in soil contamination at the source area would decrease the amount of contaminant carried into the groundwater by infiltrating rainwater. A slightly higher than normal precipitation during the few months prior to sampling (refer to Section 3.1.1.1) has recharged the groundwater and could possibly have diluted the plume in this area.

Other VOCs

Other VOCs identified in samples collected from Site 24 monitoring wells include PCE, 1,2-DCE (total), 1,1-DCE, carbon tetrachloride, carbon disulfide, chloroform, 1,1,2-TCA, 1,2-dichloropropane, and Freon 113. With the exception of PCE, 1,2-DCE (total), carbon tetrachloride and 1,1-DCE, detected concentrations were below applicable MCLs for regulated contaminants. These results are presented in Table B.1B.

PCE was identified in samples collected from sixteen Site 24 monitoring wells during Round 14. Five of these wells had concentrations of PCE at or above its MCL (5 μg/L): 09_DGMW75 (5 μg/L), 12_DBMW48A (30 μg/L), 18_PS3A (7 μg/L), 18_PS7 (5 μg/L), and 24NEW6 (5 μg/L). No significant changes in PCE concentrations were noted in comparison to Round 13 results.

1,2-DCE was detected in samples collected from eight wells located at Site 24. Concentrations of cis-1,2-DCE (shown in concentration plots in Appendix B), a breakdown product of TCE, have remained stable over time. Only the sample collected from 18_MCAS03-2 had a concentration above the MCL (6 μg/L) for cis-1,2-DCE of 9 μg/L.

Carbon tetrachloride was identified in samples collected from the following ten monitoring wells at, or above, its MCL of 0.5 μg/L: 07_DBMW43A (2 μg/L), 08_DGMW74 (1 μg/L), 09_DGMW45 (1 μg/L), 09_DGMW75 (1 μg/L), 18_DW135 (28 μg/L), 18_DW250 (5 μg/L), 22_DBMW47 (0.7J μg/L), 24EX3OB1 (2J μg/L), 24EX6OB1 (0.8J μg/L), and24_NEW7 (0.7J μg/L). These results are comparable to results from previous rounds.

1,1-DCE was detected in samples collected from eight monitoring wells during Round 14. Detections of 1,1-DCE in samples from two of these wells exceeded its MCL of 6 μg/L: 09_DBMW45 (14J μg/L) and 09_DGMW75 (11J μg/L). These Round 14 results are comparable to results of previous sampling rounds.

Vinyl chloride was detected below the MCL (0.5 μg/L) in the sample collected from 18_BGMP10D at an estimated concentration of 0.4 μg/L. This was the first time vinyl chloride was detected in a sample collected from this well. Vinyl chloride was detected for the first time during Round 13 in a sample collected from 18_MCAS01-3 at an estimated concentration of 1J μg/L, exceeding its MCL of 0.5 μg/L. Vinyl chloride was not detected in the sample collected from this well during Round 14. Future results from these wells will be used to evaluate concentration trends for vinyl chloride.

3.2.2 Radionuclides

Groundwater samples were collected and analyzed for total gross alpha and total gross beta particle activity at 21 wells during monitoring Round 14, located at Sites 2, 3, and 5. Appendix B Table B.1C presents the radionuclides sampling results for previous sampling rounds and for Round 14. Concentrations ranged from non-detect to 72 picoCuries per liter (pCi/L) for gross alpha particle activity. Concentrations for gross beta particle activity ranged from 6.7 pCi/L to 38 pCi/L. These results for Sites 2, 3, and 5 are comparable to results for total gross alpha and total gross beta during previous rounds.

3.2.3 Dissolved Metals

Groundwater samples from 23 monitoring wells located at Sites 2, 3, 5, and 17 were analyzed for dissolved metals using U.S. EPA CLP Method (ILM 0.40). Table B.1D in Appendix B lists the analytical results from the current sampling round as well as metal results from previous sampling rounds conducted from 1992 through 2001.

The CLP metals analyses include data for calcium, magnesium, potassium, and sodium as well as 19 trace metals. During Round 14, concentrations of manganese and nickel were detected in groundwater samples collected at several monitoring wells in excess of their secondary MCL of 50 μg/L and primary MCL of 100 μg/L, respectively. The highest concentration of manganese was detected at a level of 839 μg/L in the sample collected from 04_UGMW63. The highest concentration of nickel was detected in the sample collected from 03_DGMW65X at 944 μg/L. These results are consistent with previous monitoring rounds and have consistently been identified on MCAS El Toro and at off-station monitoring wells and are characteristic of basin-wide groundwater quality.

Samples collected from two wells within Site 2 had aluminum concentrations above the secondary MCL minimum of 50 μg/L: the sample collected from 02NEW11 had a concentration of 319 μg/L and the sample collected from 02NEW15 had a concentration of 107 μg/L. These results are also consistent with previous results for samples collected from Site 2 wells. An evaluation of metals conducted for MCAS El Toro in 1998 indicated that metals are not considered chemicals of potential concern (Bechtel 1998).

3.2.4 General Chemistry Parameters

Groundwater samples collected from eight groundwater monitoring wells were analyzed for general chemistry parameters. The general chemistry analyses performed on selected samples from Round 14 included major anions (chloride, sulfate, nitrate/nitrite-N, carbonate, bicarbonate, and alkalinity) and TDS. Results from the current sampling round as well as general chemistry parameter results from previous sampling rounds conducted from 1992 through 2000 for these wells are summarized in Table B.1E in Appendix B.

The groundwater sample collected from well 05_DGMW67A was not analyzed for all general chemistry parameters due to a field error. The correct containers for TDS, nitrate/nitrite, carbonate, bicarbonate and alkalinity were not filled, which resulted in the sample being analyzed for only chloride and sulfate.

Consistent with prior sampling rounds, elevated concentrations of TDS (above the secondary MCL of 500 mg/L) were found in all of the samples analyzed. Elevated chloride, nitrate/nitrite-N, and sulfate (above the primary MCL [nitrate/nitrite-N] and

secondary MCLs [chloride and sulfate]) were found in groundwater samples collected from wells located at Site 24. General chemistry parameter results were consistent with prior results.

3.2.5 Perchlorate

Groundwater samples collected from 14 monitoring wells located at Sites 1, 3, and 5, were analyzed for perchlorate during Round 14. Results from the current sampling round as well as perchlorate results from previous sampling rounds (1998 to 2000) are summarized in Table B.1F.

All samples had concentrations of perchlorate below the California provisional action level of 18 µg/L except for the sample from well 01_MW201 (310 µg/L). All other concentrations ranged from non-detect to 3.8 J µg/L (well 04_DGMW66). Eight of the wells sampled for perchlorate during Round 14 are newly constructed replacement wells with no historical results for comparison purposes; however, at all of the sites except for Site 1, similar concentrations of perchlorate were found at wells previously sampled at MCAS El Toro. Generally, perchlorate has been found at levels less than 15 µg/L except for at Site 1. The Navy is implementing a separate perchlorate sample program and perchlorate data from the groundwater monitoring program is intended to supplement this program.

3.2.6 Water Quality Field Parameters

Field parameter data collected in association with Round 14 included measurements of temperature, pH, SC, DO, ORP, and turbidity. At monitoring wells equipped with dedicated bladder pumps, the field parameters (except turbidity) were measured using a flow-through cell (QED Model R-FC5000). At the wells sampled using a temporary electric submersible pump, a Horiba U-22 Water Quality Monitoring System with a flow through cell was used to measure water quality parameters. Turbidity was measured at all of the monitoring wells using a Lamotte 2020 portable turbidity meter

Table C-1 presents a compilation of the field parameter measurements recorded prior to collecting groundwater samples at each monitoring well sampled during Round 14. Groundwaters monitoring well purging and sampling log sheets for each monitoring well are included in Appendix C.

Temperature, pH, and SC were stabilized for a minimum of three readings prior to collection of the groundwater sample. Consistent with previous sampling rounds, high turbidity readings were found in several monitoring wells. High turbidity readings can be caused by many factors including improper development of a well, high clay content in soil, aging stainless steel components, and purging groundwater with the submersible pump located close to the bottom of the well and thereby stirring up sediments.

3.3 TCE Plume Configuration

TCE plume configuration maps for Round 14 (Figure B.3A) and Round 13 (Figure B.3B) are included in Appendix B. A cross section of the plume is depicted in Figure B.3C. Analytical data was not collected during Round 13 for Sites 2 and 16; therefore, no TCE concentration plumes were configured for these areas of MCAS El Toro in Figure B.3B. No TCE plumes are present at Sites 1, 3, 5, and 17.

The configuration of the TCE plumes in the shallow groundwater unit (Site 24) and the principal aquifer (Site 18) has not significantly changed between Rounds 13 and 14. Minor differences in the shape of contour lines from Round 13 compared with Round 14 may be attributed to an increase in the number of wells sampled from Round 13 to Round 14, which produced a greater number of data points to configure the TCE plume with.

Concentrations of TCE exceeding 500 μg/L in the shallow groundwater unit have decreased from Round 13 to Round 14 near Site 24 (the VOC source area), resulting in slight modifications of the 500 μg/L contour line in the source area. Other concentrations of TCE have not significantly changed since Round 13. The decrease in concentration of TCE in the VOC source area indicates a possible reduction of contaminant in the source area of the TCE plume as a result of the effectiveness of the SVE system and dilution of the groundwater by seasonal precipitation. However, the overall location and extent of the plume have remained relatively stable.

Table 3-1
Summary of Monthly Groundwater Withdrawals at Off-Station Production Wells for 1998-2001

Well Identification	Screen Interval (feet bgs)	Month	1998 Volume Pumped (acre-feet)	1999 Volume Pumped (acre-feet)	2000 Volume Pumped (acre-feet)	2001 Volume Pumped (acre-feet)
18_ET1	220-490	1	0	11.3	95.8	0
		2	0	11.3	108.3	0
		3	0	100.4	113.8	0
		4	45.8	63	105.4	0
		5	154.1	88.3	74.4	0
		6	152.9	117.1	118.8	10.7
		7	159.4	108.9	92	NR
		8	92.1	131.2	94.2	NR
		9	109.9	112.2	57.4	NR
		10	3.3	101.9	97.8	NR
		11	0	7	0	NR
		12	0	2.1	0	NR
		Totals:	**717.5**	**854.7**	**957.9**	**10.7**
IRWD-78	240-680	1	37.8	0	112.3	0
		2	0	0	75.9	0
		3	16.3	0	105.6	33.5
		4	111.9	0	112.8	161.5
		5	0	0	99	148.4
		6	0	63.3	122.8	114.2
		7	0	113.6	116.1	NR
		8	0	0.4	108.2	NR
		9	0	24.6	107.9	NR
		10	0	64.3	25	NR
		11	0	73.4	0	NR
		12	0	86.8	0.2	NR
		Totals:	**166**	**426.4**	**985.8**	**457.6**
18_TIC106	405-715	1	34.2	117.9	180.3	93.1
		2	4.9	0	158.1	19.4
		3	4.3	0	142	13.9
		4	30.4	0	168.3	133.1
		5	67.7	85.8	155.6	127.6
		6	106.2	172.5	132	107.1
		7	143.3	168.3	125.1	152.4
		8	125.6	30.8	17.1	133.3
		9	93.1	112	129.3	141.5
		10	55.5	139.6	138.7	NR
		11	0	155.9	109.2	NR

Table 3-1 (continued)
Summary of Monthly Groundwater Withdrawals at Off-Station Production Wells for 1998-2001

Well Identification	Screen Interval (feet bgs)	Month	1998 Volume Pumped (acre-feet)	1999 Volume Pumped (acre-feet)	2000 Volume Pumped (acre-feet)	2001 Volume Pumped (acre-feet)
		12	0	115.5	135.4	NR
		Totals:	**665.2**	**1098.3**	**1591.1**	**921.4**
18_TIC107	230-980	1	13.1	58.9	30.7	0
		2	10.7	77.3	0	0
		3	6.7	84.1	54	0
		4	15	129.2	91	1.1
		5	44.7	83.7	103.9	0
		6	63	92.9	22.6	42.3
		7	94.4	91	14.1	101.3
		8	85.3	108.1	97.5	85.6
		9	70.5	82.8	56.6	90.9
		10	34.2	89.5	2.3	NR
		11	0	72	24.4	NR
		12	0	65.6	0	NR
		Totals:	**437.6**	**1035.1**	**497.1**	**321.2**
18_TIC111	200-750	1	0	3.1	0	0
		2	0	0	0.6	0
		3	0	0	0	0
		4	0	0	29.5	0
		5	68.1	0	10.3	0
		6	6.3	38.3	0	0
		7	0	29.5	0	0.7
		8	4.2	0	0	0.2
		9	0	0	0.5	0.3
		10	0	0	0	NR
		11	0	0	0	NR
		12	0	0	0.8	NR
		Totals:	**78.6**	**70.9**	**41.7**	**1.2**
18_TIC113	280-1080	1	34.9	1.6	196.8	100.2
		2	4.3	161.4	93.7	33.1
		3	52.5	133.6	132	9.3
		4	93.6	157.6	154.7	32.6
		5	22.5	0	196.5	129.4
		6	162.9	154.5	141.7	114.8
		7	213.8	126.5	139.2	165.1
		8	188.3	154.7	162.2	141.3
		9	133.9	197	124.8	148

Table 3-1 (continued)
Summary of Monthly Groundwater Withdrawals at Off-Station Production Wells for 1998-2001

Well Identification	Screen Interval (feet bgs)	Month	1998 Volume Pumped (acre-feet)	1999 Volume Pumped (acre-feet)	2000 Volume Pumped (acre-feet)	2001 Volume Pumped (acre-feet)
		10	72.9	150.8	161.8	NR
		11	0	161	125	NR
		12	0	175.2	158.4	NR
		Totals:	**979.6**	**1573.9**	**1786.8**	**873.8**
18_NLAKE	370-890	1	9.6	35.1	82.6*	12.6
		2	9.6	13.8		12.6
		3	9.6	13.8		12.6
		4	9.6	13.8		12.6
		5	9.6	13.8		12.6
		6	9.6	13.8		12.6
		7	15.7	114.8*	117.1*	NR
		8	15.7			NR
		9	15.7			NR
		10	15.7			NR
		11	15.7			NR
		12	15.7			NR
		Totals:	**151.8**	**218.9**	**199.7**	**75.6**
Irvine Subasin Wells	Variable	1	303.8	231.5	281.5	250.9
		2	206	205.9	248.7	111.3
		3	217.2	237	265.9	118.6
		4	252.7	362.2	303.5	302
		5	388.7	240.1	307.9	325.9
		6	398.6	311.7	307.5	218.1
		7	541.8	334.6	406.9	NR
		8	483.8	294.7	399.1	NR
		9	399.2	320.9	431.3	NR
		10	253.6	245	383.5	NR
		11	212.6	219.2	293	NR
		12	219.7	191.3	351	NR
		Totals:	**3877.7**	**3194.1**	**3979.8**	**1940.2**

Notes:
Data was provided by the Orange County Water District.
An acre-foot is equivalent to 43,560 gallons.
* = Data was received from the Orange County Water District as six month totals
bgs = below ground surface
NR = Not Reported

Table 3-2
Summary of Vertical Hydraulic Gradients, Monitoring Rounds 13 and 14
MCAS El Toro

Well ID	Well Completion Zone	Screen Interval	Groundwater Elevation Round 13 (feet MSL)	Groundwater Elevation Round 14 (feet MSL)	Round	Vertical Gradient (feet per foot)	Groundwater Flow Direction
Completed within the Shallow Groundwater Unit							
18_BGMW05D	Shallow	83-133	192.56	193.18	Round 13	0.009	Upward
18_BGMW05C	Shallow	225-245	193.37	192.80	Round 14	-0.004	Downward
18_DW135	Shallow	115-135	158.61	159.46	Round 13	0.013	Upward
18_DW250	Shallow	215-250	159.65	156.04	Round 14	-0.043	Downward
18_MCAS03-2	Shallow	160-170	149.98	148.77	Round 13	0.010	Upward
18_MCAS03-3	Shallow	220-230	150.50	144.18	Round 14	-0.092	Downward
Completed within both the Shallow Groundwater Unit and Principal Aquifer							
18_BGMW04B	Shallow	190-210	167.07	163.56	Round 13	-0.041	Downward
18_BGMW04A	Principal	286-306	163.93	151.59	Round 14	-0.157	Downward
18_DW250	Shallow	215-250	159.65	156.04	Round 13	0.014	Upward
18_DW350	Principal	310-350	160.49	141.35	Round 14	-0.245	Downward
18_MCAS01-3	Shallow	210-220	116.27	98.71	Round 13	-0.054	Downward
18_MCAS01-5	Principal	330-340	110.32	69.85	Round 14	-0.262	Downward
18_MCAS02-3	Shallow	200-210	125.10	118.99	Round 13	0.018	Upward
18_MCAS02-5	Principal	420-430	128.84	99.29	Round 14	-0.094	Downward
18_MCAS07-2	Shallow	190-200	95.46	78.54	Round 13	-0.117	Downward
18_MCAS07-4	Principal	440-450	67.32	-12.00	Round 14	-0.377	Downward
Completed in the Principal Aquifer							
18_DW350	Principal	310-350	160.49	141.35	Round 13	0.021	Upward
18_DW450	Principal	420-450	161.99	147.40	Round 14	0.086	Upward
18_DW450	Principal	420-450	161.99	147.40	Round 13	-0.055	Downward
18_DW540	Principal	490-540	159.77	152.32	Round 14	0.123	Upward
18_BGMP10E	Principal	429-439	57.21	11.41	Round 13	0.009	Upward
18_BGMP10D	Principal	563-573	58.29	-27.83	Round 14	-0.316	Downward
18_BGMP10F	Principal	218-229	72.13	63.18	Round 13	-0.075	Downward
18_BGMP10E	Principal	429-439	57.21	11.41	Round 14	-0.259	Downward

Notes:

1) Groundwater elevations used in this table represent data from February 2001 and September 2001.
2) The well ID groups are listed in the order of their relative position (upgradient to downgradient) along the horizontal groundwater flow direction in the shallow groundwater unit.
3) Acronyms:

bgs = below the ground surface
GW = groundwater
MSL = mean sea level
MCAS = Marine Corps Air Station

Vertical Gradient Formula = $\frac{\text{GW elevation deep well} - \text{GW elevation shallow well}}{\text{top screen depth deep well} - \text{base screen depth shallow well}}$

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3-1A

Figure 3-1A

SITE 2 - 02_DGMW60

Screen Interval 80-100 feet below ground surface

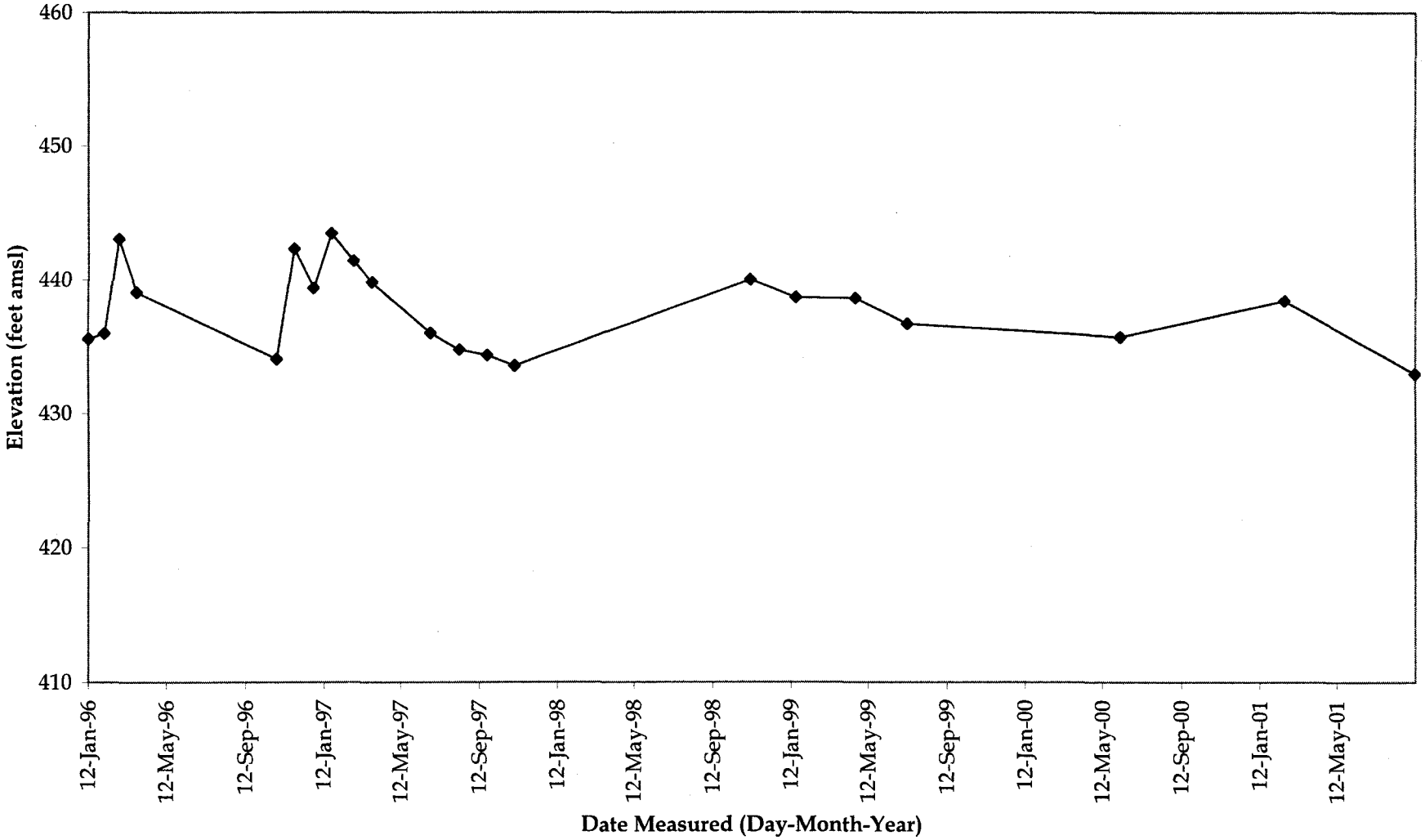
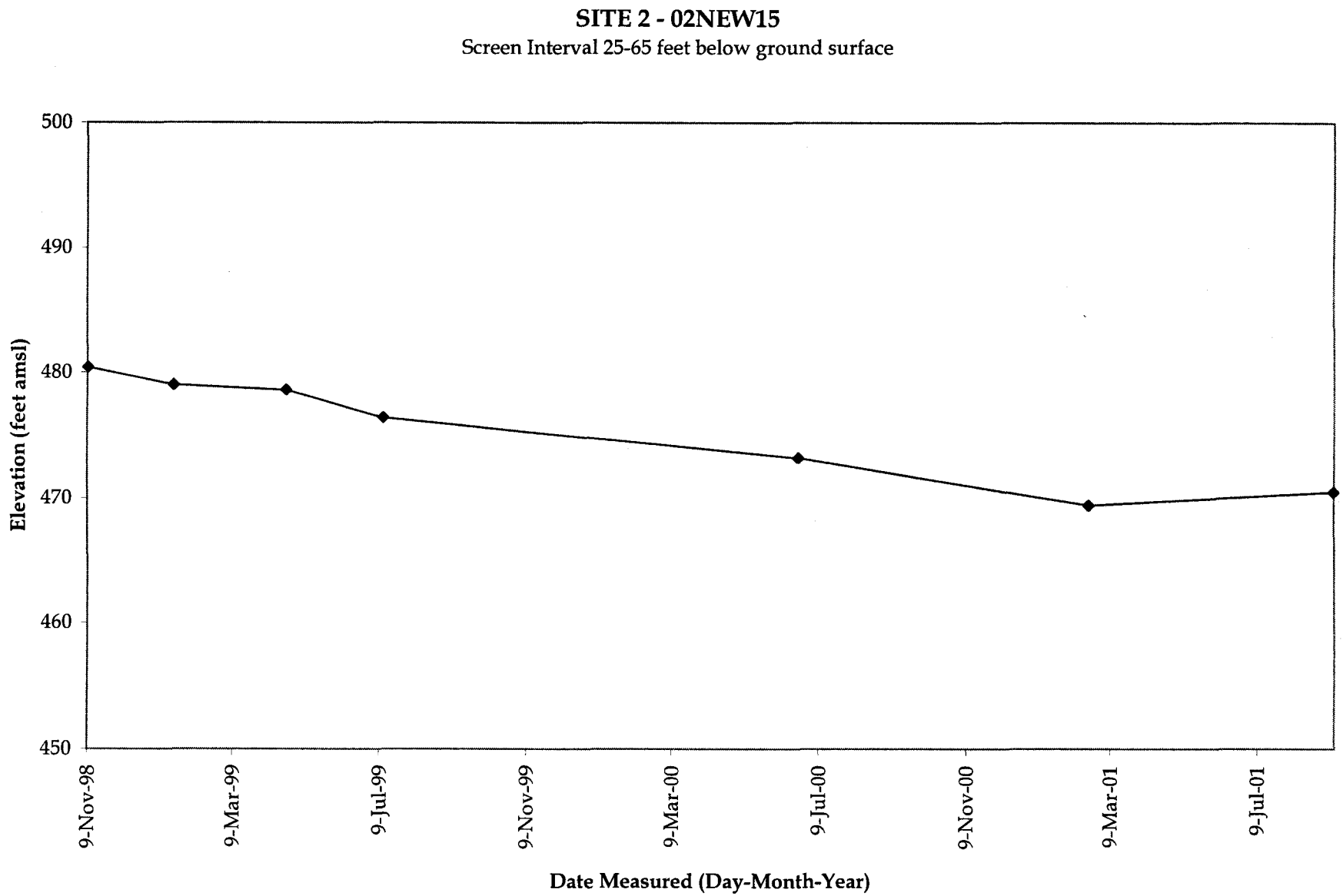


Figure 3-1B


SITE 2 - 02NEW15
Screen Interval 25-65 feet below ground surface
500
490
480
470
460
450
Elevation (feet amsl)
9-Nov-98
9-Mar-99
9-Jul-99
9-Nov-99
9-Mar-00
9-Jul-00
9-Nov-00
9-Mar-01
9-Jul-01
Date Measured (Day-Month-Year)

3-1C

Figure 3-1C

SITE 5 - 05NEW1

Screen Interval 163-203 feet below ground surface

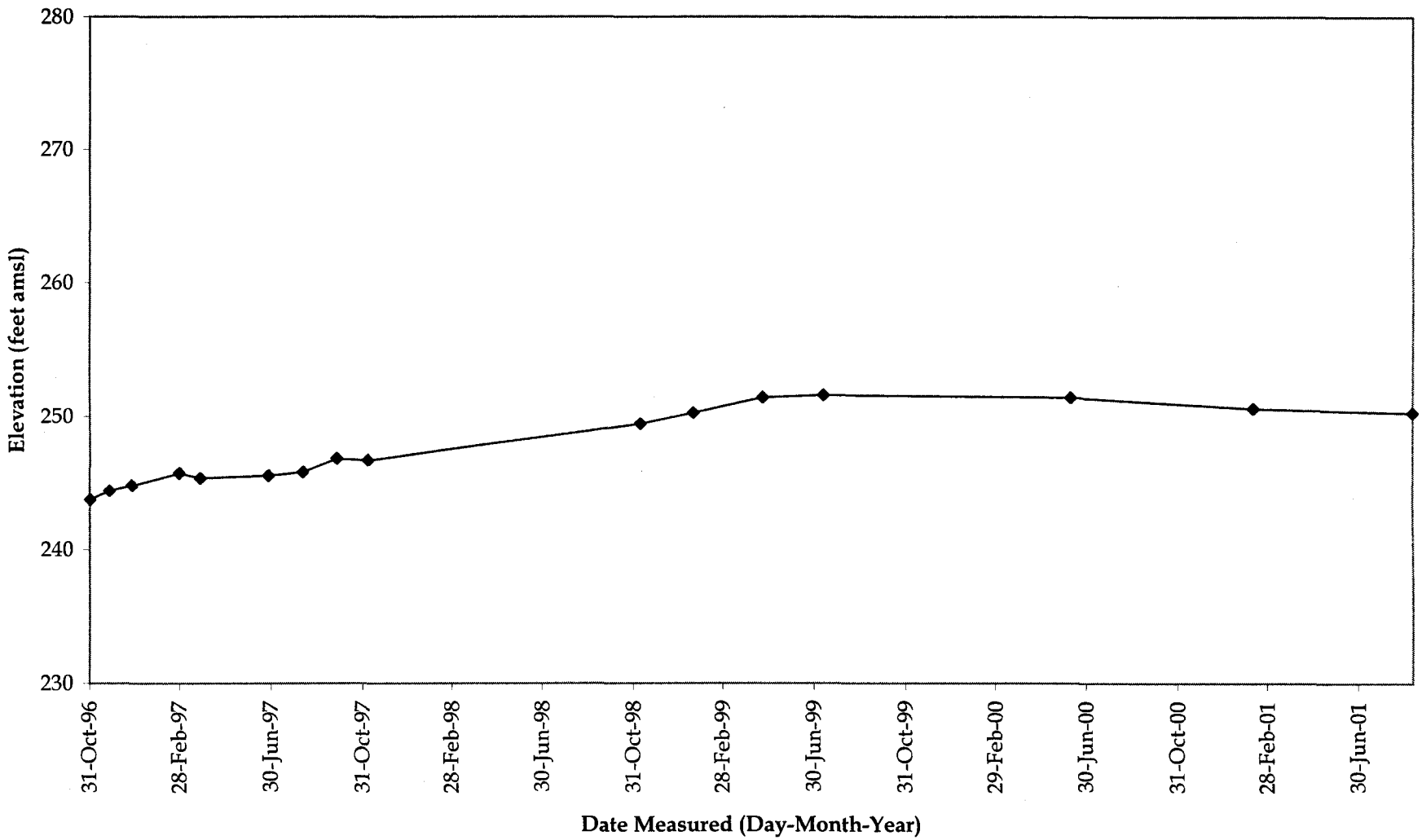
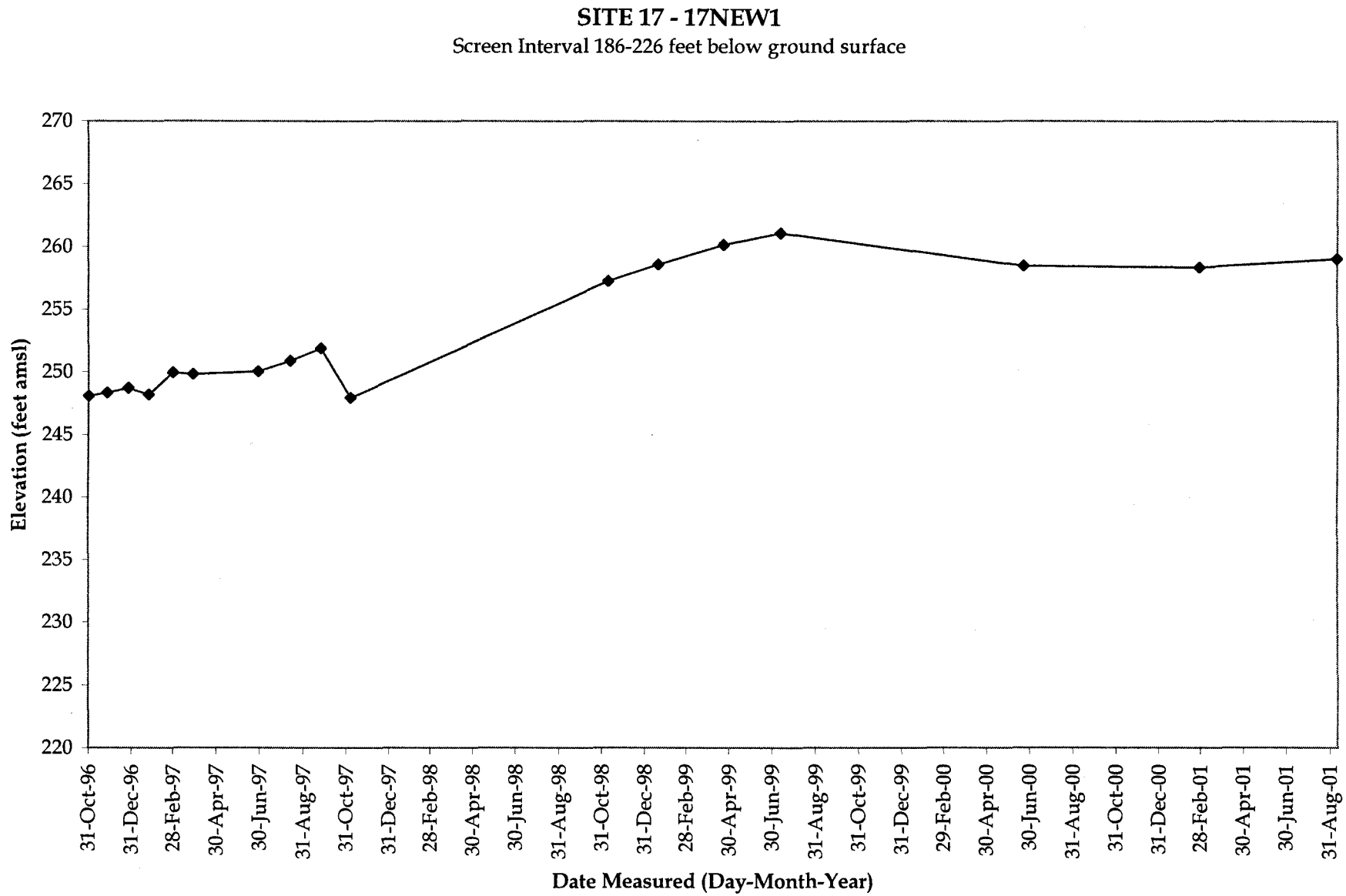


Figure 3-1D


SITE 17 - 17NEW1
Screen Interval 186-226 feet below ground surface
Elevation (feet amsl)
270
265
260
255
250
245
240
235
230
225
220
31-Oct-96
31-Dec-96
28-Feb-97
30-Apr-97
30-Jun-97
31-Aug-97
31-Oct-97
31-Dec-97
28-Feb-98
30-Apr-98
30-Jun-98
31-Aug-98
31-Oct-98
31-Dec-98
28-Feb-99
30-Apr-99
30-Jun-99
31-Aug-99
31-Oct-99
31-Dec-99
29-Feb-00
30-Apr-00
30-Jun-00
31-Aug-00
31-Oct-00
31-Dec-00
28-Feb-01
30-Apr-01
30-Jun-01
31-Aug-01
Date Measured (Day-Month-Year)

3-1E

Figur 1E

SITE 24 - 09_DGMW75

Screen Interval 114-154 feet below ground surface

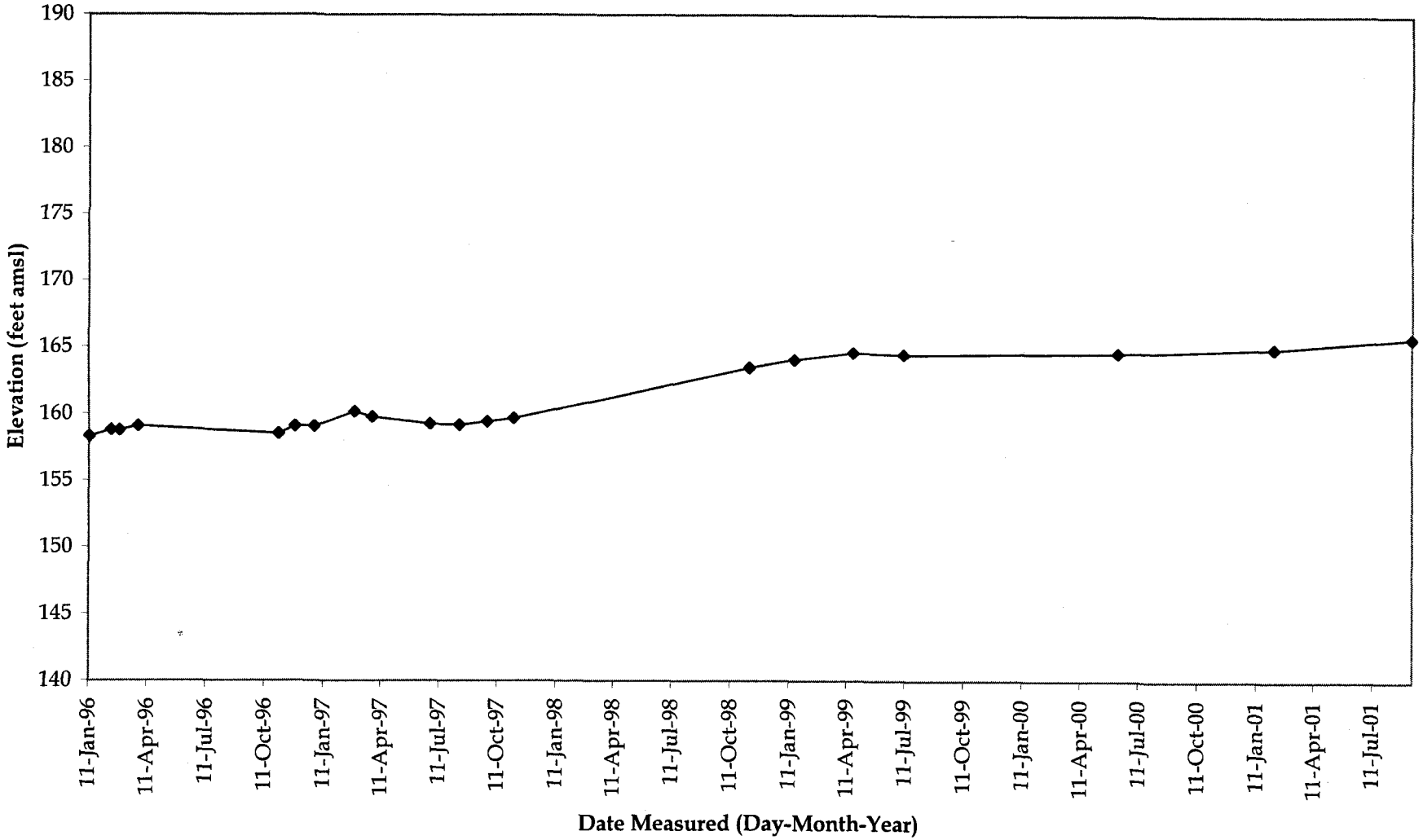
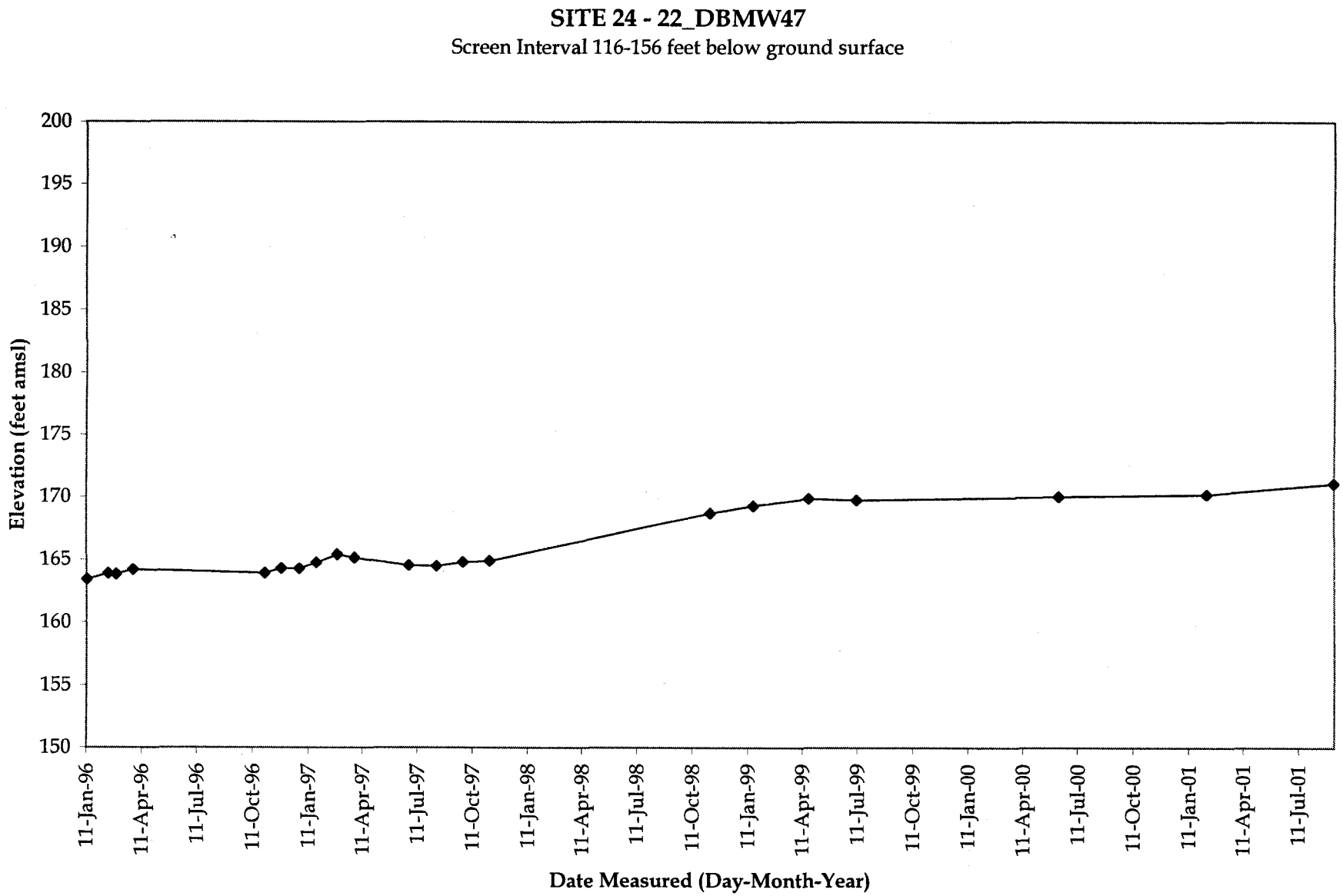


Figure 3-1F


SITE 24 - 22_DBMW47
Screen Interval 116-156 feet below ground surface
Elevation (feet amsl)
200
195
190
185
180
175
170
165
160
155
150
11-Jan-96
11-Apr-96
11-Jul-96
11-Oct-96
11-Jan-97
11-Apr-97
11-Jul-97
11-Oct-97
11-Jan-98
11-Apr-98
11-Jul-98
11-Oct-98
11-Jan-99
11-Apr-99
11-Jul-99
11-Oct-99
11-Jan-00
11-Apr-00
11-Jul-00
11-Oct-00
11-Jan-01
11-Apr-01
11-Jul-01
Date Measured (Day-Month-Year)

