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REPORT

QUARTERLY GROUNDWATER MONITORING RESULTS, NOVEMBER-DECEMBER 1999

AT THE

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TABLE OF CONTENTS

PAGE

LIST OF TABLES ii

LIST OF FIGURES iii

EXECUTIVE SUMMARY iv

1.0 INTRODUCTION 1-1

2.0 SAMPLING AND FIELD QUALITY ASSURANCE/QUALITY CONTROL PROCEDURES 2-1
- 2.1 SHALLOW MONITORING WELLS 2-1
- 2.2 DEEP MULTI-PORT MONITORING WELLS 2-2
- 2.3 FIELD QUALITY ASSURANCE/QUALITY CONTROL SAMPLES 2-3

3.0 ANALYTICAL RESULTS 3-1
- 3.1 VOLATILE ORGANIC COMPOUNDS RESULTS 3-1
- 3.2 PERCHLORATE RESULTS 3-2
- 3.3 CHROMIUM RESULTS 3-2
- 3.4 QUALITY ASSURANCE/QUALITY CONTROL RESULTS 3-3

4.0 WATER-LEVEL MEASUREMENTS 4-1

5.0 REFERENCES 5-1

APPENDICES

Appendix A - Well Development/Well Sampling Log Forms for Shallow Wells

Appendix B - Well Development/Well Sampling Log Forms, Piezometric Pressure Profile Records, and Groundwater Sampling Field Data Sheets for Deep Multi-Port Wells

Appendix C - Field Instrument Calibration Forms

Appendix D - Laboratory Analytical Reports and Chain-of-Custody Forms

LIST OF TABLES

Table 1-1	Summary of Well Construction Details for JPL Groundwater Monitoring Wells
Table 1-2	Summary of Analyses Performed on Groundwater Samples Collected from JPL Monitoring Wells, November-December 1999
Table 3-1	Summary of Volatile Organic Compounds and Perchlorate Detected in Groundwater Samples Collected from JPL Monitoring Wells, November-December 1999
Table 3-2	Location of Well Screens in Aquifer Layers
Table 3-3	Summary of Volatile Organic Compounds and Perchlorate Detected During the Long-Term Quarterly Groundwater Sampling Program, Jet Propulsion Laboratory
Table 3-4	Results of Metals Analyses of Groundwater Samples Collected from JPL Monitoring Wells, November-December 1999
Table 3-5	Summary of Metals Detected During the Long-Term Quarterly Sampling Program, Jet Propulsion Laboratory
Table 4-1	Groundwater Monitoring Well Water-Level Measurements, November 15, 1999
Table 4-2	Groundwater Monitoring Well Water-Level Measurements, December 16, 1999

LIST OF FIGURES

Figure 1-1 Locations of JPL Groundwater Monitoring Wells and Nearby Municipal Production Wells

Figure 3-1 Contours of Carbon Tetrachloride Concentrations in Aquifer Layer 1, November-December 1999

Figure 3-2 Contours of Carbon Tetrachloride Concentrations in Aquifer Layer 2, November-December 1999

Figure 3-3 Contours of Carbon Tetrachloride Concentrations in Aquifer Layer 3, November-December 1999

Figure 3-4 Contours of Trichloroethene Concentrations in Aquifer Layer 1, November-December 1999

Figure 3-5 Contours of Trichloroethene Concentrations in Aquifer Layer 2, November-December 1999

Figure 3-6 Contours of Trichloroethene Concentrations in Aquifer Layer 3, November-December 1999

Figure 3-7 Contours of 1,2-Dichloroethane Concentrations in Aquifer Layer 1, November-December 1999

Figure 3-8 Contours of Tetrachloroethene Concentrations in Aquifer Layer 1, November-December 1999

Figure 3-9 Contours of Tetrachloroethene Concentrations in Aquifer Layer 2, November-December 1999

Figure 3-10 Contours of Tetrachloroethene Concentrations in Aquifer Layer 3, November-December 1999

Figure 3-11 Contours of Perchlorate Concentrations in Aquifer Layer 1, November-December 1999

Figure 3-12 Contours of Perchlorate Concentrations in Aquifer Layer 2, November-December 1999

Figure 3-13 Contours of Perchlorate Concentrations in Aquifer Layer 3, November-December 1999

Figure 4-1 Water-Table Elevation Contour Map, November 15, 1999

Figure 4-2 Water-Table Elevation Contour Map, December 16, 1999

Figure 4-3 Hydraulic Head Elevations from Deep Multi-Port Wells, November 15, 1999

Figure 4-4 Hydraulic Head Elevations from Deep Multi-Port Wells, December 16, 1999

EXECUTIVE SUMMARY

Presented in this report are the results of the thirteenth quarterly groundwater sampling event (November-December 1999) completed as part of a long-term quarterly groundwater monitoring program at the NASA-Jet Propulsion Laboratory (JPL). This sampling event was conducted from November 15 through December 16, 1999.

During this event, groundwater samples were collected from JPL monitoring wells (both on- and off-site) and analyzed for volatile organic compounds (VOCs), total chromium (Cr), hexavalent chromium [Cr(VI)], and perchlorate (ClO_4^-).

Results indicate that only four VOCs (carbon tetrachloride, trichloroethene, tetrachloroethene and 1,2-dichloroethane) were detected at concentrations above state or Federal Maximum Contaminant Levels (MCLs) for drinking water. In addition, perchlorate was detected at concentrations exceeding the state Interim Action Level (IAL) of 18 μg/L. Hexavalent chromium was found in three wells. To date, an MCL has not been established for hexavalent chromium. Total chromium was detected in four wells, however, concentrations did not exceed the state and Federal MCLs (0.050 and 0.100 mg/L, respectively). A summary of the sampling procedures is included in Section 2.0, and analytical results are presented in Section 3.0.

In the past, general groundwater parameters (major cations/anions) were monitored quarterly to determine general groundwater types and distribution beneath and adjacent to JPL. However, because groundwater chemistry beneath JPL is now well understood, major cation/anion analysis was not conducted during this event, but will be conducted annually.

Water-level elevations were measured before and after sampling activities to determine groundwater gradients and flow directions present during sampling. Water-level measurements are presented in Section 4.0. Groundwater flow was observed to be primarily to the south and east across JPL, with a zone of depression in the water table around the nearby operating City of Pasadena municipal production wells.

1.0 INTRODUCTION

This report summarizes the results from the thirteenth groundwater sampling event completed as part of the Long-Term Quarterly Monitoring Program currently being conducted at the NASA-Jet Propulsion Laboratory (JPL). The Long-Term Quarterly Monitoring Program was initiated in 1996 in response to a request from the United States Environmental Protection Agency (EPA). The program began during the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Remedial Investigation for on-site and off-site groundwater at JPL. The purpose of the program is to monitor the elevation, flow direction, and quality of the groundwater beneath and adjacent to the JPL site.

From November 16 to December 15, 1999, Foster Wheeler Environmental Corporation (Foster Wheeler) personnel collected samples from on- and off-site JPL monitoring wells. In addition, the water-level elevation at each well was measured prior to (November 15, 1999), and after (December 16, 1999) sampling to evaluate groundwater flow directions and gradients.

The locations of the JPL groundwater monitoring wells are shown in Figure 1-1. Monitoring wells MW-3, MW-4, MW-11, MW-12, MW-14, and MW-17 through MW-24 are deep multi-port wells, each containing five screened intervals equipped with a Westbay Instruments, Inc. (Westbay) multi-port casing system. Monitoring wells MW-1, MW-5, MW-6, MW-7, MW-8, MW-9, MW-10, MW-13, MW-15, and MW-16 are relatively shallow standpipe wells, each containing a single screened interval located just below the water table. Monitoring well MW-2 was not sampled since it was replaced with well MW-14 (Figure 1-1) as a JPL sampling point. A summary of the well construction details for the JPL groundwater monitoring wells is included in Table 1-1.

Based on the approved Long-Term Quarterly Monitoring Program Plan (Foster Wheeler, 1996) and on results from the first two years of monitoring at JPL, the monitoring program was revised to improve monitoring efficiency. Following regulatory agency approval [U.S. Environmental Protection Agency (EPA), California Department of Toxic Substances Control (DTSC) and the Regional Water Quality Control Board (RWQCB)], the changes were first implemented during the August, 1999 Monitoring Event (Foster Wheeler, 1999a). Basically, the changes are specific to each event, and involve less frequent sampling of wells/screens (monitoring points) in which various JPL constituents of interest are not present. In addition, general groundwater parameters (major anions and cations), which had been monitored quarterly in the past to delineate groundwater types beneath the site, are now monitored annually. The changes are discussed in detail in the second and third Long-Term Quarterly Monitoring Program Annual Reports (Foster Wheeler, 1999b and 2000).

In accordance with these changes, the November-December 1999 event involved sampling of all JPL monitoring points for JPL constituents of interest only [volatile organic compounds (VOCs), total chromium (Cr), hexavalent Cr [Cr(VI)], and perchlorate (ClO_4^-)]. A summary of monitoring points sampled and analyses performed is presented in Table 1-2.

All of the JPL groundwater samples were taken to Montgomery Watson Laboratories in Pasadena, California, for chemical analysis. Montgomery Watson Laboratories is certified by the California Department of Health Services.

In addition to groundwater samples, field quality assurance/quality control (QA/QC) samples, including trip blanks, equipment blanks, duplicate samples, and a field blank were collected for laboratory analysis. Sampling records for each shallow well are included in Appendix A, and sampling records and piezometric pressure profiling records for each deep multi-port well are included in Appendix B. Field instrument calibration forms are included in Appendix C, and laboratory analytical reports and associated chain-of-custody forms are included in Appendix D.

2.0 SAMPLING AND FIELD QUALITY ASSURANCE/ QUALITY CONTROL PROCEDURES

Two different procedures were used in collection of groundwater samples at JPL, one designed for the shallow wells and the other for the deep multi-port wells. These procedures are outlined below.

2.1 SHALLOW MONITORING WELLS

The sampling procedure described below was applied to the shallow JPL monitoring wells sampled during this event. This includes monitoring wells MW-1, MW-5, MW-6, MW-7, MW-8, MW-9, MW-10, MW-13, MW-15, and MW-16.

The primary equipment used to sample the shallow wells included dedicated 2-inch Grundfos Redi-Flo2® pumps, a pump controller, and a 220-volt generator. All of the dedicated 2-inch Grundfos Redi-Flo2® pump systems were decontaminated prior to their installation before the beginning of the long-term quarterly monitoring program. Details of the decontamination procedures for the Grundfos Redi-Flo2® pump systems are outlined in a previous document (Ebasco, 1993a).

Prior to sample collection, the water in each shallow well casing was purged (by pumping) to remove groundwater that may have been exposed to the atmosphere and thus may not be representative of undisturbed aquifer conditions. This purged groundwater was discharged into 500- or 1,000-gallon polyethylene storage tanks for disposal by JPL personnel pursuant to EPA guidance (EPA, 1991 and 1992).

Temperature, pH, electrical conductivity, and turbidity of the water removed from each well were monitored during purging. After these parameters had stabilized (when two successive measurements made approximately 3 minutes apart were within 10 percent of each other) and the turbidity was less than 5 Nephelometric Turbidity Units, the groundwater samples were collected with the dedicated pump. During sampling for VOCs, the pump rate was reduced to approximately 0.02 gallons per minute to minimize sample agitation. All information concerning sampling was noted on the Well Development/Well Sampling Log forms included in Appendix A.

All sample bottles were filled completely (though not allowed to overflow), capped, labeled, and placed in a cooler with ice immediately thereafter. Samples collected for VOCs had zero headspace.

Calibration, or standardization, of the field instruments used to measure temperature, pH, electrical conductivity, and turbidity, was performed to the manufacturer's specifications at the beginning and end of each sampling day. Field instrument calibration forms are included in Appendix C.

2.2 DEEP MULTI-PORT MONITORING WELLS

Sampling of the deep multi-port monitoring wells at JPL required specialized sampling equipment manufactured by Westbay. This equipment included a pressure profiling/sampling probe with a surface control unit. Field personnel using this equipment were trained by Westbay personnel to ensure proper use. Copies of the detailed operations manuals for the Westbay pressure profiling/sampling probe are included in the OU-1 and OU-3 Field Sampling and Analysis Plans (Ebasco, 1993a and 1994).

The Westbay sampling probe and sample-collection bottles were decontaminated prior to sampling each screened interval in the deep multi-port wells according to the following procedures:

- Wash each 250-mL stainless-steel sample-collection bottle in a solution of non-phosphate detergent (Liquinox®) and distilled water followed by washing each bottle in a solution of an acidic detergent (Citranox®) and American Society of Testing Materials (ASTM) Type II (deionized) water.
- Rinse each bottle with ASTM Type II water.
- The interior surfaces of the Westbay sampling probe, and the hoses and valves associated with the Westbay sample bottles, were decontaminated by forcing several volumes of a solution of Liquinox® and distilled water through them followed by forcing several volumes of a Citranox® and ASTM Type II water solution through them. A final rinse with ASTM Type II water was carried out. Each of these decontamination procedures was completed using a clean plastic squeeze bottle used only for this purpose.

Purging before sampling is not required in the deep multi-port monitoring wells because the groundwater sample is collected directly from the aquifer, thus ensuring that the groundwater sample has not been exposed to the atmosphere. However, at each screened interval an initial sample was collected in order to check temperature, pH, electrical conductivity, and turbidity in the field, and to rinse the Westbay stainless-steel sample-collection bottles with formation water. Samples for laboratory analysis were then collected and transferred to sample containers as described in Section 2.1. A final sample was then collected and the temperature, pH, electrical conductivity, and turbidity were measured to ensure continuity of aquifer conditions during sampling. Results of the field analyses were recorded on well development logs, which are included in Appendix B. Calibration of field instruments was carried out according to procedures described previously (Ebasco, 1993a and 1994).

2.3 FIELD QUALITY ASSURANCE/QUALITY CONTROL SAMPLES

To verify the quality of the groundwater samples collected from the JPL monitoring wells, field QA/QC samples were collected. The field QA/QC program included the collection of duplicate samples, equipment blanks, trip blanks, and a field blank. In addition, laboratory QA/QC samples were used by the laboratory according to analytical method requirements.

Duplicate samples for VOCs, Cr(VI), total Cr, and ClO_4^- analyses were collected from shallow groundwater monitoring wells MW-10 and MW-13, and deep multi-port monitoring wells MW-4 (Screen 2) and MW-12 (Screen 2). In addition, after every 10 samples that were collected for VOC analyses, a matrix-spike (MS) sample and a matrix-spike-duplicate (MSD) sample were collected and submitted to the laboratory for use in verifying the accuracy of the analytical method. Similarly, after every 10 samples that were collected for total chromium analyses, an MS/MSD sample was collected and submitted to the laboratory for analytical method verification. A QC sample for hexavalent chromium was submitted for each day that samples were collected for hexavalent chromium.

One equipment blank was collected from the Westbay sample collection bottles during each day of sampling of the deep multi-port wells. Equipment blanks consisted of ASTM Type II water (provided by the laboratory), which had been passed through the sampling equipment after the equipment had been decontaminated. Equipment blanks were analyzed for the same constituents as the groundwater samples to identify potential cross contamination due to inadequate decontamination procedures. Equipment blanks were not collected during sampling of the shallow wells as dedicated sampling equipment was used.

A trip blank, consisting of ASTM Type II water placed in two 40-mL glass vials by the laboratory, was transported with the empty sample bottles to the field and back to the laboratory with the groundwater samples. One trip blank was submitted for VOC analysis with each shipment of groundwater samples to the laboratory. Trip blanks were used to identify potential cross contamination of groundwater samples during transport.

During this sampling event, one field blank was collected at monitoring well MW-7. The field blank is used to determine whether ambient conditions or sample containers may effect analytical results. The field blank consisted of sample bottles, filled with ASTM Type II water supplied by the laboratory, left open at the well head during the sampling of the well. After sampling, the bottles containing the field blank were capped and analyzed for the same constituents as the groundwater samples.

3.0 ANALYTICAL RESULTS

JPL groundwater monitoring wells MW-1, and MW-3 through MW-24 were sampled from November 16 to December 15, 1999 with the exception of Screen 1 of MW-14 due to mechanical failure of the sampling equipment and Screen 1 of MW-18, which was above the water table. Monitoring well MW-2 is not included in the monitoring program, as it was replaced as a JPL monitoring point by deep multi-port monitoring well MW-14.

The groundwater samples collected during this sampling event were analyzed for VOCs, total Cr, Cr(VI), and ClO_4^-. Refer to Table 1-2 for a summary of the samples collected, sample numbers used, and the analyses performed. Analytical laboratory reports and associated chain-of-custody forms are included in Appendix D.

3.1 VOLATILE ORGANIC COMPOUNDS RESULTS

Groundwater samples collected during the November-December 1999 sampling event were analyzed for over 60 different VOCs in accordance with EPA Method 524.2. Results of the analyses for VOCs in the November-December 1999 samples are summarized in Table 3-1 along with the Maximum Contaminant Levels (MCLs) for drinking water as listed in Title 22 of the California Code of Regulations and in EPA Health Advisory Guidelines. A small number of VOC compounds were detected in the JPL samples, and only four VOCs [carbon tetrachloride (CCl_4), trichloroethene (TCE), tetrachloroethene (PCE), and 1,2-dichloroethane (1,2-DCA)] were found in concentrations exceeding state and/or Federal MCLs (Table 3-1).

As a result of the data collected for the groundwater Remedial Investigation at JPL (Foster Wheeler, 1999c), the aquifer beneath the site was divided into layers based primarily on correlations interpreted from lithologic cross sections and from hydrologic characteristics. Listed in Table 3-2 are the JPL monitoring well screens and their corresponding aquifer layers. The concentrations of CCl_4, TCE, PCE, and 1,2-DCA detected in each aquifer layer are contoured on site maps to show the spatial distribution of each constituent. A map for each of the above-mentioned VOCs was prepared for each aquifer layer in which it was detected. For instances where a constituent was not detected in a particular aquifer layer, a contour map was not prepared for that constituent in that particular layer. Carbon tetrachloride concentrations detected in Aquifer Layers 1, 2 and 3 are contoured in Figures 3-1, 3-2 and 3-3, respectively. Figures 3-4, 3-5 and 3-6 display contours of TCE concentrations detected in Layers 1, 2 and 3, respectively, and Figure 3-7 contains contours of 1,2-DCA concentrations detected in Aquifer Layer 1. Figures 3-8, 3-9 and 3-10 show contours of PCE detected in Aquifer Layers 1, 2 and 3. A summary of the VOC results compiled from all thirteen long-term quarterly sampling events completed to date is provided in Table 3-3.

CCl_4 in excess of the state MCL (0.5 μg/L) was found in nine on-site wells and two off-site wells (Table 3-1, Figures 3-1, 3-2 and 3-3). The Federal MCL (5.0 μg/L) was exceeded in each of the nine on-site wells and both off-site wells. The highest concentrations of CCl_4 were found in on-site wells MW-3 (Screen 3), MW-7, MW-12 (Screen 3), MW-13, MW-16, and MW-24 (Screen 2).

TCE concentrations were equal to or exceeded the state and Federal MCL (5.0 μg/L) in five on-site wells, and two off-site wells (Table 3-1, Figures 3-4, 3-5, and 3-6). The highest levels of TCE were found in on-site wells MW-7, MW-13 , MW-16 and off-site well MW-21 (Screen 1).

1,2-DCA was detected in two on-site wells (MW-7 and MW-13) in excess of its state MCL (0.5 μg/L) (Table 3-1 and Figure 3-7). 1,2-DCA was not detected in any off-site well, and the Federal MCL for 1,2-DCA (5.0 μg/L) was not exceeded in any well.

PCE was detected at low levels in several on-site and off-site wells (Table 3-1, Figures 3-8, 3-9, and 3-10). The state and Federal MCL (5.0 μg/L) was exceeded only in off-site well MW-21 (Screens 4 and 5).

3.2 PERCHLORATE RESULTS

Perchlorate analyses were conducted on groundwater samples from the November-December 1999 event using ion chromatography (EPA 300.0, modified). Results are included in Table 3-1. No MCLs for ClO_4^- have been established to date, however, the California Department of Health Services has established an Interim Action Level (IAL) of 18 μg/L for ClO_4^-. Perchlorate was detected in a total of 17 wells (Table 3-1). Concentrations in seven of the 17 wells exceeded the Interim Action Level (18 μg/L). Perchlorate concentrations are contoured in Figures 3-11, 3-12 and 3-13 for Aquifer Layers 1, 2 and 3, respectively. The highest ClO_4^- levels were observed on-site in wells MW-4 (Screen 2), MW-7, MW-13, MW-16, and MW-24 (Screen 2).

3.3 CHROMIUM RESULTS

Groundwater samples were analyzed for total Cr and Cr(VI). The results of these analyses are summarized below and in Table 3-4.

Total Cr was detected in four wells, MW-6, MW-7, MW-10, and MW-13, below state and Federal drinking water standards (0.05 and 0.10 mg/L, respectively). Hexavalent chromium was detected in three on-site shallow wells, MW-7, MW-13, and MW-16. At this time, neither state nor Federal agencies have established an MCL for Cr(VI).

Table 3-5 contains a summary of metals data from all thirteen quarterly sampling events completed to date during the long-term monitoring program.

3.4 QUALITY ASSURANCE/QUALITY CONTROL RESULTS

Review of the QA/QC data provided with the laboratory analytical results (Appendix D) indicates that results obtained from November-December 1999 samples are acceptable for their intended use of characterizing aquifer quality. Surrogate compound, matrix and blank spike, and method blank results were used by the laboratory to determine the accuracy and precision of the analytical techniques with respect to the JPL groundwater matrix, and to identify anomalous results due to laboratory contamination or instrument malfunction.

In addition to laboratory QA/QC samples, Foster Wheeler personnel collected QA/QC samples in the field. These samples included duplicate samples, equipment blanks, trip blanks and a field blank.

Duplicate samples were used to evaluate the precision of the laboratory analyses. Duplicate groundwater samples were collected from MW-4 (Screen 2), MW-10, MW-12 (Screen 2), and MW-13 and analyzed for VOCs, ClO_4^-, total Cr, and Cr(VI). All of the analytical results for the duplicate samples were similar to the results of the original groundwater samples (Table 3-1 and Table 3-4).

Thirteen equipment blanks and sixteen trip blanks were submitted for analysis during the November-December 1999 sampling event. Chloroform was detected at very low levels (<3.7 μg/L) in each equipment blank, the field blank, and in the groundwater samples associated with these blanks (see Table 3-1 and Table 3-3). This has occurred sporadically in previous sampling events and it is believed that very low levels of chloroform were present in the water used for decontamination, and possibly in water used for making the field blank. Dichloromethane was also detected at very low levels (<0.8 μg/L) in six of the thirteen equipment blanks, but not in associated groundwater samples. Dichloromethane is a common laboratory contaminant and has been detected in various QA/QC blanks in the past.

4.0 WATER-LEVEL MEASUREMENTS

Water-level measurements were recorded before sampling, on November 15, 1999, and after sampling, on December 16, 1999, to evaluate groundwater flow directions and gradients beneath and adjacent to JPL. Water-level data in the shallow wells were collected using a Solinst® water-level meter that utilized a water-sensor probe attached to a measuring tape. As the probe was lowered into a well, contact with the groundwater completed a circuit between two electrodes in the probe, thus activating a sounding device attached to a reel at the surface. Depth to groundwater was then read directly from the measuring tape at the top of the well casing.

In the deep multi-port wells, the hydraulic head at each sampling port in each screened interval was measured with a pressure-transducer probe manufactured by Westbay specifically for the unique casing used in these wells. No data was available at MW-14 (Screen 1), for the final water-level measurement, due to equipment malfunction at that location.

Water-table elevation measurements taken before sampling are provided in Table 4-1 and have been contoured in Figure 4-1. Water-table elevation measurements taken after sampling are provided in Table 4-2 and have been contoured in Figure 4-2. The hydraulic heads measured at each deep multi-port well screen before and after sampling are presented graphically in Figures 4-3 and 4-4, respectively. The pressure-profile records for the deep wells are included in Appendix B.

As indicated by Figures 4-1 and 4-2, groundwater flow was primarily to the south and east across JPL both before and after sampling. The "trough" of depression observed around the City of Pasadena municipal production wells (Figures 4-1 and 4-2) is the result of active pumping by these wells throughout this sampling event. This is also indicated by data shown in Figures 4-3 and 4-4 where the effects of municipal well pumping are reflected by relatively large drawdowns in the hydraulic heads measured at the lowermost screens within the multi-port wells closest to the production wells (MW-3, -4, -11, -12, -17 and -19).

5.0 REFERENCES

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TABLES

TABLE 1-1

SUMMARY OF WELL CONSTRUCTION DETAILS FOR JPL GROUNDWATER MONITORING WELLS

Well Number	Well Type	Year Installed	Drilling Method	Depth to Bottom of Casing (feet)	Depth of Screened Interval (feet)	Elevation Top 4 inch Casing (feet above mean sea level)	Elevation of Screened Interval (feet above mean sea level)	Multi-Port Well Screen Number	Sand Pack (feet)	Screen Slot Size (inch)	Casing Material
MW-1	Shallow Standpipe	1989	Mud Rotary	120	70-110	1116.7	1006.70-1046.70	-	99		4" PVC
MW-2	Shallow Standpipe	1989	Mud Rotary	177	127-167	1168.85	1001.85-1041.85	-			
MW-3	Deep Multi-Port	1990	Mud Rotary	700	170-180	1099.82	919.82-929.82	1	37	0.010	4" low-carbon steel
					250-260		839.82-849.82	2	47	0.010	4" low-carbon steel
					344-354		745.82-755.82	3	45	0.010	4" low-carbon steel
					555-565		534.82-544.82	4	39	0.010	4" low-carbon steel
					650-660		433.82-443.82	5	64	0.010	4" low-carbon steel
MW-4	Deep Multi-Port	1990	Mud Rotary	559	147-157	1082.72	925.72-935.72	1	48	0.010	4" low-carbon steel
					237-247		835.72-845.72	2	34	0.010	4" low-carbon steel
					318-328		754.72-764.72	3	42	0.010	4" low-carbon steel
					389-399		683.72-693.72	4	54	0.010	4" low-carbon steel
					509-519		563.72-573.72	5	52	0.010	4" low-carbon steel
MW-5	Shallow Standpipe	1990	Air Percussion	140	85-135	1071.6	936.60-986.60	-	71	0.010	4" low-carbon steel
MW-6	Shallow Standpipe	1990	Air Percussion	245	195-245	1188.52	943.52-993.52	-	62	0.010	4" low-carbon steel
MW-7	Shallow Standpipe	1990	Air Percussion	275	225-275	1212.88	937.88-987.88	-	63	0.010	4" low-carbon steel
MW-8	Shallow Standpipe	1992	Air Percussion	205	155-205	1139.53	934.53-984.53	-	75	0.010	4" low-carbon steel
MW-9	Shallow Standpipe	1992	Air Percussion	68	18-68	1106.02	1038.02-1088.02	-	56	0.010	4" PVC
MW-10	Shallow Standpipe	1992	Air Percussion	155	105-155	1087.71	932.71-982.71	-	67.5	0.010	4" PVC (0-85') 4" stainless steel (85'-105')
MW-11	Deep Multi-Port	1992	Mud Rotary	680	140-150	1139.35	989.35-999.35	1	24	0.010	4" low-carbon steel
					250-260		879.35-889.35	2	22	0.010	4" low-carbon steel
					420-430		709.35-719.35	3	26	0.010	4" low-carbon steel
					515-525		614.35-624.35	4	26	0.010	4" low-carbon steel
					630-640		499.35-509.35	5	28	0.010	4" low-carbon steel

TABLE 1-1

SUMMARY OF WELL CONSTRUCTION DETAILS FOR JPL GROUNDWATER MONITORING WELLS

Well Number	Well Type	Year Installed	Drilling Method	Depth to Bottom of Casing (feet)	Depth of Screened Interval (feet)	Elevation Top 4 inch Casing (feet above mean sea level)	Elevation of Screened Interval (feet above mean sea level)	Multi-Port Well Screen Number	Sand Pack (feet)	Screen Slot Size (inch)	Casing Material
MW-12	Deep Multi-Port	1994	Mud Rotary	596	135-145	1102.14	957.14-967.14	1	22	0.010	4" low-carbon steel
					240-250		852.14-862.14	2	19	0.010	4" low-carbon steel
					315-325		777.14-787.14	3	21	0.010	4" low-carbon steel
					430-440		662.14-672.14	4	22	0.010	4" low-carbon steel
					546-556		546.14-556.14	5	21	0.010	4" low-carbon steel
MW-13	Shallow Standpipe	1994	Air Rotary	235	180-230	1183.47	953.47-1003.47	-	65	0.010	4" PVC
MW-14	Deep Multi-Port	1994	Mud Rotary	588	205-215	1173.42	958.42-968.42	1	22	0.010	4" low-carbon steel
					275-285		888.42-898.42	2	26	0.010	4" low-carbon steel
					380-390		783.42-793.42	3	22	0.010	4" low-carbon steel
					453-463		710.42-720.42	4	27	0.010	4" low-carbon steel
					538-548		625.42-635.42	5	21	0.010	4" low-carbon steel
MW-15	Shallow Standpipe	1994	Air Percussion	74	19-69	1120.66	1051.66-1101.66	-	60	0.010	4" stainless steel
MW-16	Shallow Standpipe	1994	Air Percussion	285	230-280	1236.27	956.27-1006.27	-	62	0.010	4.5" PVC
MW-17	Deep Multi-Port	1995	Mud Rotary	774	246-256	1190.99	934.99-944.99	1	24	0.010	4" low-carbon steel
					366-376		814.99-824.99	2	24	0.010	4" low-carbon steel
					466-476		714.99-724.99	3	27	0.010	4" low-carbon steel
					578-588		602.99-612.99	4	25	0.010	4" low-carbon steel
					723-733		457.99-467.99	5	22	0.010	4" low-carbon steel
MW-18	Deep Multi-Port	1995	Mud Rotary	732	266-276	1225.34	949.34-959.34	1	22	0.010	4" low-carbon steel
					326-336		889.34-899.34	2	24	0.010	4" low-carbon steel
					421-431		794.34-804.34	3	20	0.010	4" low-carbon steel
					561-571		654.34-664.34	4	22	0.010	4" low-carbon steel
					681-691		534.34-544.34	5	23	0.010	4" low-carbon steel
MW-19	Deep Multi-Port	1995	Mud Rotary	543	240-250	1143.2	893.20-903.20	1	20	0.010	4" low-carbon steel
					310-320		823.20-833.20	2	20	0.010	4" low-carbon steel
					390-400		743.20-753.20	3	17	0.010	4" low-carbon steel
					442-452		691.20-701.20	4	20	0.010	4" low-carbon steel
					492-502		641.20-651.20	5	22	0.010	4" low-carbon steel

TABLE 1-1

SUMMARY OF WELL CONSTRUCTION DETAILS FOR JPL GROUNDWATER MONITORING WELLS

Well Number	Well Type	Year Installed	Drilling Method	Depth to Bottom of Casing (feet)	Depth of Screened Interval (feet)	Elevation Top 4 inch Casing (feet above mean sea level)	Elevation of Screened Interval (feet above mean sea level)	Multi-Port Well Screen Number	Sand Pack (feet)	Screen Slot Size (inch)	Casing Material
MW-20	Deep Multi-Port	1995	Mud Rotary	948	228-238	1164.89	926.89-936.89	1	24	0.010	4" low-carbon steel
					388-398		766.89-776.89	2	23	0.010	4" low-carbon steel
					558-568		596.89-606.89	3	19	0.010	4" low-carbon steel
					698-708		456.89-466.89	4	23	0.010	4" low-carbon steel
					898-908		256.89-266.89	5	27	0.010	4" low-carbon steel
MW-21	Deep Multi-Port	1995	Mud Rotary	416	86-96	1058.99	962.99-972.99	1	26	0.010	4" low-carbon steel
					156-166		892.99-902.99	2	25	0.010	4" low-carbon steel
					236-246		812.99-822.99	3	21	0.010	4" low-carbon steel
					306-316		742.99-752.99	4	22	0.010	4" low-carbon steel
					366-376		682.99-692.99	5	22	0.010	4" low-carbon steel
MW-22	Deep Multi-Port	1997	Mud Rotary	634	239-249	1176.81	927.81-937.81	1	24	0.010	4" low-carbon steel
					324-334		842.81-852.81	2	21	0.010	4" low-carbon steel
					384-394		782.81-792.81	3	22	0.010	4" low-carbon steel
					464-474		702.81-712.81	4	23	0.010	4" low-carbon steel
					584-594		582.81-592.81	5	22	0.010	4" low-carbon steel
MW-23	Deep Multi-Port	1997	Mud Rotary	590	170-180	1108.34	928.34-938.34	1	23	0.010	4" low-carbon steel
					250-260		843.34-858.34	2	20.5	0.010	4" low-carbon steel
					315-325		783.34-793.34	3	18	0.010	4" low-carbon steel
					440-450		658.34-668.34	4	25	0.010	4" low-carbon steel
					540-550		558.34-568.34	5	22.5	0.010	4" low-carbon steel
MW-24	Deep Multi-Port	1997	Mud Rotary	725	275-285	1200.91	915.91-925.91	1	25	0.010	4" low-carbon steel
					370-380		820.91-830.91	2	50	0.010	4" low-carbon steel
					430-440		760.91-770.91	3	25	0.010	4" low-carbon steel
					550-560		640.91-650.91	4	19	0.010	4" low-carbon steel
					675-685		515.91-525.91	5	16	0.010	4" low-carbon steel

TABLE 1-2

SUMMARY OF ANALYSES PERFORMED ON GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS, NOVEMBER-DECEMBER 1999

Sample Location	Sample Number	Sample Type	VOCs EPA 524.2	Total Cr	Hexavalent Cr EPA 7196	Perchlorate EPA 300.0 Modified
MW-1	MW-994-001	GW	X	X	X	X
MW-3						
Screen 1	MW-994-002	GW	X	X	X	X
Screen 2	MW-994-003	GW	X	X	X	X
Screen 3	MW-994-004	GW	X	X	X	X
Screen 4	MW-994-005	GW	X	X	X	X
Screen 5	MW-994-006	GW	X	X	X	X
MW-4						
Screen 1	MW-994-007	GW	X	X	X	X
Screen 2	MW-994-008	GW	X	X	X	X
Screen 2	MW-994-009	DUP	X	X	X	X
Screen 3	MW-994-010	GW	X	X	X	X
Screen 4	MW-994-011	GW	X	X	X	X
Screen 5	MW-994-012	GW	X	X	X	X
MW-5	MW-994-013	GW	X	X	X	X
MW-6	MW-994-014	GW	X	X	X	X
MW-7	MW-994-015	GW	X	X	X	X
MW-8	MW-994-016	GW	X	X	X	X
MW-9	MW-994-017	GW	X	X	X	X
MW-10	MW-994-018	GW	X	X	X	X
MW-10	MW-994-019	DUP	X	X	X	X
MW-11						
Screen 1	MW-994-020	GW	X	X	X	X
Screen 2	MW-994-021	GW	X	X	X	X
Screen 3	MW-994-022	GW	X	X	X	X
Screen 4	MW-994-023	GW	X	X	X	X
Screen 5	MW-994-024	GW	X	X	X	X
MW-12						
Screen 1	MW-994-025	GW	X	X	X	X
Screen 2	MW-994-026	GW	X	X	X	X
Screen 2	MW-994-027	DUP	X	X	X	X
Screen 3	MW-994-028	GW	X	X	X	X
Screen 4	MW-994-029	GW	X	X	X	X
Screen 5	MW-994-030	GW	X	X	X	X
MW-13	MW-994-031	GW	X	X	X	X
MW-13	MW-994-032	DUP	X	X	X	X

TABLE 1-2

SUMMARY OF ANALYSES PERFORMED ON GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS, NOVEMBER-DECEMBER 1999

Sample Location	Sample Number	Sample Type	VOCs EPA 524.2	Total Cr	Hexavalent Cr EPA 7196	Perchlorate EPA 300.0 Modified
MW-14						
Screen 1	MW-994-033	GW	Not Sampled(1)			
Screen 2	MW-994-034	GW	X	X	X	X
Screen 3	MW-994-035	GW	X	X	X	X
Screen 4	MW-994-036	GW	X	X	X	X
Screen 5	MW-994-037	GW	X	X	X	X
MW-15	MW-994-038	GW	X	X	X	X
MW-16	MW-994-039	GW	X	X	X	X
MW-17						
Screen 1	MW-994-040	GW	X	X	X	X
Screen 2	MW-994-041	GW	X	X	X	X
Screen 3	MW-994-042	GW	X	X	X	X
Screen 4	MW-994-043	GW	X	X	X	X
Screen 5	MW-994-044	GW	X	X	X	X
MW-18						
Screen 1	MW-994-045	GW	Not Sampled(2)			
Screen 2	MW-994-046	GW	X	X	X	X
Screen 3	MW-994-047	GW	X	X	X	X
Screen 4	MW-994-048	GW	X	X	X	X
Screen 5	MW-994-049	GW	X	X	X	X
MW-19						
Screen 1	MW-994-050	GW	X	X	X	X
Screen 2	MW-994-051	GW	X	X	X	X
Screen 3	MW-994-052	GW	X	X	X	X
Screen 4	MW-994-053	GW	X	X	X	X
Screen 5	MW-994-054	GW	X	X	X	X
MW-20						
Screen 1	MW-994-055	GW	X	X	X	X
Screen 2	MW-994-056	GW	X	X	X	X
Screen 3	MW-994-057	GW	X	X	X	X
Screen 4	MW-994-058	GW	X	X	X	X
Screen 5	MW-994-059	GW	X	X	X	X
MW-21						
Screen 1	MW-994-060	GW	X	X	X	X
Screen 2	MW-994-061	GW	X	X	X	X
Screen 3	MW-994-062	GW	X	X	X	X
Screen 4	MW-994-063	GW	X	X	X	X
Screen 5	MW-994-064	GW	X	X	X	X

TABLE 1-2

SUMMARY OF ANALYSES PERFORMED ON GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS, NOVEMBER-DECEMBER 1999

Sample Location	Sample Number	Sample Type	VOCs EPA 524.2	Total Cr	Hexavalent Cr EPA 7196	Perchlorate EPA 300.0 Modified
MW-22						
Screen 1	MW-994-065	GW	X	X	X	X
Screen 2	MW-994-066	GW	X	X	X	X
Screen 3	MW-994-067	GW	X	X	X	X
Screen 4	MW-994-068	GW	X	X	X	X
Screen 5	MW-994-069	GW	X	X	X	X
MW-23						
Screen 1	MW-994-070	GW	X	X	X	X
Screen 2	MW-994-071	GW	X	X	X	X
Screen 3	MW-994-072	GW	X	X	X	X
Screen 4	MW-994-073	GW	X	X	X	X
Screen 5	MW-994-074	GW	X	X	X	X
MW-24						
Screen 1	MW-994-075	GW	X	X	X	X
Screen 2	MW-994-076	GW	X	X	X	X
Screen 3	MW-994-077	GW	X	X	X	X
Screen 4	MW-994-078	GW	X	X	X	X
Screen 5	MW-994-079	GW	X	X	X	X

GW: Groundwater Sample
DUP: Duplicate Sample
1: Not sampled due to mechanical failure
2: Not sampled, no water over screen

TABLE 3-1

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED IN GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS, NOVEMBER-DECEMBER 1999

(concentrations in µg/L)
Values above state or Federal MCLs or action levels are bold and shaded

Sampling Location	Sample Number	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Chloroform	Other Volatile Organic Compounds	Perchlorate
MW-1	MW-994-001	--	--	--	--	--	--	--	--	--	--
MW-3											
Screen 1	MW-994-002	--	--	--	--	--	--	--	--	--	--
Screen 2	MW-994-003	--	--	--	--	--	--	--	--	--	--
Screen 3	MW-994-004	**26**	1.3	--	--	--	--	0.9	43 (EB)	--	5.2
Screen 4	MW-994-005	--	--	--	--	--	--	--	--	--	--
Screen 5	MW-994-006	--	--	--	--	--	--	--	--	0.2 Carbonyl Sulfide	--
MW-4											
Screen 1	MW-994-007	--	--	--	--	--	--	--	--	--	--
Screen 2	MW-994-008	**2.3**	**6.2**	0.7	--	--	--	--	3.1 (EB)	--	**42**
Screen 2 (DUP)	MW-994-009	**2.1**	**5.9**	0.6	0.5	--	--	--	3.0 (EB)	--	**44**
Screen 3	MW-994-010	--	--	--	--	--	--	--	--	0.6 Unknown (RT=4.79)	--
Screen 4	MW-994-011	--	--	--	--	--	--	--	--	--	--
Screen 5	MW-994-012	--	--	--	--	--	--	--	--	--	--
MW-5	MW-994-013	--	--	--	--	--	--	--	--	--	--
MW-6	MW-994-014	--	--	1.3	--	--	--	--	--	--	--
MW-7	MW-994-015	**120**	**19.7**	3.0	--	**0.7**	2.2	2.4	10.8 (FB)	--	**460**
MW-8	MW-994-016	**0.9**	0.8	--	--	--	--	--	--	--	5.2
MW-9	MW-994-017	--	--	--	--	--	--	--	--	--	--
MW-10	MW-994-018	--	3.7	1.1	0.6	--	--	--	0.9	--	**21**
MW-10 (DUP)	MW-994-019	--	3.3	0.9	0.6	--	--	--	0.9	--	**21**

TABLE 3-1

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED IN GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS, NOVEMBER-DECEMBER 1999

(concentrations in µg/L)
Values above state or Federal MCLs or action levels are bold and shaded

Sampling Location	Sample Number	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Chloroform	Other Volatile Organic Compounds	Perchlorate
MW-11											
Screen 1	MW-994-020	--	--	--	--	--	--	--	--	--	--
Screen 2	MW-994-021	--	--	--	--	--	--	--	0.5 (EB)	--	--
Screen 3	MW-994-022	**0.9**	--	--	--	--	--	--	0.7 (EB)	--	--
Screen 4	MW-994-023	--	--	--	--	--	--	--	0.6 (EB)	--	--
Screen 5	MW-994-024	--	--	--	--	--	--	--	--	--	--
MW-12											
Screen 1	MW-994-025	--	--	--	--	--	--	--	--	--	--
Screen 2	MW-994-026	--	--	--	--	--	--	--	--	--	--
Screen 2 (*DUP*)	MW-994-027	**0.5**	--	--	--	--	--	--	--	0.5 Unknown (RT=4.79)	--
Screen 3	MW-994-028	**23**	--	--	--	--	--	--	2.4 (EB)	0.5 Unknown	8.5
Screen 4	MW-994-029	**3.9**	--	--	--	--	--	--	1.3 (EB)	0.5 Unknown (RT=4.80)	8.5
Screen 5	MW-994-030	**1.4**	--	--	--	--	--	--	0.5 (EB)	--	--
MW-13	MW-994-031	**10.7**	**19.7**	--	--	**0.5**	0.7	--	9.1	--	**510**
MW-13 (DUP)	MW-994-032	**10.7**	**20.0**	--	--	**0.5**	0.6	--	9.2	--	**590**
MW-14											
Screen 1	MW-994-033	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)	(1)
Screen 2	MW-994-034	--	1.0	0.8	--	--	--	--	--	--	5.2
Screen 3	MW-994-035	--	0.5	--	--	--	--	--	0.5 (EB)	--	6.8
Screen 4	MW-994-036	--	--	--	--	--	--	--	--	--	4.1
Screen 5	MW-994-037	--	--	--	--	--	--	--	--	--	--
MW-15	MW-994-038	--	--	--	--	--	--	--	--	--	--
MW-16	MW-994-039	**80**	**10.4**	3.0	--	**0.7**	5.3	0.7	24	--	**770**

TABLE 3-1

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED IN GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS, NOVEMBER-DECEMBER 1999

(concentrations in µg/L)
Values above state or Federal MCLs or action levels are bold and shaded

Sampling Location	Sample Number	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Chloroform	Other Volatile Organic Compounds	Perchlorate
MW-17											
Screen 1	MW-994-040	--	--	--	--	--	--	--	--	--	--
Screen 2	MW-994-041	--	--	--	--	--	--	--	1.4 (EB)	--	--
Screen 3	MW-994-042	**0.7**	3.2	--	--	--	--	--	4.4 (EB)	--	5.5
Screen 4	MW-994-043	--	**6.8**	--	--	--	--	--	2.0 (EB)	--	10
Screen 5	MW-994-044	--	**6.7**	--	--	--	--	--	2.1 (EB)	--	9.1
MW-18											
Screen 1	MW-994-045	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
Screen 2	MW-994-046	--	--	--	--	--	--	--	--	--	--
Screen 3	MW-994-047	--	0.8	--	--	--	--	--	2.4 (EB)	--	--
Screen 4	MW-994-048	**3.8**	1.2	2.0	--	--	--	--	0.8 (EB)	--	**23**
Screen 5	MW-994-049	--	--	--	--	--	--	--	--	0.6 Unknown (RT=4.82)	--
MW-19											
Screen 1	MW-994-050	--	--	--	--	--	--	--	--	--	--
Screen 2	MW-994-051	--	0.5	--	--	--	--	--	--	--	--
Screen 3	MW-994-052	--	0.6	1.9	--	--	--	--	--	--	5.0
Screen 4	MW-994-053	--	0.5	--	--	--	--	--	2.1 (EB)	--	--
Screen 5	MW-994-054	--	--	1.5	--	--	--	--	--	--	--
MW-20											
Screen 1	MW-994-055	--	--	--	--	--	--	--	1.3 (EB)	--	7.7
Screen 2	MW-994-056	--	--	--	--	--	--	--	3.8 (EB)	--	--
Screen 3	MW-994-057	--	--	--	--	--	--	--	--	--	--
Screen 4	MW-994-058	--	--	--	--	--	--	--	--	--	--
Screen 5	MW-994-059	--	--	--	--	--	--	--	--	--	--

TABLE 3-1

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED IN GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS, NOVEMBER-DECEMBER 1999

(concentrations in µg/L)
Values above state or Federal MCLs or action levels are bold and shaded

Sampling Location	Sample Number	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Chloroform	Other Volatile Organic Compounds	Perchlorate
MW-21											
Screen 1	MW-994-060	--	**15.0**	0.7	--	--	--	--	2.2 (EB)	--	16
Screen 2	MW-994-061	--	--	1.2	--	--	--	--	--	--	4.6
Screen 3	MW-994-062	--	0.9	2.2	--	--	--	--	0.6 (EB)	4.9 Carbonyl Sulfide	4.8
Screen 4	MW-994-063	--	0.6	**6.0**	--	--	--	--	--	5.1 Carbonyl Sulfide 1.1 cis-1,2-Dichloroethene	--
Screen 5	MW-994-064	--	0.7	**11.4**	--	--	--	--	1.0 (EB)	2.2 cis-1,2-Dichloroethene	4.9
MW-22											
Screen 1	MW-994-065	--	--	3.6	0.9	--	--	--	0.5 (EB)	--	4.2
Screen 2	MW-994-066	--	--	--	--	--	--	--	--	--	--
Screen 3	MW-994-067	--	--	--	--	--	--	--	--	--	--
Screen 4	MW-994-068	--	--	--	--	--	--	--	--	--	--
Screen 5	MW-994-069	--	--	--	--	--	--	--	--	--	--
MW-23											
Screen 1	MW-994-070	--	1.2	1.3	1.0	--	--	--	0.5 (EB)	1.1 1,2,3-Trichlorobenzene	4.1
Screen 2	MW-994-071	--	--	--	--	--	--	--	--	--	7.5
Screen 3	MW-994-072	--	--	--	--	--	--	--	--	--	--
Screen 4	MW-994-073	--	--	--	--	--	--	--	--	--	--
Screen 5	MW-994-074	--	--	--	--	--	--	--	--	--	--
MW-24											
Screen 1	MW-994-075	**6.3**	**5.3**	--	--	--	--	--	2.5 (EB)	--	**91**
Screen 2	MW-994-076	**25**	3.7	0.9	--	--	1.4	--	7.4 (EB)	--	**570**
Screen 3	MW-994-077	--	--	--	--	--	--	--	--	--	--
Screen 4	MW-994-078	--	--	--	--	--	--	--	--	--	--
Screen 5	MW-994-079	--	--	--	--	--	--	--	--	--	--

TABLE 3-1

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED IN GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS, NOVEMBER-DECEMBER 1999

(concentrations in μg/L)
Values above state or Federal MCLs or action levels are bold and shaded

Sampling Location	Sample Number	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Chloroform	Other Volatile Organic Compounds	Perchlorate
Practical Quantitation Limit		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	4.0
California Maximum Contaminant Level		0.5	5.0	5.0	5.0	0.5	6.0	1,200	100	6 cis-1,2-Dichloroethene(3)	18(4)
EPA Region IX Maximum Contaminant Level		5.0	5.0	5.0	NE	5.0	7.0	NE	100	70 cis-1,2-Dichloroethene(3)	NE

--: Not detected.
EB: Compound detected in associated equipment blank.
DUP: Duplicate sample.
RT: Retention time.
FB: Compound detected in associated field blank.
NE: Not established.
1: Not sampled due to mechanical failure.
2: Not sampled, no water over screen.
3: Only VOCs for which MCLs have been established are listed.
4: California Department of Health Services Interim Action Level.

