

REPORT

**QUARTERLY GROUNDWATER MONITORING RESULTS,
AUGUST-SEPTEMBER 1996**

AT THE

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EXECUTIVE SUMMARY

This report presents the results of the first long-term groundwater monitoring event (August/September 1996) of the Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Remedial Investigation/Feasibility Study (RI/FS) at the Jet Propulsion Laboratory (JPL). A quarterly long-term groundwater monitoring program was initiated in response to requests from the United States Environmental Protection Agency (USEPA). Between August 8 and September 12, 1996, groundwater samples were collected from 15 on-site monitoring wells and five off-site wells. Samples were analyzed for volatile organic compounds (VOCs), metals (aluminum, arsenic, lead, total chromium, and dissolved chromium), hexavalent chromium, and major anions/cations. Additional analyses for semi-volatile organic compounds (SVOCs) were performed on two samples (one duplicate sample) from screen 2 of MW-12, and for tributyl tin (TBT) on samples from MW-12 (screens 1 and 2) and MW-13.

From these analyses, only three VOCs; carbon tetrachloride (CCl_4), trichloroethene (TCE), and 1,2-dichloroethane (1,2-DCA), were detected in concentrations above the state and Federal Maximum Contaminant Levels (MCLs) for drinking water. No SVOCs were found in either of the samples analyzed. TBT was detected in screen 1 of MW-12 at a concentration of 0.005 micrograms per liter ($\mu\text{g/l}$), slightly greater than minimum detection limit of 0.002 ($\mu\text{g/l}$). From the metals analyses, aluminum was detected above its secondary MCL in 10 wells. Hexavalent chromium was found in three wells, although no MCL for this metal has been established to date. None of the other metals analyzed (arsenic, lead, total or dissolved chromium) were detected in concentrations above their MCLs. Laboratory and field quality assurance/quality control (QA/QC) results indicate that the accuracy of these data meet the criteria required for acceptability.

Results from water chemistry analyses (major anions/cations) were used to identify the general water types present beneath JPL during this sampling event. These results are presented in Section 4.0. Water level measurements were taken before and after this sampling event and are presented in Section 5.0.

1.0 INTRODUCTION

This report presents the results of the first long-term groundwater monitoring event completed at the Jet Propulsion Laboratory (JPL) as a result of the JPL Comprehensive Environmental Response, Compensation and Liability Act (CERCLA) Remedial Investigation/Feasibility Study (RI/FS). Between August 8 and September 12, 1996, the groundwater monitoring wells at JPL (on-site and off-site) were sampled by Foster Wheeler Environmental Corporation (Foster Wheeler) personnel. The purpose of the long-term quarterly groundwater sampling program is to monitor groundwater quality beneath and adjacent to the JPL site.

The location of the on-site and off-site groundwater monitoring wells sampled are shown on Figure 1-1. Monitoring wells MW-3, MW-4, MW-11, MW-12, MW-14, MW-17, MW-18, MW-19, MW-20, and MW-21 are deep, multi-port wells containing five screened intervals each and 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 wells, each with a single screened interval located at the water table. A summary of the well construction details for the JPL groundwater monitoring wells is included in Table 1-1.

All groundwater samples collected were delivered to Montgomery Laboratories for analyses. Montgomery Laboratories, located in Pasadena, California, is certified by the California Department of Health Services. The following analyses were performed on groundwater samples:

Analyses	EPA Method
Volatile Organic Compounds (all samples)	524.2
Total and Dissolved Chromium (on-site wells only)	200.8
Hexavalent Chromium (on-site wells only)	7196
Total Aluminum (all wells)	200.8
Total Lead (all wells)	200.8
Total Arsenic (all wells)	200.9
Major Cations and Major Anions (all wells)	Various
Select Semi-Volatile Organic Compounds (MW-12, second screen only)	8270
Tributyl Tin (MW-13 and upper two screens of MW-12 only)	GC/FPD

In addition to groundwater samples, field quality assurance/quality control samples were collected for laboratory analysis. Sampling records for each shallow well are included in Appendix A, sampling records and piezometric pressure profiling records from the deep multi-port wells are included in Appendix B, and field instrument calibration forms are included in Appendix C. Laboratory analytical reports and associated chain-of-custody forms are included in Appendix D.

2.0 SAMPLING PROCEDURES

The collection and handling of groundwater samples at JPL followed two separate procedures, one designed for the shallow wells, and the other for the deep multi-port (MP) wells. These procedures are outlined in detail below.

2.1 SHALLOW MONITORING WELLS

The sampling procedure described below was applied to all the JPL shallow monitoring wells, which includes 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 in each shallow monitoring well. These decontamination procedures are described in detail in the "Field Sampling and Analysis for Performing a Remedial Investigation at Operable Unit 1: On-Site Groundwater" (Ebasco, 1993a).

Prior to sampling each shallow well, the volatile organic vapor content of the headspace in each well was measured with a flame-ionization detector immediately after the well cap was opened for health and safety purposes. The depth to water from the top of the casing was then measured and recorded. Next, the dedicated 2-inch pump permanently located in each shallow well was positioned 3 to 5 feet below the measured water level.

Before groundwater samples were collected in each shallow monitoring well, it was necessary to purge all of the water in each well casing that had been potentially altered by exposure to the atmosphere and was not representative of aquifer conditions by pumping groundwater from each well. This purged groundwater was discharged into 500 or 1,000 gallon polyethylene storage tanks for later disposal pursuant to EPA guidance on the management of investigation-derived wastes (EPA, 1991 and 1992a).

Groundwater parameters, including temperature, pH, conductivity and turbidity of the water removed from each well were continuously monitored during purging activities. After the measured parameters had stabilized (when two successive measurements made approximately 3 minutes apart were within approximately 10 percent of each other), and the turbidity was less than 5 Nephelometric Turbidity Units (NTUs), the groundwater samples were collected. During sampling for volatile organic compounds, the pump rate was reduced to approximately 0.02 gallons per minute (gpm) to minimize sample agitation. All information concerning sampling was noted on the Well Development/Well Sampling Log Forms included in Appendix A

Calibration, or standardization, of the field instruments used to measure temperature, pH, conductivity, and turbidity, was performed to manufacturer specifications at the beginning and end of each sampling day and recorded on field instrument calibration forms presented in Appendix C.

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

During sampling, one set of filtered samples from the on-site wells was sent to the laboratory for dissolved chromium analyses. To collect the filtered samples, a disposable 0.45 micron cellulose acetate cartridge filter was attached to the end of the discharge hose of the sampling pump before the samples were collected.

2.2 DEEP MULTI-PORT MONITORING WELLS

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

The Westbay sampling probe and sample bottles were decontaminated prior to sampling each screened interval in the deep MP wells, according to the following procedures:

- Wash each 250 ml stainless steel sample bottle in a solution of non-phosphate detergent (Liquinox®) and deionized water followed by washing each bottle in a solution of an acidic detergent (Citranox®) and deionized water. The interior surfaces of the bottles were washed by pushing lint-free paper wipes (such as Kim Wipes®) through them with a clean wooden dowel. The exterior surfaces of the bottles were scrubbed using a clean plastic brush.
- Rinse each bottle twice with deionized 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 Liquinox® and deionized water solution, followed by several volumes of Citranox® and deionized water solution through the sample equipment with a clean plastic squeeze bottle used only for this purpose. All parts were then rinsed by forcing several volumes of deionized water through them 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 is not exposed to the atmosphere. However, the first sample volume of

groundwater retrieved from each screened interval in the multi-port wells (approximately 1 liter) was not collected for chemical analyses.

Since purging is not required to sample the deep multi-port monitoring wells, groundwater parameters (including pH, temperature, conductivity and turbidity) were measured and recorded prior to, and immediately after, each screen was sampled (Appendix B). The calibration and maintenance of the field instruments followed the procedures described previously in the OU-1 and OU-3 FSAPs (Ebasco, 1993a and 1994).

2.3 FIELD QA/QC SAMPLES

To verify the quality of the groundwater samples collected from the JPL monitoring wells, field quality assurance/quality control (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 pursuant to analytical method requirements as needed.

A minimum of one duplicate groundwater sample was collected for approximately every 20 groundwater samples collected during this sampling event (see Quality Assurance Program for Performing a Remedial Investigation for NASA-JPL; Ebasco, 1993a). Duplicate samples for VOCs and metals analysis were collected from shallow groundwater monitoring wells MW-7 and MW-10, and deep multi-port monitoring wells MW-4 (screen 2), and MW-18 (screen 3) (VOCs only). In addition, one matrix spike/matrix spike duplicate (MS/MSD) sample for VOC analysis was collected for every 20 VOC samples submitted to the laboratory. These samples were used to verify the accuracy of the analytical method.

In addition, equipment blanks were obtained during sampling of the deep (MP) wells by running American Society of Testing Materials (ASTM) Type II organic free water (provided by the analytical laboratory) through the sampling equipment as a final rinse after the equipment had been decontaminated. One equipment blank was collected during each day of sampling from the Westbay sample bottles, and analyzed for VOCs to identify potential cross contamination due to inadequate decontamination procedures. Equipment blanks were not collected during sampling of the shallow wells as they were sampled through the dedicated sampling equipment.

A trip blank consisted of laboratory reagent water placed in two 40-ml glass vials by the laboratory and transported with the sample bottles to the field. One trip blank was submitted with each shipment of groundwater samples from the field to the laboratory. Trip blanks were used to identify any cross contamination of groundwater samples during transport. Further details of the field QA/QC program are provided in the Quality Assurance Project Plan (QAPP) (Ebasco, 1993b).

One field blank was collected during this sampling event. This blank consisted of sample bottles, filled with ASTM Type II organic free water supplied by the laboratory, placed at the sampling point (well head) at shallow well MW-11 and left open during the sampling of the well. After sampling, the field blank bottles were capped and analyzed for the same constituents as the groundwater samples being collected. Field blanks are used to evaluate the influence that ambient conditions, or sample containers, may have on the analytical results.

3.0 ANALYTICAL RESULTS

JPL groundwater monitoring wells MW-1 through MW-21 (except MW-2) were sampled between August 8, and September 12, 1996. MW-2 was not sampled since it was replaced as a JPL monitoring point with deep multi-port well MW-14. The groundwater samples were analyzed for VOCs (EPA Method 524.2), chromium (total and dissolved) (on-site wells only), hexavalent chromium (on-site wells only), lead, arsenic, and aluminum (EPA Method 200 series), select semi-volatile organic compounds (SVOCs) (MW-12 second screen only) and tributyl tin (MW-13 and upper two screens from MW-12 only).

All samples were also analyzed for general water chemistry parameters including major cations and anions (sodium (Na), potassium (K), calcium (Ca), magnesium (Mg), iron (Fe), alkalinity, chloride (Cl), sulfate (SO_4), nitrate (NO_3) and total phosphate (H_2PO_4)) using various methods, total dissolved solids (TDS) (EPA Method 160.1), specific conductivity (EC) (EPA Method 120.1) and pH (EPA Method 150.1).

A summary of the samples collected and the analyses performed on each sample is presented in Table 3-1. Analytical laboratory reports and associated chain-of-custody forms are included in Appendix D. Results of the analyses for VOCs are summarized in Table 3-2 along with the Maximum Contaminant Levels (MCLs) for drinking water as listed in Title 22 of the California Administrative Code (CAC) and in the EPA Health Advisory Guidelines. The concentrations of three individual VOCs were above their MCLs (carbon tetrachloride (CCl_4), trichloroethene (TCE), and 1,2-dichloroethane (1,2-DCA) and have been placed on well location maps in Figures 3-1, 3-2, and 3-3 to better illustrate these results. Analytical results for chromium (total and dissolved), hexavalent chromium, lead, arsenic and aluminum are summarized in Table 3-3 along with their respective drinking water MCLs. These metals results are placed on a well location map in Figure 3-4.

3.1 VOLATILE ORGANIC COMPOUND RESULTS

Groundwater samples collected during the August/September 1996 sampling event were analyzed for over 60 different VOCs, in accordance with EPA Method 524.2. Only a small number of compounds were detected in these samples. A summary of all the VOCs detected in the August/September 1996 samples is provided in Table 3-2.

Among the samples collected during the August/September 1996 sampling event, only three VOCs were found in concentrations exceeding the state and federal MCLs. These compounds include CCl_4 , TCE, and 1,2-DCA.

CCl_4 in excess of both state and federal MCLs ($0.5 \mu\text{g/l}$) was found in nine of the on-site wells, and three of the off-site wells (Table 3-2). The location of these wells and the concentration of CCl_4 within them are shown in Figure 3-1. Overall, the highest concentrations of CCl_4 were found in the shallow wells MW-7, MW-13, and MW-16.

TCE in excess of state and federal MCLs ($5.0 \mu\text{g/l}$) was detected in five on-site wells, and three off-site (Table 3-2). The location of those wells containing TCE above the MCLs are presented in Figure 3-2. The highest levels of TCE were found in shallow wells MW-7, MW-13, and MW-16, and also in the uppermost screen (Screen #1) of the deep (MP) well MW-21.

1,2-DCA concentrations above both state and federal MCLs ($0.5 \mu\text{g/l}$) were found in four on-site wells (Table 3-2). 1,2-DCA was not detected in any of the off-site wells. The location of the wells containing 1,2-DCA at levels above the MCLs are shown in Figure 3-3. For all these wells, the concentration of 1,2-DCA is just slightly above the MCL defined by the state of California.

3.2 TRIBUTYL TIN RESULTS

Analyses for tributyl tin (TBT) were performed on groundwater samples collected from the upper two screens of multi-port well MW-12 and from standpipe well MW-13. A duplicate sample from MW-13 was also analyzed for TBT. TBT has been used throughout industry as an anti-foulant in cooling towers and, since cooling towers are and have been present at JPL, these TBT analyses were performed. Well MW-13 is the closest well to JPL's central cooling tower system (Building #296) and well MW-12 was chosen by Department of Toxic Substances Control (DTSC) as being downgradient of potential TBT releases.