3-2A

Figu[illegible]-2A

Site 18 and 24 - 18_BGMW04A & BGMW04B

Screen Intervals 286-306 and 190-210 feet below ground surface, respectively

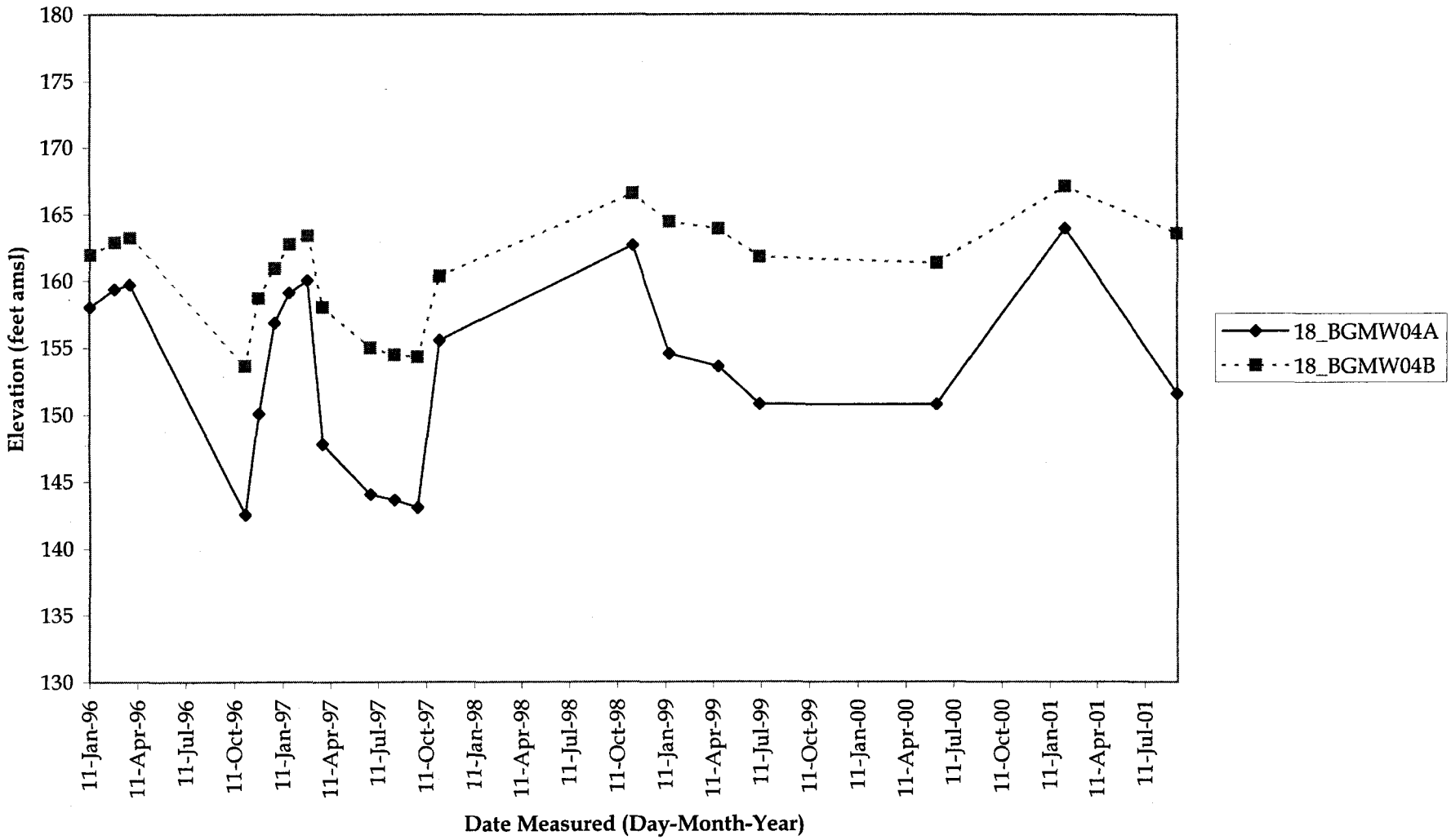


Figure 3-2B

SITE 18 - 18_MCAS06

Screen Interval 167-222 feet below ground surface

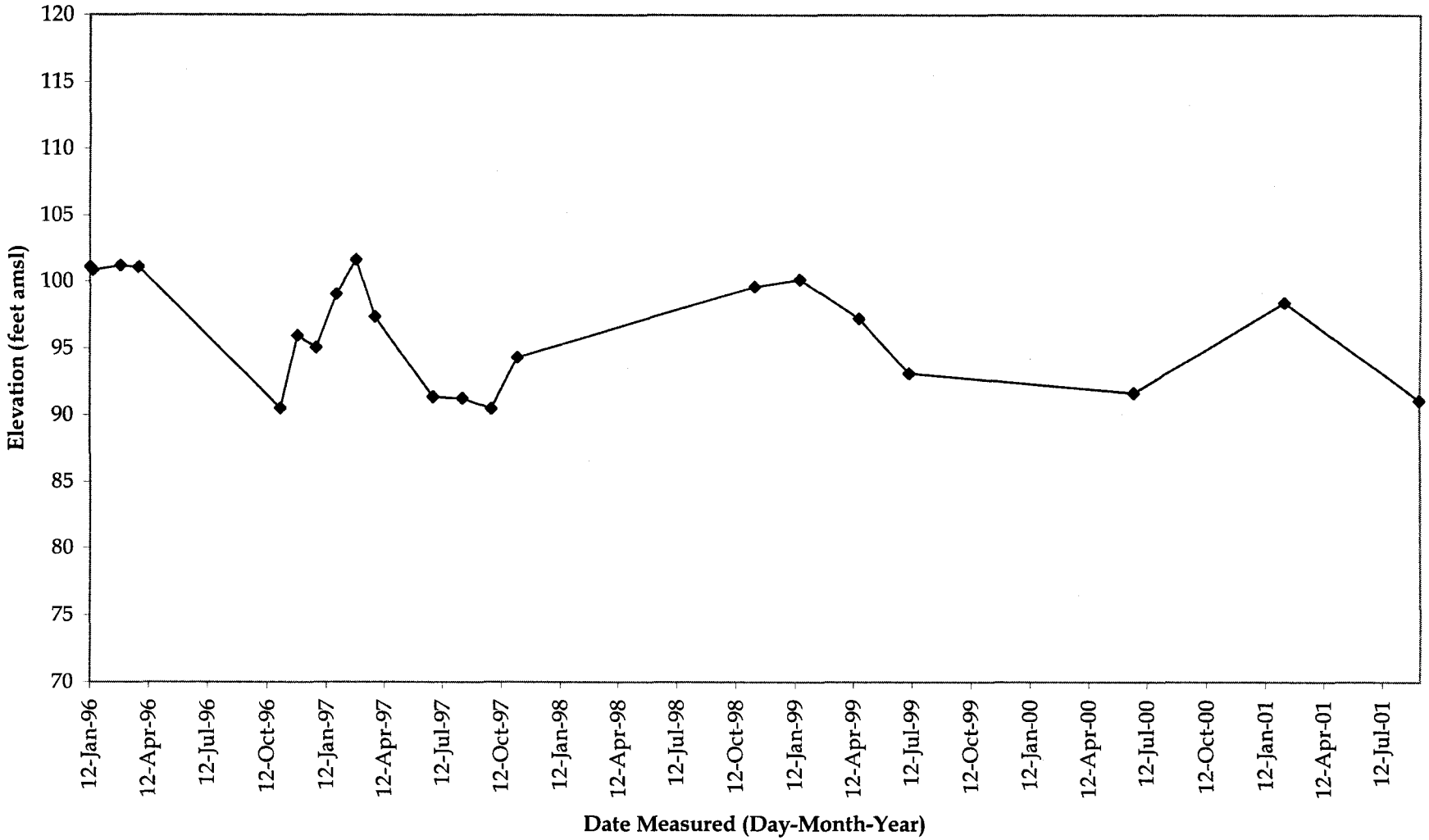


Figure 3-2C

Site 18 - 18_MCAS08

Screen Interval 392-410 feet below ground surface

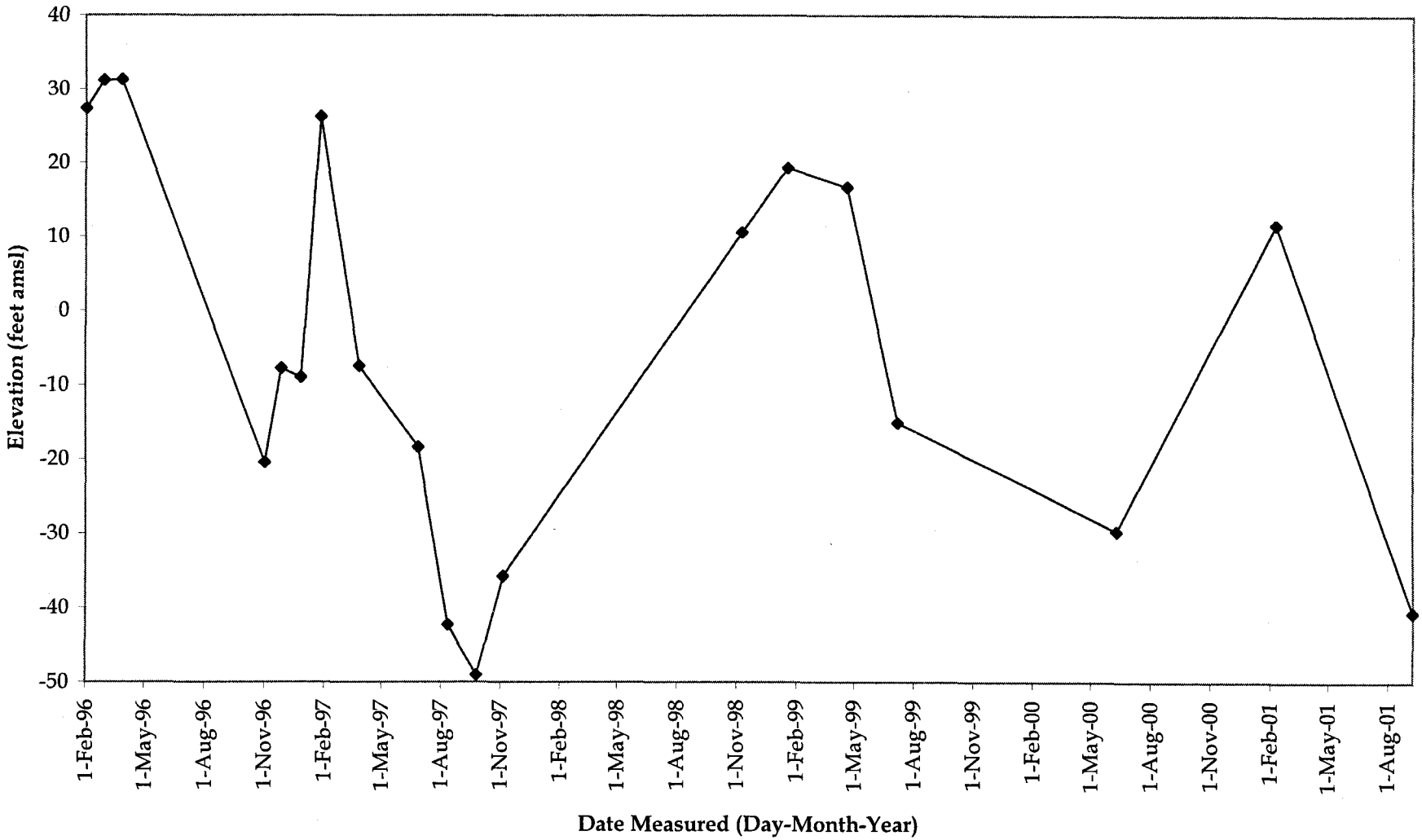


Figure 3-2D

Site 18 - 18_MCAS09

Screen Interval 372-445 feet below ground surface

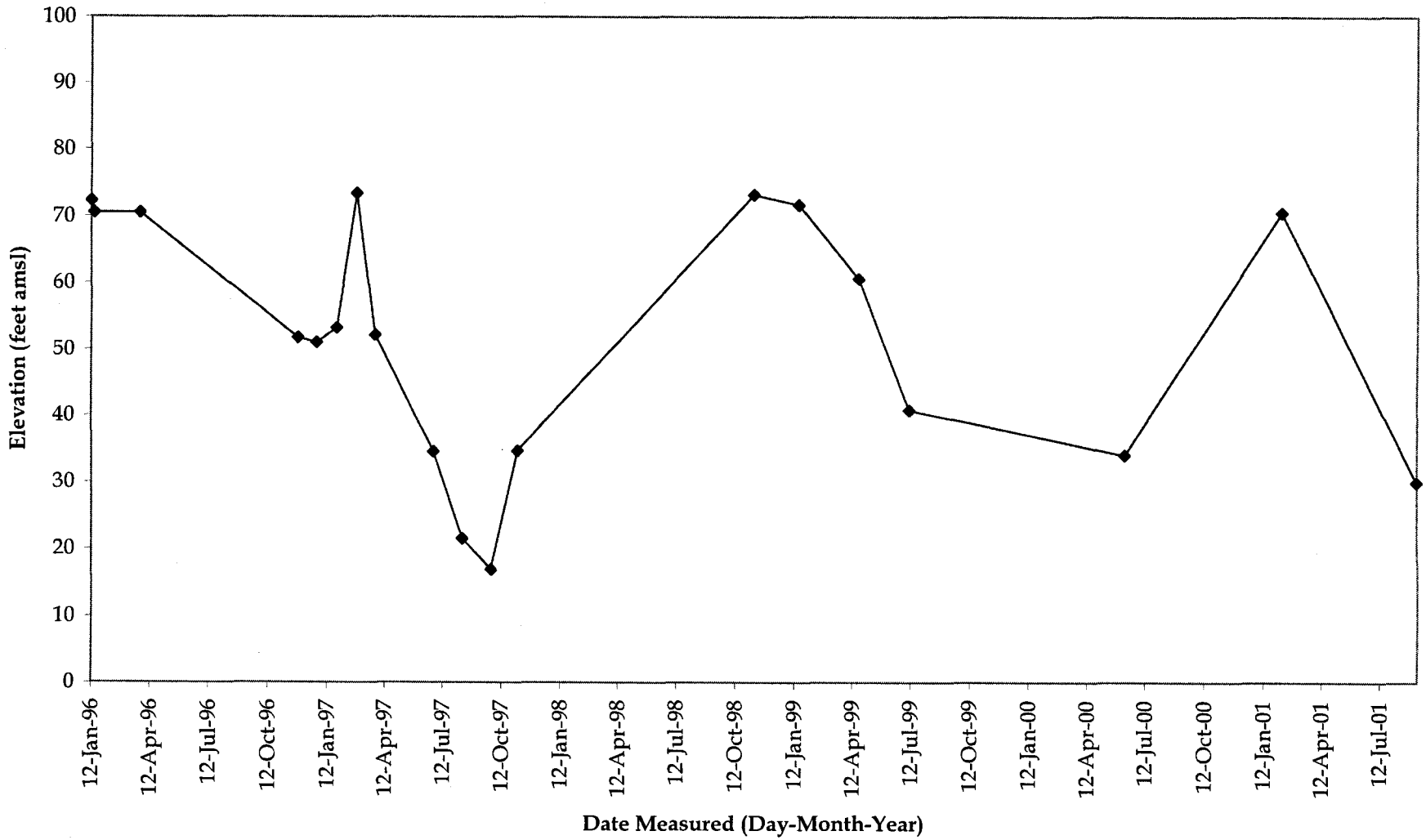
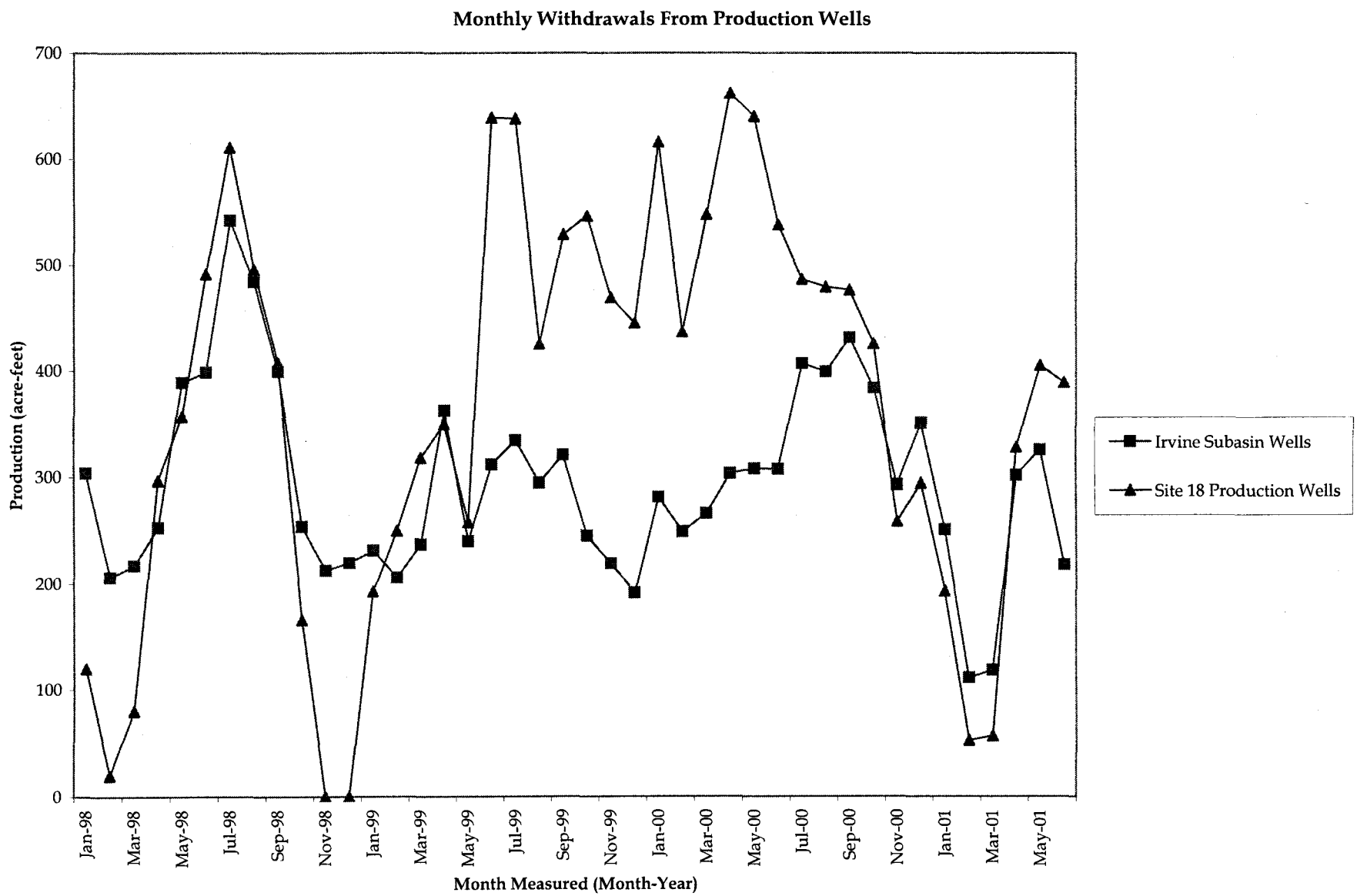


Figure 3-3


Monthly Withdrawals From Production Wells
Production (acre-feet)
700
600
500
400
300
200
100
0
Jan-98
Mar-98
May-98
Jul-98
Sep-98
Nov-98
Jan-99
Mar-99
May-99
Jul-99
Sep-99
Nov-99
Jan-00
Mar-00
May-00
Jul-00
Sep-00
Nov-00
Jan-01
Mar-01
May-01
Month Measured (Month-Year)
Irvine Subasin Wells
Site 18 Production Wells

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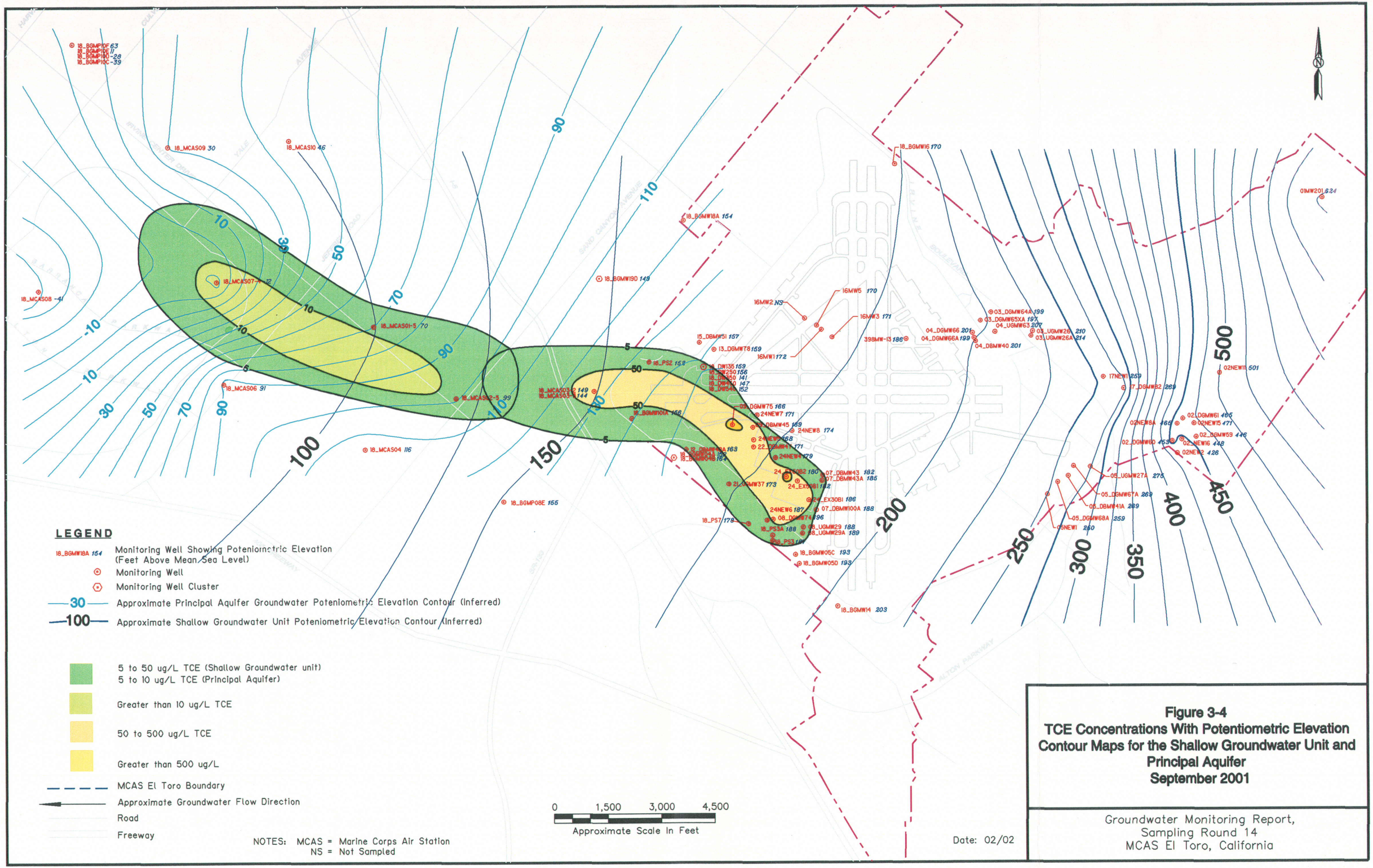

Figure 3-4
TCE Concentrations With Potentiometric Elevation Contour Maps for the Shallow Groundwater Unit and Principal Aquifer
September 2001

Groundwater Monitoring Report,
Sampling Round 14
MCAS El Toro, California

PAGE No. 3-32

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Figure 3-5A

PCE & TCE Concentrations in 02_DGMW61
Screen Interval 80-100 feet below ground surface

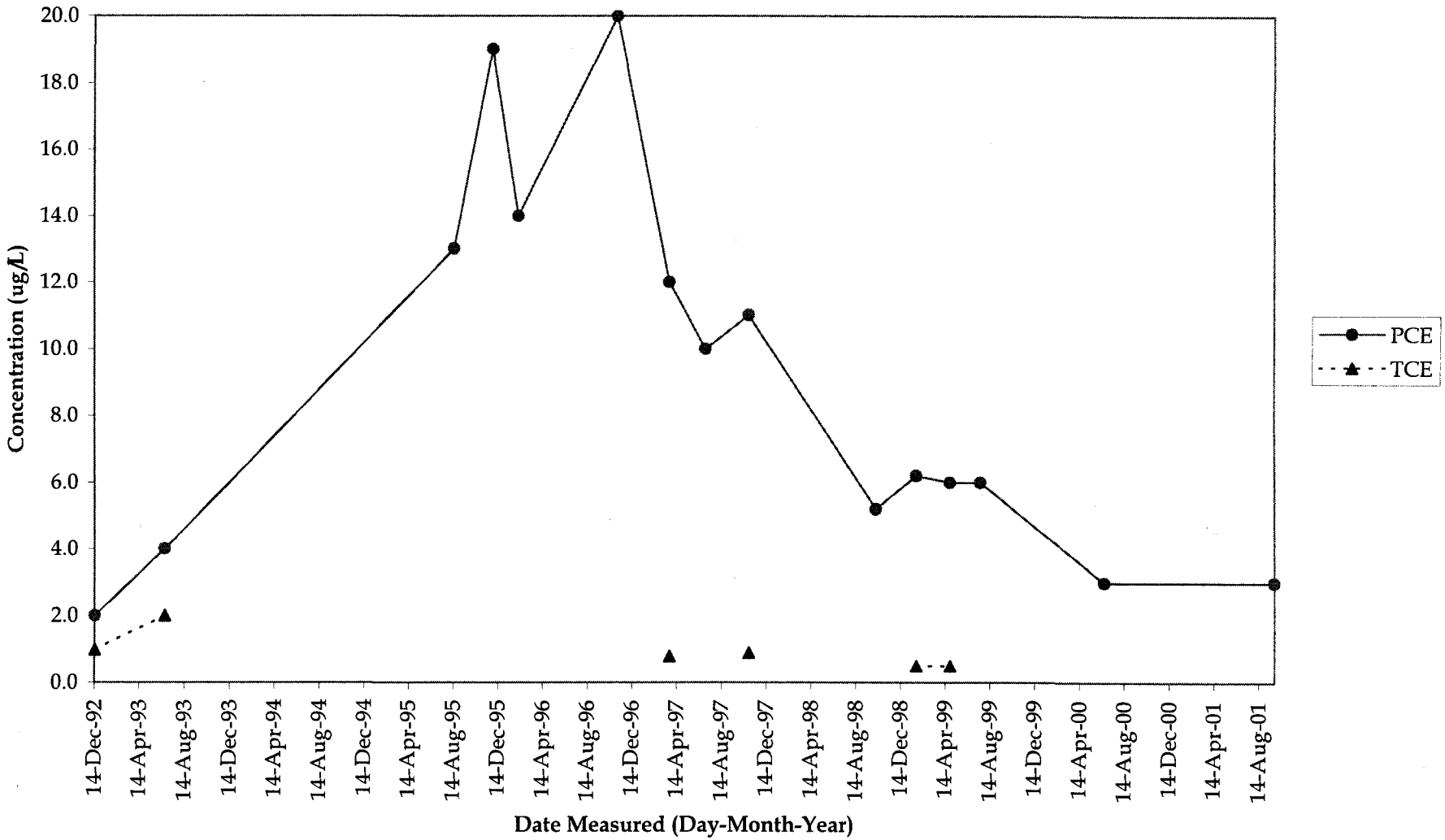


Figure 3-5B

PCE & TCE Concentrations in 02NEW8A

Screen Interval 84-104 feet below ground surface

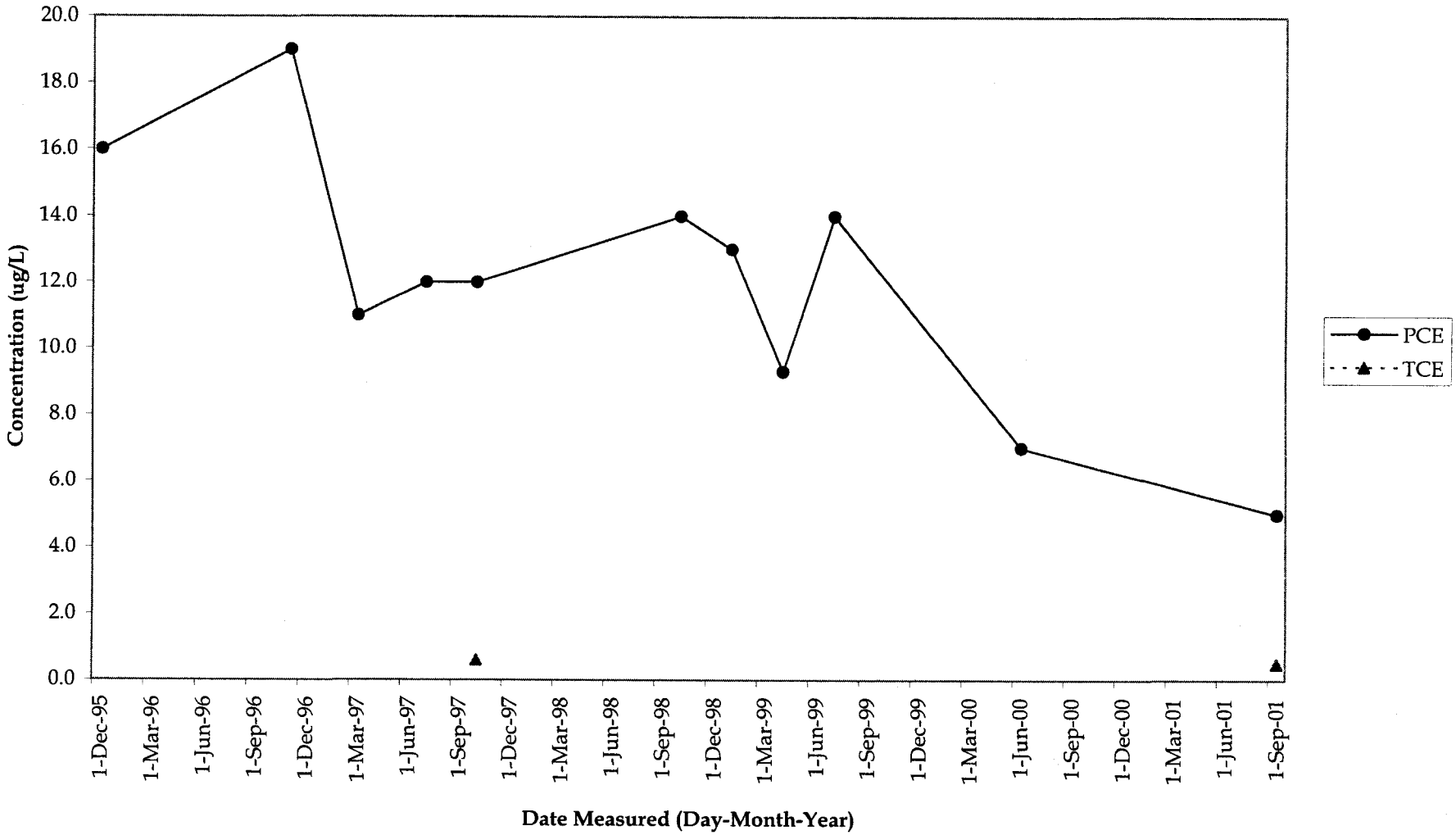
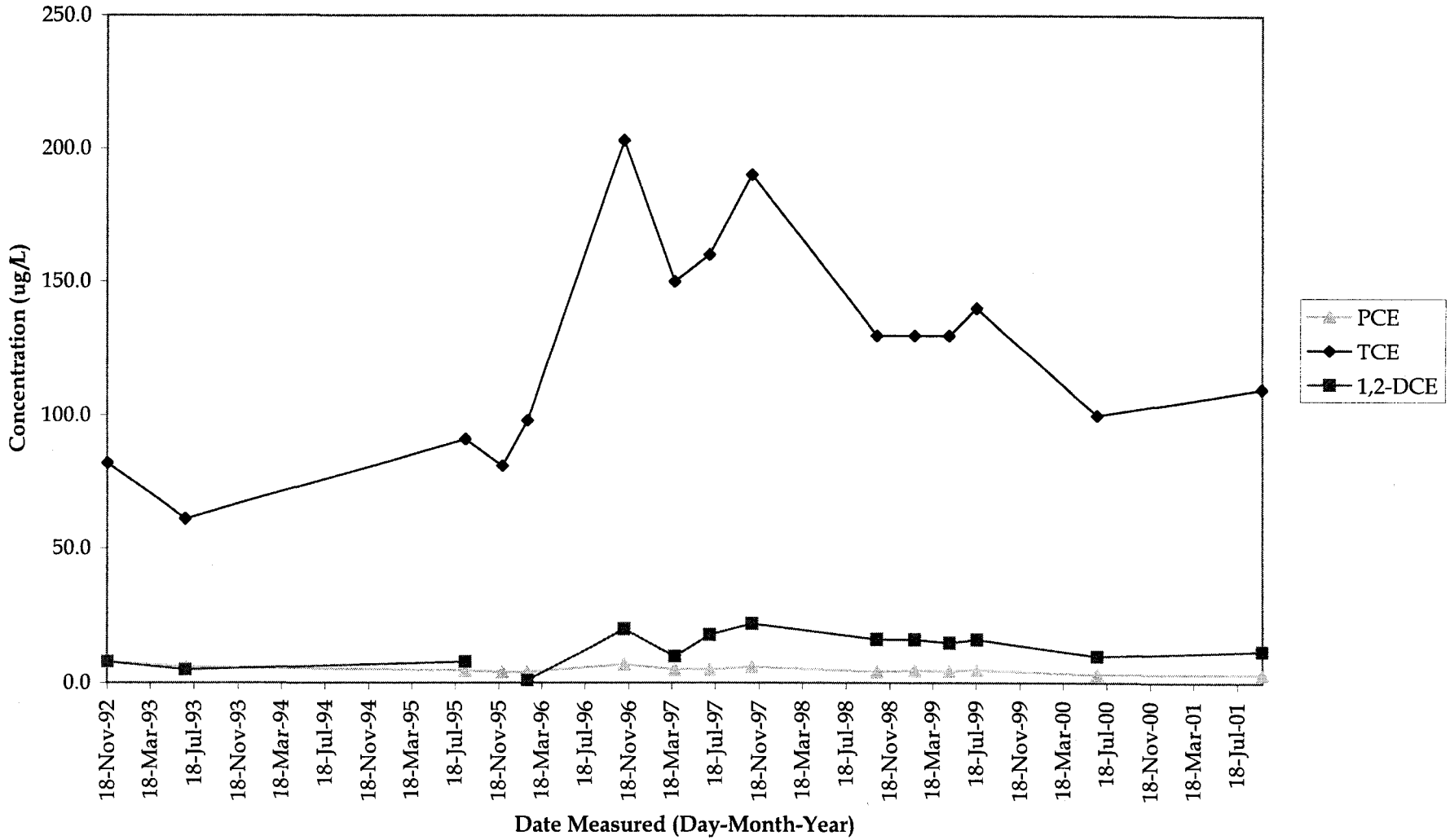


Figure 3-5C

PCE, TCE & 1,2-DCE Concentrations in 02_DGMW60

Screen Interval 80-100 feet below ground surface



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3-6A

Figu[illegible]-6A

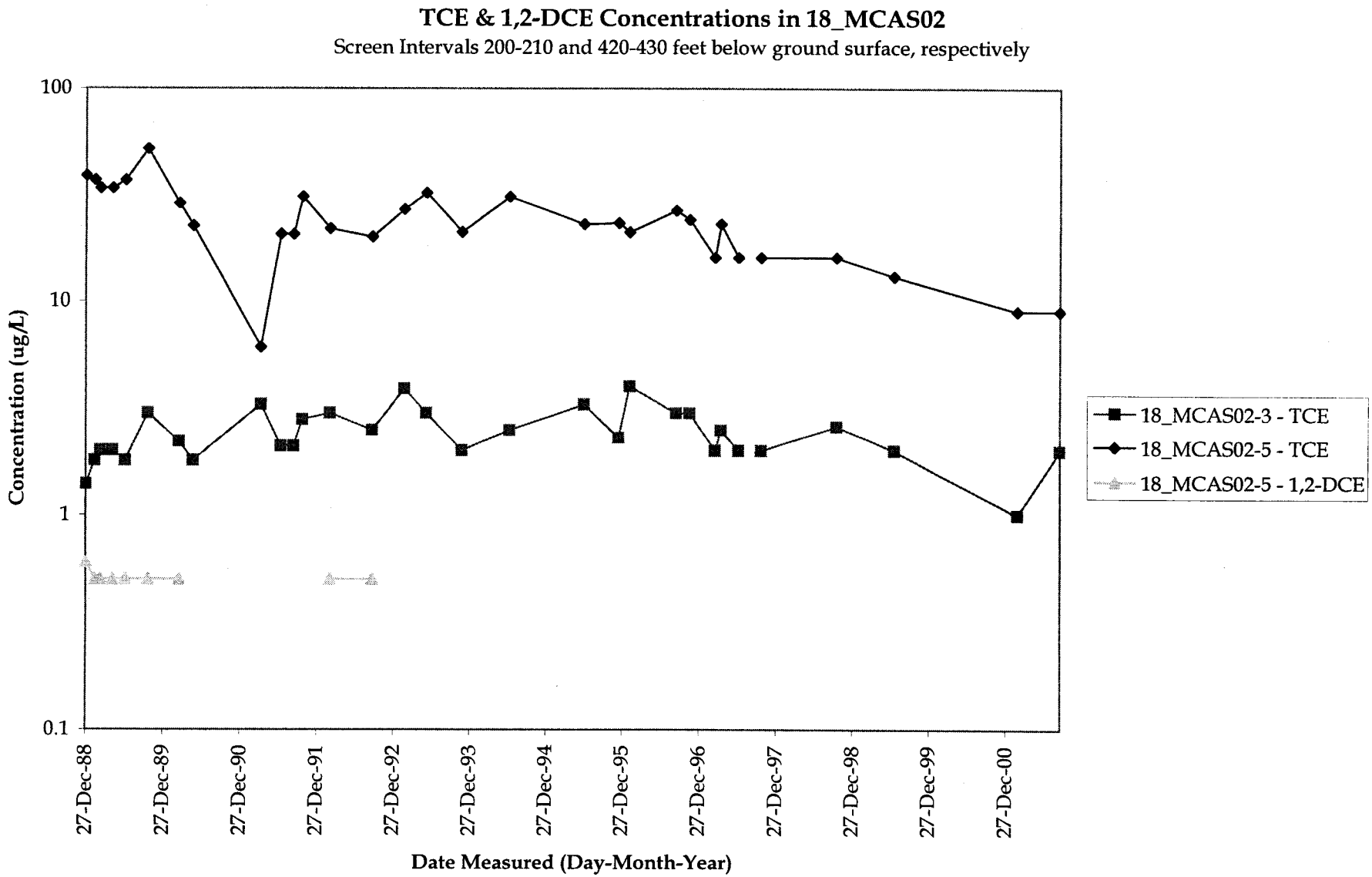
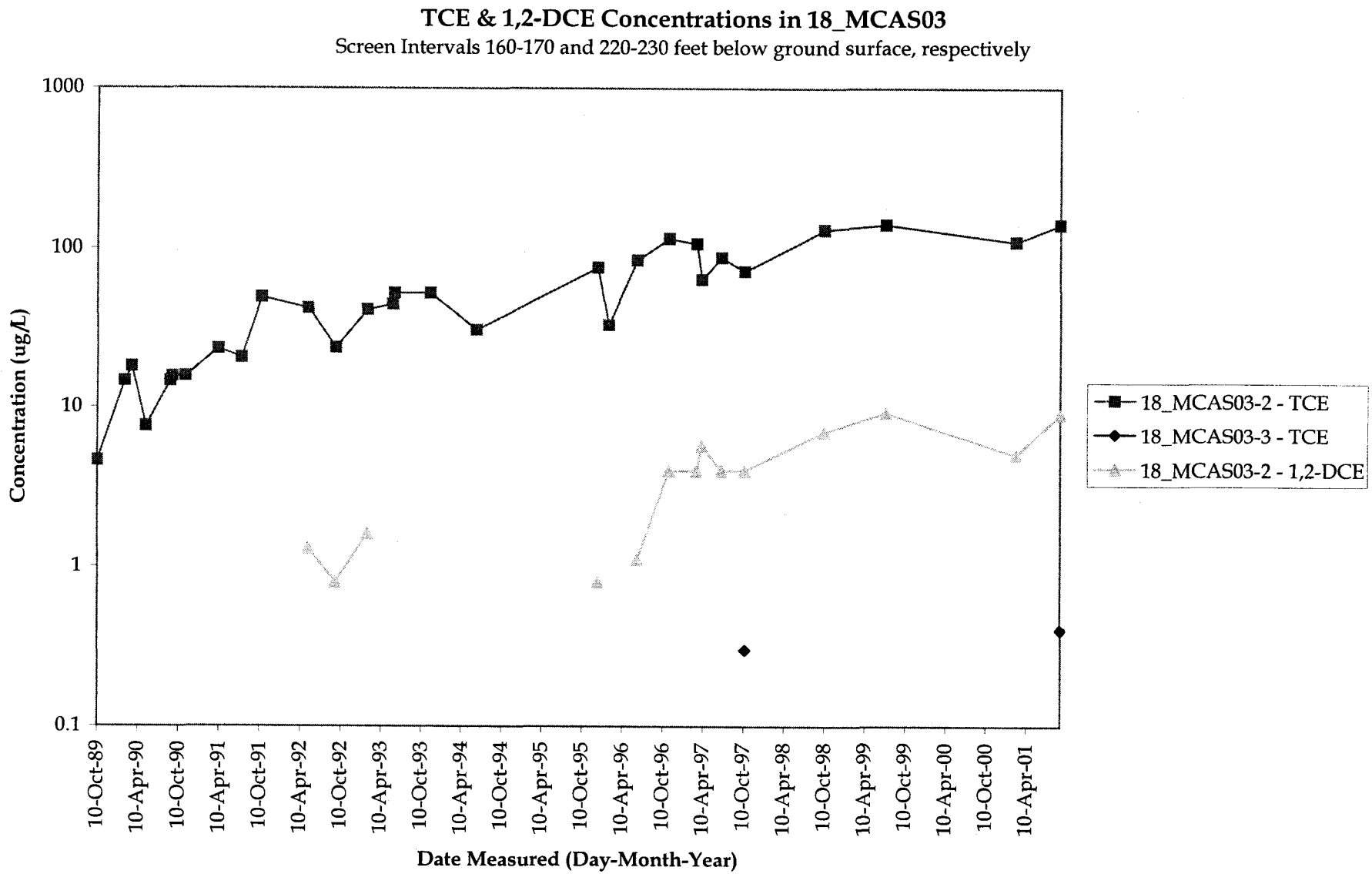

TCE & 1,2-DCE Concentrations in 18_MCAS02
Screen Intervals 200-210 and 420-430 feet below ground surface, respectively
100
10
1
0.1
Concentration (ug/L)
27-Dec-88
27-Dec-89
27-Dec-90
27-Dec-91
27-Dec-92
27-Dec-93
27-Dec-94
27-Dec-95
27-Dec-96
27-Dec-97
27-Dec-98
27-Dec-99
27-Dec-00
Date Measured (Day-Month-Year)
18_MCAS02-3 - TCE
18_MCAS02-5 - TCE
18_MCAS02-5 - 1,2-DCE

Figure 3-6B


TCE & 1,2-DCE Concentrations in 18_MCAS03
Screen Intervals 160-170 and 220-230 feet below ground surface, respectively
1000
100
10
1
0.1
Concentration (ug/L)
10-Oct-89
10-Apr-90
10-Oct-90
10-Apr-91
10-Oct-91
10-Apr-92
10-Oct-92
10-Apr-93
10-Oct-93
10-Apr-94
10-Oct-94
10-Apr-95
10-Oct-95
10-Apr-96
10-Oct-96
10-Apr-97
10-Oct-97
10-Apr-98
10-Oct-98
10-Apr-99
10-Oct-99
10-Apr-00
10-Oct-00
10-Apr-01
Date Measured (Day-Month-Year)
18_MCAS03-2 - TCE
18_MCAS03-3 - TCE
18_MCAS03-2 - 1,2-DCE

3-6C

Figure 3-6C

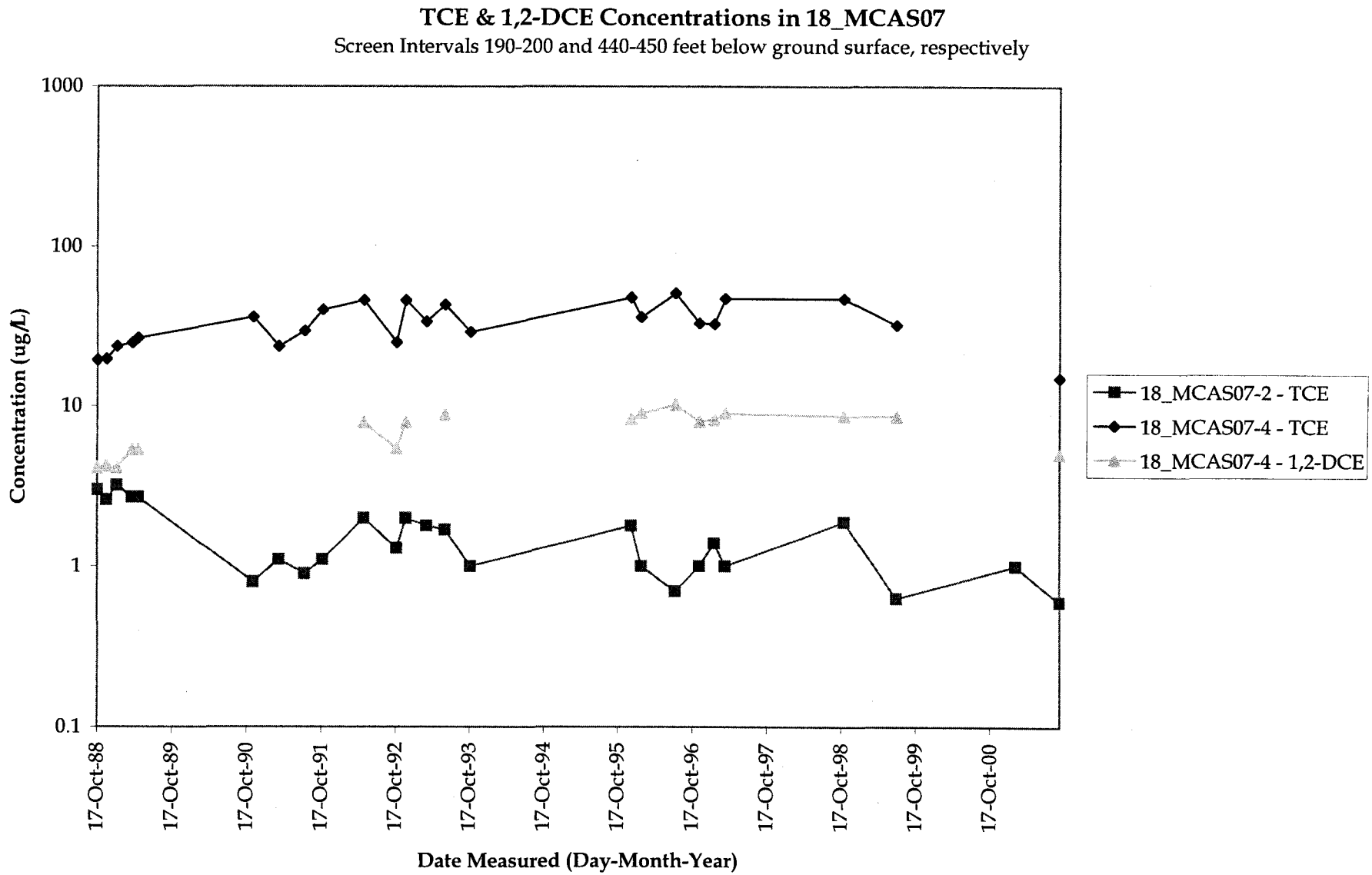
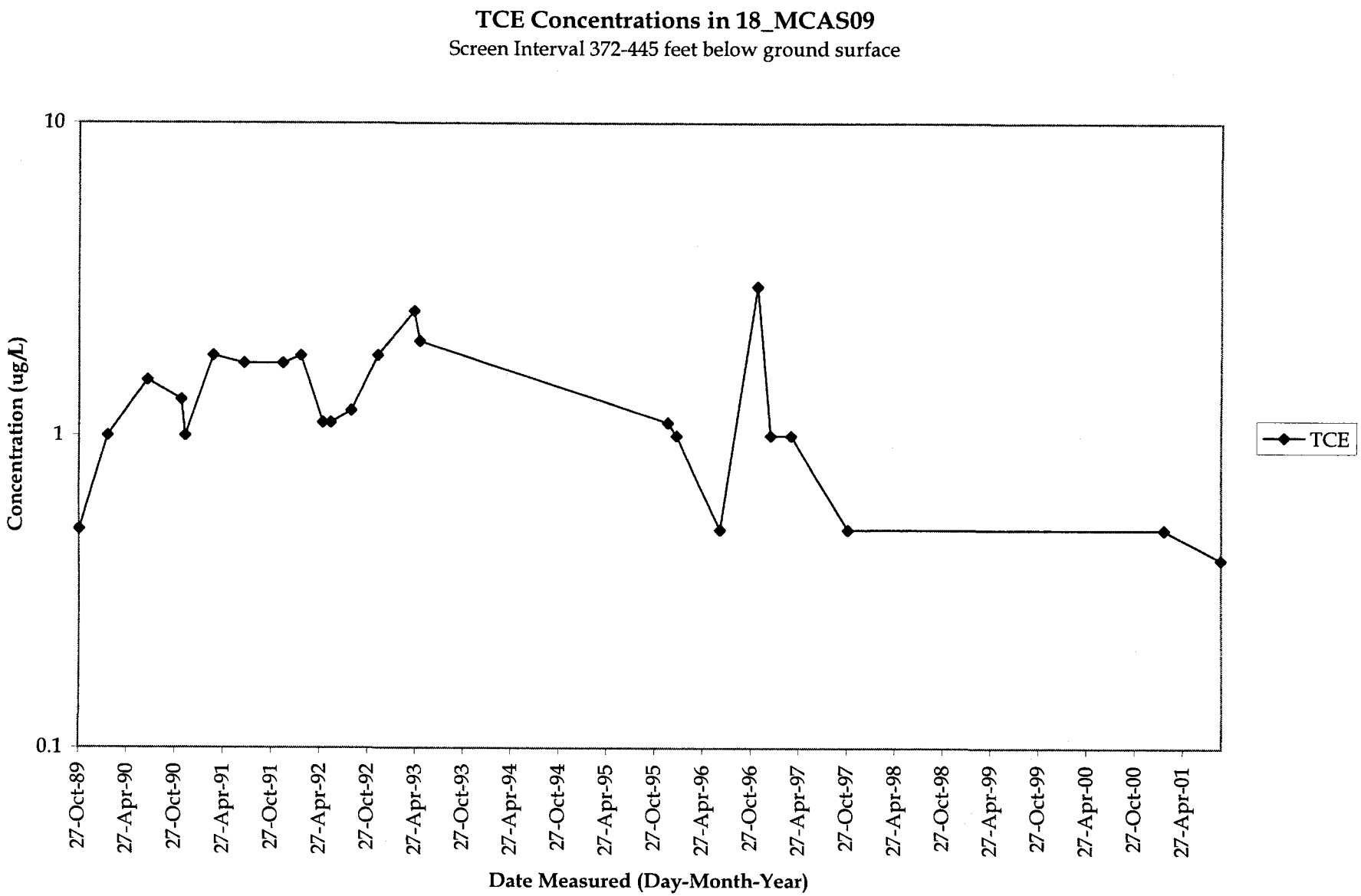


Figure 3-6D


TCE Concentrations in 18_MCAS09
Screen Interval 372-445 feet below ground surface
10
1
0.1
Concentration (ug/L)
27-Oct-89
27-Apr-90
27-Oct-90
27-Apr-91
27-Oct-91
27-Apr-92
27-Oct-92
27-Apr-93
27-Oct-93
27-Apr-94
27-Oct-94
27-Apr-95
27-Oct-95
27-Apr-96
27-Oct-96
27-Apr-97
27-Oct-97
27-Apr-98
27-Oct-98
27-Apr-99
27-Oct-99
27-Apr-00
27-Oct-00
27-Apr-01
Date Measured (Day-Month-Year)
TCE

3-7A

Figu[illegible]-7A

TCE & 1,2-DCE Concentrations in 09_DBMW45

Screen Interval 117-157 feet below ground surface

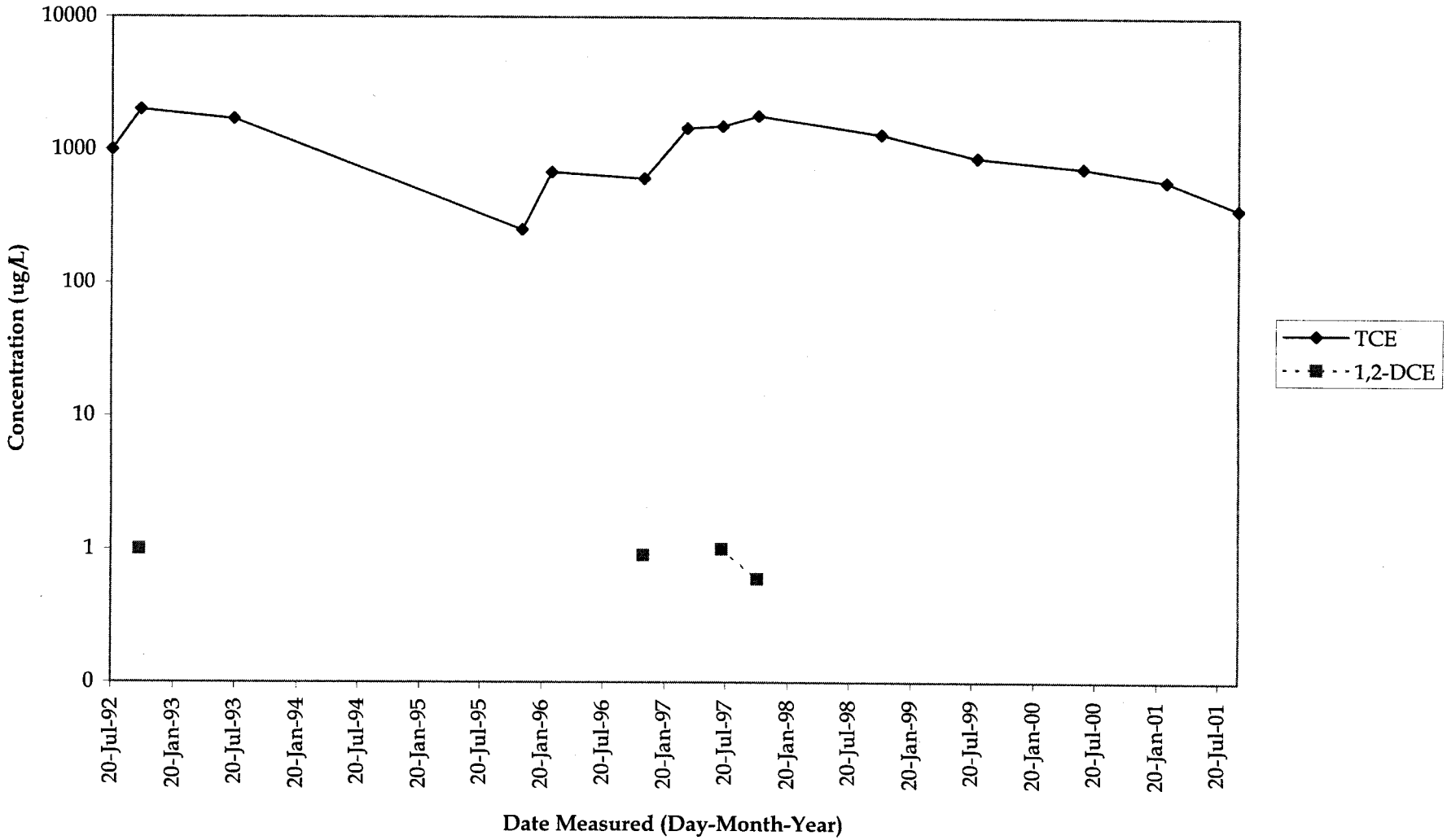
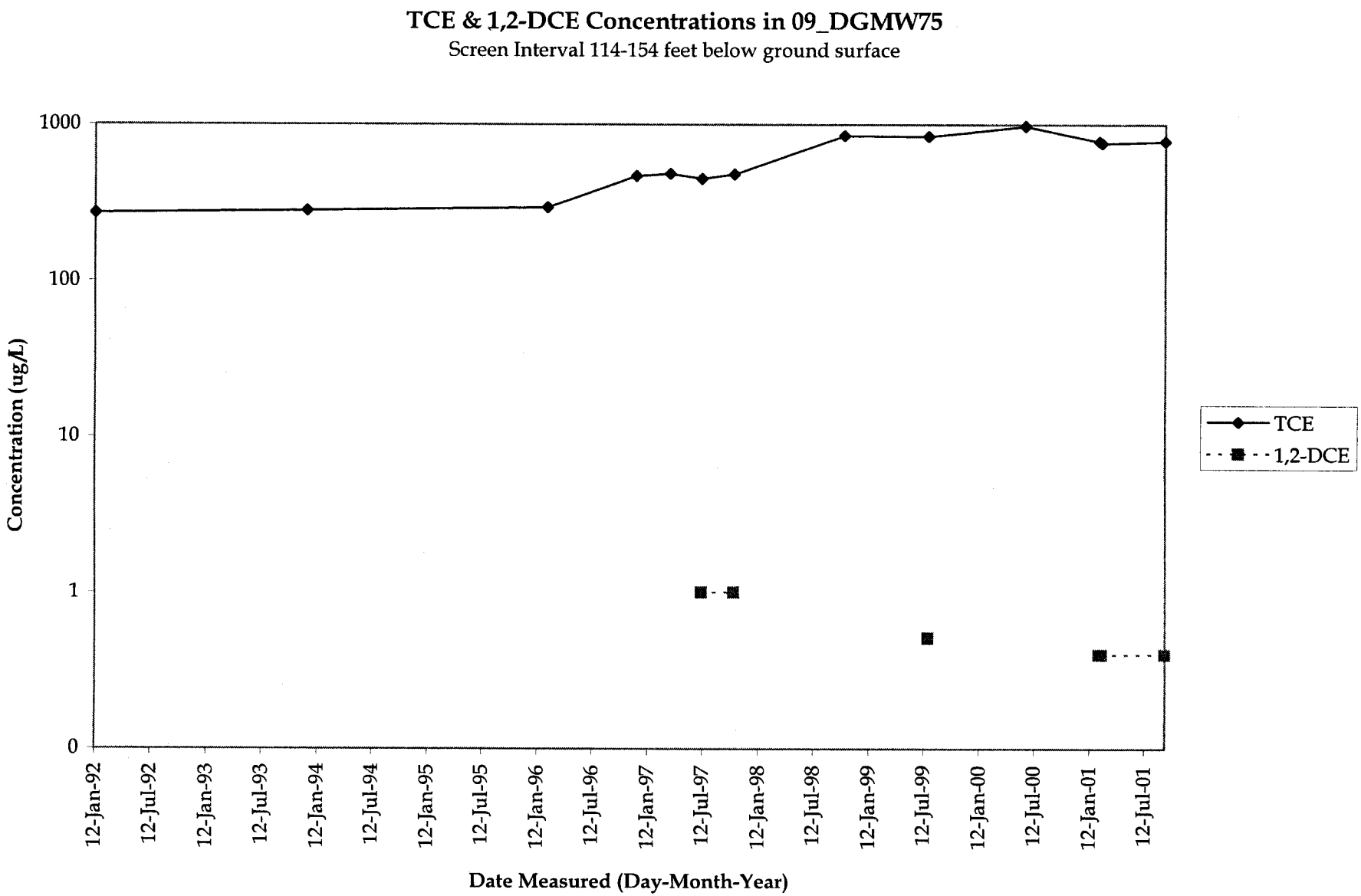


Figure 3-7B


TCE & 1,2-DCE Concentrations in 09_DGMW75
Screen Interval 114-154 feet below ground surface
1000
100
10
1
0
Concentration (ug/L)
12-Jan-92
12-Jul-92
12-Jan-93
12-Jul-93
12-Jan-94
12-Jul-94
12-Jan-95
12-Jul-95
12-Jan-96
12-Jul-96
12-Jan-97
12-Jul-97
12-Jan-98
12-Jul-98
12-Jan-99
12-Jul-99
12-Jan-00
12-Jul-00
12-Jan-01
12-Jul-01
Date Measured (Day-Month-Year)
TCE
1,2-DCE

3-7C

Figure 3-7C

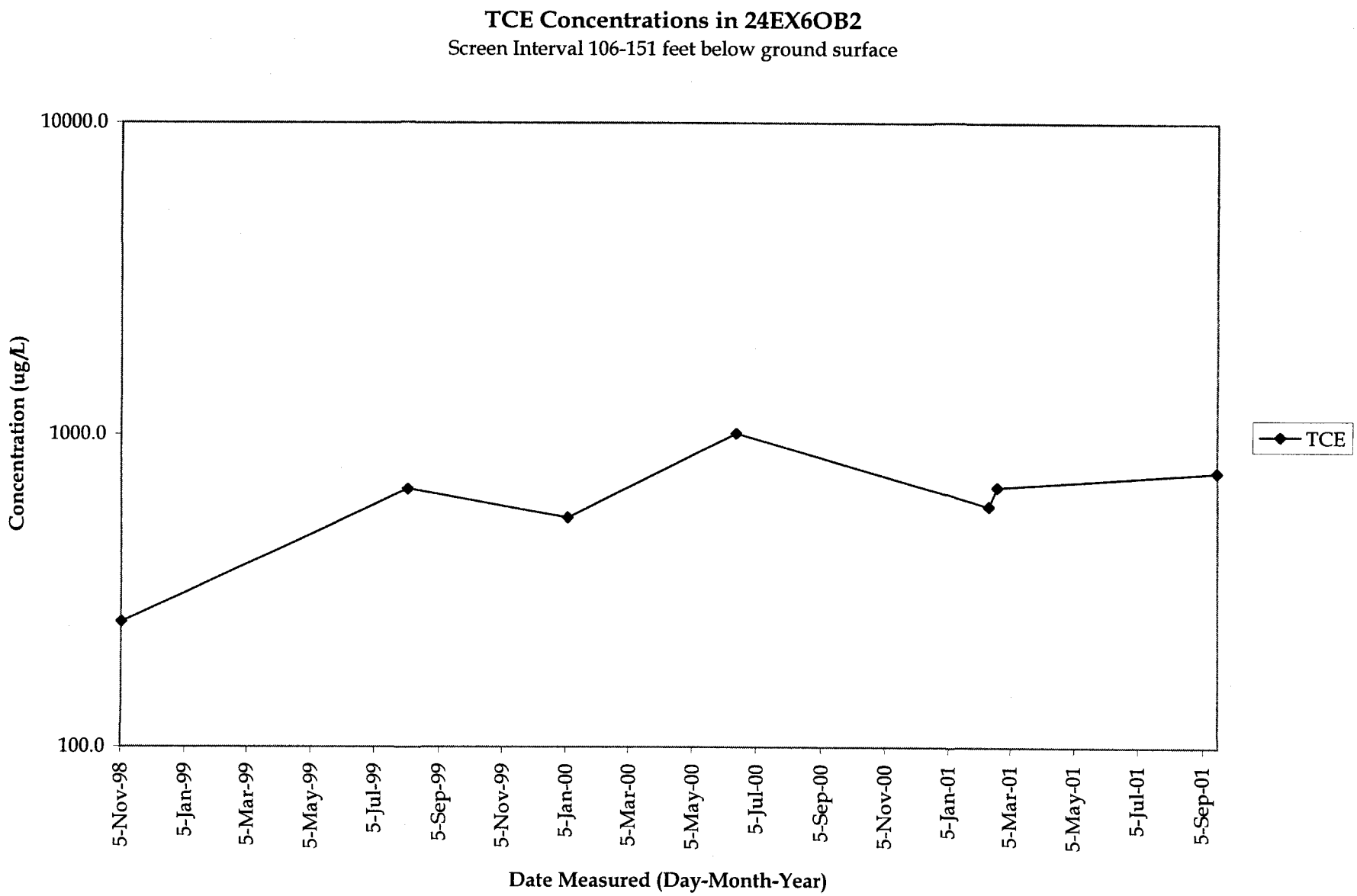
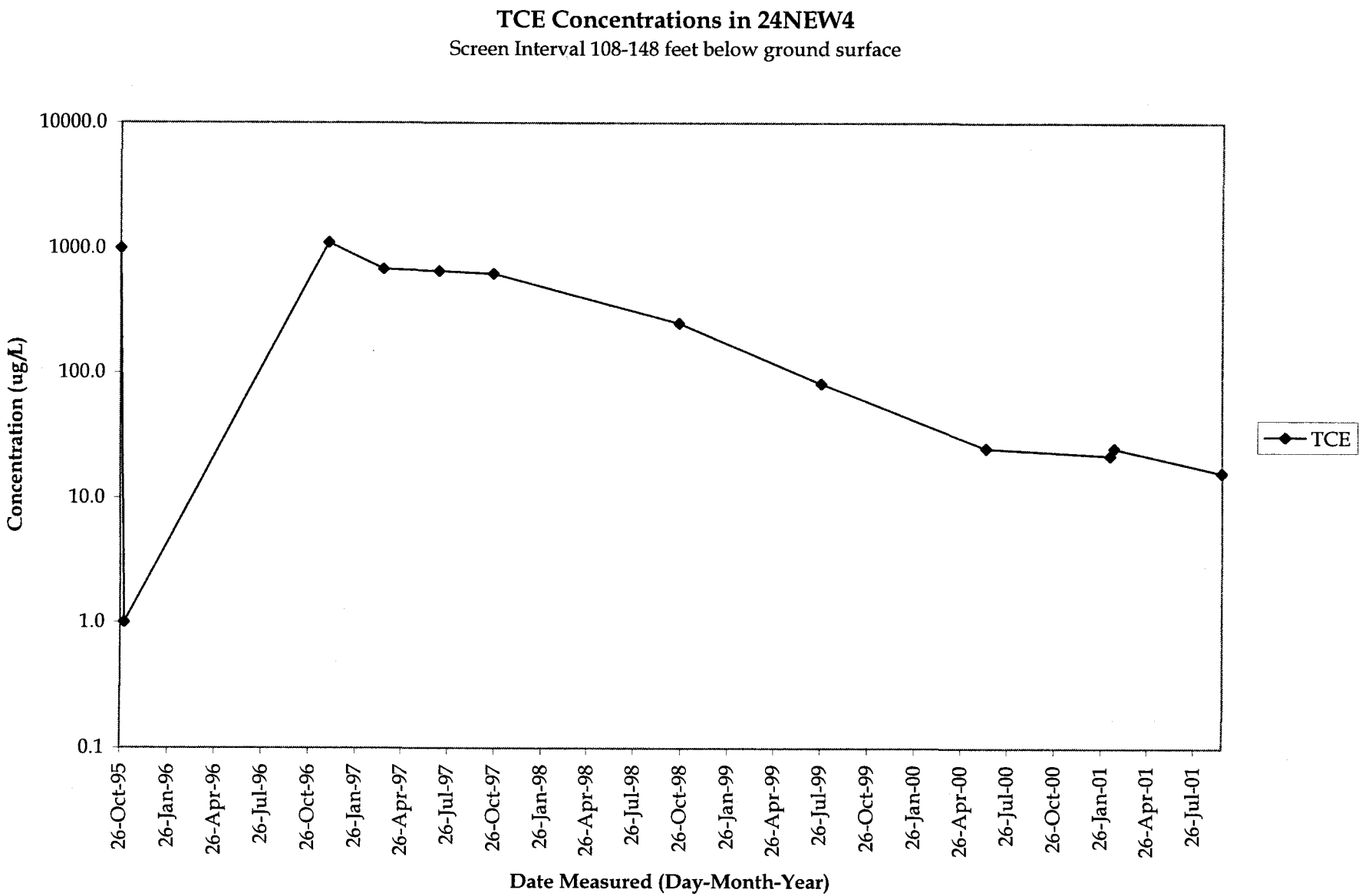


Figure 3-7D


TCE Concentrations in 24NEW4
Screen Interval 108-148 feet below ground surface
10000.0
1000.0
100.0
10.0
1.0
0.1
Concentration (ug/L)
26-Oct-95
26-Jan-96
26-Apr-96
26-Jul-96
26-Oct-96
26-Jan-97
26-Apr-97
26-Jul-97
26-Oct-97
26-Jan-98
26-Apr-98
26-Jul-98
26-Oct-98
26-Jan-99
26-Apr-99
26-Jul-99
26-Oct-99
26-Jan-00
26-Apr-00
26-Jul-00
26-Oct-00
26-Jan-01
26-Apr-01
26-Jul-01
Date Measured (Day-Month-Year)
TCE

Section 4
Conclusions and Recommendations

4.1 Conclusions

The results of groundwater monitoring conducted during September 2001 (Round 14) for groundwater flow, VOC plume migration, and groundwater chemistry are consistent with the results of groundwater monitoring conducted during Round 13. This section summarizes the results and findings from monitoring Round 14.