TABLE 3-2

LOCATION OF WELL SCREENS IN AQUIFER LAYERS

Well Number	AQUIFER LAYERS			
	Layer 1	Layer 2	Layer 3	Layer 4
MW-1	X			
MW-3				
Screen 1	X			
Screen 2		X		
Screen 3		X		
Screen 4			X	
Screen 5			X	
MW-4				
Screen 1	X			
Screen 2		X		
Screen 3		X		
Screen 4		X		
Screen 5			X	
MW-5	X			
MW-6	X			
MW-7	X			
MW-8	X			
MW-9	X			
MW-10	X			
MW-11				
Screen 1	X			
Screen 2		X		
Screen 3		X		
Screen 4		X		
Screen 5			X	
MW-12				
Screen 1	X			
Screen 2		X		
Screen 3		X		
Screen 4		X		
Screen 5			X	
MW-13	X			
MW-14				
Screen 1	X			
Screen 2		X		
Screen 3		X		
Screen 4			X	
Screen 5			X	

TABLE 3-2

LOCATION OF WELL SCREENS IN AQUIFER LAYERS

Well Number	AQUIFER LAYERS			
	Layer 1	Layer 2	Layer 3	Layer 4
MW-15	X			
MW-16	X			
MW-17				
Screen 1	X			
Screen 2		X		
Screen 3		X		
Screen 4			X	
Screen 5			X	
MW-18				
Screen 1	X			
Screen 2	X			
Screen 3		X		
Screen 4			X	
Screen 5			X	
MW-19				
Screen 1	X			
Screen 2		X		
Screen 3		X		
Screen 4			X	
Screen 5			X	
MW-20				
Screen 1	X			
Screen 2		X		
Screen 3			X	
Screen 4			X	
Screen 5				X
MW-21				
Screen 1	X			
Screen 2		X		
Screen 3		X		
Screen 4			X	
Screen 5			X	
MW-22				
Screen 1	X			
Screen 2		X		
Screen 3		X		
Screen 4			X	
Screen 5			X	

TABLE 3-2

LOCATION OF WELL SCREENS IN AQUIFER LAYERS

Well Number	AQUIFER LAYERS			
	Layer 1	Layer 2	Layer 3	Layer 4
MW-23				
Screen 1	X			
Screen 2		X		
Screen 3		X		
Screen 4			X	
Screen 5			X	
MW-24				
Screen 1	X			
Screen 2		X		
Screen 3		X		
Screen 4			X	
Screen 5			X	

TABLE 3-3

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED DURING THE LONG-TERM QUARTERLY GROUNDWATER SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in µg/L)
Values above state and/or Federal MCLs or action levels are bold and shaded

Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
MW-1	Aug/Sep 1996	--	--	--	--	--	--	--	--	--	(1)
	Oct/Nov 1996	--	--	--	--	--	--	--	--	1.9 Acetone	(1)
	Feb/Mar 1997	--	--	--	--	--	--	--	--	1.9 Acetone	(1)
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	1.3 m, p-xylenes	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	--	--	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	--	--	--	--	--	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--
	Aug 1999	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--
MW-3											
Screen 1	Aug/Sep 1996	--	--	--	--	--	--	--	1.2	--	(1)
	Oct/Nov 1996	--	--	--	--	--	--	--	8.3	0.7(B) Naphthalene	(1)
	Feb/Mar 1997	--	--	--	--	--	--	--	--	2.6 Carbon disulfide	(1)
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	--	--	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	--	--	--	--	--	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--
	Aug 1999	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--
Screen 2	Aug/Sep 1996	--	--	--	--	--	--	--	5.5	--	(1)
	Oct/Nov 1996	--	--	--	--	--	--	--	4.8	1.9(B) Naphthalene	(1)
	Feb/Mar 1997	--	--	--	--	--	--	--	4.4	8.0 Carbon disulfide	(1)
	Jun/Jul 1997	--	--	--	--	--	--	1.0	1.2	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	0.8	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	--	--	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	--	--	--	--	--	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--

TABLE 3-3

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED DURING THE LONG-TERM QUARTERLY GROUNDWATER SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in µg/L)
Values above state and/or Federal MCLs or action levels are bold and shaded

Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
	Aug 1999	--	--	--	--	--	--	--	--	--	--
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--
Screen 3	Aug/Sep 1996	**0.6**	0.8	--	--	--	--	--	1.6	--	(1)
	Oct/Nov 1996	--	--	--	--	--	--	--	0.7	--	(1)
	Feb/Mar 1997	--	--	--	--	--	--	--	0.8	--	(1)
	Jun/Jul 1997	**1.2**	0.8	0.6	--	--	--	2.8	1.8	--	**21**
	Sep/Oct 1997	**1.2**	0.5	--	--	--	--	--	1.6	--	13
	Jan/Feb 1998	**1.2**	--	--	--	--	--	--	2.7	--	6.5
	Apr/May 1998	**3.6**	0.9	--	--	--	--	--	3.9	--	6.2
	Jul/Aug 1998	**2.4**	0.6	--	--	--	--	--	3.6	--	10
	Oct/Nov 1998	**5.8**	0.7	--	--	--	--	--	21	2.7 Carbon disulfide	--
	Feb/Mar 1999	**4.5**	1.3	--	--	--	--	0.9	42	--	--
	May/Jun 1999	**42**	1.3	--	--	--	--	1.0	26(EB)[3]	--	8.9
	Aug 1999	**15**	1.0	--	--	--	--	0.8	37	--	--
	Nov/Dec 1999	**26**	1.3	--	--	--	--	0.9	43(EB)	--	5.2
Screen 4	Aug/Sep 1996	--	--	--	--	--	--	--	--	--	(1)
	Oct/Nov 1996	--	--	--	--	--	--	--	--	1.2 Acetone	(1)
	Feb/Mar 1997	--	--	--	--	--	--	--	--	1.0 Hexane	(1)
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	4.7 Carbon disulfide[4]	--
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	--	--	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	--	--	--	--	--	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--
	Aug 1999	--	--	--	--	--	--	--	--	--	--
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--
Screen 5	Aug/Sep 1996	--	--	--	--	--	--	--	--	2.1 Dichloromethane	(1)
	Oct/Nov 1996	--	--	--	--	--	--	--	--	2.1 Acetone	(1)
	Feb/Mar 1997	--	--	--	--	--	--	--	--	1.2 Carbon disulfide 1.5 Carbon disulfide 2.7 Sulfur dioxide 1.3 Unknown (RT=2.51)	(1)
	Jun/Jul 1997	--	--	--	--	--	--	--	--	4.5 Carbon disulfide	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--

TABLE 3-3

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED DURING THE LONG-TERM QUARTERLY GROUNDWATER SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in µg/L)
Values above state and/or Federal MCLs or action levels are bold and shaded

Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
	Jul/Aug 1998	--	--	--	--	--	--	--	--	--	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	**91**
	Feb/Mar 1999	--	--	--	--	--	--	--	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	**75**
	Aug 1999	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	**140**
	Nov/Dec 1999	--	--	--	--	--	--	--	--	0.2 Carbonyl Sulfide	--
MW-4											
Screen 1	Aug/Sep 1996	--	--	--	--	--	--	--	--	2.9(B) Acetone	(1)
	Oct/Nov 1996	--	--	--	--	--	--	--	--	--	(1)
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	(1)
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	7.4
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	9.6
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	--	3.4 Dichloromethane(5)	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	--	--	--	--	0.8(B)	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--
	Aug 1999	--	--	--	--	--	--	--	--	--	--
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--
Screen 2	Aug/Sep 1996	**5.5**	**19**	--	--	**0.9**	0.7	--	6.7	3.2(B) Acetone	(1)
	Oct/Nov 1996	**5.3**	**15**	--	--	**0.6**	0.8	--	5.4	1.8 Acetone	(1)
	Feb/Mar 1997	**7.9**	**19**	--	--	**0.8**	0.8	--	7.8	--	(1)
	Jun/Jul 1997	**4.0**	**5.7**	--	--	--	0.5	--	3.4	--	**51**
	Sep/Oct 1997	**4.0**	**8.0**	0.5	0.6	--	0.5	--	3.5	--	**34**
	Jan/Feb 1998	**1.9**	2.7	0.6	--	--	--	--	1.8	--	**30**
	Apr/May 1998	**2.8**	4.3	0.7	0.5	--	--	--	3.1	--	**41**
	Jul/Aug 1998	**1.5**	3.0	0.8	0.5	--	--	--	2.0	--	**29**
	Oct/Nov 1998	**0.9**	2.4	0.7	--	--	--	--	1.6	--	**25**
	Feb/Mar 1999	**1.2**	4.1	0.6	0.5(6)	--	--	--	2.5	--	**38**
	May/Jun 1999	**2.0**	**6.4**	0.7	--	--	--	--	3.7(EB)(3)	--	**56**
	Aug 1999	**1.9**	**5.5**	0.5	--	--	--	--	3.3	--	**69**
	Nov/Dec 1999	**2.3**	**6.2**	0.7	--	--	--	--	3.1(EB)	--	**42**
Screen 3	Aug/Sep 1996	--	--	--	--	--	--	--	--	3.0(B) Acetone	(1)
	Oct/Nov 1996	--	--	--	--	--	--	--	--	1.5 Acetone	(1)
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	(1)
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--

TABLE 3-3

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED DURING THE LONG-TERM QUARTERLY GROUNDWATER SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in µg/L)
Values above state and/or Federal MCLs or action levels are bold and shaded

Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	--	1.0 Dichloromethane(5)	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	--	--	--	--	0.7(5)	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--
	Aug 1999	--	--	--	--	--	--	--	--	--	--
	Nov/Dec 1999	--	--	--	--	--	--	--	--	0.6 Unknown (RT=4.79)	--
Screen 4	Aug/Sep 1996	--	--	--	--	--	--	--	--	3.9(B) Acetone	(1)
	Oct/Nov 1996	--	--	--	--	--	--	--	--	1.6 Acetone	(1)
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	(1)
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	--	--	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	--	--	--	--	0.6(5)	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--
	Aug 1999	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--
Screen 5	Oct/Nov 1996	--	--	--	--	--	--	--	--	1.9 Acetone	(1)
	Aug/Sep 1996	--	--	--	--	--	--	--	--	--	(1)
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	(1)
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	7.4 Hexane	--
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	--	--	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	--	--	--	--	0.6(5)	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--
	Aug 1999	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--
MW-5	Aug/Sep 1996	--	--	--	--	--	--	--	--	--	(1)
	Oct/Nov 1996	--	--	--	--	--	--	--	--	--	(1)
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	(1)
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--

TABLE 3-3

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED DURING THE LONG-TERM QUARTERLY GROUNDWATER SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in µg/L)
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Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	4.2
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	--	6.5 Dichloromethane(5)	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	--	--	--	--	--	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--
	Aug 1999	--	--	--	--	--	--	--	--	--	--
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--
MW-6	Aug/Sep 1996	--	--	--	--	--	--	--	1.3(TB)	--	(1)
	Oct/Nov 1996	--	--	--	--	--	--	--	--	--	(1)
	Feb/Mar 1997	--	--	--	0.8	--	--	--	--	--	(1)
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	5.5
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	2.0	1.0	--	--	--	--	--	--
	Apr/May 1998	--	0.7	3.2	1.1	--	--	--	0.6	--	--
	Jul/Aug 1998	--	0.6	2.5	0.8	--	--	--	--	7.6 Dichloromethane(5)	4.2
	Oct/Nov 1998	--	--	0.7	--	--	--	--	--	--	--
	Feb/Mar 1999	--	0.8	3.8	1.0	--	--	--	0.6	--	--
	May/Jun 1999	--	--	1.5	--	--	--	--	--	--	--
	Aug 1999	--	--	0.5	--	--	--	--	--	--	4.0
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--
MW-7	Aug/Sep 1996	**90**	**39**	0.8	--	**1.2**	1.1	7.2	13(TB)	--	(1)
	Oct/Nov 1996	**170**	**27**	1.3	--	**0.8**	2.3	7.7	14	4.3(B) 1,1-Difluoroethane 2.8(B) Acetone	(1)
	Feb/Mar 1997	**45**	**27**	0.6	--	**0.8**	0.9	5.1	9.9	--	(1)
	Jun/Jul 1997	**39**	**23**	0.7	--	**0.8**	1.0	4.1	11	10 Unknown	**285**
	Sep/Oct 1997	**93**	**22**	1.1	--	**0.9**	1.3	4.7	13	--	**550**
	Jan/Feb 1998	**150**	**24**	3.7	--	**0.8**	2.1	6.4	13	--	**720**
	Apr/May 1998	**31**	**13**	0.5	--	--	--	3.1	6.1	--	**130**
	Jul/Aug 1998	**43**	**19**	0.8	--	**0.6**	0.9	3.4	9.0	1.0 Dichloromethane(5)	**190**
	Oct/Nov 1998	**51**	**18**	0.9	--	**0.7**	1.1	3.0	9.8	3.4 Carbon disulfide	**210**
	Feb/Mar 1999	**49**	**17**	0.6	--	--	0.9	2.0	7.2	--	**150**
	May/Jun 1999	**42**	**14**	--	--	--	--	2.2	5.7(FB)	--	**120**
	Aug 1999	**40**	**16**	0.5	--	--	0.8	1.9	7.8(FB)	--	**210**
	Nov/Dec 1999	**120**	**19.7**	3.0	--	**0.7**	2.2	2.4	10.8(FB)	--	**460**

TABLE 3-3

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(concentrations in µg/L)
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Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
MW-8	Aug/Sep 1996	**4.0**	4.6	--	--	--	--	--	1.3	--	(1)
	Oct/Nov 1996	**2.8**	2.2	--	--	--	--	0.6	0.6	1.7 Acetone	(1)
	Feb/Mar 1997	**1.5**	4.5	--	--	--	--	--	1.3	1.1 Freon 11 1.9 Carbon disulfide	(1)
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	6.4
	Sep/Oct 1997	**3.2**	3.6	--	--	--	--	--	1.2	1.0 Freon 11	**29**
	Jan/Feb 1998	**1.8**	1.3	--	--	--	--	--	0.8	0.8 Freon 11	11
	Apr/May 1998	**1.3**	1.3	--	--	--	--	--	0.5	--	7.6
	Jul/Aug 1998	--	--	--	--	--	--	--	--	6.6 Dichloromethane(5)	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	--	--	--	--	--	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--
	Aug 1999	--	--	--	--	--	--	--	--	--	--
	Nov/Dec 1999	**0.9**	0.8	--	--	--	--	--	--	--	5.2
MW-9	Aug/Sep 1996	--	--	--	--	--	--	--	--	--	(1)
	Oct/Nov 1996	--	--	--	--	--	--	--	--	--	(1)
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	(1)
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	3.9 Unknown RT=6.21	--
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	--	--	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	--	--	--	--	--	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--
	Aug 1999	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--
MW-10	Aug/Sep 1996	**0.7**	**18**	0.5	--	--	--	1.2	1.4(TB)	--	(1)
	Oct/Nov 1996	**0.6**	**6.6**	1.0	1.9	--	--	0.8	1.1	3.0(B) Acetone 1.1 Unknown scan #350	(1)
	Feb/Mar 1997	--	**5.2**	--	--	--	--	--	0.6	--	(1)
	Jun/Jul 1997	--	2.2	--	--	--	--	--	--	--	11
	Sep/Oct 1997	--	4.3	1.3	1.2	--	--	--	1.0	--	16
	Jan/Feb 1998	--	1.1	2.2	1.6	--	--	--	1.4	--	4.7
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	--	8.2 Dichloromethane(5)	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	**5.7**	--	--	--	--	--	0.9	--	**39**

TABLE 3-3

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED DURING THE LONG-TERM QUARTERLY GROUNDWATER SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in µg/L)
Values above state and/or Federal MCLs or action levels are bold and shaded

Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
	May/Jun 1999	--	1.1	--	--	--	--	--	--	--	10
	Aug 1999	--	2.2	--	--	--	--	--	--	--	**21**
	Nov/Dec 1999	--	3.7	1.1	0.6	--	--	--	0.9	--	**21**
MW-11											
Screen 1	Aug/Sep 1996	--	--	--	--	--	--	--	--	2.6(B) Acetone 7.1 MTBE	(1)
	Oct/Nov 1996	--	--	--	--	--	--	--	--	1.8 Acetone	(1)
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	(1)
	Jun/Jul 1997	**1.4**	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--
	Jul/Aug 1998	**1.5**	--	--	--	--	--	--	--	--	--
	Oct/Nov 1998	**1.4**	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	--	--	--	--	0.9(5)	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--
	Aug 1999	--	--	--	--	--	--	--	--	--	--
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--
Screen 2	Aug/Sep 1996	**2.4**	--	--	--	--	--	--	1.0	--	(1)
	Oct/Nov 1996	**1.1**	--	--	--	--	--	--	1.2	--	(1)
	Feb/Mar 1997	**1.7**	--	--	--	--	--	--	1.0	--	(1)
	Jun/Jul 1997	**1.2**	--	--	--	--	--	--	1.0	--	--
	Sep/Oct 1997	**0.6**	--	--	--	--	--	--	0.6	--	--
	Jan/Feb 1998	**0.7**	--	--	--	--	--	--	0.7	--	--
	Apr/May 1998	**1.0**	--	--	--	--	--	--	0.7	--	--
	Jul/Aug 1998	**0.9**	--	--	--	--	--	--	0.6	--	--
	Oct/Nov 1998	**0.6**	--	--	--	--	--	--	0.7	--	--
	Feb/Mar 1999	--	--	--	--	--	--	0.7(5)	1.1	--	--
	May/Jun 1999	**0.5**	--	--	--	--	--	--	0.7(EB)(3)	--	--
	Aug 1999	**0.5**	--	--	--	--	--	--	0.6	--	--
	Nov/Dec 1999	--	--	--	--	--	--	--	0.5(EB)	--	--
Screen 3	Aug/Sep 1996	**0.9**	--	--	--	--	--	--	1.3	2.9(B) Acetone	(1)
	Oct/Nov 1996	--	--	--	--	--	--	--	1.4	--	(1)
	Feb/Mar 1997	--	--	--	--	--	--	--	1.1	--	(1)
	Jun/Jul 1997	**0.7**	--	--	--	--	--	--	1.4	--	--
	Sep/Oct 1997	**0.6**	--	--	--	--	--	--	1.3	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	1.4	--	--
	Apr/May 1998	**1.0**	--	--	--	--	--	--	1.3	--	--

TABLE 3-3

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(concentrations in µg/L)
Values above state and/or Federal MCLs or action levels are bold and shaded

Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
	Jul/Aug 1998	**1.5**	--	--	--	--	--	--	1.4	--	--
	Oct/Nov 1998	**1.3**	--	--	--	--	--	--	1.1	--	--
	Feb/Mar 1999	--	--	--	--	--	--	0.7(5)	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--
	Aug 1999	**0.7**	--	--	--	--	--	--	0.7	--	--
	Nov/Dec 1999	**0.9**	--	--	--	--	--	--	0.7(EB)	--	--
Screen 4	Aug/Sep 1996	--	--	--	--	--	--	--	0.5	2.4(B) Acetone	(1)
	Oct/Nov 1996	--	--	--	--	--	--	--	--	--	(1)
	Feb/Mar 1997	--	--	--	--	--	--	--	--	1.5 2-Methyl-1-Propene	(1)
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	0.5	--	--
	Apr/May 1998	--	--	--	--	--	--	--	0.5	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	0.5	--	--
	Oct/Nov 1998	--	--	--	--	--	--	--	0.6	--	--
	Feb/Mar 1999	--	--	--	--	--	--	0.7(5)	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	0.5(EB)(3)	--	--
	Aug 1999	--	--	--	--	--	--	--	0.5	--	(2)
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--
Screen 5	Aug/Sep 1996	--	--	--	--	--	--	--	--	2.4(B) Acetone	(1)
	Oct/Nov 1996	--	--	--	--	--	--	--	--	1.1 Acetone	(1)
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	(1)
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	44 Carbon disulfide(3)	--
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	--	--	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	--	--	--	--	0.7(5)	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--
	Aug 1999	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--
MW-12											
Screen 1	Aug/Sep 1996	--	--	--	--	--	--	--	4.1	--	(1)
	Oct/Nov 1996	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)
	Feb/Mar 1997	--	--	--	--	--	--	--	5.8	--	(1)
	Jun/Jul 1997	--	--	--	--	--	--	--	0.5	--	--
	Sep/Oct 1997	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)

TABLE 3-3

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED DURING THE LONG-TERM QUARTERLY GROUNDWATER SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in µg/L)
Values above state and/or Federal MCLs or action levels are bold and shaded

Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
	Jan/Feb 1998	--	--	--	--	--	--	--	0.8	--	--
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	--	--	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	--	--	--	--	--	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--
	Aug 1999	--	--	--	--	--	--	--	--	--	--
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--
Screen 2	Aug/Sep 1996	**0.9**	--	--	--	--	--	--	--	--	(1)
	Oct/Nov 1996	**1.5**	0.6	--	--	--	--	0.5	--	--	(1)
	Feb/Mar 1997	**1.1**	0.5	--	--	--	--	--	--	1.1(B) Acetone	(1)
	Jun/Jul 1997	**1.0**	--	--	--	--	--	--	0.8	--	6.9
	Sep/Oct 1997	**0.8**	--	--	--	--	--	--	0.8	--	5.8
	Jan/Feb 1998	**1.1**	--	--	--	--	--	--	0.6	--	6.3
	Apr/May 1998	**1.2**	--	--	--	--	--	--	0.9	--	6.0
	Jul/Aug 1998	**1.4**	--	--	--	--	--	--	0.9	--	5.1
	Oct/Nov 1998	**1.3**	--	--	--	--	--	--	1.0	--	4.2
	Feb/Mar 1999	**1.3**	--	--	--	--	--	--	0.9	--	4.1
	May/Jun 1999	**0.8**	--	--	--	--	--	--	0.6(EB)[3]	0.8 Dichloromethane(EB)	5.0
	Aug 1999	**0.5**	--	--	--	--	--	--	--	--	--
	Nov/Dec 1999	**0.5**	--	--	--	--	--	--	--	0.5 Unknown (RT=4.79)	--
Screen 3	Aug/Sep 1996	**4.5**	--	--	--	--	--	--	1.3	--	(1)
	Oct/Nov 1996	**3.8**	--	--	--	--	--	--	1.3	1.6 Acetone	(1)
	Feb/Mar 1997	**6.4**	--	--	--	--	--	--	1.4	1.3(B) Acetone	(1)
	Jun/Jul 1997	**20**	--	--	--	--	--	--	1.6	--	5.7
	Sep/Oct 1997	**14**	--	--	--	--	--	--	1.7	--	6.2
	Jan/Feb 1998	**23E**	--	--	--	--	--	--	2.3	--	5.9
	Apr/May 1998	**25**	--	--	--	--	--	--	2.0	--	6.9
	Jul/Aug 1998	**35**	--	--	--	--	--	--	2.2	--	6.6
	Oct/Nov 1998	**27**	--	--	--	--	--	--	2.2	--	6.9
	Feb/Mar 1999	**23**	--	--	--	--	--	--	--	--	--
	May/Jun 1999	**19**	--	--	--	--	--	--	2.0(EB)[3]	--	8.7
	Aug 1999	**19**	--	--	--	--	--	--	2.3	--	--
	Nov/Dec 1999	**23**	--	--	--	--	--	--	2.4(EB)	0.5 Unknown	8.5
Screen 4	Aug/Sep 1996	**6.3**	--	--	--	--	--	--	1.4	--	(1)
	Oct/Nov 1996	**5.1**	--	--	--	--	--	--	1.4	2.5 Acetone	(1)
	Feb/Mar 1997	**4.9**	--	--	--	--	--	--	1.3	--	(1)
	Jun/Jul 1997	**4.9**	--	--	--	--	--	--	1.3	--	7.3

TABLE 3-3

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(concentrations in µg/L)
Values above state and/or Federal MCLs or action levels are bold and shaded

Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
	Sep/Oct 1997	**3.8**	--	--	--	--	--	--	1.0	--	7.6
	Jan/Feb 1998	**4.0**	--	--	--	--	--	--	1.1	--	8.0
	Apr/May 1998	**4.3**	--	--	--	--	--	--	1.2	--	8.0
	Jul/Aug 1998	**5.1**	--	--	--	--	--	--	1.2	--	6.0
	Oct/Nov 1998	**4.1**	--	--	--	--	--	--	1.2	--	7.7
	Feb/Mar 1999	**4.5**	--	--	--	--	--	--	1.2	--	7.0
	May/Jun 1999	**4.0**	--	--	--	--	--	--	1.0(EB)[3]	--	9.1
	Aug 1999	**3.7**	--	--	--	--	--	--	1.1	--	9.2
	Nov/Dec 1999	**3.9**	--	--	--	--	--	--	1.3(EB)	0.5 Unknown (RT=4.8)	8.5
Screen 5	Aug/Sep 1996	**3.4**	--	--	--	--	--	--	0.7	--	(1)
	Oct/Nov 1996	**1.3**	--	--	--	--	--	--	--	1.5 Acetone	(1)
	Feb/Mar 1997	**1.7**	--	--	--	--	--	--	0.5	--	(1)
	Jun/Jul 1997	**1.9**	--	--	--	--	--	--	0.5	--	4.1
	Sep/Oct 1997	**1.3**	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	**1.3**	--	--	--	--	--	--	--	--	--
	Apr/May 1998	**1.7**	--	--	--	--	--	--	0.6	--	--
	Jul/Aug 1998	**2.1**	--	--	--	--	--	--	0.6	--	--
	Oct/Nov 1998	**2.0**	--	--	--	--	--	--	0.6	--	--
	Feb/Mar 1999	**1.3**	--	--	--	--	--	--	0.7	--	--
	May/Jun 1999	**1.6**	--	--	--	--	--	--	0.5(EB)[3]	--	--
	Aug 1999	**1.9**	--	--	--	--	--	--	0.6	--	--
	Nov/Dec 1999	**1.4**	--	--	--	--	--	--	0.5(EB)	--	--
MW-13	Aug/Sep 1996	**21**	**47**	0.6	--	**2.5**	1.5	0.7	21(TB)	--	(1)
	Oct/Nov 1996	**27**	**27**	--	--	**1.9**	1.5	0.6	14	--	(1)
	Feb/Mar 1997	**18**	**28**	--	--	**0.9**	1.1	0.6	9.2	--	(1)
	Jun/Jul 1997	**6.4**	**24 E**	--	--	**0.9**	0.5	--	11	--	**130**
	Sep/Oct 1997	**8.2**	**19**	--	--	**1.1**	0.5	--	10	--	**210**
	Jan/Feb 1998	**12**	**5.2**	0.5	--	--	0.5[6]	--	2.9	1.8 Freon 11	**99**
	Apr/May 1998	**13**	**17**	0.6	--	--	0.9	0.6	5.7	--	**100**
	Jul/Aug 1998	**15**	**29**	0.6	--	--	1.2	0.7	7.7	1.0 Dichloromethane[5] 0.5 1,1,1-Trichloroethane	**59**
	Oct/Nov 1998	**9.0**	**20**	--	--	--	1.1	0.5	9.3	--	**86**
	Feb/Mar 1999	**9.4**	**28**	--	--	**0.7**	0.7	11	--	--	**98**
	May/Jun 1999	**9.8**	**40**	0.6	--	**0.5**	0.8	1.0	9.4	--	**120**
	Aug 1999	**11**	**29**	--	--	**0.7**	0.9	--	12	--	**150**
	Nov/Dec 1999	**10.7**	**20.01**	--	--	**0.5**	0.7	--	9.2	--	**590**

TABLE 3-3

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Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
MW-14											
Screen 1	Aug/Sep 1996	--	--	--	2.4	--	--	--	0.6	--	(1)
	Oct/Nov 1996	--	--	--	2.9	--	--	--	--	--	(1)
	Feb/Mar 1997	--	--	0.7	1.5	--	--	--	0.7	--	(1)
	Jun/Jul 1997	--	--	--	2.0	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	1.9	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	2.1	--	--	--	0.5	--	--
	Apr/May 1998	--	--	1.2	0.8	--	--	--	0.8	--	4.4
	Jul/Aug 1998	--	--	0.8	1.7	--	--	--	0.6	--	4.4
	Oct/Nov 1998	--	--	0.5	2.4	--	--	--	0.6	--	4.2
	Feb/Mar 1999	--	--	0.8	1.2	--	--	0.6(5)	0.6	--	4.2
	May/Jun 1999	--	--	0.5	2.6	--	--	--	--	--	--
	Aug 1999	--	--	--	1.7	--	--	--	--	--	--
	Nov/Dec 1999	(8)	(8)	(8)	(8)	(8)	(8)	(8)	(8)	(8)	(8)
Screen 2	Aug/Sep 1996	--	2.8	1.6	1.4	--	--	--	1.5	--	(1)
	Oct/Nov 1996	--	1.5	1.6	1.0	--	--	--	0.9	0.6 1,2,3-Trichlorobenzene 1.1 Acetone	(1)
	Feb/Mar 1997	--	0.9	1.9	1.3	--	--	--	0.8	0.8 1,2,3-Trichlorobenzene 1.1 Acetone	(1)
	Jun/Jul 1997	--	1.1	1.7	1.5	--	--	--	0.9	0.5 1,2,3-Trichlorobenzene	--
	Sep/Oct 1997	--	1.2	1.9	1.6	--	--	--	0.8	--	--
	Jan/Feb 1998	--	--	1.2	0.7	--	--	--	--	8.9 Carbon disulfide(4)	9.0
	Apr/May 1998	--	--	1.2	0.7	--	--	--	0.6	--	4.0
	Jul/Aug 1998	--	0.9	1.8	0.8	--	--	--	0.6	--	4.9
	Oct/Nov 1998	--	0.6	1.5	0.7	--	--	--	0.5	--	4.2
	Feb/Mar 1999	--	0.9	1.6	0.7	--	--	0.6(5)	0.6	--	4.2
	May/Jun 1999	--	1.0	1.2	0.8	--	--	--	0.6(EB)(3)	--	9.6
	Aug 1999	--	--	1.0	--	--	--	--	--	--	--
	Nov/Dec 1999	--	1.0	0.8	--	--	--	--	--	--	5.2
Screen 3	Aug/Sep 1996	--	--	--	--	--	--	--	--	--	(1)
	Oct/Nov 1996	--	--	--	--	--	--	--	--	--	(1)
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	(1)
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	4.3
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	5.6
	Apr/May 1998	--	--	--	--	--	--	--	--	--	5.8
	Jul/Aug 1998	--	--	--	--	--	--	--	--	--	5.9
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	6.7

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Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
	Feb/Mar 1999	--	--	0.5	--	--	--	0.6[5]	0.5	--	5.9
	May/Jun 1999	--	--	--	--	--	--	--	--	--	7.0
	Aug 1999	--	--	--	--	--	--	--	--	--	6.6
	Nov/Dec 1999	--	0.5	--	--	--	--	--	0.5(EB)	--	6.8
Screen 4	Aug/Sep 1996	--	--	--	--	--	--	--	--	--	(1)
	Oct/Nov 1996	--	--	--	--	--	--	--	--	--	(1)
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	(1)
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	--	--	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	--	--	--	--	0.6[5]	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	9.9
	Aug 1999	--	--	--	--	--	--	--	--	--	4.0
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	4.1
Screen 5	Aug/Sep 1996	--	--	--	--	--	--	--	--	2.1(B) Acetone	(1)
	Oct/Nov 1996	--	--	--	--	--	--	--	--	1.6(TB) Acetone 1.3 Carbon disulfide	(1) (1)
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	(1)
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	4.6 Carbon disulfide[4]	--
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	--	--	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	--	--	--	--	--	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--
	Aug 1999	--	--	--	--	--	--	--	--	--	--
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--
MW-15	Aug/Sep 1996	--	--	--	--	--	--	--	--	--	(1)
	Oct/Nov 1996	--	--	--	--	--	--	--	--	2.6 Acetone	(1)
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	(1)
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--

TABLE 3-3

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED DURING THE LONG-TERM QUARTERLY GROUNDWATER SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in µg/L)
Values above state and/or Federal MCLs or action levels are bold and shaded

Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
	Jul/Aug 1998	--	--	--	--	--	--	--	--	--	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	--	--	--	--	--	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--
	Aug 1999	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--
MW-16	Aug/Sep 1996	**125**	**33**	1.3	--	**2.4**	2.2	2.0	40(TB)	--	(1)
	Oct/Nov 1996	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)
	Feb/Mar 1997	**91**	**23**	1.3	--	**1.7**	2.6	1.6	29	--	(1)
	Jun/Jul 1997	**68**	**25**	1.1	--	**2.1**	1.7	0.6	43	--	**615**
	Sep/Oct 1997	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)
	Jan/Feb 1998	**30**	3.5	1.0	--	--	1.3	--	14	--	**1230**
	Apr/May 1998	**42**	**12**	0.8	--	**1.4**	1.6	1.2	20	--	**640**
	Jul/Aug 1998	**58**	**19**	1.3	--	**0.8**	2.7	1.2	23	0.6 Dichloromethane[5] 1.0 1,1,1-Trichloroethane	**420**
	Oct/Nov 1998	**51**	**18**	1.0	--	**1.5**	1.6	1.4	29	1.1 1,1,1-Trichloroethane 13 Carbon disulfide	**220**
	Feb/Mar 1999	**67**	**20**	1.4	--	**1.1**	1.8	1.1	24	--	**790**
	May/Jun 1999	**58**	**15**	1.0	--	**0.8**	1.3	1.2	23	0.5 Fluorotrichloromethane	**650**
	Aug 1999	**70**	**19**	1.8	--	**1.1**	1.9	1.1	26(EB)	0.6 1,1,1-Trichloroethane	**930**
	Nov/Dec 1999	**80**	**10.4**	3.0	--	**0.7**	5.3	0.7	24	--	**770**
MW-17									24		
Screen 1	Aug/Sep 1996	--	--	--	--	--	--	--	--	4.3(B) Acetone	(1)
	Oct/Nov 1996	--	--	--	--	--	--	--	--	1.4 Acetone	(1)
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	(1)
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	2.9	--	--
	Apr/May 1998	--	--	--	--	--	--	--	3.2	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	--	--	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	--	--	--	--	--	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--
	Aug 1999	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--

TABLE 3-3

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED DURING THE LONG-TERM QUARTERLY GROUNDWATER SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in µg/L)
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Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
Screen 2	Aug/Sep 1996	--	--	--	--	--	--	--	3.8	4.5(B) Acetone	(1)
	Oct/Nov 1996	--	--	--	--	--	--	--	6.0	--	(1)
	Feb/Mar 1997	--	--	--	--	--	--	--	5.2	--	(1)
	Jun/Jul 1997	--	--	--	--	--	--	--	4.1	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	6.1	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	5.4	--	--
	Apr/May 1998	--	--	--	--	--	--	--	3.2	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	2.4	--	--
	Oct/Nov 1998	--	--	--	--	--	--	--	3.7	--	--
	Feb/Mar 1999	--	--	--	--	--	--	1.0(5)	3.9	--	--
	May/Jun 1999	--	--	--	--	--	--	--	3.2(EB)(3)	--	--
	Aug 1999	--	--	--	--	--	--	--	2.5	--	--
	Nov/Dec 1999	--	--	--	--	--	--	--	1.4(EB)	--	--
Screen 3	Aug/Sep 1996	**2.0**	**7.9**	--	--	--	--	--	7.5	--	(1)
	Oct/Nov 1996	**3.3**	**18**	0.8	--	--	--	--	8.7	--	(1)
	Feb/Mar 1997	**5.1**	**23**	1.1	--	--	--	--	6.2	--	(1)
	Jun/Jul 1997	**1.3**	**5.9**	--	--	--	--	--	8.2	--	12
	Sep/Oct 1997	**6.6**	**22**	1.4	--	--	--	--	9.2	--	**55**
	Jan/Feb 1998	**3.3**	**8.7**	--	--	--	--	--	6.8	--	**25**
	Apr/May 1998	--	0.9	--	--	--	--	--	5.3	--	--
	Jul/Aug 1998	--	1.0	--	--	--	--	--	4.9	--	--
	Oct/Nov 1998	--	1.9	--	--	--	--	--	4.1	--	5.1
	Feb/Mar 1999	--	1.6	--	--	--	--	--	3.8	--	4.2
	May/Jun 1999	--	1.5	--	--	--	--	--	3.5(EB)(3)	--	--
	Aug 1999	**0.8**	2.9	--	--	--	--	--	4.6	--	6.1
	Nov/Dec 1999	**0.7**	3.2	--	--	--	--	--	4.4(EB)	--	5.5
Screen 4	Aug/Sep 1996	--	**9.5**	0.5	--	--	--	--	1.1	--	(1)
	Oct/Nov 1996	--	**8.9**	--	--	--	--	--	1.5	--	(1)
	Feb/Mar 1997	--	**5.8**	--	--	--	--	--	0.7	--	(1)
	Jun/Jul 1997	--	4.5	--	--	--	--	--	0.6	--	13
	Sep/Oct 1997	--	**6.8**	0.5	--	--	--	--	1.0	--	16
	Jan/Feb 1998	--	**7.3**	0.6	--	--	--	--	1.2	--	16
	Apr/May 1998	--	**7.6**	0.6	--	--	--	--	1.5	--	17
	Jul/Aug 1998	--	**8.9**	0.6	--	--	--	--	1.9	--	14
	Oct/Nov 1998	--	**6.2**	0.5	--	--	--	--	1.9	--	12
	Feb/Mar 1999	--	3.8	--	--	--	--	1.0(5)	1.8	--	9.8
	May/Jun 1999	--	3.2	--	--	--	--	--	1.4(EB)(3)	--	14

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(concentrations in μg/L)
Values above state and/or Federal MCLs or action levels are bold and shaded

Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
	Aug 1999	--	3.5	--	--	--	--	--	1.5	--	12
	Nov/Dec 1999	--	**6.8**	--	--	--	--	--	2.0(EB)	--	10
Screen 5	Aug/Sep 1996	--	**13**	0.6	--	--	--	--	1.7	3.4(B) Acetone	(1)
	Oct/Nov 1996	--	**16**	0.7	--	--	--	--	1.7	--	(1)
	Feb/Mar 1997	--	**14**	0.7	--	--	--	--	1.3	--	(1)
	Jun/Jul 1997	--	**11**	0.7	--	--	--	--	1.3	--	12
	Sep/Oct 1997	--	**8.6**	0.6	--	--	--	--	1.4	--	15
	Jan/Feb 1998	--	**7.9**	--	--	--	--	--	1.5	--	15
	Apr/May 1998	--	**8.8**	0.6	--	--	--	--	1.8	--	15
	Jul/Aug 1998	--	**8.9**	0.6	--	--	--	--	2.0	--	13
	Oct/Nov 1998	--	**11**	0.8	--	--	--	--	2.7	--	12
	Feb/Mar 1999	--	4.9	--	--	--	--	--	2.1	--	6.4
	May/Jun 1999	--	**6.6**	0.6	--	--	--	--	2.0(EB)[3]	--	12
	Aug 1999	--	4.0	--	--	--	--	--	1.6	--	11
	Nov/Dec 1999	--	**6.7**	--	--	--	--	--	2.1(EB)	--	9.1
MW-18											
Screen 1	Aug/Sep 1996	--	--	--	--	--	--	--	1.6	--	(1)
	Oct/Nov 1996	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)
	Feb/Mar 1997	--	--	--	--	--	--	--	3.0	--	(1)
	Jun/Jul 1997	--	--	--	--	--	--	--	0.8	--	--
	Sep/Oct 1997	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)
	Jan/Feb 1998	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)
	Apr/May 1998	--	--	--	--	--	--	--	0.7	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	--	3.4 Unknown Hydrocarbon (RT=7.14)	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	--	--	--	--	--	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--
	Aug 1999	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
	Nov/Dec 1999	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)
Screen 2	Aug/Sep 1996	--	--	--	--	--	--	--	7.3	--	(1)
	Oct/Nov 1996	--	--	--	--	--	--	--	8.2	--	(1)
	Feb/Mar 1997	--	--	--	--	--	--	--	1.9	--	(1)
	Jun/Jul 1997	--	--	--	--	--	--	--	4.5	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	2.5	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	3.7	--	--
	Apr/May 1998	--	--	--	--	--	--	--	3.2	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	0.9	--	--

TABLE 3-3

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Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	--	--	--	--	--	3.0	0.8 Bromodichloromethane	--
	May/Jun 1999	--	--	--	--	--	--	--	0.8(EB)(3)	--	--
	Aug 1999	--	--	--	--	--	--	--	--	--	--
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--
Screen 3	Aug/Sep 1996	**0.7**	4.7	2.8	--	--	--	--	5.1	--	(1)
	Oct/Nov 1996	**0.7**	**6.4**	3.2	--	--	--	--	5.6	--	(1)
	Feb/Mar 1997	**0.8**	**6.6**	2.9	--	--	--	--	5.1	--	(1)
	Jun/Jul 1997	**0.6**	2.4	1.8	--	--	--	--	4.4	--	--
	Sep/Oct 1997	--	3.0	1.9	--	--	--	--	6.2	--	--
	Jan/Feb 1998	--	1.9	1.7	--	--	--	--	6.6	4.1 Unknown (RT=4.33)	--
	Apr/May 1998	**0.5**	1.8	1.3	--	--	--	--	5.7	--	5.0
	Jul/Aug 1998	--	1.5	0.9	--	--	--	--	4.6	--	5.2
	Oct/Nov 1998	--	1.4	0.8	--	--	--	--	4.2	--	--
	Feb/Mar 1999	--	1.0	0.5	--	--	--	--	3.5	--	--
	May/Jun 1999	--	1.1	--	--	--	--	--	2.5(EB)(3)	0.6 Dichloromethane	--
	Aug 1999	--	1.0	--	--	--	--	--	2.8	--	--
	Nov/Dec 1999	--	0.8	--	--	--	--	--	0.8(EB)	--	--
Screen 4	Aug/Sep 1996	**2.2**	--	0.7	--	--	--	--	0.5	--	(1)
	Oct/Nov 1996	**2.2**	--	0.7	--	--	--	--	0.5	1.4(TB) Acetone	(1)
	Feb/Mar 1997	**2.2**	--	1.5	--	--	--	--	0.6	--	(1)
	Jun/Jul 1997	**1.9**	--	0.7	--	--	--	--	--	--	11
	Sep/Oct 1997	**2.4**	--	0.7	--	--	--	--	--	1.5 Carbon Disulfide	12
	Jan/Feb 1998	**2.6**	--	1.0	--	--	--	--	0.5	--	11
	Apr/May 1998	**3.1**	0.6	1.4	--	--	--	--	0.8	--	13
	Jul/Aug 1998	**2.5**	0.6	1.2	--	--	--	--	0.6	--	16
	Oct/Nov 1998	**3.4**	0.8	1.5	--	--	--	--	0.7	--	**19**
	Feb/Mar 1999	**4.7**	1.2	2.3	--	--	--	--	1.1	--	**24**
	May/Jun 1999	**3.6**	1.6	2.5	--	--	--	--	1.1(EB)(3)	0.7 Dichloromethane	16
	Aug 1999	**3.6**	1.1	1.9	--	--	--	--	0.8	--	**23**
	Nov/Dec 1999	**3.8**	1.2	2.0	--	--	--	--	0.8(EB)	--	**23**
Screen 5	Aug/Sep 1996	--	--	--	--	--	--	--	--	--	(1)
	Oct/Nov 1996	--	--	--	--	--	--	--	--	1.6 Acetone	(1)
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	(1)
	Jun/Jul 1997	--	--	--	--	--	--	--	--	1.1 Carbon disulfide	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--