TBT was detected in screen 1 of MW-12 at $0.005 \mu\text{g/l}$. The sample was reanalyzed and TBT was subsequently detected at $0.004 \mu\text{g/l}$. The analytical laboratory minimum detection limit was $0.002 \mu\text{g/l}$. It should be noted that the turbidity results for this sample, as measured in the field, were excessively high ($\text{NTUs} = 50.4$; Table 3-3). All other samples analyzed were non-detect ($<0.002 \mu\text{g/l}$) for TBT.

3.3 SEMI-VOLATILE ORGANIC COMPOUND RESULTS

Semi-volatile organic compounds were analyzed in the two initial RI sampling events in all wells and in this long-term monitoring effort in well MW-12. Results from the initial OU-1 RI sampling event (June, 1994) indicated the presence of low levels of 10 semi-volatile organic compounds (SVOCs) in screen 2 of MW-12. However, results from a duplicate sample collected during the same OU-1 RI sampling event (June, 1994), and also from the subsequent OU-1 RI sampling event (November, 1994), did not confirm the presence of these SVOCs.

Pursuant to a request by the DTSC, a groundwater sample and a duplicate groundwater sample were collected from screen 2 of MW-12 and analyzed for the same 10 SVOCs detected earlier. The 10 SVOCs analyzed for included benzo(a)anthracene, benzo(a)pyrene, benzo(b)fluoranthene, benzo(g,h,i)perylene, benzo(k)fluoranthene, chrysene, fluoranthene, indeno(1,2,3-c,d)pyrene, phenanthrene, and pyrene. These SVOCs were not detected in either of the two samples collected from screen 2 of MW-12.

3.4 METALS RESULTS

Groundwater samples from the August/September 1996 sampling event were analyzed for the following suite of metals: aluminum, arsenic, lead, chromium (total and dissolved) (on-site wells only), and hexavalent chromium (on-site wells only). The results of these analyses are summarized in Table 3-3, and are presented by well location in Figure 3-4.

Aluminum was detected above its secondary MCL (0.05-0.20 mg/L) in eight on-site wells, and two off-site wells (Table 3-3 and Figure 3-4). The highest concentration of aluminum was found in the sample from screen #1 of MW-12, a sample with an excessively high field turbidity (NTUs = 50.4).

None of the August/September 1996 samples contained arsenic, lead, or chromium (total and dissolved) in concentrations above the state and federal MCLs (0.05 mg/L). Hexavalent chromium was detected in samples from shallow on-site wells MW-7, MW-10 and MW-13 (see Table 3-3 and Figure 3-4). At this time, no MCL for hexavalent chromium has been established by state or federal agencies.

3.5 QUALITY ASSURANCE/QUALITY CONTROL RESULTS

Review of the QA/QC data provided with the laboratory analytical results (Appendix D) indicates that the results obtained from August/September 1996 samples are acceptable for use. Surrogate compounds, matrix and blank spikes, and method blanks were used by the laboratory to determine the accuracy and precision of the analytical results, and to identify any spurious results due to laboratory contamination or instrument malfunction.

In addition to the laboratory QA/QC procedures, QA/QC procedures were implemented in the field by Foster Wheeler personnel. These field procedures included the collection of duplicate samples, equipment blanks, and trip blanks.

Duplicate samples were used as an independent means of evaluating the precision of the laboratory analyses. Duplicate groundwater samples for VOC and metals analyses were collected from MW-4 (screen 2), MW-7, MW-10, and MW-18 (screen 3) (VOCs only). All of the analytical results for the duplicate samples were within 20 percent of the original sample results (Tables 3-2 and 3-3).

Equipment blanks were used to determine if contaminants were introduced into the samples by the sampling equipment. Equipment blanks were prepared each day, prior to the sampling of the deep (MP) wells, by pouring ASTM Type II organic free water through the Westbay sampling bottles and collecting the water in sample bottles. These sample bottles were then submitted for VOCs analyses. Equipment blanks were not required from the shallow wells as the 2-inch Grundfos® pump systems used to collect the groundwater samples are dedicated to individual wells.

Twenty equipment blanks were submitted for analysis during the August/September 1996 sampling event. Acetone was found in all but three of the equipment blanks, but was also detected in each of the corresponding laboratory method blanks, indicating contamination by laboratory procedures. Tetrahydrofuran was found in four of the equipment blanks, toluene in two, and MTBE in one. None of these compounds were detected in the associated groundwater samples and therefore do not reflect cross-contamination of samples through the sampling equipment.

Trip blanks were used to determine if contaminants were introduced into the samples during transportation. Trip blanks consisted of 40 mL vials filled with reagent water prepared in advance by the laboratory. One trip blank was submitted for VOCs analysis for each shipment of groundwater samples to the laboratory. A total of 24 trip blanks were submitted along with the August/September 1996 groundwater samples.

Acetone was found in 17 of the 24 trip blanks, although it was also detected in the corresponding laboratory method blanks, indicating contamination by laboratory procedures. Low concentrations of chloroform were detected in three trip blanks, tetrahydrofuran in one, and fluorotrichloromethane in one. Of these constituents, only chloroform was also detected in groundwater samples. Groundwater results for chloroform associated with the three trip blanks that contained detectable levels of chloroform are indicated on Table 3-2.

One field blank was collected at MW-11 to assess the possible contaminants in the ambient air surrounding the well head. This field blank was prepared by filling several different sample bottles with ASTM Type II organic free water and leaving them open to the air at the well head. These samples were then submitted for VOCs, metals, and hexavalent chromium analyses. No metals or hexavalent chromium were detected in the field blank from the August/September 1996 event. Acetone was detected in the field blank but was also found in the associated laboratory method blank. No other VOCs were detected in the field blank.

4.0 GENERAL WATER CHEMISTRY

As part of this groundwater monitoring event, groundwater samples were also submitted for analyses of major cations and anions in an effort to further characterize the natural water chemistry of the groundwater beneath and adjacent to JPL. Samples from each of the JPL shallow monitoring wells, and each of the deep multi-port (MP) wells, were analyzed for major cations (Ca, Mg, Na, and K), major anions (Cl, SO₄, PO₄, and NO₃), alkalinity (bicarbonate (HCO₃) and carbonate (CO₃)), and total dissolved solids (TDS). The water chemistry results for this quarterly sampling event are summarized in Table 4-1.

4.1 ANALYTICAL RESULTS

To better illustrate the relative proportions of the major cations and anions in each groundwater sample, the water chemistry results from the August/September 1996 event have been compiled as stiff diagrams (Figures 4-1 and 4-2). Review of the water chemistry data from previous investigations indicates that the majority of groundwater sampled at JPL can be classified as one of four general types, based on the predominant cation and anion. In the past, these four general water types have included:

1. Calcium-bicarbonate groundwater. Groundwater with Ca as the dominant cation and bicarbonate (HCO₃) as the dominant anion.
2. Sodium-bicarbonate groundwater. Groundwater with Na as the dominant cation and HCO₃ as the dominant anion.
3. Calcium-bicarbonate/chloride/sulfate groundwater. Groundwater with Ca as the dominant cation and HCO₃ the dominant anion, but with relatively elevated Cl and SO₄ concentrations.
4. Calcium-bicarbonate/nitrate/chloride groundwater. Groundwater with Ca as the dominant cation and HCO₃ the dominant anion, but with relatively elevated NO₃ and Cl concentrations.

Based on this classification scheme, all of the shallow wells, except MW-6 and MW-10, contained calcium-bicarbonate waters during the August/September 1996 sampling event (see Figure 4-1). The waters in MW-6 and MW-10 had slightly higher concentrations of chloride (Cl) and sulfate (SO₄) than the other shallow wells and were therefore considered as the calcium-bicarbonate/chloride/sulfate type.

Calcium-bicarbonate and calcium-bicarbonate/chloride/sulfate waters were the predominant compositional types found in the uppermost screened intervals of all the deep (MP) wells (Figures 4-1 and 4-2). Those intervals among the calcium-bicarbonate water types that contain

higher concentrations of chloride and sulfate include MW-14 (screens 1, 2, and 3), MW-20 (screen 1), and MW-21 (screens 1, 2, and 3).

Sodium-bicarbonate waters were found in the lower most intervals of wells MW-3 (screens 3, 4, and 5), MW-4 (screens 4 and 5), MW-11 (screen 5), MW-12 (screen 5), MW-14 (screen 5), MW-18 (screen 5), and MW-20 (screens 2, 3, 4, and 5).

None of the samples obtained during the August/September 1996 event contained a sufficient amount of NO_3 to be considered a calcium-bicarbonate/nitrate water type.

4.2 QUALITY ASSURANCE/QUALITY CONTROL RESULTS

To evaluate the general quality of the water chemistry data, two independent geochemical quality control checks of the analytical results from the August/September 1996 samples were performed. These checks included calculation of total ion-charge balances, and comparison of measured TDS to calculated TDS. The results of these checks for the August/September 1996 water chemistry results are presented in Table 4-2. Charge balances are expressed as the percent difference between the sum of the equivalent weights of all of the anions and all of the cations analyzed (Freeze and Cherry, 1979). The ideal range for charge balances is ± 5 percent, although charge balance errors up to ± 10 percent are acceptable.

The charge balances for samples analyzed for major anions and cations during the August/September 1996 sampling round are within the ideal range (± 5 percent) for 52 of the 60 sets of water chemistry results. The charge balance for the remaining eight sets of water chemistry analyses fall between 5 and 10 percent, indicating that the results are acceptable for their intended use (Table 4-2).

TDS results can be used to verify that all of the important water chemistry constituents have been analyzed. This is done by comparing the measured laboratory TDS value to a calculated TDS value (calculated as the sum of the concentrations of all the major anions and cations) for each sample. Under ideal conditions, the ratio should lie between 1.0 and 1.2 (Oppenheimer and Eaton, 1986).

The ratio between measured and calculated TDS values for the August/September 1996 water chemistry results were within the ideal range (1.0 to 1.2) for 54 of the 60 sets of water chemistry analyses performed (Table 4-2). The ratio for the remaining six sets of water chemistry data fell slightly outside this ideal range suggesting sample inhomogeneity or small error in the measured TDS values. However, the data are suitable for identifying differences in water chemistry across the site.

5.0 WATER-LEVEL MEASUREMENTS

Water-level measurements were taken both before sampling, on August 5, 1996, and after sampling, on September 12 and 13, 1996. Water-table elevation measurements taken before sampling are provided in Table 5-1 and have been contoured in Figure 5-1. Similarly, water-table elevation measurements taken after sampling are provided in Table 5-2 and contoured in Figure 5-2.

As indicated on Figures 5-1 and 5-2, both before and after sampling groundwater flow was primarily to the east across JPL, except for the area near the significant groundwater mound at the mouth of the Arroyo Seco. The City of Pasadena municipal production wells were pumping throughout the sampling event as indicated with the "trough" of depression on Figures 5-1 and 5-2.

Depth to groundwater measurements in the shallow wells were collected with an automated water-level measurement system. This automated system consists of a pressure transducer connected by a cable to a data logger that is located in the well box of each shallow well. Feet of water above the transducer is recorded in the data logger and retrieved later with a portable lap-top computer.

In the deep MP wells, the potentiometric head at each sampling port at each screened interval is measured with a pressure-transducer probe manufactured by Westbay specifically for the unique casing used in these wells. Figures 5-3 and 5-4 graphically present the potentiometric heads at each deep MP well measured both before and after sampling, respectively. The potentiometric pressure profile records for the deep MP wells are included in Appendix B.

6.0 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
MW-1	Shallow Standpipe	1989	Mud Rotary	120	70-110	1116.70	1006.70-1046.70	-
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
					250-260		839.82-849.82	2
					344-354		745.82-755.82	3
					555-565		534.82-544.82	4
					650-660		433.82-443.82	5
MW-4	Deep Multi-Port	1990	Mud Rotary	559	147-157	1082.72	925.72-935.72	1
					237-247		835.72-845.72	2
					318-328		754.72-764.72	3
					389-399		683.72-693.72	4
					509-519		563.72-573.72	5
MW-5	Shallow Standpipe	1990	Air Percussion	140	85-135	1071.60	936.60-986.60	-
MW-6	Shallow Standpipe	1990	Air Percussion	245	195-245	1188.52	943.52-993.52	-
MW-7	Shallow Standpipe	1990	Air Percussion	275	225-275	1212.88	937.88-987.88	-
MW-8	Shallow Standpipe	1992	Air Percussion	205	155-205	1139.53	934.53-984.53	-
MW-9	Shallow Standpipe	1992	Air Percussion	68	18-68	1106.02	1038.02-1088.02	-
MW-10	Shallow Standpipe	1992	Air Percussion	155	105-155	1087.71	932.71-982.71	-
MW-11	Deep Multi-Port	1992	Mud Rotary	680	140-150	1139.35	989.35-999.35	1
					250-260		879.35-889.35	2
					420-430		709.35-719.35	3
					515-525		614.35-624.35	4
					630-640		499.35-509.35	5

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
MW-12	Deep Multi-Port	1994	Mud Rotary	596	135-145	1102.14	957.14-967.14	1
					240-250		852.14-862.14	2
					315-325		777.14-787.14	3
					430-440		662.14-672.14	4
					546-556		546.14-556.14	5
MW-13	Shallow Standpipe	1994	Air Rotary	235	180-230	1183.47	953.47-1003.47	-
MW-14	Deep Multi-Port	1994	Mud Rotary	588	205-215	1173.42	958.42-968.42	1
					275-285		888.42-898.42	2
					380-390		783.42-793.42	3
					453-463		710.42-720.42	4
					538-548		625.42-635.42	5
MW-15	Shallow Standpipe	1994	Air Percussion	74	19-69	1120.66	1051.66-1101.66	-
MW-16	Shallow Standpipe	1994	Air Percussion	285	230-280	1236.27	956.27-1006.27	-
MW-17	Deep Multi-Port	1995	Mud Rotary	774	246-256	1190.99	934.99-944.99	1
					366-376		814.99-824.99	2
					466-476		714.99-724.99	3
					578-588		602.99-612.99	4
					723-733		457.99-467.99	5
MW-18	Deep Multi-Port	1995	Mud Rotary	732	266-276	1225.34	949.34-959.34	1
					326-336		889.34-899.34	2
					421-431		794.34-804.34	3
					561-571		654.34-664.34	4
					681-691		534.34-544.34	5