4.1.1 Groundwater Flow Patterns

The general pattern of groundwater flow in the shallow groundwater unit during Round 14 is essentially unchanged from flow patterns observed during Round 13 and are consistent with flow patterns observed during previous sampling rounds. The flow patterns observed in the principal aquifer during Round 14 are consistent with flow patterns observed during Round 13. Specific findings from the groundwater level monitoring include the following conclusions:

- Groundwater potentiometric elevations in the shallow groundwater unit increased an average of about 0.23 feet within the boundaries of MCAS El Toro and decreased an average of 10 feet west of the boundary between Round 13 and Round 14. The west-northwest direction of flow in the shallow groundwater unit during Round 14 remained unchanged from the pattern observed during Round 13. The increases in groundwater potentiometric elevations within the boundary of MCAS El Toro are most likely due to an increase in the recharge of the groundwater unit (as a result of an increase in precipitation). The decreases in groundwater potentiometric elevations west of the boundary are due to an increase in production of groundwater at production wells west of the boundary of MCAS El Toro.

- Groundwater potentiometric elevations in the principal aquifer decreased an average of approximately 31.7 feet between Round 13 and Round 14. The decrease is attributed to an increase in production of off-station wells located west and northwest of MCAS El Toro. Despite the decrease of groundwater elevations observed during Round 14, the overall pattern of groundwater flow (in a northwesterly direction) in the principal aquifer remained relatively unchanged from the pattern observed during Round 13.

- Vertical groundwater flow gradients are considered a major factor governing the distribution of VOCs in the shallow groundwater unit, the migration of VOCs from the shallow groundwater unit into the underlying principal aquifer near the

west boundary of MCAS El Toro, and the distribution of VOCs in the principal aquifer west of MCAS El Toro. Although some variations in the vertical gradients from previous data were noted in the shallow groundwater unit along the western boundary of MCAS El Toro (from an upward gradient during Round 13 to a downward gradient during Round 14), the general overall vertical flow patterns remained consistent with the MCAS El Toro conceptual hydrogeological model as illustrated in the GMP (BNI 1999). VOC contamination remains in the upper part of the shallow groundwater unit within the Site 24 VOC source area. In the vicinity of the western boundary of MCAS El Toro, the VOC plume migrates downward to the bottom of the shallow groundwater unit in response to the transition from an upward/neutral to a downward vertical gradient in that area. Once the VOC plume enters the principal aquifer, its vertical distribution remains relatively consistent as it migrates westward in response to pumping of wells located west and northwest of MCAS El Toro.

4.1.2 Groundwater Analyses

Key findings from groundwater sampling activities and data evaluation during Round 14 are summarized as follows:

4.1.2.1 VOCs

Evaluation of the analytical results for VOC samples collected during Round 14 in comparison to results from Round 13 led to the following conclusions.

- Some VOCs were detected in samples collected from wells at Sites 3, 5, and 17 including PCE, TCE, Freon-113, 1,1-DCE, benzene, bromodichloromethane, chloroform, cyclohexane, isopropylbenzene, and xylenes. With the exception of benzene in one Site 3 well, all of the detections are well below the MCLs; most were qualified as estimated. The sample collected from the Site 3 well, 04_DGMW66A, contained 150 μg/L of benzene. This was the first round of sampling during which this well was sampled. A JP5 pipeline in the vicinity of the well and/or a fuel source at IR Site 3 are possible sources of the benzene in the sample collected from well 04_DGMW66A. The JP5 pipeline is currently under investigation under a separate project. The concentration trends of benzene will continue to be monitored and evaluated in future rounds.
- Wells 02_DGMW61 and 02_NEW8A monitor a small PCE plume located along the western edge of Site 2 downgradient of the former operational landfill area. Well 02_DGMW60 monitors a small TCE plume located near the boundary of MCAS El Toro in an area where uncontrolled dumping formerly occurred. The concentrations of PCE and TCE in these monitoring wells located at Site 2 are comparable with those measured during the last sampling event (Round 12).

- Four Site 16 wells were added to the monitoring program during Round 14. One of these four wells was not sampled due to a damaged well cap and micropurge connectors (16_MW2). Results of samples collected from these three wells indicate that a localized plume containing VOCs (principally TCE) at concentrations up to 380 μg/L exists beneath Site 16 consistent with previous results from the RI/FS. Other VOCs detected in excess of their respective MCLs include 1,1-DCA, 1,2-DCE, chloroform, benzene, and Freon-113. Concentrations of other VOCs were all below MCLs.
- As has been observed during Round 13 and previous rounds, the Round 14 analytical results for VOCs at Sites 18 and 24 indicate that TCE is the most frequently detected and widely distributed VOC found in groundwater samples. Other VOCs including PCE, 1,1-DCE, 1,2-DCE (total), carbon disulfide, carbon tetrachloride, chloroform, styrene, 1,1,2-TCA, 1,2-dichloropropane, dichlorodifluoromethane, methyl acetate, vinyl chloride, and Freon 113 were also detected in samples collected from wells at Sites 18 and 24.
- The overall shape and horizontal extent of the TCE plume for the principal aquifer (Site 18) during Round 14 remains consistent with the conditions observed during sampling Round 13. As discussed in sections 3.2.1.4 and 3.2.1.5, a field or laboratory error possibly occurred resulting in a switch of samples for Westbay ports 18_MCAS01-3 and 18_MCAS01-5. Using the results as reported by the laboratory would completely reconfigure the TCE plumes in both the shallow groundwater unit and the principal aquifer, which is inconsistent with results from all previous sampling rounds. VOCs data from future sampling rounds will be evaluated to confirm whether a field or laboratory error has occurred for this well during Round 14. If needed, tables, figures, and discussion will be modified as appropriate based on future results for these ports. Due to the uncertainty, the results for these two ports were not considered while configuring the plume for Round 14 or in the evaluation of VOCs trends. .
- While the overall shape and horizontal extent of the TCE plume in the shallow groundwater unit in Round 14 remained consistent with the conditions observed during sampling Round 13, the TCE concentration detected in the sample collected from 09_DBMW45 decreased, resulting in minor changes to the plume configuration in the Site 24 VOC source area. No other significant changes in concentrations were noted.

4.1.2.2 Radionuclides

Groundwater samples were collected and analyzed for total gross alpha and total gross beta particle activity at 21 wells during Round 14, located at Sites 2, 3, and 5. Results from these analyses are comparable to the previous sampling round (Round 12). An

evaluation of radionuclides in groundwater concluded that radionuclides in groundwater at MCAS El Toro are naturally occurring (Earth Tech 2001b).

4.1.2.3 Dissolved Metals

Results of metals analyses for samples collected from 23 monitoring wells located at Sites 2, 3, 5, and 17 indicate elevated concentrations above the secondary MCL for manganese and above the primary MCL for nickel in several monitoring wells and elevated levels of aluminum above the secondary MCL in two Site 2 wells. These results are consistent with those obtained during Round 12. Based on an evaluation of metals conducted for MCAS El Toro in 1998, metals are not considered chemicals of potential concern (Bechtel 1998).

4.1.2.4 General Chemistry Parameters

Results of general chemistry parameter analyses for samples collected from eight monitoring wells located at Sites 2, 3, 5, 17, and 24 indicate elevated levels of TDS above the MCL in almost all of the wells sampled. Elevated chloride, nitrate/nitrite, and sulfate (above MCLs) were detected in groundwater samples from wells located at Site 24. General chemistry parameter results are consistent with results observed during Round 12.

4.1.2.5 Perchlorate

Groundwater samples collected from 14 monitoring wells during Round 14, located at Sites 1, 3, and 5 were analyzed for perchlorate. All samples had concentrations of perchlorate below the California provisional action level of 18 μg/L except for the sample collected from well 01_MW201 (310 μg/L). Eight of the wells sampled for perchlorate during Round 14 are newly constructed replacement wells with no historical results for comparison purposes; however, at all of the sites except for Site 1, similar concentrations of perchlorate were found at wells previously sampled at MCAS El Toro. Generally perchlorate has been found at levels less than 15 μg/L except for at Site 1. Perchlorate data from Round 14 is intended to supplement perchlorate studies underway at MCAS El Toro.

4.2 Recommendations

Round 15 is scheduled to be performed in March 2002 and will include all of the wells identified in Table 2-2.

Once the monitoring well program is established for the post-ROD activities, the wells from the petroleum site groundwater monitoring program should be consolidated with the IR site monitoring program. The integration of these two groundwater monitoring programs would greatly improve the efficiency of groundwater sample collection and

provide an overall cost savings. Additional benefits would be to provide a basewide perspective of the groundwater conditions and cleanup progress.

At present, the groundwater monitoring program consists of sampling wells located at IR sites to monitor the concentration of contaminants, in addition to collection of hydrogeological data to evaluate groundwater conditions over time. The program is designed to evolve to ensure that the data collected provides a clear understanding of current conditions and incorporates any changes at the IR sites (e.g., additional wells) that should be incorporated into the program. Any changes to the existing program including wells to be sampled, parameters to be analyzed for , and/or sampling methodologies will be discussed with the regulatory agencies and addressed in future groundwater monitoring reports.

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Section 5
References

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Appendix A

Water Level Data

Table A.1A
Water Level Measurements and Groundwater Elevations for Conventional Wells
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOP OF CASING ELEVATION (feet amsl)	DATE MEASURED	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
01_DGMW57	BP	63 - 83	SHALLOW	631.17	4-Apr-99	47.11	584.06	
				631.17	12-Jul-99	47.89	583.28	-0.78
01_DGMW58	BP	55 - 77	SHALLOW	522.74	4-Apr-99	39.25	483.49	
01MW101	BP	118 - 148	SHALLOW	750.82	4-Apr-99	60.22	690.60	
				750.85	12-Jul-99	60.95	689.90	-0.70
01MW102	BP	95 - 135	SHALLOW	758.13	4-Apr-99	103.71	654.42	
				758.13	12-Jul-99	103.88	654.25	-0.17
01MW201	BP	27 - 57	SHALLOW	665.99	4-Apr-99	36.03	629.96	
				665.99	12-Jul-99	37.15	628.84	-1.12
				665.99	28-Feb-01	42.05	623.94	-4.90
				665.99	10-Sep-01	41.96	624.03	0.09
02_DGMW59	BP	69 - 89	SHALLOW	506.91	12-Jan-96	50.95	455.96	
				506.91	6-Feb-96	51.22	455.69	-0.27
				506.91	28-Feb-96	48.75	458.16	2.47
				506.91	27-Mar-96	48.66	458.25	0.09
				506.91	30-Oct-96	53.28	453.63	-4.62
				506.91	26-Nov-96	51.58	455.33	1.70
				506.91	26-Dec-96	48.46	458.45	3.12
				506.91	23-Jan-97	44.96	461.95	3.50
				506.91	28-Feb-97	43.10	463.81	1.86
				506.91	27-Mar-97	46.20	460.71	-3.10
				506.91	27-Jun-97	50.50	456.41	-4.30
				506.91	11-Aug-97	51.96	454.95	-1.46
				506.91	24-Sep-97	52.54	454.37	-0.58
				506.91	6-Nov-97	53.50	453.41	-0.96
				506.91	9-Nov-98	52.01	454.90	1.49
				506.91	19-Jan-99	53.63	453.28	-1.62
				506.91	22-Apr-99	53.93	452.98	-0.30
				506.91	12-Jul-99	56.03	450.88	-2.10
				506.91	9-Jun-00	57.74	449.17	-1.71
				506.91	19-Feb-01	57.69	449.22	0.05
				506.91	10-Sep-01	60.45	446.46	-2.76
02_DGMW60	BP	80 - 100	SHALLOW	499.28	12-Jan-96	63.74	435.54	
				499.28	6-Feb-96	63.32	435.96	0.42
				499.28	28-Feb-96	56.27	443.01	7.05
				499.28	27-Mar-96	60.22	439.06	-3.95
				499.28	30-Oct-96	65.26	434.02	-5.04
				499.28	26-Nov-96	56.96	442.32	8.30
				499.28	26-Dec-96	59.88	439.40	-2.92
				499.28	23-Jan-97	55.82	443.46	4.06
				499.28	26-Feb-97	57.86	441.42	-2.04
				499.28	27-Mar-97	59.46	439.82	-1.60
				499.28	27-Jun-97	63.29	435.99	-3.83
				499.28	11-Aug-97	64.54	434.74	-1.25
				499.28	24-Sep-97	64.95	434.33	-0.41
				499.28	6-Nov-97	65.74	433.54	-0.79
				499.28	9-Nov-98	59.26	440.02	6.48
				499.28	19-Jan-99	60.59	438.69	-1.33
				499.28	22-Apr-99	60.66	438.62	-0.07
				499.28	12-Jul-99	62.59	436.69	-1.93
				499.28	9-Jun-00	63.57	435.71	-0.98
				499.28	19-Feb-01	60.86	438.42	2.71
				499.28	10-Sep-01	66.31	432.97	-5.45

Table A.1A
Water Level Measurements and Groundwater Elevations for Conventional Wells
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOP OF CASING ELEVATION (feet amsl)	DATE MEASURED	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
02_DGMW61	BP	80 - 100	SHALLOW	514.85	12-Jan-96	41.59	473.26	
				514.85	8-Feb-96	41.78	473.07	-0.19
				514.85	28-Feb-96	40.15	474.70	1.63
				514.85	27-Mar-96	39.70	475.15	0.45
				514.85	30-Oct-96	44.02	470.83	-4.32
				514.85	26-Nov-96	43.24	471.61	0.78
				514.85	26-Dec-96	40.60	474.25	2.64
				514.85	23-Jan-97	37.66	477.19	2.94
				514.85	26-Feb-97	36.04	478.81	1.62
				514.85	27-Mar-97	38.02	476.83	-1.98
				514.85	27-Jun-97	42.16	472.69	-4.14
				514.85	11-Aug-97	43.34	471.51	-1.18
				514.85	24-Sep-97	44.00	470.85	-0.66
				514.85	6-Nov-97	44.94	469.91	-0.94
				514.85	9-Nov-98	40.32	474.53	4.62
				514.85	19-Jan-99	41.71	473.14	-1.39
				514.85	22-Apr-99	42.07	472.78	-0.36
				514.85	12-Jul-99	44.15	470.70	-2.08
				514.85	9-Jun-00	47.21	467.64	-3.06
				514.85	19-Feb-01	47.94	466.91	-0.73
				514.85	10-Sep-01	49.82	465.03	-1.88
02NEW2	BP	75 - 95	SHALLOW	494.68	30-Oct-96	65.83	428.85	
				494.68	26-Nov-96	66.88	427.80	-1.05
				494.68	26-Dec-96	64.58	430.10	2.30
				494.68	23-Jan-97	61.78	432.90	2.80
				494.68	28-Feb-97	60.00	434.68	1.78
				494.68	27-Mar-97	61.98	432.70	-1.98
				494.68	27-Jun-97	65.57	429.11	-3.59
				494.68	11-Aug-97	66.58	428.10	-1.01
				494.68	24-Sep-97	67.00	427.68	-0.42
				494.68	6-Nov-97	67.84	426.84	-0.84
				494.68	9-Nov-98	61.74	432.94	6.10
				494.68	19-Jan-99	63.01	431.67	-1.27
				494.68	22-Apr-99	63.54	431.14	-0.53
				494.68	12-Jul-99	64.03	430.65	-0.49
				494.68	9-Jun-00	66.55	428.13	-2.52
				494.68	19-Feb-01	70.68	424.00	-4.13
				494.68	10-Sep-01	68.95	425.73	1.73
02NEW8A	BP	84 - 104	SHALLOW	512.88	30-Oct-96	47.22	465.66	
				512.88	26-Nov-96	46.96	465.92	0.26
				512.88	26-Dec-96	45.03	467.85	1.93
				512.88	23-Jan-97	42.65	470.23	2.38
				512.88	26-Feb-97	40.78	472.10	1.87
				512.88	27-Mar-97	41.78	471.10	-1.00
				512.88	27-Jun-97	45.12	467.76	-3.34
				512.88	11-Aug-97	48.14	464.74	-3.02
				512.88	24-Sep-97	46.64	466.24	1.50
				512.88	6-Nov-97	47.52	465.36	-0.88
				512.88	9-Nov-98	39.58	473.30	7.94
				512.88	19-Jan-99	40.92	471.96	-1.34
				512.88	22-Apr-99	41.47	471.41	-0.55
				512.88	12-Jul-99	43.03	469.85	-1.56
				512.88	21-Jun-00	45.90	466.98	-2.87
				512.88	19-Feb-01	47.67	465.21	-1.77
				512.88	10-Sep-01	48.26	464.62	-0.59
02NEW11	BP	45 - 65	SHALLOW	533.85	30-Oct-96	27.34	506.51	
				533.85	26-Nov-96	27.92	505.93	-0.58
				533.85	27-Dec-96	26.75	507.10	1.17
				533.85	23-Jan-97	26.00	507.85	0.75
				533.85	26-Feb-97	23.78	510.07	2.22
				533.85	27-Mar-97	23.62	510.23	0.16
				533.85	27-Jun-97	25.78	508.07	-2.16
				533.85	11-Aug-97	27.16	506.69	-1.38
				533.85	24-Sep-97	28.21	505.64	-1.05
				533.85	6-Nov-97	29.50	504.35	-1.29
				533.85	9-Nov-98	18.31	515.54	11.19
				533.85	21-Jan-99	20.03	513.82	-1.72
				533.85	22-Apr-99	21.11	512.74	-1.08
				533.85	12-Jul-99	23.07	510.78	-1.96
				533.85	22-Jun-00	29.16	504.69	-6.09
				533.85	19-Feb-01	30.61	503.24	-1.45
				533.85	10-Sep-01	32.54	501.31	-1.93

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02NEW15	BP	25-65	SHALLOW	502.63	9-Nov-98	22.21	480.42	
				502.63	19-Jan-99	23.62	479.01	-1.41
				502.63	22-Apr-99	24.02	478.61	-0.40
				502.63	12-Jul-99	26.21	476.42	-2.19
				502.63	22-Jun-00	29.40	473.23	-3.19
				502.63	19-Feb-01	33.20	469.43	-3.80
				502.63	10-Sep-01	32.09	470.54	1.11
02NEW16	BP	25-65	SHALLOW	491.78	9-Nov-98	35.72	456.06	
				491.78	19-Jan-99	37.11	454.67	-1.39
				491.78	22-Apr-99	37.31	454.47	-0.20
				491.78	12-Jul-99	39.43	452.35	-2.12
				491.78	19-Feb-01	41.02	450.76	-1.59
				491.78	10-Sep-01	44.21	447.57	-3.19
02_UGMW25	BP	55 - 75	SHALLOW	546.36	12-Jan-96	30.89	515.47	
				546.36	7-Feb-96	30.72	515.64	0.17
				546.36	28-Feb-96	29.60	516.76	1.12
				546.36	27-Mar-96	29.25	517.11	0.35
				546.36	30-Oct-96	36.32	510.04	-7.07
				546.36	26-Nov-96	36.40	509.96	-0.08
				546.36	26-Dec-96	35.52	510.84	0.88
				546.36	23-Jan-97	33.80	512.56	1.72
				546.36	26-Feb-97	31.62	514.74	2.18
				546.36	27-Mar-97	31.64	514.72	-0.02
				546.36	27-Jun-97	34.50	511.86	-2.86
				546.36	11-Aug-97	36.08	510.28	-1.58
				546.36	24-Sep-97	37.35	509.01	-1.27
				546.36	6-Nov-97	38.68	507.68	-1.33
				546.36	9-Nov-98	26.23	520.13	12.45
				546.36	19-Jan-99	27.81	518.55	-1.58
				546.36	22-Apr-99	28.55	517.81	-0.74
				546.36	12-Jul-99	31.42	514.94	-2.87
03_DGMW64	BP	245 - 285	SHALLOW	418.28	11-Jan-96	231.49	186.79	
				418.28	26-Feb-96	230.46	187.82	1.03
				418.28	27-Mar-96	229.85	188.43	0.61
				418.28	31-Oct-96	229.35	188.93	0.50
				418.28	26-Nov-96	230.25	188.03	-0.90
				418.28	27-Dec-96	229.10	189.18	1.15
				418.28	24-Jan-97	228.13	190.15	0.97
				418.28	26-Feb-97	226.76	191.52	1.37
				418.28	27-Mar-97	227.00	191.28	-0.24
				418.28	26-Jun-97	227.50	190.78	-0.50
				418.28	11-Aug-97	227.96	190.32	-0.46
				418.28	24-Sep-97	227.11	191.17	0.85
				418.28	5-Nov-97	226.50	191.78	0.61
				418.28	9-Nov-98	221.08	197.20	5.42
				418.28	20-Jan-99	218.72	199.56	2.36
				418.28	22-Apr-99	218.43	199.85	0.29
				418.28	9-Jul-99	218.71	199.57	-0.28
03_DGMW64A	BP	210-250	SHALLOW	418.16	9-Feb-01	219.08	199.08	
				418.16	11-Sep-01	218.77	199.39	0.31
03_DGMW65X	BP	230 - 270	SHALLOW	411.90	11-Jan-96	223.57	188.33	
				411.90	26-Feb-96	222.70	189.20	0.87
				411.90	27-Mar-96	222.12	189.78	0.58
				411.90	31-Oct-96	221.58	190.32	0.54
				411.90	26-Nov-96	221.24	190.66	0.34
				411.90	26-Dec-96	220.71	191.19	0.53
				411.90	24-Jan-97	220.44	191.46	0.27
				411.90	26-Feb-97	219.10	192.80	1.34
				411.90	27-Mar-97	219.26	192.64	-0.16
				411.90	26-Jun-97	221.50	190.40	-2.24
				411.90	11-Aug-97	220.20	191.70	1.30
				411.90	24-Sep-97	219.47	192.43	0.73
				411.90	5-Nov-97	219.04	192.86	0.43
				411.90	9-Nov-98	212.43	199.47	6.61
				411.90	19-Jan-99	211.31	200.59	1.12
				411.90	22-Apr-99	210.32	201.58	0.99
				411.90	9-Jul-99	210.43	201.47	-0.11
				411.90	9-Jun-00	213.93	197.97	-3.50
03_DGMW65XA	BP	201-235	SHALLOW	409.71	9-Feb-01	212.78	196.93	
				409.71	11-Sep-01	212.28	197.43	0.50

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03_UGMW26	BP	230 - 270	SHALLOW	420.05	11-Jan-96	220.49	199.56	
				420.05	26-Feb-96	219.68	200.37	0.81
				420.05	27-Feb-96	219.68	200.37	0.00
				420.05	27-Mar-96	219.11	200.94	0.57
				420.05	31-Oct-96	217.40	202.65	1.71
				420.05	26-Nov-96	217.24	202.81	0.16
				420.05	26-Dec-96	216.76	203.29	0.48
				420.05	23-Jan-97	216.44	203.61	0.32
				420.05	26-Feb-97	215.40	204.65	1.04
				420.05	27-Mar-97	215.54	204.51	-0.14
				420.05	26-Jun-97	215.90	204.15	-0.36
				420.05	11-Aug-97	215.66	204.39	0.24
				420.05	24-Sep-97	214.60	205.45	1.06
				420.05	5-Nov-97	214.23	205.82	0.37
				420.05	9-Nov-98	207.74	212.31	6.49
				420.05	19-Jan-99	206.53	213.52	1.21
				420.05	22-Apr-99	205.26	214.79	1.27
				420.05	12-Jul-99	205.18	214.87	0.08
				420.05	19-Jun-00	210.49	209.56	-5.31
				420.05	10-Sep-01	209.90	210.15	0.59
03_UGMW26A	BP	195-235	SHALLOW	421.73	28-Feb-01	219.03	202.70	
				421.73	11-Sep-01	207.24	214.49	11.79
04_DBMW40	BP	220 - 260	SHALLOW	400.04	11-Jan-96	212.07	187.97	
				400.04	26-Feb-96	211.14	188.90	0.93
				400.04	27-Mar-96	210.66	189.38	0.48
				400.04	31-Oct-96	210.11	189.93	0.55
				400.04	26-Nov-96	209.58	190.46	0.53
				400.04	26-Dec-96	209.08	190.96	0.50
				400.04	24-Jan-97	208.92	191.12	0.16
				400.04	27-Feb-97	208.95	191.09	-0.03
				400.04	27-Mar-97	208.12	191.92	0.83
				400.04	26-Jun-97	207.25	192.79	0.87
				400.04	11-Aug-97	208.90	191.14	-1.65
				400.04	24-Sep-97	208.11	191.93	0.79
				400.04	6-Nov-97	207.44	192.60	0.67
				400.04	9-Nov-98	201.15	198.89	6.29
				400.04	19-Jan-99	200.22	199.82	0.93
				400.04	22-Apr-99	199.08	200.96	1.14
				400.04	9-Jul-99	199.54	200.50	-0.46
				400.04	9-Jun-00	199.14	200.90	0.40
				400.04	9-Feb-01	198.59	201.45	0.55
				400.04	10-Sep-01	198.97	201.07	-0.38
04_DGMW66	BP	250 - 290	SHALLOW	401.10	11-Jan-96	212.93	188.17	
				401.10	26-Feb-96	211.91	189.19	1.02
				401.10	27-Mar-96	211.42	189.68	0.49
				401.10	31-Oct-96	211.64	189.46	-0.22
				401.10	26-Nov-96	210.76	190.34	0.88
				401.10	26-Dec-96	210.12	190.98	0.64
				401.10	24-Jan-97	209.82	191.28	0.30
				401.10	27-Feb-97	210.25	190.85	-0.43
				401.10	27-Mar-97	209.26	191.84	0.99
				401.10	26-Jun-97	208.10	193.00	1.16
				401.10	11-Aug-97	210.26	190.84	-2.16
				401.10	25-Sep-97	209.49	191.61	0.77
				401.10	5-Nov-97	204.43	196.67	5.06
				401.10	9-Nov-98	201.93	199.17	2.50
				401.10	19-Jan-99	201.13	199.97	0.80
				401.10	22-Apr-99	200.09	201.01	1.04
				401.10	9-Jul-99	200.72	200.38	-0.63
				401.10	9-Feb-01	199.65	201.45	1.07
				401.10	10-Sep-01	200.14	200.96	-0.49
04_DGMW66A	BP	190-230	SHALLOW	399.09	11-Sep-01	200.38	198.71	

Table A.1A
Water Level Measurements and Groundwater Elevations for Conventional Wells
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOP OF CASING ELEVATION (feet amsl)	DATE MEASURED	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
04_UGMW63	BP	235 - 275	SHALLOW	404.11	11-Jan-96	212.50	191.61	
				404.11	30-Jan-96	212.31	191.80	0.19
				404.11	28-Feb-96	211.72	192.39	0.59
				404.11	27-Mar-96	211.22	192.89	0.50
				404.11	31-Oct-96	210.14	193.97	1.08
				404.11	26-Nov-96	209.82	194.29	0.32
				404.11	26-Dec-96	209.30	194.81	0.52
				404.11	24-Jan-97	209.16	194.95	0.14
				404.11	26-Feb-97	207.80	196.31	1.36
				404.11	27-Mar-97	207.80	196.31	0.00
				404.11	26-Jun-97	208.67	195.44	-0.87
				404.11	11-Aug-97	208.64	195.47	0.03
				404.11	25-Sep-97	207.75	196.36	0.89
				404.11	5-Nov-97	207.38	196.73	0.37
				404.11	9-Nov-98	200.32	203.79	7.06
				404.11	19-Jan-99	199.07	205.04	1.25
				404.11	22-Apr-99	197.96	206.15	1.11
				404.11	9-Jul-99	198.21	205.90	-0.25
				404.11	9-Jun-00	197.79	206.32	0.42
				404.11	9-Feb-01	197.22	206.89	0.57
				404.11	10-Sep-01	197.33	206.78	-0.11
05_DBMW41	BP	182 - 222	SHALLOW	424.77	12-Jan-96	163.12	261.65	
				424.77	7-Feb-96	162.82	261.95	0.30
				424.77	28-Feb-96	162.82	261.95	0.00
				424.77	27-Mar-96	162.45	262.32	0.37
				424.77	31-Oct-96	161.60	263.17	0.85
				424.77	26-Nov-96	161.16	263.61	0.44
				424.77	26-Dec-96	161.12	263.65	0.04
				424.77	24-Jan-97	161.16	263.61	-0.04
				424.77	27-Feb-97	159.81	264.96	1.35
				424.77	27-Mar-97	159.86	264.91	-0.05
				424.77	26-Jun-97	159.56	265.21	0.30
				424.77	11-Aug-97	159.72	265.05	-0.16
				424.77	25-Sep-97	159.24	265.53	0.48
				424.77	6-Nov-97	159.52	265.25	-0.28
				424.77	9-Nov-98	153.72	271.05	5.80
				424.77	19-Jan-99	153.45	271.32	0.27
				424.77	22-Apr-99	153.02	271.75	0.43
				424.77	12-Jul-99	153.21	271.56	-0.19
				424.77	9-Jun-00	154.25	270.52	-1.04
05_DBMW41A	BP	145-185	SHALLOW	426.21	9-Feb-01	157.70	268.51	
				426.21	19-Sep-01	157.15	269.06	0.55
05_DGMW67	BP	187 - 227	SHALLOW	428.56	12-Jan-96	166.52	262.04	
				428.56	9-Feb-96	166.26	262.30	0.26
				428.56	27-Feb-96	166.19	262.37	0.07
				428.56	27-Mar-96	165.85	262.71	0.34
				428.56	31-Oct-96	165.34	263.22	0.51
				428.56	26-Nov-96	164.80	263.76	0.54
				428.56	26-Dec-96	164.68	263.88	0.12
				428.56	24-Jan-97	164.66	263.90	0.02
				428.56	27-Feb-97	163.20	265.36	1.46
				428.56	27-Mar-97	163.28	265.28	-0.08
				428.56	26-Jun-97	163.20	265.36	0.08
				428.56	11-Aug-97	163.30	265.26	-0.10
				428.56	25-Sep-97	162.80	265.76	0.50
				428.56	7-Nov-97	163.12	265.44	-0.32
				428.56	9-Nov-98	157.86	270.70	5.26
				428.56	19-Jan-99	157.43	271.13	0.43
				428.56	22-Apr-99	157.09	271.47	0.34
				428.56	12-Jul-99	157.29	271.27	-0.20
				428.56	9-Jun-00	158.51	270.05	-1.22
05_DGMW67A	BP	150-190	SHALLOW	430.02	9-Feb-01	161.03	268.99	
				430.02	20-Sep-01	160.85	269.17	0.18

Table A.1A
Water Level Measurements and Groundwater Elevations for Conventional Wells
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOP OF CASING ELEVATION (feet amsl)	DATE MEASURED	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
05_DGMW68	BP	190 - 210	SHALLOW	416.95	12-Jan-96	168.71	248.24	
				416.95	26-Feb-96	168.11	248.84	0.60
				416.95	27-Feb-96	168.11	248.84	0.00
				416.95	27-Mar-96	167.79	249.16	0.32
				416.95	31-Oct-96	166.28	250.67	1.51
				416.95	26-Nov-96	165.68	251.27	0.60
				416.95	26-Dec-96	165.52	251.43	0.16
				416.95	24-Jan-97	161.51	255.44	4.01
				416.95	27-Feb-97	165.40	251.55	-3.89
				416.95	27-Mar-97	164.82	252.13	0.58
				416.95	26-Jun-97	164.34	252.61	0.48
				416.95	11-Aug-97	164.22	252.73	0.12
				416.95	25-Sep-97	163.47	253.48	0.75
				416.95	6-Nov-97	163.65	253.30	-0.18
				416.95	9-Nov-98	158.84	258.11	4.81
				416.95	19-Jan-99	158.08	258.87	0.76
				416.95	22-Apr-99	157.07	259.88	1.01
				416.95	12-Jul-99	156.95	260.00	0.12
				416.95	9-Jun-00	157.77	259.18	-0.82
05_DGMW68A	BP	146-186	SHALLOW	419.61	9-Feb-01	161.04	258.57	
				419.61	20-Sep-01	160.85	258.76	0.19
05NEW1	BP	163 - 203	SHALLOW	407.77	31-Oct-96	164.04	243.73	
				407.77	26-Nov-96	163.36	244.41	0.68
				407.77	26-Dec-96	162.98	244.79	0.38
				407.77	27-Feb-97	162.05	245.72	0.93
				407.77	27-Mar-97	162.41	245.36	-0.36
				407.77	26-Jun-97	162.23	245.54	0.18
				407.77	11-Aug-97	161.96	245.81	0.27
				407.77	25-Sep-97	160.93	246.84	1.03
				407.77	6-Nov-97	161.08	246.69	-0.15
				407.77	9-Nov-98	158.33	249.44	2.75
				407.77	19-Jan-99	157.50	250.27	0.83
				407.77	22-Apr-99	156.33	251.44	1.17
				407.77	12-Jul-99	156.15	251.62	0.18
				407.77	9-Jun-00	156.33	251.44	-0.18
				407.77	9-Feb-01	157.16	250.61	-0.83
				407.77	10-Sep-01	157.49	250.28	-0.33
05_UGMW27	BP	198 - 238	SHALLOW	437.86	11-Jan-96	169.84	268.02	
				437.86	29-Jan-96	169.72	268.14	0.12
				437.86	28-Feb-96	169.70	268.16	0.02
				437.86	27-Mar-96	169.32	268.54	0.38
				437.86	31-Oct-96	168.92	268.94	0.40
				437.86	26-Nov-96	168.40	269.46	0.52
				437.86	26-Dec-96	168.34	269.52	0.06
				437.86	23-Jan-97	168.26	269.60	0.08
				437.86	27-Feb-97	166.85	271.01	1.41
				437.86	27-Mar-97	166.62	271.24	0.23
				437.86	27-Jun-97	166.64	271.22	-0.02
				437.86	11-Aug-97	166.98	270.88	-0.34
				437.86	24-Sep-97	166.57	271.29	0.41
				437.86	6-Nov-97	166.92	270.94	-0.35
				437.86	9-Nov-98	160.78	277.08	6.14
				437.86	19-Jan-99	160.85	277.01	-0.07
				437.86	22-Apr-99	160.58	277.28	0.27
				437.86	9-Jul-99	161.11	276.75	-0.53
05_UGMW27A	BP	155-195	SHALLOW	439.17	9-Feb-01	164.51	274.66	
				439.17	10-Sep-01	163.94	275.23	0.57

Table A.1A
Water Level Measurements and Groundwater Elevations for Conventional Wells
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOP OF CASING ELEVATION (feet amsl)	DATE MEASURED	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
07_DBMW100	BP	131 - 171	SHALLOW	286.44	11-Jan-96	104.60	181.84	
				286.44	31-Jan-96	104.58	181.86	0.02
				286.44	27-Feb-96	104.52	181.92	0.06
				286.44	31-Oct-96	104.28	182.16	0.24
				286.44	26-Nov-96	103.60	182.84	0.68
				286.44	27-Dec-96	102.90	183.54	0.70
				286.44	26-Feb-97	103.36	183.08	-0.46
				286.44	27-Mar-97	102.63	183.81	0.73
				286.44	26-Jun-97	103.36	183.08	-0.73
				286.44	12-Aug-97	103.26	183.18	0.10
				286.44	25-Sep-97	103.12	183.32	0.14
				286.44	7-Nov-97	103.20	183.24	-0.08
				286.44	10-Nov-98	99.68	186.76	3.52
				286.44	19-Jan-99	99.19	187.25	0.49
				286.44	22-Apr-99	98.43	188.01	0.76
				286.44	9-Jul-99	98.57	187.87	-0.14
				286.44	9-Jun-00	98.25	188.19	0.32
07_DBMW100A	BP	92-132	SHALLOW	286.06	9-Feb-01	98.54	187.52	
				286.06	6-Sep-01	97.91	188.15	0.63
07_DBMW43	BP	150 - 190	SHALLOW	292.56	12-Jan-96	113.01	179.55	
				292.56	19-Feb-96	112.55	180.01	0.46
				292.56	27-Feb-96	111.41	181.15	1.14
				292.56	27-Mar-96	112.42	180.14	-1.01
				292.56	31-Oct-96	113.95	178.61	-1.53
				292.56	26-Nov-96	113.02	179.54	0.93
				292.56	26-Dec-96	112.60	179.96	0.42
				292.56	23-Jan-97	111.96	180.60	0.64
				292.56	26-Feb-97	111.40	181.16	0.56
				292.56	27-Mar-97	112.08	180.48	-0.68
				292.56	26-Jun-97	112.84	179.72	-0.76
				292.56	12-Aug-97	112.96	179.60	-0.12
				292.56	25-Sep-97	112.42	180.14	0.54
				292.56	7-Nov-97	111.38	181.18	1.04
				292.56	10-Nov-98	107.81	184.75	3.57
				292.56	19-Jan-99	109.04	183.52	-1.23
				292.56	22-Apr-99	108.59	183.97	0.45
				292.56	9-Jul-99	107.37	185.19	1.22
				292.56	9-Jun-00	107.58	184.98	-0.21
				292.56	11-Sep-01	110.76	181.80	-3.18
07_DBMW43A	BP	101-141	SHALLOW	292.53	9-Feb-01	108.22	184.31	
				292.53	6-Sep-01	107.25	185.28	0.97
08_DGMW74	BP	90 - 130	SHALLOW	276.14	14-Feb-96	84.99	191.15	
				276.14	27-Feb-96	85.08	191.06	-0.09
				276.14	27-Mar-96	85.24	190.90	-0.16
				276.14	30-Oct-96	85.23	190.91	0.01
				276.14	26-Nov-96	85.04	191.10	0.19
				276.14	26-Dec-96	85.15	190.99	-0.11
				276.14	23-Jan-97	84.80	191.34	0.35
				276.14	26-Feb-97	84.60	191.54	0.20
				276.14	27-Mar-97	84.46	191.68	0.14
				276.14	26-Jun-97	84.60	191.54	-0.14
				276.14	11-Aug-97	84.73	191.41	-0.13
				276.14	25-Sep-97	84.37	191.77	0.36
				276.14	6-Nov-97	84.50	191.64	-0.13
				276.14	10-Nov-98	81.85	194.29	2.65
				276.14	19-Jan-99	81.39	194.75	0.46
				276.14	22-Apr-99	81.85	194.29	-0.46
				276.14	9-Jul-99	80.90	195.24	0.95
				276.14	9-Jun-00	80.84	195.30	0.06
				276.14	9-Feb-01	80.72	195.42	0.12
				276.14	7-Sep-01	79.88	196.26	0.84

Table A.1A
Water Level Measurements and Groundwater Elevations for Conventional Wells
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STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOP OF CASING ELEVATION (feet amsl)	DATE MEASURED	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
08_UGMW29	BP	95 - 135	SHALLOW	269.26	12-Jan-96	87.00	182.26	
				269.26	14-Feb-96	86.75	182.51	0.25
				269.26	27-Feb-96	86.70	182.56	0.05
				269.26	27-Mar-96	86.50	182.76	0.20
				269.26	30-Oct-96	86.46	182.80	0.04
				269.26	26-Nov-96	86.29	182.97	0.17
				269.26	27-Dec-96	86.10	183.16	0.19
				269.26	23-Jan-97	86.02	183.24	0.08
				269.26	26-Feb-97	85.84	183.42	0.18
				269.26	27-Mar-97	85.70	183.56	0.14
				269.26	26-Jun-97	85.82	183.44	-0.12
				269.26	11-Aug-97	85.89	183.37	-0.07
				269.26	25-Sep-97	85.55	183.71	0.34
				269.26	7-Nov-97	85.70	183.56	-0.15
				269.26	10-Nov-98	82.70	186.56	3.00
				269.26	19-Jan-99	82.48	186.78	0.22
				269.26	22-Apr-99	82.22	187.04	0.26
				269.26	8-Jul-99	81.90	187.36	0.32
				269.26	9-Jun-00	81.72	187.54	0.18
				269.26	7-Sep-01	81.00	188.26	0.72
08_UGMW29A	BP	75-105	SHALLOW	271.71	9-Feb-01	82.18	189.53	
				271.71	6-Sep-01	82.43	189.28	-0.25
09_DBMW45	BP	117 - 157	SHALLOW	280.00	11-Jan-96	118.70	161.30	
				280.00	15-Feb-96	118.44	161.56	0.26
				280.00	27-Feb-96	118.35	161.65	0.09
				280.00	27-Mar-96	118.02	161.98	0.33
				280.00	30-Oct-96	118.64	161.36	-0.62
				280.00	26-Nov-96	118.12	161.88	0.52
				280.00	26-Dec-96	118.07	161.93	0.05
				280.00	23-Jan-97	117.50	162.50	0.57
				280.00	27-Feb-97	116.81	163.19	0.69
				280.00	27-Mar-97	117.24	162.76	-0.43
				280.00	26-Jun-97	118.00	162.00	-0.76
				280.00	11-Aug-97	118.06	161.94	-0.06
				280.00	24-Sep-97	117.79	162.21	0.27
				280.00	7-Nov-97	117.45	162.55	0.34
				280.00	10-Nov-98	113.34	166.66	4.11
				280.00	19-Jan-99	112.81	167.19	0.53
				280.00	21-Apr-99	112.27	167.73	0.54
				280.00	9-Jul-99	112.50	167.50	-0.23
				280.00	9-Jun-00	112.13	167.87	0.37
				280.00	8-Feb-01	111.74	168.26	0.39
				280.00	10-Sep-01	111.22	168.78	0.52
09_DGMW75	BP	114 - 154	SHALLOW	271.00	11-Jan-96	112.68	158.32	
				271.00	14-Feb-96	112.20	158.80	0.48
				271.00	27-Feb-96	112.21	158.79	-0.01
				271.00	27-Mar-96	111.90	159.10	0.31
				271.00	1-Nov-96	112.47	158.53	-0.57
				271.00	26-Nov-96	111.93	159.07	0.54
				271.00	26-Dec-96	111.93	159.07	0.00
				271.00	27-Feb-97	110.82	160.18	1.11
				271.00	27-Mar-97	111.21	159.79	-0.39
				271.00	26-Jun-97	111.74	159.26	-0.53
				271.00	11-Aug-97	111.83	159.17	-0.09
				271.00	24-Sep-97	111.56	159.44	0.27
				271.00	5-Nov-97	111.31	159.69	0.25
				271.00	10-Nov-98	107.54	163.46	3.77
				271.00	19-Jan-99	106.94	164.06	0.60
				271.00	21-Apr-99	106.41	164.59	0.53
				271.00	9-Jul-99	106.54	164.46	-0.13
				271.00	9-Jun-00	106.41	164.59	0.13
				271.00	8-Feb-01	106.03	164.97	0.38
				271.00	10-Sep-01	105.24	165.76	0.79
12_DBMW48A	BP	74-104	SHALLOW	248.93	9-Feb-01	86.90	162.03	
				248.93	7-Sep-01	85.90	163.03	1.00

Table A.1A
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STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOP OF CASING ELEVATION (feet amsl)	DATE MEASURED	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
13_DGMW78	BP	127 - 167	SHALLOW	276.14	11-Jan-96	126.30	149.84	
				276.14	1-Feb-96	125.90	150.24	0.40
				276.14	27-Feb-96	125.50	150.64	0.40
				276.14	27-Mar-96	125.36	150.78	0.14
				276.14	31-Oct-96	125.48	150.66	-0.12
				276.14	26-Nov-96	125.34	150.80	0.14
				276.14	26-Dec-96	125.40	150.74	-0.06
				276.14	24-Jan-97	125.02	151.12	0.38
				276.14	27-Feb-97	124.63	151.51	0.39
				276.14	27-Mar-97	124.10	152.04	0.53
				276.14	26-Jun-97	125.04	151.10	-0.94
				276.14	11-Aug-97	125.34	150.80	-0.30
				276.14	25-Sep-97	124.94	151.20	0.40
				276.14	5-Nov-97	124.80	151.34	0.14
				276.14	9-Nov-98	120.25	155.89	4.55
				276.14	18-Jan-99	119.29	156.85	0.96
				276.14	21-Apr-99	118.49	157.65	0.80
				276.14	8-Jul-99	118.62	157.52	-0.13
				276.14	9-Jun-00	118.31	157.83	0.31
				276.14	9-Feb-01	118.13	158.01	0.18
				276.14	10-Sep-01	117.11	159.03	1.02
15_DBMW51	BP	125 - 165	SHALLOW	269.26	11-Jan-96	120.45	148.81	
				269.26	6-Feb-96	119.88	149.38	0.57
				269.26	28-Feb-96	119.86	149.40	0.02
				269.26	27-Mar-96	119.41	149.85	0.45
				269.26	31-Oct-96	119.94	149.32	-0.53
				269.26	26-Nov-96	119.66	149.60	0.28
				269.26	26-Dec-96	119.65	149.61	0.01
				269.26	24-Jan-97	119.28	149.98	0.37
				269.26	27-Feb-97	118.54	150.72	0.74
				269.26	27-Mar-97	118.65	150.61	-0.11
				269.26	26-Jun-97	119.20	150.06	-0.55
				269.26	11-Aug-97	125.50	143.76	-6.30
				269.26	25-Sep-97	119.15	150.11	6.35
				269.26	6-Nov-97	119.06	150.20	0.09
				269.26	9-Nov-98	114.21	155.05	4.85
				269.26	20-Jan-99	113.43	155.83	0.78
				269.26	23-Apr-99	112.77	156.49	0.66
				269.26	8-Jul-99	112.82	156.44	-0.05
				269.26	14-Jun-00	112.41	156.85	0.41
				269.26	9-Feb-01	112.39	156.87	0.02
				269.26	10-Sep-01	112.09	157.17	0.30
16_MW_1	BP	155-180	SHALLOW	329.22	24-Sep-01	157.40	171.82	
16_MW_2	BP	153-178	SHALLOW	322.35	NS	NS	NS	
16_MW_3	BP	158-183	SHALLOW	334.16	24-Sep-01	163.21	170.95	
16_MW_5	BP	155-190	SHALLOW	326.17	20-Sep-01	156.04	170.13	
17_DGMW82	BP	235 - 255	SHALLOW	442.12	12-Jan-96	189.55	252.57	
				442.12	9-Feb-96	192.04	250.08	-2.49
				442.12	28-Feb-96	192.04	250.08	0.00
				442.12	31-Oct-96	185.60	256.52	6.44
				442.12	26-Nov-96	185.50	256.62	0.10
				442.12	26-Dec-96	185.22	256.90	0.28
				442.12	24-Jan-97	184.43	257.69	0.79
				442.12	12-Aug-97	183.64	258.48	0.79
				442.12	9-Nov-98	287.13	154.99	-103.49
				442.12	19-Jan-99	176.93	265.19	110.20
				442.12	22-Apr-99	175.90	266.22	1.03
				442.12	12-Jul-99	175.09	267.03	0.81
				442.12	22-Jun-00	173.98	268.14	1.11
				442.12	27-Feb-01	185.67	256.45	-11.69
				442.12	10-Sep-01	173.15	268.97	12.52