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Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
	Jul/Aug 1998	--	--	--	--	--	--	--	--	4.6 Hexane	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	--	--	--	--	--	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	0.8 Dichloromethane	--
	Aug 1999	--	--	--	--	--	--	--	--	1.0 Unknown (RT=4.25)	--
	Nov/Dec 1999	--	--	--	--	--	--	--	--	0.6 Unknown (RT=4.82)	--
MW-19											
Screen 1	Aug/Sep 1996	--	--	--	--	--	--	--	0.9	3.7(B) Acetone	(1)
	Oct/Nov 1996	--	--	--	--	--	--	--	0.6	2.9 Acetone	(1)
	Feb/Mar 1997	--	--	--	--	--	--	--	0.8	--	(1)
	Jun/Jul 1997	--	--	--	--	--	--	--	2.5	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	1.4	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	0.8	--	--
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	--	--	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	--	--	--	--	--	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--
	Aug 1999	--	--	--	--	--	--	--	--	--	--
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--
Screen 2	Aug/Sep 1996	--	--	0.8	--	--	--	--	--	3.0(B) Acetone	(1)
	Oct/Nov 1996	--	--	1.1	--	--	--	--	--	--	(1)
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	(1)
	Jun/Jul 1997	--	--	0.6	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	0.6	0.9	--	--	--	--	--	--	--
	Apr/May 1998	--	0.9	1.2	--	--	--	--	--	--	--
	Jul/Aug 1998	--	0.6	0.7	--	--	--	--	--	--	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	0.6	--	--	--	--	--	--	--	--
	May/Jun 1999	--	1.3	1.1	--	--	--	--	--	--	4.5
	Aug 1999	--	0.7	--	--	--	--	--	--	--	--
	Nov/Dec 1999	--	0.5	--	--	--	--	--	--	--	--
Screen 3	Aug/Sep 1996	--	--	3.1	--	--	--	--	--	2.6(B) Acetone	(1)
	Oct/Nov 1996	--	--	2.5	--	--	--	--	--	--	(1)
	Feb/Mar 1997	--	--	2.1	--	--	--	--	--	--	(1)
	Jun/Jul 1997	--	--	2.0	--	--	--	--	--	--	4.1
	Sep/Oct 1997	--	--	1.5	--	--	--	--	--	0.6 Toluene	--

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Values above state and/or Federal MCLs or action levels are bold and shaded

Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
	Jan/Feb 1998	--	--	2.1	--	--	--	--	--	--	--
	Apr/May 1998	--	--	2.5	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	2.1	--	--	--	--	--	--	4.4
	Oct/Nov 1998	--	--	2.0	--	--	--	--	--	--	4.2
	Feb/Mar 1999	--	--	1.5	--	--	--	--	--	--	--
	May/Jun 1999	--	0.9	2.7	--	--	--	--	--	--	7.2
	Aug 1999	--	0.6	1.9	--	--	--	--	--	--	4.4
	Nov/Dec 1999	--	0.6	1.9	--	--	--	--	--	--	5.0
Screen 4	Aug/Sep 1996	**0.5**	1.5	--	--	--	--	--	2.1	--	(1)
	Oct/Nov 1996	--	1.5	--	--	--	--	--	1.9	--	(1)
	Feb/Mar 1997	--	1.1	0.6	--	--	--	--	1.5	--	(1)
	Jun/Jul 1997	--	0.7	--	--	--	--	--	1.3	--	--
	Sep/Oct 1997	--	0.7	0.6	--	--	--	--	1.7	--	4.9
	Jan/Feb 1998	--	0.5	0.6	--	--	--	--	1.3	--	--
	Apr/May 1998	--	0.8	1.0	--	--	--	--	1.6	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	1.4	--	--
	Oct/Nov 1998	--	--	--	--	--	--	--	2.2	--	--
	Feb/Mar 1999	--	--	--	--	--	--	--	3.0	--	--
	May/Jun 1999	--	0.7	--	--	--	--	--	2.6(EB)(3)	--	--
	Aug 1999	--	0.5	--	--	--	--	--	2.7	--	--
	Nov/Dec 1999	--	0.5	--	--	--	--	--	2.1(EB)	--	--
Screen 5	Aug/Sep 1996	--	--	3.0	--	--	--	--	0.6	1.6(B) Unknown scan #940	(1)
	Oct/Nov 1996	--	--	2.4	--	--	--	--	--	--	(1)
	Feb/Mar 1997	--	--	1.7	--	--	--	--	--	--	(1)
	Jun/Jul 1997	--	--	1.5	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	2.2	--	--	--	--	0.8	--	--
	Jan/Feb 1998	--	--	1.4	--	--	--	--	--	--	--
	Apr/May 1998	--	--	0.9	--	--	--	--	0.6	--	--
	Jul/Aug 1998	--	--	1.5	--	--	--	--	--	--	--
	Oct/Nov 1998	--	--	1.5	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	1.3	--	--	--	--	--	--	--
	May/Jun 1999	--	--	2.1	--	--	--	--	--	0.7 Dichloromethane	4.4
	Aug 1999	--	--	1.5	--	--	--	--	--	--	4.2
	Nov/Dec 1999	--	--	1.5	--	--	--	--	--	--	--

TABLE 3-3

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED DURING THE LONG-TERM QUARTERLY GROUNDWATER SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in µg/L)
Values above state and/or Federal MCLs or action levels are bold and shaded

Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
MW-20											
Screen 1	Aug/Sep 1996	--	--	--	--	--	--	--	0.7	3.4(B) Acetone	(1)
	Oct/Nov 1996	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)
	Feb/Mar 1997	--	--	--	--	--	--	--	1.4	2.4(EB) Acetone	(1)
	Jun/Jul 1997	--	--	--	--	--	--	--	0.8	--	5.7
	Sep/Oct 1997	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)
	Jan/Feb 1998	--	--	--	--	--	--	--	1.4	--	6.3
	Apr/May 1998	--	--	--	--	--	--	--	2.5	--	5.5
	Jul/Aug 1998	--	--	--	--	--	--	--	1.8	--	5.9
	Oct/Nov 1998	--	--	--	--	--	--	--	0.8	--	7.8
	Feb/Mar 1999	--	--	--	--	--	--	--	2.2	--	4.9
	May/Jun 1999	--	--	--	--	--	--	--	1.9(EB)(3)	--	4.4
	Aug 1999	--	--	--	--	--	--	--	0.6	--	7.5
	Nov/Dec 1999	--	--	--	--	--	--	--	1.3(EB)	--	7.7
Screen 2	Aug/Sep 1996	--	--	--	--	--	--	--	7.7	4.0(B) Acetone	(1)
	Oct/Nov 1996	--	--	--	--	--	--	--	4.4	--	(1)
	Feb/Mar 1997	--	--	--	--	--	--	--	3.2	--	(1)
	Jun/Jul 1997	--	--	--	--	--	--	--	3.3	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	5.7	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	2.7	--	--
	Apr/May 1998	--	--	--	--	--	--	--	2.7	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	4.2	0.5 Dichlorobromomethane	--
	Oct/Nov 1998	--	--	--	--	--	--	--	3.6	--	--
	Feb/Mar 1999	--	--	--	--	--	--	--	4.2	--	--
	May/Jun 1999	--	--	--	--	--	--	--	4.6(EB)(3)	0.6 Bromodichloromethane	--
	Aug 1999	--	--	--	--	--	--	--	4.8	0.6 Bromodichloromethane	--
	Nov/Dec 1999	--	--	--	--	--	--	--	3.8(EB)	--	--
Screen 3	Aug/Sep 1996	--	--	--	--	--	--	--	--	2.7(B) Acetone	(1)
	Oct/Nov 1996	--	--	--	--	--	--	--	0.6	2.3 Acetone	(1)
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	(1)
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	3.4 Unknown (RT=6.2)	--
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	--	--	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	--	--	--	--	--	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--

TABLE 3-3

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED DURING THE LONG-TERM QUARTERLY GROUNDWATER SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in µg/L)
Values above state and/or Federal MCLs or action levels are bold and shaded

Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
	Aug 1999	--	--	--	--	--	--	--	--	--	--
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--
Screen 4	Aug/Sep 1996	--	--	--	--	--	--	--	--	3.8(B) Acetone	(1)
	Oct/Nov 1996	--	--	--	--	--	--	--	--	--	(1)
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	(1)
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	--	--	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	**20**
	Feb/Mar 1999	--	--	--	--	--	--	--	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--
	Aug 1999	--	--	--	--	--	--	--	--	--	--
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--
Screen 5	Aug/Sep 1996	--	--	--	--	--	--	--	--	4.8(B) Acetone	(1)
	Oct/Nov 1996	--	--	--	--	--	--	--	--	--	(1)
	Feb/Mar 1997	--	--	--	--	--	--	--	--	--	(1)
	Jun/Jul 1997	--	--	--	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	--	--	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	8.2
	Feb/Mar 1999	--	--	--	--	--	--	--	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--
	Aug 1999	--	--	--	--	--	--	--	--	0.7 Carbonyl sulfide	--
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--
MW-21											
Screen 1	Aug/Sep 1996	--	**33**	0.7	--	--	--	--	1.8	2.3(B) Acetone	(1)
	Oct/Nov 1996	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)
	Feb/Mar 1997	--	**29**	--	--	--	--	--	2.2	--	(1)
	Jun/Jul 1997	--	**20**	--	--	--	--	--	1.6	--	**19**
	Sep/Oct 1997	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)	(7)
	Jan/Feb 1998	--	**16**	--	--	--	--	--	1.8	--	14
	Apr/May 1998	--	**16**	--	--	--	--	--	1.8	--	14
	Jul/Aug 1998	--	**16**	0.6	--	--	--	--	1.8	--	13

TABLE 3-3

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED DURING THE LONG-TERM QUARTERLY GROUNDWATER SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in µg/L)
Values above state and/or Federal MCLs or action levels are bold and shaded

Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
	Oct/Nov 1998	--	**10**	--	--	--	--	--	1.6	--	13
	Feb/Mar 1999	--	**20**	0.5	--	--	--	--	1.8	--	14
	May/Jun 1999	--	**20**	0.5	--	--	--	--	1.6(EB)(3)	--	15
	Aug 1999	--	**17**	0.5	--	--	--	--	1.7	--	12
	Nov/Dec 1999	--	**15**	0.7	--	--	--	--	2.2(EB)	--	16
Screen 2	Aug/Sep 1996	--	--	0.9	--	--	--	--	0.5	--	(1)
	Oct/Nov 1996	--	0.6	2.3	--	--	--	--	0.6	1.4(TB) Acetone	(1)
	Feb/Mar 1997	--	--	1.1	--	--	--	--	--	--	(1)
	Jun/Jul 1997	--	--	0.7	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	1.1	--	--	--	--	--	--	--
	Apr/May 1998	--	--	1.0	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	0.7	--	--	--	--	0.7	--	--
	Oct/Nov 1998	--	--	--	--	--	--	--	0.7	--	--
	Feb/Mar 1999	--	--	0.8	--	--	--	--	--	--	--
	May/Jun 1999	--	--	0.6	--	--	--	--	--	--	--
	Aug 1999	--	--	0.8	--	--	--	--	--	--	--
	Nov/Dec 1999	--	--	1.2	--	--	--	--	--	--	4.6
Screen 3	Aug/Sep 1996	--	0.7	1.5	--	--	--	--	0.5	--	(1)
	Oct/Nov 1996	--	0.9	1.6	--	--	--	--	--	1.2 Acetone	(1)
	Feb/Mar 1997	--	0.8	1.6	--	--	--	--	--	--	(1)
	Jun/Jul 1997	--	--	1.2	--	--	--	--	--	--	--
	Sep/Oct 1997	--	0.6	1.3	--	--	--	--	--	--	--
	Jan/Feb 1998	--	0.5	1.4	--	--	--	--	--	--	--
	Apr/May 1998	--	--	1.1	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	0.9	--	--	--	--	--	--	--
	Oct/Nov 1998	--	--	0.8	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	1.0	--	--	--	--	--	--	4.1
	May/Jun 1999	--	0.6	1.4	--	--	--	--	--	--	--
	Aug 1999	--	0.6	1.3	--	--	--	--	--	--	--
	Nov/Dec 1999	--	0.9	2.2	--	--	--	--	0.6(EB)	4.9 Carbonyl Sulfide	4.8
Screen 4	Aug/Sep 1996	--	0.8	4.2	--	--	--	--	--	--	(1)
	Oct/Nov 1996	--	--	2.5	--	--	--	--	--	1.6 Acetone	(1)
	Feb/Mar 1997	--	--	1.8	--	--	--	--	--	--	(1)
	Jun/Jul 1997	--	--	2.8	--	--	--	--	--	--	4.6
	Sep/Oct 1997	--	0.6	4.4	--	--	--	--	--	--	7.7
	Jan/Feb 1998	--	--	2.4	--	--	--	--	--	--	--

TABLE 3-3

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED DURING THE LONG-TERM QUARTERLY GROUNDWATER SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in µg/L)
Values above state and/or Federal MCLs or action levels are bold and shaded

Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
	Apr/May 1998	--	0.6	4.4	--	--	--	--	--	0.7 cis-1,2-Dichloroethene	--
	Jul/Aug 1998	--	0.8	4.3	--	--	--	--	--	0.8 cis-1,2-Dichloroethene	4.3
	Oct/Nov 1998	--	1.1	**8.3**	--	--	--	--	0.6	1.3 cis-1,2-Dichloroethene	--
	Feb/Mar 1999	--	--	3.8	--	--	--	--	--	0.7 cis-1,2-Dichloroethene	--
	May/Jun 1999	--	--	3.2	--	--	--	--	--	0.6 cis-1,2-Dichloroethene	4.8
	Aug 1999	--	0.7	**6.1**	--	--	--	--	0.6	1.2 cis-1,2-Dichloroethene	--
	Nov/Dec 1999	--	0.6	**6.0**	--	--	--	--	--	5.1 Carbonyl Sulfide 1.1 cis-1,2-Dichloroethene	--
Screen 5	Aug/Sep 1996	--	--	4.5	--	--	--	--	0.6	--	(1)
	Oct/Nov 1996	--	--	3.1	--	--	--	--	--	--	(1)
	Feb/Mar 1997	--	--	3.0	--	--	--	--	--	--	(1)
	Jun/Jul 1997	--	--	3.0	--	--	--	--	--	--	--
	Sep/Oct 1997	--	--	2.9	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	4.1	--	--	--	--	--	0.6 cis-1,2-Dichloroethene 5.0 Carbon disulfide(4)	5.2
	Apr/May 1998	--	--	**6.5**	--	--	--	--	--	1.0 cis-1,2-Dichloroethene	5.8
	Jul/Aug 1998	--	--	**7.6**	--	--	--	--	0.6	1.5 cis-1,2-Dichloroethene	--
	Oct/Nov 1998	--	--	**6.7**	--	--	--	--	0.6	1.4 cis-1,2-Dichloroethene	4.0
	Feb/Mar 1999	--	0.5	**7.7**	--	--	--	--	0.7	1.4 cis-1,2-Dichloroethene	4.2
	May/Jun 1999	--	--	**8.2**	--	--	--	--	0.7(EB)(3)	1.5 cis-1,2-Dichloroethene	--
	Aug 1999	--	0.6	**9.6**	--	--	--	--	0.8	1.6 cis-1,2-Dichloroethene 1.4 Chlorodifluoromethane	--
	Nov/Dec 1999	--	0.7	**11.4**	--	--	--	--	1.0(EB)	2.2 cis-1,2-Dichloroethene	4.9
MW-22(9)											
Screen 1	Sep/Oct 1997	--	--	2.0	0.7	--	--	--	--	--	--
	Jan/Feb 1998	--	--	2.3	0.8	--	--	0.5	--	--	--
	Apr/May 1998	--	0.9	2.1	0.8	--	--	--	0.5	--	5.4
	Jul/Aug 1998	--	0.9	1.7	0.6	--	--	--	--	--	6.4
	Oct/Nov 1998	--	--	1.7	0.7	--	--	--	--	--	5.0
	Feb/Mar 1999	--	0.6	3.6	1.0	--	--	1.3(5)	0.5	--	6.4
	May/Jun 1999	--	--	2.7	1.0	--	--	--	--	--	4.9
	Aug 1999	--	--	2.1	0.7	--	--	--	--	--	--
	Nov/Dec 1999	--	--	3.6	0.9	--	--	--	0.5(EB)	--	4.2
Screen 2	Sep/Oct 1997	--	--	--	--	--	--	--	--	0.8 Dichloromethane	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	--	--	4.9

TABLE 3-3

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED DURING THE LONG-TERM QUARTERLY GROUNDWATER SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in µg/L)
Values above state and/or Federal MCLs or action levels are bold and shaded

Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	0.6	--	--	--	--	1.4(5)	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--
	Aug 1999	--	--	--	--	--	--	--	--	--	--
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--
Screen 3	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	15
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	--	--	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	--	--	--	--	1.3(5)	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--
	Aug 1999	--	--	--	--	--	--	--	--	--	--
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--
Screen 4	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	--	--	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	--	--	--	--	1.3(5)	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--
	Aug 1999	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	--
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--
Screen 5	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	--	--	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	--	--	--	--	1.3(5)	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--
	Aug 1999	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--
MW-23(9)											
Screen 1	Sep/Oct 1997	--	3.1	0.6	0.8	--	--	--	--	--	4.4
	Jan/Feb 1998	--	4.2	1.6	1.2	--	--	--	0.9	0.6 1,2,3-Trichlorobenzene	5.2
	Apr/May 1998	**0.5**	**16**	0.8	1.2	--	--	--	1.9	--	16
	Jul/Aug 1998	**0.5**	**9.2**	--	--	--	--	--	1.0	2.2 Dichloromethane(4)	**19**

TABLE 3-3

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(concentrations in µg/L)
Values above state and/or Federal MCLs or action levels are bold and shaded

Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
	Oct/Nov 1998	**0.8**	**15**	--	--	--	--	--	1.9	--	**21**
	Feb/Mar 1999	**0.6**	**15**	1.1	1.4	--	--	--	1.9	0.06 1,2,3-Trichlorobenzene	8.4
	May/Jun 1999	--	**7.0**	1.1	--	--	--	0.6	1.0(EB)(3)	0.7 1,2,3-Trichlorobenzene	7.6
	Aug 1999	--	3.5	1.1	1.0	--	--	--	0.7(EB)	--	--
	Nov/Dec 1999	--	1.2	1.3	1.0	--	--	--	0.5(EB)	1.1 1,2,3-Trichlorobenzene	4.1
Screen 2	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	7.6
	Jan/Feb 1998	--	--	--	--	--	--	--	0.7	--	6.7
	Apr/May 1998	--	--	--	--	--	--	--	--	--	7.5
	Jul/Aug 1998	--	1.1	1.0	0.8	--	--	--	0.7	1.8 Dichloromethane(5)	7.8
	Oct/Nov 1998	--	0.6	0.7	0.6	--	--	--	0.6	--	16
	Feb/Mar 1999	--	--	--	--	--	--	--	0.5	--	7.7
	May/Jun 1999	--	--	--	0.5	--	--	--	0.6(EB)(3)	--	7.8
	Aug 1999	--	--	--	--	--	--	--	0.5(EB)	--	--
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	7.5
Screen 3	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	--	1.7 Dichloromethane(5)	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	--	--	--	--	--	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--
	Aug 1999	--	--	--	--	--	--	--	--	--	--
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--
Screen 4	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	--	2.3 Dichloromethane(5)	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	--	--	--	--	--	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--
	Aug 1999	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	--
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--
Screen 5	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	--	1.7 Dichloromethane(5) 3.0 Unknown (RT=3.93)	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	3.1 2-Methyl-1-propene	17

TABLE 3-3

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED DURING THE LONG-TERM QUARTERLY GROUNDWATER SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in µg/L)
Values above state and/or Federal MCLs or action levels are bold and shaded

Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
	Feb/Mar 1999	--	--	--	--	--	--	--	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--
	Aug 1999	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	--
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--
MW-24[9]											
Screen 1	Sep/Oct 1997	**5.0**	**5.0**	--	--	--	--	0.6	3.1	--	**92**
	Jan/Feb 1998	**30E**	**15**	0.5	--	**0.8**	--	0.6	15	--	**330**
	Apr/May 1998	**6.7**	**5.4**	--	--	--	--	--	3.3	--	**74**
	Jul/Aug 1998	--	1.7	--	--	--	--	--	0.9	--	**20**
	Oct/Nov 1998	**1.0**	1.3	--	--	--	--	--	0.8	--	16
	Feb/Mar 1999	**1.0**	1.5	--	--	--	--	--	0.8	--	14
	May/Jun 1999	**1.0**	1.6	--	--	--	--	--	0.6(EB)[3]	--	14
	Aug 1999	**1.8**	3.6	--	--	--	--	--	1.3	--	**22**
	Nov/Dec 1999	**6.3**	**5.3**	--	--	--	--	--	2.5(EB)	--	**91**
Screen 2	Sep/Oct 1997	**13**	1.3	--	--	--	--	--	3.8	--	**200**
	Jan/Feb 1998	**6.9**	0.7	--	--	--	--	--	2.4	--	**110**
	Apr/May 1998	**29**	3.3	0.9	--	--	1.4	--	9.4	--	**480**
	Jul/Aug 1998	**58**	4.0	1.5	--	--	2.0	--	8.4	--	**500**
	Oct/Nov 1998	**19**	2.3	0.8	--	--	0.8	--	5.9	--	**490**
	Feb/Mar 1999	**30E**	3.0	1.0	--	--	1.5	--	6.6	--	**580**
	May/Jun 1999	**33**	4.3	1.3	--	--	1.8	--	7.7(EB)[3]	--	**690**
	Aug 1999	**35**	3.6	0.9	--	--	1.4	--	7.5	--	**700**
	Nov/Dec 1999	**25**	3.7	0.9	--	--	1.4	--	7.4(EB)	--	**570**
Screen 3	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	--	--	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	--	--	--	--	--	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--
	Aug 1999	--	--	--	--	--	--	--	--	--	--
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--
Screen 4	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	--	--	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--

TABLE 3-3

SUMMARY OF VOLATILE ORGANIC COMPOUNDS AND PERCHLORATE DETECTED DURING THE LONG-TERM QUARTERLY GROUNDWATER SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in µg/L)
Values above state and/or Federal MCLs or action levels are bold and shaded

Sampling Location	Sampling Event	Carbon Tetrachloride	TCE	PCE	1,1-DCA	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds	Perchlorate
	Feb/Mar 1999	--	--	--	--	--	--	--	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--
	Aug 1999	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--
Screen 5	Sep/Oct 1997	--	--	--	--	--	--	--	--	--	--
	Jan/Feb 1998	--	--	--	--	--	--	--	--	--	--
	Apr/May 1998	--	--	--	--	--	--	--	--	--	--
	Jul/Aug 1998	--	--	--	--	--	--	--	--	--	--
	Oct/Nov 1998	--	--	--	--	--	--	--	--	--	--
	Feb/Mar 1999	--	--	--	--	--	--	--	--	--	--
	May/Jun 1999	--	--	--	--	--	--	--	--	--	--
	Aug 1999	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)	(2)
	Nov/Dec 1999	--	--	--	--	--	--	--	--	--	--
Practical Quantitation Limit		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	4.0
California Maximum Contaminant Level		0.5	5.0	5.0	5.0	0.5	6.0	1,200	100	150 Freon 11(10) 6.0 cis-1,2-Dichloroethene(10) 1,1,1-Trichloroethane(10)	18(11)
EPA Region IX Maximum Contaminant Level		5.0	5.0	5.0	NE	5.0	7.0	NE	100	5.0 Dichloromethane(10) 70 cis-1,2-Dichloroethene(10) 100 Bromodichloromethane(10) 1,1,1-Trichloroethane(10)	NE

--: Not detected.
(1): Not sampled.
B: Compound detected in laboratory method blank.
EB: Compound detected in associated equipment blank.
RT: Retention time.
TB: Compound detected in associated trip blank.
FB: Compound detected in associated field blank.
E: Estimated concentration; result exceeded calibration range.
NE: Not established.

1: Perchlorate not part of monitoring program.
2: Not sampled due to changes to the sampling program as agreed to by the EPA, DTSC and RWQCB.
3: All the equipment blanks for the round had chloroform concentrations ranging from 0.8 to 2.9 µg/L. The ASTM Type II water used for the equipment blanks is the probable source of the chloroform.
4: Suspected by the laboratory to have resulted from carry over in analysis (see January/February 1998 report).
5: Attributed to laboratory contamination.
6: Results from duplicate analysis; original sample was non detect.
7: Not sampled, no water over screen.
8: Not sampled due to mechanical failure.
9: Wells installed June-August 1997.
10: Only VOCs for which MCLs have been established are listed.
11: California Department of Health Services Interim Action Level.

TABLE 3-4

RESULTS OF METALS ANALYSIS OF GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS, NOVEMBER-DECEMBER 1999

(concentrations in mg/L)

Values equal to or above state MCLs, (or other applicable regulatory limits), are bold and shaded

Sample Location	Sample Number	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
MW-1	MW-994-001	--	--	1.2
MW-3				
Screen 1	MW-994-002	--	--	4.5
Screen 2	MW-994-003	--	--	3.9
Screen 3	MW-994-004	--	--	2.3
Screen 4	MW-994-005	--	--	2.6
Screen 5	MW-994-006	--	--	4.9
MW-4				
Screen 1	MW-994-007	--	--	4.9
Screen 2	MW-994-008	--	--	4.9
Screen 2 (DUP)	MW-994-009	--	--	4.9
Screen 3	MW-994-010	--	--	3.0
Screen 4	MW-994-011	--	--	1.9
Screen 5	MW-994-012	--	--	3.4
MW-5	MW-994-013	--	--	3.6
MW-6	MW-994-014	0.012	--	2.2
MW-7	MW-994-015	0.010	0.007	1.0
MW-8	MW-994-016	--	--	4.6
MW-9	MW-994-017	--	--	4.6
MW-10	MW-994-018	0.026	--	4.7
MW-10 DUP	MW-994-019	0.026	--	4.7
MW-11				
Screen 1	MW-994-020	--	--	2.4
Screen 2	MW-994-021	--	--	3.3
Screen 3	MW-994-022	--	--	2.1
Screen 4	MW-994-023	--	--	2.3
Screen 5	MW-994-024	--	--	1.0
MW-12				
Screen 1	MW-994-025	--	--	13.1
Screen 2	MW-994-026	--	--	1.6
Screen 2 (DUP)	MW-994-027	--	--	1.6
Screen 3	MW-994-028	--	--	0.4
Screen 4	MW-994-029	--	--	3.2
Screen 5	MW-994-030	--	--	3.7

TABLE 3-4

RESULTS OF METALS ANALYSIS OF GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS, NOVEMBER-DECEMBER 1999

(concentrations in mg/L)

Values equal to or above state MCLs, (or other applicable regulatory limits), are bold and shaded

Sample Location	Sample Number	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
MW-13	MW-994-031	0.033	0.029	1.2
MW-13 DUP	MW-994-032	0.034	0.029	1.2
MW-14				
Screen 1	MW-994-033	(1)	(1)	(1)
Screen 2	MW-994-034	--	--	4.6
Screen 3	MW-994-035	--	--	0.7
Screen 4	MW-994-036	--	--	1.2
Screen 5	MW-994-037	--	--	3.6
MW-15	MW-994-038	--	--	0.3
MW-16	MW-994-039	--	0.006	1.9
MW-17				
Screen 1	MW-994-040	--	--	1.2
Screen 2	MW-994-041	--	--	3.1
Screen 3	MW-994-042	--	--	4.6
Screen 4	MW-994-043	--	--	4.9
Screen 5	MW-994-044	--	--	4.4
MW-18				
Screen 1	MW-994-045	(2)	(2)	(2)
Screen 2	MW-994-046	--	--	4.0
Screen 3	MW-994-047	--	--	0.7
Screen 4	MW-994-048	--	--	1.4
Screen 5	MW-994-049	--	--	2.3
MW-19				
Screen 1	MW-994-050	--	--	4.9
Screen 2	MW-994-051	--	--	1.5
Screen 3	MW-994-052	--	--	3.8
Screen 4	MW-994-053	--	--	3.1
Screen 5	MW-994-054	--	--	1.0
MW-20				
Screen 1	MW-994-055	--	--	0.8
Screen 2	MW-994-056	--	--	0.5
Screen 3	MW-994-057	--	--	0.3
Screen 4	MW-994-058	--	--	2.3
Screen 5	MW-994-059	--	--	1.1

TABLE 3-4

RESULTS OF METALS ANALYSIS OF GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS, NOVEMBER-DECEMBER 1999

(concentrations in mg/L)
Values equal to or above state MCLs, (or other applicable regulatory limits), are bold and shaded

Sample Location	Sample Number	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
MW-21				
Screen 1	MW-994-060	--	--	0.6
Screen 2	MW-994-061	--	--	2.1
Screen 3	MW-994-062	--	--	2.6
Screen 4	MW-994-063	--	--	2.8
Screen 5	MW-994-064	--	--	4.8
MW-22				
Screen 1	MW-994-065	--	--	8.1
Screen 2	MW-994-066	--	--	2.1
Screen 3	MW-994-067	--	--	4.9
Screen 4	MW-994-068	--	--	4.9
Screen 5	MW-994-069	--	--	0.6
MW-23				
Screen 1	MW-994-070	--	--	35.0
Screen 2	MW-994-071	--	--	1.8
Screen 3	MW-994-072	--	--	3.0
Screen 4	MW-994-073	--	--	3.6
Screen 5	MW-994-074	--	--	1.7
MW-24				
Screen 1	MW-994-075	--	--	1.1
Screen 2	MW-994-076	--	--	23.8
Screen 3	MW-994-077	--	--	45.5
Screen 4	MW-994-078	--	--	14.7
Screen 5	MW-994-079	--	--	12.0
Practical Quantitation Limit		0.010	0.005	
California Maximum Contaminant Level		0.050	NE	
EPA Maximum Contaminant Level		0.100	NE	

--: Not detected.
DUP: Duplicate.
NE: Not established.
1: Not sampled due to mechanical failure.
2: Not sampled, no water over screen.

TABLE 3-5

SUMMARY OF METALS DETECTED DURING THE LONG-TERM QUARTERLY SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in mg/L)

Values equal to or above state MCLs, (or other applicable regulatory limits), are bold and shaded

Sample Location	Sampling Date	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
MW-1	Aug/Sep 1996	--	--	--	--	0.8
	Oct/Nov 1996	--	--	--	--	0.5
	Feb/Mar 1997	--	--	--	--	2.5
	Jun/Jul 1997	--	--	--	--	1.9
	Sep/Oct 1997	--	--	--	--	0.7
	Jan/Feb 1998	--	--	--	--	1.6
	Apr/May 1998	--	--	--	--	0.5
	Jul/Aug 1998	--	0.009	**0.055**[1]	--	1.0
	Oct/Nov 1998	--	--	--	--	1.1
	Feb/Mar 1999	--	--	--	--	1.9
	May/Jun 1999	--	--	--	--	0.4
	Aug 1999	(2)	(2)	(2)	(2)	(2)
	Nov/Dec 1999	(2)	(2)	--	--	1.2
Screen 1	Aug/Sep 1996	--	--	--	--	7.2
	Oct/Nov 1996	--	--	--	--	3.1
	Feb/Mar 1997	--	--	--	--	6.1
	Jun/Jul 1997	--	--	--	--	2.6
	Sep/Oct 1997	--	--	--	--	2.1
	Jan/Feb 1998	--	--	--	--	2.9
	Apr/May 1998	--	--	--	--	4.8
	Jul/Aug 1998	--	--	--	--	4.5
	Oct/Nov 1998	--	--	--	--	3.8
	Feb/Mar 1999	--	--	--	--	4.7
	May/Jun 1999	--	--	--	--	4.6
	Aug 1999	(2)	(2)	(2)	(2)	(2)
	Nov/Dec 1999	(2)	(2)	--	--	4.5
Screen 2	Aug/Sep 1996	--	--	--	--	1.7
	Oct/Nov 1996	--	--	--	--	2.7
	Feb/Mar 1997	--	--	--	--	3.8
	Jun/Jul 1997	--	--	--	--	1.1
	Sep/Oct 1997	--	--	--	--	2.1
	Jan/Feb 1998	--	--	--	--	2.3
	Apr/May 1998	--	--	--	--	4.3
	Jul/Aug 1998	--	0.004	--	--	3.3
	Oct/Nov 1998	--	--	--	--	4.3
	Feb/Mar 1999	--	--	--	--	2.1
	May/Jun 1999	--	--	--	--	3.1
	Aug 1999	(2)	(2)	--	--	1.0
	Nov/Dec 1999	(2)	(2)	--	--	3.9
Screen 3	Aug/Sep 1996	--	--	--	--	5.2
	Oct/Nov 1996	--	--	--	--	2.7
	Feb/Mar 1997	--	--	--	--	1.7
	Jun/Jul 1997	--	--	--	--	3.4
	Sep/Oct 1997	--	--	--	--	5.0
	Jan/Feb 1998	--	--	--	--	4.9
	Apr/May 1998	--	--	--	--	4.7
	Jul/Aug 1998	--	--	--	--	4.6

TABLE 3-5

SUMMARY OF METALS DETECTED DURING THE LONG-TERM QUARTERLY SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in mg/L)

Values equal to or above state MCLs, (or other applicable regulatory limits), are bold and shaded

Sample Location	Sampling Date	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
	Oct/Nov 1998	--	--	--	--	3.3
	Feb/Mar 1999	--	--	--	--	3.2
	May/Jun 1999	--	--	--	--	1.8
	Aug 1999	(2)	(2)	--	--	2.5
	Nov/Dec 1999	(2)	(2)	--	--	2.3
Screen 4	Aug/Sep 1996	--	--	--	--	4.3
	Oct/Nov 1996	--	--	--	--	2.6
	Feb/Mar 1997	--	--	--	--	4.5
	Jun/Jul 1997	--	--	--	--	2.7
	Sep/Oct 1997	--	--	--	--	2.5
	Jan/Feb 1998	--	--	--	--	3.0
	Apr/May 1998	--	--	--	--	3.6
	Jul/Aug 1998	--	--	--	--	3.1
	Oct/Nov 1998	--	--	--	--	1.3
	Feb/Mar 1999	--	--	--	--	3.5
	May/Jun 1999	--	--	--	--	1.5
	Aug 1999	(2)	(2)	--	--	1.1
	Nov/Dec 1999	(2)	(2)	--	--	2.6
Screen 5	Aug/Sep 1996	0.011	--	--	--	1.5
	Oct/Nov 1996	0.007	--	--	--	1.9
	Feb/Mar 1997	--	--	--	--	2.5
	Jun/Jul 1997	0.007	--	--	--	0.8
	Sep/Oct 1997	0.010	--	--	--	1.0
	Jan/Feb 1998	0.009	0.008	--	--	2.3
	Apr/May 1998	--	0.002	--	--	2.0
	Jul/Aug 1998	0.006	--	--	--	3.2
	Oct/Nov 1998	--	--	--	--	4.2
	Feb/Mar 1999	--	--	--	--	4.4
	May/Jun 1999	0.006	--	--	--	4.2
	Aug 1999	(2)	(2)	--	--	5.4
	Nov/Dec 1999	(2)	(2)	--	--	4.9
MW-4						
Screen 1	Aug/Sep 1996	--	--	--	--	2.6
	Oct/Nov 1996	--	--	--	--	1.7
	Feb/Mar 1997	--	--	--	--	4.6
	Jun/Jul 1997	--	--	--	--	2.8
	Sep/Oct 1997	--	--	--	--	4.8
	Jan/Feb 1998	--	--	--	--	3.4
	Apr/May 1998	--	--	--	--	3.7
	Jul/Aug 1998	--	--	--	--	3.0
	Oct/Nov 1998	--	--	--	--	2.7
	Feb/Mar 1999	--	--	--	--	1.0
	May/Jun 1999	--	--	--	--	1.8
	Aug 1999	(2)	(2)	--	--	1.2
	Nov/Dec 1999	(2)	(2)	--	--	4.9

TABLE 3-5

SUMMARY OF METALS DETECTED DURING THE LONG-TERM QUARTERLY SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in mg/L)

Values equal to or above state MCLs, (or other applicable regulatory limits), are bold and shaded

Sample Location	Sampling Date	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
Screen 2	Aug/Sep 1996	--	--	0.023	--	3.8
	Oct/Nov 1996	--	--	0.014	--	4.2
	Feb/Mar 1997	--	--	0.011	--	4.5
	Jun/Jul 1997	--	--	0.013	--	2.7
	Sep/Oct 1997	--	--	0.012	--	3.5
	Jan/Feb 1998	--	--	--	--	4.8
	Apr/May 1998	--	--	--	--	1.8
	Jul/Aug 1998	--	--	0.011	--	4.9
	Oct/Nov 1998	--	--	0.010	--	3.4
	Feb/Mar 1999	--	--	--	--	6.1
	May/Jun 1999	--	--	--	--	4.8
	Aug 1999	(2)	(2)	0.01	--	3.8
	Nov/Dec 1999	(2)	(2)	--	--	4.9
Screen 3	Aug/Sep 1996	--	--	--	--	0.6
	Oct/Nov 1996	--	--	--	--	1.5
	Feb/Mar 1997	--	--	--	--	2.8
	Jun/Jul 1997	--	--	--	--	2.0
	Sep/Oct 1997	--	--	--	--	1.4
	Jan/Feb 1998	--	--	--	--	4.6
	Apr/May 1998	--	--	--	--	3.2
	Jul/Aug 1998	--	--	--	--	3.9
	Oct/Nov 1998	--	--	--	--	1.2
	Feb/Mar 1999	--	--	--	--	2.9
	May/Jun 1999	--	--	--	--	4.9
	Aug 1999	(2)	(2)	--	--	2.1
	Nov/Dec 1999	(2)	(2)	--	--	3.0
Screen 4	Aug/Sep 1996	--	--	--	--	3.0
	Oct/Nov 1996	--	--	--	--	1.4
	Feb/Mar 1997	--	--	--	--	2.5
	Jun/Jul 1997	--	--	--	--	4.6
	Sep/Oct 1997	--	--	--	--	3.3
	Jan/Feb 1998	--	--	--	--	4.7
	Apr/May 1998	--	--	--	--	2.0
	Jul/Aug 1998	--	--	0.007	--	3.6
	Oct/Nov 1998	--	--	--	--	2.7
	Feb/Mar 1999	--	--	--	--	3.3
	May/Jun 1999	--	--	--	--	2.9
	Aug 1999	(2)	(2)	--	--	1.2
	Nov/Dec 1999	(2)	(2)	--	--	1.9
Screen 5	Aug/Sep 1996	--	--	--	--	4.5
	Oct/Nov 1996	--	--	--	--	4.1
	Feb/Mar 1997	--	--	--	--	4.4
	Jun/Jul 1997	--	--	--	--	4.0
	Sep/Oct 1997	--	--	--	--	3.9
	Jan/Feb 1998	--	--	--	--	4.5
	Apr/May 1998	--	--	--	--	3.8
	Jul/Aug 1998	0.005	--	--	--	4.6
	Oct/Nov 1998	--	--	--	--	2.9

TABLE 3-5

SUMMARY OF METALS DETECTED DURING THE LONG-TERM QUARTERLY SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in mg/L)

Values equal to or above state MCLs, (or other applicable regulatory limits), are bold and shaded

Sample Location	Sampling Date	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
	Feb/Mar 1999	--	--	--	--	2.4
	May/Jun 1999	--	--	--	--	1.1
	Aug 1999	(2)	(2)	--	--	2.4
	Nov/Dec 1999	(2)	(2)	--	--	3.4
MW-5	Aug/Sep 1996	--	--	--	--	2.7
	Oct/Nov 1996	--	0.003	--	--	2.7
	Feb/Mar 1997	--	--	--	--	1.5
	Jun/Jul 1997	--	--	--	--	4.5
	Sep/Oct 1997	--	--	--	--	1.0
	Jan/Feb 1998	--	--	--	--	0.9
	Apr/May 1998	--	--	--	--	3.1
	Jul/Aug 1998	--	--	--	--	4.6
	Oct/Nov 1998	--	--	--	--	4.2
	Feb/Mar 1999	--	--	--	--	7.9
	May/Jun 1999	--	--	--	--	1.7
	Aug 1999	(2)	(2)	--	--	4.3
	Nov/Dec 1999	(2)	(2)	--	--	3.6
MW-6	Aug/Sep 1996	--	--	**0.050**	--	4.5
	Oct/Nov 1996	--	--	0.011	--	1.1
	Feb/Mar 1997	--	--	0.014	--	4.3
	Jun/Jul 1997	--	--	0.019	--	2.5
	Sep/Oct 1997	--	--	--	--	1.8
	Jan/Feb 1998	--	--	--	--	0.4
	Apr/May 1998	--	--	0.012	--	2.1
	Jul/Aug 1998	--	--	0.013	--	3.0
	Oct/Nov 1998	--	--	0.037	--	3.8
	Feb/Mar 1999	--	--	0.017	--	2.7
	May/Jun 1999	--	--	0.036	--	4.1
	Aug 1999	(2)	(2)	**0.31**[3]	--	2.7
	Nov/Dec 1999	(2)	(2)	0.012	--	2.2
MW-7	Aug/Sep 1996	--	--	0.013	0.007	4.8
	Oct/Nov 1996	--	--	0.019	0.019	3.5
	Feb/Mar 1997	--	--	--	0.010	2.2
	Jun/Jul 1997	--	--	--	--	1.0
	Sep/Oct 1997	--	--	0.018	--	0.8
	Jan/Feb 1998	--	--	0.012	--	1.2
	Apr/May 1998	--	--	--	--	4.1
	Jul/Aug 1998	--	--	--	--	4.7
	Oct/Nov 1998	--	--	--	--	1.2
	Feb/Mar 1999	--	--	--	--	4.3
	May/Jun 1999	--	--	0.011	--	3.5
	Aug 1999	(2)	(2)	--	0.005	3.1
	Nov/Dec 1999	(2)	(2)	0.010	0.007	1.0
MW-8	Aug/Sep 1996	--	--	--	--	4.0
	Oct/Nov 1996	--	0.003	--	--	4.7
	Feb/Mar 1997	--	--	--	--	3.1
	Jun/Jul 1997	--	0.002	--	--	4.6
	Sep/Oct 1997	--	--	--	--	4.2

TABLE 3-5

SUMMARY OF METALS DETECTED DURING THE LONG-TERM QUARTERLY SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in mg/L)

Values equal to or above state MCLs, (or other applicable regulatory limits), are bold and shaded

Sample Location	Sampling Date	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
	Jan/Feb 1998	--	--	--	--	3.4
	Apr/May 1998	--	--	0.013	--	2.6
	Jul/Aug 1998	--	--	--	--	1.2
	Oct/Nov 1998	--	--	--	--	3.7
	Feb/Mar 1999	--	--	--	--	1.5
	May/Jun 1999	--	--	--	--	1.5
	Aug 1999	(2)	(2)	0.014	--	0.7
	Nov/Dec 1999	(2)	(2)	--	--	4.6
MW-9	Aug/Sep 1996	--	--	--	--	2.1
	Oct/Nov 1996	--	--	--	--	2.5
	Feb/Mar 1997	--	--	--	--	4.2
	Jun/Jul 1997	--	--	--	--	3.2
	Sep/Oct 1997	--	--	--	--	1.0
	Jan/Feb 1998	--	--	--	--	2.4
	Apr/May 1998	--	--	--	--	1.3
	Jul/Aug 1998	--	--	--	--	3.0
	Oct/Nov 1998	--	--	--	--	2.1
	Feb/Mar 1999	--	--	--	--	2.8
	May/Jun 1999	--	--	--	--	0.1
	Aug 1999	(2)	(2)	(2)	(2)	(2)
	Nov/Dec 1999	(2)	(2)	--	--	4.6
MW-10	Aug/Sep 1996	--	--	0.011	0.010	4.5
	Oct/Nov 1996	--	0.003	0.011	--	4.9
	Feb/Mar 1997	--	--	--	--	2.2
	Jun/Jul 1997	--	--	0.014	--	2.9
	Sep/Oct 1997	--	--	--	--	3.2
	Jan/Feb 1998	--	--	--	--	2.1
	Apr/May 1998	--	0.008	0.010	--	2.6
	Jul/Aug 1998	--	--	--	--	3.8
	Oct/Nov 1998	--	--	--	--	3.6
	Feb/Mar 1999	--	--	0.014	--	3.3
	May/Jun 1999	--	--	--	--	1.8
	Aug 1999	(2)	(2)	--	--	3.6
	Nov/Dec 1999	(2)	(2)	0.026	--	4.7
MW-11						
Screen 1	Aug/Sep 1996	--	--	--	--	4.0
	Oct/Nov 1996	--	--	--	--	2.5
	Feb/Mar 1997	--	--	--	--	2.5
	Jun/Jul 1997	--	--	--	--	1.5
	Sep/Oct 1997	--	--	--	--	4.6
	Jan/Feb 1998	--	--	--	--	1.0
	Apr/May 1998	--	--	--	--	1.0
	Jul/Aug 1998	--	--	--	--	4.6
	Oct/Nov 1998	--	--	--	--	1.4
	Feb/Mar 1999	--	--	--	--	1.6
	May/Jun 1999	--	--	--	--	1.1
	Aug 1999	(2)	(2)	--	--	1.2
	Nov/Dec 1999	--	--	--	--	2.4

TABLE 3-5

SUMMARY OF METALS DETECTED DURING THE LONG-TERM QUARTERLY SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in mg/L)
Values equal to or above state MCLs, (or other applicable regulatory limits), are bold and shaded

Sample Location	Sampling Date	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
Screen 2	Aug/Sep 1996	--	--	--	--	4.5
	Oct/Nov 1996	--	--	--	--	4.7
	Feb/Mar 1997	--	--	--	--	3.1
	Jun/Jul 1997	--	--	--	--	4.7
	Sep/Oct 1997	--	--	--	--	3.0
	Jan/Feb 1998	--	--	--	--	2.4
	Apr/May 1998	--	--	--	--	1.4
	Jul/Aug 1998	--	--	--	--	3.5
	Oct/Nov 1998	--	--	--	--	3.7
	Feb/Mar 1999	--	--	--	--	12.8
	May/Jun 1999	--	--	--	--	1.3
	Aug 1999	(2)	(2)	--	--	1.9
	Nov/Dec 1999	(2)	(2)	--	--	3.3
Screen 3	Aug/Sep 1996	--	--	--	--	0.5
	Oct/Nov 1996	--	--	--	--	2.3
	Feb/Mar 1997	--	--	--	--	1.7
	Jun/Jul 1997	--	--	--	--	1.9
	Sep/Oct 1997	--	--	--	--	3.0
	Jan/Feb 1998	--	--	--	--	1.4
	Apr/May 1998	--	--	--	--	2.1
	Jul/Aug 1998	--	--	--	--	2.6
	Oct/Nov 1998	--	0.008	--	--	4.5
	Feb/Mar 1999	--	--	--	--	2.6
	May/Jun 1999	--	--	--	--	2.7
	Aug 1999	(2)	(2)	--	--	3.1
	Nov/Dec 1999	(2)	(2)	--	--	2.1
Screen 4	Aug/Sep 1996	--	--	--	--	3.9
	Oct/Nov 1996	--	--	--	--	3.3
	Feb/Mar 1997	--	0.009	--	--	5.2
	Jun/Jul 1997	--	--	--	--	4.8
	Sep/Oct 1997	--	--	--	--	5.0
	Jan/Feb 1998	--	--	--	--	3.4
	Apr/May 1998	--	--	--	--	4.2
	Jul/Aug 1998	--	--	--	--	3.7
	Oct/Nov 1998	--	--	--	--	4.5
	Feb/Mar 1999	--	--	--	--	1.4
	May/Jun 1999	--	--	--	--	4.0
	Aug 1999	(2)	(2)	(2)	(2)	3.5
	Nov/Dec 1999	(2)	(2)	--	--	2.3
Screen 5	Aug/Sep 1996	0.007	--	--	--	0.6
	Oct/Nov 1996	0.005	--	--	--	1.9
	Feb/Mar 1997	--	0.002	--	--	1.6
	Jun/Jul 1997	--	--	--	--	0.7
	Sep/Oct 1997	--	--	--	--	2.6
	Jan/Feb 1998	--	--	--	--	1.2
	Apr/May 1998	--	--	--	--	1.7
	Jul/Aug 1998	--	--	--	--	1.7
	Oct/Nov 1998	--	--	--	--	1.4