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
MW-19	Deep Multi-Port	1995	Mud Rotary	543	240-250	1143.20	893.20-903.20	1
					310-320		823.20-833.20	2
					390-400		743.20-753.20	3
					442-452		691.20-701.20	4
					492-502		641.20-651.20	5
MW-20	Deep Multi-Port	1995	Mud Rotary	948	228-238	1164.89	926.89-936.89	1
					388-398		766.89-776.89	2
					558-568		596.89-606.89	3
					698-708		456.89-466.89	4
					898-908		256.89-266.89	5
MW-21	Deep Multi-Port	1995	Mud Rotary	416	86-96	1058.99	962.99-972.99	1
					156-166		892.99-902.99	2
					236-246		812.99-822.99	3
					306-316		742.99-752.99	4
					366-376		682.99-692.99	5

TABLE 3-1
SUMMARY OF ANALYSES PERFORMED ON GROUNDWATER SAMPLES
COLLECTED FROM JPL MONITORING WELLS,
AUGUST 1996-SEPTEMBER 1996

Sample Location	Sample Number	Sampling Date	Sample Type	VOC's EPA 524.2	Total Cr, As, Al, Pb + Major Cations EPA 200 Series	Dissolved Chrome EPA 200.8	Hexavalent Chrome EPA 7196	Major Anions and TDS EPA 300 Series/160.1	Total Phosphate EPA 365.4	SVOC's EPA 8270	Tributyl Tin GCFPD
MW-1	MW-961-01	9/11/96	GW	X	X		X	X	X		
MW-1	MW-961-02	9/11/96	GW			X					
MW-3											
Screen 1	MW-961-03	9/5/96	GW	X	X		X	X	X		
Screen 1	MW-961-04	9/5/96	GW			X					
Screen 2	MW-961-05	9/5/96	GW	X	X		X	X	X		
Screen 2	MW-961-06	9/5/96	GW			X					
Screen 3	MW-961-07	9/5/96	GW	X	X		X	X	X		
Screen 3	MW-961-08	9/5/96	GW			X					
Screen 4	MW-961-09	9/4/96	GW	X	X		X	X	X		
Screen 4	MW-961-10	9/4/96	GW			X					
Screen 5	MW-961-11	9/4/96	GW	X	X		X	X	X		
Screen 5	MW-961-12	9/4/96	GW			X					
MW-4											
Screen 1	MW-961-13	8/23/96	GW	X	X		X	X	X		
Screen 1	MW-961-14	8/23/96	GW			X					
Screen 2	MW-961-15	8/23/96	GW	X	X		X	X	X		
Screen 2	MW-961-16	8/23/96	GW			X					
Screen 2	MW-961-17	8/23/96	DUP	X	X (Cr only)		X				
Screen 2	MW-961-18	8/23/96	DUP			X					
Screen 3	MW-961-19	8/22/96	GW	X	X		X	X	X		
Screen 3	MW-961-20	8/22/96	GW			X					
Screen 4	MW-961-21	8/22/96	GW	X	X		X	X	X		
Screen 4	MW-961-22	8/22/96	GW			X					
Screen 5	MW-961-23	8/22/96	GW	X	X		X	X	X		
Screen 5	MW-961-23A	9/12/96	Resample GW	X							
Screen 5	MW-961-24	8/22/96	GW			X					

GW: Groundwater Sample

DUP: Duplicate Sample

Resample GW: Resampled because initial analysis had low internal standard and subsequent re-analysis missed holding time.

TABLE 3-1
SUMMARY OF ANALYSES PERFORMED ON GROUNDWATER SAMPLES
COLLECTED FROM JPL MONITORING WELLS,
AUGUST 1996-SEPTEMBER 1996

Sample Location	Sample Number	Sampling Date	Sample Type	VOC's EPA 524.2	Total Cr, As, Al, Pb + Major Cations EPA 200 Series	Dissolved Chrome EPA 200.8	Hexavalent Chrome EPA 7196	Major Anions and TDS EPA 300 Series/160.1	Total Phosphate EPA 365.4	SVOC's EPA 8270	Tributyl Tin GCFPD
MW-5	MW-961-25	9/10/96	GW	X	X		X	X	X		
MW-5	MW-961-26	9/10/96	GW			X					
MW-6	MW-961-27	9/6/96	GW	X	X		X	X	X		
MW-6	MW-961-28	9/6/96	GW			X					
MW-7	MW-961-29	9/10/96	GW	X	X		X	X	X		
MW-7	MW-961-30	9/10/96	GW			X					
MW-7	MW-961-31	9/10/96	DUP	X	X (Cr only)		X				
MW-7	MW-961-32	9/10/96	DUP			X					
MW-8	MW-961-33	9/11/96	GW	X	X		X	X	X		
MW-8	MW-961-34	9/11/96	GW			X					
MW-9	MW-961-35	9/11/96	GW	X	X		X	X	X		
MW-9	MW-961-36	9/11/96	GW			X					
MW-10	MW-961-37	9/9/96	GW	X	X		X	X	X		
MW-10	MW-961-38	9/9/96	GW			X					
MW-10	MW-961-39	9/9/96	DUP	X	X (Cr only)		X				
MW-10	MW-961-40	9/9/96	DUP			X					
MW-11											
Screen 1	MW-961-41	8/27/96	GW	X	X		X	X	X		
Screen 1	MW-961-42	8/27/96	GW			X					
Screen 2	MW-961-43	8/27/96	GW	X	X		X	X	X		
Screen 2	MW-961-44	8/27/96	GW			X					
Screen 3	MW-961-45	8/26/96	GW	X	X		X	X	X		
Screen 3	MW-961-46	8/26/96	GW			X					
Screen 4	MW-961-47	8/26/96	GW	X	X		X	X	X		
Screen 4	MW-961-48	8/26/96	GW			X					
Screen 5	MW-961-49	8/26/96	GW	X	X		X	X	X		
Screen 5	MW-961-50	8/26/96	GW			X					

GW: Groundwater Sample

DUP: Duplicate Sample

Resample GW: Resampled because initial analysis had low internal standard and subsequent re-analysis missed holding time.

TABLE 3-1
SUMMARY OF ANALYSES PERFORMED ON GROUNDWATER SAMPLES
COLLECTED FROM JPL MONITORING WELLS,
AUGUST 1996-SEPTEMBER 1996

Sample Location	Sample Number	Sampling Date	Sample Type	VOC's EPA 524.2	Total Cr, As, Al, Pb + Major Cations EPA 200 Series	Dissolved Chrome EPA 200.8	Hexavalent Chrome EPA 7196	Major Anions and TDS EPA 300 Series/160.1	Total Phosphate EPA 365.4	SVOC's EPA 8270	Tributyl Tin GC/PCD
MW-12											
Screen 1	MW-961-51	8/29/96	GW	X	X		X	X	X		X
Screen 1	MW-961-52	8/29/96	GW			X					
Screen 2	MW-961-53	9/3/96	GW	X	X		X	X	X	X	X
Screen 2	MW-961-54	9/3/96	GW			X				X (DUP)	
Screen 3	MW-961-55	8/28/96	GW	X	X		X	X	X		
Screen 3	MW-961-56	8/28/96	GW			X					
Screen 4	MW-961-57	8/28/96	GW	X	X		X	X	X		
Screen 4	MW-961-58	8/28/96	GW			X					
Screen 5	MW-961-59	8/27/96	GW	X	X		X	X	X		
Screen 5	MW-961-60	8/27/96	GW			X					
MW-13	MW-961-61	9/9/96	GW	X	X		X	X	X		X
MW-13	MW-961-62	9/9/96	GW			X					X (DUP)
MW-14											
Screen 1	MW-961-63	8/21/96	GW	X	X		X	X	X		
Screen 1	MW-961-64	8/21/96	GW			X					
Screen 2	MW-961-65	8/21/96	GW	X	X		X	X	X		
Screen 2	MW-961-66	8/21/96	GW			X					
Screen 3	MW-961-67	8/21/96	GW	X	X		X	X	X		
Screen 3	MW-961-68	8/21/96	GW			X					
Screen 4	MW-961-69	8/20/96	GW	X	X		X	X	X		
Screen 4	MW-961-70	8/20/96	GW			X					
Screen 5	MW-961-71	8/20/96	GW	X	X		X	X	X		
Screen 5	MW-961-72	8/20/96	GW			X					
MW-15	MW-961-73	9/10/96	GW	X	X		X	X	X		
MW-15	MW-961-74	9/10/96	GW			X					
MW-16	MW-961-75	9/6/96	GW	X	X		X	X	X		
MW-16	MW-961-76	9/6/96	GW			X					

GW: Groundwater Sample

DUP: Duplicate Sample

Resample GW: Resampled because initial analysis had low internal standard and subsequent re-analysis missed holding time.

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TABLE 3-1
SUMMARY OF ANALYSES PERFORMED ON GROUNDWATER SAMPLES
COLLECTED FROM JPL MONITORING WELLS,
AUGUST 1996-SEPTEMBER 1996

Sample Location	Sample Number	Sampling Date	Sample Type	Total Cr, As, Al, Pb		Dissolved Chrome EPA 200.8	Hexavalent Chrome EPA 7196	Major Anions and TDS EPA 300 Series/160.1	Total Phosphate EPA 365.4	SVOC's EPA 8270	Tributyl Tin GCFPD
				VOC's EPA 524.2	+ Major Cations EPA 200 Series						
MW-17											
Screen 1	MW-961-77	8/14/96	GW	X	X (No Cr)			X	X		
Screen 2	MW-961-78	8/14/96	GW	X	X (No Cr)			X	X		
Screen 3	MW-961-79	8/13/96	GW	X	X (No Cr)			X	X		
Screen 4	MW-961-80	8/13/96	GW	X	X (No Cr)			X	X		
Screen 5	MW-961-81	8/13/96	GW	X	X (No Cr)			X	X		
MW-18											
Screen 1	MW-961-82	8/13/96	GW	X	X (No Cr)			X	X		
Screen 2	MW-961-83	8/12/96	GW	X	X (No Cr)			X	X		
Screen 3	MW-961-84	8/12/96	GW	X	X (No Cr)			X	X		
Screen 3	MW-961-85	8/12/96	DUP	X							
Screen 4	MW-961-86	8/12/96	GW	X	X (No Cr)			X	X		
Screen 5	MW-961-87	8/12/96	GW	X	X (No Cr)			X	X		
MW-19											
Screen 1	MW-961-88	8/8/96	GW	X	X (No Cr)			X	X		
Screen 1	MW-961-88A	8/30/96	Resample GW	X							
Screen 2	MW-961-89	8/8/96	GW	X	X (No Cr)			X	X		
Screen 3	MW-961-90	8/8/96	GW	X	X (No Cr)			X	X		
Screen 4	MW-961-91	8/8/96	GW	X	X (No Cr)			X	X		
Screen 5	MW-961-92	8/8/96	GW	X	X (No Cr)			X	X		

GW: Groundwater Sample

DUP: Duplicate Sample

Resample GW: Resampled because initial analysis had low internal standard and subsequent re-analysis missed holding time.

TABLE 3-1
SUMMARY OF ANALYSES PERFORMED ON GROUNDWATER SAMPLES
COLLECTED FROM JPL MONITORING WELLS,
AUGUST 1996-SEPTEMBER 1996

Sample Location	Sample Number	Sampling Date	Sample Type	VOC's EPA 524.2	Total Cr, As, Al, Pb + Major Cations EPA 200 Series	Dissolved Chrome EPA 200.8	Hexavalent Chrome EPA 7196	Major Anions and TDS EPA 300 Series/160.1	Total Phosphate EPA 365.4	SVOC's EPA 8270	Tributyl Tin GCFPD
MW-20											
Screen 1	MW-961-93	8/15/96	GW	X	X (No Cr)			X	X		
Screen 2	MW-961-94	8/15/96	GW	X	X (No Cr)			X	X		
Screen 3	MW-961-95	8/15/96	GW	X	X (No Cr)			X	X		
Screen 4	MW-961-96	8/15/96	GW	X	X (No Cr)			X	X		
Screen 5	MW-961-97	8/14/96	GW	X	X (No Cr)			X	X		
MW-21											
Screen 1	MW-961-98	8/19/96	GW	X	X (No Cr)			X	X		
Screen 2	MW-961-99	8/19/96	GW	X	X (No Cr)			X	X		
Screen 3	MW-961-100	8/16/96	GW	X	X (No Cr)			X	X		
Screen 4	MW-961-101	8/16/96	GW	X	X (No Cr)			X	X		
Screen 5	MW-961-102	8/16/96	GW	X	X (No Cr)			X	X		

GW: Groundwater Sample

DUP: Duplicate Sample

Resample GW: Resampled because initial analysis had low internal standard and subsequent re-analysis missed holding time.

TABLE 3-2
SUMMARY OF VOLATILE ORGANIC COMPOUNDS DETECTED IN
GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS
AUGUST 1996-SEPTEMBER 1996
 (concentrations in µg/l)
 Values above State and Federal MCLs are shaded

Sampling Location	Sample Number	Sampling Date	Carbon Tetrachloride	TCE	PCE	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds
MW-1	MW-961-01	9/11/96	--	--	--	--	--	--	--	--
MW-3										
Screen 1	MW-961-03	9/5/96	--	--	--	--	--	--	1.2	--
Screen 2	MW-961-05	9/5/96	--	--	--	--	--	--	5.5	--
Screen 3	MW-961-07	9/5/96	0.6	0.8	--	--	--	--	1.6	--
Screen 4	MW-961-09	9/4/96	--	--	--	--	--	--	--	--
Screen 5	MW-961-11	9/4/96	--	--	--	--	--	--	--	2.1 Methylene chloride
MW-4										
Screen 1	MW-961-13	8/23/96	--	--	--	--	--	--	--	2.9(B) Acetone
Screen 2	MW-961-15	8/23/96	5.5	19	--	0.9	0.7	--	6.7	3.2(B) Acetone
Screen 2 (DUP)	MW-961-17	8/23/96	4.8	14	--	0.7	0.6	--	5.1	3.1(B) Acetone
Screen 3	MW-961-19	8/22/96	--	--	--	--	--	--	--	3.0(B) Acetone
Screen 4	MW-961-21	8/22/96	--	--	--	--	--	--	--	3.9(B) Acetone
Screen 5	MW-961-23	8/22/96	--	--	--	--	--	--	--	--
Screen 5 (RESAMPLE)	MW-961-23A	9/12/96	--	--	--	--	--	--	--	--
MW-5	MW-961-25	9/10/96	--	--	--	--	--	--	--	--
MW-6	MW-961-27	9/6/96	--	--	--	--	--	--	1.3(TB)	--
MW-7	MW-961-29	9/10/96	90	39	0.8	1.2	1.1	7.2	13(TB)	--
MW-7 (DUP)	MW-961-31	9/10/96	87	38	0.9	1.4	1.3	8.8	14(TB)	--
MW-8	MW-961-33	9/11/96	4.0	4.6	--	--	--	--	1.3	--
MW-9	MW-961-35	9/11/96	--	--	--	--	--	--	--	--
MW-10	MW-961-37	9/9/96	0.7	18	0.5	--	--	1.2	1.4(TB)	--
MW-10 (DUP)	MW-961-39	9/9/96	0.7	20	0.6	--	--	1.3	1.6(TB)	--

(B): Indicates compound also detected in the laboratory method blank.