Table A.1A
Water Level Measurements and Groundwater Elevations for Conventional Wells
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOP OF CASING ELEVATION (feet amsl)	DATE MEASURED	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
17NEW1	BP	186 - 226	SHALLOW	431.93	31-Oct-96	183.88	248.05	
				431.93	26-Nov-96	183.60	248.33	0.28
				431.93	26-Dec-96	183.22	248.71	0.38
				431.93	24-Jan-97	183.75	248.18	-0.53
				431.93	27-Feb-97	181.98	249.95	1.77
				431.93	27-Mar-97	182.10	249.83	-0.12
				431.93	27-Jun-97	181.90	250.03	0.20
				431.93	12-Aug-97	181.04	250.89	0.86
				431.93	24-Sep-97	180.05	251.88	0.99
				431.93	6-Nov-97	184.02	247.91	-3.97
				431.93	9-Nov-98	174.68	257.25	9.34
				431.93	19-Jan-99	173.34	258.59	1.34
				431.93	22-Apr-99	171.77	260.16	1.57
				431.93	12-Jul-99	170.87	261.06	0.90
				431.93	22-Jun-00	173.46	258.47	-2.59
				431.93	27-Feb-01	173.58	258.35	-0.12
				431.93	10-Sep-01	172.90	259.03	0.68
17NEW2	BP	83 - 123	SHALLOW	551.36	31-Oct-96	87.95	463.41	
				551.36	26-Nov-96	88.01	463.35	-0.06
				551.36	26-Dec-96	87.88	463.48	0.13
				551.36	24-Jan-97	88.56	462.80	-0.68
				551.36	27-Feb-97	87.53	463.83	1.03
				551.36	27-Mar-97	87.72	463.64	-0.19
				551.36	12-Aug-97	88.00	463.36	-0.28
				551.36	24-Sep-97	87.50	463.86	0.50
				551.36	6-Nov-97	87.66	463.70	-0.16
				551.36	9-Nov-98	86.22	465.14	1.44
				551.36	29-Jan-99	86.09	465.27	0.13
				551.36	22-Apr-99	85.89	465.47	0.20
				551.36	12-Jul-99	85.79	465.57	0.10
18_BGMW03A	CL	370 - 390	PRINCIPAL	279.25	12-Jan-96	103.00	176.25	
				279.25	27-Feb-96	107.63	171.62	-4.63
				279.25	29-Feb-96	107.59	171.66	0.04
				279.25	27-Mar-96	107.22	172.03	0.37
				279.25	30-Oct-96	118.52	160.73	-11.30
				279.25	26-Nov-96	112.30	166.95	6.22
				279.25	26-Dec-96	109.52	169.73	2.78
				279.25	23-Jan-97	107.40	171.85	2.12
				279.25	26-Feb-97	106.57	172.68	0.83
				279.25	27-Mar-97	113.40	165.85	-6.83
				279.25	26-Jun-97	116.94	162.31	-3.54
				279.25	12-Aug-97	106.60	172.65	10.34
				279.25	24-Sep-97	106.38	172.87	0.22
				279.25	7-Nov-97	108.98	170.27	-2.60
				279.25	9-Nov-98	103.45	175.80	5.53
				279.25	20-Jan-99	106.25	173.00	-2.80
				279.25	22-Apr-99	106.77	172.48	-0.52
				279.25	8-Jul-99	109.08	170.17	-2.31
18_BGMW03B	CL	280 - 300	PRINCIPAL	279.28	12-Jan-96	105.26	174.02	
				279.28	27-Feb-96	104.22	175.06	1.04
				279.28	29-Feb-96	104.25	175.03	-0.03
				279.28	27-Mar-96	103.90	175.38	0.35
				279.28	30-Oct-96	111.00	168.28	-7.10
				279.28	26-Nov-96	107.02	172.26	3.98
				279.28	26-Dec-96	105.26	174.02	1.76
				279.28	23-Jan-97	103.80	175.48	1.46
				279.28	26-Feb-97	103.10	176.18	0.70
				279.28	27-Mar-97	107.68	171.60	-4.58
				279.28	26-Jun-97	110.00	169.28	-2.32
				279.28	12-Aug-97	110.20	169.08	-0.20
				279.28	24-Sep-97	110.21	169.07	-0.01
				279.28	7-Nov-97	105.19	174.09	5.02
				279.28	9-Nov-98	100.16	179.12	5.03
				279.28	20-Jan-99	102.45	176.83	-2.29
				279.28	22-Apr-99	102.53	176.75	-0.08
				279.28	9-Jul-99	103.90	175.38	-1.37

Table A.1A
Water Level Measurements and Groundwater Elevations for Conventional Wells
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOP OF CASING ELEVATION (feet amsl)	DATE MEASURED	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_BGMW03C	CL	222 - 242	SHALLOW	279.41	12-Jan-96	104.26	175.15	
				279.41	12-Feb-96	103.51	175.90	0.75
				279.41	27-Feb-96	103.45	175.96	0.06
				279.41	27-Mar-96	103.08	176.33	0.37
				279.41	30-Oct-96	107.17	172.24	-4.09
				279.41	26-Nov-96	107.70	171.71	-0.53
				279.41	26-Dec-96	103.88	175.53	3.82
				279.41	23-Jan-97	102.80	176.61	1.08
				279.41	26-Feb-97	102.32	177.09	0.48
				279.41	27-Mar-97	104.80	174.61	-2.48
				279.41	26-Jun-97	106.40	173.01	-1.60
				279.41	12-Aug-97	117.35	162.06	-10.95
				279.41	24-Sep-97	117.77	161.64	-0.42
				279.41	7-Nov-97	103.57	175.84	14.20
				279.41	9-Nov-98	98.70	180.71	4.87
				279.41	19-Jan-99	99.76	179.65	-1.06
				279.41	22-Apr-99	99.47	179.94	0.29
				279.41	9-Jul-99	100.48	178.93	-1.01
18_BGMW03E	CL - BP	124 - 164	SHALLOW	279.16	12-Jan-96	107.22	171.94	
				279.16	5-Feb-96	107.09	172.07	0.13
				279.16	27-Feb-96	106.98	172.18	0.11
				279.16	27-Mar-96	106.62	172.54	0.36
				279.16	30-Oct-96	106.54	172.62	0.08
				279.16	26-Nov-96	106.32	172.84	0.22
				279.16	26-Dec-96	106.16	173.00	0.16
				279.16	23-Jan-97	105.95	173.21	0.21
				279.16	26-Feb-97	105.40	173.76	0.55
				279.16	27-Mar-97	105.70	173.46	-0.30
				279.16	26-Jun-97	106.04	173.12	-0.34
				279.16	12-Aug-97	105.95	173.21	0.09
				279.16	24-Sep-97	105.60	173.56	0.35
				279.16	7-Nov-97	105.68	173.48	-0.08
				279.16	9-Nov-98	104.00	175.16	1.68
				279.16	19-Jan-99	103.76	175.40	0.24
				279.16	22-Apr-99	103.05	176.11	0.71
				279.16	9-Jul-99	103.21	175.95	-0.16
18_BGMW04A	CL	286 - 306	PRINCIPAL	243.36	11-Jan-96	85.37	157.99	
				243.36	27-Feb-96	84.01	159.35	1.36
				243.36	28-Feb-96	83.97	159.39	0.04
				243.36	27-Mar-96	83.65	159.71	0.32
				243.36	31-Oct-96	100.84	142.52	-17.19
				243.36	26-Nov-96	93.28	150.08	7.56
				243.36	26-Dec-96	86.54	156.82	6.74
				243.36	23-Jan-97	84.26	159.10	2.28
				243.36	26-Feb-97	83.34	160.02	0.92
				243.36	27-Mar-97	95.58	147.78	-12.24
				243.36	26-Jun-97	99.34	144.02	-3.76
				243.36	11-Aug-97	99.76	143.60	-0.42
				243.36	24-Sep-97	100.32	143.04	-0.56
				243.36	5-Nov-97	87.81	155.55	12.51
				243.36	9-Nov-98	80.70	162.66	7.11
				243.36	18-Jan-99	88.82	154.54	-8.12
				243.36	21-Apr-99	89.78	153.58	-0.96
				243.36	8-Jul-99	92.56	150.80	-2.78
				243.36	9-Jun-00	92.58	150.78	-0.02
				243.36	9-Feb-01	79.43	163.93	13.15
				243.36	10-Sep-01	91.77	151.59	-12.34
18_BGMW04B	CL	190 - 210	SHALLOW	243.58	11-Jan-96	81.65	161.93	
				243.58	19-Jan-96	81.70	161.88	-0.05
				243.58	27-Feb-96	80.72	162.86	0.98
				243.58	27-Mar-96	80.36	163.22	0.36
				243.58	31-Oct-96	89.96	153.62	-9.60
				243.58	26-Nov-96	84.90	158.68	5.06
				243.58	26-Dec-96	82.66	160.92	2.24
				243.58	23-Jan-97	80.84	162.74	1.82
				243.58	26-Feb-97	80.20	163.38	0.64
				243.58	27-Mar-97	85.56	158.02	-5.36
				243.58	26-Jun-97	88.58	155.00	-3.02
				243.58	11-Aug-97	89.12	154.46	-0.54
				243.58	24-Sep-97	89.28	154.30	-0.16
				243.58	5-Nov-97	83.24	160.34	6.04
				243.58	9-Nov-98	77.03	166.55	6.21
				243.58	18-Jan-99	79.14	164.44	-2.11
				243.58	21-Apr-99	79.69	163.89	-0.55
				243.58	8-Jul-99	81.81	161.77	-2.12
				243.58	9-Jun-00	82.27	161.31	-0.46
				243.58	9-Feb-01	76.51	167.07	5.76
				243.58	10-Sep-01	80.02	163.56	-3.51

Table A.1A
Water Level Measurements and Groundwater Elevations for Conventional Wells
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOP OF CASING ELEVATION (feet amsl)	DATE MEASURED	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_BGMW05A	CL	462 - 482	PRINCIPAL	269.45	12-Jan-96	81.91	187.54	
				269.45	26-Jan-96	84.98	184.47	-3.07
				269.45	27-Feb-96	85.22	184.23	-0.24
				269.45	27-Mar-96	84.13	185.32	1.09
				269.45	30-Oct-96	85.97	183.48	-1.84
				269.45	26-Nov-96	87.68	181.77	-1.71
				269.45	26-Dec-96	84.86	184.59	2.82
				269.45	23-Jan-97	88.11	181.34	-3.25
				269.45	26-Feb-97	84.05	185.40	4.06
				269.45	27-Mar-97	84.90	184.55	-0.85
				269.45	26-Jun-97	84.93	184.52	-0.03
				269.45	11-Aug-97	85.20	184.25	-0.27
				269.45	25-Sep-97	85.10	184.35	0.10
				269.45	6-Nov-97	84.63	184.82	0.47
				269.45	10-Nov-98	75.40	194.05	9.23
				269.45	20-Jan-99	80.25	189.20	-4.85
				269.45	22-Apr-99	79.95	189.50	0.30
				269.45	8-Jul-99	80.38	189.07	-0.43
18_BGMW05B	CL	321 - 341	PRINCIPAL	270.41	12-Jan-96	82.51	187.90	
				270.41	27-Feb-96	81.50	188.91	1.01
				270.41	29-Feb-96	81.38	189.03	0.12
				270.41	27-Mar-96	81.15	189.26	0.23
				270.41	30-Oct-96	85.43	184.98	-4.28
				270.41	26-Nov-96	82.87	187.54	2.56
				270.41	26-Dec-96	82.05	188.36	0.82
				270.41	23-Jan-97	81.03	189.38	1.02
				270.41	26-Feb-97	79.56	190.85	1.47
				270.41	27-Mar-97	82.88	187.53	-3.32
				270.41	26-Jun-97	84.50	185.91	-1.62
				270.41	11-Aug-97	84.78	185.63	-0.28
				270.41	25-Sep-97	84.70	185.71	0.08
				270.41	6-Nov-97	81.98	188.43	2.72
				270.41	10-Nov-98	78.08	192.33	3.90
				270.41	20-Jan-99	78.80	191.61	-0.72
				270.41	22-Apr-99	81.02	189.39	-2.22
				270.41	8-Jul-99	79.98	190.43	1.04
18_BGMW05C	CL	225 - 245	SHALLOW	269.39	12-Jan-96	80.64	188.75	
				269.39	25-Jan-96	80.52	188.87	0.12
				269.39	27-Feb-96	80.20	189.19	0.32
				269.39	29-Feb-96	80.16	189.23	0.04
				269.39	27-Mar-96	79.93	189.46	0.23
				269.39	30-Oct-96	81.93	187.46	-2.00
				269.39	26-Nov-96	80.66	188.73	1.27
				269.39	26-Dec-96	80.28	189.11	0.38
				269.39	23-Jan-97	79.68	189.71	0.60
				269.39	26-Feb-97	79.26	190.13	0.42
				269.39	27-Mar-97	80.36	189.03	-1.10
				269.39	26-Jun-97	81.32	188.07	-0.96
				269.39	11-Aug-97	79.50	189.89	1.82
				269.39	25-Sep-97	81.22	188.17	-1.72
				269.39	6-Nov-97	80.00	189.39	1.22
				269.39	10-Nov-98	76.78	192.61	3.22
				269.39	20-Jan-99	76.94	192.45	-0.16
				269.39	9-Jul-99	77.33	192.06	-0.39
				269.39	9-Jun-00	77.10	192.29	0.23
				269.39	9-Feb-01	76.02	193.37	1.08
				269.39	10-Sep-01	76.59	192.80	-0.57

Table A.1A
Water Level Measurements and Groundwater Elevations for Conventional Wells
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOP OF CASING ELEVATION (feet amsl)	DATE MEASURED	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_BGMW05D	CL - BP	83 - 133	SHALLOW	270.42	12-Jan-96	82.21	188.21	
				270.42	19-Feb-96	81.78	188.64	0.43
				270.42	27-Feb-96	81.87	188.55	-0.09
				270.42	27-Mar-96	81.63	188.79	0.24
				270.42	30-Oct-96	81.80	188.62	-0.17
				270.42	26-Nov-96	81.60	188.82	0.20
				270.42	26-Dec-96	81.71	188.71	-0.11
				270.42	23-Jan-97	81.40	189.02	0.31
				270.42	26-Feb-97	81.20	189.22	0.20
				270.42	27-Mar-97	82.09	188.33	-0.89
				270.42	26-Jun-97	81.30	189.12	0.79
				270.42	11-Aug-97	81.45	188.97	-0.15
				270.42	25-Sep-97	81.07	189.35	0.38
				270.42	6-Nov-97	81.09	189.33	-0.02
				270.42	10-Nov-98	78.55	191.87	2.54
				270.42	20-Jan-99	78.18	192.24	0.37
				270.42	22-Apr-99	77.76	192.66	0.42
				270.42	9-Jul-99	77.85	192.57	-0.09
				270.42	9-Jun-00	77.38	193.04	0.47
				270.42	9-Feb-01	77.86	192.56	-0.48
				270.42	10-Sep-01	77.24	193.18	0.62
18_BGMW101	BP	90 - 130	SHALLOW	232.80	12-Jan-96	80.86	151.94	
				232.80	29-Jan-96	80.78	152.02	0.08
				232.80	27-Feb-96	80.46	152.34	0.32
				232.80	27-Mar-96	80.21	152.59	0.25
				232.80	31-Oct-96	80.52	152.28	-0.31
				232.80	26-Nov-96	80.20	152.60	0.32
				232.80	26-Dec-96	80.22	152.58	-0.02
				232.80	23-Jan-97	80.08	152.72	0.14
				232.80	27-Feb-97	79.30	153.50	0.78
				232.80	27-Mar-97	79.46	153.34	-0.16
				232.80	26-Jun-97	80.04	152.76	-0.58
				232.80	11-Aug-97	80.25	152.55	-0.21
				232.80	25-Sep-97	80.02	152.78	0.23
				232.80	5-Nov-97	80.07	152.73	-0.05
				232.80	9-Nov-98	76.32	156.48	3.75
				232.80	18-Jan-99	75.80	157.00	0.52
				232.80	21-Apr-99	76.32	156.48	-0.52
				232.80	08_jul-99	75.45	157.35	0.87
				232.80	9-Jun-00	75.82	156.98	-0.37
18_BGMW101A	BP	68-98	SHALLOW	232.30	9-Feb-01	77.09	155.21	
				232.30	10-Sep-01	76.21	156.09	0.88
18_BGMW14	BP	75 - 115	SHALLOW	268.67	12-Jan-96	70.40	198.27	
				268.67	16-Feb-96	69.95	198.72	0.45
				268.67	28-Feb-96	69.82	198.85	0.13
				268.67	27-Mar-96	69.70	198.97	0.12
				268.67	31-Oct-96	70.06	198.61	-0.36
				268.67	27-Nov-96	69.32	199.35	0.74
				268.67	26-Dec-96	69.66	199.01	-0.34
				268.67	26-Feb-97	69.33	199.34	0.33
				268.67	27-Mar-97	68.85	199.82	0.48
				268.67	27-Jun-97	69.58	199.09	-0.73
				268.67	11-Aug-97	69.76	198.91	-0.18
				268.67	24-Sep-97	69.27	199.40	0.49
				268.67	6-Nov-97	69.25	199.42	0.02
				268.67	10-Nov-98	66.96	201.71	2.29
				268.67	18-Jan-99	66.86	201.81	0.10
				268.67	21-Apr-99	66.58	202.09	0.28
				268.67	8-Jul-99	66.60	202.07	-0.02
				268.67	16-Jun-00	67.12	201.55	-0.52
				268.67	19-Feb-01	66.86	201.81	0.26
				268.67	10-Sep-01	66.16	202.51	0.70

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Water Level Measurements and Groundwater Elevations for Conventional Wells
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOP OF CASING ELEVATION (feet amsl)	DATE MEASURED	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_BGMW16	BP	223 - 263	SHALLOW	376.67	11-Jan-96	217.68	158.99	
				376.67	19-Jan-96	217.68	158.99	0.00
				376.67	28-Feb-96	217.04	159.63	0.64
				376.67	27-Mar-96	216.58	160.09	0.46
				376.67	31-Oct-96	215.84	160.83	0.74
				376.67	26-Nov-96	215.78	160.89	0.06
				376.67	26-Dec-96	215.46	161.21	0.32
				376.67	24-Jan-97	215.35	161.32	0.11
				376.67	27-Feb-97	214.09	162.58	1.26
				376.67	26-Jun-97	215.20	161.47	-1.11
				376.67	11-Aug-97	215.50	161.17	-0.30
				376.67	24-Sep-97	215.00	161.67	0.50
				376.67	5-Nov-97	215.12	161.55	-0.12
				376.67	9-Nov-98	210.37	166.30	4.75
				376.67	18-Jan-99	209.20	167.47	1.17
				376.67	22-Apr-99	207.82	168.85	1.38
				376.67	9-Jul-99	208.18	168.49	-0.36
				376.67	9-Jun-00	206.55	170.12	1.63
				376.67	27-Feb-01	207.07	169.60	-0.52
				376.67	10-Sep-01	206.28	170.39	0.79
18_BGMW18	BP	140 - 180	SHALLOW	276.49	5-Feb-96	131.41	145.08	
				276.49	27-Feb-96	130.97	145.52	0.44
				276.49	27-Mar-96	130.58	145.91	0.39
				276.49	31-Oct-96	130.90	145.59	-0.32
				276.49	26-Nov-96	130.72	145.77	0.18
				276.49	26-Dec-96	130.50	145.99	0.22
				276.49	24-Jan-97	130.00	146.49	0.50
				276.49	27-Feb-97	129.28	147.21	0.72
				276.49	27-Mar-97	129.04	147.45	0.24
				276.49	26-Jun-97	128.90	147.59	0.14
				276.49	11-Aug-97	130.32	146.17	-1.42
				276.49	25-Sep-97	129.97	146.52	0.35
				276.49	5-Nov-97	129.83	146.66	0.14
				276.49	10-Nov-98	125.42	151.07	4.41
				276.49	18-Jan-99	124.63	151.86	0.79
				276.49	22-Apr-99	123.99	152.50	0.64
				276.49	8-Jul-99	124.16	152.33	-0.17
				276.49	15-Jun-00	123.51	152.98	0.65
18_BGMW18A	BP	114-148	SHALLOW	277.86	9-Feb-01	124.81	153.05	
				277.86	10-Sep-01	123.89	153.97	0.92
18_BGMW19A	CL	448 - 468	PRINCIPAL	232.61	12-Jan-96	93.32	139.29	
				232.61	27-Feb-96	90.51	142.10	2.81
				232.61	1-Mar-96	90.32	142.29	0.19
				232.61	27-Mar-96	90.10	142.51	0.22
				232.61	31-Oct-96	115.98	116.63	-25.88
				232.61	27-Nov-96	104.24	128.37	11.74
				232.61	26-Dec-96	95.84	136.77	8.40
				232.61	24-Jan-97	91.52	141.09	4.32
				232.61	26-Feb-97	90.49	142.12	1.03
				232.61	27-Mar-97	103.25	129.36	-12.76
				232.61	26-Jun-97	113.40	119.21	-10.15
				232.61	11-Aug-97	114.38	118.23	-0.98
				232.61	24-Sep-97	116.75	115.86	-2.37
				232.61	7-Nov-97	100.58	132.03	16.17
				232.61	10-Nov-98	88.74	143.87	11.84
				232.61	20-Jan-99	89.84	142.77	-1.10
				232.61	23-Apr-99	93.12	139.49	-3.28
				232.61	8-Jul-99	99.07	133.54	-5.95

Table A.1A
Water Level Measurements and Groundwater Elevations for Conventional Wells
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOP OF CASING ELEVATION (feet amsl)	DATE MEASURED	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_BGMW19B	CL	400 - 420	PRINCIPAL	232.69	12-Jan-96	94.61	138.08	
				232.69	27-Feb-96	92.03	140.66	2.58
				232.69	1-Mar-96	91.90	140.79	0.13
				232.69	27-Mar-96	91.70	140.99	0.20
				232.69	31-Oct-96	114.94	117.75	-23.24
				232.69	27-Nov-96	104.06	128.63	10.88
				232.69	26-Dec-96	97.14	135.55	6.92
				232.69	24-Jan-97	92.94	139.75	4.20
				232.69	26-Feb-97	92.11	140.58	0.83
				232.69	27-Mar-97	104.65	128.04	-12.54
				232.69	26-Jun-97	113.00	119.69	-8.35
				232.69	11-Aug-97	113.50	119.19	-0.50
				232.69	24-Sep-97	115.35	117.34	-1.85
				232.69	7-Nov-97	102.10	130.59	13.25
				232.69	10-Nov-98	90.44	142.25	11.66
				232.69	20-Jan-99	92.19	140.50	-1.75
				232.69	23-Apr-99	95.38	137.31	-3.19
				232.69	8-Jul-99	101.18	131.51	-5.80
18_BGMW19C	CL	257 - 277	PRINCIPAL	232.73	12-Jan-96	92.45	140.28	
				232.73	27-Feb-96	90.65	142.08	1.80
				232.73	29-Feb-96	90.57	142.16	0.08
				232.73	27-Mar-96	90.18	142.55	0.39
				232.73	31-Oct-96	100.40	132.33	-10.22
				232.73	27-Nov-96	95.79	136.94	4.61
				232.73	26-Dec-96	93.18	139.55	2.61
				232.73	24-Jan-97	91.15	141.58	2.03
				232.73	26-Feb-97	90.30	142.43	0.85
				232.73	27-Mar-97	96.20	136.53	-5.90
				232.73	26-Jun-97	99.10	133.63	-2.90
				232.73	11-Aug-97	98.85	133.88	0.25
				232.73	24-Sep-97	99.38	133.35	-0.53
				232.73	7-Nov-97	94.62	138.11	4.76
				232.73	10-Nov-98	87.63	145.10	6.99
				232.73	20-Jan-99	91.49	141.24	-3.86
				232.73	21-Apr-99	88.47	144.26	3.02
				232.73	8-Jul-99	90.96	141.77	-2.49
18_BGMW19D	CL	150 - 170	SHALLOW	232.54	12-Jan-96	91.49	141.05	
				232.54	16-Feb-96	90.85	141.69	0.64
				232.54	27-Feb-96	90.77	141.77	0.08
				232.54	27-Mar-96	90.50	142.04	0.27
				232.54	31-Oct-96	91.63	140.91	-1.13
				232.54	27-Nov-96	91.40	141.14	0.23
				232.54	26-Dec-96	91.15	141.39	0.25
				232.54	24-Jan-97	90.79	141.75	0.36
				232.54	26-Feb-97	90.18	142.36	0.61
				232.54	27-Mar-97	90.80	141.74	-0.62
				232.54	26-Jun-97	90.25	142.29	0.55
				232.54	11-Aug-97	90.46	142.08	-0.21
				232.54	24-Sep-97	90.13	142.41	0.33
				232.54	7-Nov-97	90.19	142.35	-0.06
				232.54	10-Nov-98	85.94	146.60	4.25
				232.54	18-Jan-99	85.34	147.20	0.60
				232.54	21-Apr-99	84.76	147.78	0.58
				232.54	8-Jul-99	85.02	147.52	-0.26
				232.54	15-Jun-00	123.51	109.03	-38.49
				232.54	27-Feb-01	84.32	148.22	39.19
				232.54	11-Sep-01	83.63	148.91	0.69

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18_BGMW19E	CL	98 - 138	SHALLOW	232.91	12-Jan-96	91.67	141.24	
				232.91	6-Feb-96	91.47	141.44	0.20
				232.91	27-Feb-96	91.22	141.69	0.25
				232.91	27-Mar-96	90.98	141.93	0.24
				232.91	31-Oct-96	92.91	140.00	-1.93
				232.91	27-Nov-96	91.74	141.17	1.17
				232.91	26-Dec-96	91.60	141.31	0.14
				232.91	24-Jan-97	91.22	141.69	0.38
				232.91	26-Feb-97	90.70	142.21	0.52
				232.91	27-Mar-97	90.34	142.57	0.36
				232.91	11-Aug-97	90.85	142.06	-0.51
				232.91	24-Sep-97	90.50	142.41	0.35
				232.91	7-Nov-97	90.59	142.32	-0.09
				232.91	10-Nov-98	86.23	146.68	4.36
				232.91	20-Jan-99	85.61	147.30	0.62
				232.91	21-Apr-99	85.18	147.73	0.43
				232.91	8-Jul-99	85.53	147.38	-0.35
18_DW135	CL - BP	115 - 135	SHALLOW	268.90	12-Jan-96	117.69	151.21	
				268.90	19-Feb-96	117.06	151.84	0.63
				268.90	26-Feb-96	116.99	151.91	0.07
				268.90	27-Mar-96	116.61	152.29	0.38
				268.90	31-Oct-96	117.12	151.78	-0.51
				268.90	26-Nov-96	117.00	151.90	0.12
				268.90	26-Dec-96	117.00	151.90	0.00
				268.90	26-Jan-97	118.40	150.50	-1.40
				268.90	27-Feb-97	116.04	152.86	2.36
				268.90	27-Mar-97	115.88	153.02	0.16
				268.90	26-Jun-97	116.64	152.26	-0.76
				268.90	11-Aug-97	116.80	152.10	-0.16
				268.90	25-Sep-97	116.51	152.39	0.29
				268.90	5-Nov-97	116.35	152.55	0.16
				268.90	9-Nov-98	112.15	156.75	4.20
				268.90	18-Jan-99	111.30	157.60	0.85
				268.90	23-Apr-99	110.76	158.14	0.54
				268.90	8-Jul-99	110.80	158.10	-0.04
				268.90	9-Jun-00	110.44	158.46	0.36
				268.90	9-Feb-01	110.29	158.61	0.15
				268.90	10-Sep-01	109.44	159.46	0.85
18_DW250	CL	215 - 250	SHALLOW	268.82	11-Jan-96	116.41	152.41	
				268.82	31-Jan-96	115.65	153.17	0.76
				268.82	26-Feb-96	115.36	153.46	0.29
				268.82	27-Mar-96	114.90	153.92	0.46
				268.82	31-Oct-96	122.12	146.70	-7.22
				268.82	26-Nov-96	118.28	150.54	3.84
				268.82	26-Dec-96	116.55	152.27	1.73
				268.82	26-Jan-97	115.70	153.12	0.85
				268.82	27-Feb-97	114.25	154.57	1.45
				268.82	27-Mar-97	119.08	149.74	-4.83
				268.82	26-Jun-97	121.14	147.68	-2.06
				268.82	11-Aug-97	121.44	147.38	-0.30
				268.82	25-Sep-97	121.38	147.44	0.06
				268.82	5-Nov-97	116.35	152.47	5.03
				268.82	9-Nov-98	111.04	157.78	5.31
				268.82	18-Jan-99	113.06	155.76	-2.02
				268.82	23-Apr-99	113.07	155.75	-0.01
				268.82	8-Jul-99	114.21	154.61	-1.14
				268.82	9-Jun-00	114.00	154.82	0.21
				268.82	9-Feb-01	109.17	159.65	4.83
				268.82	10-Sep-01	112.78	156.04	-3.61

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18_DW350	CL	310 - 350	PRINCIPAL	269.11	12-Jan-96	115.40	153.71	
				269.11	29-Jan-96	114.78	154.33	0.62
				269.11	26-Feb-96	113.93	155.18	0.85
				269.11	27-Mar-96	113.50	155.61	0.43
				269.11	31-Oct-96	141.90	127.21	-28.40
				269.11	26-Nov-96	131.29	137.82	10.61
				269.11	26-Dec-96	116.68	152.43	14.61
				269.11	26-Jan-97	114.80	154.31	1.88
				269.11	27-Feb-97	113.23	155.88	1.57
				269.11	27-Mar-97	133.40	135.71	-20.17
				269.11	26-Jun-97	137.25	131.86	-3.85
				269.11	11-Aug-97	137.66	131.45	-0.41
				269.11	25-Sep-97	138.25	130.86	-0.59
				269.11	5-Nov-97	116.49	152.62	21.76
				269.11	9-Nov-98	110.20	158.91	6.29
				269.11	18-Jan-99	125.50	143.61	-15.30
				269.11	8-Jul-99	128.98	140.13	-3.48
				269.11	9-Jun-00	128.92	140.19	0.06
				269.11	9-Feb-01	108.62	160.49	20.30
				269.11	10-Sep-01	127.76	141.35	-19.14
18_DW450	CL	420 - 450	PRINCIPAL	269.12	11-Jan-96	114.81	154.31	
				269.12	29-Jan-96	113.81	155.31	1.00
				269.12	26-Feb-96	112.88	156.24	0.93
				269.12	27-Mar-96	112.37	156.75	0.51
				269.12	31-Oct-96	136.54	132.58	-24.17
				269.12	26-Nov-96	127.10	142.02	9.44
				269.12	26-Dec-96	116.46	152.66	10.64
				269.12	26-Jan-97	113.52	155.60	2.94
				269.12	27-Feb-97	112.18	156.94	1.34
				269.12	27-Mar-97	129.00	140.12	-16.82
				269.12	26-Jun-97	134.30	134.82	-5.30
				269.12	11-Aug-97	135.14	133.98	-0.84
				269.12	25-Sep-97	136.50	132.62	-1.36
				269.12	5-Nov-97	118.34	150.78	18.16
				269.12	9-Nov-98	109.22	159.90	9.12
				269.12	18-Jan-99	117.07	152.05	-7.85
				269.12	23-Apr-99	109.22	159.90	7.85
				269.12	8-Jul-99	122.39	146.73	-13.17
				269.12	9-Jun-00	122.40	146.72	-0.01
				269.12	9-Feb-01	107.13	161.99	15.27
				269.12	10-Sep-01	121.72	147.40	-14.59
18_DW540	CL	490 - 540	PRINCIPAL	269.53	11-Jan-96	115.26	154.27	
				269.53	30-Jan-96	114.16	155.37	1.10
				269.53	26-Feb-96	113.21	156.32	0.95
				269.53	27-Mar-96	112.71	156.82	0.50
				269.53	31-Oct-96	133.60	135.93	-20.89
				269.53	26-Nov-96	124.17	145.36	9.43
				269.53	26-Dec-96	116.98	152.55	7.19
				269.53	26-Jan-97	113.63	155.90	3.35
				269.53	27-Feb-97	112.54	156.99	1.09
				269.53	27-Mar-97	125.78	143.75	-13.24
				269.53	26-Jun-97	131.30	138.23	-5.52
				269.53	11-Aug-97	132.10	137.43	-0.80
				269.53	25-Sep-97	133.45	136.08	-1.35
				269.53	5-Nov-97	118.93	150.60	14.52
				269.53	9-Nov-98	110.81	158.72	8.12
				269.53	18-Jan-99	113.31	156.22	-2.50
				269.53	23-Apr-99	115.41	154.12	-2.10
				269.53	8-Jul-99	120.19	149.34	-4.78
				269.53	9-Feb-01	109.76	159.77	10.43
				269.53	10-Sep-01	117.21	152.32	-7.45

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18_MCAS04	SH	181 - 238	PRINCIPAL	144.54	9-Feb-96	22.48	122.06	
				144.54	28-Feb-96	22.24	122.30	0.24
				144.54	27-Mar-96	22.02	122.52	0.22
				144.54	1-Nov-96	28.32	116.22	-6.30
				144.54	27-Nov-96	25.56	118.98	2.76
				144.54	26-Dec-96	24.06	120.48	1.50
				144.54	26-Jan-97	25.00	119.54	-0.94
				144.54	26-Feb-97	22.38	122.16	2.62
				144.54	27-Mar-97	24.70	119.84	-2.32
				144.54	26-Jun-97	27.25	117.29	-2.55
				144.54	11-Aug-97	27.54	117.00	-0.29
				144.54	24-Sep-97	28.05	116.49	-0.51
				144.54	5-Nov-97	26.19	118.35	1.86
				144.54	9-Nov-98	23.99	120.55	2.20
				144.54	19-Jan-99	24.02	120.52	-0.03
				144.54	20-Apr-99	25.62	118.92	-1.60
				144.54	7-Jul-99	27.95	116.59	-2.33
				144.54	9-Feb-01	25.32	119.22	2.63
				144.54	7-Sep-01	28.53	116.01	-3.21
18_MCAS06	SH	167 - 222	PRINCIPAL	115.15	12-Jan-96	14.08	101.07	
				115.15	16-Jan-96	14.32	100.83	-0.24
				115.15	28-Feb-96	14.00	101.15	0.32
				115.15	27-Mar-96	14.10	101.05	-0.10
				115.15	1-Nov-96	24.63	90.52	-10.53
				115.15	27-Nov-96	19.20	95.95	5.43
				115.15	26-Dec-96	20.10	95.05	-0.90
				115.15	26-Jan-97	16.11	99.04	3.99
				115.15	26-Feb-97	13.54	101.61	2.57
				115.15	27-Mar-97	17.83	97.32	-4.29
				115.15	26-Jun-97	23.80	91.35	-5.97
				115.15	11-Aug-97	23.89	91.26	-0.09
				115.15	25-Sep-97	24.65	90.50	-0.76
				115.15	5-Nov-97	20.82	94.33	3.83
				115.15	9-Nov-98	15.55	99.60	5.27
				115.15	18-Jan-99	15.02	100.13	0.53
				115.15	20-Apr-99	17.93	97.22	-2.91
				115.15	7-Jul-99	22.05	93.10	-4.12
				115.15	21-Jun-00	23.50	91.65	-1.45
				115.15	9-Feb-01	16.75	98.40	6.75
				115.15	7-Sep-01	24.05	91.10	-7.30
18_MCAS08	DP	392 - 410	PRINCIPAL	85.28	1-Feb-96	58.01	27.27	
				85.28	28-Feb-96	54.08	31.20	3.93
				85.28	27-Mar-96	54.00	31.28	0.08
				85.28	1-Nov-96	105.75	-20.47	-51.75
				85.28	27-Nov-96	93.05	-7.77	12.70
				85.28	27-Dec-96	94.25	-8.97	-1.20
				85.28	26-Jan-97	59.10	26.18	35.15
				85.28	27-Mar-97	92.75	-7.47	-33.65
				85.28	26-Jun-97	103.70	-18.42	-10.95
				85.28	11-Aug-97	127.60	-42.32	-23.90
				85.28	25-Sep-97	134.33	-49.05	-6.73
				85.28	5-Nov-97	121.09	-35.81	13.24
				85.28	9-Nov-98	74.72	10.56	46.37
				85.28	18-Jan-99	66.01	19.27	8.71
				85.28	20-Apr-99	68.63	16.65	-2.62
				85.28	7-Jul-99	100.37	-15.09	-31.74
				85.28	9-Jun-00	114.98	-29.70	-14.61
				85.28	9-Feb-01	73.60	11.68	41.38
				85.28	7-Sep-01	125.94	-40.66	-52.34

Table A.1A
Water Level Measurements and Groundwater Elevations for Conventional Wells
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOP OF CASING ELEVATION (feet amsl)	DATE MEASURED	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_MCAS09	DP	372 - 445	PRINCIPAL	77.15	12-Jan-96	4.89	72.26	
				77.15	16-Jan-96	6.63	70.52	-1.74
				77.15	27-Mar-96	6.63	70.52	0.00
				77.15	27-Nov-96	25.42	51.73	-18.79
				77.15	26-Dec-96	26.10	51.05	-0.68
				77.15	26-Jan-97	23.90	53.25	2.20
				77.15	26-Feb-97	3.80	73.35	20.10
				77.15	27-Mar-97	25.00	52.15	-21.20
				77.15	26-Jun-97	42.65	34.50	-17.65
				77.15	11-Aug-97	55.65	21.50	-13.00
				77.15	25-Sep-97	60.28	16.87	-4.63
				77.15	5-Nov-97	42.52	34.63	17.76
				77.15	9-Nov-98	3.93	73.22	38.59
				77.15	18-Jan-99	5.43	71.72	-1.50
				77.15	21-Apr-99	16.58	60.57	-11.15
				77.15	9-Jul-99	36.38	40.77	-19.80
				77.15	9-Jun-00	43.16	33.99	-6.78
				77.15	9-Feb-01	6.60	70.55	36.56
				77.15	7-Sep-01	47.26	29.89	-40.66
18_MCAS10	DP	355 - 375	PRINCIPAL	102.10	11-Jan-96	16.06	86.04	
				102.10	19-Jan-96	18.47	83.63	-2.41
				102.10	27-Mar-96	16.12	85.98	2.35
				102.10	1-Nov-96	56.65	45.45	-40.53
				102.10	27-Nov-96	38.68	63.42	17.97
				102.10	27-Dec-96	39.20	62.90	-0.52
				102.10	26-Jan-97	38.85	63.25	0.35
				102.10	26-Feb-97	18.09	84.01	20.76
				102.10	27-Mar-97	37.90	64.20	-19.81
				102.10	26-Jun-97	53.40	48.70	-15.50
				102.10	11-Aug-97	64.70	37.40	-11.30
				102.10	25-Sep-97	68.10	34.00	-3.40
				102.10	5-Nov-97	50.62	51.48	17.48
				102.10	9-Nov-99	19.36	82.74	31.26
				102.10	19-Jan-99	18.90	83.20	0.46
				102.10	20-Apr-99	29.68	72.42	-10.78
				102.10	7-Jul-99	46.93	55.17	-17.25
				102.10	9-Feb-01	20.12	81.98	26.81
				102.10	7-Sep-01	56.04	46.06	-35.92
18_PS1	SH	102 - 122	SHALLOW	247.99	11-Jan-96	86.98	161.01	
				247.99	19-Jan-96	86.90	161.09	0.08
				247.99	26-Feb-96	86.65	161.34	0.25
				247.99	27-Mar-96	86.41	161.58	0.24
				247.99	31-Oct-96	86.61	161.38	-0.20
				247.99	26-Nov-96	86.36	161.63	0.25
				247.99	26-Dec-96	86.42	161.57	-0.06
				247.99	23-Jan-97	86.12	161.87	0.30
				247.99	27-Mar-97	85.68	162.31	0.44
				247.99	26-Jun-97	86.02	161.97	-0.34
				247.99	11-Aug-97	86.25	161.74	-0.23
				247.99	24-Sep-97	85.87	162.12	0.38
				247.99	5-Nov-97	85.92	162.07	-0.05
				247.99	9-Nov-99	82.21	165.78	3.71
				247.99	18-Jan-99	81.87	166.12	0.34
				247.99	21-Apr-99	81.41	166.58	0.46
				247.99	8-Jul-99	81.29	166.70	0.12

Table A.1A
Water Level Measurements and Groundwater Elevations for Conventional Wells
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOP OF CASING ELEVATION (feet amsl)	DATE MEASURED	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_PS2	SH	103 - 133	SHALLOW	246.73	11-Jan-96	99.50	147.23	
				246.73	18-Jan-96	99.42	147.31	0.08
				246.73	26-Feb-96	98.96	147.77	0.46
				246.73	27-Mar-96	98.62	148.11	0.34
				246.73	31-Oct-96	99.18	147.55	-0.56
				246.73	27-Nov-96	99.08	147.65	0.10
				246.73	26-Dec-96	99.04	147.69	0.04
				246.73	23-Jan-97	98.58	148.15	0.46
				246.73	27-Feb-97	97.91	148.82	0.67
				246.73	27-Mar-97	89.10	157.63	8.81
				246.73	26-Jun-97	98.68	148.05	-9.58
				246.73	11-Aug-97	98.86	147.87	-0.18
				246.73	24-Sep-97	98.62	148.11	0.24
				246.73	5-Nov-97	98.54	148.19	0.08
				246.73	9-Nov-99	94.43	152.30	4.11
				246.73	18-Jan-99	93.65	153.08	0.78
				246.73	21-Apr-99	93.15	153.58	0.50
				246.73	8-Jul-99	93.24	153.49	-0.09
				246.73	9-Jun-00	93.16	153.57	0.08
				246.73	9-Feb-01	93.01	153.72	0.15
				246.73	10-Sep-01	94.91	151.82	-1.90
18_PS3	SH	102-122	SHALLOW	266.47	11-Jan-96	87.30	179.17	
				266.47	22-Feb-96	84.10	182.37	3.20
				266.47	28-Feb-96	84.06	182.41	0.04
				266.47	27-Mar-96	83.84	182.63	0.22
				266.47	26-Feb-97	83.30	183.17	0.54
				266.47	11-Sep-01	79.46	187.01	3.84
18_PS3A	SH	70-105	SHALLOW	263.76	28-Feb-01	72.36	191.40	
				263.76	10-Sep-01	75.85	187.91	-3.49
18_PS7	SH	106 - 126	SHALLOW	260.00	11-Jan-96	88.10	171.90	
				260.00	22-Jan-96	87.28	172.72	0.82
				260.00	28-Feb-96	87.06	172.94	0.22
				260.00	27-Mar-96	86.85	173.15	0.21
				260.00	31-Oct-96	87.11	172.89	-0.26
				260.00	27-Nov-96	87.75	172.25	-0.64
				260.00	26-Dec-96	86.98	173.02	0.77
				260.00	24-Jan-97	86.66	173.34	0.32
				260.00	26-Feb-97	86.38	173.62	0.28
				260.00	27-Mar-97	86.22	173.78	0.16
				260.00	27-Jun-97	86.50	173.50	-0.28
				260.00	12-Aug-97	86.60	173.40	-0.10
				260.00	24-Sep-97	86.28	173.72	0.32
				260.00	5-Nov-97	86.40	173.60	-0.12
				260.00	6-Nov-99	83.53	176.47	2.87
				260.00	18-Jan-99	83.15	176.85	0.38
				260.00	23-Apr-99	82.36	177.64	0.79
				260.00	9-Jul-99	82.72	177.28	-0.36
				260.00	16-Jum-00	82.68	177.32	0.04
				260.00	27-Feb-01	82.46	177.54	0.22
				260.00	10-Sep-01	81.57	178.43	0.89
21_UGMW37	WT	89-130	SHALLOW	257.87	11-Jan-96	91.28	166.59	
				257.87	12-Feb-96	90.93	166.94	0.35
				257.87	27-Feb-96	89.95	167.92	0.98
				257.87	27-Mar-96	90.68	167.19	-0.73
				257.87	30-Oct-96	90.68	167.19	0.00
				257.87	26-Nov-96	90.50	167.37	0.18
				257.87	26-Dec-96	90.60	167.27	-0.10
				257.87	23-Jan-97	90.24	167.63	0.36
				257.87	26-Feb-97	90.00	167.87	0.24
				257.87	25-Mar-97	89.94	167.93	0.06
				257.87	26-Jun-97	90.10	167.77	-0.16
				257.87	11-Aug-97	90.25	167.62	-0.15
				257.87	25-Sep-97	89.97	167.90	0.28
				257.87	7-Nov-97	90.07	167.80	-0.10
				257.87	21-Jun-00	85.82	172.05	4.25
				257.87	9-Feb-01	85.90	171.97	-0.08
				257.87	7-Sep-01	84.89	172.98	1.01

Table A.1A
Water Level Measurements and Groundwater Elevations for Conventional Wells
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOP OF CASING ELEVATION (feet amsl)	DATE MEASURED	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
22_DBMW47	BP	116 - 156	SHALLOW	277.83	11-Jan-96	114.43	163.40	
				277.83	15-Feb-96	113.95	163.88	0.48
				277.83	28-Feb-96	114.01	163.82	-0.06
				277.83	27-Mar-96	113.66	164.17	0.35
				277.83	30-Oct-96	113.93	163.90	-0.27
				277.83	26-Nov-96	113.57	164.26	0.36
				277.83	26-Dec-96	113.58	164.25	-0.01
				277.83	23-Jan-97	113.08	164.75	0.50
				277.83	27-Feb-97	112.45	165.38	0.63
				277.83	27-Mar-97	112.70	165.13	-0.25
				277.83	26-Jun-97	113.30	164.53	-0.60
				277.83	11-Aug-97	113.36	164.47	-0.06
				277.83	24-Sep-97	113.05	164.78	0.31
				277.83	7-Nov-97	112.95	164.88	0.10
				277.83	9-Nov-98	109.12	168.71	3.83
				277.83	19-Jan-99	108.53	169.30	0.59
				277.83	21-Apr-99	107.94	169.89	0.59
				277.83	9-Jul-99	108.07	169.76	-0.13
				277.83	21-Jun-00	85.82	192.01	22.25
				277.83	9-Feb-01	107.61	170.22	-21.79
				277.83	7-Sep-01	106.72	171.11	0.89
24NEW1	SH	225 - 245	SHALLOW	281.10	31-Oct-96	123.51	157.59	
				281.10	26-Nov-96	118.78	162.32	4.73
				281.10	26-Dec-96	116.70	164.40	2.08
				281.10	23-Jan-97	115.26	165.84	1.44
				281.10	27-Feb-97	114.18	166.92	1.08
				281.10	27-Mar-97	120.28	160.82	-6.10
				281.10	26-Jun-97	122.25	158.85	-1.97
				281.10	12-Aug-97	122.44	158.66	-0.19
				281.10	24-Sep-97	122.35	158.75	0.09
				281.10	7-Nov-97	116.30	164.80	6.05
				281.10	9-Nov-98	111.06	170.04	5.24
				281.10	19-Jan-99	115.33	165.77	-4.27
				281.10	23-Apr-99	115.07	166.03	0.26
				281.00	9-Jul-99	116.16	164.84	-1.19
24NEW4	BP	108 - 148	SHALLOW	281.80	26-Nov-96	109.75	172.05	
				281.80	26-Dec-96	109.50	172.30	0.25
				281.80	23-Jan-97	109.03	172.77	0.47
				281.80	26-Feb-97	108.86	172.94	0.17
				281.80	27-Mar-97	108.94	172.86	-0.08
				281.80	26-Jun-97	109.05	172.75	-0.11
				281.80	12-Aug-97	109.00	172.80	0.05
				281.80	24-Sep-97	108.72	173.08	0.28
				281.80	7-Nov-97	108.82	172.98	-0.10
				281.80	9-Nov-98	105.36	176.44	3.46
				281.80	19-Jan-99	104.67	177.13	0.69
				281.80	22-Apr-99	104.11	177.69	0.56
				281.80	9-Jul-99	103.74	178.06	0.37
				281.80	9-Jun-00	103.61	178.19	0.13
				281.80	8-Feb-01	103.65	178.15	-0.04
				281.80	7-Sep-01	102.81	178.99	0.84
24NEW5	SH	230 - 250	SHALLOW	279.20	31-Oct-96	120.39	158.81	
				279.20	26-Nov-96	115.29	163.91	5.10
				279.20	26-Dec-96	112.34	166.86	2.95
				279.20	23-Jan-97	110.74	168.46	1.60
				279.20	27-Feb-97	109.62	169.58	1.12
				279.20	27-Mar-97	116.80	162.40	-7.18
				279.20	26-Jun-97	118.93	160.27	-2.13
				279.20	12-Aug-97	119.18	160.02	-0.25
				279.20	24-Sep-97	119.07	160.13	0.11
				279.20	7-Nov-97	112.12	167.08	6.95
				279.20	9-Nov-98	106.39	172.81	5.73
				279.20	19-Jan-99	111.14	168.06	-4.75
				279.20	9-Jul-99	112.52	166.68	-1.38
				279.20	9-Jun-00	112.06	167.14	0.46
				279.20	8-Feb-01	104.87	174.33	7.19
				279.20	7-Sep-01	111.28	167.92	-6.41

Table A.1A
Water Level Measurements and Groundwater Elevations for Conventional Wells
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOP OF CASING ELEVATION (feet amsl)	DATE MEASURED	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
24NEW6	SH	165 - 185	SHALLOW	265.60	26-Nov-96	83.05	182.55	
				265.60	26-Dec-96	82.63	182.97	0.42
				265.60	23-Jan-97	82.02	183.58	0.61
				265.60	26-Feb-97	81.60	184.00	0.42
				265.60	27-Mar-97	82.43	183.17	-0.83
				265.60	26-Jun-97	83.14	182.46	-0.71
				265.60	11-Aug-97	83.33	182.27	-0.19
				265.60	24-Sep-97	83.10	182.50	0.23
				265.60	7-Nov-97	82.28	183.32	0.82
				265.60	28-Oct-98	79.17	186.43	3.11
				265.60	19-Jan-99	83.23	182.37	-4.06
				265.60	23-Apr-99	78.88	186.72	4.35
				265.60	9-Jul-99	79.32	186.28	-0.44
				265.60	9-Jun-00	78.91	186.69	0.41
				265.60	8-Feb-01	78.20	187.40	0.71
				265.60	7-Sep-01	78.36	187.24	-0.16
24NEW7	BP	118 - 158	SHALLOW	285.10	31-Oct-96	122.30	162.80	
				285.10	27-Nov-96	121.60	163.50	0.70
				285.10	26-Dec-96	121.38	163.72	0.22
				285.10	23-Jan-97	120.76	164.34	0.62
				285.10	27-Feb-97	120.33	164.77	0.43
				285.10	27-Mar-97	120.52	164.58	-0.19
				285.10	26-Jun-97	121.34	163.76	-0.82
				285.10	12-Aug-97	121.44	163.66	-0.10
				285.10	24-Sep-97	121.00	164.10	0.44
				285.10	6-Nov-97	120.78	164.32	0.22
				285.10	9-Nov-98	116.30	168.80	4.48
				285.10	19-Jan-99	115.87	169.23	0.43
				285.10	23-Apr-99	115.60	169.50	0.27
				285.10	9-Jul-99	115.56	169.54	0.04
				285.10	9-Jun-00	115.34	169.76	0.22
				285.10	8-Feb-01	114.79	170.31	0.55
				285.10	7-Sep-01	114.40	170.70	0.39
24NEW8	BP	122 - 162	SHALLOW	291.50	31-Oct-96	125.68	165.82	
				291.50	27-Nov-96	125.10	166.40	0.58
				291.50	26-Dec-96	124.92	166.58	0.18
				291.50	23-Jan-97	124.30	167.20	0.62
				291.50	27-Feb-97	123.90	167.60	0.40
				291.50	27-Mar-97	124.90	166.60	-1.00
				291.50	26-Jun-97	124.72	166.78	0.18
				291.50	12-Aug-97	124.78	166.72	-0.06
				291.50	24-Sep-97	124.40	167.10	0.38
				291.50	6-Nov-97	124.06	167.44	0.34
				291.50	9-Nov-98	119.83	171.67	4.23
				291.50	20-Jan-99	119.22	172.28	0.61
				291.50	23-Apr-99	118.76	172.74	0.46
				291.50	9-Jul-99	118.90	172.60	-0.14
				291.50	9-Jun-00	118.75	172.75	0.15
				291.50	8-Feb-01	118.09	173.41	0.66
				291.50	7-Sep-01	117.26	174.24	0.83
24EX3OB1	BP	105 - 150	SHALLOW	288.84	10-Nov-98	105.60	183.24	
				288.84	20-Jan-99	104.96	183.88	0.64
				288.84	23-Apr-99	107.94	180.90	-2.98
				288.84	9-Jul-99	104.41	184.43	3.53
				288.84	9-Jun-00	103.95	184.89	0.46
				288.84	8-Feb-01	103.73	185.11	0.22
				288.84	7-Sep-01	103.22	185.62	0.51
24EX3OB2	BP	105 -150	SHALLOW	288.07	10-Nov-98	104.23	183.84	
				288.07	20-Jan-99	103.62	184.45	0.61
				288.07	23-Apr-99	103.17	184.90	0.45
				288.07	9-Jul-99	102.70	185.37	0.47
24EX3OB3	BP	170 - 175	SHALLOW	288.18	10-Nov-98	102.69	185.49	
				288.18	20-Jan-99	102.58	185.60	0.11
				288.18	23-Apr-99	102.32	185.86	0.26
				288.18	9-Jul-99	102.65	185.53	-0.33
24EX4OB2	BP	105.7 - 150.7	SHALLOW	290.45	10-Nov-98	109.74	180.71	
				290.45	20-Jan-99	108.98	181.47	0.76
				290.45	23-Apr-99	109.74	180.71	-0.76
				290.45	9-Jul-99	108.48	181.97	1.26

Table A.1A
Water Level Measurements and Groundwater Elevations for Conventional Wells
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOP OF CASING ELEVATION (feet amsl)	DATE MEASURED	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
24EX5OB1	BP	105 - 150	SHALLOW	283.19	10-Nov-98	104.32	178.87	
				283.19	20-Jan-99	102.85	180.34	1.47
				283.19	23-Apr-99	102.36	180.83	0.49
				283.19	9-Jul-99	102.28	180.91	0.08
				283.19	15-Jun-00	101.92	181.27	0.36
				283.19	8-Feb-01	101.81	181.38	0.11
				283.19	7-Sep-01	100.89	182.30	0.92
24EX5OB2	BP	105 - 150	SHALLOW	283.91	10-Nov-98	104.03	179.88	
				283.91	20-Jan-99	102.91	181.00	1.12
				283.91	23-Apr-99	102.85	181.06	0.06
				283.91	9-Jul-99	102.53	181.38	0.32
24EX6OB1	BP	106 - 151	SHALLOW	283.19	10-Nov-98	105.61	177.58	
				283.19	20-Jan-99	105.01	178.18	0.60
				283.19	23-Apr-99	104.33	178.86	0.68
				283.19	9-Jul-99	104.31	178.88	0.02
				283.19	9-Jun-00	103.90	179.29	0.41
24EX6OB2	BP	105.4 - 150.4	SHALLOW	282.96	10-Nov-98	105.63	177.33	
				282.96	20-Jan-99	104.95	178.01	0.68
				282.96	23-Apr-99	104.45	178.51	0.50
				282.96	9-Jul-99	104.34	178.62	0.11
				282.96	8-Feb-01	103.82	179.14	0.52
				282.96	7-Sep-01	103.02	179.94	0.80
24EX6OB3	BP	218 - 223	SHALLOW	283.07	10-Nov-98	104.00	179.07	
				283.07	20-Jan-99	104.42	178.65	-0.42
				283.07	23-Apr-99	104.08	178.99	0.34
				283.07	9-Jul-99	104.83	178.24	-0.75
398MW-13	BP	193-243	SHALLOW	368.87	9-Feb-01	186.47	182.40	
				368.87	11-Sep-01	185.50	183.37	0.97

Notes

1. BP = water table monitoring well/port, CL = well in monitoring well cluster, DP = completed in deep production aquifer, SH = completed below water table and above top of intermediate horizon.
2. BGS = below ground surface, AMSL = above mean sea level, TOC = top of well casing, NA = not available or applicable.
3. **Bold Station ID** indicates well measured during Round 14.