TABLE 3-5

SUMMARY OF METALS DETECTED DURING THE LONG-TERM QUARTERLY SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in mg/L)

Values equal to or above state MCLs, (or other applicable regulatory limits), are bold and shaded

Sample Location	Sampling Date	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
	Feb/Mar 1999	--	--	--	--	4.1
	May/Jun 1999	0.005	--	--	--	1.4
	Aug 1999	(2)	(2)	(2)	(2)	(2)
	Nov/Dec 1999	(2)	(2)	--	--	1.0
MW-12						
Screen 1	Aug/Sep 1996	--	0.004	--	--	50.4
	Oct/Nov 1996	(4)	(4)	(4)	(4)	(4)
	Feb/Mar 1997	--	0.003	--	--	3.8
	Jun/Jul 1997	--	--	--	--	4.8
	Sep/Oct 1997	(4)	(4)	(4)	(4)	(4)
	Jan/Feb 1998	--	--	--	--	2.6
	Apr/May 1998	--	--	0.010	--	4.8
	Jul/Aug 1998	--	--	--	--	5.0
	Oct/Nov 1998	--	--	--	--	7.4
	Feb/Mar 1999	--	--	--	--	7.5
	May/Jun 1999	--	--	--	--	10.5
	Aug 1999	(2)	(2)	--	--	41.6
	Nov/Dec 1999	(2)	(2)	--	--	13.1
Screen 2	Aug/Sep 1996	--	**0.024**	--	--	4.0
	Oct/Nov 1996	--	--	--	--	4.0
	Feb/Mar 1997	--	--	--	--	2.5
	Jun/Jul 1997	--	--	--	--	3.2
	Sep/Oct 1997	--	--	--	--	3.4
	Jan/Feb 1998	--	--	--	--	4.4
	Apr/May 1998	--	--	--	--	1.6
	Jul/Aug 1998	--	0.006	--	--	3.7
	Oct/Nov 1998	--	--	--	--	4.9
	Feb/Mar 1999	--	--	--	--	2.5
	May/Jun 1999	--	--	--	--	1.7
	Aug 1999	(2)	(2)	--	--	1.9
	Nov/Dec 1999	(2)	(2)	--	--	1.6
Screen 3	Aug/Sep 1996	--	--	--	--	2.5
	Oct/Nov 1996	--	--	--	--	3.1
	Feb/Mar 1997	--	--	--	--	5.0
	Jun/Jul 1997	--	--	--	--	4.8
	Sep/Oct 1997	--	--	--	--	4.2
	Jan/Feb 1998	--	--	--	--	2.8
	Apr/May 1998	--	--	--	--	4.4
	Jul/Aug 1998	--	**0.018**	--	--	3.2
	Oct/Nov 1998	--	--	--	--	4.2
	Feb/Mar 1999	--	--	--	--	4.6
	May/Jun 1999	--	--	--	--	0.8
	Aug 1999	(2)	(2)	--	--	0.4
	Nov/Dec 1999	(2)	(2)	--	--	0.4

TABLE 3-5

SUMMARY OF METALS DETECTED DURING THE LONG-TERM QUARTERLY SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in mg/L)

Values equal to or above state MCLs, (or other applicable regulatory limits), are bold and shaded

Sample Location	Sampling Date	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
Screen 4	Aug/Sep 1996	--	0.005	--	--	1.8
	Oct/Nov 1996	--	--	--	--	0.7
	Feb/Mar 1997	--	--	--	--	2.4
	Jun/Jul 1997	--	--	--	--	2.5
	Sep/Oct 1997	--	--	--	--	1.6
	Jan/Feb 1998	--	--	--	--	3.4
	Apr/May 1998	--	--	--	--	1.7
	Jul/Aug 1998	--	--	--	--	3.7
	Oct/Nov 1998	--	--	--	--	4.2
	Feb/Mar 1999	--	--	--	--	3.1
	May/Jun 1999	--	--	--	--	1.1
	Aug 1999	(2)	(2)	(2)	(2)	0.9
	Nov/Dec 1999	(2)	(2)	--	--	3.2
Screen 5	Aug/Sep 1996	--	--	--	--	2.0
	Oct/Nov 1996	--	--	--	--	2.0
	Feb/Mar 1997	--	--	--	--	1.5
	Jun/Jul 1997	--	--	--	--	5.0
	Sep/Oct 1997	--	--	--	--	1.0
	Jan/Feb 1998	--	--	--	--	2.2
	Apr/May 1998	--	--	--	--	3.5
	Jul/Aug 1998	--	--	--	--	3.1
	Oct/Nov 1998	--	--	--	--	1.3
	Feb/Mar 1999	--	--	--	--	5.0
	May/Jun 1999	--	--	--	--	3.2
	Aug 1999	(2)	(2)	(2)	(2)	4.8
	Nov/Dec 1999	(2)	(2)	--	--	3.7
MW-13	Aug/Sep 1996	--	--	0.046	0.047	4.1
	Oct/Nov 1996	--	0.005	0.031	0.028	3.0
	Feb/Mar 1997	--	--	0.032	0.035	0.5
	Jun/Jul 1997	--	--	0.038	0.037	1.2
	Sep/Oct 1997	--	--	**0.050**	0.045	2.4
	Jan/Feb 1998	--	0.003	0.040	0.036	1.0
	Apr/May 1998	--	--	**0.082**	0.024	3.5
	Jul/Aug 1998	--	--	0.025	0.023	1.0
	Oct/Nov 1998	--	--	0.036	0.029	3.4
	Feb/Mar 1999	--	--	0.030	0.019	1.0
	May/Jun 1999	--	--	0.024	0.024	0.4
	Aug 1999	(2)	(2)	0.037	0.031	0.15
	Nov/Dec 1999	(2)	(2)	0.034	0.029	1.2
MW-14						
Screen 1	Aug/Sep 1996	--	--	--	--	3.3
	Oct/Nov 1996	--	--	--	--	4.5
	Feb/Mar 1997	--	--	--	--	4.3
	Jun/Jul 1997	--	--	--	--	2.2
	Sep/Oct 1997	--	--	--	--	3.9
	Jan/Feb 1998	--	0.004	--	--	5.0
	Apr/May 1998	--	--	0.011	--	3.1
	Jul/Aug 1998	--	--	--	--	3.8

TABLE 3-5

SUMMARY OF METALS DETECTED DURING THE LONG-TERM QUARTERLY SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in mg/L)

Values equal to or above state MCLs, (or other applicable regulatory limits), are bold and shaded

Sample Location	Sampling Date	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
	Oct/Nov 1998	--	--	--	--	4.2
	Feb/Mar 1999	--	--	--	--	4.8
	May/Jun 1999	--	--	--	--	3.4
	Aug 1999	(2)	(2)	--	--	1.7
	Nov/Dec 1999	(5)	(5)	(5)	(5)	(5)
Screen 2	Aug/Sep 1996	--	--	--	--	4.4
	Oct/Nov 1996	--	--	--	--	3.8
	Feb/Mar 1997	--	--	--	--	4.8
	Jun/Jul 1997	--	--	--	--	5.0
	Sep/Oct 1997	--	--	--	--	3.2
	Jan/Feb 1998	--	0.003	--	--	4.8
	Apr/May 1998	--	--	--	--	4.9
	Jul/Aug 1998	--	--	--	--	4.8
	Oct/Nov 1998	--	--	--	--	4.3
	Feb/Mar 1999	--	--	--	--	4.7
	May/Jun 1999	--	--	--	--	4.4
	Aug 1999	(2)	(2)	--	--	2.8
	Nov/Dec 1999	(2)	(2)	--	--	4.6
Screen 3	Aug/Sep 1996	--	--	--	--	1.7
	Oct/Nov 1996	--	--	--	--	2.0
	Feb/Mar 1997	--	--	--	--	2.5
	Jun/Jul 1997	--	--	--	--	0.7
	Sep/Oct 1997	--	--	--	--	2.9
	Jan/Feb 1998	--	0.003	0.026	--	2.1
	Apr/May 1998	--	--	--	--	1.4
	Jul/Aug 1998	--	--	--	--	3.1
	Oct/Nov 1998	--	--	--	--	0.8
	Feb/Mar 1999	--	--	--	--	0.7
	May/Jun 1999	--	--	--	--	0.8
	Aug 1999	(2)	(2)	--	--	2.2
	Nov/Dec 1999	(2)	(2)	--	--	0.7
Screen 4	Aug/Sep 1996	--	--	--	--	3.1
	Oct/Nov 1996	--	--	--	--	2.5
	Feb/Mar 1997	--	--	--	--	4.1
	Jun/Jul 1997	--	--	--	--	2.3
	Sep/Oct 1997	--	--	--	--	1.7
	Jan/Feb 1998	--	0.002	--	--	2.7
	Apr/May 1998	--	--	--	--	1.3
	Jul/Aug 1998	--	--	--	--	1.0
	Oct/Nov 1998	--	--	--	--	2.3
	Feb/Mar 1999	--	--	--	--	2.1
	May/Jun 1999	--	--	--	--	1.7
	Aug 1999	(2)	(2)	--	--	1.2
	Nov/Dec 1999	(2)	(2)	--	--	1.2
Screen 5	Aug/Sep 1996	--	--	--	--	1.5
	Oct/Nov 1996	--	--	--	--	4.1
	Feb/Mar 1997	--	**0.028**	--	--	2.3
	Jun/Jul 1997	--	--	--	--	1.9

TABLE 3-5

SUMMARY OF METALS DETECTED DURING THE LONG-TERM QUARTERLY SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in mg/L)

Values equal to or above state MCLs, (or other applicable regulatory limits), are bold and shaded

Sample Location	Sampling Date	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
	Sep/Oct 1997	--	--	--	--	3.8
	Jan/Feb 1998	--	--	--	--	4.7
	Apr/May 1998	--	--	--	--	1.9
	Jul/Aug 1998	--	--	--	--	2.4
	Oct/Nov 1998	--	--	--	--	4.5
	Feb/Mar 1999	--	--	--	--	4.2
	May/Jun 1999	--	--	--	--	1.9
	Aug 1999	(2)	(2)	(2)	(2)	1.4
	Nov/Dec 1999	(2)	(2)	--	--	3.6
MW-15	Aug/Sep 1996	--	--	--	--	1.3
	Oct/Nov 1996	--	--	NS	--	0.5
	Feb/Mar 1997	--	--	--	--	2.6
	Jun/Jul 1997	--	--	--	--	0.2
	Sep/Oct 1997	--	--	--	--	0.9
	Jan/Feb 1998	--	--	--	--	1.4
	Apr/May 1998	--	--	--	--	0.4
	Jul/Aug 1998	--	--	--	--	3.0
	Oct/Nov 1998	--	--	--	--	2.0
	Feb/Mar 1999	--	--	--	--	0.6
	May/Jun 1999	--	--	--	--	0.4
	Aug 1999	(2)	(2)	(2)	(2)	1.4
	Nov/Dec 1999	(2)	(2)	--	--	0.3
MW-16	Aug/Sep 1996	--	--	0.018	--	3.4
	Oct/Nov 1996	(4)	(4)	(4)	(4)	1.4
	Feb/Mar 1997	--	--	--	0.007	0.2
	Jun/Jul 1997	--	--	--	--	0.1
	Sep/Oct 1997	(4)	(4)	(4)	(4)	1.4
	Jan/Feb 1998	--	--	--	--	1.1
	Apr/May 1998	--	--	0.014	--	1.4
	Jul/Aug 1998	--	--	--	--	1.9
	Oct/Nov 1998	--	--	0.013	--	0.9
	Feb/Mar 1999	--	--	0.013	0.007	1.0
	May/Jun 1999	--	--	--	--	2.2
	Aug 1999	(2)	(2)	--	0.007	0.5
	Nov/Dec 1999	(2)	(2)	--	0.006	1.9
MW-17						
Screen 1	Aug/Sep 1996	--	--	NS	NS	1.0
	Oct/Nov 1996	--	--	--	--	2.9
	Feb/Mar 1997	--	--	--	--	2.0
	Jun/Jul 1997	--	--	--	--	2.2
	Sep/Oct 1997	--	--	--	--	1.3
	Jan/Feb 1998	--	--	--	--	5.0
	Apr/May 1998	--	--	--	--	1.7
	Jul/Aug 1998	--	--	--	--	1.5
	Oct/Nov 1998	--	--	--	--	0.5
	Feb/Mar 1999	--	--	--	--	1.5
	May/Jun 1999	--	--	--	--	0.4

TABLE 3-5

SUMMARY OF METALS DETECTED DURING THE LONG-TERM QUARTERLY SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in mg/L)

Values equal to or above state MCLs, (or other applicable regulatory limits), are bold and shaded

Sample Location	Sampling Date	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
	Aug 1999	(2)	(2)	(2)	(2)	(2)
	Nov/Dec 1999	(2)	(2)	--	--	1.2
Screen 2	Aug/Sep 1996	--	--	NS	NS	4.5
	Oct/Nov 1996	--	--	--	--	2.5
	Feb/Mar 1997	--	--	--	--	2.7
	Jun/Jul 1997	--	--	--	--	4.5
	Sep/Oct 1997	--	--	--	--	1.2
	Jan/Feb 1998	--	--	--	--	0.8
	Apr/May 1998	--	--	--	--	2.2
	Jul/Aug 1998	--	0.007	--	--	1.0
	Oct/Nov 1998	--	--	--	--	1.7
	Feb/Mar 1999	--	--	--	--	1.1
	May/Jun 1999	--	--	--	--	1.6
	Aug 1999	(2)	(2)	--	--	12.4
	Nov/Dec 1999	(2)	(2)	--	--	3.1
Screen 3	Aug/Sep 1996	--	0.002	NS	NS	4.9
	Oct/Nov 1996	--	--	--	--	4.8
	Feb/Mar 1997	--	--	--	--	6.0
	Jun/Jul 1997	--	--	--	--	4.8
	Sep/Oct 1997	--	--	--	0.006	2.5
	Jan/Feb 1998	--	--	--	--	3.2
	Apr/May 1998	--	--	--	--	3.6
	Jul/Aug 1998	--	--	--	--	4.0
	Oct/Nov 1998	--	--	--	--	4.4
	Feb/Mar 1999	--	--	--	--	6.3
	May/Jun 1999	--	--	--	--	2.2
	Aug 1999	(2)	(2)	--	--	2.5
	Nov/Dec 1999	(2)	(2)	--	--	4.6
Screen 4	Aug/Sep 1996	--	--	NS	NS	2.8
	Oct/Nov 1996	--	--	--	--	2.6
	Feb/Mar 1997	--	--	--	--	5.6
	Jun/Jul 1997	--	--	--	--	4.1
	Sep/Oct 1997	--	--	--	--	3.6
	Jan/Feb 1998	--	--	--	--	3.9
	Apr/May 1998	--	--	--	--	3.7
	Jul/Aug 1998	--	--	--	--	4.4
	Oct/Nov 1998	--	--	--	--	1.8
	Feb/Mar 1999	--	--	--	--	4.8
	May/Jun 1999	--	--	--	--	7.9
	Aug 1999	(2)	(2)	--	--	4.1
	Nov/Dec 1999	(2)	(2)	--	--	4.9
Screen 5	Aug/Sep 1996	--	--	NS	NS	5.0
	Oct/Nov 1996	--	0.005	--	--	5.2
	Feb/Mar 1997	--	0.003	--	--	25
	Jun/Jul 1997	--	--	--	--	34
	Sep/Oct 1997	--	--	--	--	4.8
	Jan/Feb 1998	--	--	--	--	4.8
	Apr/May 1998	--	0.002	--	--	3.7

TABLE 3-5

SUMMARY OF METALS DETECTED DURING THE LONG-TERM QUARTERLY SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in mg/L)

Values equal to or above state MCLs, (or other applicable regulatory limits), are bold and shaded

Sample Location	Sampling Date	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
	Jul/Aug 1998	--	--	--	--	4.8
	Oct/Nov 1998	--	--	--	--	5.1
	Feb/Mar 1999	--	0.007	--	--	12.4
	May/Jun 1999	--	0.004	--	--	16.3
	Aug 1999	(2)	(2)	(2)	(2)	2.4
	Nov/Dec 1999	(2)	(2)	--	--	4.4
MW-18						
Screen 1	Aug/Sep 1996	--	--	NS	NS	0.9
	Oct/Nov 1996	(4)	--	--	--	--
	Feb/Mar 1997	--	--	--	--	1.9
	Jun/Jul 1997	--	--	--	--	0.4
	Sep/Oct 1997	(4)	--	--	--	--
	Jan/Feb 1998	(4)	--	--	--	--
	Apr/May 1998	--	--	--	--	0.1
	Jul/Aug 1998	--	--	--	--	3.8
	Oct/Nov 1998	--	--	--	--	2.3
	Feb/Mar 1999	--	--	--	--	0.7
	May/Jun 1999	--	--	--	--	2.8
	Aug 1999	(2)	(2)	(2)	(2)	(2)
	Nov/Dec 1999	(4)	(4)	(4)	(4)	(4)
Screen 2	Aug/Sep 1996	--	--	NS	NS	3.5
	Oct/Nov 1996	--	0.003	--	--	3.4
	Feb/Mar 1997	--	--	--	--	2.8
	Jun/Jul 1997	--	--	--	--	1.5
	Sep/Oct 1997	--	--	--	--	1.4
	Jan/Feb 1998	--	--	--	--	3.6
	Apr/May 1998	--	--	--	--	0.1
	Jul/Aug 1998	--	--	--	--	3.1
	Oct/Nov 1998	--	--	--	--	1.9
	Feb/Mar 1999	--	0.005	--	--	2.7
	May/Jun 1999	--	--	--	--	4.1
	Aug 1999	(2)	(2)	--	--	1.0
	Nov/Dec 1999	(2)	(2)	--	--	4.0
Screen 3	Aug/Sep 1996	--	--	NS	NS	4.2
	Oct/Nov 1996	--	0.002	NS	--	4.0
	Feb/Mar 1997	--	--	0.015	0.007	3.3
	Jun/Jul 1997	--	--	--	--	3.9
	Sep/Oct 1997	--	--	--	--	2.1
	Jan/Feb 1998	--	--	--	--	0.6
	Apr/May 1998	--	--	0.012	0.007	0.04
	Jul/Aug 1998	--	--	0.014	--	2.3
	Oct/Nov 1998	--	--	--	--	1.7
	Feb/Mar 1999	--	--	--	0.007	1.2
	May/Jun 1999	--	--	--	--	2.1
	Aug 1999	(2)	(2)	--	--	0.8
	Nov/Dec 1999	(2)	(2)	--	--	0.7

TABLE 3-5

SUMMARY OF METALS DETECTED DURING THE LONG-TERM QUARTERLY SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in mg/L)

Values equal to or above state MCLs, (or other applicable regulatory limits), are bold and shaded

Sample Location	Sampling Date	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
Screen 4	Aug/Sep 1996	--	--	NS	NS	2.0
	Oct/Nov 1996	--	0.003	--	--	1.9
	Feb/Mar 1997	--	--	--	--	2.8
	Jun/Jul 1997	0.005	--	--	--	3.6
	Sep/Oct 1997	--	--	--	--	1.1
	Jan/Feb 1998	--	--	--	--	2.2
	Apr/May 1998	--	--	--	--	0.04
	Jul/Aug 1998	--	--	--	--	2.5
	Oct/Nov 1998	--	--	--	--	4.6
	Feb/Mar 1999	--	--	--	--	2.7
	May/Jun 1999	--	--	--	--	3.0
	Aug 1999	(2)	(2)	--	--	0.7
	Nov/Dec 1999	(2)	(2)	--	--	1.4
Screen 5	Aug/Sep 1996	--	--	NS	NS	2.8
	Oct/Nov 1996	--	0.002	--	--	3.6
	Feb/Mar 1997	--	--	--	--	2.9
	Jun/Jul 1997	--	--	--	--	4.0
	Sep/Oct 1997	--	--	--	--	1.7
	Jan/Feb 1998	--	--	--	--	1.6
	Apr/May 1998	--	--	--	--	0.1
	Jul/Aug 1998	--	--	--	--	1.1
	Oct/Nov 1998	--	--	--	--	2.8
	Feb/Mar 1999	--	--	--	--	2.0
	May/Jun 1999	--	--	--	--	2.4
	Aug 1999	(2)	(2)	(2)	(2)	0.6
	Nov/Dec 1999	(2)	(2)	--	--	2.3
MW-19						
Screen 1	Aug/Sep 1996	--	--	NS	NS	5.0
	Oct/Nov 1996	--	--	--	--	3.4
	Feb/Mar 1997	--	--	--	--	6.6
	Jun/Jul 1997	--	--	--	--	0.8
	Sep/Oct 1997	--	--	--	--	4.6
	Jan/Feb 1998	--	--	--	--	4.7
	Apr/May 1998	--	--	--	--	2.2
	Jul/Aug 1998	--	--	--	--	4.9
	Oct/Nov 1998	--	--	--	--	13.0
	Feb/Mar 1999	--	--	--	--	5.0
	May/Jun 1999	--	--	--	--	5.0
	Aug 1999	(2)	(2)	(2)	(2)	1.1
	Nov/Dec 1999	(2)	(2)	--	--	4.9
Screen 2	Aug/Sep 1996	--	--	NS	NS	4.5
	Oct/Nov 1996	--	--	--	--	3.6
	Feb/Mar 1997	--	--	--	--	22
	Jun/Jul 1997	--	--	--	--	2.8
	Sep/Oct 1997	--	--	--	--	4.6
	Jan/Feb 1998	--	--	--	--	4.7
	Apr/May 1998	--	--	--	--	2.3
	Jul/Aug 1998	--	--	--	--	4.9

TABLE 3-5

SUMMARY OF METALS DETECTED DURING THE LONG-TERM QUARTERLY SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in mg/L)

Values equal to or above state MCLs, (or other applicable regulatory limits), are bold and shaded

Sample Location	Sampling Date	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
	Oct/Nov 1998	--	--	--	--	4.8
	Feb/Mar 1999	--	--	--	--	3.9
	May/Jun 1999	--	--	--	--	2.3
	Aug 1999	(2)	(2)	(2)	(2)	0.1
	Nov/Dec 1999	(2)	(2)	--	--	1.5
Screen 3	Aug/Sep 1996	--	--	NS	NS	3.0
	Oct/Nov 1996	--	--	--	--	5.0
	Feb/Mar 1997	--	--	--	--	4.9
	Jun/Jul 1997	--	--	--	--	4.9
	Sep/Oct 1997	--	--	--	--	2.0
	Jan/Feb 1998	--	--	--	--	4.1
	Apr/May 1998	--	--	--	--	2.4
	Jul/Aug 1998	--	--	--	--	3.9
	Oct/Nov 1998	--	--	--	--	3.4
	Feb/Mar 1999	--	--	--	--	4.1
	May/Jun 1999	--	--	--	--	2.5
	Aug 1999	(2)	(2)	(2)	(2)	0.2
	Nov/Dec 1999	(2)	(2)	--	--	3.8
Screen 4	Aug/Sep 1996	--	--	NS	NS	4.2
	Oct/Nov 1996	--	--	--	--	8.0
	Feb/Mar 1997	--	0.003	--	--	16
	Jun/Jul 1997	--	--	--	--	4.9
	Sep/Oct 1997	--	--	--	--	4.8
	Jan/Feb 1998	--	--	--	--	4.8
	Apr/May 1998	--	--	--	--	4.8
	Jul/Aug 1998	--	--	--	--	4.6
	Oct/Nov 1998	--	--	--	--	1.5
	Feb/Mar 1999	--	--	--	--	4.4
	May/Jun 1999	--	--	--	--	1.7
	Aug 1999	(2)	(2)	(2)	(2)	1.0
	Nov/Dec 1999	(2)	(2)	--	--	3.1
Screen 5	Aug/Sep 1996	--	--	NS	NS	4.9
	Oct/Nov 1996	--	--	NS	--	4.6
	Feb/Mar 1997	--	--	--	--	3.8
	Jun/Jul 1997	--	--	--	--	2.2
	Sep/Oct 1997	--	--	--	--	5.0
	Jan/Feb 1998	--	--	--	--	4.0
	Apr/May 1998	--	--	--	--	4.6
	Jul/Aug 1998	--	0.010	--	--	4.8
	Oct/Nov 1998	--	--	--	--	2.5
	Feb/Mar 1999	--	--	--	--	4.4
	May/Jun 1999	--	--	--	--	1.7
	Aug 1999	(2)	(2)	(2)	(2)	0.8
	Nov/Dec 1999	(2)	(2)	--	--	1.0

TABLE 3-5

SUMMARY OF METALS DETECTED DURING THE LONG-TERM QUARTERLY SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in mg/L)

Values equal to or above state MCLs, (or other applicable regulatory limits), are bold and shaded

Sample Location	Sampling Date	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
MW-20						
Screen 1	Aug/Sep 1996	--	--	--	NS	3.5
	Oct/Nov 1996	(4)	(4)	(4)	(4)	(4)
	Feb/Mar 1997	--	--	--	--	2.3
	Jun/Jul 1997	--	--	--	--	0.2
	Sep/Oct 1997	(4)	(4)	(4)	(4)	(4)
	Jan/Feb 1998	--	--	--	--	3.2
	Apr/May 1998	--	--	--	--	2.9
	Jul/Aug 1998	--	--	--	--	3.2
	Oct/Nov 1998	--	--	--	--	1.3
	Feb/Mar 1999	--	--	--	--	0.5
	May/Jun 1999	--	--	--	--	1.1
	Aug 1999	(2)	(2)	--	--	3.2
	Nov/Dec 1999	(2)	(2)	--	--	0.8
Screen 2	Aug/Sep 1996	--	--	NS	NS	3.9
	Oct/Nov 1996	--	--	--	--	1.1
	Feb/Mar 1997	--	--	--	--	2.1
	Jun/Jul 1997	--	--	--	--	2.5
	Sep/Oct 1997	--	--	--	--	3.6
	Jan/Feb 1998	--	--	--	--	0.4
	Apr/May 1998	--	--	--	--	1.4
	Jul/Aug 1998	--	--	--	--	1.3
	Oct/Nov 1998	--	--	--	--	2.4
	Feb/Mar 1999	--	--	--	--	0.8
	May/Jun 1999	--	--	--	--	0.9
	Aug 1999	(2)	(2)	--	--	2.8
	Nov/Dec 1999	(2)	(2)	--	--	0.5
Screen 3	Aug/Sep 1996	--	--	NS	NS	1.7
	Oct/Nov 1996	--	--	--	--	1.6
	Feb/Mar 1997	--	--	--	--	1.9
	Jun/Jul 1997	--	--	--	--	2.1
	Sep/Oct 1997	--	--	--	--	4.6
	Jan/Feb 1998	--	--	--	--	2.2
	Apr/May 1998	--	--	--	--	1.3
	Jul/Aug 1998	--	--	--	--	0.7
	Oct/Nov 1998	--	--	--	--	2.7
	Feb/Mar 1999	--	0.009	--	--	0.1
	May/Jun 1999	--	--	--	--	1.0
	Aug 1999	(2)	(2)	--	--	0.7
	Nov/Dec 1999	(2)	(2)	--	--	0.3
Screen 4	Aug/Sep 1996	--	--	NS	NS	1.0
	Oct/Nov 1996	--	--	--	--	1.3
	Feb/Mar 1997	--	--	--	--	3.3
	Jun/Jul 1997	--	--	--	--	1.3
	Sep/Oct 1997	--	--	--	--	1.4
	Jan/Feb 1998	--	--	--	--	0.6
	Apr/May 1998	--	--	--	--	1.7
	Jul/Aug 1998	--	--	--	--	2.1

TABLE 3-5

SUMMARY OF METALS DETECTED DURING THE LONG-TERM QUARTERLY SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in mg/L)

Values equal to or above state MCLs, (or other applicable regulatory limits), are bold and shaded

Sample Location	Sampling Date	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
	Oct/Nov 1998	--	--	--	--	2.6
	Feb/Mar 1999	--	--	--	--	0.8
	May/Jun 1999	--	--	--	--	2.4
	Aug 1999	(2)	(2)	--	--	0.3
	Nov/Dec 1999	(2)	(2)	--	--	2.3
Screen 5	Aug/Sep 1996	--	--	NS	NS	1.8
	Oct/Nov 1996	--	--	NS	--	1.3
	Feb/Mar 1997	--	0.004	--	--	1.6
	Jun/Jul 1997	0.006	--	--	--	1.9
	Sep/Oct 1997	--	--	--	--	3.5
	Jan/Feb 1998	--	--	--	--	0.1
	Apr/May 1998	--	--	--	--	1.1
	Jul/Aug 1998	--	--	--	--	3.3
	Oct/Nov 1998	--	--	--	--	1.6
	Feb/Mar 1999	--	--	--	--	1.0
	May/Jun 1999	--	--	--	--	2.7
	Aug 1999	(2)	(2)	--	--	1.7
	Nov/Dec 1999	(2)	(2)	--	--	1.1
MW-21						
Screen 1	Aug/Sep 1996	--	--	NS	NS	0.9
	Oct/Nov 1996	(4)	(4)	(4)	(4)	(4)
	Feb/Mar 1997	--	--	--	--	1.1
	Jun/Jul 1997	--	--	--	--	2.8
	Sep/Oct 1997	(4)	(4)	(4)	(4)	(4)
	Jan/Feb 1998	--	--	--	--	0.8
	Apr/May 1998	--	--	--	--	0.7
	Jul/Aug 1998	--	--	--	--	3.4
	Oct/Nov 1998	--	--	--	--	2.2
	Feb/Mar 1999	--	--	--	--	0.3
	May/Jun 1999	--	--	--	--	2.8
	Aug 1999	(2)	(2)	(2)	(2)	1.1
	Nov/Dec 1999	(2)	(2)	--	--	0.6
Screen 2	Aug/Sep 1996	--	--	NS	NS	2.1
	Oct/Nov 1996	--	--	--	--	1.2
	Feb/Mar 1997	--	--	--	--	3.9
	Jun/Jul 1997	--	--	--	--	1.7
	Sep/Oct 1997	--	--	--	--	0.8
	Jan/Feb 1998	--	--	--	--	0.6
	Apr/May 1998	--	--	--	--	1.8
	Jul/Aug 1998	--	--	--	--	3.9
	Oct/Nov 1998	--	--	--	--	3.5
	Feb/Mar 1999	--	--	--	--	0.04
	May/Jun 1999	--	--	--	--	0.8
	Aug 1999	(2)	(2)	(2)	(2)	1.6
	Nov/Dec 1999	(2)	(2)	--	--	2.1
Screen 3	Aug/Sep 1996	--	--	NS	NS	4.6
	Oct/Nov 1996	--	--	--	--	4.9
	Feb/Mar 1997	--	0.003	--	--	4.6

TABLE 3-5

SUMMARY OF METALS DETECTED DURING THE LONG-TERM QUARTERLY SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in mg/L)

Values equal to or above state MCLs, (or other applicable regulatory limits), are bold and shaded

Sample Location	Sampling Date	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
	Jun/Jul 1997	--	--	--	--	1.4
	Sep/Oct 1997	--	--	--	--	3.2
	Jan/Feb 1998	--	0.003	--	--	4.8
	Apr/May 1998	--	--	--	--	4.1
	Jul/Aug 1998	--	--	--	--	4.8
	Oct/Nov 1998	--	--	--	--	4.8
	Feb/Mar 1999	--	--	--	--	4.2
	May/Jun 1999	--	--	--	--	2.2
	Aug 1999	(2)	(2)	(2)	(2)	1.9
	Nov/Dec 1999	(2)	(2)	--	--	2.6
Screen 4	Aug/Sep 1996	--	--	NS	NS	2.5
	Oct/Nov 1996	--	--	--	--	3.3
	Feb/Mar 1997	--	0.004	--	--	4.4
	Jun/Jul 1997	--	--	--	--	2.5
	Sep/Oct 1997	--	--	--	--	4.5
	Jan/Feb 1998	--	--	--	--	1.1
	Apr/May 1998	--	--	--	--	4.6
	Jul/Aug 1998	--	--	--	--	2.4
	Oct/Nov 1998	--	--	--	--	4.4
	Feb/Mar 1999	--	--	--	--	13.1
	May/Jun 1999	--	--	--	--	7.6
	Aug 1999	(2)	(2)	(2)	(2)	0.5
	Nov/Dec 1999	(2)	(2)	--	--	2.8
Screen 5	Aug/Sep 1996	--	--	NS	NS	4.9
	Oct/Nov 1996	--	--	--	--	5.0
	Feb/Mar 1997	--	--	--	--	28
	Jun/Jul 1997	--	--	--	--	26
	Sep/Oct 1997	--	--	--	--	12
	Jan/Feb 1998	--	--	--	--	4.9
	Apr/May 1998	--	--	--	--	4.6
	Jul/Aug 1998	--	--	--	--	4.2
	Oct/Nov 1998	--	--	--	--	14.0
	Feb/Mar 1999	--	--	--	--	4.3
	May/Jun 1999	--	--	--	--	3.3
	Aug 1999	(2)	(2)	(2)	(2)	1.9
	Nov/Dec 1999	(2)	(2)	--	--	4.8
MW-22[6]						
Screen 1	Sep/Oct 1997	--	--	--	--	34
	Jan/Feb 1998	--	--	--	--	4.5
	Apr/May 1998	--	--	--	--	4.6
	Jul/Aug 1998	--	--	--	--	4.8
	Oct/Nov 1998	--	--	--	--	4.0
	Feb/Mar 1999	--	--	--	--	20.1
	May/Jun 1999	--	--	--	--	37.6
	Aug 1999	(2)	(2)	--	--	4.8
	Nov/Dec 1999	(2)	(2)	--	--	8.1

TABLE 3-5

SUMMARY OF METALS DETECTED DURING THE LONG-TERM QUARTERLY SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in mg/L)
Values equal to or above state MCLs, (or other applicable regulatory limits), are bold and shaded

Sample Location	Sampling Date	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
Screen 2	Sep/Oct 1997	--	--	--	--	4.9
	Jan/Feb 1998	--	--	--	--	4.2
	Apr/May 1998	--	--	--	--	4.7
	Jul/Aug 1998	--	--	--	--	4.4
	Oct/Nov 1998	--	--	--	--	4.1
	Feb/Mar 1999	--	--	--	--	8.1
	May/Jun 1999	--	--	--	--	4.5
	Aug 1999	(2)	(2)	--	--	8.5
	Nov/Dec 1999	(2)	(2)	--	--	2.1
Screen 3	Sep/Oct 1997	--	--	--	--	3.0
	Jan/Feb 1998	--	--	--	--	3.8
	Apr/May 1998	--	--	--	--	2.9
	Jul/Aug 1998	--	--	--	--	4.9
	Oct/Nov 1998	--	--	--	--	3.5
	Feb/Mar 1999	--	--	--	--	5.2
	May/Jun 1999	--	--	--	--	3.7
	Aug 1999	(2)	(2)	(2)	(2)	5.1
	Nov/Dec 1999	(2)	(2)	--	--	4.9
Screen 4	Sep/Oct 1997	--	--	--	--	2.8
	Jan/Feb 1998	--	--	--	--	3.7
	Apr/May 1998	--	--	--	--	3.0
	Jul/Aug 1998	--	--	--	--	4.0
	Oct/Nov 1998	--	--	--	--	4.3
	Feb/Mar 1999	--	--	--	--	5.1
	May/Jun 1999	--	--	--	--	4.1
	Aug 1999	(2)	(2)	(2)	(2)	2.8
	Nov/Dec 1999	(2)	(2)	--	--	4.9
Screen 5	Sep/Oct 1997	--	--	--	--	4.4
	Jan/Feb 1998	--	--	--	--	2.8
	Apr/May 1998	--	--	--	--	2.9
	Jul/Aug 1998	--	--	--	--	2.3
	Oct/Nov 1998	--	--	--	--	3.3
	Feb/Mar 1999	--	--	--	--	2.6
	May/Jun 1999	--	--	--	--	4.7
	Aug 1999	(2)	(2)	(2)	(2)	--
	Nov/Dec 1999	(2)	(2)	--	--	0.6
MW-23[6]						
Screen 1	Sep/Oct 1997	--	--	--	--	3.4
	Jan/Feb 1998	--	--	--	--	4.1
	Apr/May 1998	--	--	--	--	4.5
	Jul/Aug 1998	--	--	--	--	4.0
	Oct/Nov 1998	--	--	--	--	6.3
	Feb/Mar 1999	--	--	--	--	4.2
	May/Jun 1999	--	--	--	--	7.0
	Aug 1999	(2)	(2)	--	--	9.4
	Nov/Dec 1999	(2)	(2)	--	--	35.0

TABLE 3-5

SUMMARY OF METALS DETECTED DURING THE LONG-TERM QUARTERLY SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in mg/L)

Values equal to or above state MCLs, (or other applicable regulatory limits), are bold and shaded

Sample Location	Sampling Date	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
Screen 2	Sep/Oct 1997	--	--	--	--	4.9
	Jan/Feb 1998	--	--	--	--	4.9
	Apr/May 1998	--	--	--	--	4.7
	Jul/Aug 1998	--	--	--	--	3.4
	Oct/Nov 1998	--	--	--	--	4.1
	Feb/Mar 1999	--	--	--	--	2.5
	May/Jun 1999	--	--	--	--	7.3
	Aug 1999	(2)	(2)	--	--	1.5
	Nov/Dec 1999	(2)	(2)	--	--	1.8
Screen 3	Sep/Oct 1997	--	--	--	--	3.0
	Jan/Feb 1998	--	--	--	--	4.6
	Apr/May 1998	--	--	--	--	4.6
	Jul/Aug 1998	--	--	--	--	4.7
	Oct/Nov 1998	--	--	--	--	4.5
	Feb/Mar 1999	--	--	--	--	4.3
	May/Jun 1999	--	--	--	--	7.5
	Aug 1999	(2)	(2)	--	--	13.1
	Nov/Dec 1999	(2)	(2)	--	--	3.0
Screen 4	Sep/Oct 1997	--	--	--	--	4.9
	Jan/Feb 1998	--	--	--	--	4.5
	Apr/May 1998	--	--	--	--	4.9
	Jul/Aug 1998	--	--	--	--	4.6
	Oct/Nov 1998	--	--	--	--	4.2
	Feb/Mar 1999	--	--	--	--	5.1
	May/Jun 1999	--	--	--	--	2.0
	Aug 1999	(2)	(2)	--	--	4.2
	Nov/Dec 1999	(2)	(2)	--	--	3.6
Screen 5	Sep/Oct 1997	--	--	--	--	1.8
	Jan/Feb 1998	--	--	--	--	1.8
	Apr/May 1998	--	--	--	--	2.4
	Jul/Aug 1998	--	--	--	--	1.7
	Oct/Nov 1998	--	--	--	--	2.5
	Feb/Mar 1999	--	--	--	--	3.2
	May/Jun 1999	--	--	--	--	2.4
	Aug 1999	(2)	(2)	(2)	(2)	1.7
	Nov/Dec 1999	(2)	(2)	--	--	1.7
MW-24[6]						
Screen 1	Sep/Oct 1997	--	--	--	--	1.6
	Jan/Feb 1998	--	--	--	--	3.8
	Apr/May 1998	--	--	--	--	2.7
	Jul/Aug 1998	--	--	--	--	4.9
	Oct/Nov 1998	--	--	--	--	3.8
	Feb/Mar 1999	--	--	--	--	7.6
	May/Jun 1999	--	--	--	--	4.3
	Aug 1999	(2)	(2)	--	--	9.7
	Nov/Dec 1999	(2)	(2)	--	--	1.1

TABLE 3-5

SUMMARY OF METALS DETECTED DURING THE LONG-TERM QUARTERLY SAMPLING PROGRAM, JET PROPULSION LABORATORY

(concentrations in mg/L)

Values equal to or above state MCLs, (or other applicable regulatory limits), are bold and shaded

Sample Location	Sampling Date	Arsenic	Lead	Total Chromium	Hexavalent Chromium	Field Turbidity (NTUs)
Screen 2	Sep/Oct 1997	--	--	--	--	4.4
	Jan/Feb 1998	--	--	--	--	4.9
	Apr/May 1998	--	--	--	--	4.5
	Jul/Aug 1998	--	--	--	--	4.8
	Oct/Nov 1998	--	--	--	--	8.3
	Feb/Mar 1999	--	--	--	--	4.2
	May/Jun 1999	--	--	--	--	5.4
	Aug 1999	(2)	(2)	--	--	33.8
	Nov/Dec 1999	(2)	(2)	--	--	23.8
Screen 3	Sep/Oct 1997	--	--	--	--	4.6
	Jan/Feb 1998	0.006	--	--	--	4.7
	Apr/May 1998	--	--	--	--	4.9
	Jul/Aug 1998	--	--	--	--	4.9
	Oct/Nov 1998	--	--	--	--	7.8
	Feb/Mar 1999	0.006	--	0.013	--	34.8
	May/Jun 1999	--	--	--	--	27.2
	Aug 1999	(2)	(2)	--	--	25.2
	Nov/Dec 1999	(2)	(2)	--	--	45.5
Screen 4	Sep/Oct 1997	--	--	--	--	4.0
	Jan/Feb 1998	--	--	--	--	4.9
	Apr/May 1998	--	--	--	--	4.3
	Jul/Aug 1998	--	--	--	--	4.8
	Oct/Nov 1998	--	--	--	--	8.3
	Feb/Mar 1999	--	0.003	--	--	6.1
	May/Jun 1999	--	--	--	--	10.0
	Aug 1999	(2)	(2)	--	--	10.5
	Nov/Dec 1999	(2)	(2)	--	--	14.7
Screen 5	Sep/Oct 1997	--	--	--	--	4.8
	Jan/Feb 1998	--	--	--	--	4.8
	Apr/May 1998	--	--	--	--	4.0
	Jul/Aug 1998	--	--	--	--	4.0
	Oct/Nov 1998	--	--	--	--	8.0
	Feb/Mar 1999	--	--	--	--	5.7
	May/Jun 1999	--	--	--	--	5.8
	Aug 1999	(2)	(2)	(2)	(2)	(2)
	Nov/Dec 1999	(2)	(2)	--	--	12.0
Practical Quantitation Limit		0.005	0.002	0.01	0.005	
Calif. Maximum Contaminant Level		0.05	(7)	0.05	NE	
EPA Maximum Contaminant Level		0.05	(7)	0.10	NE	

--: Not detected.
NS: Not sampled.
NE: Not established.
1: Probable lab error. MW-1 is always upgradient of the site and downgradient of the Arroyo Seco. Lab could not find readily identifiable error. For purposes of future monitoring, MW-1 will continue to be classified as a well upgradient of JPL.
2: Monitoring points not sampled for the particular constituent due to changes in the sampling program as agreed to be EPA, DTSC and RWQCB.
3: Believed to be a laboratory error.
4: Not sampled, no water over screen.
5: Not sampled due to mechanical failure.
6: Wells installed June-August 1997.
7: Treatment technique and public notification triggered at 0.015 mg/L.