--: Indicates not detected.

(TB): Compound detected in associated trip blank.

(DUP): Duplicate

(RESAMPLE): Resampled

TABLE 3-2
SUMMARY OF VOLATILE ORGANIC COMPOUNDS DETECTED IN
GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS
AUGUST 1996-SEPTEMBER 1996

(concentrations in µg/l)

Values above State and Federal MCLs are shaded

Sampling Location	Sample Number	Sampling Date	Carbon Tetrachloride	TCE	PCE	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds
MW-11										
Screen 1	MW-961-41	8/27/96	--	--	--	--	--	--	--	2.6(B) Acetone
Screen 2	MW-961-43	8/27/96	2.4	--	--	--	--	--	1.0	--
Screen 3	MW-961-45	8/26/96	0.9	--	--	--	--	--	1.3	2.9(B) Acetone
Screen 4	MW-961-47	8/26/96	--	--	--	--	--	--	0.5	2.4(B) Acetone
Screen 5	MW-961-49	8/26/96	--	--	--	--	--	--	--	2.4(B) Acetone
MW-12										
Screen 1	MW-961-51	8/29/96	--	--	--	--	--	--	4.1	--
Screen 2	MW-961-53	9/3/96	0.9	--	--	--	--	--	--	--
Screen 3	MW-961-55	8/28/96	4.5	--	--	--	--	--	1.3	--
Screen 4	MW-961-57	8/28/96	6.8	--	--	--	--	--	1.4	--
Screen 5	MW-961-59	8/27/96	3.4	--	--	--	--	--	0.7	--
MW-13	MW-961-61	9/9/96	2.1	4.7	0.6	2.5	1.5	0.7	21(TB)	--
MW-14										
Screen 1	MW-961-63	8/21/96	--	--	--	--	--	--	0.6	2.4 1,1-Dichloroethane
Screen 2	MW-961-65	8/21/96	--	2.8	1.6	--	--	--	1.5	1.4 1,1-Dichloroethane
Screen 3	MW-961-67	8/21/96	--	--	--	--	--	--	--	--
Screen 4	MW-961-69	8/20/96	--	--	--	--	--	--	--	--
Screen 5	MW-961-71	8/20/96	--	--	--	--	--	--	--	2.1(B) Acetone
MW-15	MW-961-73	9/10/96	--	--	--	--	--	--	--	--
MW-16	MW-961-75	9/6/96	125	33	1.3	2.4	2.2	2.0	40(TB)	--

(B): Indicates compound also detected in the laboratory method blank.

--: Indicates not detected.

(TB): Compound detected in associated trip blank.

(DUP): Duplicate

(RESAMPLE): Resampled

TABLE 3-2
SUMMARY OF VOLATILE ORGANIC COMPOUNDS DETECTED IN
GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS
AUGUST 1996-SEPTEMBER 1996
 (concentrations in µg/l)
 Values above State and Federal MCLs are shaded

Sampling Location	Sample Number	Sampling Date	Carbon Tetrachloride	TCE	PCE	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds
MW-17										
Screen 1	MW-961-77	8/14/96	--	--	--	--	--	--	--	4.3(B) Acetone
Screen 2	MW-961-78	8/14/96	--	--	--	--	--	--	3.8	4.5(B) Acetone
Screen 3	MW-961-79	8/13/96	2.0	7.9	--	--	--	--	7.5	--
Screen 4	MW-961-80	8/13/96	--	9.5	0.5	--	--	--	1.1	--
Screen 5	MW-961-81	8/13/96	--	1.3	0.6	--	--	--	1.7	3.4(B) Acetone
MW-18										
Screen 1	MW-961-82	8/13/96	--	--	--	--	--	--	1.6	--
Screen 2	MW-961-83	8/12/96	--	--	--	--	--	--	7.3	--
Screen 3	MW-961-84	8/12/96	0.7	4.7	2.8	--	--	--	5.1	--
Screen 3 (DUP)	MW-961-85	8/12/96	1.0	5.2	3.5	--	--	0.7	5.0	--
Screen 4	MW-961-86	8/12/96	2.2	--	0.7	--	--	--	0.5	--
Screen 5	MW-961-87	8/12/96	--	--	--	--	--	--	--	--
MW-19										
Screen 1	MW-961-88	8/15/96	--	--	--	--	--	--	0.9	3.7(B) Acetone
Screen 1 (RESAMPLE)	MW-961-88A	8/30/96	--	--	--	--	--	--	0.7	--
Screen 2	MW-961-89	8/8/96	--	--	0.8	--	--	--	--	3.0(B) Acetone
Screen 3	MW-961-90	8/8/96	--	--	3.1	--	--	--	--	2.6(B) Acetone
Screen 4	MW-961-91	8/8/96	0.5	1.5	--	--	--	--	2.1	--
Screen 5	MW-961-92	8/8/96	--	--	3.0	--	--	--	0.6	1.6(B) Unknown Scan #940 4.9 (B) Acetone

(B): Indicates compound also detected in the laboratory method blank.

--: Indicates not detected.

(TB): Compound detected in associated trip blank.

(DUP): Duplicate

(RESAMPLE): Resampled

TABLE 3-2
SUMMARY OF VOLATILE ORGANIC COMPOUNDS DETECTED IN
GROUNDWATER SAMPLES COLLECTED FROM JPL MONITORING WELLS
AUGUST 1996-SEPTEMBER 1996

(concentrations in µg/l)

Values above State and Federal MCLs are shaded

Sampling Location	Sample Number	Sampling Date	Carbon Tetrachloride	TCE	PCE	1,2-DCA	1,1-DCE	Freon 113	Total Trihalomethanes (Primarily Chloroform)	Other Volatile Organic Compounds
MW-20										
Screen 1	MW-961-93	8/15/96	--	--	--	--	--	--	0.7	3.4(B) Acetone
Screen 2	MW-961-94	8/15/96	--	--	--	--	--	--	7.7	4.0(B) Acetone
Screen 3	MW-961-95	8/15/96	--	--	--	--	--	--	--	2.7(B) Acetone
Screen 4	MW-961-96	8/15/96	--	--	--	--	--	--	--	3.8(B) Acetone
Screen 5	MW-961-97	8/14/96	--	--	--	--	--	--	--	4.8(B) Acetone
MW-21										
Screen 1	MW-961-98	8/19/96	--	0.33	0.7	--	--	--	1.8	2.3(B) Acetone
Screen 2	MW-961-99	8/19/96	--	--	0.9	--	--	--	0.5	--
Screen 3	MW-961-100	8/16/96	--	0.7	1.5	--	--	--	0.5	--
Screen 4	MW-961-101	8/16/96	--	0.8	4.2	--	--	--	--	--
Screen 5	MW-961-102	8/16/96	--	--	4.5	--	--	--	0.6	--
Practical Quantitation Limit			0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5
California Maximum Contaminant Level			0.5	5.0	5.0	0.5	6.0	1,200	100	-- Methylene chloride -- Acetone 5.0 1,1-Dichloroethane
EPA Region IX Maximum Contaminant Level			5.0	5.0	5.0	5.0	7.0	--	100	5.0 Methylene chloride -- Acetone -- 1,1-Dichloroethane

(B): Indicates compound also detected in the laboratory method blank.

--: Indicates not detected.

(TB): Compound detected in associated trip blank.

(DUP): Duplicate

(RESAMPLE): Resampled

TABLE 3-3
SUMMARY OF METALS DETECTED IN GROUNDWATER
SAMPLES COLLECTED FROM JPL MONITORING WELLS,
AUGUST 1996-SEPTEMBER 1996
(concentrations in mg/l)

Sample Location	Sample Number	Sampling Date	Aluminum	Arsenic	Lead	Chromium		Hexavalent Chromium	Field Turbidity (NTUs)
						Total	Dissolved		
MW-1	MW-961-01	9/11/96	--	--	--	--	NA	--	0.8
MW-1	MW-961-02	9/11/96	NA	NA	NA	NA	--	NA	0.8
MW-3									
Screen 1	MW-961-03	9/5/96	--	--	--	--	NA	--	7.2
Screen 1	MW-961-04	9/5/96	NA	NA	NA	NA	--	NA	7.2
Screen 2	MW-961-05	9/5/96	--	--	--	--	NA	--	1.7
Screen 2	MW-961-06	9/5/96	NA	NA	NA	NA	--	NA	1.7
Screen 3	MW-961-07	9/5/96	--	--	--	--	NA	--	5.2
Screen 3	MW-961-08	9/5/96	NA	NA	NA	NA	--	NA	5.2
Screen 4	MW-961-09	9/4/96	--	--	--	--	NA	--	4.3
Screen 4	MW-961-10	9/4/96	NA	NA	NA	NA	--	NA	4.3
Screen 5	MW-961-11	9/4/96	0.055	0.011	--	--	NA	--	1.5
Screen 5	MW-961-12	9/4/96	NA	NA	NA	NA	--	NA	1.5
MW-4									
Screen 1	MW-961-13	8/23/96	--	--	--	--	NA	--	2.6
Screen 1	MW-961-14	8/23/96	NA	NA	NA	NA	--	NA	2.6
Screen 2	MW-961-15	8/23/96	--	--	--	0.023	NA	--	3.8
Screen 2	MW-961-16	8/23/96	NA	NA	NA	NA	--	NA	3.8
Screen 2 (DUP)	MW-961-17	8/23/96	--	--	--	0.021	NA	--	3.8
Screen 2 (DUP)	MW-961-18	8/23/96	NA	NA	NA	NA	--	NA	3.8
Screen 3	MW-961-19	8/22/96	--	--	--	--	NA	--	0.6
Screen 3	MW-961-20	8/22/96	NA	NA	NA	NA	--	NA	0.6
Screen 4	MW-961-21	8/22/96	--	--	--	--	NA	--	3.0
Screen 4	MW-961-22	8/22/96	NA	NA	NA	NA	--	NA	3.0
Screen 5	MW-961-23	8/22/96	--	--	--	--	NA	--	4.5
Screen 5	MW-961-24	8/22/96	NA	NA	NA	NA	--	NA	4.5
MW-5	MW-961-25	9/10/96	--	--	--	--	NA	--	2.7
MW-5	MW-961-26	9/10/96	NA	NA	NA	NA	--	NA	2.7
MW-6	MW-961-27	9/6/96	--	--	--	0.050	NA	--	4.5
MW-6	MW-961-28	9/6/96	NA	NA	NA	NA	--	NA	4.5
MW-7	MW-961-29	9/10/96	--	--	--	0.013	NA	0.007	4.8
MW-7	MW-961-30	9/10/96	NA	NA	NA	NA	0.010	NA	4.8
MW-7 DUP	MW-961-31	9/10/96	--	--	--	0.012	NA	0.011	4.8
MW-7 DUP	MW-961-32	9/10/96	NA	NA	NA	NA	--	NA	4.8
MW-8	MW-961-33	9/11/96	0.160	--	--	--	NA	--	4.0
MW-8	MW-961-34	9/11/96	NA	NA	NA	NA	--	NA	4.0
MW-9	MW-961-35	9/11/96	0.110	--	--	--	NA	--	2.1
MW-9	MW-961-36	9/11/96	NA	NA	NA	NA	--	NA	2.1

TABLE 3-3
SUMMARY OF METALS DETECTED IN GROUNDWATER
SAMPLES COLLECTED FROM JPL MONITORING WELLS,
AUGUST 1996-SEPTEMBER 1996
(concentrations in mg/l)