Table A.1B
Potentiometric Groundwater Elevations, Multiport Wells
MCAS EL TORO

STATION ID	PORT	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOC ELEVATION (feet amsl)	DATE MEASURED	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_BGMP06	A	445 - 455	PRINCIPAL	175.41	7-Feb-96	127.57	
				175.41	27-Feb-96	128.48	0.91
				175.41	27-Mar-96	128.56	0.08
				175.41	1-Nov-96	99.35	-29.21
				175.41	26-Nov-96	114.41	15.06
				175.41	26-Dec-96	121.94	7.53
				175.41	23-Jan-97	127.68	5.74
				175.41	27-Feb-97	127.99	0.31
				175.41	27-Mar-97	113.15	-14.84
				175.41	26-Jun-97	101.41	-11.74
				175.41	12-Aug-97	100.24	-1.17
				175.41	24-Sep-97	97.90	-2.34
				175.41	5-Nov-97	112.73	14.83
				175.41	10-Nov-98	129.16	16.43
				175.41	19-Jan-99	127.71	-1.45
				175.41	21-Apr-99	122.34	-5.37
				175.41	6-Jul-99	113.20	-9.14
18_BGMP06	B	380 - 390	PRINCIPAL	175.41	7-Feb-96	108.99	
				175.41	27-Feb-96	110.95	1.96
				175.41	27-Mar-96	109.09	-1.86
				175.41	1-Nov-96	69.58	-39.51
				175.41	26-Nov-96	91.16	21.58
				175.41	26-Dec-96	100.96	9.80
				175.41	23-Jan-97	109.61	8.65
				175.41	27-Feb-97	107.99	-1.62
				175.41	27-Mar-97	87.57	-20.42
				175.41	26-Jun-97	71.02	-16.55
				175.41	12-Aug-97	69.45	-1.57
				175.41	24-Sep-97	66.48	-2.97
				175.41	5-Nov-97	84.19	17.71
				175.41	10-Nov-98	109.08	24.89
				175.41	19-Jan-99	107.68	-1.40
				175.41	21-Apr-99	98.73	-8.95
				175.41	6-Jul-99	84.58	-14.15
18_BGMP06	C	295 - 305	PRINCIPAL	175.41	7-Feb-96	121.94	
				175.41	27-Feb-96	122.41	0.47
				175.41	27-Mar-96	122.81	0.40
				175.41	1-Nov-96	99.18	-23.63
				175.41	26-Nov-96	110.49	11.31
				175.41	26-Dec-96	117.17	6.68
				175.41	23-Jan-97	121.48	4.31
				175.41	27-Feb-97	122.15	0.67
				175.41	27-Mar-97	111.49	-10.66
				175.41	26-Jun-97	101.18	-10.31
				175.41	12-Aug-97	100.38	-0.80
				175.41	24-Sep-97	98.65	-1.73
				175.41	5-Nov-97	108.84	10.19
				175.41	10-Nov-98	122.31	13.47
				175.41	19-Jan-99	123.03	0.72
				175.41	21-Apr-99	117.26	-5.77
				175.41	6-Jul-99	109.65	-7.61

Table A.1B
Potentiometric Groundwater Elevations, Multiport Wells
MCAS EL TORO

STATION ID	PORT	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOC ELEVATION (feet amsl)	DATE MEASURED	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_BGMP06	D	168 - 178	SHALLOW	175.41	7-Feb-96	129.72	
				175.41	27-Feb-96	129.84	0.12
				175.41	27-Mar-96	129.84	0.00
				175.41	1-Nov-96	127.04	-2.80
				175.41	26-Nov-96	127.42	0.38
				175.41	26-Dec-96	128.85	1.43
				175.41	23-Jan-97	129.68	0.83
				175.41	27-Feb-97	130.29	0.61
				175.41	27-Mar-97	129.55	-0.74
				175.41	26-Jun-97	127.99	-1.56
				175.41	12-Aug-97	127.67	-0.32
				175.41	24-Sep-97	110.95	-16.72
				175.41	5-Nov-97	128.32	17.37
				175.41	10-Nov-98	132.47	4.15
				175.41	19-Jan-99	132.82	0.35
				175.41	21-Apr-99	131.87	-0.95
				175.41	6-Jul-99	131.56	-0.31
18_BGMP06	E	105 - 115	SHALLOW	175.41	7-Feb-96	126.02	
				175.41	27-Feb-96	126.16	0.14
				175.41	27-Mar-96	126.25	0.09
				175.41	1-Nov-96	125.33	-0.92
				175.41	26-Nov-96	124.79	-0.54
				175.41	26-Dec-96	125.47	0.68
				175.41	23-Jan-97	125.89	0.42
				175.41	27-Feb-97	129.36	3.47
				175.41	27-Mar-97	126.11	-3.25
				175.41	26-Jun-97	125.54	-0.57
				175.41	12-Aug-97	125.45	-0.09
				175.41	24-Sep-97	125.62	0.17
				175.41	5-Nov-97	125.50	-0.12
				175.41	10-Nov-98	128.21	2.71
				175.41	19-Jan-99	128.35	0.14
				175.41	21-Apr-99	127.80	-0.55
				175.41	6-Jul-99	127.98	0.18
				175.41	22-Feb-01	127.72	-0.26
18_BGMP08	A	439 - 449	PRINCIPAL	195.70	11-Jan-96	148.06	
				195.70	27-Mar-96	150.61	2.55
				195.70	7-Nov-96	133.62	-16.99
				195.70	26-Dec-96	146.20	12.58
				195.70	27-Feb-97	150.98	4.78
				195.70	27-Mar-97	142.80	-8.18
				195.70	27-Jun-97	135.23	-7.57
				195.70	12-Aug-97	134.37	-0.86
				195.70	24-Sep-97	132.89	-1.48
				195.70	6-Nov-97	142.31	9.42
				195.70	10-Nov-98	152.09	9.78
				195.70	19-Jan-99	151.73	-0.36
				195.70	20-Apr-99	148.85	-2.88
				195.70	7-Jul-99	143.28	-5.57
18_BGMP08	C	297 - 307	PRINCIPAL	195.70	11-Jan-96	152.35	
				195.70	27-Feb-96	151.43	-0.92
				195.70	27-Mar-96	151.86	0.43
				195.70	7-Nov-96	138.89	-12.97
				195.70	26-Dec-96	148.92	10.03
				195.70	27-Feb-97	152.48	3.56
				195.70	27-Mar-97	144.89	-7.59
				195.70	27-Jun-97	138.88	-6.01
				195.70	12-Aug-97	138.18	-0.70
				195.70	24-Sep-97	137.14	-1.04
				195.70	6-Nov-97	145.07	7.93
				195.70	10-Nov-98	153.70	8.63
				195.70	19-Jan-99	152.92	-0.78
				195.70	20-Apr-99	151.12	-1.80
				195.70	7-Jul-99	145.34	-5.78

Table A.1B
Potentiometric Groundwater Elevations, Multiport Wells
MCAS EL TORO

STATION ID	PORT	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOC ELEVATION (feet amsl)	DATE MEASURED	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_BGMP08	D	126 - 136	SHALLOW	195.70	11-Jan-96	154.74	
				195.70	27-Feb-96	154.83	0.09
				195.70	27-Mar-96	155.16	0.33
				195.70	7-Nov-96	152.45	-2.71
				195.70	26-Dec-96	154.98	2.53
				195.70	27-Feb-97	156.32	1.34
				195.70	27-Mar-97	155.41	-0.91
				195.70	27-Jun-97	154.18	-1.23
				195.70	12-Aug-97	153.99	-0.19
				195.70	24-Sep-97	153.80	-0.19
				195.70	6-Nov-97	154.63	0.83
				195.70	10-Nov-98	160.17	5.54
				195.70	19-Jan-99	157.93	-2.24
				195.70	20-Apr-99	157.64	-0.29
				195.70	7-Jul-99	156.64	-1.00
18_BGMP08	E	63 -73	SHALLOW	195.70	11-Jan-96	151.81	
				195.70	27-Feb-96	151.92	0.11
				195.70	7-Nov-96	150.76	-1.16
				195.70	26-Dec-96	152.39	1.63
				195.70	27-Feb-97	153.26	0.87
				195.70	27-Mar-97	153.19	-0.07
				195.70	27-Jun-97	152.62	-0.57
				195.70	12-Aug-97	152.39	-0.23
				195.70	24-Sep-97	152.38	-0.01
				195.70	6-Nov-97	152.38	0.00
				195.70	10-Nov-98	155.21	2.83
				195.70	19-Jan-99	162.63	7.42
				195.70	20-Apr-99	155.24	-7.39
				195.70	7-Jul-99	154.76	-0.48
				195.70	13-Sep-01	155.09	0.33
18_BGMP10	A	1001 - 1011	PRINCIPAL	58.24	19-Jan-96	34.45	
				58.24	27-Mar-96	40.50	6.05
				58.24	1-Nov-96	-18.91	-59.41
				58.24	25-Nov-96	5.82	24.73
				58.24	26-Dec-96	25.27	19.45
				58.24	23-Jan-97	45.78	20.51
				58.24	27-Feb-97	36.39	-9.39
				58.24	27-Mar-97	2.89	-33.50
				58.24	27-Jun-97	-31.31	-34.20
				58.24	12-Aug-97	-36.72	-5.41
				58.24	25-Sep-97	-44.50	-7.78
				58.24	6-Nov-97	-25.49	19.01
				58.24	10-Nov-98	36.17	61.66
				58.24	18-Jan-99	33.34	-2.83
				58.24	21-Apr-99	25.46	-7.88
				58.24	7-Jul-99	-5.10	-30.56
18_BGMP10B	B	887 - 897	PRINCIPAL	58.24	19-Jan-96	37.66	
				58.24	27-Mar-96	118.86	81.20
				58.24	1-Nov-96	-16.16	-135.02
				58.24	25-Nov-96	11.65	27.81
				58.24	26-Dec-96	30.33	18.68
				58.24	23-Jan-97	50.83	20.50
				58.24	27-Feb-97	35.94	-14.89
				58.24	27-Mar-97	-3.38	-39.32
				58.24	27-Jun-97	-35.77	-32.39
				58.24	12-Aug-97	-40.67	-4.90
				58.24	25-Sep-97	-47.18	-6.51
				58.24	6-Nov-97	-24.58	22.60
				58.24	10-Nov-98	43.29	67.87
				58.24	18-Jan-99	34.18	-9.11
				58.24	21-Apr-99	26.28	-7.90
				58.24	7-Jul-99	-7.47	-33.75

Table A.1B
Potentiometric Groundwater Elevations, Multiport Wells
MCAS EL TORO

STATION ID	PORT	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOC ELEVATION (feet amsl)	DATE MEASURED	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_BGMP10C	C	752 - 762	PRINCIPAL	58.24	19-Jan-96	41.86	
				58.24	27-Mar-96	34.89	-6.97
				58.24	1-Nov-96	-9.54	-44.43
				58.24	25-Nov-96	19.37	28.91
				58.24	26-Dec-96	36.36	16.99
				58.24	23-Jan-97	56.73	20.37
				58.24	27-Feb-97	33.13	-23.60
				58.24	27-Mar-97	-11.02	-44.15
				58.24	27-Jun-97	-42.21	-31.19
				58.24	12-Aug-97	-45.78	-3.57
				58.24	25-Sep-97	-51.15	-5.37
				58.24	6-Nov-97	-23.60	27.55
				58.24	10-Nov-98	49.74	73.34
				58.24	18-Jan-99	30.87	-18.87
				58.24	21-Apr-99	22.72	-8.15
				58.24	7-Jul-99	-14.57	-37.29
				58.24	13-Sep-01	-39.24	-24.67
18_BGMP10D	D	563 - 573	PRINCIPAL	58.24	19-Jan-96	40.94	
				58.24	27-Mar-96	37.40	-3.54
				58.24	1-Nov-96	-8.82	-46.22
				58.24	25-Nov-96	20.65	29.47
				58.24	26-Dec-96	36.86	16.21
				58.24	23-Jan-97	56.06	19.20
				58.24	27-Feb-97	33.62	-22.44
				58.24	27-Mar-97	2.01	-31.61
				58.24	27-Jun-97	-28.33	-30.34
				58.24	12-Aug-97	-31.47	-3.14
				58.24	25-Sep-97	-37.52	-6.05
				58.24	6-Nov-97	-16.21	21.31
				58.24	10-Nov-98	54.35	70.56
				58.24	18-Jan-99	29.47	-24.88
				58.24	21-Apr-99	27.60	-1.87
				58.24	7-Jul-99	-8.41	-36.01
				58.24	21-Feb-01	58.29	66.70
				58.24	13-Sep-01	-27.83	-86.12
18_BGMP10E	E	429 - 439	PRINCIPAL	58.24	19-Jan-96	55.65	
				58.24	27-Mar-96	60.15	4.50
				58.24	1-Nov-96	11.52	-48.63
				58.24	25-Nov-96	31.89	20.37
				58.24	26-Dec-96	47.93	16.04
				58.24	23-Jan-97	61.28	13.35
				58.24	27-Feb-97	57.47	-3.81
				58.24	27-Mar-97	40.29	-17.18
				58.24	27-Jun-97	47.24	6.95
				58.24	12-Aug-97	8.61	-38.63
				58.24	25-Sep-97	3.08	-5.53
				58.24	6-Nov-97	17.93	14.85
				58.24	10-Nov-98	54.35	36.42
				58.24	18-Jan-99	55.47	1.12
				58.24	21-Apr-99	47.54	-7.93
				58.24	7-Jul-99	30.09	-17.45
				58.24	21-Feb-01	57.21	27.12
				58.24	13-Sep-01	11.41	-45.80

Table A.1B
Potentiometric Groundwater Elevations, Multiport Wells
MCAS EL TORO

STATION ID	PORT	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOC ELEVATION (feet amsl)	DATE MEASURED	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_BGMP10F	F	218 - 228	PRINCIPAL	58.24	19-Jan-96	70.10	
				58.24	27-Mar-96	72.90	2.80
				58.24	1-Nov-96	58.63	-14.27
				58.24	25-Nov-96	61.75	3.12
				58.24	26-Dec-96	67.55	5.80
				58.24	23-Jan-97	72.08	4.53
				58.24	27-Feb-97	71.97	-0.11
				58.24	27-Mar-97	68.82	-3.15
				58.24	27-Jun-97	46.27	-22.55
				58.24	12-Aug-97	60.15	13.88
				58.24	25-Sep-97	58.93	-1.22
				58.24	6-Nov-97	60.12	1.19
				58.24	10-Nov-98	72.13	12.01
				58.24	18-Jan-99	73.23	1.10
				58.24	21-Apr-99	71.91	-1.32
				58.24	7-Jul-99	68.64	-3.27
				58.24	21-Feb-01	72.13	3.49
				58.24	13-Sep-01	63.18	-8.95
18_MCAS01-1	1	60 - 70	SHALLOW	142.68	12-Jan-96	119.94	
				142.68	27-Feb-96	119.78	-0.16
				142.68	27-Mar-96	120.84	1.06
				142.68	31-Oct-96	118.60	-2.24
				142.68	25-Nov-96	118.37	-0.23
				142.68	26-Dec-96	118.83	0.46
				142.68	23-Jan-97	119.15	0.32
				142.68	27-Feb-97	115.80	-3.35
				142.68	27-Mar-97	115.73	-0.07
				142.68	26-Jun-97	115.05	-0.68
				142.68	12-Aug-97	114.71	-0.34
				142.68	24-Sep-97	114.52	-0.19
				142.68	5-Nov-97	114.38	-0.14
				142.68	9-Nov-98	115.88	1.50
				142.68	18-Jan-99	115.35	-0.53
				142.68	20-Apr-99	114.69	-0.66
				142.68	6-Jul-99	114.10	-0.59
18_MCAS01-2	2	150 - 160	SHALLOW	142.68	12-Jan-96	112.41	
				142.68	27-Feb-96	110.79	-1.62
				142.68	27-Mar-96	113.85	3.06
				142.68	31-Oct-96	111.79	-2.06
				142.68	25-Nov-96	109.14	-2.65
				142.68	26-Dec-96	113.83	4.69
				142.68	23-Jan-97	114.77	0.94
				142.68	27-Feb-97	115.56	0.79
				142.68	27-Mar-97	114.94	-0.62
				142.68	26-Jun-97	113.70	-1.24
				142.68	12-Aug-97	113.29	-0.41
				142.68	24-Sep-97	113.05	-0.24
				142.68	5-Nov-97	113.39	0.34
				142.68	9-Nov-98	115.02	1.63
				142.68	18-Jan-99	114.81	-0.21
				142.68	20-Apr-99	114.09	-0.72
				142.68	6-Jul-99	112.91	-1.18

Table A.1B
Potentiometric Groundwater Elevations, Multiport Wells
MCAS EL TORO

STATION ID	PORT	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOC ELEVATION (feet amsl)	DATE MEASURED	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_MCAS01-3	3	210 - 220	SHALLOW	142.68	12-Jan-96	111.84	
				142.68	27-Feb-96	111.49	-0.35
				142.68	27-Mar-96	113.88	2.39
				142.68	31-Oct-96	97.80	-16.08
				142.68	25-Nov-96	103.69	5.89
				142.68	26-Dec-96	111.58	7.89
				142.68	23-Jan-97	114.81	3.23
				142.68	27-Feb-97	115.26	0.45
				142.68	27-Mar-97	106.32	-8.94
				142.68	26-Jun-97	100.16	-6.16
				142.68	12-Aug-97	99.38	-0.78
				142.68	24-Sep-97	98.31	-1.07
				142.68	5-Nov-97	106.11	7.80
				142.68	9-Nov-98	114.53	8.42
				142.68	18-Jan-99	115.24	0.71
				142.68	20-Apr-99	109.71	-5.53
				142.68	6-Jul-99	103.47	-6.24
				142.68	20-Feb-01	116.27	12.80
				142.68	24-Sep-01	98.71	-17.56
18_MCAS01-4	4	270 - 280	PRINCIPAL	142.68	12-Jan-96	103.88	
				142.68	27-Feb-96	108.29	4.41
				142.68	27-Mar-96	107.27	-1.02
				142.68	31-Oct-96	63.46	-43.81
				142.68	25-Nov-96	90.01	26.55
				142.68	26-Dec-96	100.42	10.41
				142.68	23-Jan-97	108.50	8.08
				142.68	27-Feb-97	107.44	-1.06
				142.68	27-Mar-97	82.26	-25.18
				142.68	26-Jun-97	66.20	-16.06
				142.68	12-Aug-97	64.72	-1.48
				142.68	24-Sep-97	61.80	-2.92
				142.68	5-Nov-97	84.08	22.28
				142.68	9-Nov-98	107.53	23.45
				142.68	18-Jan-99	107.36	-0.17
				142.68	20-Apr-99	96.09	-11.27
				142.68	6-Jul-99	79.13	-16.96
18_MCAS01-5	5	330 - 340	PRINCIPAL	142.68	12-Jan-96	104.04	
				142.68	27-Feb-96	108.86	4.82
				142.68	27-Mar-96	108.09	-0.77
				142.68	31-Oct-96	62.82	-45.27
				142.68	25-Nov-96	90.45	27.63
				142.68	26-Dec-96	100.96	10.51
				142.68	23-Jan-97	109.08	8.12
				142.68	27-Feb-97	108.30	-0.78
				142.68	27-Mar-97	92.47	-15.83
				142.68	26-Jun-97	65.32	-27.15
				142.68	12-Aug-97	63.84	-1.48
				142.68	24-Sep-97	60.84	-3.00
				142.68	5-Nov-97	84.03	23.19
				142.68	9-Nov-98	108.26	24.23
				142.68	18-Jan-99	107.77	-0.49
				142.68	20-Apr-99	96.71	-11.06
				142.68	6-Jul-99	78.88	-17.83
				142.68	20-Feb-01	110.32	31.44
				142.68	24-Sep-01	69.85	-40.47

Table A.1B
Potentiometric Groundwater Elevations, Multiport Wells
MCAS EL TORO

STATION ID	PORT	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOC ELEVATION (feet amsl)	DATE MEASURED	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_MCAS01-6	6	450 - 460	PRINCIPAL	142.68	12-Jan-96	103.30	
				142.68	27-Feb-96	108.74	5.44
				142.68	27-Mar-96	107.19	-1.55
				142.68	31-Oct-96	56.85	-50.34
				142.68	25-Nov-96	88.91	32.06
				142.68	26-Dec-96	100.11	11.20
				142.68	23-Jan-97	109.17	9.06
				142.68	27-Feb-97	107.77	-1.40
				142.68	27-Mar-97	91.39	-16.38
				142.68	26-Jun-97	59.18	-32.21
				142.68	12-Aug-97	57.29	-1.89
				142.68	24-Sep-97	54.16	-3.13
				142.68	5-Nov-97	81.43	27.27
				142.68	9-Nov-98	107.91	26.48
				142.68	18-Jan-99	106.99	-0.92
				142.68	20-Apr-99	93.92	-13.07
				142.68	6-Jul-99	75.03	-18.89
18_MCAS01-7	7	540 - 550	PRINCIPAL	142.68	12-Jan-96	97.27	
				142.68	27-Feb-96	102.82	5.55
				142.68	27-Mar-96	104.38	1.56
				142.68	31-Oct-96	62.45	-41.93
				142.68	25-Nov-96	77.13	14.68
				142.68	26-Dec-96	89.13	12.00
				142.68	23-Jan-97	97.07	7.94
				142.68	27-Feb-97	101.04	3.97
				142.68	27-Mar-97	100.19	-0.85
				142.68	26-Jun-97	69.49	-30.70
				142.68	12-Aug-97	66.45	-3.04
				142.68	24-Sep-97	62.94	-3.51
				142.68	5-Nov-97	76.17	13.23
				142.68	9-Nov-98	96.93	20.76
				142.68	18-Jan-99	104.14	7.21
				142.68	20-Apr-99	96.15	-7.99
				142.68	6-Jul-99	84.39	-11.76
18_MCAS02-1	1	40 - 50	SHALLOW	163.91	12-Jan-96	133.03	
				163.91	27-Feb-96	133.31	0.28
				163.91	27-Mar-96	133.19	-0.12
				163.91	31-Oct-96	130.98	-2.21
				163.91	25-Nov-96	131.18	0.20
				163.91	26-Dec-96	131.53	0.35
				163.91	23-Jan-97	132.04	0.51
				163.91	27-Feb-97	132.82	0.78
				163.91	27-Mar-97	132.89	0.07
				163.91	26-Jun-97	131.85	-1.04
				163.91	12-Aug-97	131.25	-0.60
				163.91	24-Sep-97	130.95	-0.30
				163.91	5-Nov-97	131.21	0.26
				163.91	9-Nov-98	131.14	-0.07
				163.91	18-Jan-99	131.14	0.00
				163.91	19-Apr-99	131.14	0.00
				163.91	6-Jul-99	131.14	0.00

Table A.1B
Potentiometric Groundwater Elevations, Multiport Wells
MCAS EL TORO

STATION ID	PORT	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOC ELEVATION (feet amsl)	DATE MEASURED	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_MCAS02-2	2	130 - 140	SHALLOW	163.91	12-Jan-96	127.18	
				163.91	27-Feb-96	124.66	-2.52
				163.91	27-Mar-96	125.32	0.66
				163.91	31-Oct-96	124.03	-1.29
				163.91	25-Nov-96	124.62	0.59
				163.91	26-Dec-96	125.88	1.26
				163.91	23-Jan-97	126.63	0.75
				163.91	27-Feb-97	127.50	0.87
				163.91	27-Mar-97	127.09	-0.41
				163.91	26-Jun-97	125.68	-1.41
				163.91	12-Aug-97	124.98	-0.70
				163.91	24-Sep-97	125.08	0.10
				163.91	5-Nov-97	84.94	-40.14
				163.91	9-Nov-98	129.50	44.56
				163.91	18-Jan-99	129.44	-0.06
				163.91	19-Apr-99	128.70	-0.74
				163.91	6-Jul-99	127.64	-1.06
18_MCAS02-3	3	200 - 210	SHALLOW	163.91	12-Jan-96	123.83	
				163.91	27-Feb-96	123.82	-0.01
				163.91	27-Mar-96	124.28	0.46
				163.91	31-Oct-96	114.25	-10.03
				163.91	25-Nov-96	119.12	4.87
				163.91	26-Dec-96	122.02	2.90
				163.91	23-Jan-97	123.97	1.95
				163.91	27-Feb-97	124.49	0.52
				163.91	27-Mar-97	120.11	-4.38
				163.91	26-Jun-97	116.01	-4.10
				163.91	12-Aug-97	115.36	-0.65
				163.91	24-Sep-97	114.78	-0.58
				163.91	5-Nov-97	118.82	4.04
				163.91	9-Nov-98	125.92	7.10
				163.91	18-Jan-99	126.08	0.16
				163.91	19-Apr-99	124.19	-1.89
				163.91	6-Jul-99	120.86	-3.33
				163.91	20-Feb-01	125.10	4.24
				163.91	12-Sep-01	118.99	-6.11
18_MCAS02-4	4	370 - 380	PRINCIPAL	163.91	12-Jan-96	121.23	
				163.91	27-Feb-96	122.61	1.38
				163.91	27-Mar-96	126.82	4.21
				163.91	31-Oct-96	87.89	-38.93
				163.91	25-Nov-96	107.70	19.81
				163.91	26-Dec-96	116.29	8.59
				163.91	27-Feb-97	122.42	6.13
				163.91	27-Mar-97	103.20	-19.22
				163.91	26-Jun-97	89.13	-14.07
				163.91	12-Aug-97	88.76	-0.37
				163.91	24-Sep-97	86.41	-2.35
				163.91	5-Nov-97	103.96	17.55
				163.91	9-Nov-98	124.65	20.69
				163.91	18-Jan-99	123.93	-0.72
				163.91	19-Apr-99	118.47	-5.46
				163.91	6-Jul-99	103.99	-14.48

Table A.1B
Potentiometric Groundwater Elevations, Multiport Wells
MCAS EL TORO

STATION ID	PORT	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOC ELEVATION (feet amsl)	DATE MEASURED	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_MCAS02-5	5	420 - 430	PRINCIPAL	163.91	12-Jan-96	122.45	
				163.91	27-Feb-96	124.13	1.68
				163.91	27-Mar-96	124.35	0.22
				163.91	31-Oct-96	90.33	-34.02
				163.91	25-Nov-96	109.37	19.04
				163.91	26-Dec-96	117.79	8.42
				163.91	23-Jan-97	124.27	6.48
				163.91	27-Feb-97	124.14	-0.13
				163.91	27-Mar-97	105.94	-18.20
				163.91	26-Jun-97	92.46	-13.48
				163.91	12-Aug-97	91.18	-1.28
				163.91	24-Sep-97	88.80	-2.38
				163.91	5-Nov-97	105.72	16.92
				163.91	9-Nov-98	126.71	20.99
				163.91	18-Jan-99	125.99	-0.72
				163.91	19-Apr-99	120.72	-5.27
				163.91	6-Jul-99	106.75	-13.97
				163.91	20-Feb-01	128.84	22.09
				163.91	12-Sep-01	99.29	-29.55
18_MCAS02-6	6	490 - 500	PRINCIPAL	163.91	12-Jan-96	115.94	
				163.91	27-Feb-96	119.48	3.54
				163.91	27-Mar-96	120.90	1.42
				163.91	31-Oct-96	96.44	-24.46
				163.91	25-Nov-96	99.34	2.90
				163.91	26-Dec-96	106.83	7.49
				163.91	23-Jan-97	112.27	5.44
				163.91	27-Feb-97	117.33	5.06
				163.91	27-Mar-97	116.92	-0.41
				163.91	26-Jun-97	104.26	-12.66
				163.91	12-Aug-97	100.64	-3.62
				163.91	24-Sep-97	98.51	-2.13
				163.91	5-Nov-97	101.81	3.30
				163.91	9-Nov-98	118.80	16.99
				163.91	18-Jan-99	125.75	6.95
				163.91	19-Apr-99	122.45	-3.30
				163.91	6-Jul-99	118.31	-4.14
18_MCAS02-7	7	550 - 560	PRINCIPAL	163.91	12-Jan-96	116.76	
				163.91	27-Feb-96	119.95	3.19
				163.91	27-Mar-96	121.40	1.45
				163.91	31-Oct-96	97.50	-23.90
				163.91	25-Nov-96	100.57	3.07
				163.91	26-Dec-96	107.65	7.08
				163.91	23-Jan-97	113.04	5.39
				163.91	27-Feb-97	118.06	5.02
				163.91	27-Mar-97	117.81	-0.25
				163.91	26-Jun-97	104.91	-12.90
				163.91	12-Aug-97	101.46	-3.45
				163.91	24-Sep-97	99.38	-2.08
				163.91	5-Nov-97	102.77	3.39
				163.91	9-Nov-98	119.45	16.68
				163.91	18-Jan-99	126.37	6.92
				163.91	19-Apr-99	123.17	-3.20
				163.91	6-Jul-99	118.94	-4.23

Table A.1B
Potentiometric Groundwater Elevations, Multiport Wells
MCAS EL TORO

STATION ID	PORT	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOC ELEVATION (feet amsl)	DATE MEASURED	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_MCAS02-8	8	620 - 630	PRINCIPAL	163.91	12-Jan-96	114.02	
				163.91	27-Feb-96	117.24	3.22
				163.91	27-Mar-96	119.28	2.04
				163.91	31-Oct-96	96.70	-22.58
				163.91	25-Nov-96	99.12	2.42
				163.91	26-Dec-96	105.64	6.52
				163.91	23-Jan-97	110.63	4.99
				163.91	27-Feb-97	115.75	5.12
				163.91	27-Mar-97	116.71	0.96
				163.91	26-Jun-97	104.55	-12.16
				163.91	12-Aug-97	100.65	-3.90
				163.91	24-Sep-97	98.92	-1.73
				163.91	5-Nov-97	101.17	2.25
				163.91	9-Nov-98	117.54	16.37
				163.91	18-Jan-99	124.55	7.01
				163.91	19-Apr-99	122.17	-2.38
				163.91	6-Jul-99	118.24	-3.93
18_MCAS03-1	1	80 - 90	SHALLOW	218.60	12-Jan-96	146.92	
				218.60	27-Feb-96	146.92	0.00
				218.60	27-Mar-96	147.80	0.88
				218.60	1-Nov-96	145.57	-2.23
				218.60	25-Nov-96	143.36	-2.21
				218.60	26-Dec-96	143.66	0.30
				218.60	23-Jan-97	144.07	0.41
				218.60	27-Feb-97	145.20	1.13
				218.60	27-Mar-97	145.11	-0.09
				218.60	26-Jun-97	150.70	5.59
				218.60	12-Aug-97	144.41	-6.29
				218.60	24-Sep-97	144.76	0.35
				218.60	5-Nov-97	144.47	-0.29
				218.60	9-Nov-98	148.02	3.55
				218.60	18-Jan-99	148.55	0.53
				218.60	19-Apr-00	148.77	0.22
				218.60	6-Jul-99	148.63	-0.14
18_MCAS03-2	2	160 - 170	SHALLOW	218.60	12-Jan-96	144.12	
				218.60	27-Feb-96	144.38	0.26
				218.60	27-Mar-96	144.90	0.52
				218.60	1-Nov-96	144.35	-0.55
				218.60	25-Nov-96	144.14	-0.21
				218.60	26-Dec-96	144.49	0.35
				218.60	23-Jan-97	144.43	-0.06
				218.60	27-Feb-97	146.30	1.87
				218.60	27-Mar-97	146.04	-0.26
				218.60	26-Jun-97	145.14	-0.90
				218.60	12-Aug-97	144.90	-0.24
				218.60	24-Sep-97	144.98	0.08
				218.60	5-Nov-97	145.12	0.14
				218.60	9-Nov-98	149.00	3.88
				218.60	18-Jan-99	149.35	0.35
				218.60	19-Apr-99	149.52	0.17
				218.60	6-Jul-99	149.37	-0.15
				218.60	22-Feb-01	149.98	0.61
				218.60	11-Sep-01	148.77	-1.21

Table A.1B
Potentiometric Groundwater Elevations, Multiport Wells
MCAS EL TORO

STATION ID	PORT	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOC ELEVATION (feet amsl)	DATE MEASURED	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_MCAS03-3	3	220 - 230	SHALLOW	218.60	12-Jan-96	145.66	
				218.60	27-Feb-96	146.50	0.84
				218.60	27-Mar-96	147.00	0.50
				218.60	1-Nov-96	137.72	-9.28
				218.60	25-Nov-96	142.43	4.71
				218.60	26-Dec-96	144.36	1.93
				218.60	23-Jan-97	146.44	2.08
				218.60	27-Feb-97	147.53	1.09
				218.60	27-Mar-97	143.37	-4.16
				218.60	26-Jun-97	139.95	-3.42
				218.60	12-Aug-97	139.64	-0.31
				218.60	24-Sep-97	139.25	-0.39
				218.60	5-Nov-97	143.47	4.22
				218.60	9-Nov-98	149.56	6.09
				218.60	18-Jan-99	148.94	-0.62
				218.60	19-Apr-99	147.42	-1.52
				218.60	6-Jul-99	145.12	-2.30
				218.60	22-Feb-01	150.50	5.38
				218.60	11-Sep-01	144.18	-6.32
18_MCAS03-4	4	340 - 350	PRINCIPAL	218.60	12-Jan-96	143.62	
				218.60	27-Feb-96	145.49	1.87
				218.60	27-Mar-96	145.95	0.46
				218.60	1-Nov-96	123.90	-22.05
				218.60	25-Nov-96	136.89	12.99
				218.60	26-Dec-96	141.22	4.33
				218.60	23-Jan-97	144.61	3.39
				218.60	27-Feb-97	146.32	1.71
				218.60	27-Mar-97	132.36	-13.96
				218.60	26-Jun-97	125.79	-6.57
				218.60	12-Aug-97	125.04	-0.75
				218.60	24-Sep-97	123.83	-1.21
				218.60	5-Nov-97	137.94	14.11
				218.60	9-Nov-98	147.87	9.93
				218.60	18-Jan-99	142.29	-5.58
				218.60	19-Apr-99	138.74	-3.55
				218.60	6-Jul-99	134.21	-4.53
18_MCAS03-5	5	420 - 430	PRINCIPAL	218.60	12-Jan-96	142.49	
				218.60	27-Feb-96	144.85	2.36
				218.60	27-Mar-96	145.24	0.39
				218.60	1-Nov-96	121.88	-23.36
				218.60	25-Nov-96	134.88	13.00
				218.60	26-Dec-96	139.88	5.00
				218.60	23-Jan-97	144.09	4.21
				218.60	27-Feb-97	145.48	1.39
				218.60	27-Mar-97	132.12	-13.36
				218.60	26-Jun-97	124.35	-7.77
				218.60	12-Aug-97	123.22	-1.13
				218.60	24-Sep-97	121.60	-1.62
				218.60	5-Nov-97	135.86	14.26
				218.60	9-Nov-98	147.19	11.33
				218.60	18-Jan-99	144.93	-2.26
				218.60	19-Apr-99	141.92	-3.01
				218.60	6-Jul-99	135.16	-6.76

Table A.1B
Potentiometric Groundwater Elevations, Multiport Wells
MCAS EL TORO

STATION ID	PORT	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOC ELEVATION (feet amsl)	DATE MEASURED	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_MCAS03-6	6	490 - 500	PRINCIPAL	218.60	12-Jan-96	144.20	
				218.60	27-Feb-96	146.21	2.01
				218.60	27-Mar-96	146.83	0.62
				218.60	1-Nov-96	124.77	-22.06
				218.60	25-Nov-96	136.69	11.92
				218.60	26-Dec-96	141.57	4.88
				218.60	23-Jan-97	145.12	3.55
				218.60	27-Feb-97	147.09	1.97
				218.60	27-Mar-97	135.10	-11.99
				218.60	26-Jun-97	127.68	-7.42
				218.60	12-Aug-97	126.72	-0.96
				218.60	24-Sep-97	124.89	-1.83
				218.60	5-Nov-97	138.17	13.28
				218.60	9-Nov-98	148.92	10.75
				218.60	18-Jan-99	147.12	-1.80
				218.60	19-Apr-99	144.51	-2.61
				218.60	6-Jul-99	138.57	-5.94
18_MCAS07-1	1	90 - 100	SHALLOW	101.72	12-Jan-96	89.07	
				101.72	28-Feb-96	89.55	0.48
				101.72	27-Mar-96	89.90	0.35
				101.72	1-Nov-96	87.24	-2.66
				101.72	26-Nov-96	87.98	0.74
				101.72	26-Dec-96	88.63	0.65
				101.72	23-Jan-97	88.39	-0.24
				101.72	27-Feb-97	88.62	0.23
				101.72	27-Mar-97	88.21	-0.41
				101.72	12-Aug-97	87.21	-1.00
				101.72	24-Sep-97	87.12	-0.09
				101.72	6-Nov-97	86.87	-0.25
				101.72	9-Nov-98	87.19	0.32
				101.72	19-Jan-99	87.19	0.00
				101.72	20-Apr-99	87.19	0.00
				101.72	7-Jul-99	87.19	0.00
18_MCAS07-2	2	190 - 200	SHALLOW	101.72	12-Jan-96	95.24	
				101.72	28-Feb-96	97.32	2.08
				101.72	27-Mar-96	96.10	-1.22
				101.72	1-Nov-96	75.99	-20.11
				101.72	26-Nov-96	86.60	10.61
				101.72	26-Dec-96	92.35	5.75
				101.72	23-Jan-97	96.56	4.21
				101.72	27-Feb-97	96.61	0.05
				101.72	27-Mar-97	87.87	-8.74
				101.72	2-Jul-97	79.11	-8.76
				101.72	12-Aug-97	78.39	-0.72
				101.72	24-Sep-97	77.05	-1.34
				101.72	6-Nov-97	84.01	6.96
				101.72	9-Nov-98	95.06	11.05
				101.72	19-Jan-99	96.14	1.08
				101.72	20-Apr-99	90.60	-5.54
				101.72	7-Jul-99	83.83	-6.77
				101.72	20-Feb-01	95.46	11.63
				101.72	24-Sep-01	78.54	-16.92

Table A.1B
Potentiometric Groundwater Elevations, Multiport Wells
MCAS EL TORO

STATION ID	PORT	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOC ELEVATION (feet amsl)	DATE MEASURED	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_MCAS07-3	3	350 - 360	PRINCIPAL	101.72	12-Jan-96	68.37	
				101.72	28-Feb-96	76.70	8.33
				101.72	27-Mar-96	66.41	-10.29
				101.72	1-Nov-96	11.74	-54.67
				101.72	26-Nov-96	47.37	35.63
				101.72	26-Dec-96	61.78	14.41
				101.72	23-Jan-97	76.54	14.76
				101.72	27-Feb-97	68.28	-8.26
				101.72	27-Mar-97	34.89	-33.39
				101.72	2-Jul-97	6.95	-27.94
				101.72	12-Aug-97	5.09	-1.86
				101.72	24-Sep-97	-1.28	-6.37
				101.72	6-Nov-97	26.81	28.09
				101.72	9-Nov-98	70.91	44.10
				101.72	19-Jan-99	64.56	-6.35
				101.72	20-Apr-99	52.71	-11.85
				101.72	7-Jul-99	26.51	-26.20
18_MCAS07-4	4	440 - 450	PRINCIPAL	101.72	12-Jan-96	59.28	
				101.72	28-Feb-96	70.35	11.07
				101.72	27-Mar-96	53.24	-17.11
				101.72	1-Nov-96	-2.51	-55.75
				101.72	26-Nov-96	36.73	39.24
				101.72	26-Dec-96	50.55	13.82
				101.72	23-Jan-97	69.29	18.74
				101.72	27-Feb-97	56.93	-12.36
				101.72	27-Mar-97	16.13	-40.80
				101.72	2-Jul-97	-17.77	-33.90
				101.72	12-Aug-97	-19.73	-1.96
				101.72	24-Sep-97	-23.50	-3.77
				101.72	6-Nov-97	9.95	33.45
				101.72	9-Nov-98	61.48	51.53
				101.72	19-Jan-99	55.17	-6.31
				101.72	20-Apr-99	42.43	-12.74
				101.72	7-Jul-99	7.01	-35.42
				101.72	20-Feb-01	67.32	60.31
				101.72	24-Sep-01	-12.00	-79.32
18_MCAS07-5	5	510 - 520	PRINCIPAL	101.72	12-Jan-96	64.20	
				101.72	28-Feb-96	74.39	10.19
				101.72	27-Mar-96	61.67	-12.72
				101.72	1-Nov-96	-0.18	-61.85
				101.72	26-Nov-96	41.35	41.53
				101.72	26-Dec-96	55.19	13.84
				101.72	23-Jan-97	73.09	17.90
				101.72	27-Feb-97	64.82	-8.27
				101.72	27-Mar-97	22.50	-42.32
				101.72	2-Jul-97	-9.25	-31.75
				101.72	12-Aug-97	-11.26	-2.01
				101.72	24-Sep-97	-14.79	-3.53
				101.72	6-Nov-97	17.30	32.09
				101.72	9-Nov-98	65.67	48.37
				101.72	19-Jan-99	61.27	-4.40
				101.72	20-Apr-99	49.77	-11.50
				101.72	7-Jul-99	15.42	-34.35

Table A.1B
Potentiometric Groundwater Elevations, Multiport Wells
MCAS EL TORO

STATION ID	PORT	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOC ELEVATION (feet amsl)	DATE MEASURED	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_MCAS07-6	6	800 - 810	PRINCIPAL	101.72	12-Jan-96	52.54	
				101.72	28-Feb-96	41.22	-11.32
				101.72	27-Mar-96	49.18	7.96
				101.72	1-Nov-96	45.68	-3.50
				101.72	26-Nov-96	46.98	1.30
				101.72	26-Dec-96	48.24	1.26
				101.72	23-Jan-97	49.38	1.14
				101.72	27-Feb-97	51.37	1.99
				101.72	27-Mar-97	52.13	0.76
				101.72	2-Jul-97	50.06	-2.07
				101.72	12-Aug-97	48.17	-1.89
				101.72	24-Sep-97	47.28	-0.89
				101.72	6-Nov-97	45.92	-1.36
				101.72	9-Nov-98	51.83	5.91
				101.72	19-Jan-99	54.71	2.88
				101.72	20-Apr-99	56.28	1.57
				101.72	7-Jul-99	55.68	-0.60
18_MCAS07-7	7	910 - 920	PRINCIPAL	101.72	12-Jan-96	50.78	
				101.72	28-Feb-96	40.22	-10.56
				101.72	27-Mar-96	45.44	5.22
				101.72	1-Nov-96	45.38	-0.06
				101.72	26-Nov-96	46.69	1.31
				101.72	26-Dec-96	47.80	1.11
				101.72	23-Jan-97	48.75	0.95
				101.72	27-Feb-97	50.95	2.20
				101.72	27-Mar-97	51.08	0.13
				101.72	2-Jul-97	49.78	-1.30
				101.72	12-Aug-97	47.90	-1.88
				101.72	24-Sep-97	46.99	-0.91
				101.72	6-Nov-97	45.57	-1.42
				101.72	9-Nov-98	51.27	5.70
				101.72	19-Jan-99	53.72	2.45
				101.72	20-Apr-99	55.48	1.76
				101.72	7-Jul-99	55.04	-0.44
18_MCAS07-8	8	980 - 990	PRINCIPAL	101.72	12-Jan-96	51.78	
				101.72	28-Feb-96	92.16	40.38
				101.72	27-Mar-96	73.43	-18.73
				101.72	1-Nov-96	49.34	-24.09
				101.72	26-Nov-96	51.38	2.04
				101.72	26-Dec-96	51.65	0.27
				101.72	23-Jan-97	51.90	0.25
				101.72	27-Feb-97	52.27	0.37
				101.72	27-Mar-97	51.38	-0.89
				101.72	2-Jul-97	51.76	0.38
				101.72	12-Aug-97	51.03	-0.73
				101.72	24-Sep-97	51.34	0.31
				101.72	6-Nov-97	50.87	-0.47
				101.72	9-Nov-98	51.57	0.70
				101.72	19-Jan-99	52.16	0.59
				101.72	20-Apr-99	53.07	0.91
				101.72	7-Jul-99	53.31	0.24

Table A.1B
Potentiometric Groundwater Elevations, Multiport Wells
MCAS EL TORO

STATION ID	PORT	SCREEN INTERVAL (feet bgs)	GROUND-WATER UNIT	TOC ELEVATION (feet amsl)	DATE MEASURED	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_MCAS07-9	9	1080 - 1090	PRINCIPAL	101.72	28-Feb-96	45.83	
				101.72	27-Mar-96	58.04	12.21
				101.72	1-Nov-96	49.45	-8.59
				101.72	26-Nov-96	51.36	1.91
				101.72	26-Dec-96	52.16	0.80
				101.72	23-Jan-97	52.55	0.39
				101.72	27-Feb-97	52.98	0.43
				101.72	27-Mar-97	51.35	-1.63
				101.72	2-Jul-97	52.58	1.23
				101.72	12-Aug-97	51.83	-0.75
				101.72	24-Sep-97	52.13	0.30
				101.72	6-Nov-97	51.63	-0.50
				101.72	9-Nov-98	52.32	0.69
				101.72	19-Jan-99	52.94	0.62
				101.72	20-Apr-99	53.62	0.68
				101.72	7-Jul-99	53.44	-0.18

EXPLANATION

1. BGS = below ground surface, MSL = mean sea level, TOC = top of well casing, NA = not available or applicable.

Table A.1C
WATER LEVEL MEASURMENTS AND GROUNDWATER ELEVATIONS
(Data Provided by Orange County Water District)
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	TOP OF CASING ELEVATION (feet amsl)	MEASUREMENT DATE	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_ET1	PRODUCT	220 - 490	128.40	1-Jan-92	92.30	36.10	
			128.40	1-Feb-92	46.00	82.40	46.30
			128.40	1-Mar-92	34.80	93.60	11.20
			128.40	1-Apr-92	94.50	33.90	-59.70
			128.40	1-May-92	110.00	18.40	-15.50
			128.40	1-Jun-92	118.60	9.80	-8.60
			128.40	1-Jul-92	130.80	-2.40	-12.20
			128.40	1-Aug-92	118.00	10.40	12.80
			128.40	1-Sep-92	112.30	16.10	5.70
			128.40	1-Oct-92	107.50	20.90	4.80
			128.40	1-Nov-92	95.70	32.70	11.80
			128.40	1-Dec-92	92.20	36.20	3.50
			128.40	1-Jan-93	54.60	73.80	37.60
			128.40	1-Feb-93	43.02	85.38	11.58
			128.40	1-Mar-93	31.90	96.50	11.12
			128.40	1-May-93	100.00	28.40	-68.10
			128.40	1-Jun-93	119.90	8.50	-19.90
			128.40	1-Jul-93	123.80	4.60	-3.90
			128.40	1-Sep-93	86.30	42.10	37.50
			128.40	1-Oct-93	109.70	18.70	-23.40
			128.40	1-Nov-93	66.10	62.30	43.60
			128.40	1-Dec-93	52.80	75.60	13.30
			128.40	1-Jan-94	49.50	78.90	3.30
			128.40	24-Feb-94	98.70	29.70	-49.20
			128.40	31-Mar-94	118.00	10.40	-19.30
			128.40	26-Apr-94	117.70	10.70	0.30
			128.40	1-May-94	124.50	3.90	-6.80
			128.40	1-Jun-94	130.60	-2.20	-6.10
			128.40	1-Aug-94	127.80	0.60	2.80
			128.40	1-Oct-94	59.70	68.70	68.10
			128.40	3-Oct-94	127.80	0.60	-68.10
			128.40	1-Nov-94	48.50	79.90	79.30
			128.40	1-Dec-94	40.60	87.80	7.90
			128.40	1-Jan-95	31.80	96.60	8.80
			128.40	3-Jan-95	46.00	82.40	-14.20
			128.40	28-Feb-95	28.10	100.30	17.90
			128.40	31-Mar-95	26.40	102.00	1.70
			128.40	30-Apr-95	108.10	20.30	-81.70
			128.40	31-May-95	124.30	4.10	-16.20
			128.40	30-Jun-95	124.30	4.10	0.00
			128.40	31-Jul-95	62.20	66.20	62.10
			128.40	31-Aug-95	78.90	49.50	-16.70
			128.40	30-Sep-95	140.90	-12.50	-62.00
			128.40	31-Oct-95	53.80	74.60	87.10
			128.40	30-Nov-95	37.70	90.70	16.10
			128.40	29-Dec-95	32.00	96.40	5.70
			128.40	31-Dec-95	36.10	92.30	-4.10
			128.40	31-Jan-96	36.80	91.60	-0.70