TABLE 4-1

GROUNDWATER MONITORING WELL WATER LEVEL MEASUREMENTS

November 15, 1999

Well Number	Screen Number	Date Measured	Depth to Water (ft)	Reference Elevation (ft msl)	Water Level Elevation (ft msl)
MW-1		11/15/99	31.65	1116.69	1085.04
MW-3	1 (top)	11/15/99	139.82	1100.34	960.52
	2	11/15/99	144.35	1100.34	955.99
	3	11/15/99	147.36	1100.34	952.98
	4	11/15/99	226.49	1100.34	873.85
	5	11/15/99	256.83	1100.34	843.51
MW-4	1 (top)	11/15/99	116.27	1082.84	966.57
	2	11/15/99	123.19	1082.84	959.65
	3	11/15/99	125.33	1082.84	957.51
	4	11/15/99	134.06	1082.84	948.78
	5	11/15/99	213.63	1082.84	869.21
MW-5		11/15/99	104.45	1071.62	967.17
MW-6		11/15/99	202.03	1188.54	986.51
MW-7		11/15/99	244.15	1212.90	968.75
MW-8		11/15/99	170.26	1139.55	969.29
MW-9		11/15/99	26.83	1106.06	1079.23
MW-10		11/15/99	117.24	1087.73	970.49
MW-11	1 (top)	11/15/99	126.56	1139.30	1012.74
	2	11/15/99	167.41	1139.30	971.89
	3	11/15/99	181.38	1139.30	957.92
	4	11/15/99	189.71	1139.30	949.59
	5	11/15/99	233.54	1139.30	905.76
MW-12	1 (top)	11/15/99	132.76	1102.14	969.38
	2	11/15/99	140.70	1102.14	961.44
	3	11/15/99	143.16	1102.14	958.98
	4	11/15/99	155.74	1102.14	946.40
	5	11/15/99	219.09	1102.14	883.05
MW-13		11/15/99	211.28	1183.49	972.21

TABLE 4-1

GROUNDWATER MONITORING WELL WATER LEVEL MEASUREMENTS

November 15, 1999

Well Number	Screen Number	Date Measured	Depth to Water (ft)	Reference Elevation (ft msl)	Water Level Elevation (ft msl)
MW-14	1 (top)	11/15/99	184.25	1173.47	989.22
	2	11/15/99	185.04	1173.47	988.43
	3	11/15/99	184.88	1173.47	988.59
	4	11/15/99	184.88	1173.47	988.59
	5	11/15/99	185.44	1173.47	988.03
MW-15		11/15/99	38.05	1120.68	1082.63
MW-16		11/15/99	264.97	1236.29	971.32
MW-17	1 (top)	11/15/99	235.07	1191.21	956.14
	2	11/15/99	240.70	1191.21	950.51
	3	11/15/99	249.11	1191.21	942.10
	4	11/15/99	305.80	1191.21	885.41
	5	11/15/99	317.03	1191.21	874.18
MW-18	1 (top)	11/15/99	N/W	1225.41	N/W
	2	11/15/99	272.43	1225.41	952.98
	3	11/15/99	274.41	1225.41	951.00
	4	11/15/99	301.37	1225.41	924.04
	5	11/15/99	316.63	1225.41	908.78
MW-19	1 (top)	11/15/99	188.14	1142.94	954.80
	2	11/15/99	200.47	1142.94	942.47
	3	11/15/99	205.81	1142.94	937.13
	4	11/15/99	309.47	1142.94	833.47
	5	11/15/99	316.50	1142.94	826.44
MW-20	1 (top)	11/15/99	218.06	1165.05	946.99
	2	11/15/99	217.89	1165.05	947.16
	3	11/15/99	227.57	1165.05	937.48
	4	11/15/99	246.21	1165.05	918.84
	5	11/15/99	217.67	1165.05	947.38

TABLE 4-1

GROUNDWATER MONITORING WELL WATER LEVEL MEASUREMENTS

November 15, 1999

Well Number	Screen Number	Date Measured	Depth to Water (ft)	Reference Elevation (ft msl)	Water Level Elevation (ft msl)
MW-21	1 (top)	11/15/99	79.71	1059.10	979.39
	2	11/15/99	79.12	1059.10	979.98
	3	11/15/99	79.46	1059.10	979.64
	4	11/15/99	80.54	1059.10	978.56
	5	11/15/99	80.60	1059.10	978.50
MW-22	1 (top)	11/15/99	200.84	1176.98	976.14
	2	11/15/99	200.55	1176.98	976.43
	3	11/15/99	200.11	1176.98	976.87
	4	11/15/99	219.01	1176.98	957.97
	5	11/15/99	231.59	1176.98	945.39
MW-23	1 (top)	11/15/99	135.93	1108.84	972.91
	2	11/15/99	138.73	1108.84	970.11
	3	11/15/99	138.79	1108.84	970.05
	4	11/15/99	161.51	1108.84	947.33
	5	11/15/99	162.07	1108.84	946.77
MW-24	1 (top)	11/15/99	230.49	1200.94	970.45
	2	11/15/99	233.54	1200.94	967.40
	3	11/15/99	235.18	1200.94	965.76
	4	11/15/99	260.14	1200.94	940.80
	5	11/15/99	284.24	1200.94	916.70

N/W No water over the measurement port

TABLE 4-2

GROUNDWATER MONITORING WELL WATER LEVEL MEASUREMENTS

December 16, 1999

Well Number	Screen Number	Date Measured	Depth to Water (ft)	Reference Elevation (ft msl)	Water Level Elevation (ft msl)
MW-1		12/16/99	28.75	1116.69	1087.94
MW-3	1 (top)	12/16/99	137.92	1100.34	962.42
	2	12/16/99	142.67	1100.34	957.67
	3	12/16/99	145.49	1100.34	954.85
	4	12/16/99	223.57	1100.34	876.77
	5	12/16/99	253.05	1100.34	847.29
MW-4	1 (top)	12/16/99	115.59	1082.84	967.25
	2	12/16/99	121.84	1082.84	961.00
	3	12/16/99	123.74	1082.84	959.10
	4	12/16/99	132.54	1082.84	950.30
	5	12/16/99	210.74	1082.84	872.10
MW-5		12/16/99	104.26	1071.62	967.36
MW-6		12/16/99	201.61	1188.54	986.93
MW-7		12/16/99	244.08	1212.90	968.82
MW-8		12/16/99	170.02	1139.55	969.53
MW-9		12/16/99	25.81	1106.06	1080.25
MW-10		12/16/99	117.13	1087.73	970.60
MW-11	1 (top)	12/16/99	126.66	1139.30	1012.64
	2	12/16/99	166.47	1139.30	972.83
	3	12/16/99	180.10	1139.30	959.20
	4	12/16/99	188.38	1139.30	950.92
	5	12/16/99	249.96	1139.30	889.34
MW-12	1 (top)	12/16/99	130.07	1102.14	972.07
	2	12/16/99	138.49	1102.14	963.65
	3	12/16/99	140.69	1102.14	961.45
	4	12/16/99	153.10	1102.14	949.04
	5	12/16/99	215.65	1102.14	886.49
MW-13		12/16/99	211.11	1183.49	972.38

TABLE 4-2

GROUNDWATER MONITORING WELL WATER LEVEL MEASUREMENTS

December 16, 1999

Well Number	Screen Number	Date Measured	Depth to Water (ft)	Reference Elevation (ft msl)	Water Level Elevation (ft msl)
MW-14	1 (top)	12/16/99	inaccessible port	1173.47	No data
	2	12/16/99	inaccessible port	1173.47	No data
	3	12/16/99	inaccessible port	1173.47	No data
	4	12/16/99	inaccessible port	1173.47	No data
	5	12/16/99	inaccessible port	1173.47	No data
MW-15		12/16/99	35.39	1120.68	1085.29
MW-16		12/16/99	264.87	1236.29	971.42
MW-17	1 (top)	12/16/99	235.04	1191.21	956.17
	2	12/16/99	238.55	1191.21	952.66
	3	12/16/99	246.39	1191.21	944.82
	4	12/16/99	302.74	1191.21	888.47
	5	12/16/99	313.85	1191.21	877.36
MW-18	1 (top)	12/16/99	N/W	1225.41	N/W
	2	12/16/99	271.33	1225.41	954.08
	3	12/16/99	272.78	1225.41	952.63
	4	12/16/99	299.42	1225.41	925.99
	5	12/16/99	314.25	1225.41	911.16
MW-19	1 (top)	12/16/99	187.50	1142.94	955.44
	2	12/16/99	198.37	1142.94	944.57
	3	12/16/99	203.18	1142.94	939.76
	4	12/16/99	307.47	1142.94	835.47
	5	12/16/99	311.51	1142.94	831.43
MW-20	1 (top)	12/16/99	215.16	1165.05	949.89
	2	12/16/99	215.09	1165.05	949.96
	3	12/16/99	224.98	1165.05	940.07
	4	12/16/99	243.67	1165.05	921.38
	5	12/16/99	216.98	1165.05	948.07

TABLE 4-2

GROUNDWATER MONITORING WELL WATER LEVEL MEASUREMENTS

December 16, 1999

Well Number	Screen Number	Date Measured	Depth to Water (ft)	Reference Elevation (ft msl)	Water Level Elevation (ft msl)
MW-21	1 (top)	12/16/99	79.48	1059.10	979.62
	2	12/16/99	78.19	1059.10	980.91
	3	12/16/99	78.23	1059.10	980.87
	4	12/16/99	79.16	1059.10	979.94
	5	12/16/99	79.24	1059.10	979.86
MW-22	1 (top)	12/16/99	200.12	1176.98	976.86
	2	12/16/99	199.23	1176.98	977.75
	3	12/16/99	198.78	1176.98	978.20
	4	12/16/99	217.46	1176.98	959.52
	5	12/16/99	229.56	1176.98	947.42
MW-23	1 (top)	12/16/99	135.79	1108.84	973.05
	2	12/16/99	138.07	1108.84	970.77
	3	12/16/99	138.00	1108.84	970.84
	4	12/16/99	160.28	1108.84	948.56
	5	12/16/99	160.79	1108.84	948.05
MW-24	1 (top)	12/16/99	229.78	1200.94	971.16
	2	12/16/99	229.80	1200.94	971.14
	3	12/16/99	233.51	1200.94	967.43
	4	12/16/99	257.96	1200.94	942.98
	5	12/16/99	281.59	1200.94	919.35

N/W No water over the measurement port

FIGURES

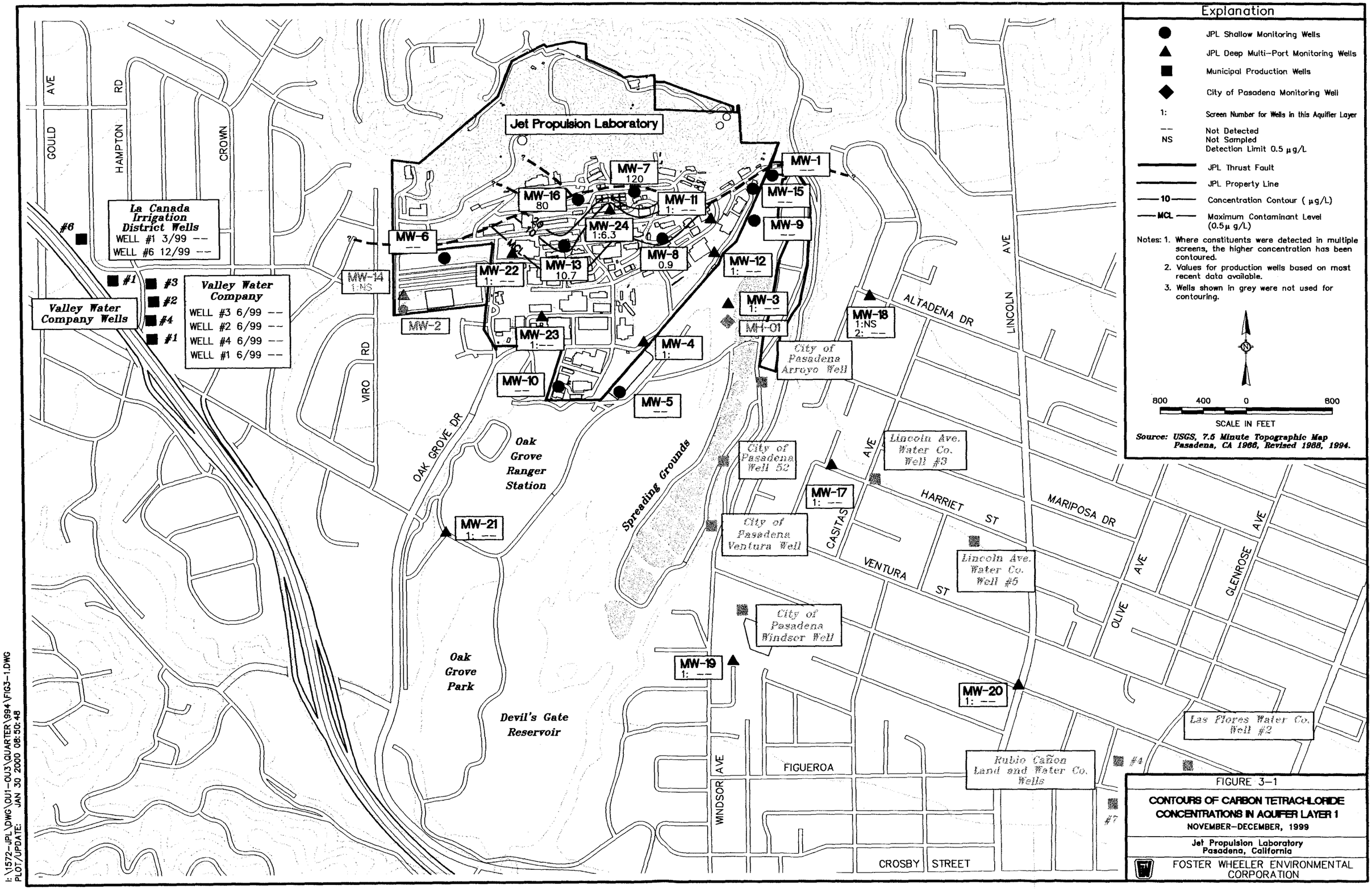

FIGURE 3-1

CONTOURS OF CARBON TETRACHLORIDE CONCENTRATIONS IN AQUIFER LAYER 1

NOVEMBER-DECEMBER, 1999

Jet Propulsion Laboratory
Pasadena, California

FOSTER WHEELER ENVIRONMENTAL CORPORATION

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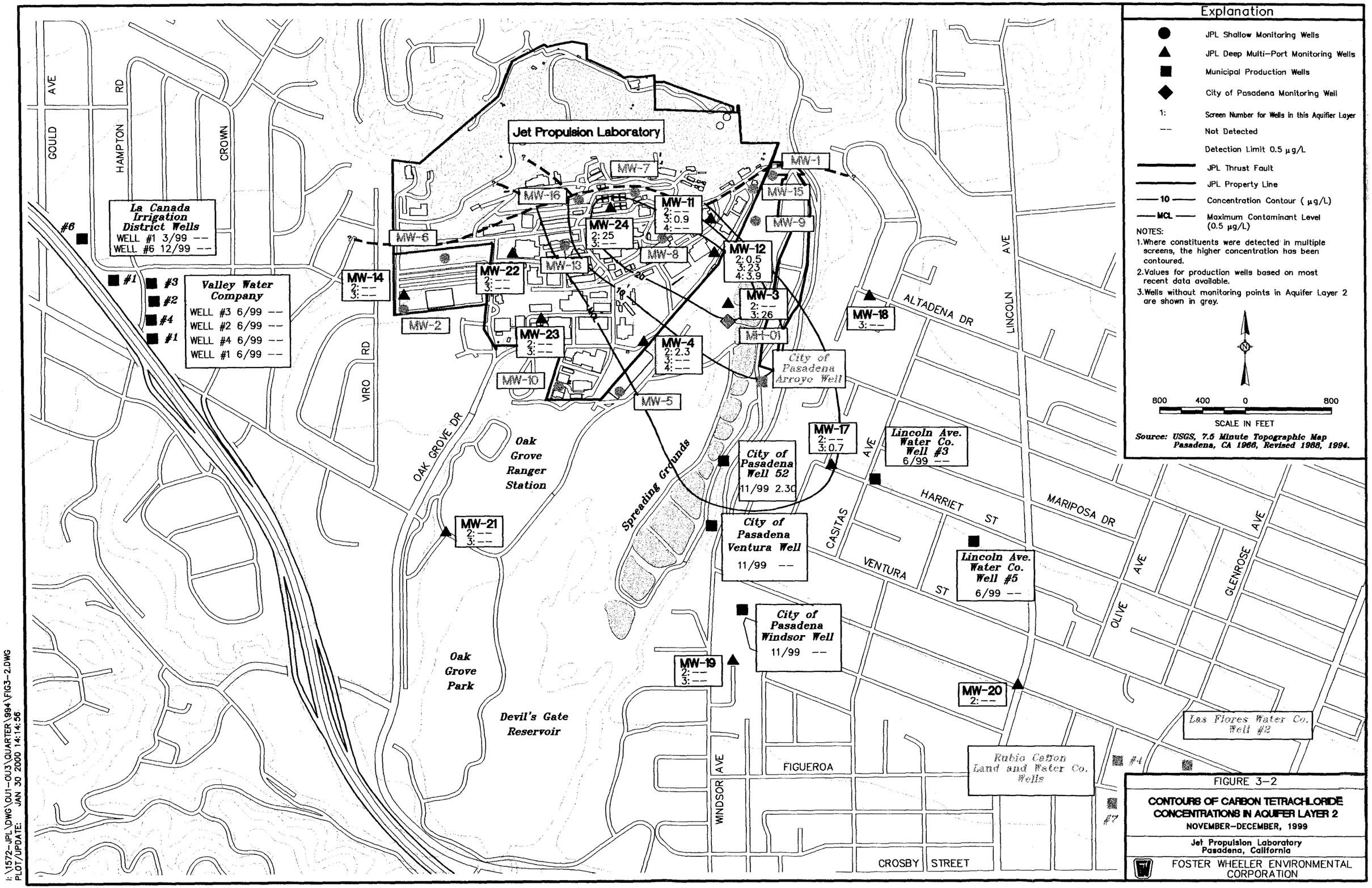

FIGURE 3-2

CONTOURS OF CARBON TETRACHLORIDE CONCENTRATIONS IN AQUIFER LAYER 2

NOVEMBER-DECEMBER, 1999

Jet Propulsion Laboratory
Pasadena, California

FOSTER WHEELER ENVIRONMENTAL CORPORATION

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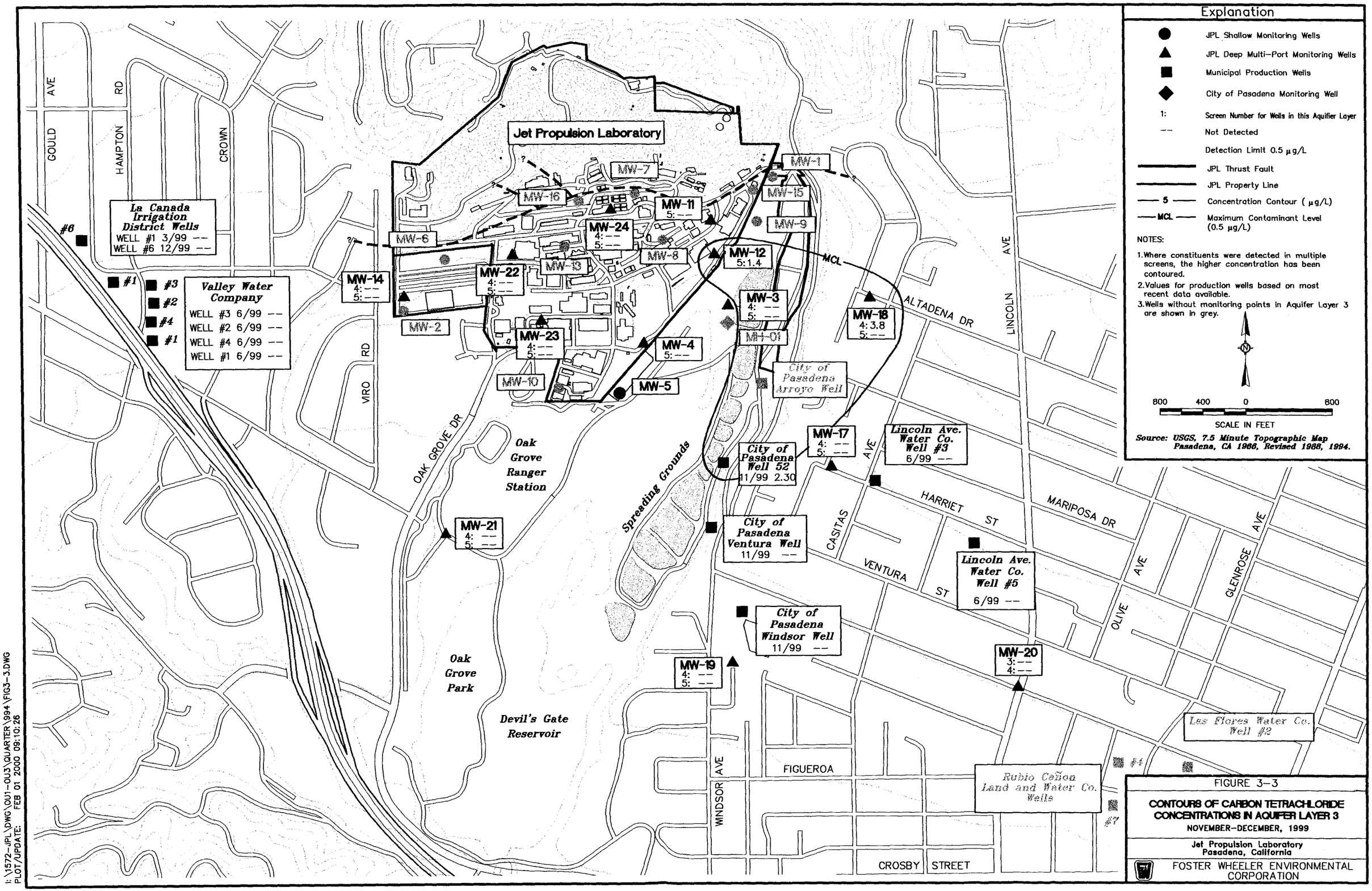

FIGURE 3-3

CONTOURS OF CARBON TETRACHLORIDE CONCENTRATIONS IN AQUIFER LAYER 3

NOVEMBER-DECEMBER, 1999

Jet Propulsion Laboratory
Pasadena, California

FOSTER WHEELER ENVIRONMENTAL CORPORATION

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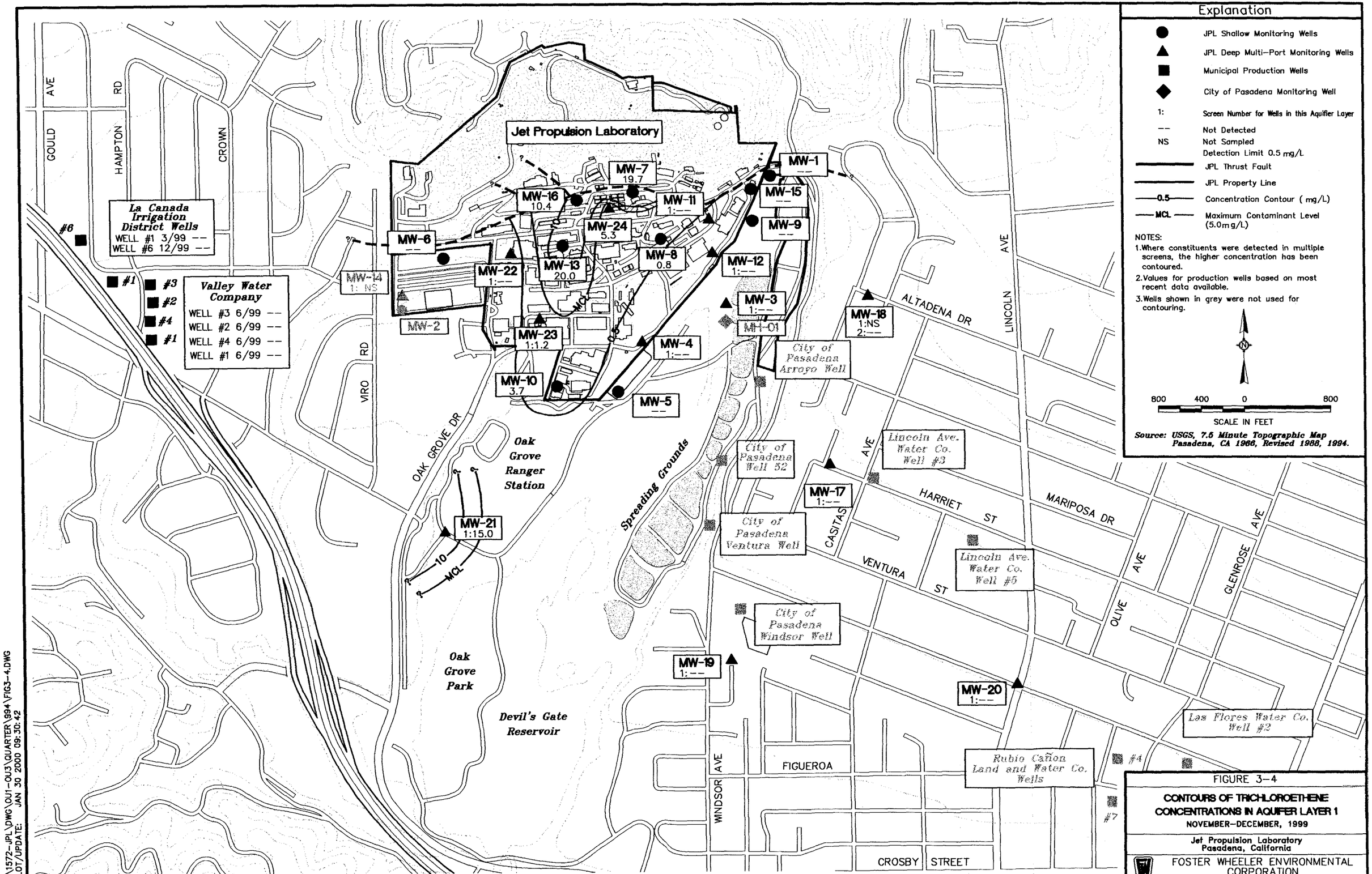

FIGURE 3-4

CONTOURS OF TRICHLOROETHENE CONCENTRATIONS IN AQUIFER LAYER 1

NOVEMBER-DECEMBER, 1999

Jet Propulsion Laboratory
Pasadena, California

FOSTER WHEELER ENVIRONMENTAL CORPORATION

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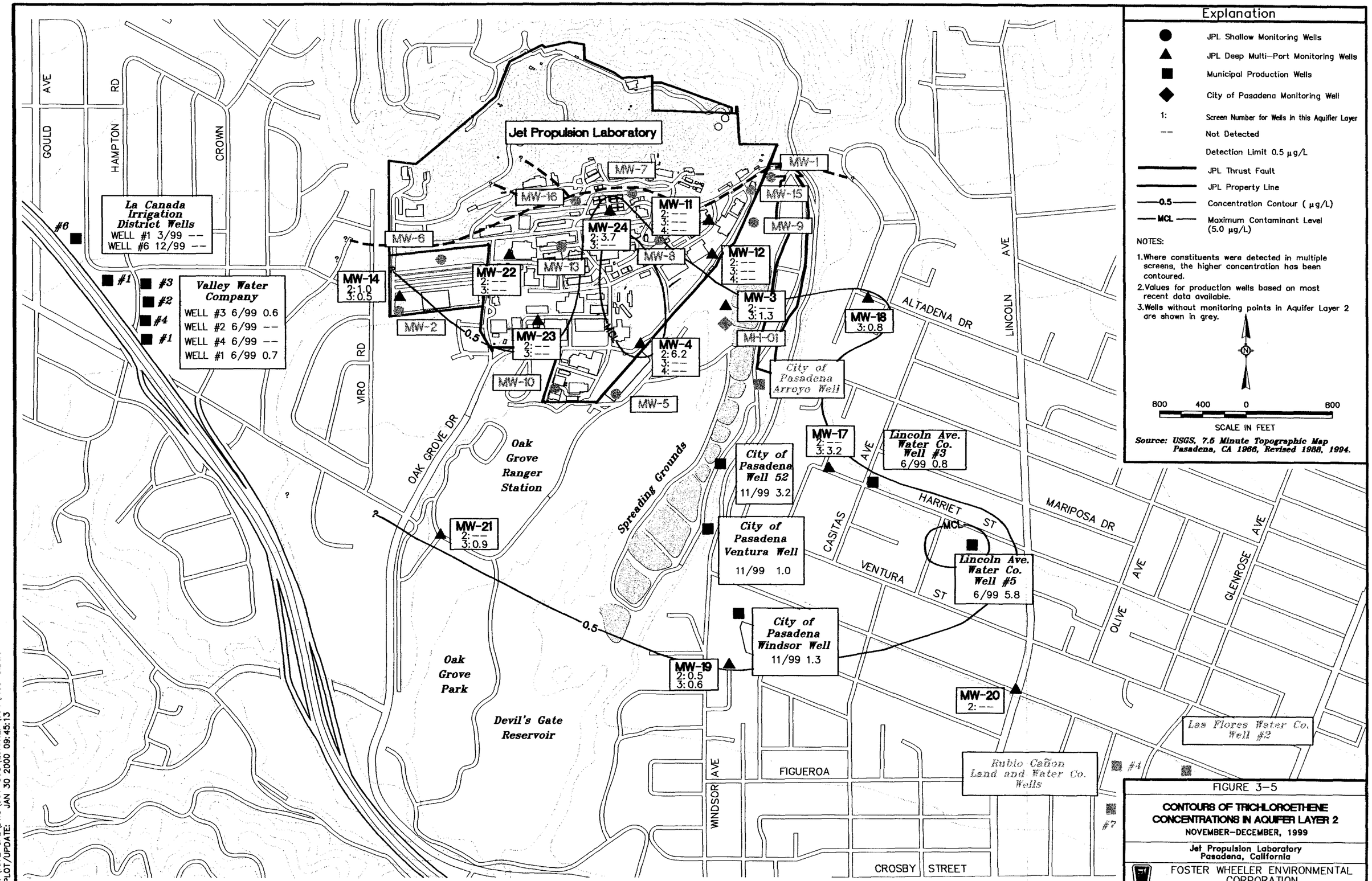

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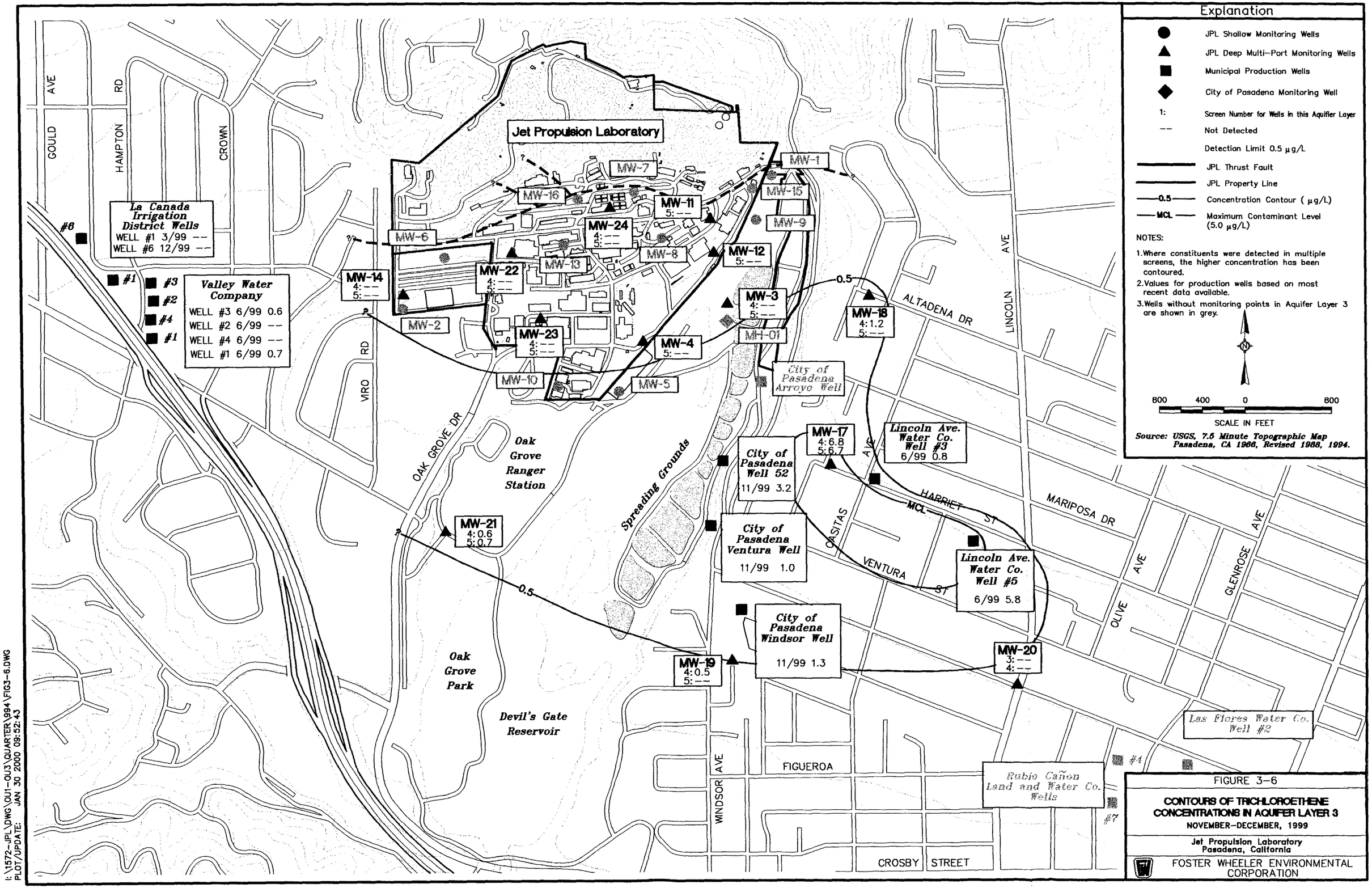

FIGURE 3-6

CONTOURS OF TRICHLOROETHENE CONCENTRATIONS IN AQUIFER LAYER 3

NOVEMBER-DECEMBER, 1999

Jet Propulsion Laboratory
Pasadena, California

FOSTER WHEELER ENVIRONMENTAL CORPORATION

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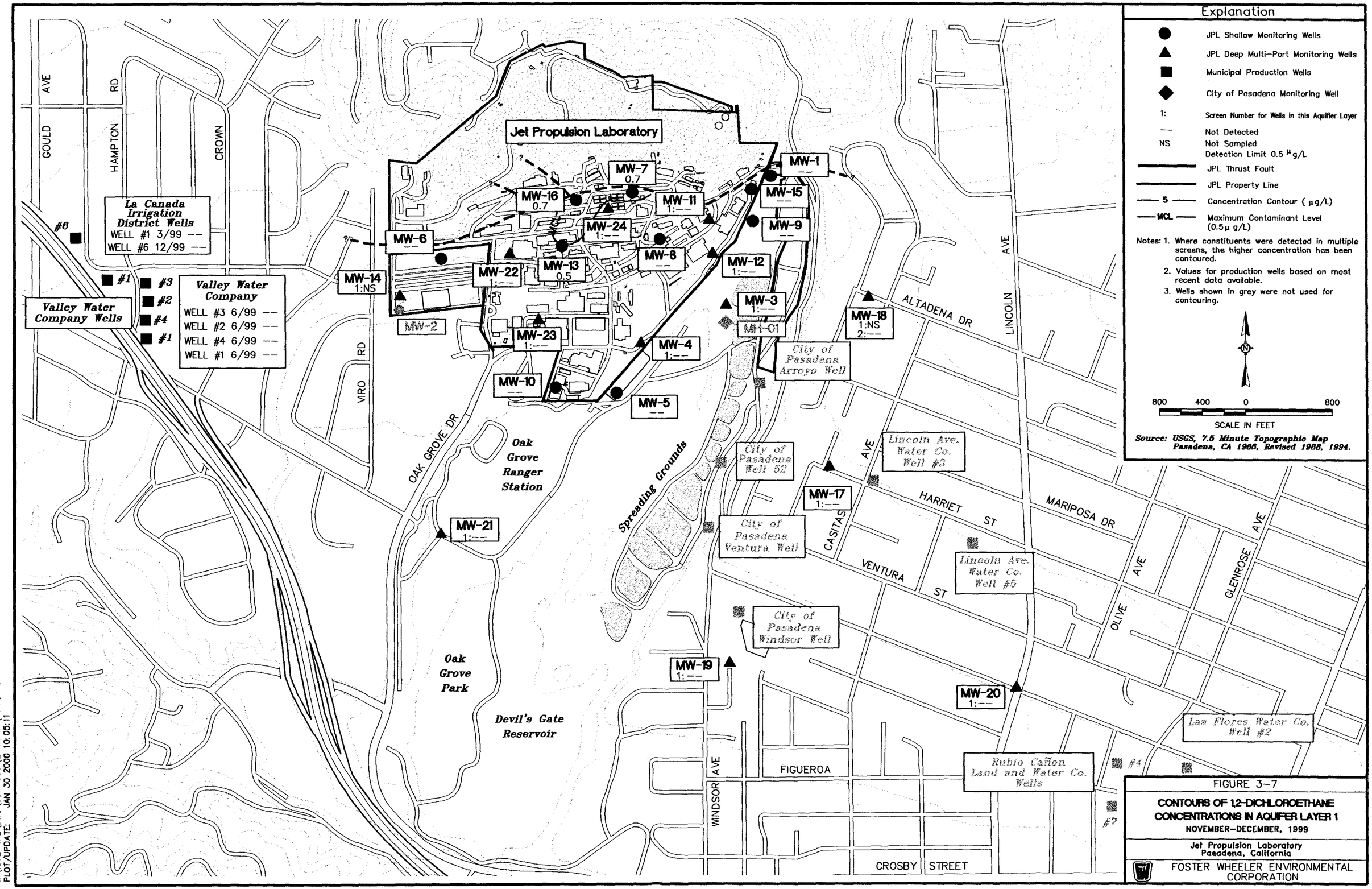

FIGURE 3-7

CONTOURS OF 1,2-DICHLOROETHANE CONCENTRATIONS IN AQUIFER LAYER 1

NOVEMBER-DECEMBER, 1999

Jet Propulsion Laboratory
Pasadena, California

FOSTER WHEELER ENVIRONMENTAL CORPORATION

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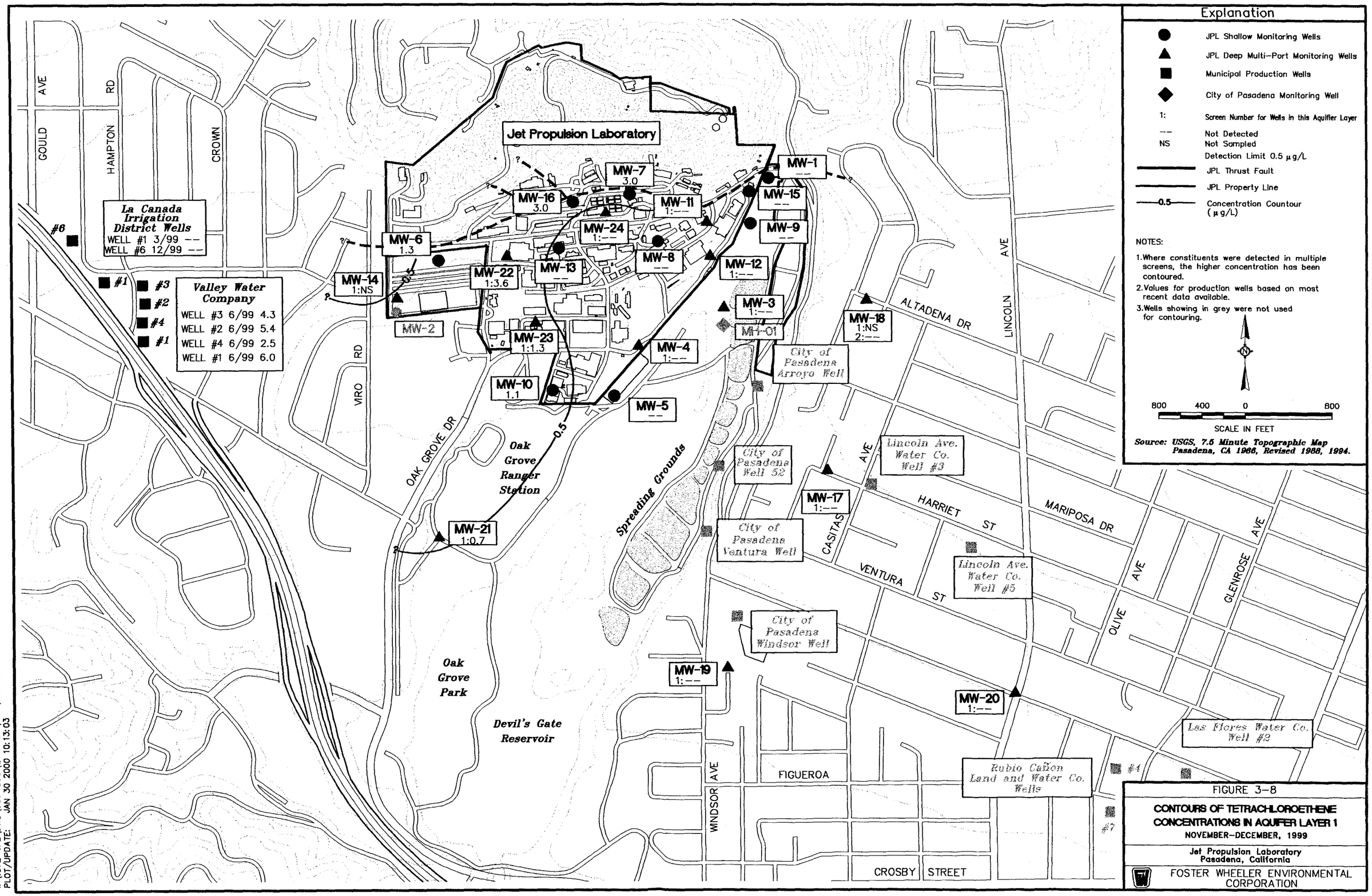

FIGURE 3-8

CONTOURS OF TETRACHLOROETHENE CONCENTRATIONS IN AQUIFER LAYER 1

NOVEMBER-DECEMBER, 1999

Jet Propulsion Laboratory
Pasadena, California

FOSTER WHEELER ENVIRONMENTAL CORPORATION

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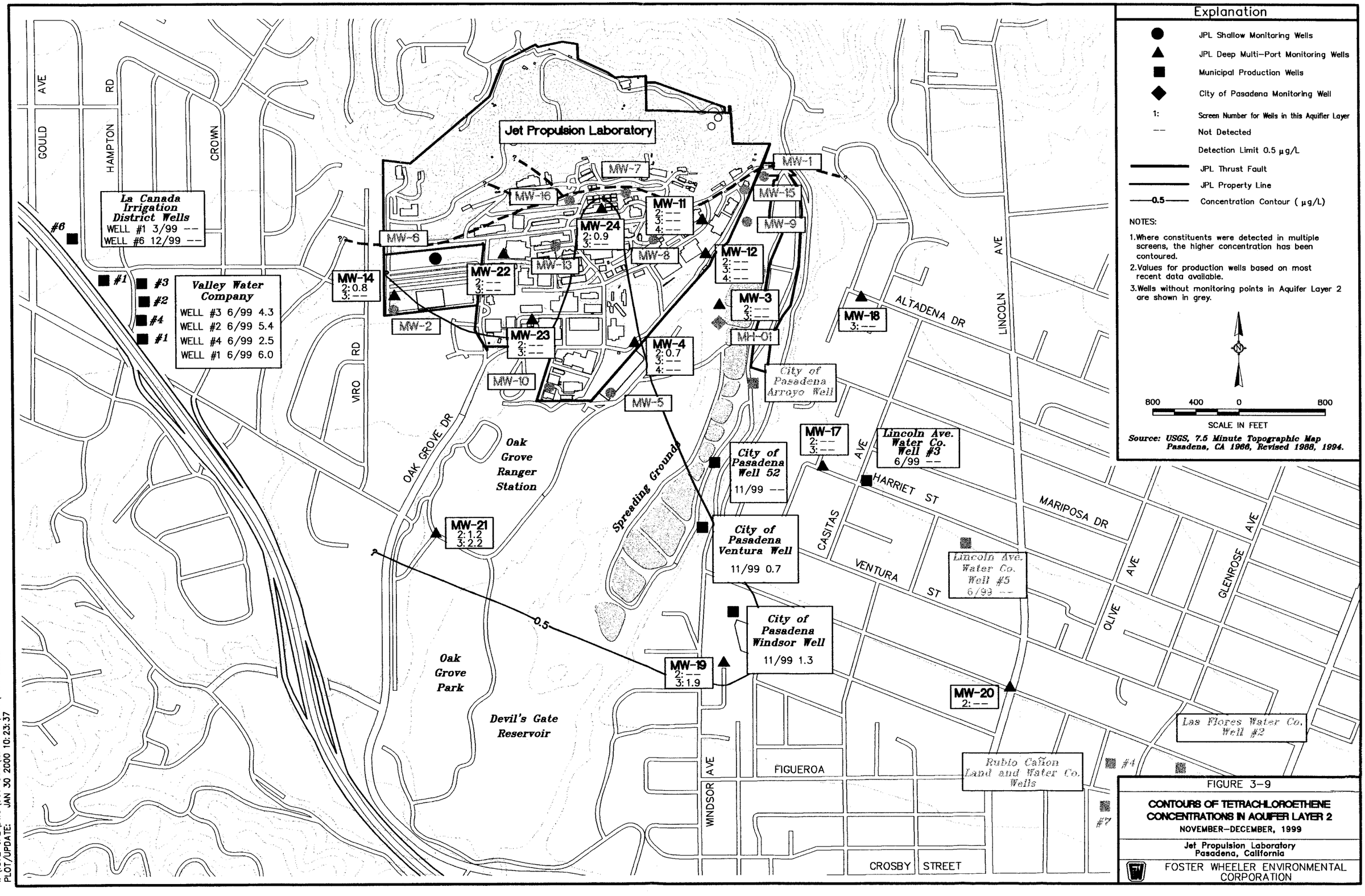

FIGURE 3-9

CONTOURS OF TETRACHLOROETHENE CONCENTRATIONS IN AQUIFER LAYER 2

NOVEMBER-DECEMBER, 1999

Jet Propulsion Laboratory
Pasadena, California

FOSTER WHEELER ENVIRONMENTAL CORPORATION

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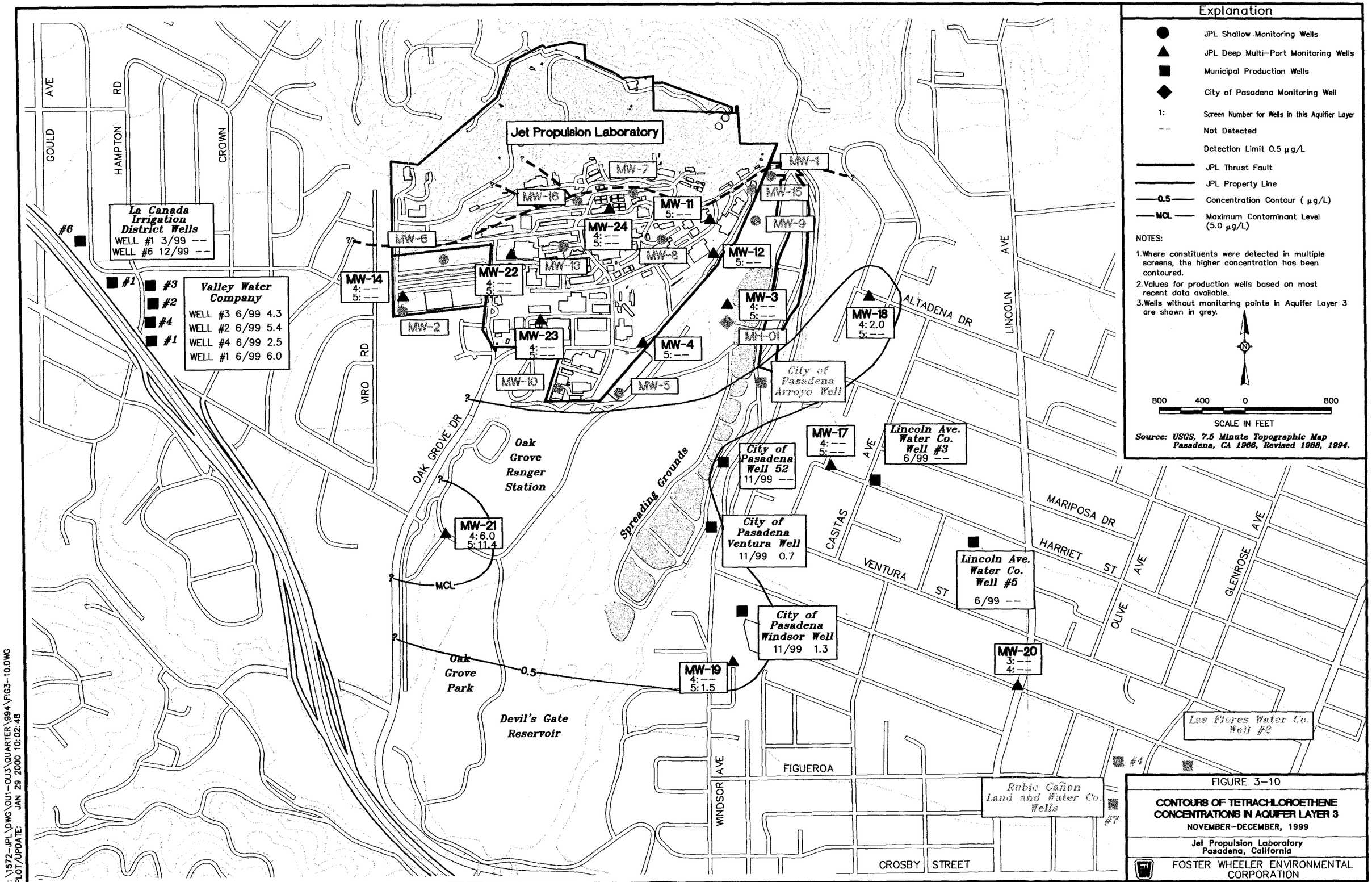