Sample Location	Sample Number	Sampling Date	Aluminum	Arsenic	Lead	Chromium		Hexavalent Chromium	Field Turbidity (NTUs)
						Total	Dissolved		
MW-10	MW-961-37	9/9/96	0.190	--	--	0.011	NA	0.010	4.5
MW-10	MW-961-38	9/9/96	NA	NA	NA	NA	0.020	NA	4.5
MW-10 DUP	MW-961-39	9/9/96	--	--	--	0.012	NA	0.017	4.5
MW-10 DUP	MW-961-40	9/9/96	NA	NA	NA	NA	--	NA	4.5
MW-11									
Screen 1	MW-961-41	8/27/96	0.052	--	--	--	NA	--	4.0
Screen 1	MW-961-42	8/27/96	NA	NA	NA	NA	--	NA	4.0
Screen 2	MW-961-43	8/27/96	0.050	--	--	--	NA	--	4.5
Screen 2	MW-961-44	8/27/96	NA	NA	NA	NA	--	NA	4.5
Screen 3	MW-961-45	8/26/96	0.077	--	--	--	NA	--	0.5
Screen 3	MW-961-46	8/26/96	NA	NA	NA	NA	--	NA	0.5
Screen 4	MW-961-48	8/26/96	--	--	--	--	NA	--	3.9
Screen 4	MW-961-47	8/26/96	NA	NA	NA	NA	--	NA	3.9
Screen 5	MW-961-49	8/26/96	0.055	0.007	--	--	NA	--	0.6
Screen 5	MW-961-50	8/26/96	NA	NA	NA	NA	--	NA	0.6
MW-12									
Screen 1	MW-961-51	8/29/96	1.10	--	0.0044	--	NA	--	50.4
Screen 1	MW-961-52	8/29/96	NA	NA	NA	NA	--	NA	50.4
Screen 2	MW-961-53	9/3/96	--	--	0.024	--	NA	--	4.0
Screen 2	MW-961-54	9/3/96	NA	NA	NA	NA	--	NA	4.0
Screen 3	MW-961-55	8/28/96	--	--	--	--	NA	--	2.5
Screen 3	MW-961-56	8/28/96	NA	NA	NA	NA	--	NA	2.5
Screen 4	MW-961-57	8/28/96	0.086	--	0.0045	--	NA	--	1.8
Screen 4	MW-961-58	8/28/96	NA	NA	NA	NA	--	NA	1.8
Screen 5	MW-961-59	8/27/96	0.060	--	--	--	NA	--	2.0
Screen 5	MW-961-60	8/27/96	NA	NA	NA	NA	--	NA	2.0
MW-13	MW-961-61	9/9/96	0.092	--	--	0.046	NA	0.047	4.1
MW-13	MW-961-62	9/9/96	NA	NA	NA	NA	0.044	NA	4.1
MW-14									
Screen 1	MW-961-63	8/21/96	--	--	--	--	NA	--	3.3
Screen 1	MW-961-64	8/21/96	NA	NA	NA	NA	--	NA	3.3
Screen 2	MW-961-65	8/21/96	--	--	--	--	NA	--	4.4
Screen 2	MW-961-66	8/21/96	NA	NA	NA	NA	--	NA	4.4
Screen 3	MW-961-67	8/21/96	--	--	--	--	NA	--	1.7
Screen 3	MW-961-68	8/21/96	NA	NA	NA	NA	--	NA	1.7
Screen 4	MW-961-69	8/20/96	--	--	--	--	NA	--	3.1
Screen 4	MW-961-70	8/20/96	NA	NA	NA	NA	--	NA	3.1
Screen 5	MW-961-71	8/20/96	--	--	--	--	NA	--	1.5
Screen 5	MW-961-72	8/20/96	NA	NA	NA	NA	--	NA	1.5

TABLE 3-3
SUMMARY OF METALS DETECTED IN GROUNDWATER
SAMPLES COLLECTED FROM JPL MONITORING WELLS,
AUGUST 1996-SEPTEMBER 1996
(concentrations in mg/l)

Sample Location	Sample Number	Sampling Date	Aluminum	Arsenic	Lead	Chromium		Hexavalent Chromium	Field Turbidity (NTUs)
						Total	Dissolved		
MW-15	MW-961-73	9/10/96	--	--	--	--	NA	--	1.3
MW-15	MW-961-74	9/10/96	NA	NA	NA	NA	--	NA	1.3
MW-16	MW-961-75	9/6/96	0.11	--	--	0.018	NA	--	3.4
MW-16	MW-961-76	9/6/96	NA	NA	NA	NA	--	NA	3.4
MW-17									
Screen 1	MW-961-77	8/14/96	--	--	--	N/A	N/A	N/A	1.0
Screen 2	MW-961-78	8/14/96	0.33	--	--	N/A	N/A	N/A	4.5
Screen 3	MW-961-79	8/13/96	0.12	--	0.0023	N/A	N/A	N/A	4.9
Screen 4	MW-961-80	8/13/96	0.26	--	--	N/A	N/A	N/A	2.8
Screen 5	MW-961-81	8/13/96	0.21	--	--	N/A	N/A	N/A	5.0
MW-18									
Screen 1	MW-961-82	8/13/96	--	--	--	N/A	N/A	N/A	0.9
Screen 2	MW-961-83	8/12/96	--	--	--	N/A	N/A	N/A	3.5
Screen 3	MW-961-84	8/12/96	--	--	--	N/A	N/A	N/A	4.2
Screen 4	MW-961-86	8/12/96	--	--	--	N/A	N/A	N/A	2.0
Screen 5	MW-961-87	8/12/96	--	--	--	N/A	N/A	N/A	2.8
MW-19									
Screen 1	MW-961-88	8/8/96	--	--	--	N/A	N/A	N/A	5.0
Screen 2	MW-961-89	8/8/96	--	--	--	N/A	N/A	N/A	4.5
Screen 3	MW-961-90	8/8/96	--	--	--	N/A	N/A	N/A	3.0
Screen 4	MW-961-91	8/8/96	--	--	--	N/A	N/A	N/A	4.2
Screen 5	MW-961-92	8/8/96	--	--	--	N/A	N/A	N/A	4.9
MW-20									
Screen 1	MW-961-93	8/15/96	--	--	--	N/A	N/A	N/A	3.5
Screen 2	MW-961-94	8/15/96	--	--	--	N/A	N/A	N/A	3.9
Screen 3	MW-961-95	8/15/96	--	--	--	N/A	N/A	N/A	1.7
Screen 4	MW-961-96	8/15/96	--	--	--	N/A	N/A	N/A	1.0
Screen 5	MW-961-97	8/14/96	--	--	--	N/A	N/A	N/A	1.8
MW-21									
Screen 1	MW-961-98	8/19/96	--	--	--	N/A	N/A	N/A	0.9
Screen 2	MW-961-99	8/19/96	--	--	--	N/A	N/A	N/A	2.1
Screen 3	MW-961-10	8/16/96	--	--	--	N/A	N/A	N/A	4.6
Screen 4	MW-961-10	8/16/96	--	--	--	N/A	N/A	N/A	2.5
Screen 5	MW-961-10	8/16/96	0.012	--	--	N/A	N/A	N/A	4.9
Practical Quantitation Limit			0.050	0.005	0.002	0.01	0.01	0.005	
Calif. Maximum Contaminant Level			1.0	0.05	0.05	0.05	--	--	
EPA Maximum Contaminant Level			0.05-0.2 ⁽¹⁾	0.05	(2)	0.1	--	--	

N/A: Not analyzed

(1): Secondary MCL

(DUP): Duplicate

(2): Treatment technique and public notification triggered at 0.015 mg/l

--: Not detected at laboratory detection limits

TABLE 4-1
SUMMARY OF WATER CHEMISTRY RESULTS FOR GROUNDWATER SAMPLES
COLLECTED FROM JPL MONITORING WELLS AUGUST/SEPTEMBER 1998
(All concentrations in mg/L)

Well Number	ANIONS						CATIONS					Measured Alkalinity	Measured pH
	Cl	CO ₃	HCO ₃	NO ₃	SO ₄	H ₂ PO ₄	Na	Mg	K	Ca	Fe		
MW-1	12	0.655	201	1.2	36	<0.05 ⁽²⁾	28	15	3.1	49	n/d	165	7.7
MW-3													
Screen 1	6.6	1.75	170	0.6	28	<0.05 ⁽²⁾	18	14	2.6	40	n/d	140	8.2
Screen 2	11	9.86	191	0.8	33	<0.05 ⁽²⁾	20	16	2.6	47	n/d	160	8.9
Screen 3	21	7.38	143	0.2	13	<0.05 ⁽²⁾	41	9.4	3	21	n/d	120	8.9
Screen 4	9	3.35	163	0.3	17	<0.05 ⁽²⁾	51	8.3	2.2	17	n/d	135	8.5
Screen 5	9.2	4.69	144	<0.200 ⁽¹⁾	20	<0.05 ⁽²⁾	70	1.3	1.2	8.9	n/d	120	8.7
MW-4													
Screen 1	9.2	0.312	152	1	28	<0.05 ⁽²⁾	17	12	2.5	30	n/d	125	7.5
Screen 2	40	0.299	183	8.2	57	0.08	26	23	2.2	55	n/d	150	7.4
Screen 3	22	1.19	183	7.7	11	0.07	33	14	1.8	38	0.11	150	8
Screen 4	18	1.27	195	5.4	8.7	0.07	39	11	1.8	32	0.82	160	8
Screen 5	8.4	1.6	195	1.1	17	0.05	38	9.6	1.9	31	0.62	160	8.1
MW-5	8	0.219	134	1.7	28	<0.05 ⁽²⁾	15	12	2.7	38	n/d	110	7.4
MW-6	82	0.189	146	11	69	0.08	28	27	2	78	n/d	120	7.3
MW-7	19	0.378	146	6	39	<0.05 ⁽²⁾	20	18	2.8	52	n/d	120	7.6
MW-8	14	0.189	146	2.3	31	0.06	2.5	13	2.5	42	n/d	120	7.3
MW-9	14	0.253	195	<0.200 ⁽¹⁾	37	<0.05 ⁽²⁾	23	15	3.3	49	n/d	160	7.3
MW-10	43	0.3	232	9.8	86	0.05	21	30	3	83	n/d	190	7
MW-11													
Screen 1	18	2.04	249	0.2	38	0.5	27	21	3.5	48	n/d	205	8.1
Screen 2	15	1.69	207	0.6	39	0.1	23	18	3.1	39	n/d	170	8.1
Screen 3	12	2.26	219	0.2	28	0.08	28	14	2.3	38	n/d	180	8.2
Screen 4	11	2.69	200	<0.200 ⁽¹⁾	25	<0.05 ⁽²⁾	26	13	2.4	34	n/d	165	8.3
Screen 5	11	1.69	164	<0.200 ⁽¹⁾	19	<0.05 ⁽²⁾	48	2.2	1.1	22	n/d	135	8.2
MW-12													
Screen 1	9.7	0.504	195	0.7	36	0.12	43	12	4.4	38	n/d	160	7.6
Screen 2	14	0.567	219	1.7	40	<0.05 ⁽²⁾	26	17	3.1	53	n/d	180	7.6
Screen 3	16	1.46	225	1.2	34	<0.05 ⁽²⁾	25	14	2.9	50	n/d	185	8
Screen 4	15	1.5	231	1.3	32	<0.05 ⁽²⁾	26	13	2.3	52	n/d	190	8
Screen 5	13	1.38	213	1	19	<0.05 ⁽²⁾	40	10	2.2	40	n/d	175	8
MW-13	24	0.3	195	9.9	66	<0.05 ⁽²⁾	26	23	2.9	63	n/d	160	7.4
MW-14													
Screen 1	120	0.245	238	18	205	0.07	40	50	2.5	135	0.41	195	7.2
Screen 2	125	0.333	323	15	180	0.06	36	58	2.6	145	1.4	265	7.2
Screen 3	83	1.6	195	11	97	<0.05 ⁽²⁾	41	41	3.6	59	0.23	160	8.1
Screen 4	28	1.23	189	10	17	0.06	29	17	2	42	0.17	155	8
Screen 5	7.9	5.7	175	0.1	17	<0.05 ⁽²⁾	42	12	2.5	14	0.21	145	8.7

Notes:

(1) Based on a detection limit of 0.200 mg/L for NO₃

(2) Based on a detection limit of 0.05 mg/L for H₂PO₄

n/d = not detected

TABLE 4-1
SUMMARY OF WATER CHEMISTRY RESULTS FOR GROUNDWATER SAMPLES
COLLECTED FROM JPL MONITORING WELLS AUGUST/SEPTEMBER 1996
(All concentrations in mg/L)

Well Number	ANIONS						CATIONS					Measured Alkalinity	Measured pH
	Cl	CO ₃	HCO ₃	NO ₃	SO ₄	H ₂ PO ₄	Na	Mg	K	Ca	Fe		
MW-15	17	0.824	201	1.3	38	<0.05 ⁽²⁾	24	17	3.1	51	n/d	165	7.8
MW-16	20	0.339	165	13	0.79	<0.05 ⁽²⁾	25	20	2.5	51	n/d	135	7.5
MW-17													
Screen 1	5.4	0.325	158	0.8	29	0.05	15	13	2.2	33	0.11	130	7.5
Screen 2	6.1	0.816	158	0.6	25	0.07	15	13	2.3	30	0.54	130	7.9
Screen 3	11	0.701	171	1.2	28	<0.05 ⁽²⁾	21	16	1.9	32	0.91	140	7.8
Screen 4	11	1.1	213	2.4	26	<0.05 ⁽²⁾	30	15	1.8	45	1.2	175	7.9
Screen 5	12	1.04	201	2.2	28	<0.05 ⁽²⁾	35	14	1.7	40	2.3	165	7.9
MW-18													
Screen 1	15	0.15	146	2.9	32	<0.05 ⁽²⁾	15	14	2.1	35	0.053	120	7.2
Screen 2	9.5	0.299	183	1.1	31	<0.05 ⁽²⁾	18	15	2.2	39	0.52	150	7.4
Screen 3	12	0.752	231	0.8	29	<0.05 ⁽²⁾	22	19	2.8	47	0.8	190	7.7
Screen 4	8.1	1.54	188	0.6	23	<0.05 ⁽²⁾	34	11	1.2	34	0.13	155	8.1
Screen 5	10	8.31	161	<0.200 ⁽¹⁾	5.8	<0.05 ⁽²⁾	54	5.7	1.6	10	0.088	135	8.9
MW-19													
Screen 1	6.6	0.495	152	0.5	23	0.06	14	13	2.1	31	2.7	125	7.7
Screen 2	31	0.237	183	3.7	57	0.05	15	23	1.5	49	5.5	150	7.3
Screen 3	65	0.477	232	9.8	59	<0.05 ⁽²⁾	30	32	2.2	74	0.75	190	7.5
Screen 4	29	0.873	213	4.1	38	<0.05 ⁽²⁾	26	22	1.7	51	0.97	175	7.8
Screen 5	60	1	244	8.5	54	<0.05 ⁽²⁾	33	30	2.2	73	0.38	200	7.8
MW-20													
Screen 1	84	0.775	189	19	155	<0.05 ⁽²⁾	25	38	3.9	96	1.7	155	7.8
Screen 2	12	13	159	0.8	30	<0.05 ⁽²⁾	54	11	2.2	13	0.34	135	9.1
Screen 3	23	6.29	193	1	18	<0.05 ⁽²⁾	59	14	2.5	18	0.12	160	8.7
Screen 4	10	4.06	157	<0.200 ⁽¹⁾	22	0.07	71	2.4	1.2	7.1	0.13	130	8.6
Screen 5	7.8	11.2	172	<0.200 ⁽¹⁾	23	<0.05 ⁽²⁾	71	2.6	1.7	11	0.058	145	9
MW-21													
Screen 1	75	0.075	183	17	105	0.13	31	32	2	92	0.12	150	6.8
Screen 2	120	1.25	305	5.2	180	0.07	56	51	3.4	120	0.09	250	7.8
Screen 3	92	1.17	286	8.6	66	<0.05 ⁽²⁾	40	37	3.1	110	0.83	235	7.8
Screen 4	67	0.795	244	10	70	<0.05 ⁽²⁾	31	30	2.5	86	0.45	200	7.7
Screen 5	56	1.16	225	9.6	65	<0.05 ⁽²⁾	34	29	2.8	68	2.8	185	7.9