Table A.1C
WATER LEVEL MEASURMENTS AND GROUNDWATER ELEVATIONS
(Data Provided by Orange County Water District)
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	TOP OF CASING ELEVATION (feet amsl)	MEASUREMENT DATE	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_ET1	PRODUCT	220 - 490	128.40	29-Feb-96	32.10	96.30	4.70
			128.40	31-Mar-96	103.21	25.19	-71.11
			128.40	30-Apr-96	126.00	2.40	-22.79
			128.40	31-May-96	137.30	-8.90	-11.30
			128.40	30-Jun-96	131.00	-2.60	6.30
			128.40	31-Jul-96	132.00	-3.60	-1.00
			128.40	5-Aug-96	139.00	-10.60	-7.00
			128.40	30-Sep-96	135.00	-6.60	4.00
			128.40	31-Oct-96	78.00	50.40	57.00
			128.40	30-Nov-96	54.50	73.90	23.50
			128.40	31-Dec-96	37.00	91.40	17.50
			128.40	31-Jan-97	33.40	95.00	3.60
			128.40	28-Feb-97	36.50	91.90	-3.10
			128.40	31-Mar-97	41.20	87.20	-4.70
			128.40	31-Mar-97	111.00	17.40	-69.80
			128.40	30-Apr-97	118.70	9.70	-7.70
			128.40	31-May-97	126.10	2.30	-7.40
			128.40	30-Jun-97	129.50	-1.10	-3.40
			128.40	31-Jul-97	129.60	-1.20	-0.10
			128.40	31-Aug-97	131.50	-3.10	-1.90
			128.40	30-Sep-97	131.30	-2.90	0.20
			128.40	31-Oct-97	68.50	59.90	62.80
			128.40	30-Nov-97	55.00	73.40	13.50
			128.40	31-Dec-97	35.00	93.40	20.00
			128.40	31-Jan-98	24.60	103.80	10.40
			128.40	28-Feb-98	21.70	106.70	2.90
			128.40	31-Mar-98	22.40	106.00	-0.70
			128.40	30-Apr-98	105.00	23.40	-82.60
			128.40	31-May-98	41.10	87.30	63.90
			128.40	30-Jun-98	112.60	15.80	-71.50
			128.40	31-Jul-98	114.00	14.40	-1.40
			128.40	31-Aug-98	116.00	12.40	-2.00
			128.40	30-Sep-98	54.30	74.10	61.70
			128.40	31-Oct-98	41.00	87.40	13.30
			128.40	31-Jan-99	119.10	9.30	-78.10
			128.40	30-Apr-99	103.20	25.20	15.90
			128.40	4-Aug-99	126.00	2.40	-22.80
			128.40	30-Jun-00	117.00	11.40	9.00
			128.40	15-Aug-00	115.20	13.20	1.80
			128.40	15-Sep-00	119.10	9.30	-3.90
			128.40	31-Oct-00	72.10	56.30	47.00
			128.40	15-Nov-00	58.00	70.40	14.10
			128.40	15-Dec-00	57.30	71.10	0.70
			128.40	15-Jan-01	40.00	88.40	17.30
			128.40	15-Feb-01	32.90	95.50	7.10
			128.40	15-Mar-01	33.10	95.30	-0.20
			128.40	15-Apr-01	39.70	88.70	-6.60
			128.40	15-May-01	49.90	78.50	-10.20
			128.40	15-Jun-01	48.00	80.40	1.90
			128.40	15-Jul-01	99.80	28.60	-51.80

Table A.1C
WATER LEVEL MEASURMENTS AND GROUNDWATER ELEVATIONS
(Data Provided by Orange County Water District)
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	TOP OF CASING ELEVATION (feet amsl)	MEASUREMENT DATE	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_NLAKE	PRODUCT	370 - 890	91.18	2-May-94	222.30	-131.12	
			91.18	1-Jun-94	276.40	-185.22	-54.10
			91.18	2-Nov-94	116.00	-24.82	160.40
			91.18	11-Aug-95	319.20	-228.02	-203.20
			91.18	6-Sep-95	320.00	-228.82	-0.80
			91.18	4-Oct-95	336.80	-245.62	-16.80
			91.18	9-Nov-95	90.45	0.73	246.35
			91.18	8-Dec-95	287.10	-195.92	-196.65
			91.18	8-Jan-96	279.70	-188.52	7.40
			91.18	5-Feb-96	48.52	42.66	231.18
			91.18	5-Mar-96	45.35	45.83	3.17
			91.18	30-May-96	317.00	-225.82	-271.65
			91.18	2-Jul-96	319.90	-228.72	-2.90
			91.18	5-Aug-96	322.20	-231.02	-2.30
			91.18	4-Sep-96	333.00	-241.82	-10.80
			91.18	2-Oct-96	305.60	-214.42	27.40
			91.18	4-Nov-96	203.20	-112.02	102.40
			91.18	5-Dec-96	293.88	-202.70	-90.68
			91.18	2-Jan-97	182.08	-90.90	111.80
			91.18	4-Feb-97	190.50	-99.32	-8.42
			91.18	3-Mar-97	285.10	-193.92	-94.60
			91.18	10-Apr-97	223.60	-132.42	61.50
			91.18	1-May-97	273.70	-182.52	-50.10
			91.18	3-Jun-97	238.50	-147.32	35.20
			91.18	8-Jul-97	317.50	-226.32	-79.00
			91.18	6-Aug-97	327.20	-236.02	-9.70
			91.18	3-Sep-97	330.30	-239.12	-3.10
			91.18	1-Oct-97	324.00	-232.82	6.30
			91.18	30-Oct-97	314.50	-223.32	9.50
			91.18	7-Jan-98	212.80	-121.62	101.70
			91.18	4-Feb-98	199.50	-108.32	13.30
			91.18	2-Mar-98	192.06	-100.88	7.44
			91.18	3-Apr-98	195.50	-104.32	-3.44
			91.18	5-May-98	317.00	-225.82	-121.50
			91.18	2-Jun-98	289.00	-197.82	28.00
			91.18	1-Jul-98	295.00	-203.82	-6.00
			91.18	3-Aug-98	302.00	-210.82	-7.00
			91.18	1-Sep-98	309.00	-217.82	-7.00
			91.18	29-Sep-98	312.00	-220.82	-3.00
			91.18	27-Oct-98	124.00	-32.82	188.00
			91.18	4-Jan-99	202.00	-110.82	-78.00
			91.18	2-Apr-99	213.50	-122.32	-11.50
			91.18	5-Aug-99	313.00	-221.82	-99.50
			91.18	1-Jun-00	315.00	-223.82	-2.00
			91.18	6-Jul-00	315.90	-224.72	-0.90
			91.18	1-Aug-00	320.50	-229.32	-4.60
			91.18	1-Sep-00	321.30	-230.12	-0.80
			91.18	2-Oct-00	325.00	-233.82	-3.70
			91.18	7-Nov-00	109.20	-18.02	215.80
			91.18	1-Dec-00	314.50	-223.32	-205.30
			91.18	2-Jan-01	312.20	-221.02	2.30
			91.18	1-Feb-01	252.30	-161.12	59.90
			91.18	1-Mar-01	53.49	37.69	198.81
			91.18	5-Apr-01	68.00	23.18	-14.51
			91.18	1-May-01	305.80	-214.62	-237.80
			91.18	6-Jul-01	307.30	-216.12	-1.50
			91.18	1-Aug-01	316.70	-225.52	-9.40
			91.18	4-Sep-01	325.90	-234.72	-9.20

Table A.1C
WATER LEVEL MEASURMENTS AND GROUNDWATER ELEVATIONS
(Data Provided by Orange County Water District)
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	TOP OF CASING ELEVATION (feet amsl)	MEASUREMENT DATE	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_SLAKE	PRODUCT	210 - 800	87.70	9-Apr-92	20.31	67.39	
			87.70	4-Nov-92	31.30	56.40	-10.99
			87.70	15-Dec-92	33.72	53.98	-2.42
			87.70	3-Nov-93	31.70	56.00	2.02
			87.70	3-Nov-94	30.05	57.65	1.65
			87.70	8-Jun-95	25.29	62.41	4.76
			87.70	1-Nov-95	26.93	60.77	-1.64
			87.70	9-Feb-96	14.50	73.20	12.43
			87.70	2-May-96	28.30	59.40	-13.80
			87.70	5-Aug-96	38.80	48.90	-10.50
			87.70	15-Nov-96	29.80	57.90	9.00
			87.70	24-Jan-97	12.95	74.75	16.85
			87.70	5-Feb-97	16.60	71.10	-3.65
			87.70	9-May-97	32.50	55.20	-15.90
			87.70	6-Nov-97	31.70	56.00	0.80
			87.70	10-Feb-98	14.80	72.90	16.90
			87.70	5-May-98	21.90	65.80	-7.10
			87.70	11-Jun-98	18.00	69.70	3.90
			87.70	3-Aug-98	22.00	65.70	-4.00
			87.70	26-Oct-98	16.70	71.00	5.30
			87.70	1-Feb-99	15.00	72.70	1.70
			87.70	6-May-99	11.00	76.70	4.00
			87.70	28-Jul-99	26.95	60.75	-15.95
			87.70	5-May-00	13.97	73.73	12.98
			87.70	1-Aug-00	25.85	61.85	-11.88
			87.70	2-Nov-00	13.38	74.32	12.47
			87.70	1-Feb-01	4.65	83.05	8.73
			87.70	4-May-01	12.43	75.27	-7.78
			87.70	1-Aug-01	23.42	64.28	-10.99

Table A.1C
WATER LEVEL MEASURMENTS AND GROUNDWATER ELEVATIONS
(Data Provided by Orange County Water District)
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	TOP OF CASING ELEVATION (feet amsl)	MEASUREMENT DATE	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_TIC106	PRODUCT	405 - 715	55.00	6-Jan-92	64.00	-9.00	
			55.00	7-Feb-92	58.00	-3.00	6.00
			55.00	6-Mar-92	59.50	-4.50	-1.50
			55.00	26-Mar-92	60.00	-5.00	-0.50
			55.00	28-May-92	67.00	-12.00	-7.00
			55.00	1-Jul-92	70.00	-15.00	-3.00
			55.00	28-Jul-92	81.00	-26.00	-11.00
			55.00	28-Aug-92	82.00	-27.00	-1.00
			55.00	2-Oct-92	106.00	-51.00	-24.00
			55.00	28-Oct-92	151.00	-96.00	-45.00
			55.00	28-Dec-92	78.00	-23.00	73.00
			55.00	26-Jan-93	66.00	-11.00	12.00
			55.00	26-Feb-93	61.00	-6.00	5.00
			55.00	2-Apr-93	61.00	-6.00	0.00
			55.00	9-Apr-93	110.00	-55.00	-49.00
			55.00	7-May-93	116.00	-61.00	-6.00
			55.00	10-May-93	62.00	-7.00	54.00
			55.00	25-May-93	65.00	-10.00	-3.00
			55.00	2-Jun-93	125.00	-70.00	-60.00
			55.00	30-Jun-93	129.00	-74.00	-4.00
			55.00	2-Aug-93	134.00	-79.00	-5.00
			55.00	1-Sep-93	106.00	-51.00	28.00
			55.00	4-Oct-93	139.00	-84.00	-33.00
			55.00	3-Nov-93	126.00	-71.00	13.00
			55.00	29-Nov-93	64.00	-9.00	62.00
			55.00	30-Dec-93	114.00	-59.00	-50.00
			55.00	26-Jan-94	118.00	-63.00	-4.00
			55.00	25-Feb-94	47.00	8.00	71.00
			55.00	3-Mar-94	116.00	-61.00	-69.00
			55.00	21-Mar-94	49.00	6.00	67.00
			55.00	24-Mar-94	116.00	-61.00	-67.00
			55.00	27-Apr-94	50.00	5.00	66.00
			55.00	27-May-94	120.00	-65.00	-70.00
			55.00	6-Jul-94	61.00	-6.00	59.00
			55.00	8-Jul-94	128.00	-73.00	-67.00
			55.00	29-Jul-94	129.00	-74.00	-1.00
			55.00	2-Sep-94	135.00	-80.00	-6.00
			55.00	9-Sep-94	72.00	-17.00	63.00
			55.00	28-Sep-94	139.00	-84.00	-67.00
			55.00	28-Oct-94	137.00	-82.00	2.00

Table A.1C
WATER LEVEL MEASURMENTS AND GROUNDWATER ELEVATIONS
(Data Provided by Orange County Water District)
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	TOP OF CASING ELEVATION (feet amsl)	MEASUREMENT DATE	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_TIC106	PRODUCT	405 - 715	55.00	31-Oct-94	70.00	-15.00	67.00
			55.00	27-Dec-94	56.00	-1.00	14.00
			55.00	30-Jan-95	54.00	1.00	2.00
			55.00	8-Mar-95	54.00	1.00	0.00
			55.00	3-Apr-95	49.00	6.00	5.00
			55.00	8-May-95	125.00	-70.00	-76.00
			55.00	9-Jun-95	134.00	-79.00	-9.00
			55.00	20-Jun-95	49.00	6.00	85.00
			55.00	8-Jul-95	137.00	-82.00	-88.00
			55.00	21-Jul-95	80.00	-25.00	57.00
			55.00	8-Sep-95	150.00	-95.00	-70.00
			55.00	6-Oct-95	154.00	-99.00	-4.00
			55.00	27-Oct-95	82.00	-27.00	72.00
			55.00	6-Dec-95	127.00	-72.00	-45.00
			55.00	8-Dec-95	67.00	-12.00	60.00
			55.00	2-Jan-96	55.00	0.00	12.00
			55.00	22-Jan-96	127.00	-72.00	-72.00
			55.00	25-Jan-96	59.00	-4.00	68.00
			55.00	12-Mar-96	51.00	4.00	8.00
			55.00	18-Apr-96	119.00	-64.00	-68.00
			55.00	22-Apr-96	57.00	-2.00	62.00
			55.00	28-May-96	134.00	-79.00	-77.00
			55.00	2-Jul-96	145.00	-90.00	-11.00
			55.00	20-Jul-96	90.00	-35.00	55.00
			55.00	6-Aug-96	152.00	-97.00	-62.00
			55.00	6-Sep-96	156.00	-101.00	-4.00
			55.00	23-Sep-96	102.00	-47.00	54.00
			55.00	1-Oct-96	158.00	-103.00	-56.00
			55.00	29-Oct-96	148.00	-93.00	10.00
			55.00	18-Nov-96	80.00	-25.00	68.00
			55.00	8-Jan-97	61.00	-6.00	19.00
			55.00	27-Jan-97	54.50	0.50	6.50
			55.00	5-Mar-97	120.00	-65.00	-65.50
			55.00	10-Mar-97	60.00	-5.00	60.00
			55.00	1-Apr-97	128.00	-73.00	-68.00
			55.00	7-Apr-97	62.00	-7.00	66.00
			55.00	28-Apr-97	133.00	-78.00	-71.00
			55.00	22-May-97	80.00	-25.00	53.00
			55.00	3-Jun-97	144.00	-89.00	-64.00
			55.00	8-Jul-97	158.00	-103.00	-14.00

Table A.1C
WATER LEVEL MEASURMENTS AND GROUNDWATER ELEVATIONS
(Data Provided by Orange County Water District)
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	TOP OF CASING ELEVATION (feet amsl)	MEASUREMENT DATE	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_TIC106	PRODUCT	405 - 715	55.00	22-Jul-97	104.00	-49.00	54.00
			55.00	6-Aug-97	159.00	-104.00	-55.00
			55.00	8-Sep-97	139.00	-84.00	20.00
			55.00	29-Sep-97	114.00	-59.00	25.00
			55.00	3-Nov-97	76.00	-21.00	38.00
			55.00	6-Nov-97	151.00	-96.00	-75.00
			55.00	14-Nov-97	90.00	-35.00	61.00
			55.00	30-Dec-97	73.00	-18.00	17.00
			55.00	12-Jan-98	64.00	-9.00	9.00
			55.00	10-Feb-98	48.00	7.00	16.00
			55.00	12-Mar-98	52.00	3.00	-4.00
			55.00	8-Apr-98	49.00	6.00	3.00
			55.00	14-Apr-98	114.00	-59.00	-65.00
			55.00	14-May-98	61.00	-6.00	53.00
			55.00	8-Jun-98	140.00	-85.00	-79.00
			55.00	5-Aug-98	135.00	-80.00	5.00
			55.00	29-Sep-98	163.00	-108.00	-28.00
			55.00	7-Oct-98	80.00	-25.00	83.00
			55.00	9-Nov-98	81.00	-26.00	-1.00
			55.00	12-Jan-99	122.00	-67.00	-41.00
			55.00	1-Mar-99	58.00	-3.00	64.00
			55.00	31-Aug-99	160.00	-105.00	-102.00
			55.00	20-Jun-00	168.00	-113.00	-8.00
			55.00	22-Jul-00	175.00	-120.00	-7.00
			55.00	23-Aug-00	164.00	-109.00	11.00
			55.00	22-Sep-00	168.00	-113.00	-4.00
			55.00	20-Oct-00	179.00	-124.00	-11.00
			55.00	31-Oct-00	107.00	-52.00	72.00
			55.00	20-Nov-00	167.00	-112.00	-60.00
			55.00	20-Dec-00	144.00	-89.00	23.00
			55.00	12-Jan-01	90.00	-35.00	54.00
			55.00	22-Feb-01	80.00	-25.00	10.00
			55.00	20-Mar-01	75.00	-20.00	5.00
			55.00	23-Mar-01	137.00	-82.00	-62.00
			55.00	20-Apr-01	138.00	-83.00	-1.00
			55.00	21-May-01	150.00	-95.00	-12.00
			55.00	19-Jun-01	95.00	-40.00	55.00
			55.00	23-Jul-01	170.00	-115.00	-75.00
			55.00	22-Aug-01	186.00	-131.00	-16.00
			55.00	22-Sep-01	190.00	-135.00	-4.00

Table A.1C
WATER LEVEL MEASURMENTS AND GROUNDWATER ELEVATIONS
(Data Provided by Orange County Water District)
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	TOP OF CASING ELEVATION (feet amsl)	MEASUREMENT DATE	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_TIC111	PRODUCT	200 - 750	260.00	10-Feb-92	130.00	130.00	
			260.00	3-Jul-92	232.00	28.00	-102.00
			260.00	6-Jul-92	145.00	115.00	87.00
			260.00	4-Aug-92	225.00	35.00	-80.00
			260.00	5-Aug-92	148.00	112.00	77.00
			260.00	28-Aug-92	227.00	33.00	-79.00
			260.00	13-Sep-92	153.00	107.00	74.00
			260.00	29-Sep-92	227.00	33.00	-74.00
			260.00	27-Oct-92	222.00	38.00	5.00
			260.00	29-Oct-92	146.00	114.00	76.00
			260.00	21-Dec-92	232.00	28.00	-86.00
			260.00	29-Dec-92	137.00	123.00	95.00
			260.00	25-Feb-93	126.00	134.00	11.00
			260.00	25-Mar-93	124.00	136.00	2.00
			260.00	7-Jun-93	134.00	126.00	-10.00
			260.00	12-Jun-93	235.00	25.00	-101.00
			260.00	30-Jul-93	190.00	70.00	45.00
			260.00	31-Jul-93	120.00	140.00	70.00
			260.00	20-Aug-93	123.00	137.00	-3.00
			260.00	7-Sep-93	202.00	58.00	-79.00
			260.00	29-Sep-93	228.00	32.00	-26.00
			260.00	5-Oct-93	128.00	132.00	100.00
			260.00	8-Nov-93	185.00	75.00	-57.00
			260.00	12-Nov-93	130.00	130.00	55.00
			260.00	4-Dec-93	127.00	133.00	3.00
			260.00	30-Dec-93	125.00	135.00	2.00
			260.00	19-Jan-94	224.00	36.00	-99.00
			260.00	25-Mar-94	123.00	137.00	101.00
			260.00	2-May-94	130.00	130.00	-7.00
			260.00	4-May-94	221.00	39.00	-91.00
			260.00	30-May-94	135.00	125.00	86.00
			260.00	1-Jun-94	182.00	78.00	-47.00
			260.00	24-Jun-94	223.00	37.00	-41.00
			260.00	28-Jun-94	138.00	122.00	85.00
			260.00	29-Jul-94	219.00	41.00	-81.00
			260.00	2-Aug-94	137.00	123.00	82.00
			260.00	5-Sep-94	225.00	35.00	-88.00
			260.00	14-Sep-94	139.00	121.00	86.00
			260.00	6-Nov-94	226.00	34.00	-87.00
			260.00	8-Nov-94	130.00	130.00	96.00

Table A.1C
WATER LEVEL MEASURMENTS AND GROUNDWATER ELEVATIONS
(Data Provided by Orange County Water District)
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	TOP OF CASING ELEVATION (feet amsl)	MEASUREMENT DATE	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_TIC111	PRODUCT	200 - 750	260.00	6-Jan-95	134.00	126.00	-4.00
			260.00	6-Feb-95	129.00	131.00	5.00
			260.00	1-Mar-95	135.00	125.00	-6.00
			260.00	1-Apr-95	132.00	128.00	3.00
			260.00	9-May-95	219.00	41.00	-87.00
			260.00	15-May-95	125.00	135.00	94.00
			260.00	2-Jun-95	215.00	45.00	-90.00
			260.00	9-Jun-95	126.00	134.00	89.00
			260.00	5-Jul-95	225.00	35.00	-99.00
			260.00	11-Jul-95	131.00	129.00	94.00
			260.00	2-Aug-95	129.00	131.00	2.00
			260.00	6-Aug-95	229.00	31.00	-100.00
			260.00	2-Oct-95	224.00	36.00	5.00
			260.00	8-Oct-95	124.00	136.00	100.00
			260.00	30-Nov-95	204.00	56.00	-80.00
			260.00	9-Dec-95	120.00	140.00	84.00
			260.00	10-Jan-96	127.00	133.00	-7.00
			260.00	1-Feb-96	124.00	136.00	3.00
			260.00	29-Feb-96	125.00	135.00	-1.00
			260.00	7-Apr-96	128.00	132.00	-3.00
			260.00	9-Apr-96	200.00	60.00	-72.00
			260.00	29-Apr-96	230.00	30.00	-30.00
			260.00	7-Jun-96	124.00	136.00	106.00
			260.00	28-Jun-96	158.00	102.00	-34.00
			260.00	12-Jul-96	127.00	133.00	31.00
			260.00	26-Jul-96	159.00	101.00	-32.00
			260.00	5-Sep-96	204.00	56.00	-45.00
			260.00	23-Sep-96	201.00	59.00	3.00
			260.00	1-Oct-96	127.00	133.00	74.00
			260.00	6-Nov-96	211.00	49.00	-84.00
			260.00	8-Nov-96	133.00	127.00	78.00
			260.00	9-Nov-96	130.00	130.00	3.00
			260.00	11-Nov-96	210.00	50.00	-80.00
			260.00	7-Jan-97	128.00	132.00	82.00
			260.00	11-Jan-97	227.00	33.00	-99.00
			260.00	1-Feb-97	128.00	132.00	99.00
			260.00	13-Feb-97	218.00	42.00	-90.00
			260.00	5-Mar-97	125.00	135.00	93.00
			260.00	14-Mar-97	217.00	43.00	-92.00
			260.00	4-Apr-97	214.00	46.00	3.00

Table A.1C
WATER LEVEL MEASURMENTS AND GROUNDWATER ELEVATIONS
(Data Provided by Orange County Water District)
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	TOP OF CASING ELEVATION (feet amsl)	MEASUREMENT DATE	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_TIC111	PRODUCT	200 - 750	260.00	5-May-97	224.00	36.00	-10.00
			260.00	6-Jun-97	221.00	39.00	3.00
			260.00	10-Jul-97	225.00	35.00	-4.00
			260.00	8-Aug-97	229.00	31.00	-4.00
			260.00	29-Aug-97	228.00	32.00	1.00
			260.00	25-Sep-97	227.00	33.00	1.00
			260.00	6-Oct-97	148.00	112.00	79.00
			260.00	31-Oct-97	132.00	128.00	16.00
			260.00	4-Dec-97	130.00	130.00	2.00
			260.00	30-Dec-97	128.00	132.00	2.00
			260.00	9-Feb-98	131.00	129.00	-3.00
			260.00	6-Mar-98	129.00	131.00	2.00
			260.00	20-May-98	231.00	29.00	-102.00
			260.00	24-May-98	130.00	130.00	101.00
			260.00	18-Jun-98	128.00	132.00	2.00
			260.00	20-Jul-98	125.00	135.00	3.00
			260.00	19-Jun-00	124.00	136.00	1.00
			260.00	22-Jul-00	124.00	136.00	0.00
			260.00	23-Aug-00	125.00	135.00	-1.00
			260.00	22-Sep-00	124.00	136.00	1.00
			260.00	31-Oct-00	121.00	139.00	3.00
			260.00	20-Nov-00	122.00	138.00	-1.00
			260.00	20-Dec-00	123.00	137.00	-1.00
			260.00	15-Jan-01	120.00	140.00	3.00
			260.00	22-Feb-01	118.00	142.00	2.00
			260.00	22-Mar-01	121.00	139.00	-3.00
			260.00	19-Apr-01	118.00	142.00	3.00
			260.00	21-May-01	120.00	140.00	-2.00
			260.00	19-Jun-01	119.00	141.00	1.00
			260.00	23-Jul-01	121.00	139.00	-2.00
			260.00	21-Aug-01	123.00	137.00	-2.00
			260.00	22-Sep-01	123.00	137.00	0.00

Table A.1C
WATER LEVEL MEASURMENTS AND GROUNDWATER ELEVATIONS
(Data Provided by Orange County Water District)
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	TOP OF CASING ELEVATION (feet amsl)	MEASUREMENT DATE	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_TIC113	PRODUCT	280 - 1080	59.00	7-Jan-92	25.00	34.00	
			59.00	7-Feb-92	18.00	41.00	7.00
			59.00	4-Mar-92	13.00	46.00	5.00
			59.00	26-Mar-92	11.50	47.50	1.50
			59.00	1-Jun-92	65.00	-6.00	-53.50
			59.00	1-Jul-92	110.00	-51.00	-45.00
			59.00	29-Jul-92	118.00	-59.00	-8.00
			59.00	28-Aug-92	111.00	-52.00	7.00
			59.00	2-Oct-92	114.00	-55.00	-3.00
			59.00	30-Oct-92	111.00	-52.00	3.00
			59.00	28-Dec-92	39.00	20.00	72.00
			59.00	27-Jan-93	26.00	33.00	13.00
			59.00	26-Feb-93	13.00	46.00	13.00
			59.00	31-Mar-93	12.00	47.00	1.00
			59.00	9-Apr-93	46.00	13.00	-34.00
			59.00	10-May-93	38.00	21.00	8.00
			59.00	31-May-93	48.00	11.00	-10.00
			59.00	1-Jul-93	103.00	-44.00	-55.00
			59.00	2-Aug-93	108.00	-49.00	-5.00
			59.00	1-Sep-93	108.00	-49.00	0.00
			59.00	4-Oct-93	108.00	-49.00	0.00
			59.00	3-Nov-93	107.00	-48.00	1.00
			59.00	7-Dec-93	100.00	-41.00	7.00
			59.00	30-Dec-93	86.00	-27.00	14.00
			59.00	26-Jan-94	41.00	18.00	45.00
			59.00	28-Feb-94	24.00	35.00	17.00
			59.00	21-Mar-94	32.00	27.00	-8.00
			59.00	24-Mar-94	55.00	4.00	-23.00
			59.00	9-May-94	55.00	4.00	0.00
			59.00	30-May-94	86.00	-27.00	-31.00
			59.00	28-Jul-94	108.00	-49.00	-22.00
			59.00	2-Sep-94	108.00	-49.00	0.00
			59.00	29-Sep-94	109.00	-50.00	-1.00
			59.00	28-Oct-94	107.00	-48.00	2.00
			59.00	31-Oct-94	49.00	10.00	58.00
			59.00	30-Dec-94	21.00	38.00	28.00
			59.00	30-Jan-95	1.00	58.00	20.00
			59.00	3-Mar-95	0.00	59.00	1.00
			59.00	3-Apr-95	0.00	59.00	0.00
			59.00	9-May-95	92.00	-33.00	-92.00
			59.00	26-May-95	108.00	-49.00	-16.00
			59.00	20-Jun-95	39.00	20.00	69.00
			59.00	9-Jul-95	116.00	-57.00	-77.00
			59.00	21-Jul-95	58.00	1.00	58.00
			59.00	8-Sep-95	140.00	-81.00	-82.00
			59.00	6-Oct-95	140.00	-81.00	0.00
			59.00	6-Dec-95	64.00	-5.00	76.00
			59.00	8-Dec-95	15.00	44.00	49.00
			59.00	27-Dec-95	31.00	28.00	-16.00
			59.00	29-Dec-95	6.00	53.00	25.00
			59.00	25-Jan-96	8.00	51.00	-2.00
			59.00	12-Mar-96	4.00	55.00	4.00
			59.00	18-Apr-96	114.00	-55.00	-110.00
			59.00	28-May-96	110.00	-51.00	4.00
			59.00	2-Jul-96	140.00	-81.00	-30.00
			59.00	6-Aug-96	148.00	-89.00	-8.00
			59.00	6-Sep-96	108.00	-49.00	40.00
			59.00	23-Sep-96	95.00	-36.00	13.00

Table A.1C
WATER LEVEL MEASURMENTS AND GROUNDWATER ELEVATIONS
(Data Provided by Orange County Water District)
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	TOP OF CASING ELEVATION (feet amsl)	MEASUREMENT DATE	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_TIC113	PRODUCT	280 - 1080	59.00	1-Oct-96	108.00	-49.00	-13.00
			59.00	29-Oct-96	107.00	-48.00	1.00
			59.00	4-Nov-96	61.00	-2.00	46.00
			59.00	16-Dec-96	31.00	28.00	30.00
			59.00	8-Jan-97	11.00	48.00	20.00
			59.00	27-Jan-97	3.00	56.00	8.00
			59.00	5-Mar-97	77.00	-18.00	-74.00
			59.00	10-Mar-97	24.00	35.00	53.00
			59.00	2-Apr-97	117.00	-58.00	-93.00
			59.00	7-Apr-97	64.00	-5.00	53.00
			59.00	28-Apr-97	108.00	-49.00	-44.00
			59.00	21-May-97	80.00	-21.00	28.00
			59.00	8-Jul-97	110.00	-51.00	-30.00
			59.00	18-Jul-97	82.00	-23.00	28.00
			59.00	6-Aug-97	118.00	-59.00	-36.00
			59.00	12-Sep-97	109.00	-50.00	9.00
			59.00	8-Oct-97	108.00	-49.00	1.00
			59.00	6-Nov-97	150.00	-91.00	-42.00
			59.00	14-Nov-97	60.00	-1.00	90.00
			59.00	15-Dec-97	22.00	37.00	38.00
			59.00	12-Jan-98	18.00	41.00	4.00
			59.00	10-Feb-98	3.00	56.00	15.00
			59.00	12-Mar-98	60.00	-1.00	-57.00
			59.00	8-Apr-98	3.00	56.00	57.00
			59.00	14-Apr-98	55.00	4.00	-52.00
			59.00	15-May-98	16.00	43.00	39.00
			59.00	8-Jun-98	92.00	-33.00	-76.00
			59.00	21-Jul-98	107.00	-48.00	-15.00
			59.00	1-Sep-98	57.00	2.00	50.00
			59.00	25-Sep-98	105.00	-46.00	-48.00
			59.00	7-Oct-98	41.00	18.00	64.00
			59.00	9-Nov-98	13.00	46.00	28.00
			59.00	12-Jan-99	79.00	-20.00	-66.00
			59.00	2-Apr-99	88.00	-29.00	-9.00
			59.00	10-Aug-99	108.00	-49.00	-20.00
			59.00	20-Jun-00	116.00	-57.00	-8.00
			59.00	22-Jul-00	109.00	-50.00	7.00
			59.00	23-Aug-00	106.00	-47.00	3.00
			59.00	22-Sep-00	110.00	-51.00	-4.00
			59.00	31-Oct-00	117.00	-58.00	-7.00
			59.00	20-Nov-00	93.00	-34.00	24.00
			59.00	20-Dec-00	92.00	-33.00	1.00
			59.00	12-Jan-01	33.00	26.00	59.00
			59.00	22-Feb-01	9.50	49.50	23.50
			59.00	23-Mar-01	59.00	0.00	-49.50
			59.00	20-Apr-01	69.00	-10.00	-10.00
			59.00	21-May-01	87.00	-28.00	-18.00
			59.00	19-Jun-01	51.00	8.00	36.00
			59.00	23-Jul-01	113.00	-54.00	-62.00
			59.00	22-Aug-01	123.00	-64.00	-10.00
			59.00	22-Sep-01	127.00	-68.00	-4.00

Table A.1C
WATER LEVEL MEASURMENTS AND GROUNDWATER ELEVATIONS
(Data Provided by Orange County Water District)
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	TOP OF CASING ELEVATION (feet amsl)	MEASUREMENT DATE	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_TIC117	MONITOR	360 - 635	199.75	7-Feb-92	71.00	128.75	
			199.75	9-Apr-92	66.05	133.70	4.95
			199.75	1-May-92	71.20	128.55	-5.15
			199.75	15-Aug-92	81.20	118.55	-10.00
			199.75	2-Nov-92	79.00	120.75	2.20
			199.75	17-Feb-93	66.20	133.55	12.80
			199.75	17-May-93	63.20	136.55	3.00
			199.75	6-Aug-93	79.50	120.25	-16.30
			199.75	2-Nov-93	77.40	122.35	2.10
			199.75	28-Sep-94	66.85	132.90	10.55
			199.75	2-Nov-94	72.70	127.05	-5.85
			199.75	6-Sep-95	73.80	125.95	-1.10
			199.75	1-Nov-95	66.62	133.13	7.18
			199.75	5-Feb-96	60.83	138.92	5.79
			199.75	1-May-96	68.26	131.49	-7.43
			199.75	31-Jul-96	72.72	127.03	-4.46
			199.75	1-Aug-96	80.60	119.15	-7.88
			199.75	28-Oct-96	77.52	122.23	3.08
			199.75	4-Feb-97	60.43	139.32	17.09
			199.75	6-May-97	71.64	128.11	-11.21
			199.75	4-Aug-97	74.02	125.73	-2.38
			199.75	9-Oct-97	73.00	126.75	1.02
			199.75	28-Oct-97	70.47	129.28	2.53
			199.75	4-Feb-98	59.62	140.13	10.85
			199.75	13-May-98	61.12	138.63	-1.50
			199.75	30-Jun-98	62.00	137.75	-0.88
			199.75	3-Aug-98	65.20	134.55	-3.20
			199.75	26-Oct-98	59.75	140.00	5.45
			199.75	1-Feb-99	57.90	141.85	1.85
			199.75	5-May-99	62.40	137.35	-4.50
			199.75	28-Jul-99	66.54	133.21	-4.14
			199.75	5-May-00	65.34	134.41	1.20
			199.75	31-Jul-00	65.48	134.27	-0.14
			199.75	2-Nov-00	63.82	135.93	1.66
			199.75	4-Feb-01	57.95	141.80	5.87
			199.75	1-May-01	57.72	142.03	0.23
			199.75	10-Jul-01	61.25	138.50	-3.53
			199.75	4-Aug-01	61.25	138.50	0.00

Table A.1C
WATER LEVEL MEASURMENTS AND GROUNDWATER ELEVATIONS
(Data Provided by Orange County Water District)
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	TOP OF CASING ELEVATION (feet amsl)	MEASUREMENT DATE	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_TIC37	PRODUCT	255 - 1560	222.00	7-Feb-92	97.40	124.60	
			222.00	1-May-92	94.40	127.60	3.00
			222.00	12-Aug-92	111.20	110.80	-16.80
			222.00	2-Nov-92	112.40	109.60	-1.20
			222.00	17-Feb-93	96.20	125.80	16.20
			222.00	2-Nov-93	104.00	118.00	-7.80
			222.00	18-Feb-94	93.70	128.30	10.30
			222.00	13-May-94	98.30	123.70	-4.60
			222.00	18-Aug-94	104.60	117.40	-6.30
			222.00	3-Nov-94	97.50	124.50	7.10
			222.00	10-Feb-95	87.80	134.20	9.70
			222.00	16-Aug-95	99.80	122.20	-12.00
			222.00	3-Nov-95	96.70	125.30	3.10
			222.00	3-May-96	93.50	128.50	3.20
			222.00	9-Aug-96	100.80	121.20	-7.30
			222.00	1-Nov-96	103.50	118.50	-2.70
			222.00	7-Feb-97	85.30	136.70	18.20
			222.00	9-May-97	96.20	125.80	-10.90
			222.00	1-Aug-97	100.60	121.40	-4.40
			222.00	30-Jan-98	85.70	136.30	14.90
			222.00	1-May-98	80.00	142.00	5.70
			222.00	13-Aug-98	89.50	132.50	-9.50
			222.00	30-Oct-98	87.20	134.80	2.30
			222.00	29-Apr-99	85.50	136.50	1.70
			222.00	10-Aug-99	90.00	132.00	-4.50
			222.00	21-May-00	51.00	171.00	39.00
			222.00	22-Feb-01	104.00	118.00	-53.00

Table A.1C
WATER LEVEL MEASURMENTS AND GROUNDWATER ELEVATIONS
(Data Provided by Orange County Water District)
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	TOP OF CASING ELEVATION (feet amsl)	MEASUREMENT DATE	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_TIC61	PRODUCT	240 - 695	284.00	7-Feb-92	145.60	138.40	
			284.00	1-May-92	144.70	139.30	0.90
			284.00	12-Aug-92	149.70	134.30	-5.00
			284.00	2-Nov-92	149.70	134.30	0.00
			284.00	17-Feb-93	145.30	138.70	4.40
			284.00	17-May-93	145.30	138.70	0.00
			284.00	6-Aug-93	146.20	137.80	-0.90
			284.00	2-Nov-93	147.00	137.00	-0.80
			284.00	2-Nov-94	145.12	138.88	1.88
			284.00	10-May-95	142.58	141.42	2.54
			284.00	6-Sep-95	144.50	139.50	-1.92
			284.00	1-Nov-95	141.00	143.00	3.50
			284.00	5-Feb-96	138.22	145.78	2.78
			284.00	1-May-96	139.90	144.10	-1.68
			284.00	5-Aug-96	140.11	143.89	-0.21
			284.00	18-Oct-96	142.30	141.70	-2.19
			284.00	28-Oct-96	141.71	142.29	0.59
			284.00	4-Feb-97	136.70	147.30	5.01
			284.00	9-May-97	140.80	143.20	-4.10
			284.00	4-Aug-97	140.50	143.50	0.30
			284.00	28-Oct-97	139.32	144.68	1.18
			284.00	4-Feb-98	135.48	148.52	3.84
			284.00	7-May-98	136.55	147.45	-1.07
			284.00	3-Aug-98	134.20	149.80	2.35
			284.00	26-Oct-98	132.70	151.30	1.50
			284.00	1-Feb-99	131.40	152.60	1.30
			284.00	6-May-99	132.00	152.00	-0.60
			284.00	28-Jul-99	138.89	145.11	-6.89
			284.00	5-May-00	131.10	152.90	7.79
			284.00	31-Jul-00	131.04	152.96	0.06
			284.00	2-Nov-00	130.70	153.30	0.34
			284.00	4-Feb-01	129.51	154.49	1.19
			284.00	4-May-01	129.39	154.61	0.12
			284.00	11-Jul-01	129.00	155.00	0.39
			284.00	4-Aug-01	129.50	154.50	-0.50

Table A.1C
WATER LEVEL MEASURMENTS AND GROUNDWATER ELEVATIONS
(Data Provided by Orange County Water District)
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	TOP OF CASING ELEVATION (feet amsl)	MEASUREMENT DATE	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_TIC64	PRODUCT	310 - 540	271.00	31-Oct-91	141.20	129.80	
			271.00	7-Feb-92	137.70	133.30	3.50
			271.00	1-May-92	136.30	134.70	1.40
			271.00	12-Aug-92	141.50	129.50	-5.20
			271.00	2-Nov-92	141.50	129.50	0.00
			271.00	2-Nov-93	137.00	134.00	4.50
			271.00	18-Feb-94	132.80	138.20	4.20
			271.00	13-May-94	138.80	132.20	-6.00
			271.00	18-Aug-94	135.60	135.40	3.20
			271.00	3-Nov-94	135.00	136.00	0.60
			271.00	15-Aug-95	133.30	137.70	1.70
			271.00	3-Nov-95	132.50	138.50	0.80
			271.00	3-May-96	130.00	141.00	2.50
			271.00	9-Aug-96	132.10	138.90	-2.10
			271.00	1-Nov-96	132.60	138.40	-0.50
			271.00	7-Feb-97	127.40	143.60	5.20
			271.00	9-May-97	130.00	141.00	-2.60
			271.00	1-Aug-97	131.00	140.00	-1.00
			271.00	30-Oct-97	129.40	141.60	1.60
			271.00	30-Jan-98	125.50	145.50	3.90
			271.00	1-May-98	124.50	146.50	1.00
			271.00	8-Aug-98	125.10	145.90	-0.60
			271.00	30-Oct-98	123.00	148.00	2.10
			271.00	29-Apr-99	123.00	148.00	0.00
			271.00	10-Aug-99	123.00	148.00	0.00
			271.00	20-Jun-00	123.00	148.00	0.00
			271.00	22-Jul-00	124.00	147.00	-1.00
			271.00	23-Aug-00	124.00	147.00	0.00
			271.00	22-Sep-00	124.00	147.00	0.00
			271.00	31-Oct-00	129.00	142.00	-5.00
			271.00	20-Nov-00	122.00	149.00	7.00
			271.00	20-Dec-00	123.00	148.00	-1.00
			271.00	12-Jan-01	122.00	149.00	1.00
			271.00	22-Feb-01	121.00	150.00	1.00
			271.00	22-Mar-01	120.00	151.00	1.00
			271.00	20-Apr-01	120.00	151.00	0.00
			271.00	20-May-01	120.00	151.00	0.00
			271.00	19-Jun-01	121.00	150.00	-1.00
			271.00	23-Jul-01	122.00	149.00	-1.00
			271.00	22-Aug-01	122.00	149.00	0.00
			271.00	22-Sep-01	123.00	148.00	-1.00

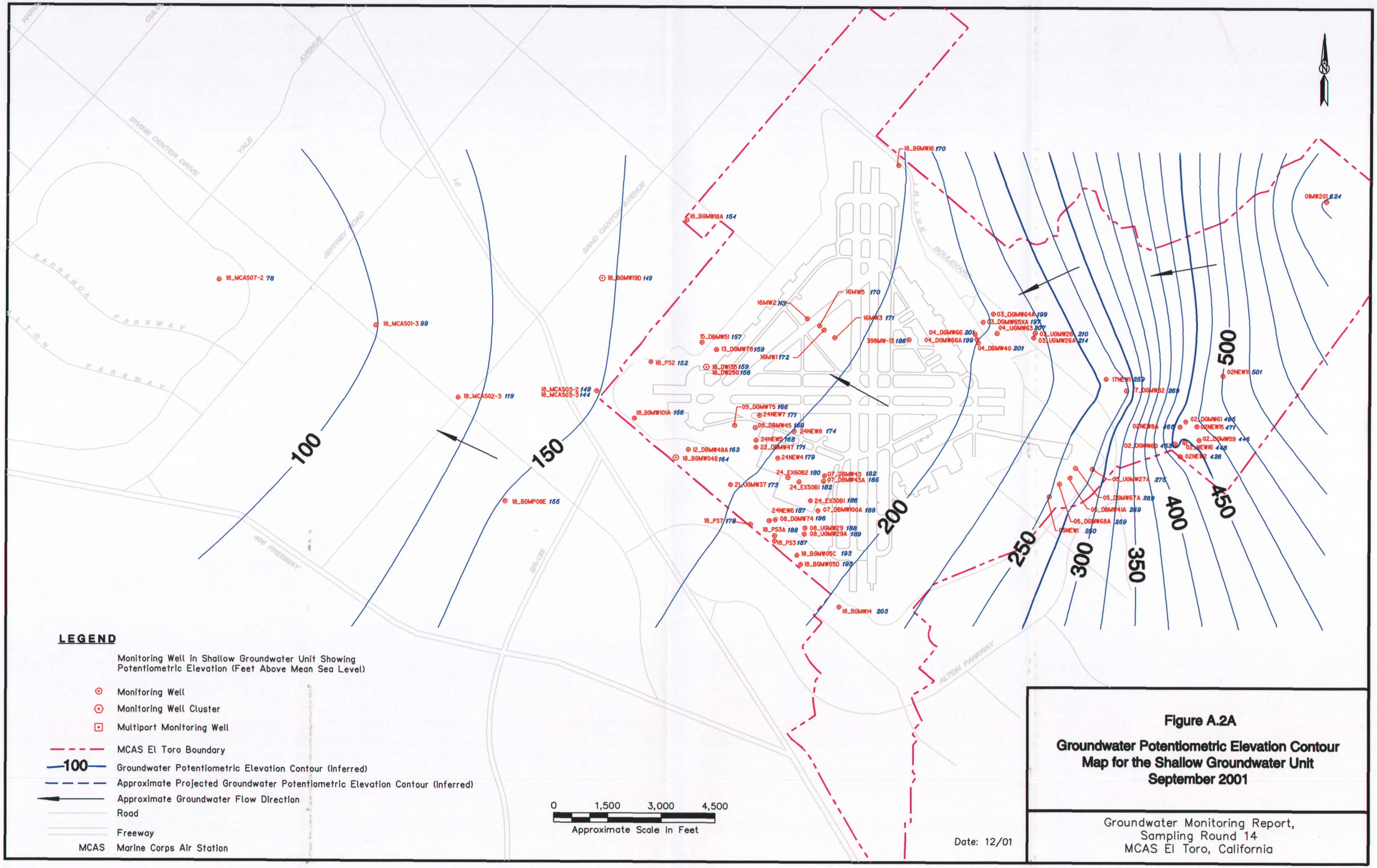
Table A.1C
WATER LEVEL MEASURMENTS AND GROUNDWATER ELEVATIONS
(Data Provided by Orange County Water District)
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	TOP OF CASING ELEVATION (feet amsl)	MEASUREMENT DATE	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
18_TIC74	PRODUCT	210 - 705	200.75	7-Apr-92	61.70	139.05	
			200.75	9-Nov-92	72.70	128.05	-11.00
			200.75	30-Apr-93	62.30	138.45	10.40
			200.75	4-Nov-93	77.34	123.41	-15.04
			200.75	3-Nov-94	69.13	131.62	8.21
			200.75	31-May-95	69.20	131.55	-0.07
			200.75	6-Sep-95	72.90	127.85	-3.70
			200.75	1-Nov-95	66.60	134.15	6.30
			200.75	5-Feb-96	60.25	140.50	6.35
			200.75	1-May-96	68.50	132.25	-8.25
			200.75	1-Aug-96	73.21	127.54	-4.71
			200.75	28-Oct-96	76.47	124.28	-3.26
			200.75	4-Feb-97	59.82	140.93	16.65
			200.75	6-May-97	70.71	130.04	-10.89
			200.75	4-Aug-97	73.22	127.53	-2.51
			200.75	8-Oct-97	68.00	132.75	5.22
			200.75	30-Oct-97	65.95	134.80	2.05
			200.75	4-Feb-98	55.50	145.25	10.45
			200.75	7-May-98	56.60	144.15	-1.10
			200.75	29-Jun-98	57.40	143.35	-0.80
			200.75	3-Aug-98	58.20	142.55	-0.80
			200.75	26-Oct-98	55.30	145.45	2.90
			200.75	1-Feb-99	53.90	146.85	1.40
			200.75	6-May-99	57.90	142.85	-4.00
			200.75	28-Jul-99	59.02	141.73	-1.12
			200.75	5-May-00	67.27	133.48	-8.25
			200.75	31-Jul-00	66.93	133.82	0.34
			200.75	2-Nov-00	64.40	136.35	2.53
			200.75	4-Feb-01	58.62	142.13	5.78
			200.75	1-May-01	58.32	142.43	0.30
			200.75	10-Jul-01	58.00	142.75	0.32
			200.75	4-Aug-01	58.73	142.02	-0.73

Table A.1C
WATER LEVEL MEASURMENTS AND GROUNDWATER ELEVATIONS
(Data Provided by Orange County Water District)
MCAS El Toro

STATION ID	WELL TYPE	SCREEN INTERVAL (feet bgs)	TOP OF CASING ELEVATION (feet amsl)	MEASUREMENT DATE	DEPTH TO WATER (from TOC)	WATER ELEVATION (feet amsl)	CHANGE FROM PRIOR ELEVATION (feet)
IRWD-78	PRODUCT	240 - 680	60.50	2-Nov-93	84.00	-23.50	
			60.50	18-Feb-94	35.50	25.00	48.50
			60.50	23-Feb-94	34.00	26.50	1.50
			60.50	31-Mar-94	53.30	7.20	-19.30
			60.50	30-Apr-94	52.20	8.30	1.10
			60.50	18-Aug-94	68.20	-7.70	-16.00
			60.50	28-Mar-95	2.00	58.50	66.20
			60.50	27-Jun-95	70.00	-9.50	-68.00
			60.50	15-Aug-95	246.40	-185.90	-176.40
			60.50	5-Sep-95	246.10	-185.60	0.30
			60.50	3-Oct-95	250.00	-189.50	-3.90
			60.50	31-Oct-95	39.50	21.00	210.50
			60.50	5-Dec-95	20.50	40.00	19.00
			60.50	29-Dec-95	10.60	49.90	9.90
			60.50	24-Jan-96	14.75	45.75	-4.15
			60.50	5-Mar-96	14.70	45.80	0.05
			60.50	3-Apr-96	229.00	-168.50	-214.30
			60.50	3-May-96	252.00	-191.50	-23.00
			60.50	5-Aug-96	232.00	-171.50	20.00
			60.50	9-Oct-96	91.50	-31.00	140.50
			60.50	8-Nov-96	73.80	-13.30	17.70
			60.50	27-Nov-96	41.00	19.50	32.80
			60.50	13-Jan-97	14.00	46.50	27.00
			60.50	30-Jan-97	10.70	49.80	3.30
			60.50	27-Feb-97	19.00	41.50	-8.30
			60.50	30-May-97	217.20	-156.70	-198.20
			60.50	30-Jun-97	215.80	-155.30	1.40
			60.50	31-Jul-97	217.70	-157.20	-1.90
			60.50	4-Nov-97	233.90	-173.40	-16.20
			60.50	26-Feb-98	29.10	31.40	204.80
			60.50	1-Apr-98	7.00	53.50	22.10
			60.50	16-Jun-98	43.50	17.00	-36.50
			60.50	14-Jul-98	52.00	8.50	-8.50
			60.50	31-Aug-98	60.00	0.50	-8.00
			60.50	30-Sep-98	54.20	6.30	5.80
			60.50	30-Oct-98	24.70	35.80	29.50
			60.50	1-Feb-99	53.90	6.60	-29.20
			60.50	6-May-99	57.90	2.60	-4.00
			60.50	28-Jul-99	59.02	1.48	-1.12
			60.50	5-May-00	67.27	-6.77	-8.25
			60.50	30-Jun-00	198.00	-137.50	-130.73
			60.50	31-Oct-00	64.20	-3.70	133.80
			60.50	30-Nov-00	59.00	1.50	5.20
			60.50	28-Dec-00	47.50	13.00	11.50
			60.50	31-Jan-01	19.40	41.10	28.10
			60.50	29-Mar-01	173.50	-113.00	-154.10
			60.50	1-May-01	190.00	-129.50	-16.50
			60.50	1-Jun-01	184.00	-123.50	6.00
			60.50	1-Jul-01	196.40	-135.90	-12.40

Notes:
bgs - below ground surface
amsl - above mean sea level
TOC - top of casing