FIGURE 3-10

CONTOURS OF TETRACHLOROETHENE CONCENTRATIONS IN AQUIFER LAYER 3

NOVEMBER-DECEMBER, 1999

Jet Propulsion Laboratory
Pasadena, California

FOSTER WHEELER ENVIRONMENTAL CORPORATION

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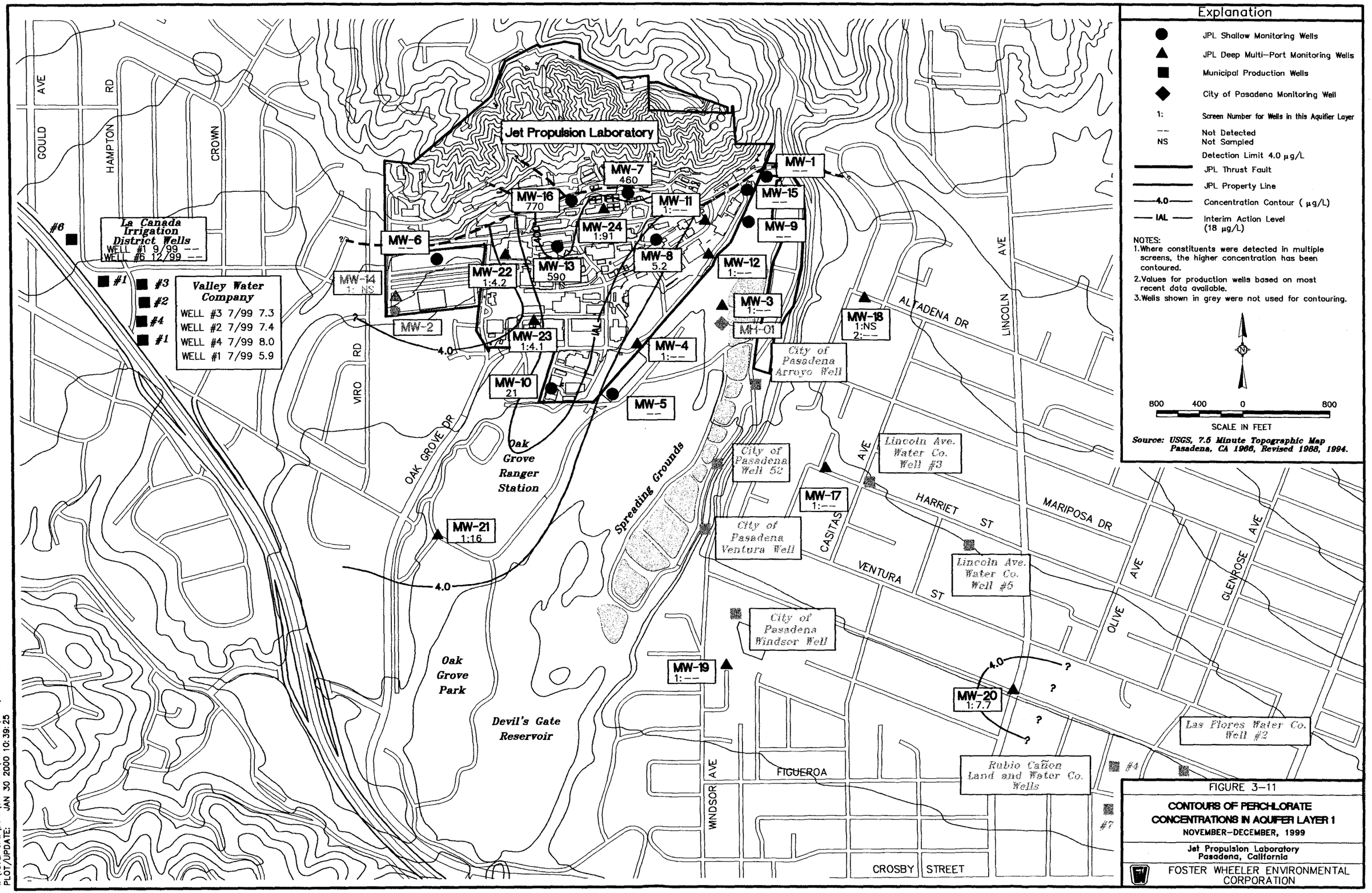

FIGURE 3-11

CONTOURS OF PERCHLORATE CONCENTRATIONS IN AQUIFER LAYER 1

NOVEMBER-DECEMBER, 1999

Jet Propulsion Laboratory
Pasadena, California

FOSTER WHEELER ENVIRONMENTAL CORPORATION

I:\1572-JPL\DWG\OU1-OU3\QUARTER\994\FIG3-11.DWG
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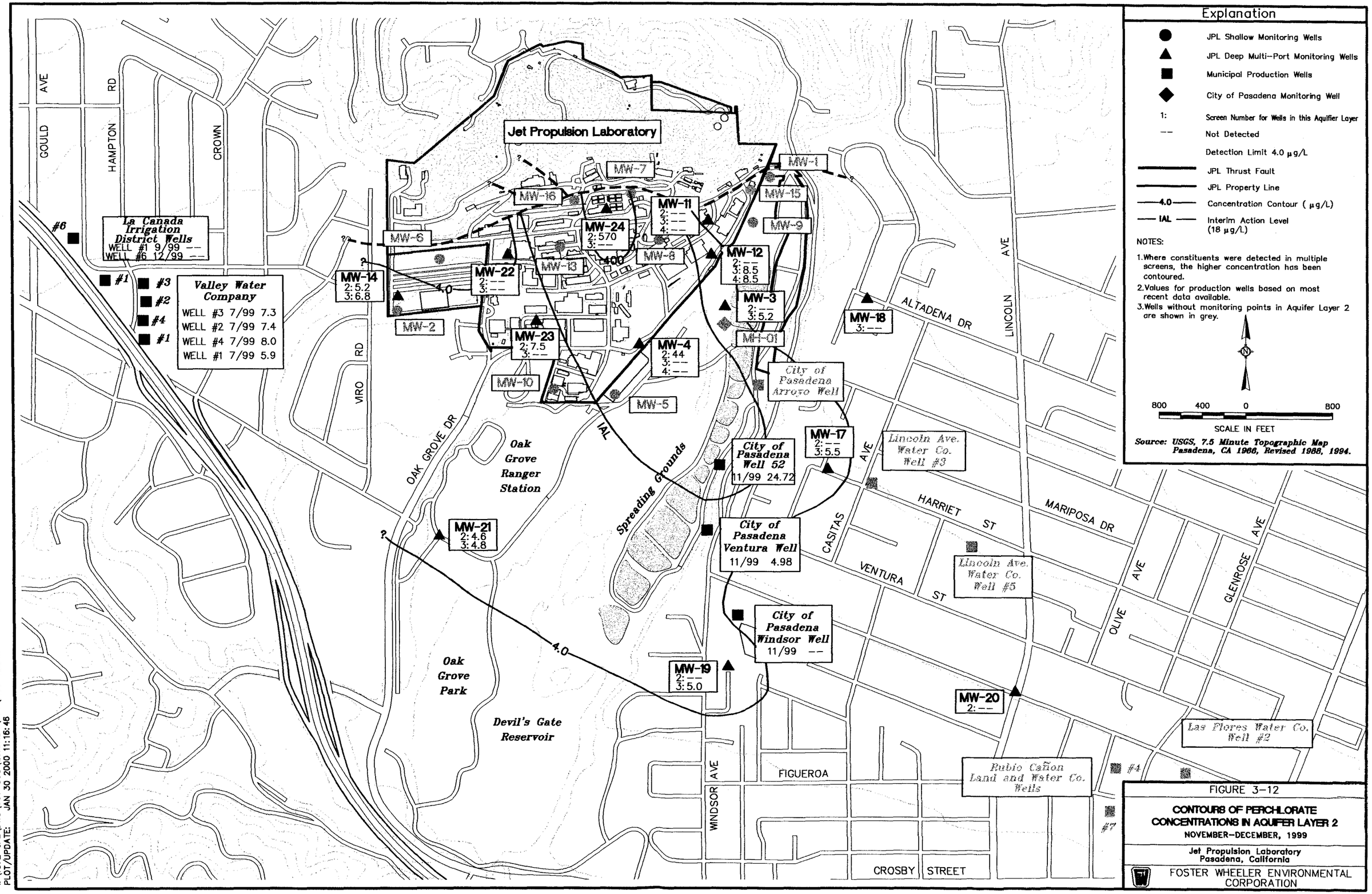

FIGURE 3-12

CONTOURS OF PERCHLORATE CONCENTRATIONS IN AQUIFER LAYER 2

NOVEMBER-DECEMBER, 1999

Jet Propulsion Laboratory
Pasadena, California

FOSTER WHEELER ENVIRONMENTAL CORPORATION

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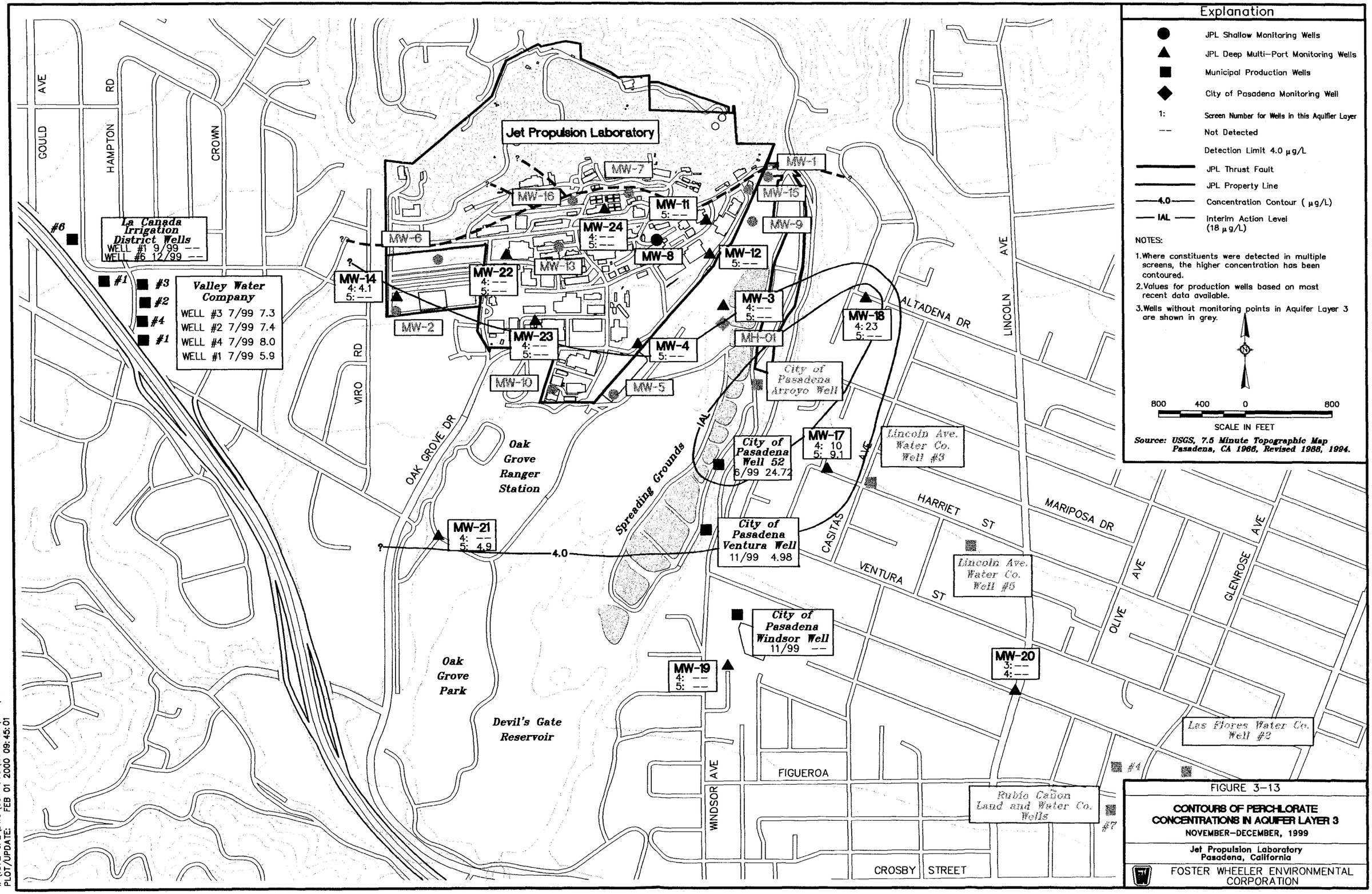

FIGURE 3-13

CONTOURS OF PERCHLORATE CONCENTRATIONS IN AQUIFER LAYER 3

NOVEMBER-DECEMBER, 1999

Jet Propulsion Laboratory
Pasadena, California

FOSTER WHEELER ENVIRONMENTAL CORPORATION

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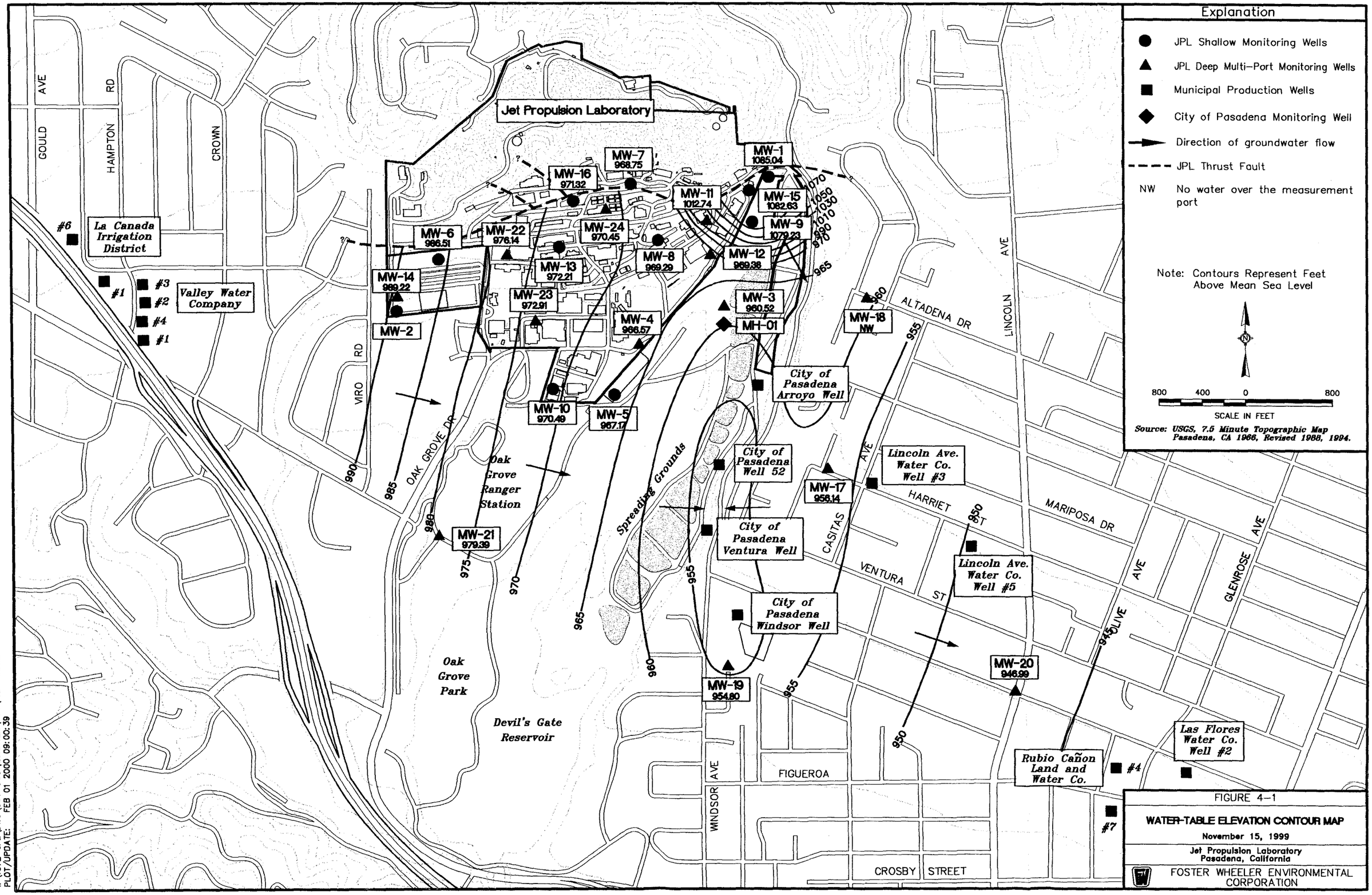

FIGURE 4-1

WATER-TABLE ELEVATION CONTOUR MAP

November 15, 1999

Jet Propulsion Laboratory
Pasadena, California

FOSTER WHEELER ENVIRONMENTAL CORPORATION

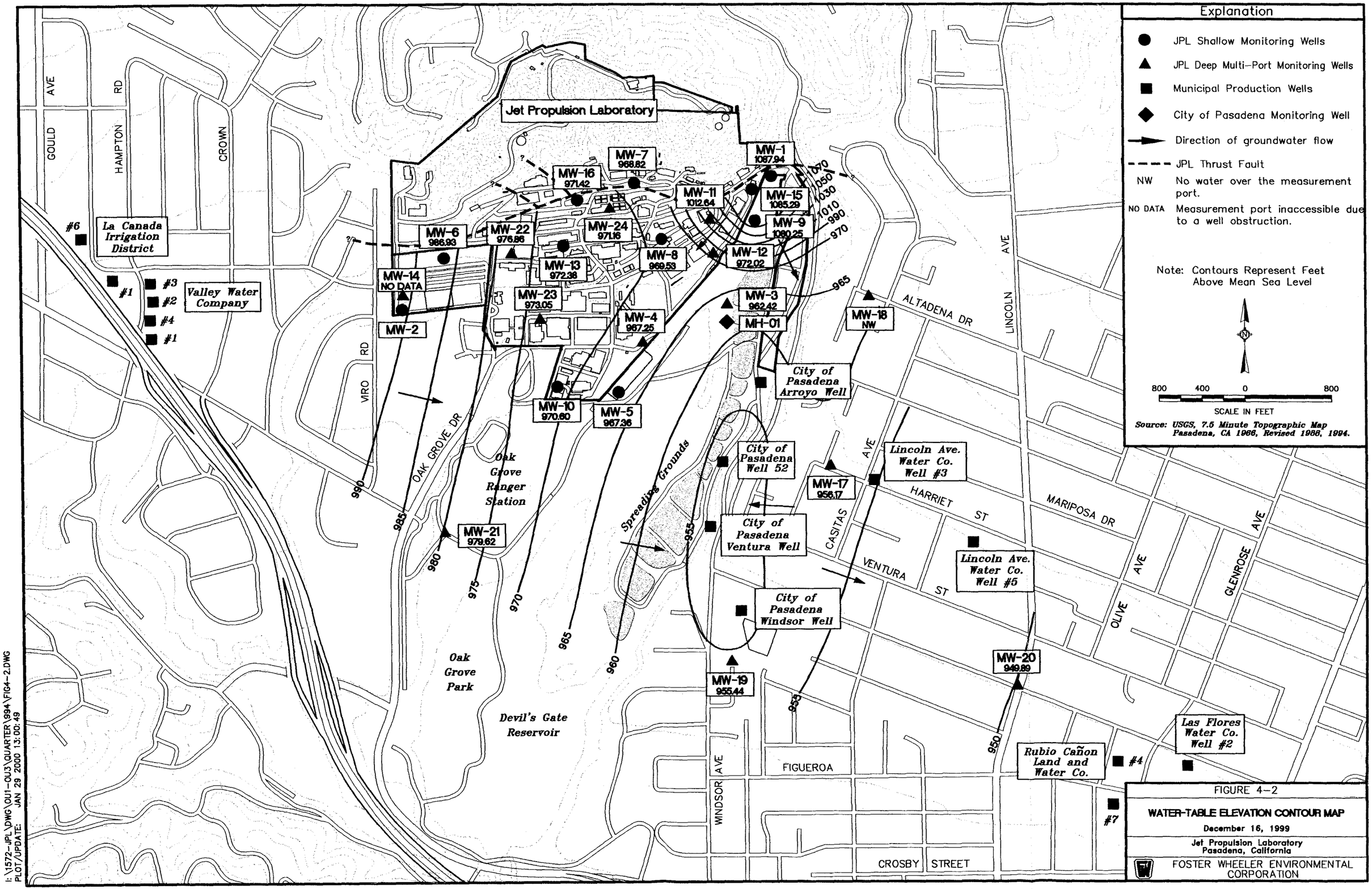

FIGURE 4-2

WATER-TABLE ELEVATION CONTOUR MAP

December 16, 1999

Jet Propulsion Laboratory
Pasadena, California

FOSTER WHEELER ENVIRONMENTAL CORPORATION

I:\1572-JPL\DWG\OU1-OU3\QUARTER\994\FIG4-2.DWG
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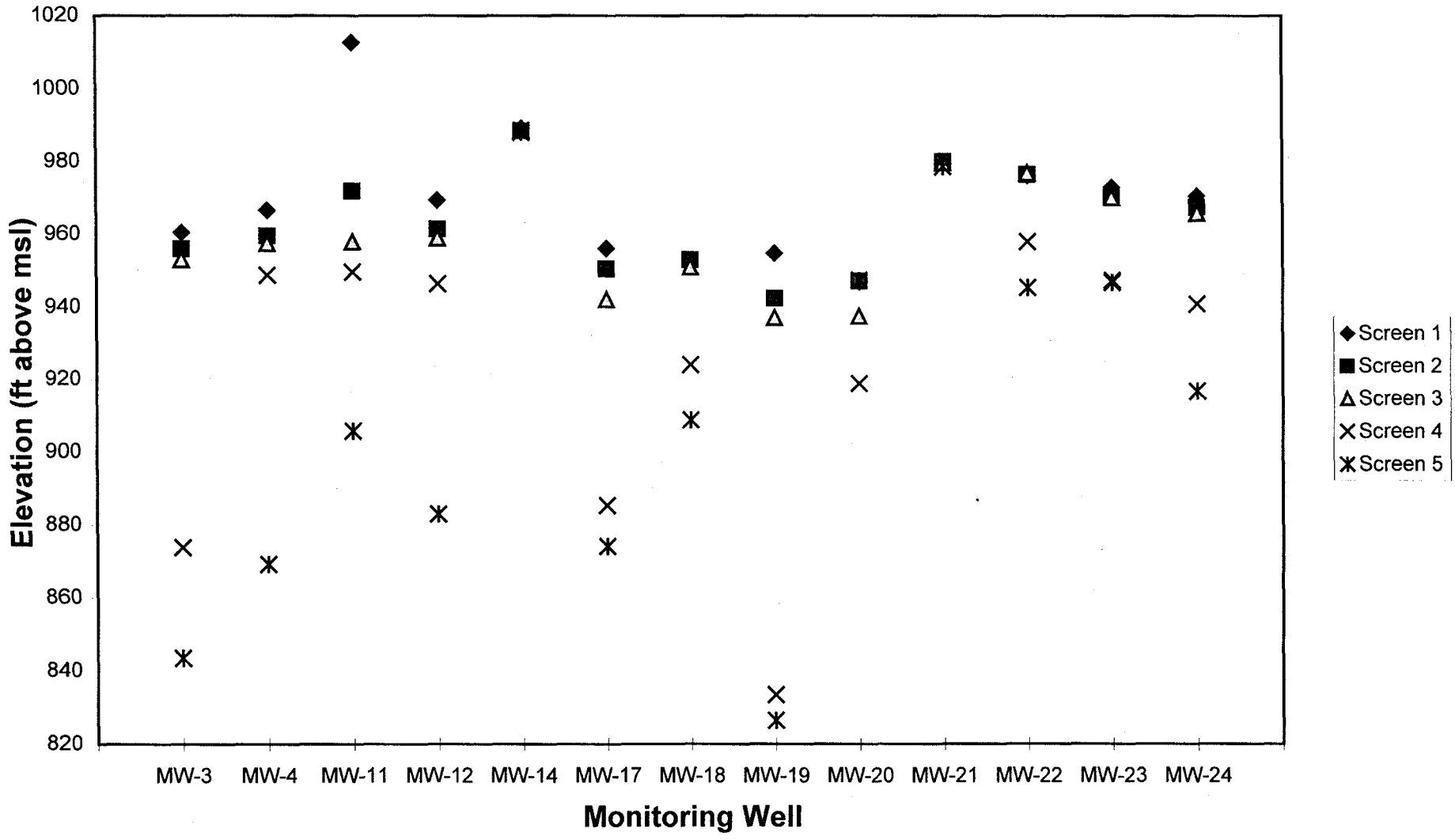

Figure 4-3

HYDRAULIC HEAD ELEVATIONS FROM DEEP (MP) WELLS

November 15, 1999

Jet Propulsion Laboratory
Pasadena, California

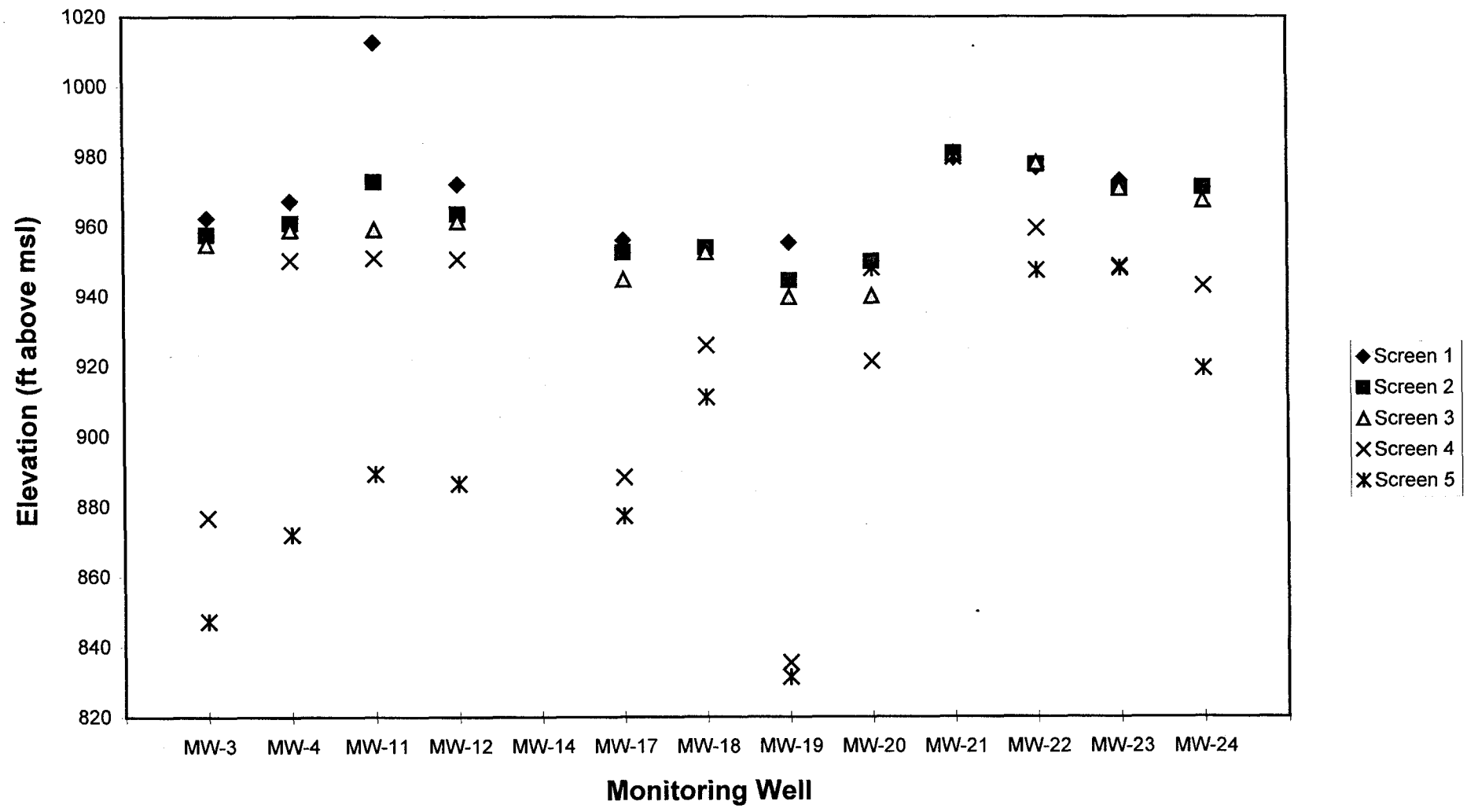

Figure 4-4

HYDRAULIC HEAD ELEVATIONS

FROM DEEP (MP) WELLS

December 16, 1999

Jet Propulsion Laboratory
Pasadena, California

Note: No data available for well MW-14, due to well obstruction.

APPENDIX A

WELL DEVELOPMENT/WELL SAMPLING LOG FORMS FOR SHALLOW WELLS

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : ~~H9-20~~1572.0294
Date : 12/14/99
Site Engineer : T. Turpyn-Keaslor

Well Number : MW-1
Equipment : YSI 3500
DRT 15CE
Contractor : ——

	Before	Reference Point	After
Depth to Water (ft)	29.26	TOC	29.26
Depth to Sediment (ft)	119.20	TOC	119.20
Thickness of Sediment (ft)	0.80		0.80

Depth of Well (ft) 120.00
Diameter of Casing (ft) .333
Water Column Height (ft) 90.74
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = 59.11
Casing Volumes Purged 1.14
Total Volume Purged (gals) ~~67~~ 67.5

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1105	7.51	17.51	17.3	452	2.0	PUMP ON; CONTROL BOX
						SET AT 147 Hz
1110	7.83	6.26	16.7	426	2.0	CLEAR
1115	7.94	5.19	16.8	434	2.5	CLEAR
1120	7.99	3.01	17.0	431	2.5	CLEAR: CONTROL BOX 176Hz
1125	8.07	3.09	16.2	429	2.5	CLEAR
1130	8.10	2.25	16.2	427	2.5	CLEAR; READY TO
						SAMPLE
1133	8.08	1.20	16.2	428	0.2	REDUCED FLOW; COLLECT
						MW-99-001 (MS/MSD)
1135	—	—	—	—	—	PUMP OFF

Notes Sampling Procedures:

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0294
Date : 12/13/99
Site Engineer : T. Turpyn-Keasler

Well Number : MW-5
Equipment : YSI 3500
DRT 15CE
Contractor : ——

	Before	Reference Point	After
Depth to Water (ft)	104.25	TOC	104.25
Depth to Sediment (ft)	139.86	TOC	139.86
Thickness of Sediment (ft)	0.14		0.14

Depth of Well (ft) 140.00
Diameter of Casing (ft) .333
Water Column Height (ft) 35.75
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = 23.29
Casing Volumes Purged 2.19
Total Volume Purged (gals) ~51

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1318	8.25	175.3	16.2	312	1.7	Pump On: control Box set at 250 Hz
1320	7.32	22.3	16.0	301	1.7	Clear
1325	8.45	8.86	16.8	303	1.7	Clear
1330	7.20	8.77	17.1	307	1.7	Clear
1335	8.43	8.70	18.0	312	1.7	Clear
1340	7.08	3.95	17.9	311	1.7	Clear
1345	8.23	4.01	18.5	316	1.7	Clear
1348	6.79	3.65	18.6	316	1.7	Clear Ready to Sample
1350	~~8.25~~		~~19.1~~	~~318~~	~~1.7~~ 0.2	Reduced Flow Collected Sample MW-5 .013
1354	8.25	2.51	19.1	318	—	Pump off

Notes Sampling Procedures:

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572-0294
Date : 12/13/99
Site Engineer : T. Turpin-Keasler

Well Number : MW-6
Equipment : YSI-3500
DRT 15CE
Contractor :

	Before	Reference Point	After
Depth to Water (ft)	201.65	TOC	201.65
Depth to Sediment (ft)	244.00	TOC	244.00
Thickness of Sediment (ft)	1.0		1.0

Depth of Well (ft) 245.00
Diameter of Casing (ft) .373
Water Column Height (ft) 43.35
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = 28.24
Casing Volumes Purged 1.6
Total Volume Purged (gals) 45

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1100	6.93	70.1	19.8	673	1.5	Pump ON; Control
	~~6.73~~		~~20.8~~	~~717~~	~~1.5~~	Box Set @ 338 hz
1105	6.73	21.5	20.8	717	1.5	Clear
1110	6.68	18.4	21.3	713	1.5	Clear
1115	6.65	9.83	21.6	718	1.5	Clear
1120	6.65	3.40	21.9	723	1.5	Clear
1125	6.65	2.15	21.9	721	1.5	Clear; READY TO SAMPLE
1130	6.66	2.19	21.8	740	0.2 ~~1.5~~	REDUCED FLOW
						COLLECT MW-994-014

Notes Sampling Procedures:

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPC
Project Number : 1572-0294
Date : 12/10/99
Site Engineer : Tania Turpyn-Keasler

Well Number : MW-7
Equipment : YSI-3500
DRT-15CE
Contractor : —

	Before	Reference Point	After
Depth to Water (ft)	244.06	TOC	244.10
Depth to Sediment (ft)	273.61	TOC	273.61
Thickness of Sediment (ft)	1.39		1.39

Depth of Well (ft) 275.0
Diameter of Casing (ft) .333
Water Column Height (ft) 30.94
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = 20.16 gal
Casing Volumes Purged 2.38
Total Volume Purged (gals) -48 gal

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0930	6.67	30.6	18.7	420	1.5	PUMP ON; CONTROL BOX
						SET AT 362 Hz
0935	6.93	7.58	19.9	438	1.5	CLEAR
0940	6.97	8.5	20.7	443	1.5	CLEAR
0945	7.06	7.67	20.6	440	1.5	CLEAR
0950	7.08	3.5	20.5	444	1.5	CLEAR
0955	7.12	1.75	20.3	443	1.5	CLEAR; READY TO SAMPLE
1000	—	—	—	—	0.2	REDUCE FLOW: COLLECT
						MW-999-015
1002	7.11	0.98	20.7	439	—	PUMP OFF; FINAL PARAMETERS

Notes Sampling Procedures:

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572-0294
Date : 12/10/99
Site Engineer : T. Turpyn-Keesler

Well Number : MW-8
Equipment : YSI 3500
DRT-15CE
Contractor : —

	Before	Reference Point	After
Depth to Water (ft)	170.0	TOC	170.0
Depth to Sediment (ft)	202.75	TOC	202.75
Thickness of Sediment (ft)	2.82		2.82

Depth of Well (ft) 205.0
Diameter of Casing (ft) 333
Water Column Height (ft) 35.00
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = 22.8 gal
Casing Volumes Purged ~1.3
Total Volume Purged (gals) ~29.7

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1325	7.80	6.94	17.1	302	0.66	PUMP ON; CONTROL BOX
						SET AT 295 HZ
1330	8.66	37.0	17.5	302	0.66	SLIGHTLY CLOUDY
1335	8.46	48.5	19.0	315	0.66	SLIGHTLY CLOUDY
1340	8.44	32.8	19.1	318	0.66	CLEARING
1345	8.35	23.9	20.3	326	0.66	CLEARING
1350	7.05	16.4	20.3	330	0.66	CLEAR
1355	7.03	9.03	20.4	332	0.66	CLEAR
1400	7.02	6.54	20.1	331	0.66	CLEAR
1405	7.02	4.84	19.7	331	0.66	CLEAR
1410	7.07	4.56	20.2	331	0.66	CLEAR; READY TO SAMPLE
1415	–			—	0.2	REDUCE FLOW; COLLECT
						MW-994-016
1417	7.00	4.04	19.8	331	—	PUMP OFF; FINAL PARAMETERS

Notes Sampling Procedures:

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572-0294
Date : 12/14/99
Site Engineer : T. Turpyn-Keasler

Well Number : MW-9
Equipment : YSI 3500
DRT 15CE
Contractor : —

	Before	Reference Point	After
Depth to Water (ft)	25.80	TOC	25.80
Depth to Sediment (ft)	69.60	TOC	69.60
Thickness of Sediment (ft)	—		—

Depth of Well (ft) 68.00
Diameter of Casing (ft) .33
Water Column Height (ft) 42.20
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = 27.49
Casing Volumes Purged 3.16
Total Volume Purged (gals) ~87

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0857	7.31	32.9	15.7	440	2.0	PUMP ON; CONTROL BOX
						SET AT 155 HZ
0905	7.19	12.25	16.5	451	2.0	CLEAR
0910	7.12	9.65	17.1	458	2.0	CLEAR
0915	7.12	5.01	17.2	456	2.0	CLEAR
0919	7.14	19.8	16.9	430	2.0	GREY
0923	7.14	20.8	17.1	454	2.0	GREY
0927	7.18	30.2	17.1	455	2.0	GREY
0930	7.17	22.6	16.7	454	1.5	REDUCED FLOW RATE
0934	7.17	9.62	16.8	451	1.5	CLEARING
0938	7.15	7.29	17.4	456	1.5	CLEARING
0942	7.13	6.62	17.7	458	1.5	CLEAR
0946	7.12	4.65	17.6	460	1.5	READY TO SAMPLE
0950	—	—	—	—	~~0.2~~	REDUCED FLOW; COLLECT
						MW-9-99-002
0953	7.12	4.30	17.4	455	—	FINAL PARAMETERS; PUMP
						OFF

Notes Sampling Procedures:

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPC
Project Number : 1572.0294
Date : 12/13/99
Site Engineer : T. Turpijn-Keesler

Well Number : MW-10
Equipment : YSI 3500
DRT 15CE
Contractor :

	Before	Reference Point	After
Depth to Water (ft)	117.10	TOC	117.10
Depth to Sediment (ft)	154.50	TOC	154.50
Thickness of Sediment (ft)	~~0.50~~		0.50

Depth of Well (ft) 155.00
Diameter of Casing (ft) .333
Water Column Height (ft) 38.00
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = 24.75
Casing Volumes Purged 2.04
Total Volume Purged (gals) 50.4

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1205	6.89	27.9	18.2	807	1.8	PUMP ON; CONTROL
						BOX SET AT 27.4 Hz
1210	6.90	12.07	19.6	756	1.8	Clear
1215	6.96	7.21	19.7	788	1.8	Clear
1220	6.79	4.34	19.6	814	1.8	Clear
1225	(6.77)	4.92	19.8	816	1.8	Clear
1230	6.78	4.66	19.8	823	1.8	Clear Ready to Sample
						Reduced Flow Collecte
1233	—	—	—	—	0.2	MW-994-018 ~~MW-994-019~~
1245 (DUP)						MW-994-019 (DUPLICATE
1236	6.78	4.73	19.2	821	—	FINAL PARAMETERS
						PUMP OFF

Notes Sampling Procedures:

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0294
Date : 12/14/99
Site Engineer : T. Turpyn-Keasler

Well Number : MW-13
Equipment : YSI 3500
DRT 15CE
Contractor : —

	Before	Reference Point	After
Depth to Water (ft)	211.25	TOC	211.25
Depth to Sediment (ft)	234.92	TOC	234.92
Thickness of Sediment (ft)	0.08		0.08

Depth of Well (ft) 235.00
Diameter of Casing (ft) 3.33
Water Column Height (ft) 23.75
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = 15.47
Casing Volumes Purged 3.23
Total Volume Purged (gals) 50

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1335	8.43	2.35	20.9	500	1.5	PUMP ON; CONTROL BOX
						SET AT 33 HZ
1340	7.37	1.84	20.9	492	1.5	CLEAN
1345	7.23	3.69	22.5	503	1.5	CLEAN
1350	8.61	3.91	22.6	507	1.5	CLEAN
1355	8.66	2.62	22.7	509	2.0	CLEAN; INCREASED FLOW 36 Hz
1400	8.63	1.22	22.4	506	2.0	READY TO SAMPLE
1405	—	—	—	—	0.2	REDUCED FLOW, COLLECTED
(1500) DUP)						MW-994-031 & 032
						DUPLICATE SAMPLE
1407	8.67	0.34	21.5	501	—	PUMP OFF

Notes Sampling Procedures:

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPC
Project Number : 1572-0294
Date : 12/13/99
Site Engineer : T. Turpyn-Keesler

Well Number : MW-15
Equipment : YSI 3500
DRT 15CP
Contractor :

	Before	Reference Point	After
Depth to Water (ft)	36.20	TOC	36.20
Depth to Sediment (ft)	74.96	TOC	74.96
Thickness of Sediment (ft)	—		—

Depth of Well (ft) 74.0
Diameter of Casing (ft) .333
Water Column Height (ft) 37.8
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = 24.63
Casing Volumes Purged 1.8
Total Volume Purged (gals) ~45

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1425	7.41	8.63	15.7	502	1.8	Pump on; Control box set @ 156 Hz
1430	7.66	2.45	15.8	494	1.8	Clear
1434	7.64	1.03	15.8	493	1.8	Clear
1438	7.62	0.56	15.8	493	1.8	Clear
1442	7.59	0.41	15.8	494	1.8	clear
1446	7.57	0.42	15.8	494	1.8	clear
1450	7.53	0.28	15.6	493	1.8	clear; READY TO SAMPLE
~~1451~~						
1453	—	—	—	—	0.2	REDUCE FLOW; COLLECT MW-994-038
1455	7.53	0.33	15.7	493	—	PUMP OFF; FINAL PARAMETERS

Notes Sampling Procedures:

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572-0294
Date : 12/10/99
Site Engineer : T. Turpyn-Keasler

Well Number : MW-16
Equipment : YSI 3500
DRTISLE
Contractor :

	Before	Reference Point	After
Depth to Water (ft)	264.80	TOC	264.80
Depth to Sediment (ft)	285.0	TOC	285.0
Thickness of Sediment (ft)	Ø		Ø

Depth of Well (ft) 285.0
Diameter of Casing (ft) 0.333
Water Column Height (ft) 20.2
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = 13.1 gal
Casing Volumes Purged 2.67
Total Volume Purged (gals) ~35

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1130	6.85	5.82	20.8	559	1.0	PUMP ON; CONTROL BOX
						SET AT 37 Hz
1135	6.84	58.0	21.8	520	1.0	CLOUDY
1140	6.87	72.0	22.7	504	1.0	CLOUDY
1145	6.91	29.8	24.3	497	1.0	CLEARING
1150	6.96	9.23	24.2	490	1.0	CLEAR
1154	6.99	4.43	24.6	485	1.0	CLEAR
1158	7.00	2.42	24.5	490	1.0	CLEAR
1202	7.04	1.92	24.3	490	1.0	CLEAR; READY TO SAMPLE
1205	—	—	—	—	0.2	REDUCE FLOW; COLLECT
~~1207~~	~~7.05~~	~~1.77~~	~~23.9~~	~~487~~ (11)		MW-999-039
1207	7.05	1.77	23.9	487	—	PUMP OFF; FINAL PARAMETERS

Notes Sampling Procedures:

F4

APPENDIX B

WELL DEVELOPMENT/WELL SAMPLING LOG FORMS, PIEZOMETRIC PRESSURE PROFILE RECORDS, AND GROUNDWATER SAMPLING FIELD DATA SHEETS FOR DEEP MULTI-PORT WELLS

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0294
Date : 11/28/99
Site Engineer : T. Turpyn-Keasler

Well Number : MW-3
Equipment : YSI 3500
DRT 15CE
Contractor : —

	Before	Reference Point	After
Depth to Water (ft)	* See Pressure	Profile Sheets	
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0850	–	13.40	—	—	—	1ST RUN TURBIDITY HIGH
1010	7.97	8.76	18.7	297	—	2ND RUN
1040	8.08	4.90	18.3	306	—	COLLECT MW-994-006 FINAL PARAMETERS
1115	7.82	4.63	19.0	308	—	1ST RUN; INITIAL PARAMETERS
1140	7.78	2.60	19.2	317	—	COLLECT MW-994-005 FINAL PARAMETERS
1205	7.94	4.68	17.2	397	—	1ST RUN; INITIAL PARAMETERS
1225	7.86	2.25	18.0	414		COLLECT MW-994-004
1250	7.81	2.13	17.4	349	—	1ST RUN; INITIAL PARAMETERS
1315	7.54	3.85	18.0	359		COLLECT MW-994-003 FINAL PARAMETERS
1335	7.49	4.89	16.4	351	—	1ST RUN; INITIAL PARAMETERS
1400	7.51	4.52	16.9	358	—	COLLECT MW-994-002 FINAL PARAMETERS

Notes Sampling Procedures: _____

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572-0294
Date : 12/6/99
Site Engineer : T. Turpin-Keasler

Well Number : MW-4
Equipment : YSI 3500
DRT-15CE
Contractor : —

	Before	Reference Point	After
Depth to Water (ft)	* See Pressure	Profile Sheets	
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0905	7.09	0.82	16.1	334	—	1st RUN TO SCREEN 5; INITIAL PARAMETERS
0945	7.27	3.36	18.3	344	—	COLLECT MW-994-012 FINAL PARAMETERS
1010	7.44	2.02	17.5	362	—	1st RUN TO SCREEN 4; INITIAL PARAMETERS
1030	7.52	1.91	17.9	367	—	COLLECT MW-994-011 FINAL PARAMETERS
1055	7.58	3.01	18.0	379	—	1st RUN TO SCREEN 3; INITIAL PARAMETERS
1120	7.60	2.96	18.1	377	—	COLLECT MW-994-010/MSMSD FINAL PARAMETERS
1315	7.09	4.96	19.2	634	—	1st RUN TO SCREEN 2; INITIAL PARAMETERS
1335					—	COLLECT MW-994-009/008 VOCs, 2Cr TOT, 2CrO4, 1CrVI
1355	6.95	4.87	18.4	625	—	COLLECT MW-994-008 1CrVI, FINAL PARAMETERS
1425	7.27	4.85	17.6	347	—	~~COLLECT MW-~~ 1st RUN TO SCREEN 1; INITIAL PARAMETERS
1445	7.15	4.92	17.1	383	—	COLLECT MW-994-007 FINAL PARAMETERS

Notes Sampling Procedures: _____

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0294
Date : 12-1-99
Site Engineer : T. Turpyn-Keasler

Well Number : MW-~~14~~ 11 (1)
Equipment : YSI 3500
DRT 15CE
Contractor : —

	Before	Reference Point	After
Depth to Water (ft)	*See Pressure	Profile Sheets	
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1105	7.16	0.61	19.9	300	—	1st RUN; INITIAL PARAMETERS SCREEN 5
1130	7.66	1.03	19.8	303	—	COLLECT MW-999-024 FINAL PARAMETERS
1155	7.81	2.71	19.3	327	—	1st RUN TO SCREEN 4; INITIAL PARAMETERS
1225	7.94	2.31	18.9	326	—	COLLECT MW-994-023 FINAL PARAMETERS
1248	7.78	2.24	18.7	365	—	1st RUN TO SCREEN 3; INITIAL PARAMETERS
1315	7.71	2.15	17.8	365		COLLECT MW-994-022 FINAL PARAMETERS
1340	7.69	2.38	17.5	383	—	1st RUN TO SCREEN 2; INITIAL PARAMETERS
1400	7.68	3.30	17.7	387	—	COLLECT MW-994-021 FINAL PARAMETERS
1420	7.63	2.71	17.6	444	—	1st RUN TO SCREEN 1; INITIAL PARAMETERS
1435	7.52	2.37	17.3	431	—	COLLECT MW-994-020 FINAL PARAMETERS

Notes Sampling Procedures: _____

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0294
Date : 12-2-99
Site Engineer : T. Turpyn-Keasler

Well Number : MW-12
Equipment : YSI-3500
DRT-15LE
Contractor : —

	Before	Reference Point	After
Depth to Water (ft)	* See Pressure	Profile Sheets	
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0805	6.35	3.67	16.0	367	—	1st RUN: INITIAL PARAMETERS SCREEN 5
0830	6.49	31.84	16.3	353	—	COLLECT MW-994-030 FINAL PARAMETERS
0955	7.32	3.21	17.9	411	—	1st RUN TO SCREEN 9; INITIAL PARAMETERS
1030	7.39	0.84	17.1	406	—	COLLECT MW-994-029 FINAL PARAMETERS
1050	7.41	0.42	17.5	435	—	1st RUN TO SCREEN 3; INITIAL PARAMETERS
1120	7.41	0.39	17.9	436	—	COLLECT MW-994-028 FINAL PARAMETERS
1145	7.97	1.56	17.9	425	—	1st RUN TO SCREEN 2; INITIAL PARAMETERS
1255	—					COLLECT MW-994-027 (DUP)
1315	7.36	2.05	18.8	437	—	COLLECT MW-994-026 FINAL PARAMETERS
1340	7.50	9.58	19.5	360	—	1st RUN TO SCREEN 1; INITIAL PARAMETERS
1355	7.58	14.72	18.0	369	—	PARAMETERS
1415	7.48	13.18	18.0	363	—	COLLECT MW 994-025, FINAL PARAMETERS

Notes Sampling Procedures: _____

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0294
Date : 12/9/99
Site Engineer : T. Turpyn-Keesler

Well Number : MW-14
Equipment : YSI 3500
DRT-15CE
Contractor : —

	Before	Reference Point	After
Depth to Water (ft)	* See Pressure Profile Sheets		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0910	6.86	3.71	17.8	281	—	1st RUN TO SCREEN 5; INITIAL PARAMETERS
~~1000~~ 0940	8.42	3.59	19.3	305	—	COLLECT MW-994-037 FINAL PARAMETERS
1025	8.19	1.21	19.9	510	—	1st RUN TO SCREEN 4; INITIAL PARAMETERS
1045	7.98	0.51	19.1	516	—	COLLECT MW-994-036 FINAL PARAMETERS
1125	7.83	0.72	19.7	908	—	~~COLLECT MW-994-03~~ 1st RUN TO SCREEN 3; INITIAL PARAMETERS
1200	7.77	0.71	21.1	948	—	COLLECT MW-994-035 FINAL PARAMETERS
1250	7.20	4.63	20.4	1098	—	1st RUN TO SCREEN 2; INITIAL PARAMETERS
1320	7.45	4.50	18.2	1053	—	COLLECT MW-994-034 FINAL PARAMETERS
see below					—	1st RUN TO SCREEN 1, INITIAL PARAMETERS

Notes Sampling Procedures: Tool became lodged in hole, unable to sample MW-14, screen 1.