Notes:

(1) Based on a detection limit of 0.200 mg/L for NO₃

(2) Based on a detection limit of 0.05 mg/L for H₂PO₄

n/d = not detected

TABLE 4-2
QUALITY CONTROL CHECKS OF WATER CHEMISTRY
DATA FROM GROUNDWATER SAMPLES COLLECTED
FROM JPL MONITORING WELLS
(AUGUST/SEPTEMBER 1996)

Well Number	Screen Number	Total Anions	Total Cations	Total Ions	Charge Balance	Measured TDS	Calculated TDS	Measured TDS/Calculated TDS
MW-1	-	4.47	5	9.47	5.60	270	243	1.1
MW-3	1	3.61	4.02	7.63	5.37	230	194	1.2
	2	4.25	4.62	8.87	4.17	260	226	1.2
	3	3.28	3.69	6.97	5.98	190	181	1.0
	4	3.33	3.82	7.15	6.85	210	186	1.1
	5	3.08	3.63	6.71	8.20	200	183	1.1
MW-4	1	3.41	3.3	6.71	1.64	220	175	1.3
	2	5.9	5.85	11.75	0.43	340	301	1.1
	3	4.4	4.55	8.95	1.68	270	218	1.2
	4	4.22	4.26	8.48	0.47	240	210	1.1
	5	3.87	4.05	7.92	2.27	220	203	1.1
MW-5	-	3.13	3.62	6.75	7.28	190	171	1.1
MW-6	-	6.93	7.32	14.25	2.74	440	367	1.2
MW-7	-	4.18	5.04	9.22	9.39	280	229	1.2
MW-8	-	3.6	3.36	6.96	3.45	230	179	1.3
MW-9	-	4.37	4.78	9.15	4.48	270	237	1.1
MW-10	-	7.5	7.64	15.14	0.92	440	390	1.1
MW-11	1	5.41	5.41	10.82	0.00	300	279	1.1
	2	4.68	4.53	9.21	1.63	260	240	1.1
	3	4.54	4.34	8.88	2.25	250	231	1.1
	4	4.13	3.98	8.11	1.85	230	210	1.1
	5	3.41	3.4	6.81	0.16	180	184	1.0
MW-12	1	4.27	4.88	9.15	8.67	280	240	1.2
	2	4.95	5.28	10.23	3.23	300	263	1.1
	3	4.94	4.83	9.77	1.13	270	254	1.1
	4	4.98	4.87	9.85	1.12	260	256	1.0
	5	4.33	4.63	8.96	3.35	240	230	1.0
MW-13	-	5.96	6.27	12.23	2.53	370	311	1.2
MW-14	1	12.8	12.72	25.52	0.31	780	688	1.1
	2	13.6	13.72	27.32	0.44	810	721	1.1
	3	8.35	8.24	16.59	0.66	480	432	1.1
	4	4.96	4.83	9.79	1.33	290	238	1.2
	5	3.48	3.59	7.07	1.56	210	183	1.1
MW-15	-	4.66	5.09	9.75	4.41	290	250	1.2
MW-16	-	4.98	5.37	10.35	3.77	330	213	1.5

Note: Shaded areas represent values that fall slightly outside the ideal range for each particular QA/QC test

TABLE 4-2
 QUALITY CONTROL CHECKS OF WATER CHEMISTRY
 DATA FROM GROUNDWATER SAMPLES COLLECTED
 FROM JPL MONITORING WELLS
 (AUGUST/SEPTEMBER 1996)

Well Number	Screen Number	Total Anions	Total Cations	Total Ions	Charge Balance	Measured TDS	Calculated TDS	Measured TDS/Calculated TDS
MW-17	1	3.41	3.44	6.85	0.44	200	176	1.1
	2	3.34	3.29	6.63	0.75	200	170	1.2
	3	3.78	3.9	7.68	1.56	210	195	1.1
	4	4.52	4.85	9.37	3.52	270	236	1.1
	5	4.38	4.73	9.11	3.84	270	231	1.2
MW-18	1	3.7	3.62	7.32	1.09	230	188	1.2
	2	3.99	4.04	8.03	0.62	250	206	1.2
	3	4.8	4.96	9.76	1.64	290	247	1.2
	4	3.85	4.13	7.98	3.51	240	205	1.2
	5	3.1	3.36	6.46	4.02	190	168	1.1
MW-19	1	3.2	3.3	6.5	1.54	190	165	1.2
	2	5.33	5.06	10.39	2.60	340	270	1.3
	3	7.56	7.73	15.29	1.11	460	386	1.2
	4	5.4	5.56	10.96	1.46	320	277	1.2
	5	7.42	7.64	15.06	1.46	480	381	1.3
MW-20	1	9.49	9.15	18.64	1.82	560	494	1.1
	2	3.72	3.97	7.69	3.25	230	204	1.1
	3	4.3	4.7	9	4.44	250	232	1.1
	4	3.34	3.67	7.01	4.71	210	192	1.1
	5	3.6	3.9	7.5	4.00	220	204	1.1
MW-21	1	8.52	8.67	17.19	0.87	500	444	1.1
	2	12.5	12.77	25.27	1.07	810	686	1.2
	3	9.7	10.4	20.1	3.48	550	518	1.1
	4	8.06	8.21	16.27	0.92	470	417	1.1
	5	7.32	7.37	14.69	0.34	420	375	1.1

Note: Shaded areas represent values that fall slightly outside the ideal range for each particular QA/QC test

TABLE 5-1
GROUNDWATER MONITORING WELL WATER LEVEL MEASUREMENTS
(AUGUST, 1996)

Well Number	Screen Number	Date Measured	Depth to Water (ft)	Reference Elevation (ft msl)	Water Level Elevation (ft msl)
MW-1		8/5/96	25.26	1116.70	1091.44
MW-3	1 (top)	8/5/96	139.96	1100.34	960.38
	2	8/5/96	152.83	1100.34	947.51
	3	8/5/96	158.03	1100.34	942.31
	4	8/5/96	236.92	1100.34	863.42
	5	8/5/96	267.12	1100.34	833.22
MW-4	1 (top)	8/5/96	113.04	1082.84	969.80
	2	8/5/96	128.66	1082.84	954.18
	3	8/5/96	131.71	1082.84	951.13
	4	8/5/96	142.57	1082.84	940.27
	5	8/5/96	220.83	1082.84	862.01
MW-5		8/5/96	102.60	1071.60	969.00
MW-6		8/5/96	207.00	1188.52	981.52
MW-7		8/5/96	241.62	1212.88	971.26
MW-8		8/5/96	167.12	1139.53	972.41
MW-9		8/5/96	20.96	1106.02	1085.06
MW-10		8/5/96	117.45	1087.71	970.26
MW-11	1 (top)	8/5/96	118.16	1139.30	1021.14
	2	8/5/96	169.95	1139.30	969.35
	3	8/5/96	186.82	1139.30	952.48
	4	8/5/96	192.95	1139.30	946.35
	5	8/5/96	258.12	1139.30	881.18
MW-12	1 (top)	8/5/96	127.26	1102.14	974.88
	2	8/5/96	145.68	1102.14	956.46
	3	8/5/96	150.10	1102.14	952.04
	4	8/5/96	165.59	1102.14	936.55
	5	8/5/96	228.79	1102.14	873.35
MW-13		8/5/96	210.96	1183.47	972.51
MW-14	1 (top)	8/5/96	190.31	1173.47	983.16
	2	8/5/96	191.61	1173.47	981.86
	3	8/5/96	192.02	1173.47	981.45
	4	8/5/96	191.98	1173.47	981.49
	5	8/5/96	193.11	1173.47	980.36
MW-15		8/5/96	32.66	1120.66	1088.00

TABLE 5-1
GROUNDWATER MONITORING WELL WATER LEVEL MEASUREMENTS
(AUGUST, 1996)

Well Number	Screen Number	Date Measured	Depth to Water (ft)	Reference Elevation (ft msl)	Water Level Elevation (ft msl)
MW-16		8/5/96	264.18	1236.27	972.09
MW-17	1 (top)	8/5/96	227.76	1191.21	963.45
	2	8/5/96	251.48	1191.21	939.73
	3	8/5/96	263.63	1191.21	927.58
	4	8/5/96	325.14	1191.21	866.07
	5	8/5/96	337.80	1191.21	853.41
MW-18	1 (top)	8/5/96	265.18	1225.41	960.23
	2	8/5/96	268.96	1225.41	956.45
	3	8/5/96	282.12	1225.41	943.29
	4	8/5/96	315.22	1225.41	910.19
	5	8/5/96	332.29	1225.41	893.12
MW-19	1 (top)	8/5/96	187.33	1142.94	955.61
	2	8/5/96	202.97	1142.94	939.97
	3	8/5/96	207.79	1142.94	935.15
	4	8/5/96	307.20	1142.94	835.74
	5	8/5/96	310.87	1142.94	832.07
MW-20	1 (top)	8/5/96	218.67	1165.05	946.38
	2	8/5/96	220.84	1165.05	944.21
	3	8/5/96	244.21	1165.05	920.84
	4	8/5/96	263.10	1165.05	901.95
	5	8/5/96	218.67	1165.05	946.38
MW-21	1 (top)	8/5/96	81.30	1059.10	977.80
	2	8/5/96	83.72	1059.10	975.38
	3	8/5/96	84.25	1059.10	974.85
	4	8/5/96	84.50	1059.10	974.60
	5	8/5/96	84.60	1059.10	974.50

TABLE 5-2
GROUNDWATER MONITORING WELL WATER LEVEL MEASUREMENTS
(SEPTEMBER, 1996)

Well Number	Screen Number	Date Measured	Depth to Water (ft)	Reference Elevation (ft msl)	Water Level Elevation (ft msl)
MW-1		9/12/96	32.39	1116.70	1084.31
MW-3	1 (top)	9/12/96	149.58	1100.34	950.76
	2	9/12/96	162.22	1100.34	938.12
	3	9/12/96	168.31	1100.34	932.03
	4	9/12/96	256.20	1100.34	844.14
	5	9/12/96	284.81	1100.34	815.53
MW-4	1 (top)	9/12/96	124.26	1082.84	958.58
	2	9/12/96	139.08	1082.84	943.76
	3	9/12/96	142.39	1082.84	940.45
	4	9/12/96	153.01	1082.84	929.83
	5	9/12/96	239.47	1082.84	843.37
MW-5		9/12/96	113.38	1071.60	958.22
MW-6		9/12/96	N/A ¹	1188.52	N/A ¹
MW-7		9/12/96	251.45	1212.88	961.43
MW-8		9/12/96	178.28	1139.53	961.25
MW-9		9/12/96	25.87	1106.02	1080.15
MW-10		9/12/96	127.67	1087.71	960.04
MW-11	1 (top)	9/12/96	123.97	1139.30	1015.33
	2	9/12/96	179.42	1139.30	959.88
	3	9/12/96	197.85	1139.30	941.45
	4	9/12/96	204.46	1139.30	934.84
	5	9/12/96	275.33	1139.30	863.97
MW-12	1 (top)	9/12/96	138.57	1102.14	963.57
	2	9/12/96	156.34	1102.14	945.80
	3	9/12/96	160.80	1102.14	941.34
	4	9/12/96	176.53	1102.14	925.61
	5	9/12/96	247.09	1102.14	855.05
MW-13		9/12/96	221.38	1183.47	962.09
MW-14	1 (top)	9/12/96	198.83	1173.47	974.64
	2	9/12/96	201.08	1173.47	972.39
	3	9/12/96	201.36	1173.47	972.11
	4	9/12/96	201.41	1173.47	972.06
	5	9/12/96	202.55	1173.47	970.92
MW-15		9/12/96	37.91	1120.66	1082.75