LEGEND

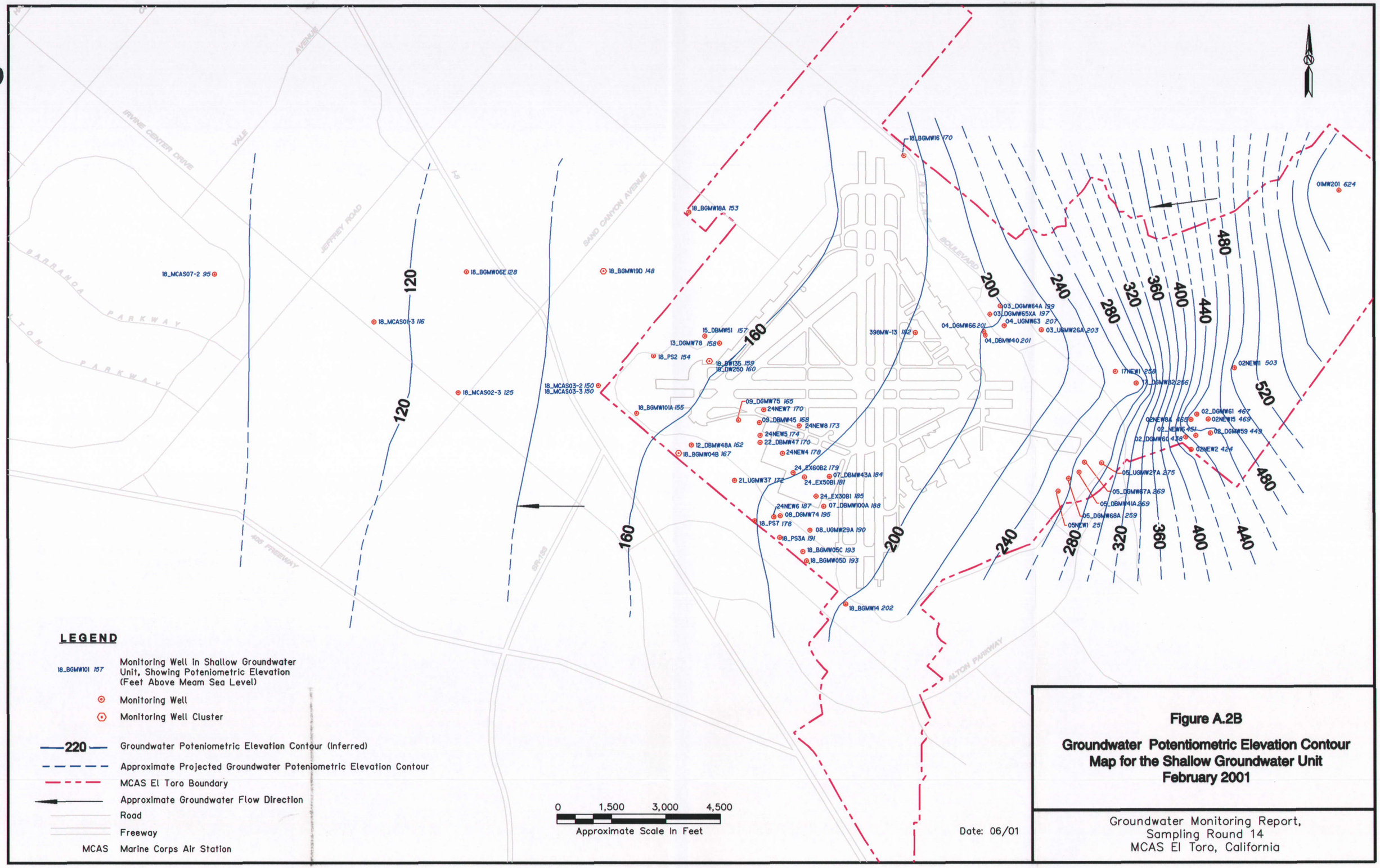
Monitoring Well in Shallow Groundwater Unit Showing Potentiometric Elevation (Feet Above Mean Sea Level)

- Monitoring Well
- Monitoring Well Cluster
- Multiport Monitoring Well
- MCAS El Toro Boundary
- 100 Groundwater Potentiometric Elevation Contour (Inferred)
- Approximate Projected Groundwater Potentiometric Elevation Contour (Inferred)
- Approximate Groundwater Flow Direction
- Road
- Freeway
- MCAS Marine Corps Air Station

Figure A.2A

Groundwater Potentiometric Elevation Contour Map for the Shallow Groundwater Unit September 2001

Groundwater Monitoring Report,
Sampling Round 14
MCAS El Toro, California



LEGEND

18_BGMW101 157 — Monitoring Well in Shallow Groundwater Unit, Showing Poteniometric Elevation (Feet Above Meam Sea Level)

Monitoring Well

Monitoring Well Cluster

220 — Groundwater Poteniometric Elevation Contour (Inferred)

Approximate Projected Groundwater Poteniometric Elevation Contour

MCAS El Toro Boundary

Approximate Groundwater Flow Direction

Road

Freeway

MCAS Marine Corps Air Station

Figure A.2B

Groundwater Potentiometric Elevation Contour Map for the Shallow Groundwater Unit February 2001

Groundwater Monitoring Report,
Sampling Round 14
MCAS El Toro, California

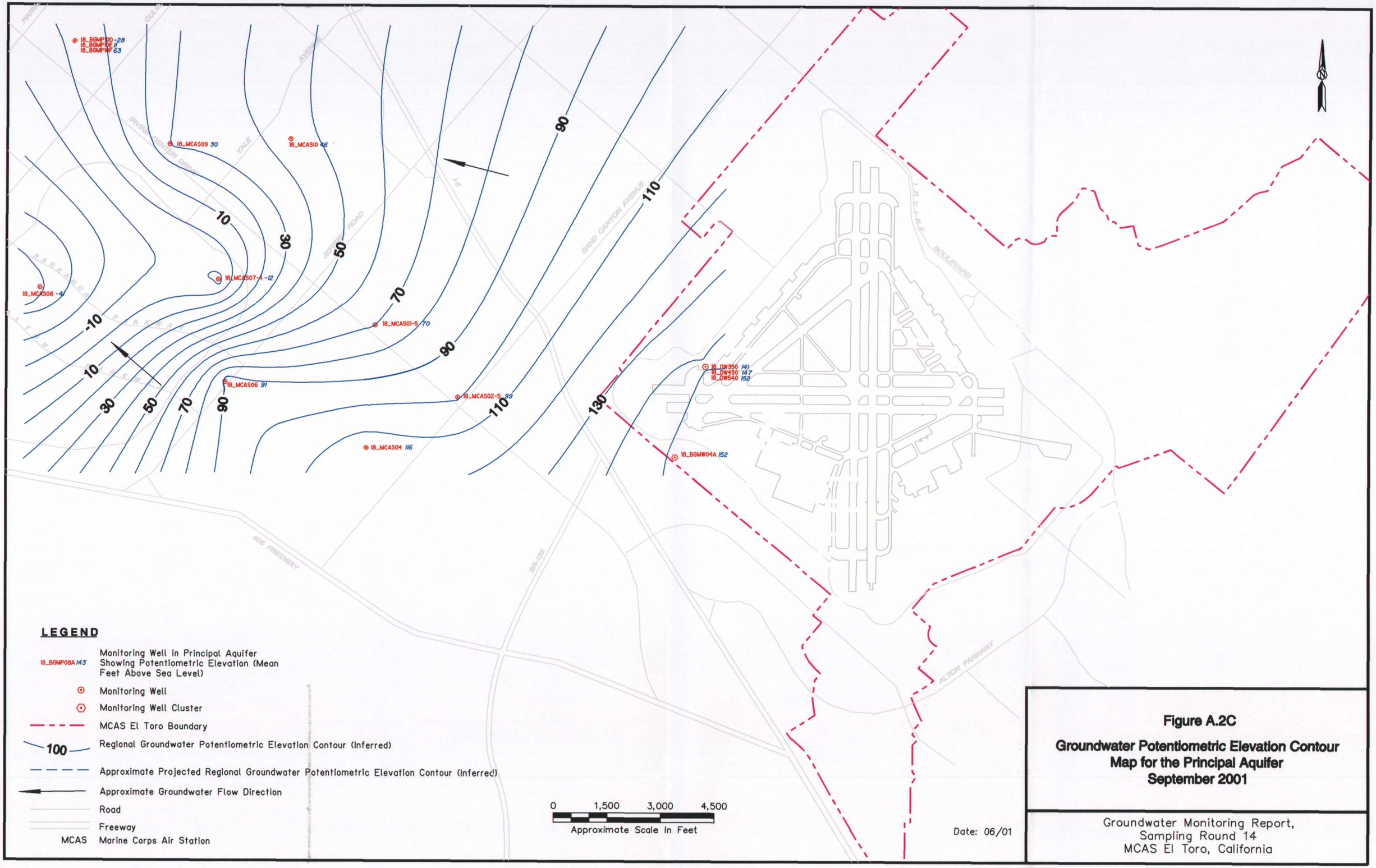


Figure A.2C

Groundwater Potentiometric Elevation Contour Map for the Principal Aquifer September 2001

Groundwater Monitoring Report,
Sampling Round 14
MCAS El Toro, California

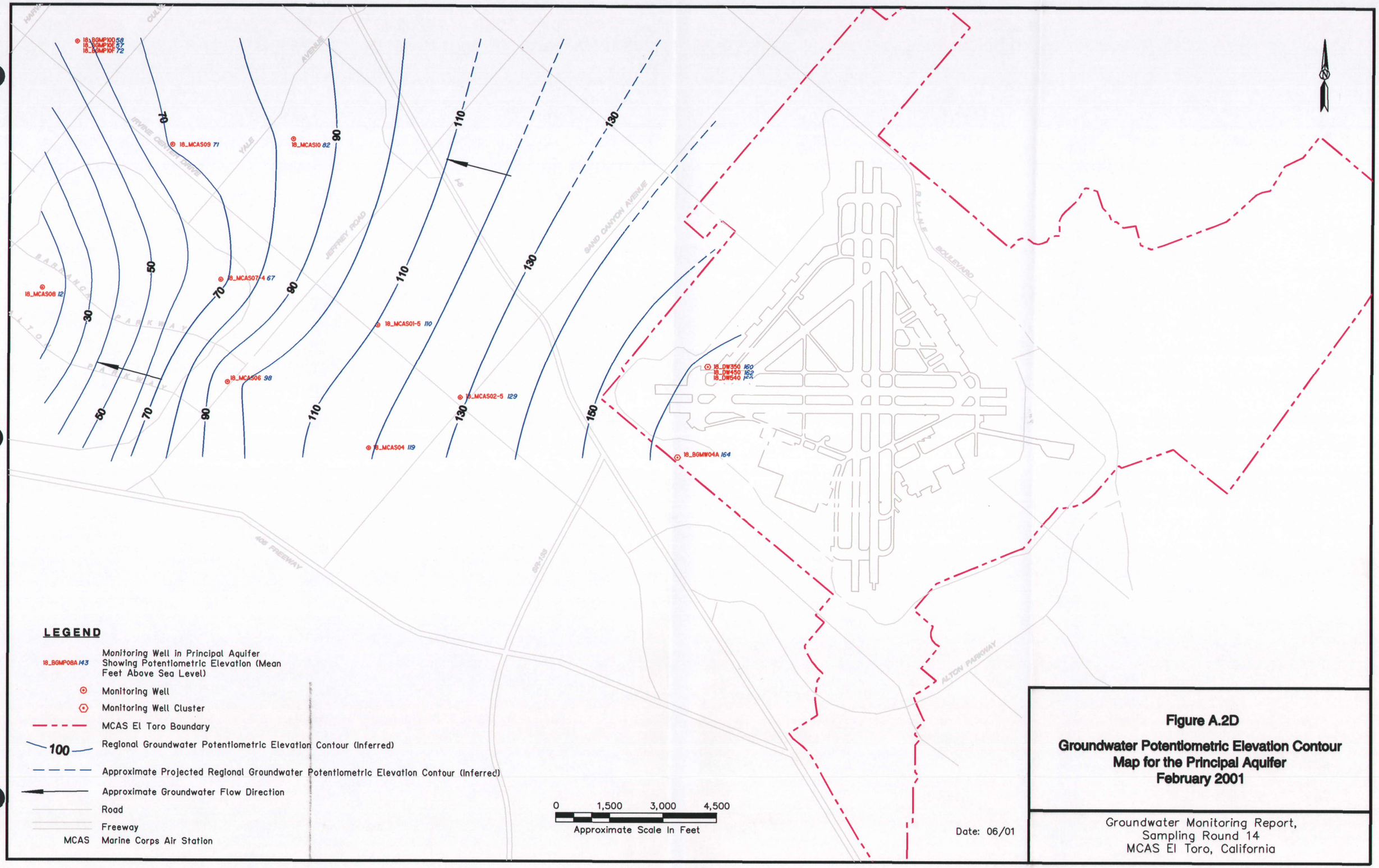


Figure A.2D

Groundwater Potentiometric Elevation Contour Map for the Principal Aquifer February 2001

Groundwater Monitoring Report,
Sampling Round 14
MCAS El Toro, California

Figure A.3A

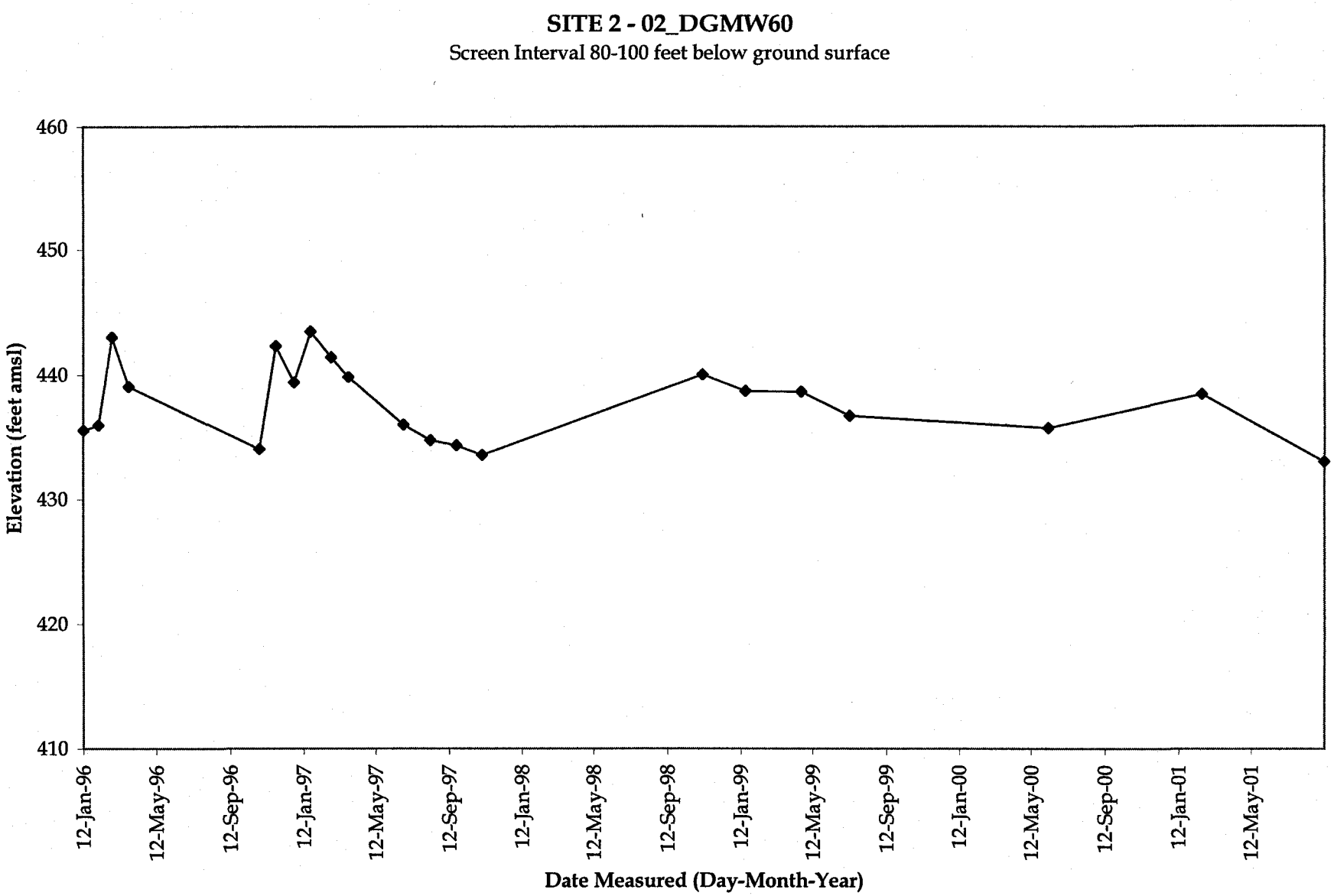

SITE 2 - 02_DGMW60
Screen Interval 80-100 feet below ground surface
460
450
440
430
420
410
Elevation (feet amsl)
12-Jan-96
12-May-96
12-Sep-96
12-Jan-97
12-May-97
12-Sep-97
12-Jan-98
12-May-98
12-Sep-98
12-Jan-99
12-May-99
12-Sep-99
12-Jan-00
12-May-00
12-Sep-00
12-Jan-01
12-May-01
Date Measured (Day-Month-Year)

Figure A.3B

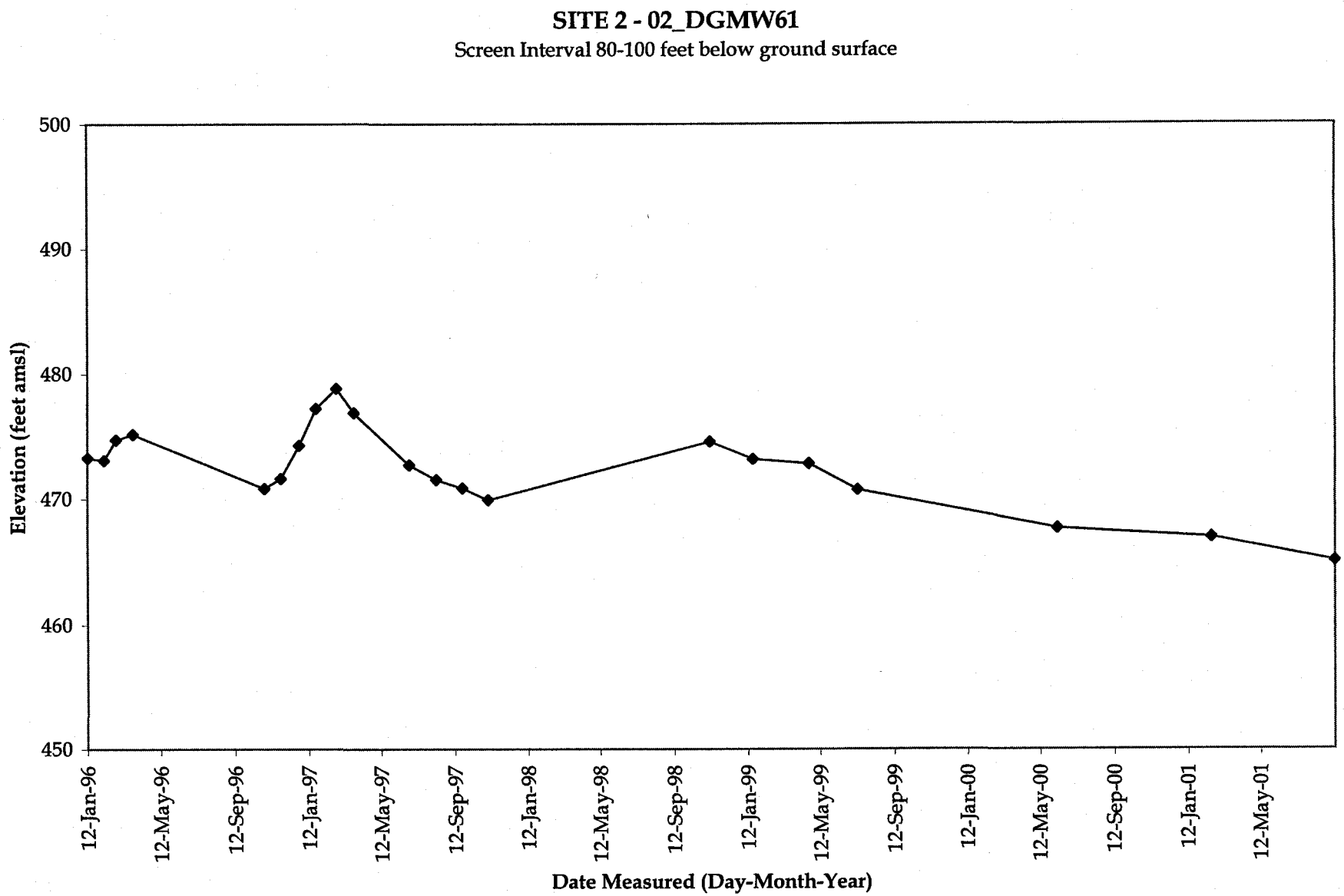

SITE 2 - 02_DGMW61
Screen Interval 80-100 feet below ground surface
Elevation (feet amsl)
500
490
480
470
460
450
12-Jan-96
12-May-96
12-Sep-96
12-Jan-97
12-May-97
12-Sep-97
12-Jan-98
12-May-98
12-Sep-98
12-Jan-99
12-May-99
12-Sep-99
12-Jan-00
12-May-00
12-Sep-00
12-Jan-01
12-May-01
Date Measured (Day-Month-Year)

Figure A.3C

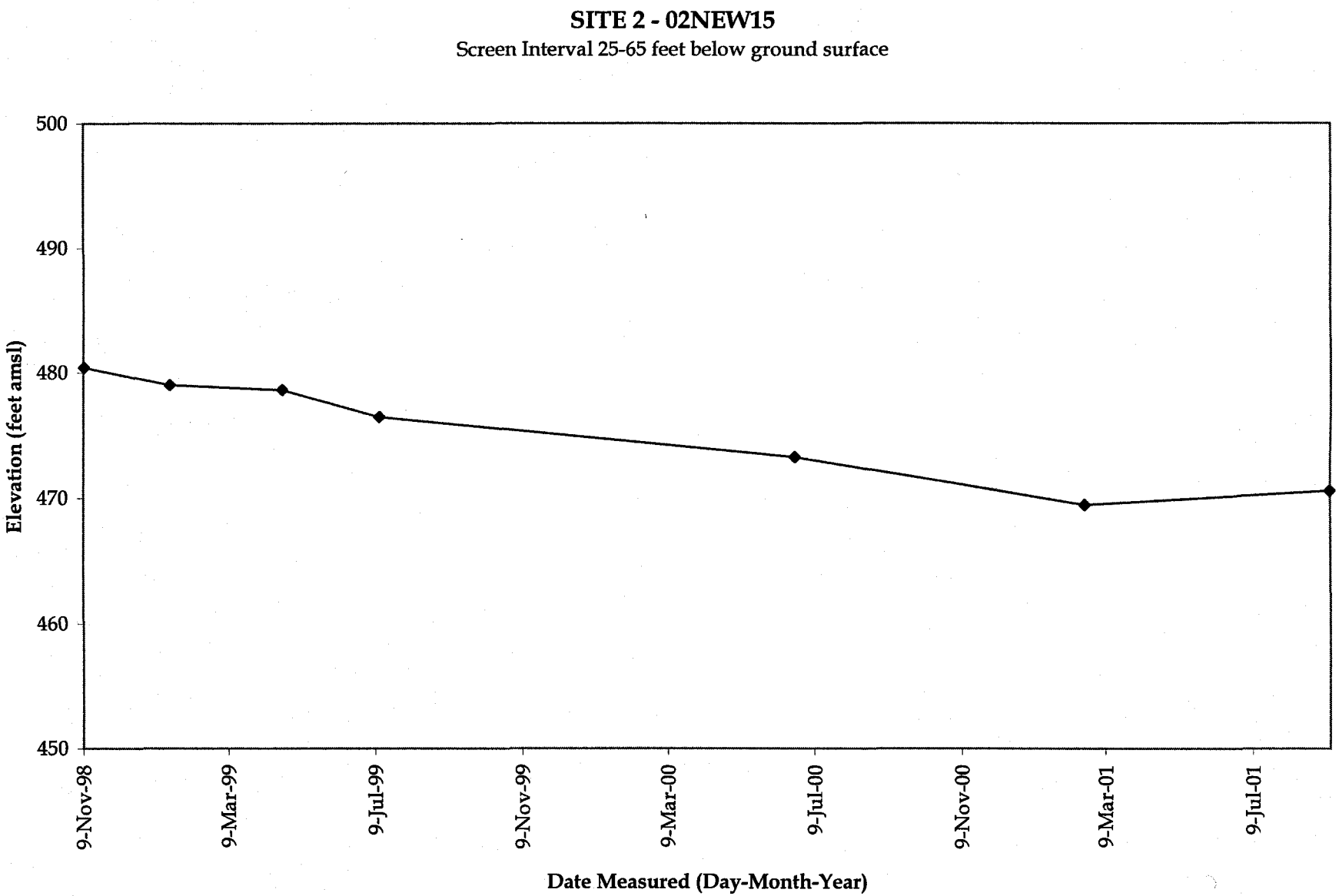

SITE 2 - 02NEW15
Screen Interval 25-65 feet below ground surface
500
490
480
470
460
450
Elevation (feet amsl)
9-Nov-98
9-Mar-99
9-Jul-99
9-Nov-99
9-Mar-00
9-Jul-00
9-Nov-00
9-Mar-01
9-Jul-01
Date Measured (Day-Month-Year)

Figure A.3D

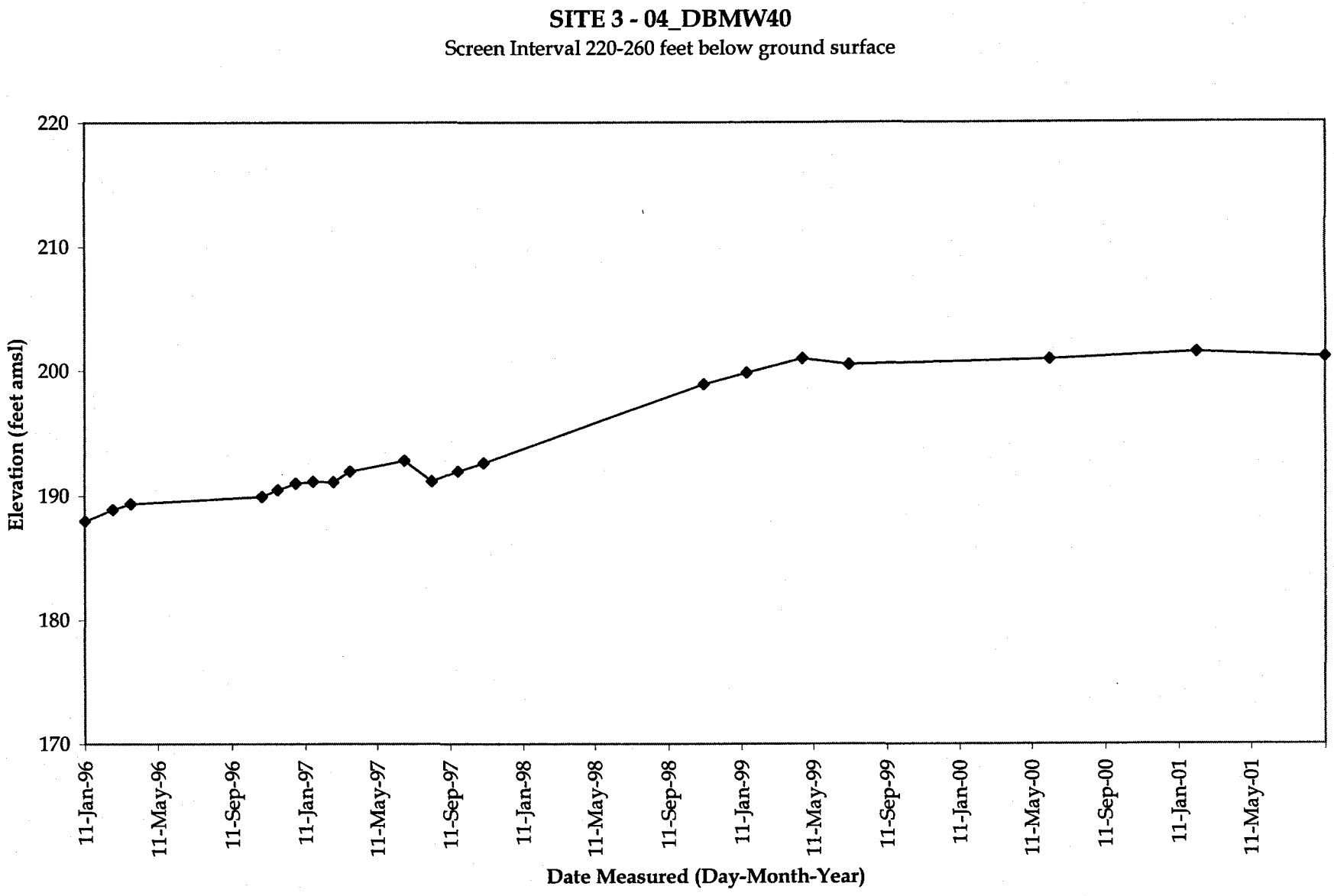

SITE 3 - 04_DBMW40
Screen Interval 220-260 feet below ground surface
Elevation (feet amsl)
220
210
200
190
180
170
11-Jan-96
11-May-96
11-Sep-96
11-Jan-97
11-May-97
11-Sep-97
11-Jan-98
11-May-98
11-Sep-98
11-Jan-99
11-May-99
11-Sep-99
11-Jan-00
11-May-00
11-Sep-00
11-Jan-01
11-May-01
Date Measured (Day-Month-Year)

Figure A.3E

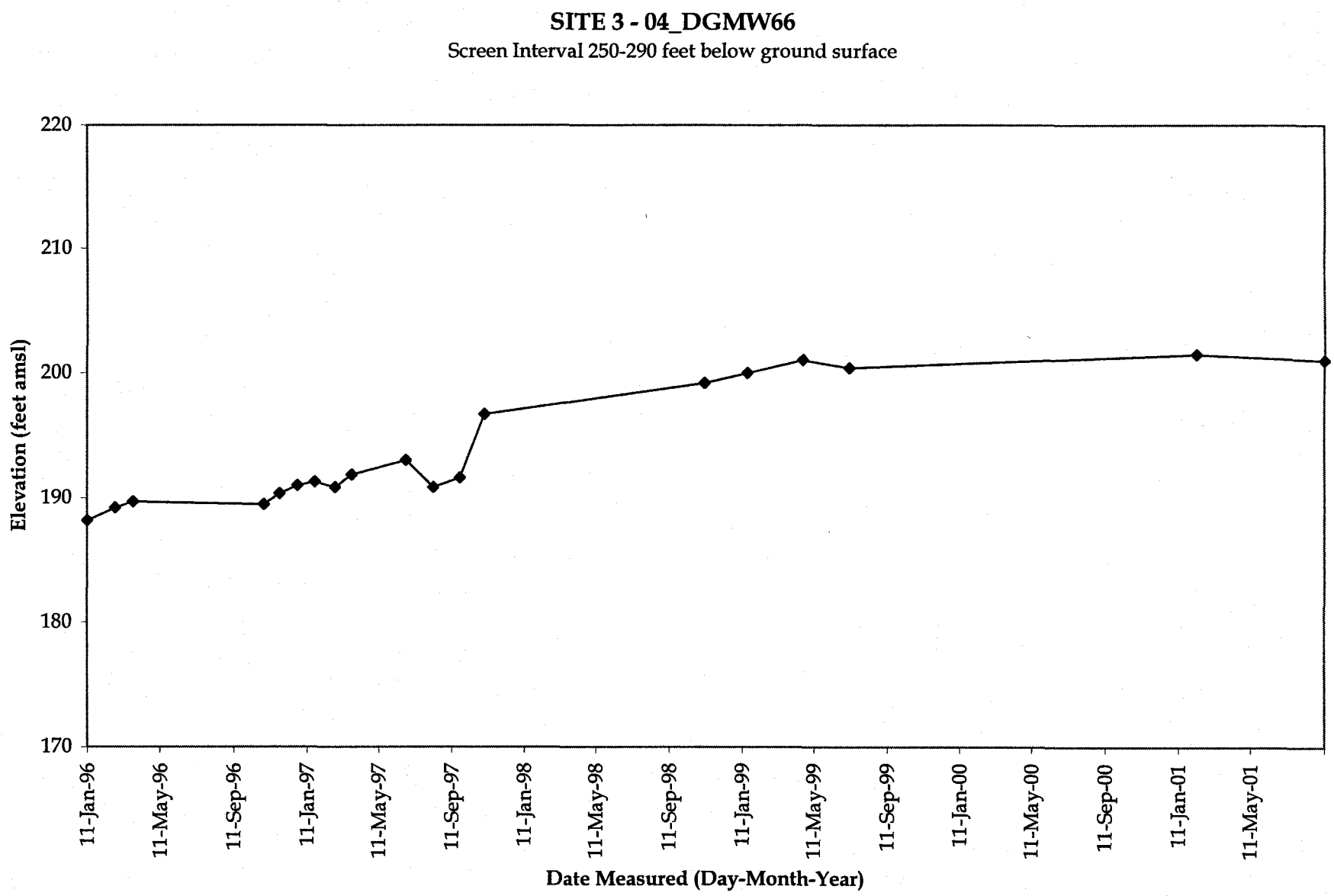

SITE 3 - 04_DGMW66
Screen Interval 250-290 feet below ground surface
Elevation (feet amsl)
220
210
200
190
180
170
11-Jan-96
11-May-96
11-Sep-96
11-Jan-97
11-May-97
11-Sep-97
11-Jan-98
11-May-98
11-Sep-98
11-Jan-99
11-May-99
11-Sep-99
11-Jan-00
11-May-00
11-Sep-00
11-Jan-01
11-May-01
Date Measured (Day-Month-Year)

Figure A.3F

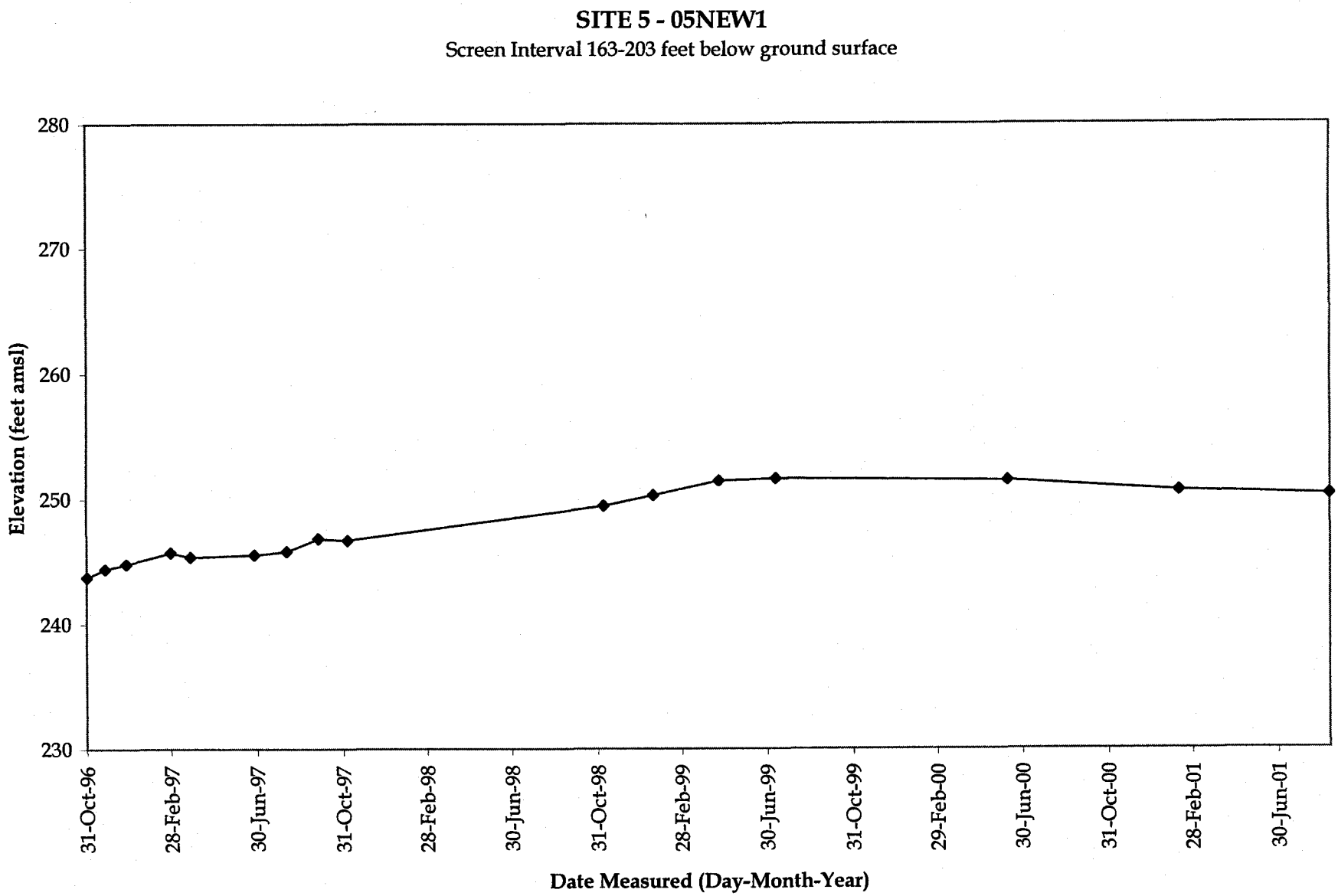

SITE 5 - 05NEW1
Screen Interval 163-203 feet below ground surface
Elevation (feet amsl)
280
270
260
250
240
230
31-Oct-96
28-Feb-97
30-Jun-97
31-Oct-97
28-Feb-98
30-Jun-98
31-Oct-98
28-Feb-99
30-Jun-99
31-Oct-99
29-Feb-00
30-Jun-00
31-Oct-00
28-Feb-01
30-Jun-01
Date Measured (Day-Month-Year)

Figure A.3G

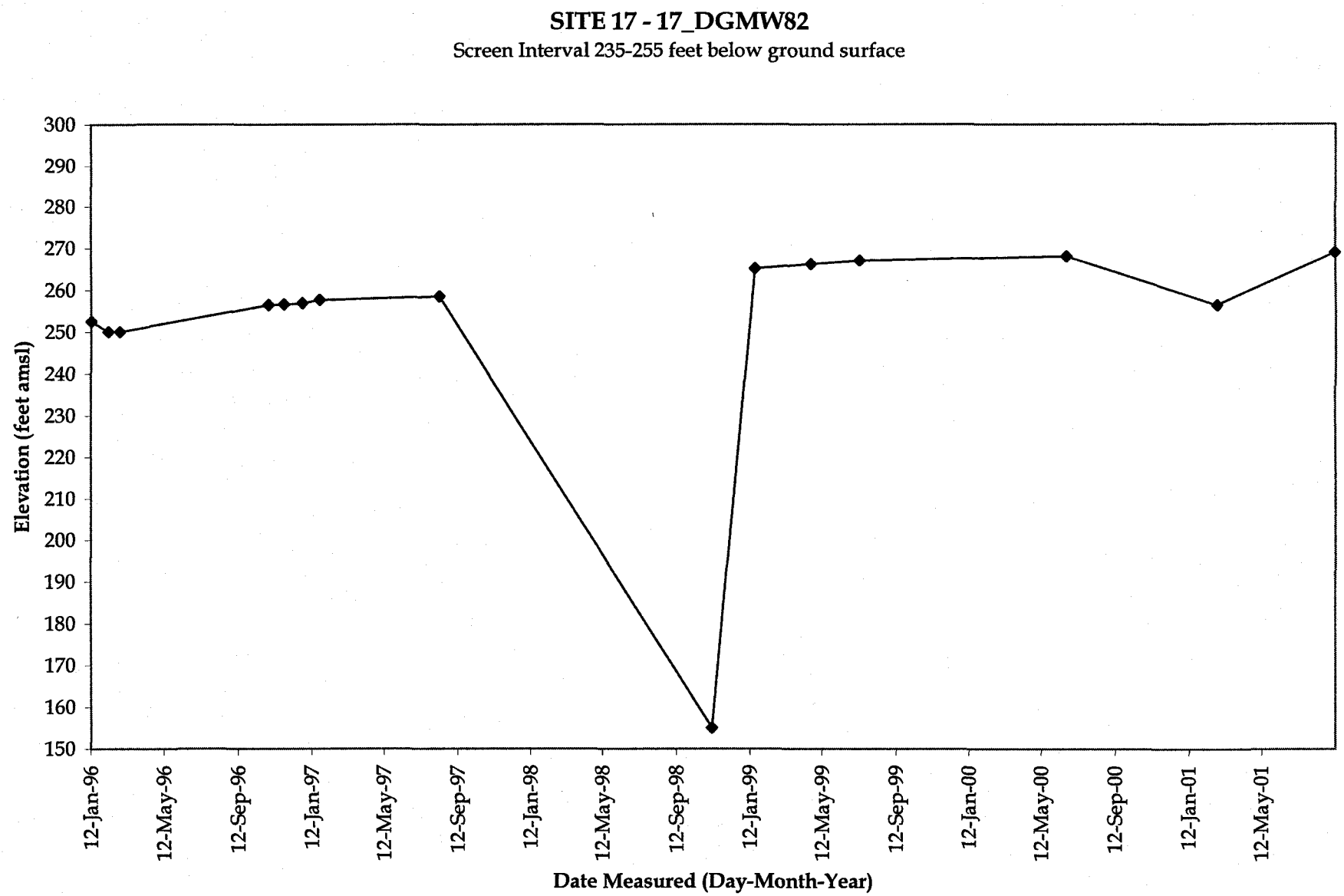

SITE 17 - 17_DGMW82
Screen Interval 235-255 feet below ground surface
Elevation (feet amsl)
300
290
280
270
260
250
240
230
220
210
200
190
180
170
160
150
12-Jan-96
12-May-96
12-Sep-96
12-Jan-97
12-May-97
12-Sep-97
12-Jan-98
12-May-98
12-Sep-98
12-Jan-99
12-May-99
12-Sep-99
12-Jan-00
12-May-00
12-Sep-00
12-Jan-01
12-May-01
Date Measured (Day-Month-Year)

Figure A.3H

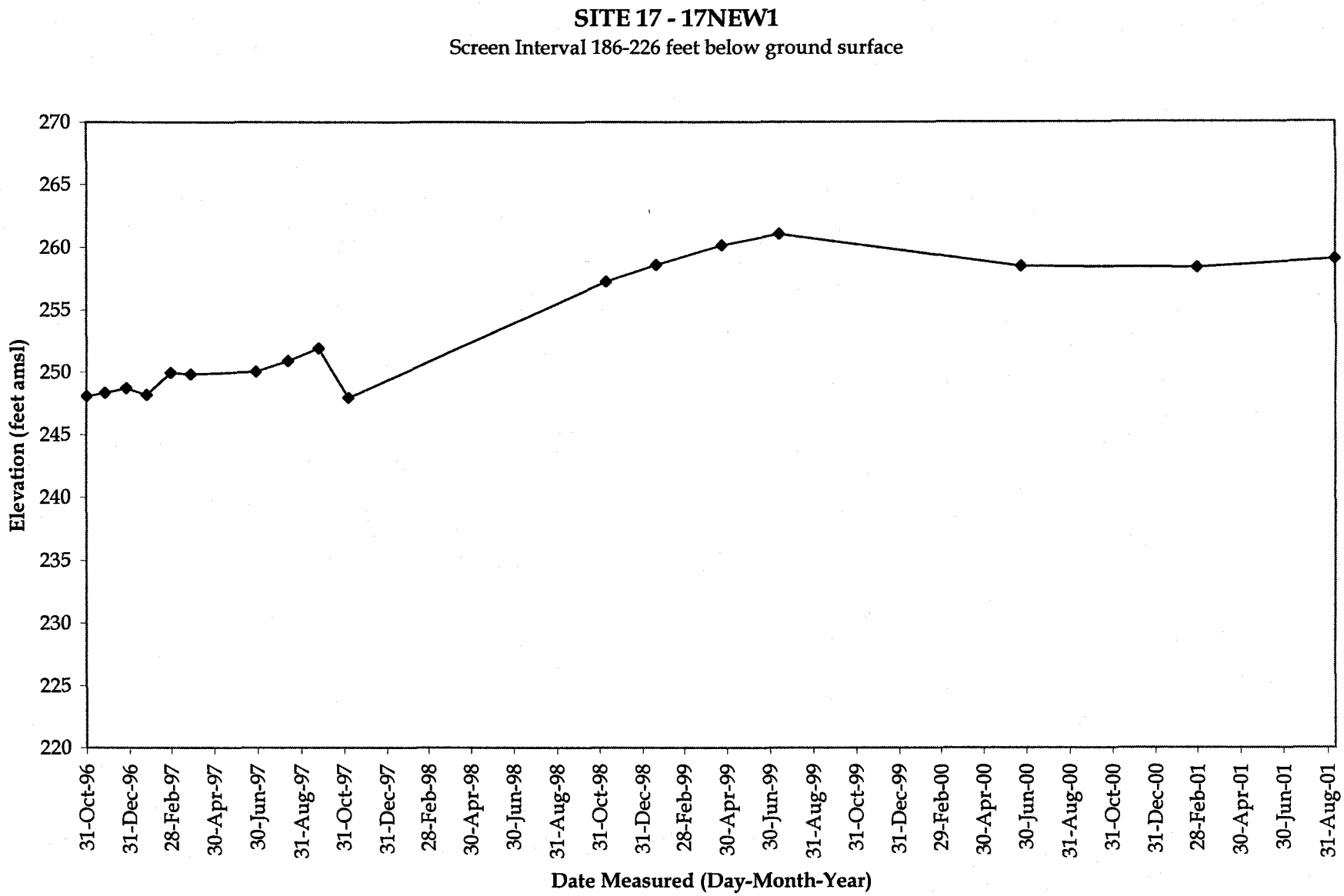

SITE 17 - 17NEW1
Screen Interval 186-226 feet below ground surface
Elevation (feet amsl)
270
265
260
255
250
245
240
235
230
225
220
31-Oct-96
31-Dec-96
28-Feb-97
30-Apr-97
30-Jun-97
31-Aug-97
31-Oct-97
31-Dec-97
28-Feb-98
30-Apr-98
30-Jun-98
31-Aug-98
31-Oct-98
31-Dec-98
28-Feb-99
30-Apr-99
30-Jun-99
31-Aug-99
31-Oct-99
31-Dec-99
29-Feb-00
30-Apr-00
30-Jun-00
31-Aug-00
31-Oct-00
31-Dec-00
28-Feb-01
30-Apr-01
30-Jun-01
31-Aug-01
Date Measured (Day-Month-Year)

Figure A.3I

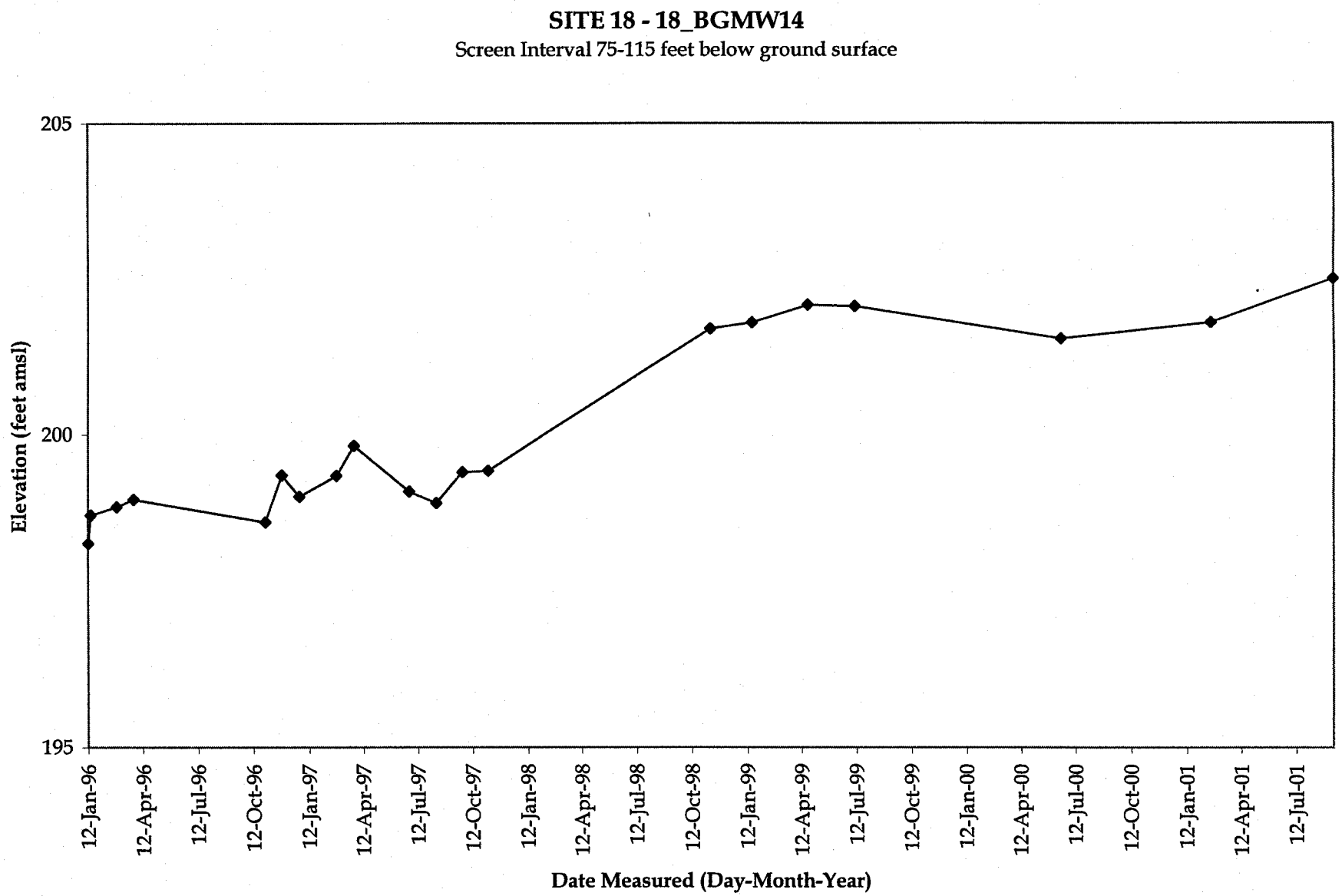

SITE 18 - 18_BGMW14
Screen Interval 75-115 feet below ground surface
205
200
195
Elevation (feet amsl)
12-Jan-96
12-Apr-96
12-Jul-96
12-Oct-96
12-Jan-97
12-Apr-97
12-Jul-97
12-Oct-97
12-Jan-98
12-Apr-98
12-Jul-98
12-Oct-98
12-Jan-99
12-Apr-99
12-Jul-99
12-Oct-99
12-Jan-00
12-Apr-00
12-Jul-00
12-Oct-00
12-Jan-01
12-Apr-01
12-Jul-01
Date Measured (Day-Month-Year)

Figure A.3J

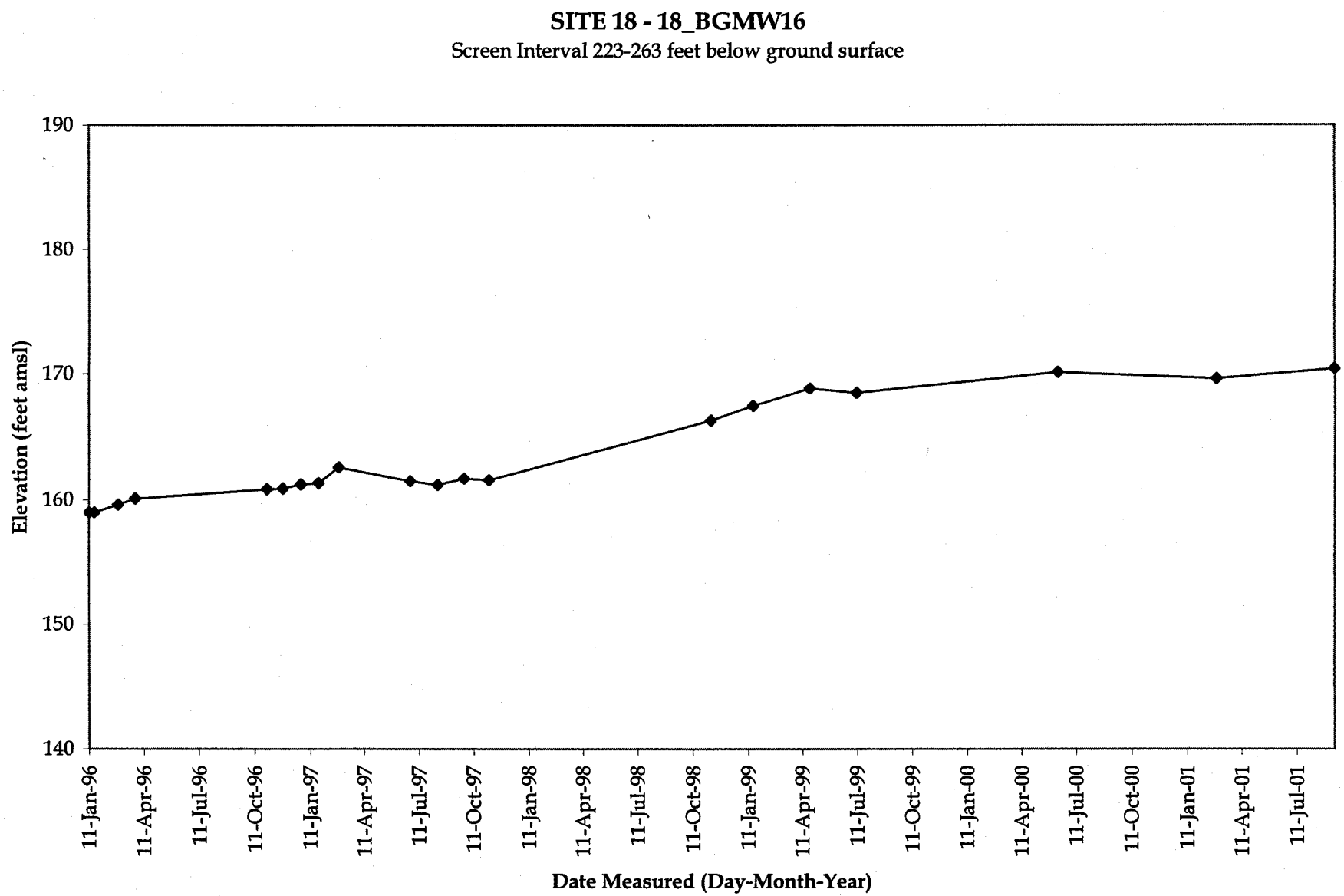

SITE 18 - 18_BGMW16
Screen Interval 223-263 feet below ground surface
190
180
170
160
150
140
Elevation (feet amsl)
11-Jan-96
11-Apr-96
11-Jul-96
11-Oct-96
11-Jan-97
11-Apr-97
11-Jul-97
11-Oct-97
11-Jan-98
11-Apr-98
11-Jul-98
11-Oct-98
11-Jan-99
11-Apr-99
11-Jul-99
11-Oct-99
11-Jan-00
11-Apr-00
11-Jul-00
11-Oct-00
11-Jan-01
11-Apr-01
11-Jul-01
Date Measured (Day-Month-Year)