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0294
Date : 11/29/99
Site Engineer : T. Turpyn-Keasler

Well Number : MW-17
Equipment : YSI 3500
DRT 15CE
Contractor : —

	Before	Reference Point	After
Depth to Water (ft)	* See Pressure	Profile Sheets	
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0910	7.36	4.39	18.9	397	—	1st RUN TO SCREEN 5, INITIAL PARAMETERS
0955	7.62	5.64	19.8	395	—	COLLECT MW-994-044
1022	7.92	4.97	18.6	375	—	1st RUN TO SCREEN 4, INITIAL PARAMETERS
1055	7.82	4.92	19.8	394	—	COLLECT MW-994-043
1145	7.77	4.59	18.6	353	—	1st RUN TO SCREEN 3 INITIAL PARAMETERS
1215	7.75	4.82	18.8	357	—	COLLECT MW-994-042
1245	7.44	3.14	17.7	311	—	1st RUN TO SCREEN 2 INITIAL PARAMETERS
1300	7.31	2.35	18.6	329	—	COLLECT MW-994-041
1335	7.42	1.19	18.2	317	—	1st RUN TO SCREEN 1 INITIAL PARAMETERS
1410	7.29	1.34	17.8	311	—	COLLECT MW-994-040

Notes Sampling Procedures: _____

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0294
Date : NOV 18, 1999
Site Engineer : T. Turpin-Keesler, M. Los

Well Number : MW-L8
Equipment : YSI-3500
DRT 15CE
Contractor : —

	Before	Reference Point	After
Depth to Water (ft)	* See Pressure Profile Sheets		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1010	8.86	2.32	17.8	453	—	1st RUN TO SCREEN 5; INITIAL PARAMETERS
1045	8.84	2.35	17.8	265	—	COLLECT MW-994-049 FINAL PARAMETERS
1117	8.34	1.44	19.0	359	—	1st RUN TO SCREEN 4; INITIAL PARAMETERS
1149	7.73	1.60	19.5	368	—	COLLECT MW-994-048 FINAL PARAMETERS
1230	7.73	0.78	19.5	402	—	1st RUN TO SCREEN 3; INITIAL PARAMETERS
1315	7.70	0.50	19.3	419		COLLECT MW-994-047 FINAL PARAMETERS
1345	8.02	4.01	18.0	369	—	1st RUN TO SCREEN 5; INITIAL PARAMETERS
1435	8.05	4.00	18.3	372	—	COLLECT MW-994-046 FINAL PARAMETERS

Notes Sampling Procedures: _____

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572-0294
Date : 11/19/99
Site Engineer : T. Turpyn-Kenslor

Well Number : MW-19
Equipment : YSI 3500
HF Scientific
Contractor : —

	Before	Reference Point	After
Depth to Water (ft)	* See Pressure	Profile Sheet	
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0900	6.54	0.98	16.5	703	—	1st RUN TO SCREEN 5; INITIAL PARAMETERS
0930	7.01	2.23	16.6	716	—	COLLECT MW-994-054 2VOC, CrTOT, Cr6+, ClO4-
1000	7.35	3.11	16.7	416	—	1st RUN TO SCREEN 4; INITIAL PARAMETERS
1030	7.35	1.98	17.2	412	—	COLLECT MW-994-059 2VOC, CrTOT, Cr6+, ClO4-
1055	7.02	3.79	17.9	791	—	1st RUN TO SCREEN 3, INITIAL PARAMETERS
1120	6.94	3.32	18.0	806	—	COLLECT MW-994-052 2VOC, CrTOT, Cr6+, ClO4-
1210	6.85	7.20	18.1	507	—	1st RUN TO SCREEN 2, INITIAL PARAMETERS
1230	6.69	1.45	17.7	502		COLLECT MW-994-051 2VOC, CrTOT, Cr6+, ClO4-
1320	6.97	4.89	17.1	297	—	1st RUN TO SCREEN 1, INITIAL PARAMETERS
1340	7.13	4.01	16.6	294	—	COLLECT MW-994-050 2xVOC, CrTOT, Cr6+, ClO4-

Notes Sampling Procedures: _____

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : SPL
Project Number : 1572.0294
Date : 11/30/99
Site Engineer : T. Turpyn-Keasler

Well Number : MW-20
Equipment : YSI 3500
DRT 15CE
Contractor : —

	Before	Reference Point	After
Depth to Water (ft)	* See Pressure Profile Sheets		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0825	7.44	1.12	16.9	349	—	1st RUN TO SCREEN 5; INITIAL PARAMETERS
0905	8.01	1.11	16.4	314	—	COLLECT MW-994-059 FINAL PARAMETERS
~~09~~ 0940	7.76	2.32	17.5	288	—	1st RUN TO SCREEN 4, INITIAL PARAMETERS
1015	7.88	2.16	17.1	286	—	COLLECT MW-994-058 FINAL PARAMETERS
1045	7.55	0.29	18.0	510	—	1st RUN TO SCREEN 3; INITIAL PARAMETERS
1115	7.68	0.31	17.9	511	—	COLLECT MW-994-057 FINAL PARAMETERS
1145	7.92	0.47	17.7	342	—	1st RUN TO SCREEN 2; INITIAL PARAMETERS
1210	7.84	0.66	18.7	360	—	COLLECT MW-994-056 FINAL PARAMETERS
	(11) 7.09					
1415	~~6.54~~	0.75	20.2	800	—	1st RUN TO SCREEN 1; INITIAL PARAMETERS
1440	7.43	1.09	19.8	807	—	COLLECT MW-994-055 FINAL PARAMETERS

Notes Sampling Procedures: _____

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0294
Date : 11/22/99
Site Engineer : T. Turpyn-Keasler

Well Number : MW-21
Equipment : YSI 3500
DRT 15CE
Contractor : —

	Before	Reference Point	After
Depth to Water (ft)	* See Pressure	Profile Sheets	
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0845	8.13	4.75	14.7	697	—	1st RUN TO SCREEN 5; INITIAL PARAMETERS
0915	7.85	4.95	15.3	703	—	COLLECT MW-994-069
0955	7.37	2.81	17.8	625	—	1st RUN TO SCREEN 4, INITIAL PARAMETERS
1020	7.24	2.73	18.5	660	—	COLLECT MW-994-063
1045	7.36	2.92	19.4	908	—	1st RUN TO SCREEN 3 INITIAL PARAMETERS
1110	7.34	2.62	19.6	925		COLLECT MW-994-062
1135	7.37	2.05	20.2	1118	—	1st RUN TO SCREEN 2 INITIAL PARAMETERS
1155	7.09	0.65	19.9	1163	—	COLLECT MW-994-061
1220	6.98	0.56	19.9	840	—	1st RUN TO SCREEN 1 INITIAL PARAMETERS
1240	6.89	0.24	21.6	875	—	COLLECT MW-994-060

Notes Sampling Procedures: _____

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name: JPL
Project Number: 1572.0294
Date: 12/15/99
Site Engineer: T. Turpin-Keisler
Well Number: MW-22
Equipment: YSI 3500
DRT 15LC
Contractor: ——

	Before	Reference Point	After
Depth to Water (ft)	* See Pressure Profile Sheets		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) ____
Diameter of Casing (ft) ____
Water Column Height (ft) ____

Casing Volume (gals) $=\pi$(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = ____

Casing Volumes Purged ____

Total Volume Purged (gals) ____

Time	pH	Turbidity (NTU)	Temp (°C)	Conductivity (µmhos)	~~Dissolved Oxygen (mg/L)~~	~~Eh (mV)~~	Comments
0900	7.84	0.58	17.8	320			1st RUN TO SCREEN 5; INITIAL PARAMETERS
0920	8.37	0.71	16.5	329			COLLECT MW-994-069 FINAL PARAMETERS
0955	7.54	7.28	16.1	304			1st RUN TO SCREEN 4; INITIAL PARAMETERS
1015 ~~0955~~	7.60	4.96	15.4	299			COLLECT MW-994-068 VOCs Cr TOT, Cr6+, ClO4-
(11) ~~1015~~							
1102	7.87	4.89	18.9	416			1st RUN TO SCREEN 3; INITIAL PARAMETERS
1125	7.96	9.97	17.8	420			COLLECT MW-994-067 FINAL PARAMETERS
1205	8.49	2.17	16.9	561			1st RUN TO SCREEN 2; INITIAL PARAMETERS
	—	—	—	—			2nd RUN; COLLECT MW-994-066 Cr TOT, Cr6, ClO4-
1245	7.37	1.46	16.7	575			3rd RUN COLLECT VOCs MW-994-066, FINAL PARAMETERS
1315	7.42	8.32	17.7	968			1st RUN TO SCREEN 1; INITIAL PARAMETERS
1335	7.54	8.41	17.5	969			—
1355	7.84	8.17	18.1	987			COLLECT MW-994-065 FINAL PARAMETERS

Notes Sampling Procedures: ____

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0294
Date : 12/8/99
Site Engineer : T. Turpyn-Keasler

Well Number : MW-23
Equipment : YSI 3500
DRT 15CE
Contractor : —

	Before	Reference Point	After
Depth to Water (ft)	* See Pressure Profile Sheets		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0845	8.85	1.70	17.7	480	—	1st RUN TO SCREEN 5 INITIAL PARAMETERS
1125	9.39	1.56	17.6	476	—	COLLECT MW-994-074 FINAL PARAMETERS
1155	7.97	3.56	17.9	337	—	1st RUN TO SCREEN 4 INITIAL PARAMETERS
1225	7.68	1.62	17.0	331	—	COLLECT MW-994-073 FINAL PARAMETERS
1255	7.60	3.06	17.1	418	—	1st RUN TO SCREEN 3 INITIAL PARAMETERS
1310	7.48	21.04	17.7	425	—	COLLECT MW-994-072 FINAL PARAMETERS
1340	7.17	1.88	17.8	906	—	1st RUN; INITIAL PARAMETERS ~~FINAL~~ SCREEN 2
1400	7.23	1.14	16.3	876	—	COLLECT MW-994-071 FINAL PARAMETERS
1420	7.05	28.1	17.2	1067	—	1st RUN TO SCREEN 1; INITIAL PARAMETERS
1435	6.98	35.1	17.9	1071	—	2ND RUN
1510	6.81	46.3	17.0	1074	—	COLLECT MW-994-070 FINAL PARAMETERS

Notes Sampling Procedures: _____

F4

FOSTER WHEELER ENVIRONMENTAL CORPORATION

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0294
Date : 12/7/99
Site Engineer : T. Turpyn-Keasler

Well Number : MW-24
Equipment : YSI 3500
DRT 15CE
Contractor : —

	Before	Reference Point	After
Depth to Water (ft)	* See Pressure	Profile Sheets	
Depth to Sediment (ft)			
Thickness of Sediment (ft)			

Depth of Well (ft) _____
Diameter of Casing (ft) _____
Water Column Height (ft) _____
Casing Volume (gals) = π(Diam. of Casing (ft)/2)^2 (Water Column Height (ft))(7.48 gals/ft^3) = _____
Casing Volumes Purged _____
Total Volume Purged (gals) _____

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0900	7.44	14.57	16.9	353	—	1st RUN TO SCREEN 5; INITIAL PARAMETERS
0930	7.29	10.48	18.8	372	—	2nd RUN TURBIDITY
1000	7.32	12.04	19.2	376	—	COLLECT MW-994-079
1025	7.91	15.43	18.5	320	—	1st RUN TO SCREEN 4; INITIAL PARAMETERS
1100	7.81	14.74	19.9	323	—	2nd RUN TURBIDITY
1120	7.93	14.87	19.7	332	—	3rd RUN
1150	7.89	14.63	19.8	337	—	COLLECT MW-994-078 FINAL PARAMETERS
1200	7.43	47.8	18.9	418	—	1st RUN TO SCREEN 3; INITIAL PARAMETERS
1245	7.39	45.5	19.5	426	—	2nd RUN
1310	7.30	45.7	20.3	408	—	3rd RUN COLLECT MW-994-076
1335	7.58	24.3	20.2	369	—	1st RUN TO SCREEN 2; INITIAL PARAMETERS
1405	7.54	23.8	19.9	372	—	COLLECT MW-994-076 FINAL PARAMETERS
1430	7.81	1.16	19.7	340	—	1st RUN TO SCREEN 1; INITIAL PARAMETERS
1500	7.84	3.52	20.2	347	—	COLLECT MW-994-075 FINAL PARAMETERS

Notes Sampling Procedures: _____

F4

GROUNDWATER MONITORING WELL WATER LEVEL MEASUREMENTS

November 15, 1999

Well Number	Screen Number	Date Measured	Depth to Water (ft)	Reference Elevation (ft msl)	Water Level Elevation (ft msl)
MW-1		11/15/99	31.65	1116.69	1085.04
MW-3	1 (top)	11/15/99	139.82	1100.34	960.52
	2	11/15/99	144.35	1100.34	955.99
	3	11/15/99	147.36	1100.34	952.98
	4	11/15/99	226.49	1100.34	873.85
	5	11/15/99	256.83	1100.34	843.51
MW-4	1 (top)	11/15/99	116.27	1082.84	966.57
	2	11/15/99	123.19	1082.84	959.65
	3	11/15/99	125.33	1082.84	957.51
	4	11/15/99	134.06	1082.84	948.78
	5	11/15/99	213.63	1082.84	869.21
MW-5		11/15/99	104.45	1071.62	967.17
MW-6		11/15/99	202.03	1188.54	986.51
MW-7		11/15/99	244.15	1212.90	968.75
MW-8		11/15/99	170.26	1139.55	969.29
MW-9		11/15/99	26.83	1106.06	1079.23
MW-10		11/15/99	117.24	1087.73	970.49
MW-11	1 (top)	11/15/99	126.56	1139.30	1012.74
	2	11/15/99	167.41	1139.30	971.89
	3	11/15/99	181.38	1139.30	957.92
	4	11/15/99	189.71	1139.30	949.59
	5	11/15/99	233.54	1139.30	905.76
MW-12	1 (top)	11/15/99	132.76	1102.14	969.38
	2	11/15/99	140.70	1102.14	961.44
	3	11/15/99	143.16	1102.14	958.98
	4	11/15/99	155.74	1102.14	946.40
	5	11/15/99	219.09	1102.14	883.05
MW-13		11/15/99	211.28	1183.49	972.21
MW-14	1 (top)	11/15/99	184.25	1173.47	989.22
	2	11/15/99	185.04	1173.47	988.43
	3	11/15/99	184.88	1173.47	988.59
	4	11/15/99	184.88	1173.47	988.59
	5	11/15/99	185.44	1173.47	988.03
MW-15		11/15/99	38.05	1120.68	1082.63
MW-16		11/15/99	264.97	1236.29	971.32
MW-17	1 (top)	11/15/99	235.07	1191.21	956.14
	2	11/15/99	240.70	1191.21	950.51
	3	11/15/99	249.11	1191.21	942.10
	4	11/15/99	305.80	1191.21	885.41
	5	11/15/99	317.03	1191.21	874.18

GROUNDWATER MONITORING WELL WATER LEVEL MEASUREMENTS

November 15, 1999

Well Number	Screen Number	Date Measured	Depth to Water (ft)	Reference Elevation (ft msl)	Water Level Elevation (ft msl)
MW-18	1 (top)	11/15/99	N/W	1225.41	N/W
	2	11/15/99	272.43	1225.41	952.98
	3	11/15/99	274.41	1225.41	951.00
	4	11/15/99	301.37	1225.41	924.04
	5	11/15/99	316.63	1225.41	908.78
MW-19	1 (top)	11/15/99	188.14	1142.94	954.80
	2	11/15/99	200.47	1142.94	942.47
	3	11/15/99	205.81	1142.94	937.13
	4	11/15/99	309.47	1142.94	833.47
	5	11/15/99	316.50	1142.94	826.44
MW-20	1 (top)	11/15/99	218.06	1165.05	946.99
	2	11/15/99	217.89	1165.05	947.16
	3	11/15/99	227.57	1165.05	937.48
	4	11/15/99	246.21	1165.05	918.84
	5	11/15/99	217.67	1165.05	947.38
MW-21	1 (top)	11/15/99	79.71	1059.10	979.39
	2	11/15/99	79.12	1059.10	979.98
	3	11/15/99	79.46	1059.10	979.64
	4	11/15/99	80.54	1059.10	978.56
	5	11/15/99	80.60	1059.10	978.50
MW-22	1 (top)	11/15/99	200.84	1176.98	976.14
	2	11/15/99	200.55	1176.98	976.43
	3	11/15/99	200.11	1176.98	976.87
	4	11/15/99	219.01	1176.98	957.97
	5	11/15/99	231.59	1176.98	945.39
MW-23	1 (top)	11/15/99	135.93	1108.84	972.91
	2	11/15/99	138.73	1108.84	970.11
	3	11/15/99	138.79	1108.84	970.05
	4	11/15/99	161.51	1108.84	947.33
	5	11/15/99	162.07	1108.84	946.77
MW-24	1 (top)	11/15/99	230.49	1200.94	970.45
	2	11/15/99	233.54	1200.94	967.40
	3	11/15/99	235.18	1200.94	965.76
	4	11/15/99	260.14	1200.94	940.80
	5	11/15/99	284.24	1200.94	916.70

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing
Probe Type: Westbay
Date: 11/15/99
Job No.: 1572
Serial No.: 1455
Well Name: MW-3
Elevation of Datum(ft msl): 1100.34
Range: 0 to 750 psia
Weather: 75 degrees, sunny
Client: Jet Propulsion Laboratory
Casing Size: 1.5-inch Westbay Casing
Operator: M. Losi/T. Turpijn-Keasler
Ambient Reading (Pressure/Temperature/Time) Start: 14.11/21.72/1445
Finish: 14.10/20.04/1456

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	653	163.20			22.77	1447		256.83	843.51
			185.84						
			185.82						
			185.87						
				163.21					
4	558	121.99			23.22	1448		226.49	873.85
			157.82						
			157.80						
			157.82						
				121.99					
3	346	29.93			22.61	1450		147.36	952.98
			100.21						
			100.23						
			100.21						
				29.96					
2	252	14.22			21.16	1452		144.35	955.99
			60.75						
			60.79						
			60.77						
				14.22					
1	172	14.12			20.73	1454		139.82	960.52
			28.05						
			28.07						
			28.05						
				14.14					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing
Probe Type: Westbay
Date: 11/15/99
Job No.: 1572
Serial No.: 1455
Well Name: MW-4
Elevation of Datum(ft msl): 1082.84
Range: 0 to 750 psia
Weather: 75 degrees, sunny
Client: Jet Propulsion Laboratory
Casing Size: 1.5-inch Westbay Casing
Operator: M. Losi/T. Turpijn-Keasler
Ambient Reading (Pressure/Temperature/Time) Start: 14.09/20.57/1407
Finish: 14.11/20.28/1420

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	513	125.02			22.00	1410		213.63	869.21
			143.88						
			143.90						
			143.85						
				125.05					
4	392	72.42			21.82	1412		131.75	951.09
			125.93						
			128.90						
			125.92						
				72.44					
3	322	42.01			21.11	1414		125.33	957.51
			99.34						
			99.35						
			99.38						
				42.01					
2	240	14.19			20.49	1416		123.19	959.65
			64.73						
			64.75						
			64.73						
				14.21					
1	150	14.14			20.24	1418		116.27	966.57
			28.74						
			28.71						
			28.72						
				14.24					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing
Probe Type: Westbay
Date: 11/15/99
Job No.: 1572
Serial No.: 1455
Well Name: MW-11
Elevation of Datum(ft msl): 1139.30
Range: 0 to 750 psia
Weather: 75 degrees, sunny
Client: Jet Propulsion Laboratory
Casing Size: 1.5-inch Westbay Casing
Operator: M. Losi/T. Turpijn-Keasler
Ambient Reading (Pressure/Temperature/Time) Start: 14.10/22.4/0810
Finish: 14.11/18.20/0834

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	639	188.10			21.50	815		233.54	905.76
			189.86						
			189.89						
			189.86						
				188.12					
4	524	138.52			21.26	825		189.71	949.59
			159.01						
			159.04						
			159.01						
				138.52					
3	429	97.67			20.59	830		181.38	957.92
			121.45						
			121.42						
			121.47						
				97.66					
2	259	24.20			19.51	832		167.41	971.89
			53.82						
			53.79						
			53.82						
				24.21					
1	149	14.15			18.37	833		126.56	1012.74
			23.84						
			23.82						
			23.84						
				14.16					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing
Probe Type: Westbay
Date: 11/15/99
Job No.: 1572
Serial No.: 1455
Well Name: MW-12
Elevation of Datum(ft msl): 1102.14
Range: 0 to 750 psia
Client: Jet Propulsion Laboratory
Weather: 75 degrees, sunny
Casing Size: 1.5-inch Westbay Casing
Operator: M. Losi/T. Turpijn-Keasler
Ambient Reading (Pressure/Temperature/Time) Start: 14.20/23.12/1336
Finish: 14.18/23.02/1403

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	548	134.38			23.06	1353		219.09	883.05
			156.77						
			156.78						
			156.77						
				134.41					
4	436	85.71			22.11	1355		155.74	946.40
			135.68						
			135.71						
			135.66						
				85.74					
3	323	36.61			21.34	1357		143.16	958.98
			92.14						
			92.17						
			92.14						
				36.62					
2	243	14.12			19.89	1359		140.70	961.44
			58.53						
			58.58						
			58.50						
				14.13					
1	140	14.07			19.26	1401		132.76	969.38
			17.35						
			17.32						
			17.32						
				14.07					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing
Probe Type: Westbay
Date: 11/15/99
Job No.: 1572
Serial No.: 1455
Well Name: MW-14
Elevation of Datum(ft msl): 1173.47
Range: 0 to 750 psia
Client: Jet Propulsion Laboratory
Weather: 75 degrees, sunny
Casing Size: 1.5-inch Westbay Casing
Operator: M. Losi/T. Turpijn-Keasler
Ambient Reading (Pressure/Temperature/Time) Start: 14.10/22.05/1152
Finish: 14.12/19.90/1205

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	540	154.38			22.14	1157		185.44	988.03
			167.80						
			167.83						
			167.80						
				154.40					
4	456	117.81			21.90	1200		184.88	988.59
			131.62						
			131.65						
			131.65						
				117.81					
3	382	85.62			21.54	1202		184.88	988.59
			99.55						
			99.57						
			99.57						
				85.64					
2	277	40.04			20.29	1204		185.04	988.43
			53.98						
			53.96						
			53.98						
				40.04					
1	207	14.17			20.01	1206		184.25	989.22
			23.98						
			23.93						
			24.00						
				14.14					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing
Probe Type: Westbay
Date: 11/15/99
Job No.: 1572
Serial No.: 1455
Well Name: MW-17
Elevation of Datum(ft msl): 1191.21
Range: 0 to 750 psia
Client: Jet Propulsion Laboratory
Weather: 75 degrees, sunny
Casing Size: 1.5-inch Westbay Casing
Operator: M. Losi/T. Turpijn-Keasler
Ambient Reading (Pressure/Temperature/Time) Start: 14.14/21.74/0927
Finish: 14.10/16.43/0940

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	726	170.04			20.94	930		317.03	874.18
			191.40						
			191.43						
			191.40						
				170.06					
4	582	107.59			20.64	932		305.80	885.41
			133.86						
			133.84						
			133.86						
				107.51					
3	468	57.99			17.97	934		249.11	942.10
			109.01						
			108.98						
			109.03						
				57.99					
2	370	15.45			17.23	936		240.70	950.51
			70.19						
			70.15						
			70.17						
				15.47					
1	250	14.11			16.76	938		235.07	956.14
			20.60						
			20.58						
			20.60						
				14.11					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing
Probe Type: Westbay
Date: 11/15/99
Job No.: 1572
Serial No.: 1455
Well Name: MW-18
Elevation of Datum(ft msl): 1225.41
Range: 0 to 750 psia
Weather: 75 degrees, sunny
Client: Jet Propulsion Laboratory
Casing Size: 1.5-inch Westbay Casing
Operator: M. Losi/T. Turpijn-Keasler
Ambient Reading (Pressure/Temperature/Time) Start: 14.06/20.01/0952
Finish: 14.09/17.82/1004

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	684	147.48			20.43	954		316.63	908.78
			173.36						
			173.34						
			173.29						
				147.49					
4	564	95.42			20.91	956		301.37	924.04
			127.93						
			127.90						
			127.95						
				95.44					
3	424	34.62			19.80	958		274.41	951.00
			78.95						
			78.92						
			78.90						
				34.58					
2	330	14.25			18.64	1000		272.43	952.98
			39.02						
			39.05						
			39.02						
				14.20					
1	270	14.23			18.09	1002	No water over measurement port		
			14.26						
			14.28						
			14.26						
				14.25					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing
Probe Type: Westbay
Date: 11/15/99
Job No.: 1572
Serial No.: 1455
Well Name: MW-19
Elevation of Datum(ft msl): 1142.94
Range: 0 to 750 psia
Weather: 75 degrees, sunny
Client: Jet Propulsion Laboratory
Casing Size: 1.5-inch Westbay Casing
Operator: M. Losi/T. Turpijn-Keasler
Ambient Reading (Pressure/Temperature/Time) Start: 14.20/19.38/1046
Finish: 14.18/17.96/1102

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	498	92.92			19.32	1048		316.50	826.44
			92.87						
			92.89						
			92.85						
				92.92					
4	444	70.30			18.12	1051		309.47	833.47
			72.50						
			72.52						
			72.50						
				70.30					
3	392	47.74			18.26	1056		205.81	937.13
			94.89						
			94.90						
			94.92						
				47.76					
2	314	14.20			18.66	1058		200.47	942.47
			63.39						
			63.41						
			63.41						
				14.25					
1	242	14.21			18.34	1100		188.14	954.80
			37.56						
			37.51						
			37.54						
				14.23					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing
Probe Type: Westbay
Date: 11/15/99
Job No.: 1572
Serial No.: 1455
Well Name: MW-20
Elevation of Datum(ft msl): 1165.05
Range: 0 to 750 psia
Client: Jet Propulsion Laboratory
Weather: 75 degrees, sunny
Casing Size: 1.5-inch Westbay Casing
Operator: M. Losi/T. Turpijn-Keasler
Ambient Reading (Pressure/Temperature/Time) Start: 14.29/20.01/1015
Finish: 14.23/17.80/1035

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	900	264.39			22.35	1020		217.67	947.38
			310.03						
			310.06						
			310.06						
				264.40					
4	700	177.52			22.98	1023		246.21	918.84
			210.98						
			210.95						
			211.00						
				177.52					
3	562	117.49			21.87	1028		227.57	937.48
			159.23						
			159.26						
			159.21						
				117.50					
2	392	43.66			20.07	1030		217.89	947.16
			89.72						
			89.75						
			89.74						
				43.66					
1	230	14.28			18.31	1032		218.06	946.99
			19.43						
			19.45						
			19.43						
				14.23					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing
Probe Type: Westbay
Date: 11/15/99
Job No.: 1572
Serial No.: 1455
Well Name: MW-21
Elevation of Datum(ft msl): 1059.10
Range: 0 to 750 psia
Weather: 75 degrees, sunny
Client: Jet Propulsion Laboratory
Casing Size: 1.5-inch Westbay Casing
Operator: M. Losi/T. Turpijn-Keasler
Ambient Reading (Pressure/Temperature/Time) Start: 14.16/19.74/1118
Finish: 14.16/20.65/1140

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	372	135.16			20.62	1123		80.60	978.50
			140.47						
			140.49						
			140.49						
				135.19					
4	310	108.22			20.53	1125		80.54	978.56
			113.62						
			113.65						
			113.62						
				108.23					
3	240	78.19			20.20	1127		79.46	979.64
			83.74						
			83.76						
			83.76						
				78.21					
2	161	43.85			19.69	1128		79.12	979.98
			49.66						
			49.64						
			49.66						
				43.88					
1	90	14.17			20.68	1140		79.71	979.39
			18.63						
			18.60						
			18.63						
				14.19					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing
Probe Type: Westbay
Date: 11/15/99
Job No.: 1572
Serial No.: 1455
Well Name: MW-22
Elevation of Datum(ft msl): 1176.98
Range: 0 to 750 psia
Weather: 75 degrees, sunny
Client: Jet Propulsion Laboratory
Casing Size: 1.5-inch Westbay Casing
Operator: M. Losi/T. Turpijn-Keasler
Ambient Reading (Pressure/Temperature/Time) Start: 14.03/25.47/1248
Finish: 14.06/21.11/1302

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	588	162.01			23.74	1252		231.59	945.39
			168.54						
			168.57						
			168.54						
				162.02					
4	467	109.54			23.29	1254		219.01	957.97
			121.55						
			121.52						
			121.57						
				109.54					
3	389	75.62			22.52	1256		200.11	976.87
			95.90						
			95.95						
			95.93						
				75.62					
2	329	49.60			22.03	1258		200.55	976.43
			69.73						
			69.75						
			69.71						
				49.62					
1	245	14.13			21.34	1300		200.84	976.14
			33.22						
			33.15						
			33.20						
				14.13					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing
Probe Type: Westbay
Date: 11/15/99
Job No.: 1572
Serial No.: 1455
Well Name: MW-23
Elevation of Datum(ft msl): 1108.84
Range: 0 to 750 psia
Client: Jet Propulsion Laboratory
Weather: 75 degrees, sunny
Casing Size: 1.5-inch Westbay Casing
Operator: M. Losi/T. Turpijn-Keasler
Ambient Reading (Pressure/Temperature/Time) Start: 14.16/21.31/0846
Finish: 14.09/20.30/0900

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	542	169.17			22.29	851		162.07	946.77
			178.83						
			178.84						
			178.81						
				169.20					
4	445	127.08			22.05	853		161.51	947.33
			137.03						
			137.00						
			137.03						
				127.90					
3	319	72.37			21.87	855		138.79	970.05
			92.24						
			92.26						
			92.24						
				72.37					
2	254	44.23			21.30	856		138.73	970.11
			64.12						
			64.07						
			64.09						
				44.19					
1	174	14.16			20.46	858		135.93	972.91
			30.62						
			30.64						
			30.62						
				14.16					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing
Probe Type: Westbay
Date: 11/15/99
Job No.: 1572
Serial No.: 1455
Well Name: MW-24
Elevation of Datum(ft msl): 1200.94
Range: 0 to 750 psia
Weather: 75 degrees, sunny
Client: Jet Propulsion Laboratory
Casing Size: 1.5-inch Westbay Casing
Operator: M. Losi/T. Turpijn-Keasler
Ambient Reading (Pressure/Temperature/Time) Start: 14.11/22.35/1314
Finish: 14.11/21.38/1328

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	678	205.05			22.21	1316		284.24	916.70
			184.79						
			184.81						
			184.81						
				205.08					
4	554	151.34			22.40	1318		260.14	940.80
			141.51						
			141.48						
			141.51						
				151.36					
3	435	99.86			22.29	1320		235.18	965.76
			100.74						
			100.74						
			100.72						
				99.72					
2	373	72.98			21.98	1324		233.54	967.40
			74.55						
			74.57						
			74.58						
				72.98					
1	279	32.31			21.36	1326		230.49	970.45
			35.17						
			35.15						
			35.10						
				32.29					

GROUNDWATER MONITORING WELL WATER LEVEL MEASUREMENTS

December 16, 1999

Well Number	Screen Number	Date Measured	Depth to Water (ft)	Reference Elevation (ft msl)	Water Level Elevation (ft msl)
MW-1		12/16/99	28.75	1116.69	1087.94
MW-3	1 (top)	12/16/99	137.92	1100.34	962.42
	2	12/16/99	142.67	1100.34	957.67
	3	12/16/99	145.49	1100.34	954.85
	4	12/16/99	223.57	1100.34	876.77
	5	12/16/99	253.05	1100.34	847.29
MW-4	1 (top)	12/16/99	115.59	1082.84	967.25
	2	12/16/99	121.84	1082.84	961.00
	3	12/16/99	123.74	1082.84	959.10
	4	12/16/99	132.54	1082.84	950.30
	5	12/16/99	210.74	1082.84	872.10
MW-5		12/16/99	104.26	1071.62	967.36
MW-6		12/16/99	201.61	1188.54	986.93
MW-7		12/16/99	244.08	1212.90	968.82
MW-8		12/16/99	170.02	1139.55	969.53
MW-9		12/16/99	25.81	1106.06	1080.25
MW-10		12/16/99	117.13	1087.73	970.60
MW-11	1 (top)	12/16/99	126.66	1139.30	1012.64
	2	12/16/99	166.47	1139.30	972.83
	3	12/16/99	180.10	1139.30	959.20
	4	12/16/99	188.38	1139.30	950.92
	5	12/16/99	249.96	1139.30	889.34
MW-12	1 (top)	12/16/99	130.07	1102.14	972.07
	2	12/16/99	138.49	1102.14	963.65
	3	12/16/99	140.69	1102.14	961.45
	4	12/16/99	153.10	1102.14	949.04
	5	12/16/99	215.65	1102.14	886.49
MW-13		12/16/99	211.11	1183.49	972.38
MW-14	1 (top)	12/16/99	inaccessible port	1173.47	No data
	2	12/16/99	inaccessible port	1173.47	No data
	3	12/16/99	inaccessible port	1173.47	No data
	4	12/16/99	inaccessible port	1173.47	No data
	5	12/16/99	inaccessible port	1173.47	No data
MW-15		12/16/99	35.39	1120.68	1085.29
MW-16		12/16/99	264.87	1236.29	971.42
MW-17	1 (top)	12/16/99	235.04	1191.21	956.17
	2	12/16/99	238.55	1191.21	952.66
	3	12/16/99	246.39	1191.21	944.82
	4	12/16/99	302.74	1191.21	888.47
	5	12/16/99	313.85	1191.21	877.36

GROUNDWATER MONITORING WELL WATER LEVEL MEASUREMENTS

December 16, 1999

Well Number	Screen Number	Date Measured	Depth to Water (ft)	Reference Elevation (ft msl)	Water Level Elevation (ft msl)
MW-18	1 (top)	12/16/99	N/W	1225.41	N/W
	2	12/16/99	271.33	1225.41	954.08
	3	12/16/99	272.78	1225.41	952.63
	4	12/16/99	299.42	1225.41	925.99
	5	12/16/99	314.25	1225.41	911.16
MW-19	1 (top)	12/16/99	187.50	1142.94	955.44
	2	12/16/99	198.37	1142.94	944.57
	3	12/16/99	203.18	1142.94	939.76
	4	12/16/99	307.47	1142.94	835.47
	5	12/16/99	311.51	1142.94	831.43
MW-20	1 (top)	12/16/99	215.16	1165.05	949.89
	2	12/16/99	215.09	1165.05	949.96
	3	12/16/99	224.98	1165.05	940.07
	4	12/16/99	243.67	1165.05	921.38
	5	12/16/99	216.98	1165.05	948.07
MW-21	1 (top)	12/16/99	79.48	1059.10	979.62
	2	12/16/99	78.19	1059.10	980.91
	3	12/16/99	78.23	1059.10	980.87
	4	12/16/99	79.16	1059.10	979.94
	5	12/16/99	79.24	1059.10	979.86
MW-22	1 (top)	12/16/99	200.12	1176.98	976.86
	2	12/16/99	199.23	1176.98	977.75
	3	12/16/99	198.78	1176.98	978.20
	4	12/16/99	217.46	1176.98	959.52
	5	12/16/99	229.56	1176.98	947.42
MW-23	1 (top)	12/16/99	135.79	1108.84	973.05
	2	12/16/99	138.07	1108.84	970.77
	3	12/16/99	138.00	1108.84	970.84
	4	12/16/99	160.28	1108.84	948.56
	5	12/16/99	160.79	1108.84	948.05
MW-24	1 (top)	12/16/99	229.78	1200.94	971.16
	2	12/16/99	229.80	1200.94	971.14
	3	12/16/99	233.51	1200.94	967.43
	4	12/16/99	257.96	1200.94	942.98
	5	12/16/99	281.59	1200.94	919.35

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing
Probe Type: Westbay
Date: 12/16/99
Job No.: 1572
Serial No.: 1455
Well Name: MW-3
Elevation of Datum(ft msl): 1100.34
Range: 0 to 750 psia
Client: Jet Propulsion Laboratory
Weather: 75 degrees, sunny
Casing Size: 1.5-inch Westbay Casing
Operator: M. Hunt/T. Turpijn-Keasler
Ambient Reading (Pressure/Temperature/Time) Start: 13.90/20.40/1403
Finish: 13.93/19.65/1420

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	653	163.05			22.97	1408		253.05	847.29
			187.29						
			187.28						
			187.31						
				163.02					
4	558	121.66			23.52	1411		246.64	853.70
			158.91						
			158.88						
			158.88						
				121.67					
3	346	29.58			21.92	1413		145.49	954.85
			100.84						
			100.82						
			100.85						
				29.60					
2	252	14.05			20.58	1416		188.81	911.53
			61.32						
			61.29						
			61.32						
				14.02					
1	172	14.05			20.07	1418		137.92	962.42
			28.72						
			28.69						
			28.66						
				14.02					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing
Probe Type: Westbay
Date: 12/16/99
Job No.: 1572
Serial No.: 1455
Well Name: MW-4
Elevation of Datum(ft msl): 1082.84
Range: 0 to 750 psia
Weather: 75 degrees, sunny
Client: Jet Propulsion Laboratory
Casing Size: 1.5-inch Westbay Casing
Operator: M. Hunt/T. Turpijn-Keasler
Ambient Reading (Pressure/Temperature/Time) Start: 13.90/20.40/1327
Finish: 13.99/20.33/1351

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	513	124.99			22.70	1341		210.74	872.10
			144.98						
			144.97						
			144.98						
				124.96					
4	392	72.21			22.72	1343		132.54	950.30
			126.41						
			126.44						
			126.41						
				72.19					
3	322	41.76			22.34	1345		123.74	959.10
			99.90						
			99.87						
			99.90						
				41.83					
2	240	14.01			21.51	1347		121.84	961.00
			65.14						
			65.18						
			65.18						
				14.02					
1	150	13.99			20.89	1349		115.59	967.25
			28.87						
			28.84						
			28.87						
				13.99					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing
Probe Type: Westbay
Date: 12/16/99
Job No.: 1572
Serial No.: 1455
Well Name: MW-11
Elevation of Datum(ft msl): 1139.30
Range: 0 to 750 psia
Client: Jet Propulsion Laboratory
Weather: 75 degrees, sunny
Casing Size: 1.5-inch Westbay Casing
Operator: M. Hunt/T. Turpijn-Keasler
Ambient Reading (Pressure/Temperature/Time) Start: 14.05/18.30/0827
Finish: 14.11/18.92/0845

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	639	168.88			20.90	832		249.96	889.34
			182.70						
			182.73						
			182.76						
				168.89					
4	524	119.33			21.45	835		188.38	950.92
			159.54						
			159.57						
			159.60						
				119.38					
3	429	78.51			20.73	838		180.10	959.20
			121.98						
			122.01						
			121.95						
				78.49					
2	259	14.18			19.70	841		166.47	972.83
			54.16						
			54.19						
			54.22						
				14.15					
1	149	14.08			19.11	843		126.66	1012.64
			23.73						
			23.76						
			23.80						
				14.11					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing
Probe Type: Westbay
Date: 12/16/99
Job No.: 1572
Serial No.: 1455
Well Name: MW-12
Elevation of Datum(ft msl): 1102.14
Range: 0 to 750 psia
Weather: 75 degrees, sunny
Client: Jet Propulsion Laboratory
Casing Size: 1.5-inch Westbay Casing
Operator: M. Hunt/T. Turpijn-Keasler
Ambient Reading (Pressure/Temperature/Time) Start: 13.61/23.77/1306
Finish: 13.96/19.17/1318

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	548	134.27			22.62	1308		215.65	886.49
			157.87						
			157.84						
			157.87						
				134.29					
4	436	85.52			21.92	1311		151.57	950.57
			138.41						
			136.44						
			136.41						
				85.59					
3	323	36.37			21.01	1313		140.69	961.45
			92.81						
			92.79						
			92.85						
				36.42					
2	243	14.12			19.74	1315		138.49	963.65
			59.08						
			59.11						
			59.08						
				14.15					
1	140	14.08			19.32	1317		130.07	972.07
			18.08						
			18.11						
			18.08						
				14.05					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing
Probe Type: Westbay
Date: 12/16/99
Job No.: 1572
Serial No.: 1455
Well Name: MW-17
Elevation of Datum(ft msl): 1191.21
Range: 0 to 750 psia
Weather: 75 degrees, sunny
Client: Jet Propulsion Laboratory
Casing Size: 1.5-inch Westbay Casing
Operator: M. Hunt/T. Turpijn-Keasler
Ambient Reading (Pressure/Temperature/Time) Start: 14.01/17.75/0912
Finish: 14.15/16.49/0928

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	726	170.06			19.57	916		313.85	877.36
			192.73						
			192.74						
			192.77						
				170.02					
4	582	107.48			19.10	919		302.74	888.47
			135.11						
			135.14						
			135.17						
				107.51					
3	468	57.90			18.09	921		246.39	944.82
			110.12						
			110.15						
			110.18						
				57.94					
2	370	15.19			17.20	923		238.55	952.66
			71.04						
			71.07						
			71.08						
				15.22					
1	250	14.22			16.78	925		235.04	956.17
			20.53						
			20.57						
			20.60						
				14.24					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing
Probe Type: Westbay
Date: 12/16/99
Job No.: 1572
Serial No.: 1455
Well Name: MW-18
Elevation of Datum(ft msl): 1225.41
Range: 0 to 750 psia
Weather: 75 degrees, sunny
Client: Jet Propulsion Laboratory
Casing Size: 1.5-inch Westbay Casing
Operator: M. Hunt/T. Turpijn-Keasler
Ambient Reading (Pressure/Temperature/Time) Start: 14.04/18.03/0946
Finish: 14.01/18.19/1002

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	684	147.24			21.01	950		314.25	911.16
			174.28						
			174.31						
			174.34						
				147.23					
4	564	95.08			21.21	954		299.42	925.99
			128.69						
			128.72						
			128.75						
				95.09					
3	424	34.24			20.24	956		272.78	952.63
			79.55						
			79.58						
			79.61						
				34.28					
2	330	14.15			19.10	958		271.33	954.08
			39.41						
			39.47						
			39.50						
				14.18					
1	270	14.17			18.54	1000	No water over measurement port		
			14.17						
			14.20						
			14.24						
				14.14					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing
Probe Type: Westbay
Date: 12/16/99
Job No.: 1572
Serial No.: 1455
Well Name: MW-19
Elevation of Datum(ft msl): 1142.94
Range: 0 to 750 psia
Weather: 75 degrees, sunny
Client: Jet Propulsion Laboratory
Casing Size: 1.5-inch Westbay Casing
Operator: M. Hunt/T. Turpijn-Keasler
Ambient Reading (Pressure/Temperature/Time) Start: 13.99/19.44/1046
Finish: 14.08/18.50/1100