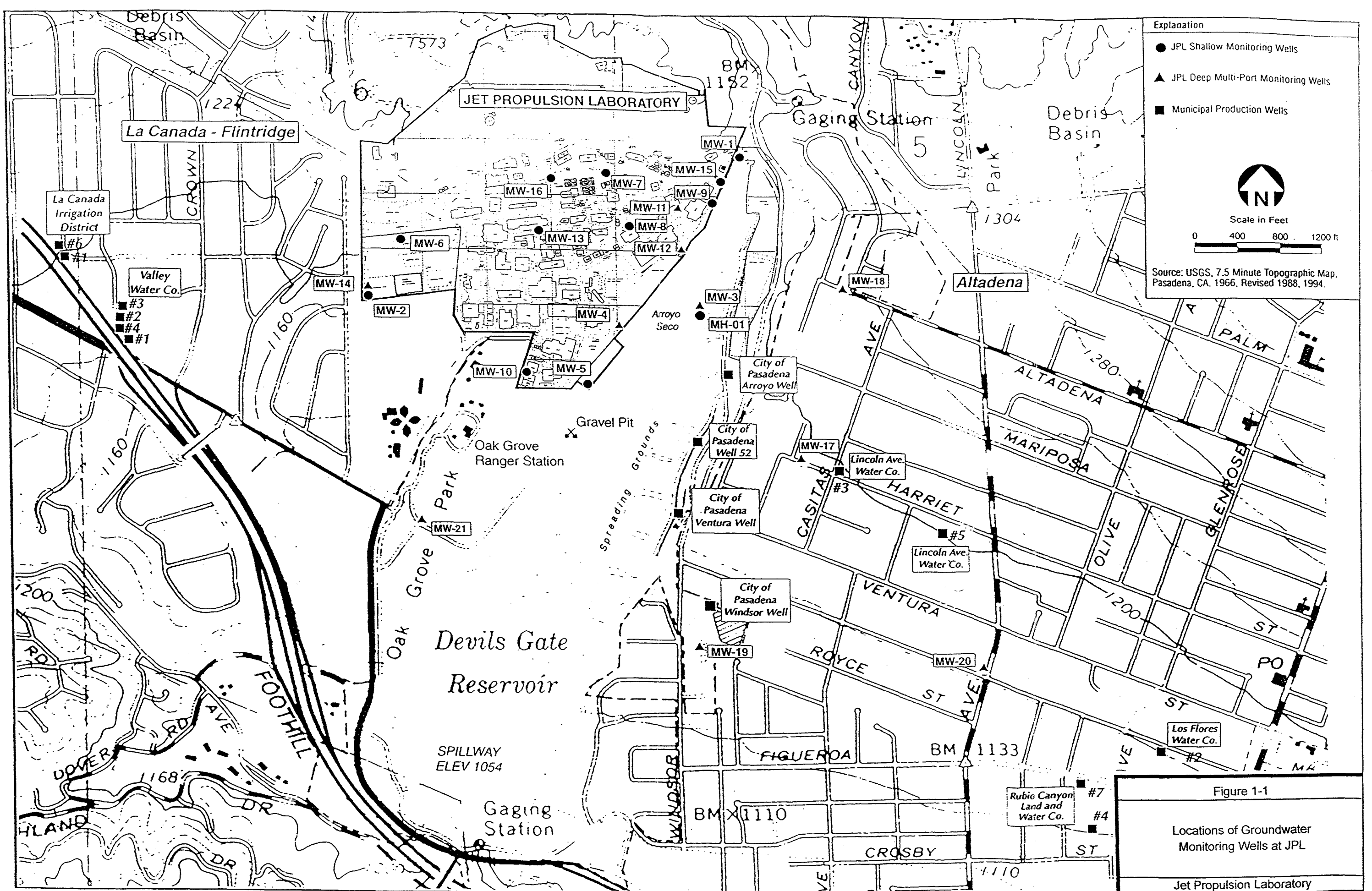
TABLE 5-2
GROUNDWATER MONITORING WELL WATER LEVEL MEASUREMENTS
(SEPTEMBER, 1996)

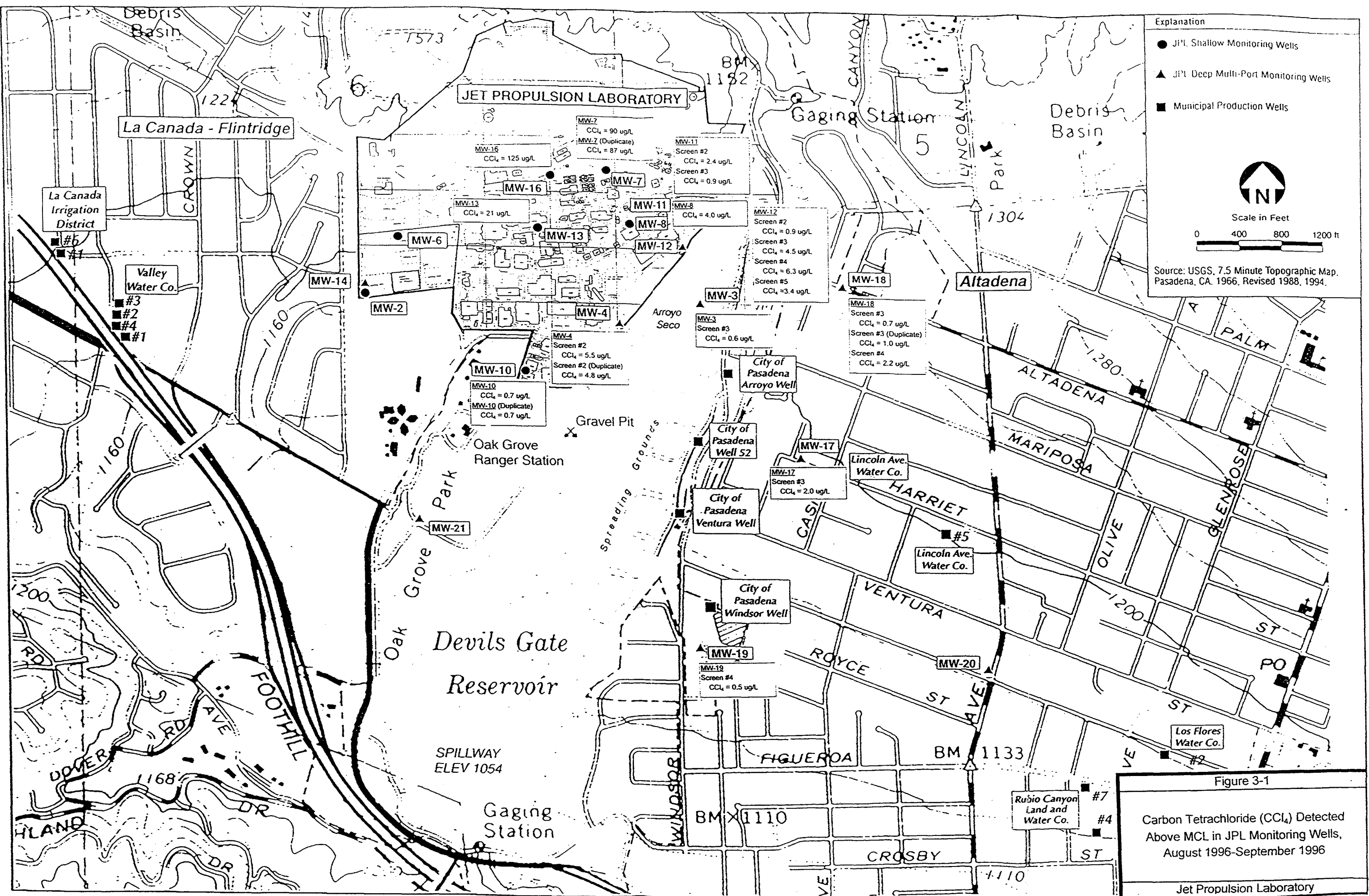
Well Number	Screen Number	Date Measured	Depth to Water (ft)	Reference Elevation (ft msl)	Water Level Elevation (ft msl)
MW-16		9/12/96	274.62	1236.27	961.65
MW-17	1 (top)	9/13/96	238.67	1191.21	952.54
	2	9/13/96	257.68	1191.21	933.53
	3	9/13/96	273.04	1191.21	918.17
	4	9/13/96	339.62	1191.21	851.59
	5	9/13/96	353.57	1191.21	837.64
MW-18	1 (top)	9/13/96	N/A ²	1225.41	N/A ²
	2	9/13/96	278.05	1225.41	947.36
	3	9/13/96	291.39	1225.41	934.02
	4	9/13/96	326.43	1225.41	898.98
	5	9/13/96	343.04	1225.41	882.37
MW-19	1 (top)	9/13/96	196.49	1142.94	946.45
	2	9/13/96	211.30	1142.94	931.64
	3	9/13/96	217.17	1142.94	925.77
	4	9/13/96	326.53	1142.94	816.41
	5	9/13/96	330.23	1142.94	812.71
MW-20	1 (top)	9/13/96	227.02	1165.05	938.03
	2	9/13/96	228.07	1165.05	936.98
	3	9/13/96	246.46	1165.05	918.59
	4	9/13/96	275.04	1165.05	890.01
	5	9/13/96	226.92	1165.05	938.13
MW-21	1 (top)	9/13/96	N/A ²	1059.10	N/A ²
	2	9/13/96	92.98	1059.10	966.12
	3	9/13/96	93.53	1059.10	965.57
	4	9/13/96	93.83	1059.10	965.27
	5	9/13/96	93.85	1059.10	965.25

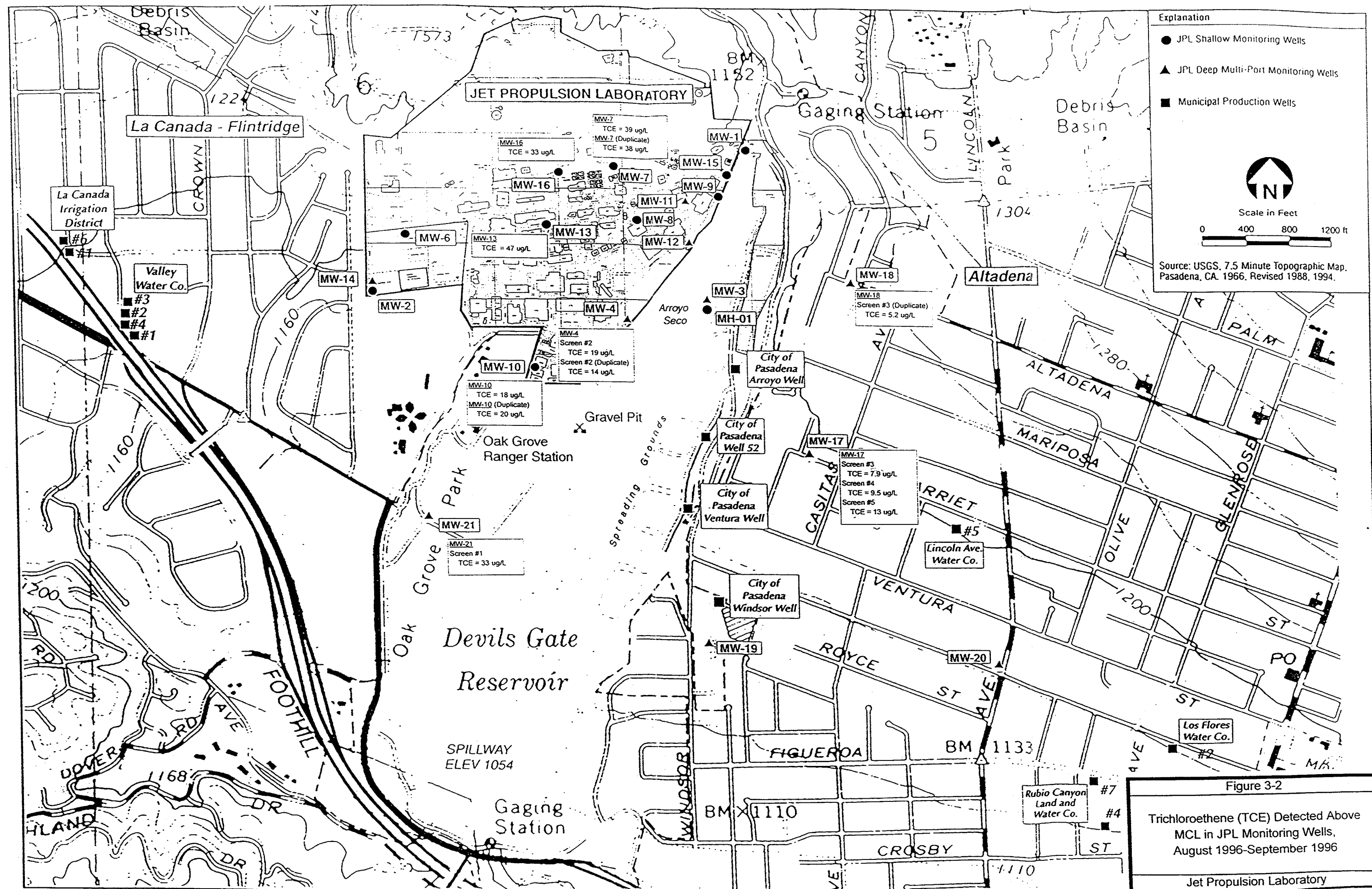
¹ Data from MW-6 was not available due to a malfunction in the data logger used to collect water levels.

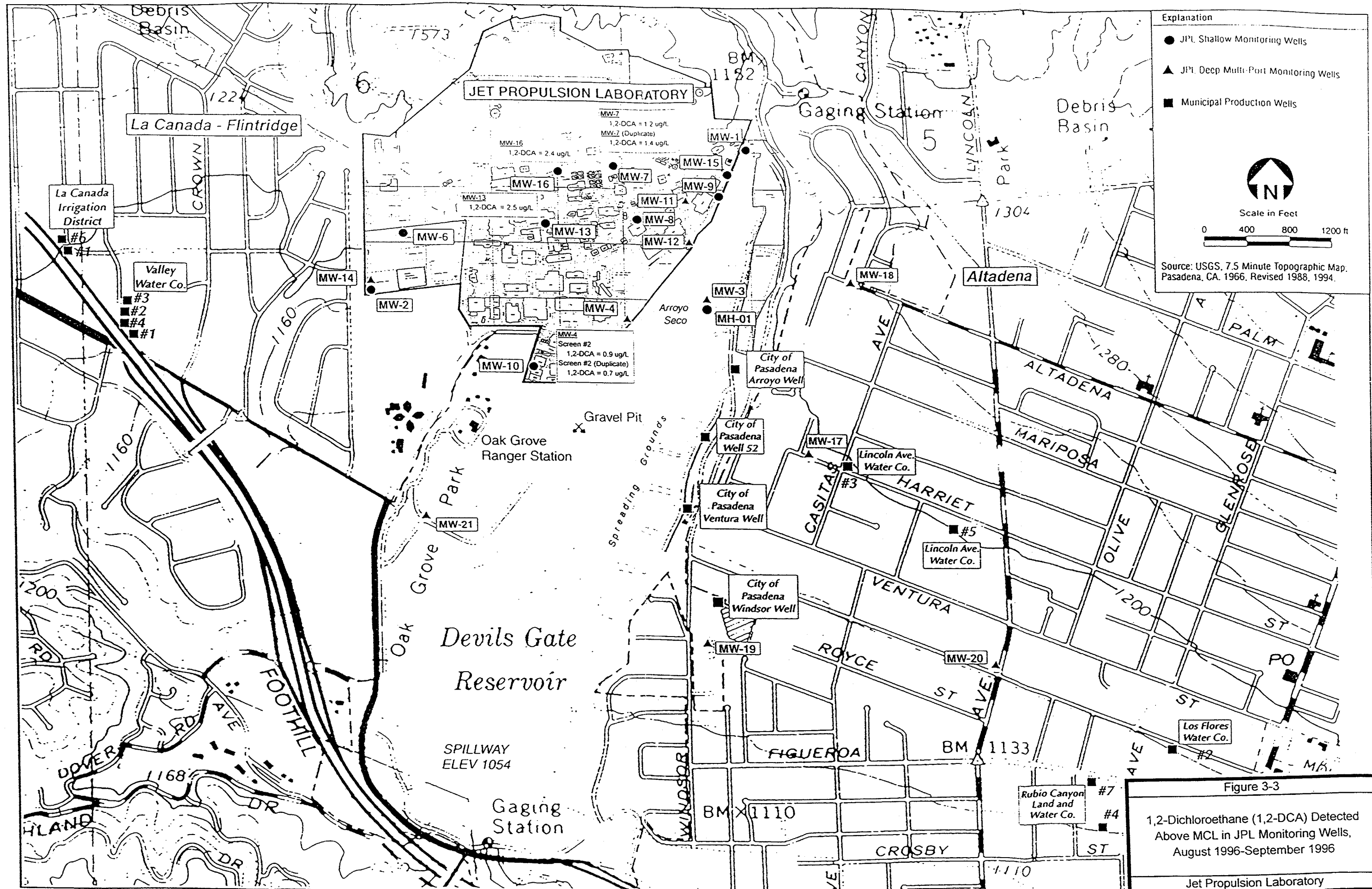
² There was no water over the first sample port in monitoring wells MW-18 and MW-21.