Figure A.3K

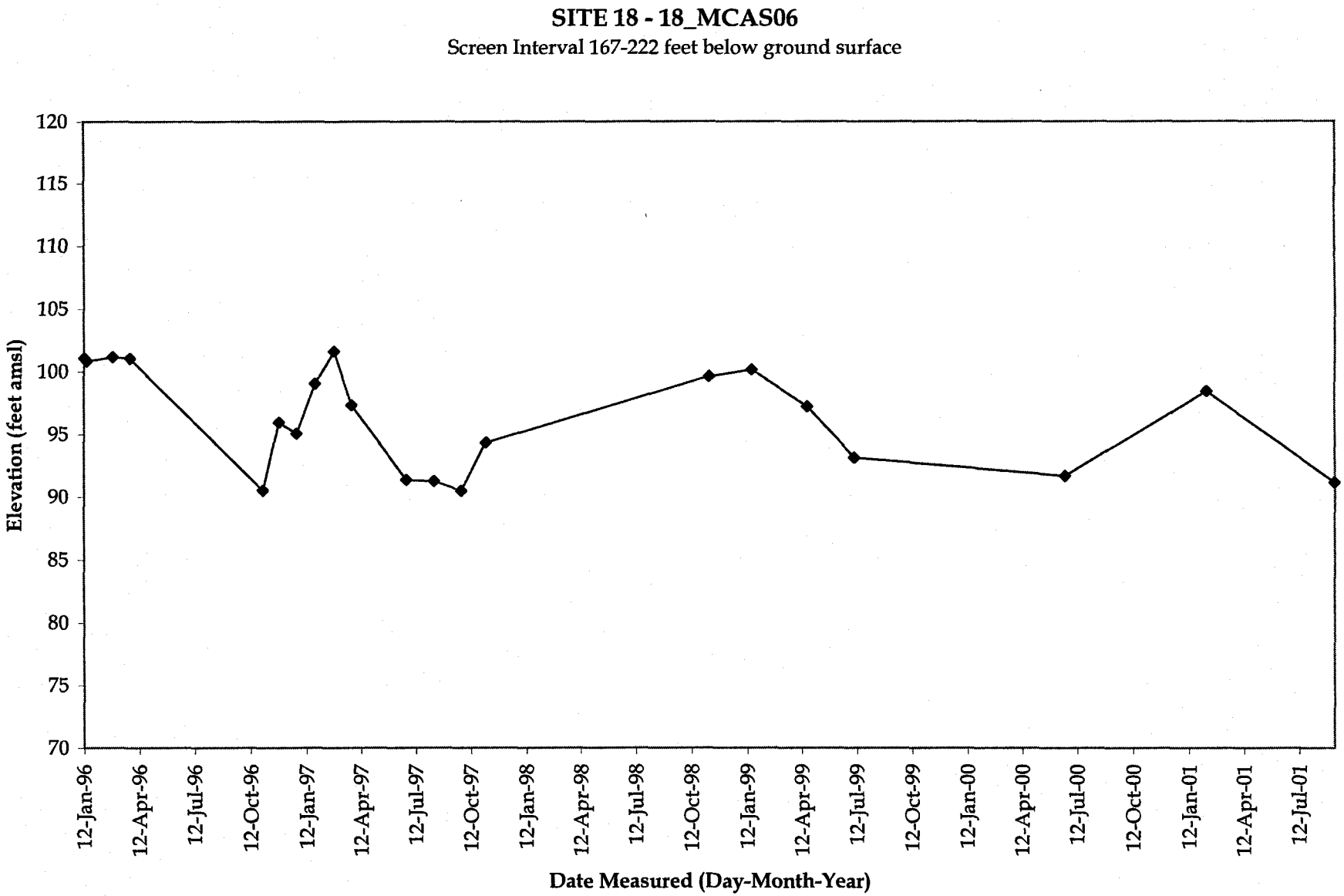

SITE 18 - 18_MCAS06
Screen Interval 167-222 feet below ground surface
Elevation (feet amsl)
120
115
110
105
100
95
90
85
80
75
70
12-Jan-96
12-Apr-96
12-Jul-96
12-Oct-96
12-Jan-97
12-Apr-97
12-Jul-97
12-Oct-97
12-Jan-98
12-Apr-98
12-Jul-98
12-Oct-98
12-Jan-99
12-Apr-99
12-Jul-99
12-Oct-99
12-Jan-00
12-Apr-00
12-Jul-00
12-Oct-00
12-Jan-01
12-Apr-01
12-Jul-01
Date Measured (Day-Month-Year)

Figure A.3L

Site 18 - 18_MCAS08

Screen Interval 392-410 feet below ground surface

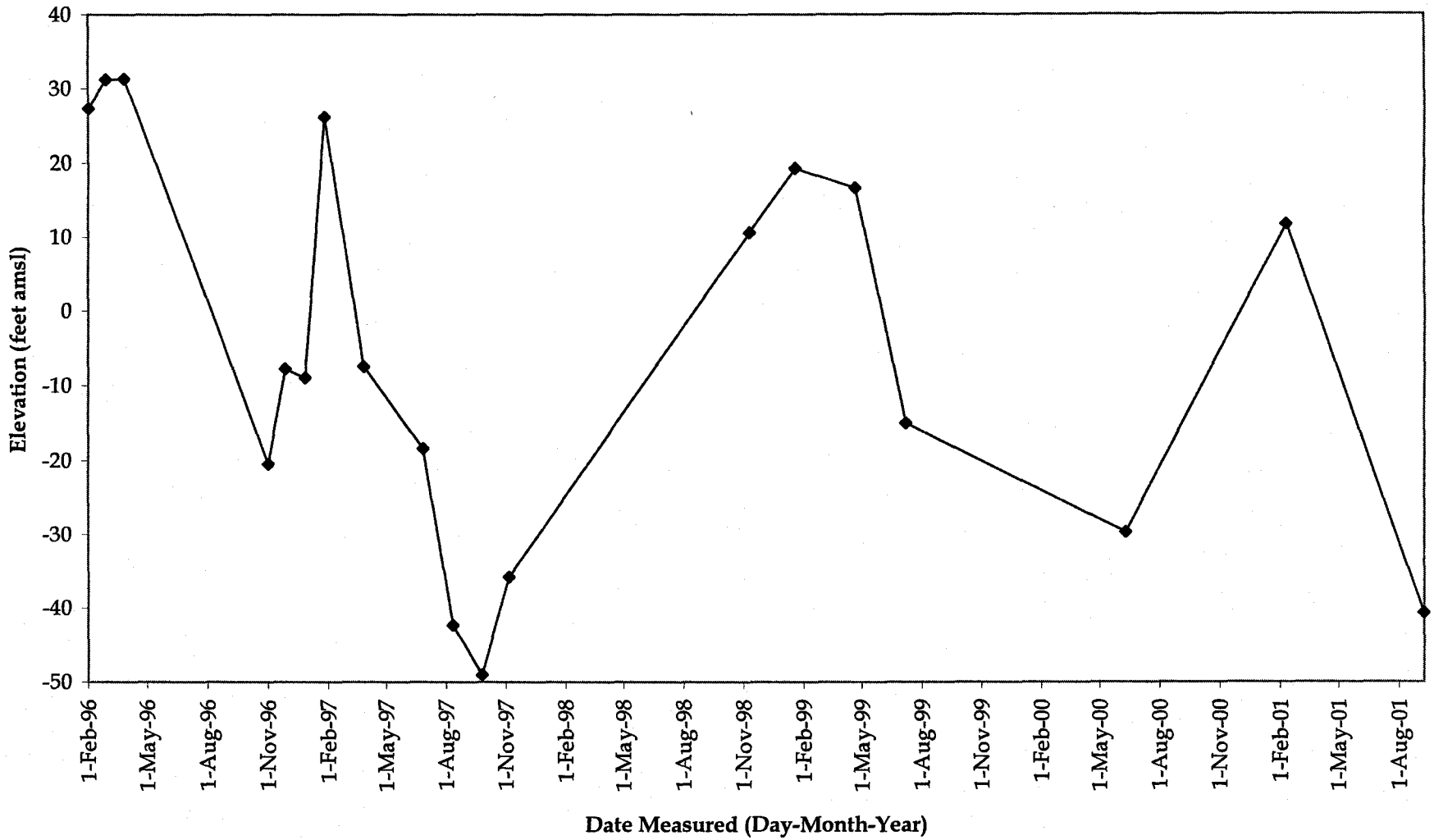


Figure A.3M

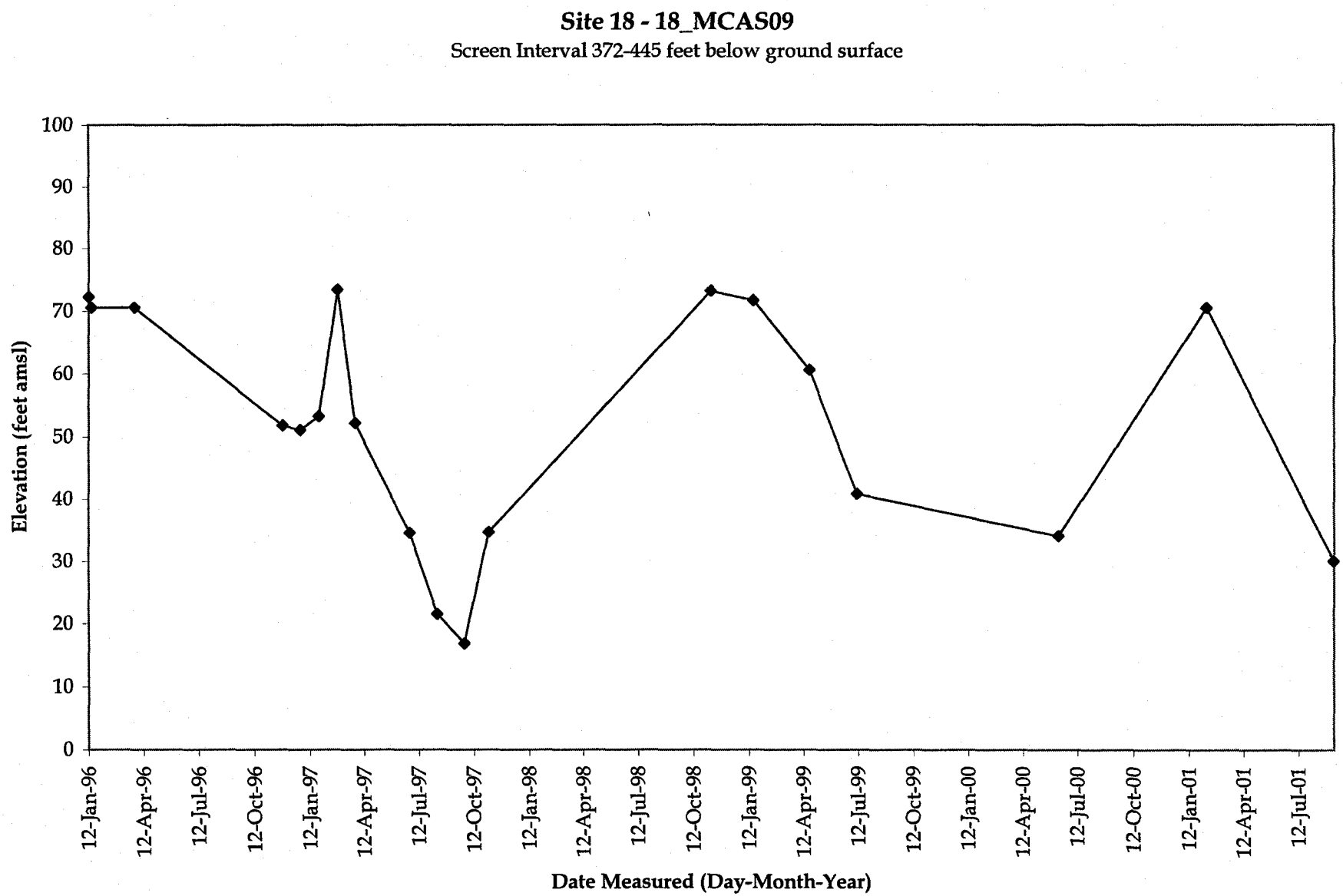

Site 18 - 18_MCAS09
Screen Interval 372-445 feet below ground surface
Elevation (feet amsl)
100
90
80
70
60
50
40
30
20
10
0
12-Jan-96
12-Apr-96
12-Jul-96
12-Oct-96
12-Jan-97
12-Apr-97
12-Jul-97
12-Oct-97
12-Jan-98
12-Apr-98
12-Jul-98
12-Oct-98
12-Jan-99
12-Apr-99
12-Jul-99
12-Oct-99
12-Jan-00
12-Apr-00
12-Jul-00
12-Oct-00
12-Jan-01
12-Apr-01
12-Jul-01
Date Measured (Day-Month-Year)

Figure A.3N

SITE 24 - 18_PS2

Screen Interval 103-133 feet below ground surface

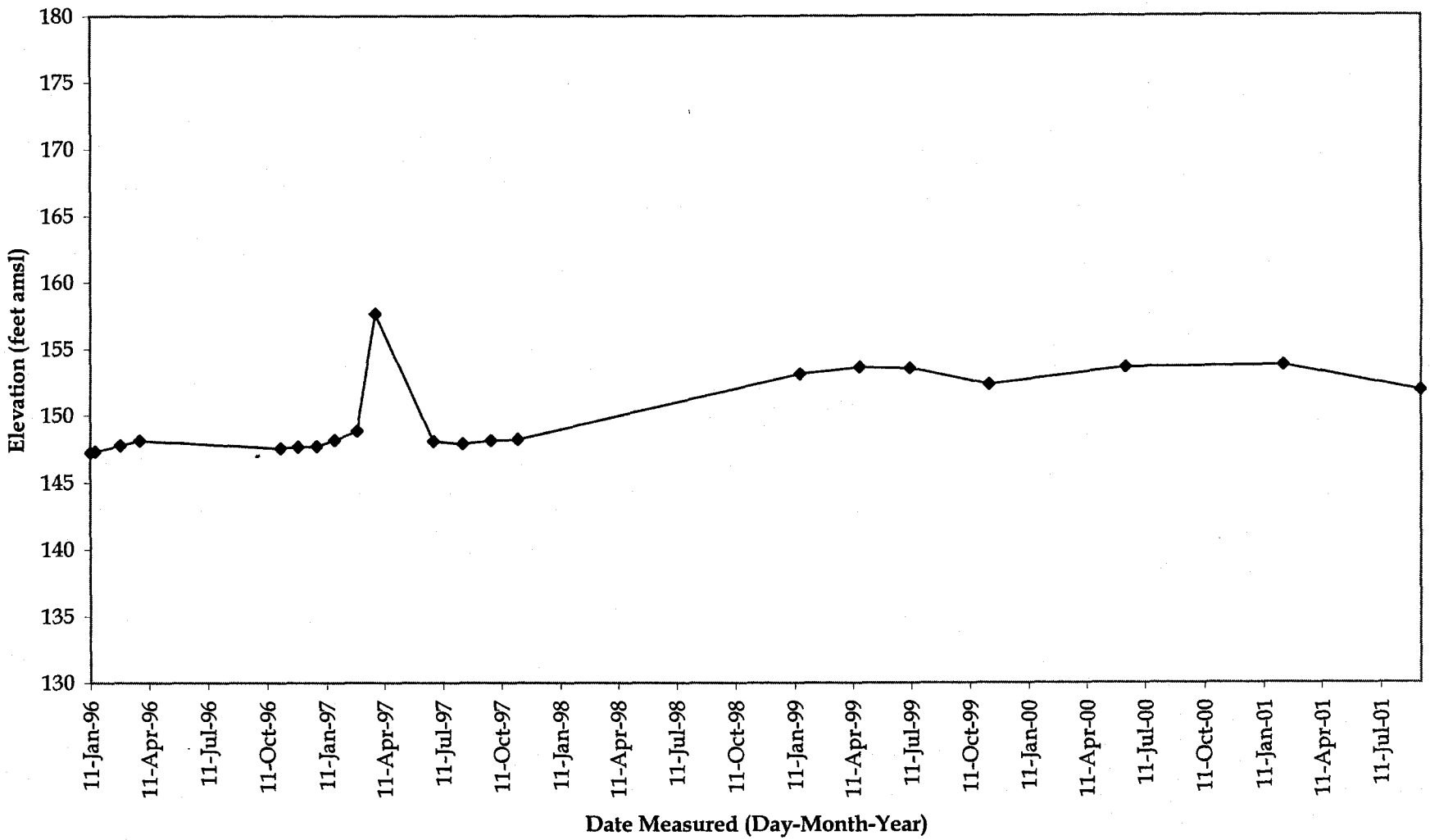


Figure A.3O

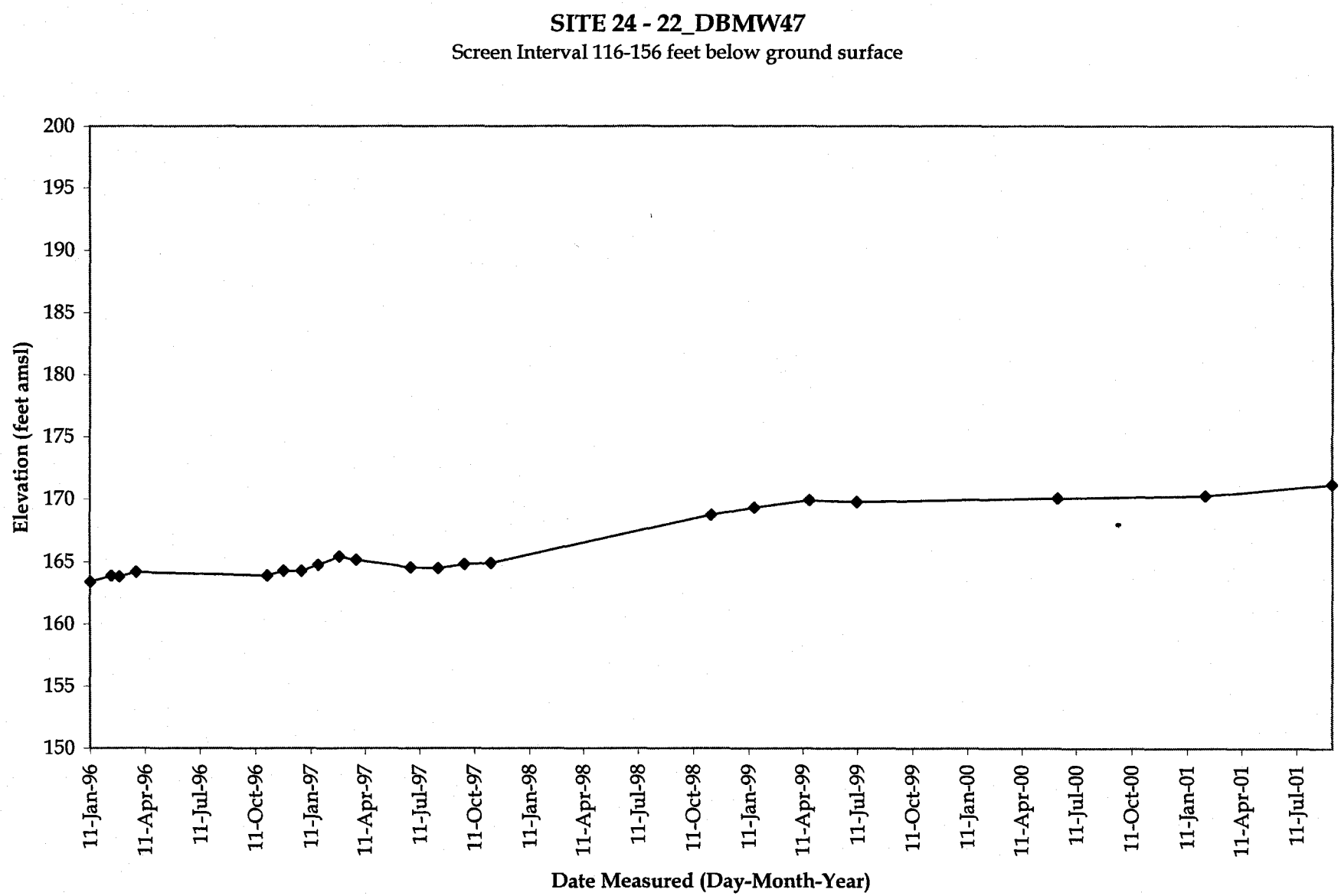

SITE 24 - 22_DBMW47
Screen Interval 116-156 feet below ground surface
Elevation (feet amsl)
200
195
190
185
180
175
170
165
160
155
150
11-Jan-96
11-Apr-96
11-Jul-96
11-Oct-96
11-Jan-97
11-Apr-97
11-Jul-97
11-Oct-97
11-Jan-98
11-Apr-98
11-Jul-98
11-Oct-98
11-Jan-99
11-Apr-99
11-Jul-99
11-Oct-99
11-Jan-00
11-Apr-00
11-Jul-00
11-Oct-00
11-Jan-01
11-Apr-01
11-Jul-01
Date Measured (Day-Month-Year)

Figure A.3P

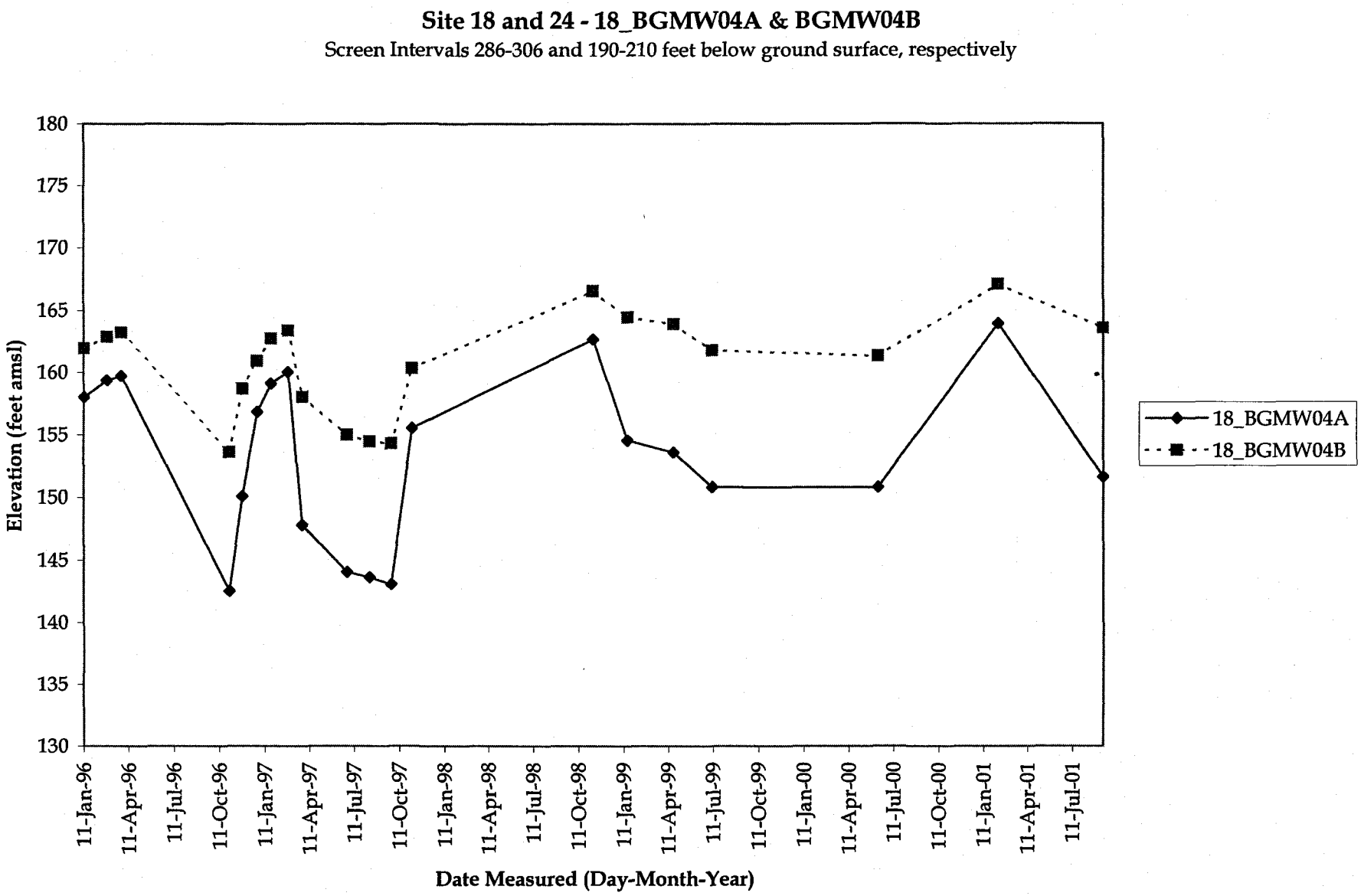

Site 18 and 24 - 18_BGMW04A & BGMW04B
Screen Intervals 286-306 and 190-210 feet below ground surface, respectively
Elevation (feet amsl)
180
175
170
165
160
155
150
145
140
135
130
11-Jan-96
11-Apr-96
11-Jul-96
11-Oct-96
11-Jan-97
11-Apr-97
11-Jul-97
11-Oct-97
11-Jan-98
11-Apr-98
11-Jul-98
11-Oct-98
11-Jan-99
11-Apr-99
11-Jul-99
11-Oct-99
11-Jan-00
11-Apr-00
11-Jul-00
11-Oct-00
11-Jan-01
11-Apr-01
11-Jul-01
Date Measured (Day-Month-Year)
18_BGMW04A
18_BGMW04B

Figure A.3Q

Site 18 and 24 - 18_DW135, DW250, DW350, DW450, DW540

Screen Intervals 115-135, 215-250, 310-350, 420-450, and 490-540 feet below ground surface, respectively

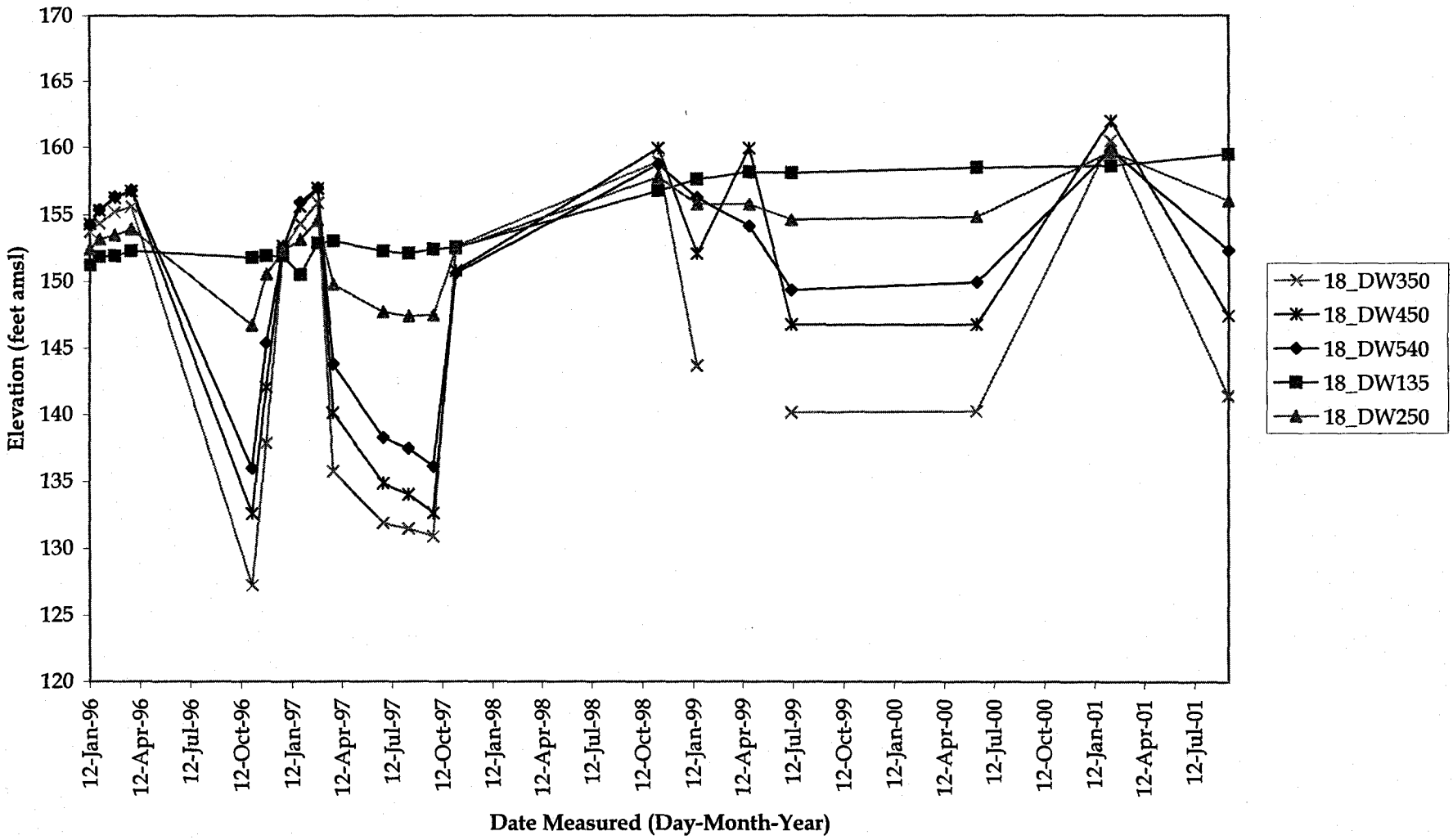


Figure A.3R

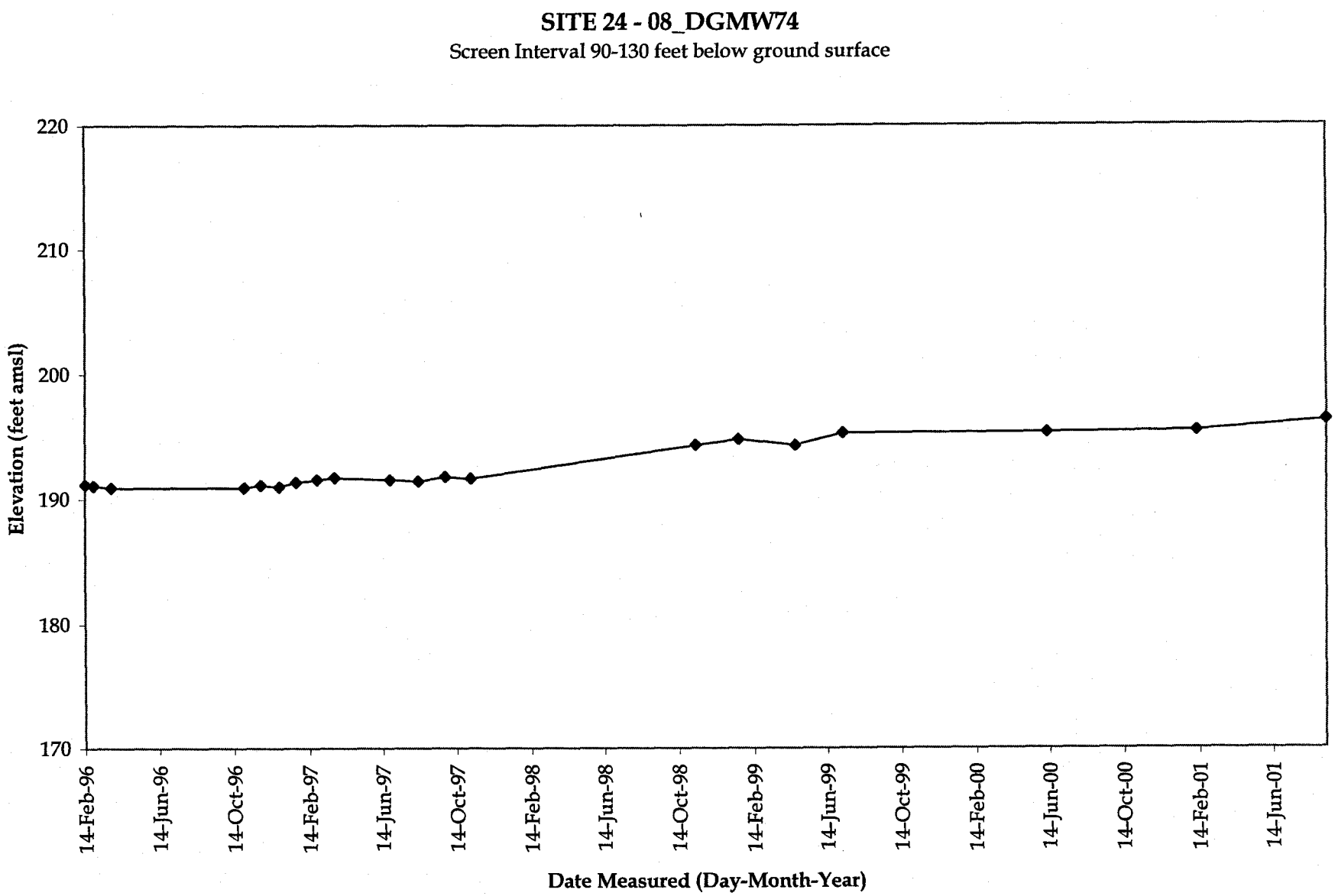

SITE 24 - 08_DGMW74
Screen Interval 90-130 feet below ground surface
Elevation (feet amsl)
220
210
200
190
180
170
14-Feb-96
14-Jun-96
14-Oct-96
14-Feb-97
14-Jun-97
14-Oct-97
14-Feb-98
14-Jun-98
14-Oct-98
14-Feb-99
14-Jun-99
14-Oct-99
14-Feb-00
14-Jun-00
14-Oct-00
14-Feb-01
14-Jun-01
Date Measured (Day-Month-Year)

Figure A.3S

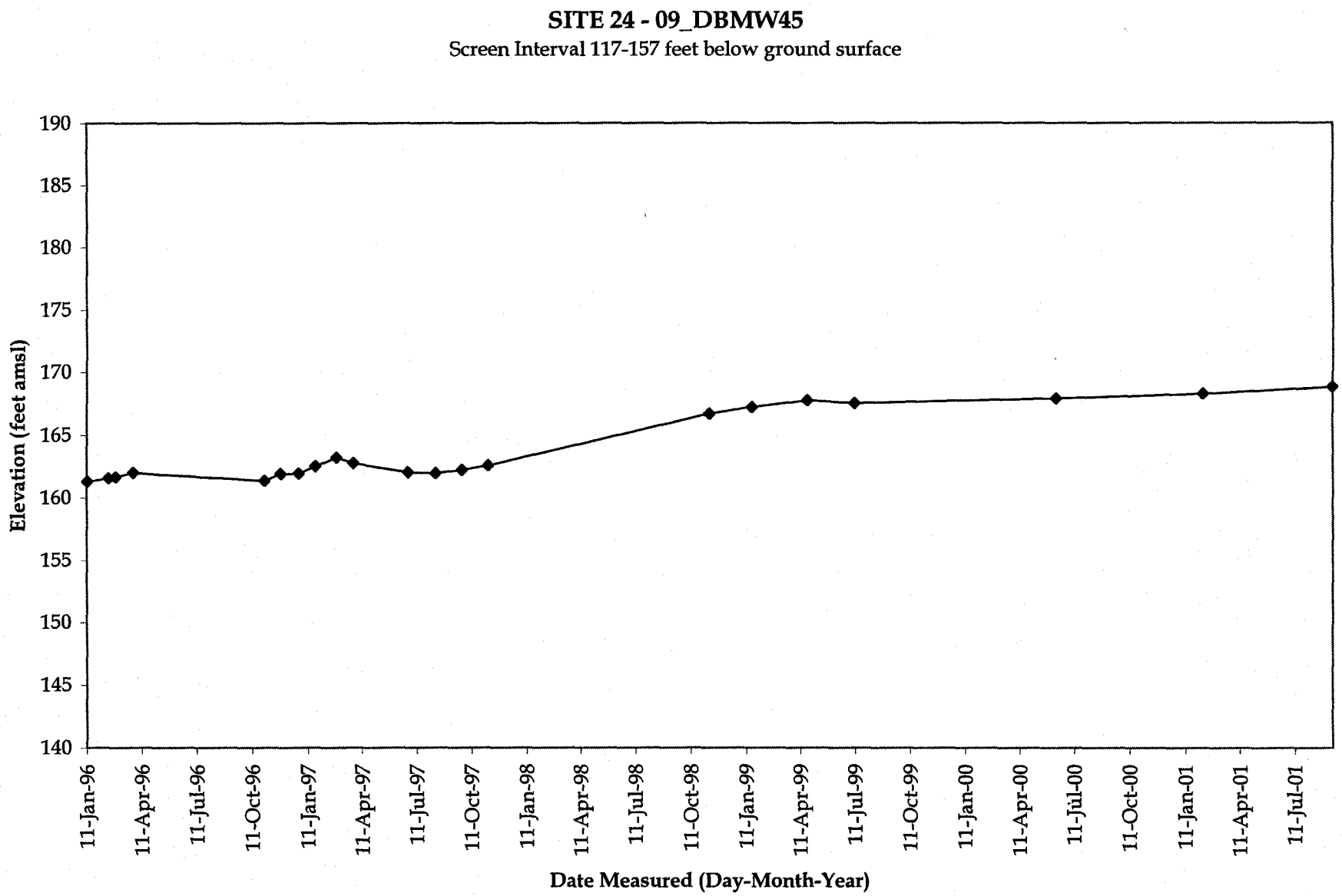

SITE 24 - 09_DBMW45
Screen Interval 117-157 feet below ground surface
Elevation (feet amsl)
190
185
180
175
170
165
160
155
150
145
140
11-Jan-96
11-Apr-96
11-Jul-96
11-Oct-96
11-Jan-97
11-Apr-97
11-Jul-97
11-Oct-97
11-Jan-98
11-Apr-98
11-Jul-98
11-Oct-98
11-Jan-99
11-Apr-99
11-Jul-99
11-Oct-99
11-Jan-00
11-Apr-00
11-Jul-00
11-Oct-00
11-Jan-01
11-Apr-01
11-Jul-01
Date Measured (Day-Month-Year)

Figure A.3T

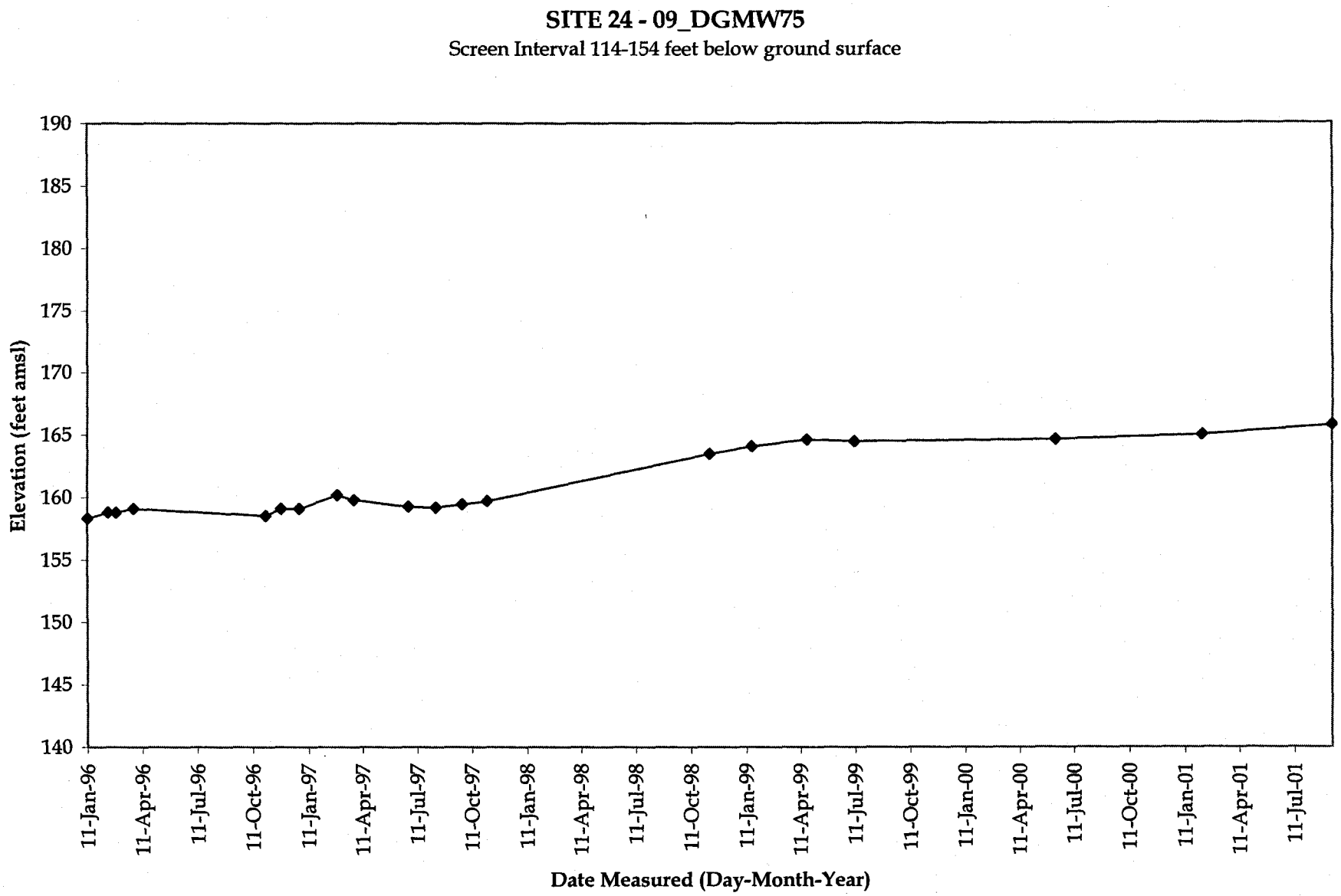

SITE 24 - 09_DGMW75
Screen Interval 114-154 feet below ground surface
Elevation (feet amsl)
190
185
180
175
170
165
160
155
150
145
140
11-Jan-96
11-Apr-96
11-Jul-96
11-Oct-96
11-Jan-97
11-Apr-97
11-Jul-97
11-Oct-97
11-Jan-98
11-Apr-98
11-Jul-98
11-Oct-98
11-Jan-99
11-Apr-99
11-Jul-99
11-Oct-99
11-Jan-00
11-Apr-00
11-Jul-00
11-Oct-00
11-Jan-01
11-Apr-01
11-Jul-01
Date Measured (Day-Month-Year)

Figure A.3U

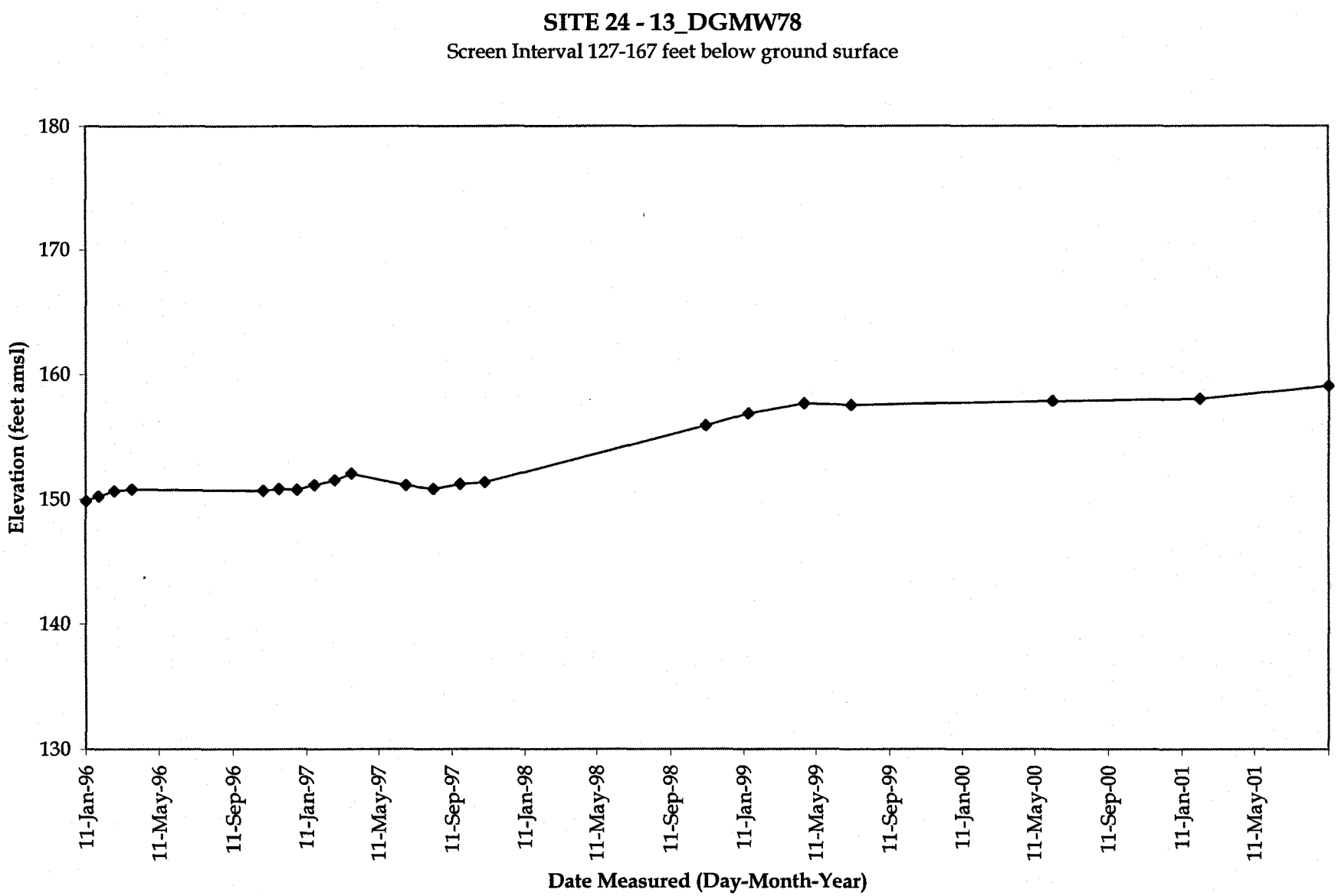
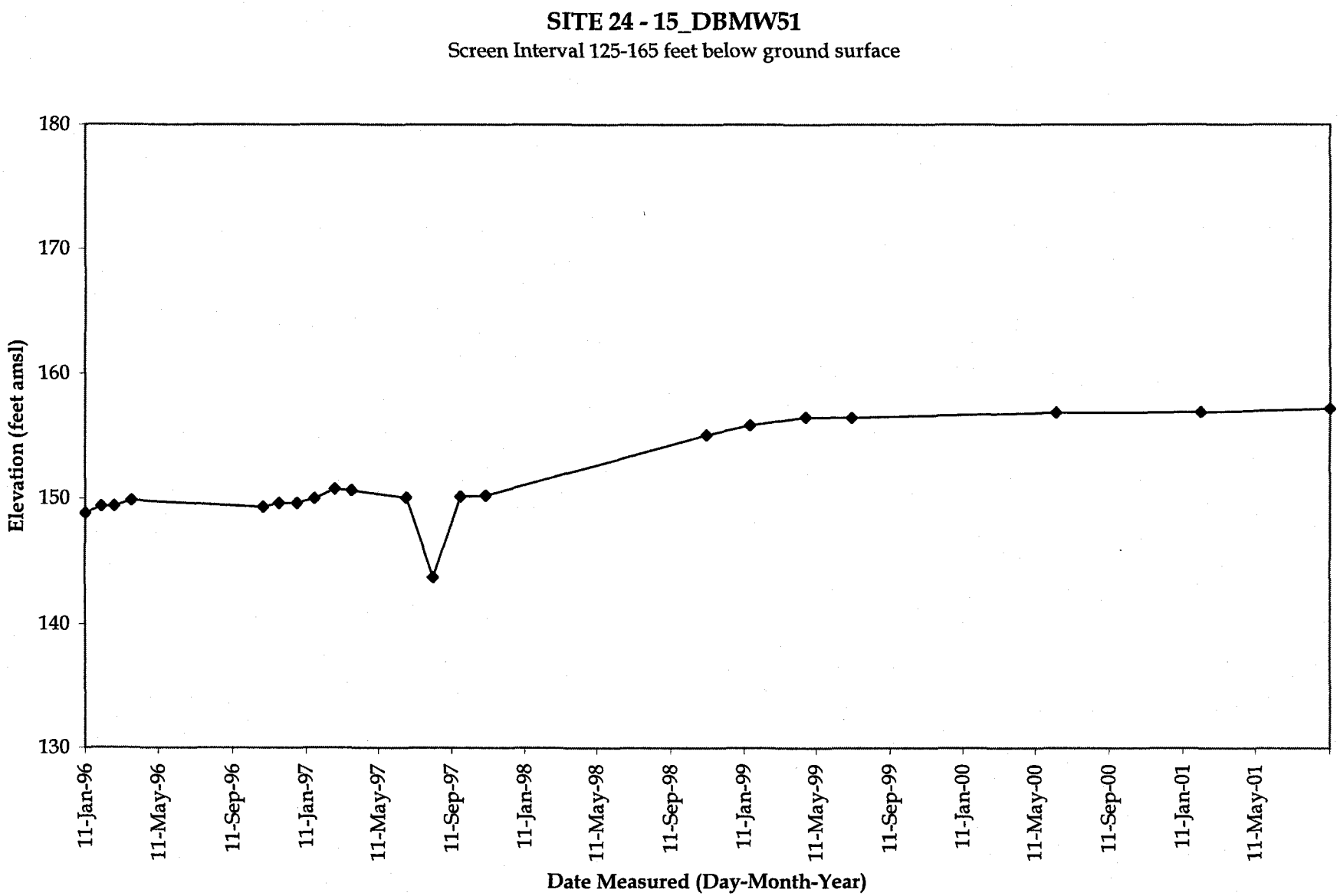

SITE 24 - 13_DGMW78
Screen Interval 127-167 feet below ground surface
Elevation (feet amsl)
180
170
160
150
140
130
11-Jan-96
11-May-96
11-Sep-96
11-Jan-97
11-May-97
11-Sep-97
11-Jan-98
11-May-98
11-Sep-98
11-Jan-99
11-May-99
11-Sep-99
11-Jan-00
11-May-00
11-Sep-00
11-Jan-01
11-May-01
Date Measured (Day-Month-Year)

Figure A.3V


SITE 24 - 15_DBMW51
Screen Interval 125-165 feet below ground surface
Elevation (feet amsl)
180
170
160
150
140
130
11-Jan-96
11-May-96
11-Sep-96
11-Jan-97
11-May-97
11-Sep-97
11-Jan-98
11-May-98
11-Sep-98
11-Jan-99
11-May-99
11-Sep-99
11-Jan-00
11-May-00
11-Sep-00
11-Jan-01
11-May-01
Date Measured (Day-Month-Year)