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	498	73.78			19.45	1050		311.51	831.43
			94.85						
			94.88						
			94.91						
				73.81					
4	444	50.31			18.54	1052		307.47	835.47
			73.19						
			73.22						
			73.25						
				50.34					
3	392	27.64			18.47	1054		203.18	939.76
			95.86						
			95.89						
			95.92						
				27.61					
2	314	14.18			18.75	1056		198.37	944.57
			64.13						
			64.16						
			64.19						
				14.17					
1	242	14.14			18.67	1058		187.50	955.44
			37.63						
			37.66						
			37.69						
				14.11					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing
Probe Type: Westbay
Date: 12/16/99
Job No.: 1572
Serial No.: 1455
Well Name: MW-20
Elevation of Datum(ft msl): 1165.05
Range: 0 to 750 psia
Weather: 75 degrees, sunny
Client: Jet Propulsion Laboratory
Casing Size: 1.5-inch Westbay Casing
Operator: M. Hunt/T. Turpijn-Keasler
Ambient Reading (Pressure/Temperature/Time) Start: 13.93/19.83/1013
Finish: 14.11/18.26/1032

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	900	263.78			23.14	1019		216.97	948.08
			310.08						
			310.11						
			310.14						
				263.75					
4	700	176.84			23.19	1023		243.67	921.38
			211.81						
			211.84						
			211.87						
				176.90					
3	562	116.93			21.83	1026		224.98	940.07
			160.09						
			160.12						
			160.15						
				116.96					
2	392	43.03			20.34	1028		215.09	949.96
			90.68						
			90.71						
			90.74						
				43.08					
1	230	14.21			18.76	1030		215.16	949.89
			20.42						
			20.45						
			20.49						
				14.27					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing
Probe Type: Westbay
Date: 12/16/99
Job No.: 1572
Serial No.: 1455
Well Name: MW-21
Elevation of Datum(ft msl): 1059.10
Range: 0 to 750 psia
Weather: 75 degrees, sunny
Client: Jet Propulsion Laboratory
Casing Size: 1.5-inch Westbay Casing
Operator: M. Hunt/T. Turpijn-Keasler
Ambient Reading (Pressure/Temperature/Time) Start: 13.90/20.66/1117
Finish: 14.02/19.74/1144

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	372	124.73			20.66	1121		79.24	979.86
			140.86						
			140.89						
			140.86						
				124.74					
4	310	97.79			20.71	1136		79.16	979.94
			114.01						
			114.04						
			114.04						
				97.79					
3	240	67.72			20.47	1138		78.23	980.87
			84.08						
			84.08						
			84.10						
				67.73					
2	161	33.34			20.03	1140		78.19	980.91
			49.87						
			49.84						
			49.87						
				33.37					
1	90	14.02			19.75	1142		79.48	979.62
			18.55						
			18.49						
			18.52						
				14.02					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing
Probe Type: Westbay
Date: 12/16/99
Job No.: 1572
Serial No.: 1455
Well Name: MW-22
Elevation of Datum(ft msl): 1176.98
Range: 0 to 750 psia
Weather: 75 degrees, sunny
Client: Jet Propulsion Laboratory
Casing Size: 1.5-inch Westbay Casing
Operator: M. Hunt/T. Turpijn-Keasler
Ambient Reading (Pressure/Temperature/Time) Start: 13.80/21.43/1155
Finish: 13.89/20.94/1209

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	588	146.09			22.22	1159		229.56	947.42
			169.23						
			169.26						
			169.20						
				146.09					
4	467	93.43			22.47	1201		217.44	959.54
			122.04						
			122.01						
			122.01						
				93.42					
3	389	59.57			22.19	1203		198.78	978.20
			96.29						
			96.33						
			96.30						
				59.58					
2	329	33.46			21.67	1205		199.23	977.75
			70.12						
			70.09						
			70.09						
				33.47					
1	245	13.99			21.07	1207		200.12	976.86
			33.29						
			33.32						
			33.29						
				13.99					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing
Probe Type: Westbay
Date: 12/16/99
Job No.: 1572
Serial No.: 1455
Well Name: MW-23
Elevation of Datum(ft msl): 1108.84
Range: 0 to 750 psia
Weather: 75 degrees, sunny
Client: Jet Propulsion Laboratory
Casing Size: 1.5-inch Westbay Casing
Operator: M. Hunt/T. Turpijn-Keasler
Ambient Reading (Pressure/Temperature/Time) Start: 14.27/19.11/0745
Finish: 13.96/20.16/0810

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	542	159.38			21.73	755		160.79	948.05
			179.34						
			179.37						
			179.40						
				159.36					
4	445	117.16			21.69	758		160.28	948.56
			137.51						
			137.54						
			137.57						
				117.21					
3	319	62.44			21.45	801		138.00	970.84
			92.55						
			92.58						
			92.61						
				62.48					
2	254	34.19			21.06	803		138.07	970.77
			64.34						
			64.37						
			64.40						
				34.23					
1	174	14.05			20.32	806		135.79	973.05
			30.68						
			30.71						
			30.65						
				14.02					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

PIEZOMETRIC PRESSURES/LEVELS

FIELD DATA SHEET FOR MULTI-PORT MONITORING WELLS

Datum: Top of 1.5" Casing
Probe Type: Westbay
Date: 12/16/99
Job No.: 1572
Serial No.: 1455
Well Name: MW-24
Elevation of Datum(ft msl): 1200.94
Range: 0 to 750 psia
Client: Jet Propulsion Laboratory
Weather: 75 degrees, sunny
Casing Size: 1.5-inch Westbay Casing
Operator: M. Hunt/T. Turpijn-Keasler
Ambient Reading (Pressure/Temperature/Time) Start: 13.64/22.06/1220
Finish: 13.83/21.61/1241

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings: Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)	Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
5	678	168.09			23.02	1230		281.59	919.35
			185.58						
			185.55						
			185.61						
				168.11					
4	554	114.16			22.94	1232		257.96	942.98
			142.04						
			142.08						
			142.08						
				114.22					
3	435	62.42			22.58	1235		233.51	967.43
			101.08						
			101.11						
			101.05						
				62.42					
2	373	35.47			22.43	1237		229.80	971.14
			75.81						
			75.78						
			75.85						
				35.44					
1	279	13.85			22.11	1239		229.78	971.16
			35.07						
			35.04						
			35.11						
				13.89					

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-3 Depth: 172 Date: 11/22/99

Well Name: MW-3 Sampling Zone No.: 2 Starting Time: 1320 Finishing Time: 1400

Technicians: T. Turpyn-Keasler, M. Losi, D. Strong

Water Level Inside MP Casing (Beginning of Session) 14.22 psia (End of Session) 14.33 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level In MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.22	✓	1321	1326	✓	14.24	1.0	1 SI RUN; INITIAL PARAMETERS NTUs = 4.89
2	✓	✓	✓	✓	✓	✓	14.32	✓	1343	1348	✓	14.33	1.0	COLLECT MW-994-002 2 VOCs, Cr_{TOT}, Cr_{6+}, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 28.29 psia

Total Volume: 2 L

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-3 Depth: 252 Date: 11/22/98

Well Name: MW-3 Sampling Zone No.: 2 Starting Time: 1230 Finishing Time: 1315

Technicians: T. Turpin-Keasler, M. Losi, D. Strong

Water Level Inside MP Casing (Beginning of Session) 14.39 psia (End of Session) 14.40 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.39	✓	1239	1241	✓	14.40	1.0	1st RUN; INITIAL PARAMETERS NTUs = 2.25
2	✓	✓	✓	✓	✓	✓	14.39	✓	1258	1301	✓	14.40	1.0	COLLECT MW-999-003 2xVOCs, Cr_{TOT}, Cr^{6+}, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 61.04 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-3 Depth: 346 Date: 11/22/99

Well Name: MW-3 Sampling Zone No.: 3 Starting Time: 1145 Finishing Time: 1225

Technicians T. Turpyn-Keasler, M. Losi, D. Strong

Water Level Inside MP Casing (Beginning of Session) 31.87 psia (End of Session) 31.91 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	31.87	✓	1153	1156	✓	31.91	1.0	1st RUN; INITIAL PARAMETERS NTUs = 4.68
2	✓	✓	✓	✓	✓	✓	31.87	✓	1212	1215	✓	31.91	1.0	COLLECT MW-99Y-004 2xVOC, Cr_{TOT}, Cr_{6+}, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: Pressure OUTSIDE MP casing = 100.50 psia ~~psia~~

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-3 Depth: 558 Date: 11/22/99

Well Name: MW-3 Sampling Zone No.: 4 Starting Time: 1045 Finishing Time: 1140

Technicians T. Turpin-Keasler, M. Losi, D. Strong

Water Level Inside MP Casing (Beginning of Session) 123.87 psia (End of Session) 123.87 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	123.87 ~~123.87~~	✓	1057	1100	✓	123.87	1.0	1ST RUN; INITIAL PARAMETERS NTUs = 4.63
2	✓	✓	✓	✓	✓	✓	123.87	✓	1124	1127	✓	123.87	1.0	COLLECT MW-994-005 2VOC, Cr_{TOT}, Cr_{6+}, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING ~ 158.31 psia

Total Volume: 2 ℓ

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-3 Depth: 653 Date: 11/22/99

Well Name: MW-3 Sampling Zone No.: 5 Starting Time: 0805 Finishing Time: 1040

Technicians: T. Turpyn-Keasler, D. Strong

Water Level Inside MP Casing (Beginning of Session) 165.21 psia (End of Session) 165.21 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	165.21	✓	0824	0824	✓	165.21	1.0	1st RUN, INITIAL PARAMETERS NTUs = 13.7
2	✓	✓	✓	✓	✓	✓	165.21	✓	0938	0943	✓	165.21	1.0	2nd RUN NTUs = 7.97
3	✓	✓	✓	✓	✓	✓	165.19	✓	1020		✓	165.21	1.0	3rd RUN COLLECT MW-994-006 2VOC, Cr_{TOT}, Cr_{6+}, ClO_4^-
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 186.41 psia

Total Volume: 3 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-4 Depth: 150 Date: 12/6/99

Well Name: MW-4 Sampling Zone No.: 1 Starting Time: 1405 Finishing Time: 1445

Technicians: T. Turpin-Keasler, D. Strong, J. Donnay

Water Level Inside MP Casing (Beginning of Session) 14.17 psia (End of Session) 14.21 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.17	✓	1413	1416	✓	14.15	1.0	1st RUN; INITIAL PARAMETERS NTUs = 4.85
2	✓	✓	✓	✓	✓	✓	14.20	✓	1431	1437	✓	14.21	1.0	COLLECT MW-994-007 VOCs, Cr_{TOT}, Cr_{6+}, ClO_4
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 28.83 psia

Total Volume: 2 L

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-4 Depth: 240 Date: 12/6/99

Well Name: MW-4 Sampling Zone No.: 2 Starting Time: ~~1445~~ 1300 Finishing Time: 1355

Technicians T. Turpyn-Keasler, D. Strong, J. Donnay

Water Level Inside MP Casing (Beginning of Session) 14.30 psia (End of Session) 14.30 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.30	✓	1303	1307	✓	14.30	1D	1st RUN INITIAL PARAMETERS NTUs = 4.96
2	✓	✓	✓	✓	✓	✓	14.27	✓	1322	1326	✓	14.30	1.0	COLLECT MW-994-009/008 4 VOCs, 2 Cr TOT, 2 ClO4-, 1 Cl4
3	✓	✓	✓	✓	✓	✓	14.27	✓	1445	1448	✓	14.30	1.0	COLLECT MW-994-008 ClO4- FINAL PARAMETERS
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 65.19 psia

Total Volume: 3 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-4 Depth: 322 Date: 12/6/99

Well Name: MW-4 Sampling Zone No.: 3 Starting Time: 1035 Finishing Time: 1120

Technicians: T. Turpyn-Keusler, D. Strong, J. Donnay

Water Level Inside MP Casing (Beginning of Session) 43.87 psia (End of Session) 43.87 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	43.87	✓	1041	1043	✓	43.92	1.0	1st RUN; INITIAL PARAMETERS NTU = 3.01
2	✓	✓	✓	✓	✓	✓	43.87	✓	1103	1106	✓	43.87	1.0	COLLECT MW-999-010 6 VOCs, Br TOT, C_6H_5, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING ~ 99.79 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-4 Depth: 392 Date: 12/6/99

Well Name: MW-4 Sampling Zone No.: 4 Starting Time: 0950 Finishing Time: 1030

Technicians T. Turpyn-Keasler, D. Strong, J. Donnay

Water Level Inside MP Casing (Beginning of Session) 74.38 psia (End of Session) 74.40 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	74.38	✓	0951	0954	✓	74.40	1.0	1st RUN; INITIAL PARAMETERS NTUs = 2.02
2	✓	✓	✓	✓	✓	✓	74.38	✓	1015	1017	✓	74.40	1.0	COLLECT MW-99N-011 2 VOCs, Cr_{TOT}, Cr^{6+}, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 126.39

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-4 Depth: 513 Date: 12-6-99

Well Name: MW-4 Sampling Zone No.: 5 Starting Time: 0820 Finishing Time: 0945

Technicians: T. Turpin-Keasler, D. Strong, J. Donnay

Water Level Inside MP Casing (Beginning of Session) 127.27 psia (End of Session) 127.13 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	127.27	✓	0842	0846	✓	127.27	1.0	1 SI RUN; ~~TO SEE~~ INITIAL PARAMETERS NTUs = 0.82
2	✓	✓	✓	✓	✓	✓	127.10	✓	0915	0918	✓	127.13	1.0	COLLECT MW-994-012 2 VOCs, Cr TOT, Cr6+, ClO4-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 145.61 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-11 Depth: 149 Date: 12-1-99

Well Name: MW-11 Sampling Zone No.: ~~149~~ 1 Starting Time: 1400 Finishing Time: 1435

Technicians: T. Turpyn-Keusler, D. Strong

Water Level Inside MP Casing (Beginning of Session) 14.30 psia (End of Session) 14.31 psia

Run No.	Surface Function Checks: Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Position Sampler: Deactivate Set Arm Locate Port	Surface Collection Checks: Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	Comments
1	✓	✓	✓	✓	✓	✓	14.30	✓	1404	1410	✓	14.31	1.0	1st RUN; INITIAL PARAMETERS NTUs = 2.71
2	✓	✓	✓	✓	✓	✓	14.31	✓	1422	1428	✓	14.31	1.0	COLLECT MW-999-020 2 VOCs, Cr TOT, Cr6+, ClO4-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 23.94 psia

Total Volume: 2 L

F2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-11 Depth: 259 Date: 12-1-99

Well Name: MW-11 Sampling Zone No.: 2 Starting Time: 1320 Finishing Time: 1400

Technicians: T. Turpyn-Keasler, D. Strong

Water Level Inside MP Casing (Beginning of Session) 14.31 psia (End of Session) 14.33 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.31	✓	1323	1326	✓	14.31	1.0	(2) RUN; INITIAL PARAMETERS NTUS = 2.58
2	✓	✓	✓	✓	✓	✓	14.31	✓	1341	1345	✓	14.33	1.0	COLLECT MW-994-21 6VOCs, Cr TOT, Cr6+, Cl04-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 54.04 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-11 Depth: 429 Date: 12-1-99

Well Name: MW-11 Sampling Zone No.: 3 Starting Time: 1225 Finishing Time: 1315

Technicians T. Turpyn-Keesler, D. Strong

Water Level Inside MP Casing (Beginning of Session) 80.61 psia (End of Session) 80.66 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	80.61	✓	1232	1235	✓	80.63	1.0	1st RUN; INITIAL PARAMETERS NTUs = 2.24
2	✓	✓	✓	✓	✓	✓	80.63	✓	1257	1259	✓	80.66	1.0	COLLECT MW-994-023 2 VOCs, Cr_{TOT}, Cr_6^+, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 121.80 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-11 Depth: 524 Date: 12-1-99

Well Name: MW-11 Sampling Zone No.: 4 Starting Time: 1135 Finishing Time: 1225

Technicians T. Turpyn-Keasler, D. Strong

Water Level Inside MP Casing (Beginning of Session) 121.54 psia (End of Session) 121.57 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	121.54	✓	1143	1145	✓	121.57	1.0	1st RUN; INITIAL PARAMETERS NTUs = 2.71
2	✓	✓	✓	✓	✓	✓	121.56	✓	1206	1209	✓	121.57	1.0	COLLECT MW-994-023 2 VOCs, Cr_{TOT}, Cr_6+, ClO_4-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 159.44 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-11 Depth: 639 Date: 12-1-99

Well Name: MW-11 Sampling Zone No.: 5 Starting Time: 0945/1025 Finishing Time: 1130

Technicians T. Turpyn-Keasler, D. Strong

Water Level Inside MP Casing (Beginning of Session) 171.06 psia (End of Session) 171.11 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	171.06	✓	1044	1046	✓	171.08	1.0	(1st RUN) INITIAL PARAMETERS NTUs = 0.61
2	✓	✓	✓	✓	✓	✓	171.10	✓	1114	1116	✓	171.11	1.0	COLLECT MW-994-029 2 VOCs, Cr_{tot}, Cr_{6+}, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 182.76 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-12 Depth: 140 Date: 12-1-99

Well Name: MW-12 Sampling Zone No.: 1 Starting Time: 1320 Finishing Time: 1415

Technicians T. TURPIN-KEASLER, D. STRONG

Water Level Inside MP Casing (Beginning of Session) 14.22 psia (End of Session) 14.23 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.22	✓	1326	1333	✓	14.21	1.0	1st RUN; INITIAL PARAMETERS NTUs = 9.58
2	✓	✓	✓	✓	✓	✓	14.22	✓	1343	1350	✓	14.23	1.0	~~COLLECT MW-994-025 2VOCs, C_{TOT}, Cr_{6+}, ClO_4^-~~ NTU=14.7
3	✓	✓	✓	✓	✓	✓	14.23	✓	1400	1406	✓	14.23	1.0	COLLECT MW-994-025 2VOCs, C_{TOT}, Cr_{6+}, ClO_4^-
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 17.82 psia

Total Volume: 3 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-12 Depth: 243 Date: 12-1-99

Well Name: MW-12 Sampling Zone No.: 2 Starting Time: 1125 Finishing Time: 1315

Technicians: T. Turpin-Keasler, D. Strong

Water Level Inside MP Casing (Beginning of Session) 14.35 psia (End of Session) 14.31 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level In MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level In MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	—	14.35	✓	1132	1135	✓	14.35	1.0	1st RUN; INITIAL PARAMETERS NTUs = 1.56
2	✓	✓	✓	✓	✓	✓	14.33	✓	1241	1245	✓	14.34	1.0	COLLECT MW-994-027 Duplicate
3	✓	✓	✓	✓	✓	✓	14.33	✓	1304	1307	✓	14.31	1.0	COLLECT MW-994-026 FINAL PARAMETERS
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 58.87 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-12 Depth: 323 Date: 12-1-99

Well Name: MW-12 Sampling Zone No.: 3 Starting Time: 1235 Finishing Time: 1120

Technicians: T. Turpyn-Keasler, D. Strong

Water Level Inside MP Casing (Beginning of Session) 38.63 psia (End of Session) 38.63 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	38.63	✓	1039	1043	✓	38.66	1.0	1st RUN, INITIAL PARAMETERS NTUs = 0.42
2	✓	✓	✓	✓	✓	✓	38.63	✓	1103	1107	✓	38.63	1.0	COLLECT MW-994-028 2VOCs, Cr_{TOT}, Cr_{6+}, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 92.69 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-12 Depth: 436 Date: 12-2-99

Well Name: MW-12 Sampling Zone No.: 4 Starting Time: 0930 Finishing Time: 1030

Technicians T. Tunyn-keasler, D. Strong

Water Level Inside MP Casing (Beginning of Session) 87.83 psia (End of Session) 87.76 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level In MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level In MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	87.83	✓	0939	0943	✓	87.83	1.0	1st RUN, INITIAL PARAMETERS NTUs = 3.21
2	✓	✓	✓	✓	✓	✓	87.74	✓	1006	1009	✓	87.76	1.0	COLLECT MW-999-029 2VOCs, C_{TOT}, Cr_{6+}, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 136.44 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: SPL Location: MW-12 Depth: 548 Date: 12-2-99

Well Name: MW-12 Sampling Zone No.: 5 Starting Time: 0735 Finishing Time: 0830

Technicians: T. Turpyn-Keasler, D. Strong

Water Level Inside MP Casing (Beginning of Session) 136.59 psia (End of Session) 136.53

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	136.59	✓	0750	0753	✓	136.59	1.0	1st RUN, INITIAL PARAMETERS NTUs = 3.67
2	✓	✓	✓	✓	✓	✓	136.51	✓	0816	0819	✓	136.53	1.0	COLLECT MW-999-030 2VOCs, Cr_{TOT}, Cr_{6+}, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 158.02 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-14 Depth: 277 Date: 12/9/99

Well Name: MW-14 Sampling Zone No.: 2 Starting Time: 1215 Finishing Time: 1320

Technicians: T. Turpin-Keasler, D. Strang, J. Donnaly

Water Level Inside MP Casing (Beginning of Session) 37.89 psia (End of Session) 37.87 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	37.89	✓	1221	1225	✓	37.90	1.0	1ST RUN; INITIAL PARAMETERS NTUs = 4.63
2	✓	✓	✓	✓	✓	✓	37.87	✓	1305	1310	✓	37.87	1.0	COLLECT MW-994-034 VOCs, Cr_{6+}, Cr_{TOT}, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 54.84 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-14 Depth: 382 Date: 12/9/99

Well Name: MW-14 Sampling Zone No.: 3 Starting Time: 1100 Finishing Time: 1200

Technicians: T. Turpyn-Keasler, D. Strong, J. Donnar

Water Level Inside MP Casing (Beginning of Session) 83.57 psia (End of Session) 83.55 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	83.57	✓	1110	1113	✓	83.57	1.0	1st RUN; INITIAL PARAMETERS NTUs = 0.72
2	✓	✓	✓	✓	✓	✓	83.54	✓	1142	1145	✓	83.55	1.0	COLLECT MW-994-035 VOCs, Cr_{6+}, Cr_{TOT}, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING - 100.52 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-14 Depth: 456 Date: 12/9/99

Well Name: MW-14 Sampling Zone No.: 4 Starting Time: 1000 Finishing Time: 1045

Technicians: T. Turpin-Keasler, D. Strong, J. Donnay

Water Level Inside MP Casing (Beginning of Session) 115.80 psia (End of Session) 115.82 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	115.80	✓	1009	1014	✓	115.81	1.0	1st RUN; INITIAL PARAMETERS NTUs = 1.21
2	✓	✓	✓	✓	✓	✓	115.80	✓	1034	1037	✓	115.82	1.0	COLLECT MW-999-036 VOCs, Cr_{TOT}, Cr_{6T}, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING ~ 132.57 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-14 Depth: 540 Date: 12/9/99

Well Name: MW-14 Sampling Zone No.: 5 Starting Time: 0840 Finishing Time: ~~1000~~ 0940

Technicians: T. Turpyn-Keasler, D. Strong, J. Dannay

Water Level Inside MP Casing (Beginning of Session) 152.53 psia (End of Session) 152.49 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	152.53	✓	0852	0854	✓	152.53	1.0	1st RUN; INITIAL PARAMETERS NTUs = 3.71
2	✓	✓	✓	✓	✓	✓	152.48	✓	0917	0919	✓	152.49	1.0	COLLECT MW-99-037 VOCs, Cr_{TOT}, Cr_{6+}, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 168.87 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-17 Depth: 250 Date: 11/29/99

Well Name: MW-17 Sampling Zone No.: 1 Starting Time: 1320 Finishing Time: 1410

Technicians T. Turpin-Keasler, D. Strong

Water Level Inside MP Casing (Beginning of Session) 14.19 psia (End of Session) 12.23 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.19	✓	1330	1335	✓	14.22	1.0	1st RUN; INITIAL PARAMETERS NTUs = 1.19
2	✓	✓	✓	✓	✓	✓	14.20	✓	1357	1357	✓	14.23	1.0	COLLECT MW-994-040 2 VOCs, Cr_{TOT}, Cr_{6+}, Cl, O_2
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 20.59 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-17 Depth: 370 Date: 11/29/99

Well Name: MW-17 Sampling Zone No.: 2 Starting Time: 1220 Finishing Time: 1300

Technicians: T. Turpyn-Keasler, D. Strong

Water Level Inside MP Casing (Beginning of Session) 17.15 psia (End of Session) 12.24 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	17.15	✓	1224	1227	✓	17.26	1.0	1ST RUN, INITIAL PARAMETERS NTUs = 3.14
2	✓	✓	✓	✓	✓	✓	17.19	✓	1246	1249	✓	17.24	1.0	COLLECT MW-999-041 6VOCs, Cr_{TOT}, Cr^{6+}, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 70.64 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-17 Depth: 468 Date: 11/29/99

Well Name: MW-17 Sampling Zone No.: 3 Starting Time: 1100 Finishing Time: 1215

Technicians: T. Turpyn-Keasler, D. Strong

Water Level Inside MP Casing (Beginning of Session) 59.98 psia (End of Session) 59.99 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	59.98	✓	1132	1135	✓	60.01 ~~59.~~	1.0	1st RUN; INITIAL PARAMETERS NTUs = 4.59
2	✓	✓	✓	✓	✓	✓	59.98	✓	1155	1158	✓	59.99	1.0	COLLECT MW-994-042 2VOCs, Cr_{TOT}, Cr_6+, ClO_4-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 109.56 psia

Total Volume: 2.0 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-17 Depth: 582 Date: 11/29/99

Well Name: MW-17 Sampling Zone No.: 4 Starting Time: 1000 Finishing Time: 1050

Technicians T. Turpyn-Keasler, D Strong

Water Level Inside MP Casing (Beginning of Session) 109.53 psia (End of Session) 109.57 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	109.53	✓	1009	1011	✓	109.58	1.0	1ST RUN; INITIAL PARAMETERS NTUs = 4.97
2	✓	✓	✓	✓	✓	✓	109.53	✓	1035	1038	✓	109.57	1.0	COLLECT MW-994-043 2 VOCs, Cr tot, Cr 6+, ClO4-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING ~ 134.70 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-17 Depth: 726 Date: 11/29/99

Well Name: MW-17 Sampling Zone No.: 5 Starting Time: 0830 Finishing Time: 0955

Technicians T. Turpyn-Keasler, M. Losi, D. Strong

Water Level Inside MP Casing (Beginning of Session) 172.04 psia (End of Session) 172.10 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	172.04	✓	0848	0850	✓	172.08	1.0	1st RUN; INITIAL PARAMETERS NTUs = 4.39
2	✓	✓	✓	✓	✓	✓	172.10	✓	0929	0933	✓	172.10	1.0	COLLECT MW-994-044 2 VOCs, Cr TOT, Cr-6+, ClO4-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 192.45 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-18 Depth: 270 Date: 11/18/99

Well Name: MW-18 Sampling Zone No.: 1 Starting Time: 1440 Finishing Time: 1445

Technicians: T. Turpin-Keasler, M. Losi, D. Strong

Water Level Inside MP Casing (Beginning of Session) 14.26 psia (End of Session) _____

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.26	✓						1ST RUN NO WATER OVER PORT
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

F-2

Comments: PRESSURE OUTSIDE MP CASING ~ 14.24 DRY PORT

Total Volume: _____

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-18 Depth: 330 Date: 11/18/99

Well Name: MW-18 Sampling Zone No.: 2 Starting Time: 1320 Finishing Time: 1435

Technicians T. Turpyn-Keasler, D. Strong, M. Losi

Water Level Inside MP Casing (Beginning of Session) 14.15 psia (End of Session) 14.20

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.15	✓	1335	1337	✓	14.15	1.0	1st RUN ; INITIAL PARAMETERS NTUs = 4.01
2	✓	✓	✓	✓	✓	✓	14.19	✓	1417	1423	✓	14.20	1.0	COLLECT MW-994-046 VOCs, Cr_{TOT}, Cr^{6+}, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 39.00

Total Volume: 2.0 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-18 Depth: 424 Date: 11/18/99

Well Name: MW-18 Sampling Zone No.: 3 Starting Time: 1155 Finishing Time: 1315

Technicians T. Turpin-Keasler, M. Losi, D. Strong

Water Level Inside MP Casing (Beginning of Session) 36.33 psia (End of Session) 36.34 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	36.33	✓	1208	1211	✓	36.36	1.0	1ST RUN; INITIAL PARAMETERS NTU'S = 0.78
2	✓	✓	✓	✓	✓	✓	36.31	✓	1300	1303	✓	36.34	1.0	2ND RUN; COLLECT MW-994-047 2 VOC'S, Cr_{TOT}, Cr_{VI}, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 78.90 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: JPL - MW-18 Depth: 564 Date: 11/18/99

Well Name: MW-18 Sampling Zone No.: 4 Starting Time: 1050 Finishing Time: 1149

Technicians T. Turpin-Keasler, M. Lori, D. Strong

Water Level Inside MP Casing (Beginning of Session) 97.15 psia (End of Session) 97.15 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	97.15	✓	1103	1106	✓	97.18	1.0	1st RUN; INITIAL PARAMETERS NTU's = 1.44
2	✓	✓	✓	✓	✓	✓	97.13	✓	1133	1136	✓	97.15	1.0	2nd RUN: COLLECT MW-994-048 2 VOC, C_{TOT}, Cr_{VI}, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 127.92 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: JPL MW-18 Depth: 684 Date: 11/18/99

Well Name: MW-18 Sampling Zone No.: 5 Starting Time: 0935 Finishing Time: 0945

Technicians: T. Turpin-Keasler, M. Losi, D. Strong

Water Level Inside MP Casing (Beginning of Session) 149.40 psia (End of Session) 149.42 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	149.40	✓	0950	0953	✓	149.42	1.0	1st RUN, INITIAL PARAMETERS NTUs = 2.32
2	✓	✓	✓	✓	✓	✓	149.31	✓	1029	1032	✓	149.33	1.0	2nd RUN, COLLECT MW-994-049 2VOA, Cr VI, Cr TOT, ClO4
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: Pressure outside MP casing = 173.35 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-19 Depth: 242 Date: 11/19/99

Well Name: MW-19 Sampling Zone No.: 1 Starting Time: 1235 Finishing Time: 1340

Technicians: T. Turpijn-Keasler, D. Strong

Water Level Inside MP Casing (Beginning of Session): 14.20 psia (End of Session) 14.22 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.20	✓	1306	1310	✓	14.21	1.0	1st RUN; INITIAL PARAMETERS NTUs = 4.89
2	✓	✓	✓	✓	✓	✓	14.22	✓	1324	1330	✓	14.22		COLLECT MW-994-050 2 VOCs, Cr tot, Cr6+, ClO4-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 37.73 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-19 Depth: 314 Date: 11/19/99

Well Name: MW-19 Sampling Zone No.: 2 Starting Time: 1150 Finishing Time: 1230

Technicians: T. Turpyn-Keasler, D. Strong

Water Level Inside MP Casing (Beginning of Session) 14.19 psia (End of Session) 14.20 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.19	✓	1158	1201	✓	14.20	1.0	1ST RUN; INITIAL PARAMETERS NTUS = 7.20
2	✓	✓	✓	✓	✓	✓	14.19	✓	1219	1223	✓	14.20	1.0	COLLECT MW-999-051 2 VOCs, Cr_{TOT}, Cr_{6+}, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 63.49 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-19 Depth: 392 Date: 11/19/99

Well Name: MW-19 Sampling Zone No.: 3 Starting Time: 1035 Finishing Time: 1120

Technicians: T. Turpyn-Keasler, D. Strong

Water Level Inside MP Casing (Beginning of Session) 28.95 psia (End of Session) 28.99 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	28.95	✓	1041	1044	✓	28.97	1.0	1ST RUN; INITIAL PARAMETERS NTUs = 379
2	✓	✓	✓	✓	✓	✓	28.94	✓	1104	1107	✓	28.99	1.0	COLLECT MW-999-052 2 VOA, Cr tot, Cr6+, ClO4-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 95.14

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-19 Depth: 444 Date: 11/19/99

Well Name: MW-19 Sampling Zone No.: 4 Starting Time: 0940 Finishing Time: 1030

Technicians: T. Turpyn-Keasler, D. Strong

Water Level Inside MP Casing (Beginning of Session) 51.52 psia (End of Session) 51.52 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	51.52	✓	0948	0951	✓	51.52	1.0	1st RUN; INITIAL PARAMETERS NTU's = 3.11
2	✓	✓	✓	✓	✓	✓	51.52	✓	1011	1014	✓	51.52	1.0	COLLECT MW-994-053 2 VOA, Br, Cr_6, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 72.83 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-19 Depth: 498 Date: 11/19/99

Well Name: MW-19 Sampling Zone No.: 5 Starting Time: 0835 Finishing Time: 0930

Technicians: T. Turpyn-Keasler, D. Strong

Water Level Inside MP Casing (Beginning of Session) 75.01 psia (End of Session) 75.04 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	75.01	✓	0848	0851	✓	75.04	1.0	1st RUN, INITIAL PARAMETERS NTU's = 0.98
2	✓	✓	✓	✓	✓	✓	75.01	✓	0914	0917	✓	75.04	1.0	COLLECT MW-994-054 2 VOA, Cr_{TOT}, Cr^{6+} ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 94.62 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-20 Depth: 230 Date: 11/30/99

Well Name: MW-20 Sampling Zone No.: 1 Starting Time: 1400 Finishing Time: 1440

Technicians: T. Turpyn-Keasler, D. Strong

Water Level Inside MP Casing (Beginning of Session) 14.31 psia (End of Session) 14.33 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.31	✓	1403	1410	✓	14.33	1.0	1st RUN; INITIAL PARAMETERS NTUs = 0.75
2	✓	✓	✓	✓	✓	✓	14.31	✓	1425	1432	✓	14.33	1.0	COLLECT MW-994-055 2 VOCs, Cr_{TOT}, Cr^{6+}, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 20.14 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-20 Depth: 392 Date: 11/30/99

Well Name: MW-20 Sampling Zone No.: 2 Starting Time: 1120 Finishing Time: 1210

Technicians T. Turpyn-Keasler, D. Strong

Water Level Inside MP Casing (Beginning of Session) 45.42 psia (End of Session) 45.44 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	45.42	✓	1129	1131	✓	45.44	1.0	1st RUN; INITIAL PARAMETERS NTUs =
2	✓	✓	✓	✓	✓	✓	45.44	✓	1150	1153	✓	45.44	1.0	COLLECT MW-994-056 QC 2 VOCs, C_{TOT}, C_{r6+}, ClO_4^- C_{r6+}
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 90.35 psia

Total Volume: 2 l

F2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: FFL Location: MW-20 Depth: 562 Date: 11/30/99

Well Name: MW-20 Sampling Zone No.: 3 Starting Time: 1020 Finishing Time: 1115

Technicians: T. Turpin-Keasler, D. Strong

Water Level Inside MP Casing (Beginning of Session) 119.31 psia (End of Session) 119.34 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	119.31	✓	1027	1029	✓	119.34	1.0	1st RUN; INITIAL PARAMETERS NTUs = 0.29
2	✓	✓	✓	✓	✓	✓	119.33	✓	1053	1055	✓	119.34	1.0	COLLECT MW-999-057 2VOCs, Cr_{TOT}, Cr_{6+}, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 159.87 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-20 Depth: 700 Date: 11/30/99

Well Name: MW-20 Sampling Zone No.: 4 Starting Time: 0910 Finishing Time: 1015

Technicians: T. Turpyn-Keesler, D. Strong

Water Level Inside MP Casing (Beginning of Session) 179.41 psia (End of Session) 179.43 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	179.41	✓	0922	0924	✓	179.44	1.0	1st RUN: INITIAL PARAMETERS NTUs = 2.32
2	✓	✓	✓	✓	✓	✓	179.41	✓	0952	0954	✓	179.43	1.0	COLLECT MW-994-058 2 VOCs, Cr_{TOT}, Cr_{6+}, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 211.59 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: SPL Location: MW-20 Depth: 900 Date: 11/30/99

Well Name: MW-20 Sampling Zone No.: 5 Starting Time: 0745 Finishing Time: 0905

Technicians: T. Turpyn-Keasler, D. Strong

Water Level Inside MP Casing (Beginning of Session) 266.24 psia (End of Session) 266.30 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level In MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	266.24	✓	0801	0803	✓	266.25	1.0	1ST RUN; INITIAL PARAMETERS NTUs = 1.12
2	✓	✓	✓	✓	✓	✓	266.28	✓	0840	0842	✓	266.30	1.0	COLLECT MW-994-059 2 VOCs, Cr_{TOT}, Cr_{6+}, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 310.21 psia

Total Volume: 2 L

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-21 Depth: 90 Date: 11/22/99

Well Name: MW-21 Sampling Zone No.: 1 Starting Time: 1200 Finishing Time: 1240

Technicians: T. Turpin-Keasler, D. Strong, J. Donnay

Water Level Inside MP Casing (Beginning of Session) 14.23 psia (End of Session) 14.23 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.23	✓	1206	1211	✓	14.23	1.0	1st RUN; INITIAL PARAMETERS NTUs = 0.56
2	✓	✓	✓	✓	✓	✓	14.24	✓	1222	1229	✓	14.23	1.0	COLLECT MW-994-060 2VOCs, Cr_{TOT}, Cr_{6+}, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 18.60 psia

Total Volume: 2.0 L

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-21 Depth: 161 Date: 11/23/99

Well Name: MW-21 Sampling Zone No.: 2 Starting Time: 1115 Finishing Time: 1155

Technicians: T. Turpyn-Keasler, D. Strong, J. Downey

Water Level Inside MP Casing (Beginning of Session) ~~36.41 psia~~ (II) 35.51 psia (End of Session) 35.31 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	35.51 (II) ~~36.38~~	✓	1123	1126	✓	35.51	1.0	1st RUN; INITIAL PARAMETERS NTUs = 2.05
2	✓	✓	✓	✓	✓	✓	35.50	✓	1140	1145	✓	35.53	1.0	COLLECT MW-994-061 2 VOCs, Cr_{tot}, Cr_{6+}, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 49.91 psia

Total Volume: 2 l

F2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-21 Depth: 240 Date: 11/22/99

Well Name: MW-21 Sampling Zone No.: 3 Starting Time: 1025 Finishing Time: 1110

Technicians M. Turpin-Keasler, D. Strong, J. Downey

Water Level Inside MP Casing (Beginning of Session) 69.86 psia (End of Session) 69.89 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	69.86	✓	1032	1035	✓	68.88	1.0	1ST RUN: INITIAL PARAMETERS NTUs – 2.92
2	✓	✓	✓	✓	✓	✓	69.84	✓	1055	1059	✓	69.89	1.0	COLLECT MW-994-062 2 VOCs, Cr_{TOT}, Cr_{6+}, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 84.60 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-21 Depth: 310 Date: 11/23/99

Well Name: MW-21 Sampling Zone No.: 4 Starting Time: 0925 Finishing Time: 1020

Technicians: T. Turpin-Keasler, D. Strong, J. Downey

Water Level Inside MP Casing (Beginning of Session) 100.01 psia (End of Session) 100.02 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	100.01	✓	0938	0940	✓	100.02	1.0	1st RUN; INITIAL PARAMETERS NTUs = 2.81
2	✓	✓	✓	✓	✓	✓	100.01	✓	1004	1006	✓	100.02	1.0	COLLECT MW-994-063 2 VOC, Cr_{TOT}, Cr_{6+}, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 113.91 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-21 Depth: 372 Date: 11/23/99

Well Name: MW-21 Sampling Zone No.: 5 Starting Time: 0815 Finishing Time: 0915

Technicians T. Turpin-Keasler, D. Strong, J. Donnay

Water Level Inside MP Casing (Beginning of Session) 127.08 psia (End of Session) 127.04 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	127.08	✓	0827	0830	✓	127.08	1.0	1st RUN; INITIAL PARAMETERS NTUs = 4.75
2	✓	✓	✓	✓	✓	✓	127.02	✓	0857	0900	✓	127.04	1.0	COLLECT MW-994-0629 2 VOCs, Cr_{TOT}, Cr_{6+}, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

F-2

Comments: PRESSURE OUTSIDE MP CASING = 140.90 psia

Total Volume: 2 l

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-22 Depth: 245 Date: 12/15/99

Well Name: MW-22 Sampling Zone No.: 1 Starting Time: 1300 Finishing Time: 1355

Technicians T. Turpijn-Keasler, D. Strong,

Water Level Inside MP Casing (Beginning of Session) 14.18 psia (End of Session) 14.13 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓		✓	14.18	✓	1307	1309	✓	14.14	.75	1ST RUN, INITIAL PARAMETERS NTUs = 8.32
2	✓	✓	✓	✓	✓	✓	14.11	✓	1322	1326	✓	14.11	.75	TURBIDITY RUN NTUs = 8.41
3	✓	✓	✓	✓	✓	✓	14.12	✓	1344	1348	✓	14.13	0.75	COLLECT MW-994-0~~05~~
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: Pressure outside MP casing = 33.51 psia

Total Volume: 2.25 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-22 Depth: 329 Date: 12/15/99

Well Name: MW-22 Sampling Zone No.: 2 Starting Time: 1145 Finishing Time: 1245

Technicians: T. Turpyn-Keasler, D. Strong

Water Level Inside MP Casing (Beginning of Session) 35.20 psia (End of Session) 35.19 psia

Run No.	Surface Function Checks: Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Position Sampler: Deactivate Set Arm Locate Port	Surface Collection Checks: Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	Comments
1	✓	✓	✓	✓	✓	✓	35.20	✓	1153	1156	✓	35.21	0.75	1ST RUN; INITIAL PARAMETERS NTUs = 2.17
2	✓	✓	✓	✓	✓	✓	35.19	✓	1216	1219	✓	35.20	0.75	COLLECT MW-994-066 Cr(tot), Cr(VI), ClO4 –
3	✓	✓	✓	✓	✓	✓	35.19	✓	1236	1238	✓	35.19	0.75	COLLECT MW-994-066 VOCs
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 70-16 psia

Total Volume: 2.25 ℓ

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-22 Depth: 389 Date: 12/15/99

Well Name: MW-22 Sampling Zone No.: 3 Starting Time: 1040 Finishing Time: 1125

Technicians: T. Turpyn-Keasler, D. Strong

Water Level Inside MP Casing (Beginning of Session) 61.34 psia (End of Session) 61.34 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	61.34	✓	1049	1052	✓	61.32	0.75	1st RUN, INITIAL PARAMETERS NTUs = 4.89
2	✓	✓	✓	✓	✓	✓	61.34	✓	1109	1112	✓	61.34	0.75	COLLECT MW-994-067 VOCs, Cr_{TOT}, Cr_{6+}, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP casing = 96.35 psia

Total Volume: 1-5R

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: SPL Location: MW-22 Depth: 467 Date: 12/15/99

Well Name: MW-22 Sampling Zone No.: 4 Starting Time: 0935 Finishing Time: 1015

Technicians: T. Turpin-Keasler, D. Strong.

Water Level Inside MP Casing (Beginning of Session) 95.22 psia (End of Session) 95.25 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	95.22	✓	0942	0944	✓	95.23	0.75	1st RUN; INITIAL PARAMETERS NTUs = 7.28
2	✓	✓	✓	✓	✓	✓	95.24	✓	1003	1006	✓	95.25	0.75	COLLECT MW-99L-068 VOCs, Cr_{TOT}, Cr_{6+}, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 122.11 psia

Total Volume: 1.5 L

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-22 Depth: 588 Date: 12/15/99

Well Name: MW-22 Sampling Zone No.: 5 Starting Time: 0835 Finishing Time: 0920

Technicians: I. Turpijn-Keasler, D. Strong

Water Level Inside MP Casing (Beginning of Session) 147.80 psia (End of Session) 147.82 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	147.80	✓	0845	0847	✓	147.83	.75	1st RUN; INITIAL PARAMETERS NTUs = 0.58
2	✓	✓	✓	✓	✓	✓	147.82	✓	0910	0912	✓	147.82	.75	COLLECT MW-994-062 VOCs, Cr TOT, Cr6+, Bl04+
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 169.58 (11) psia

Total Volume: 1.50 L

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-23 Depth: 174 Date: 12/8/99

Well Name: MW-23 Sampling Zone No.: 1 Starting Time: 1405 Finishing Time: 1510

Technicians: T. Turpyn-Keasler, D. Strong, J. Donnay

Water Level Inside MP Casing (Beginning of Session) 14.38 psia (End of Session) 14.34 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.38	✓	1407	1413	✓	14.35	1.0	1ST RUN; INITIAL PARAMETERS NTUs = 28.1
2	✓	✓	✓	✓	✓	✓	1436	✓	1425	1431	✓	14.35	1.0	2ND RUN
3	✓	✓	✓	✓	✓	✓	14.33	✓	1455	1500	✓	14.34	1.0	3RD COLLECT MW-924-070 VOCs, Cr_{6+}, Cr_{TOT}, ClO_4^-
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 31.00 psia

Total Volume: 3 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-23 Depth: 254 Date: 12/8/99

Well Name: MW-23 Sampling Zone No.: 2 Starting Time: 1320 Finishing Time: 1400

Technicians: T. Turpyn-Keasler, D. Strong, J. Donnay

Water Level Inside MP Casing (Beginning of Session) ~~37.61 psia~~ (II) 36.66 psia (End of Session) 36.64 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	~~37.61~~ 36.66 (II)	✓	1326	1329	✓	36.68	1.0	1st RUN; INITIAL PARAMETERS NTUs = 1.88
2	✓	✓	✓	✓	✓	✓	36.63	✓	1343	1347	✓	36.64	1.0	COLLECT MW-994-071 VOCs, $C_{r\,TOT}$, $C_{r\,6+}$, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 64.63 psia

Total Volume: 2 l

F-2

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-23 Depth: 319 Date: 12/8/99

Well Name: MW-23 Sampling Zone No.: 3 Starting Time: 1235 Finishing Time: 1310

Technicians: T. Turpin-Keasler, D. Strong, J. Donnay

Water Level Inside MP Casing (Beginning of Session) 64.85 psia (End of Session) 64.85 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	64.85	✓	1240	1244	✓	64.88	1.0	1st RUN; INITIAL PARAMETERS NTUs = 3.06
2	✓	✓	✓	✓	✓	✓	64.85	✓	1300	1302	✓	64.85	1.0	COLLECT MW-994-072 VOCs, Cr_{6+}, ClO_4^-, Cr_{TOT}
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 92.68 psia

Total Volume: 2 l

F-2

Continue

Page 1 o. 1

FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling

Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-23 Depth: 445 Date: 12/8/99

Well Name: MW-23 Sampling Zone No.: 4 Starting Time: 1135 Finishing Time: 1225

Technicians: T. Turpyn-Keasler, D. Strong, J. Dorrany

Water Level Inside MP Casing (Beginning of Session) 119.54 psia (End of Session) 119.54 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed	Deactivate Set Arm Locate Port	Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	119.54	✓	1142	1144	✓	119.57	1.0	1st RUN, ~~TO SEE~~ INITIAL PARAMETERS NTUS = 3.56
2	✓	✓	✓	✓	✓	✓	119.54	✓	1205	1207	✓	119.54	1.0	COLLECT MW-994-073 VOCs, Cr_{TOT}, Cr_{6}, ClO_4^-
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: PRESSURE OUTSIDE MP CASING = 137.73 psia

Total Volume: 2 l

F-2