FIGURES









Explanation

- JPL Shallow Monitoring Wells
- ▲ JPL Deep Multi-Port Monitoring Wells
- Municipal Production Wells

Scale in Feet

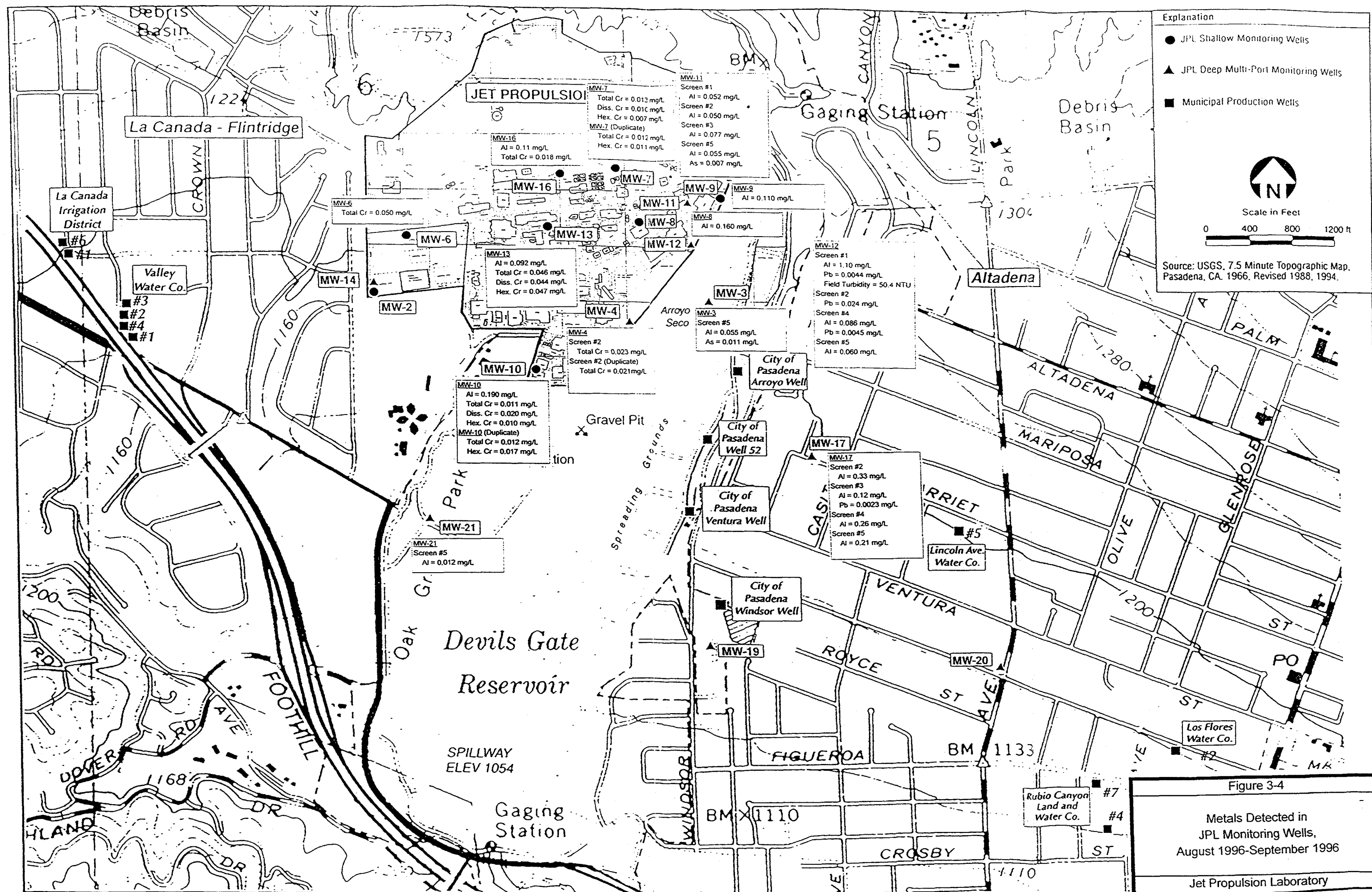
0 400 800 1200 ft

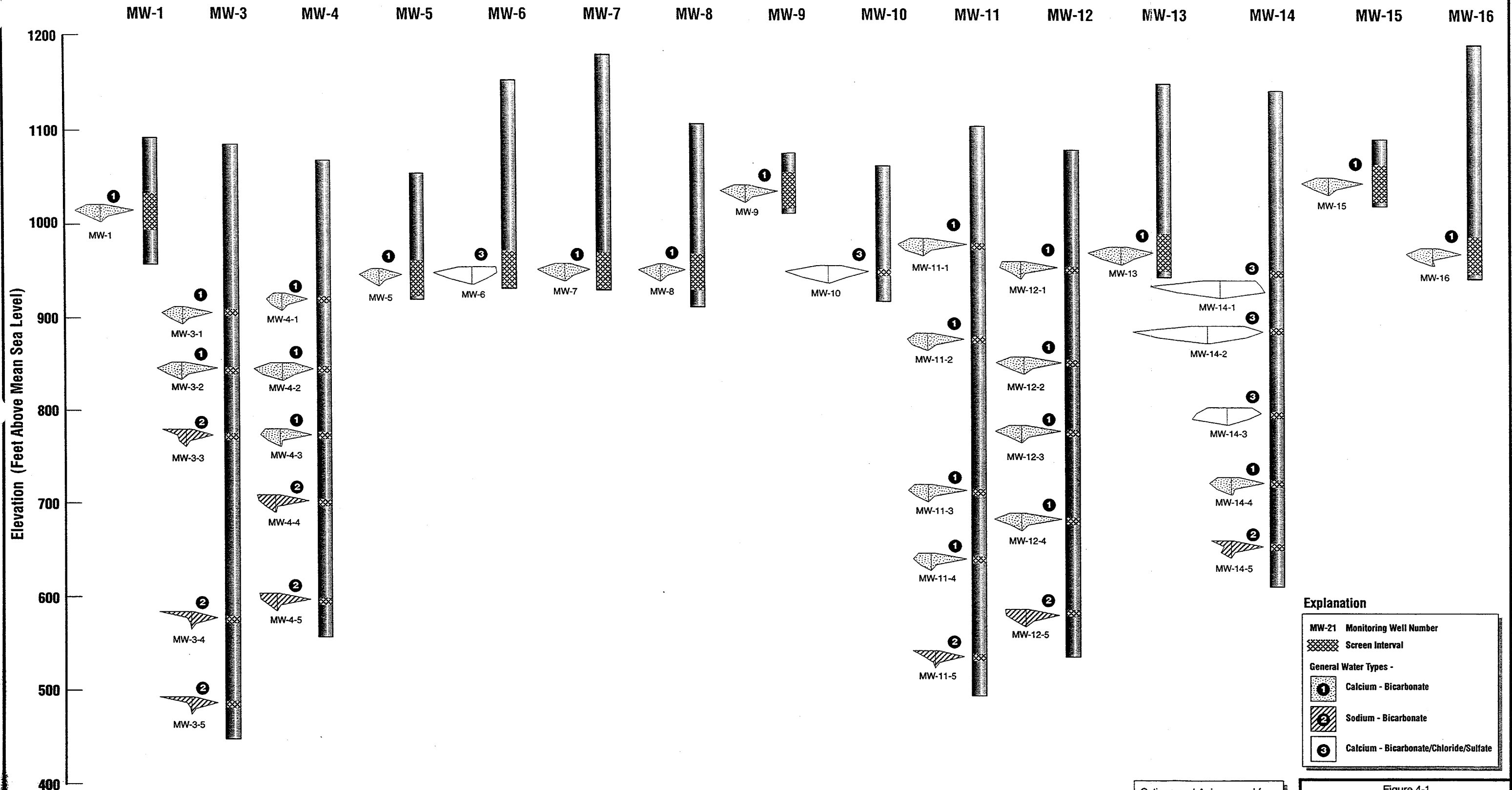
Source: USGS, 7.5 Minute Topographic Map, Pasadena, CA, 1966, Revised 1988, 1994.

Figure 3-3

1,2-Dichloroethane (1,2-DCA) Detected Above MCL in JPL Monitoring Wells, August 1996-September 1996

Jet Propulsion Laboratory





Cations and Anions used for Stiff Diagrams

Na+K	—	Cl
Ca	—	HCO ₃ +CO ₃
Mg	—	SO ₄
Fe	—	NO ₃

Explanation

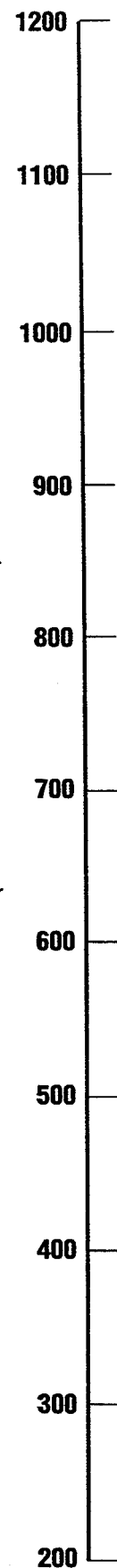
MW-21	Monitoring Well Number
Screen Interval	
General Water Types -	
1	Calcium - Bicarbonate
2	Sodium - Bicarbonate
3	Calcium - Bicarbonate/Chloride/Sulfate

Figure 4-1

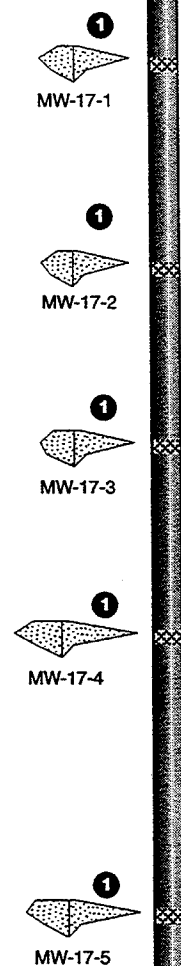
Stiff Diagrams for the August/September 1996 Groundwater Sampling Event for JPL On-Site Monitoring Wells

Jet Propulsion Laboratory
Pasadena, California

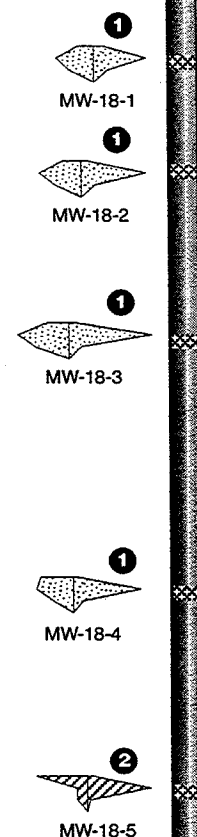
Elevation (Feet Above Mean Sea Level)



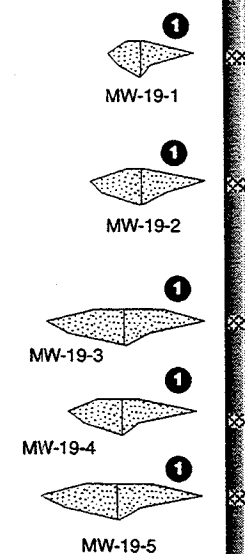
MW-17



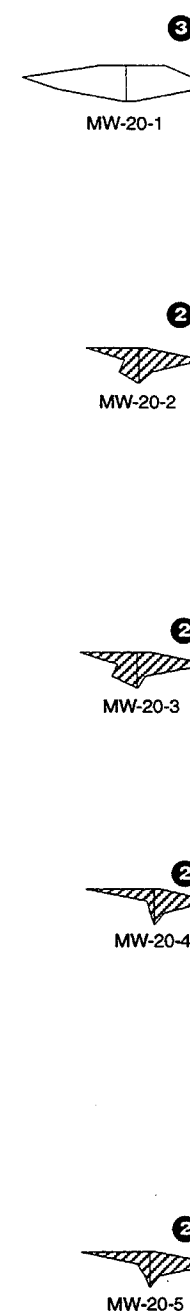
MW-18



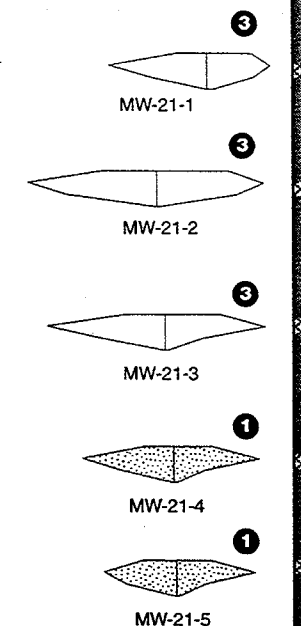
MW-19



MW-20



MW-21



Cations and Anions used for Stiff Diagrams			
Na+K	— —	Cl	— —
Ca	— —	HCO ₃ +CO ₃	— —
Mg	— —	SO ₄	— —
Fe	— —	NO ₃	— —

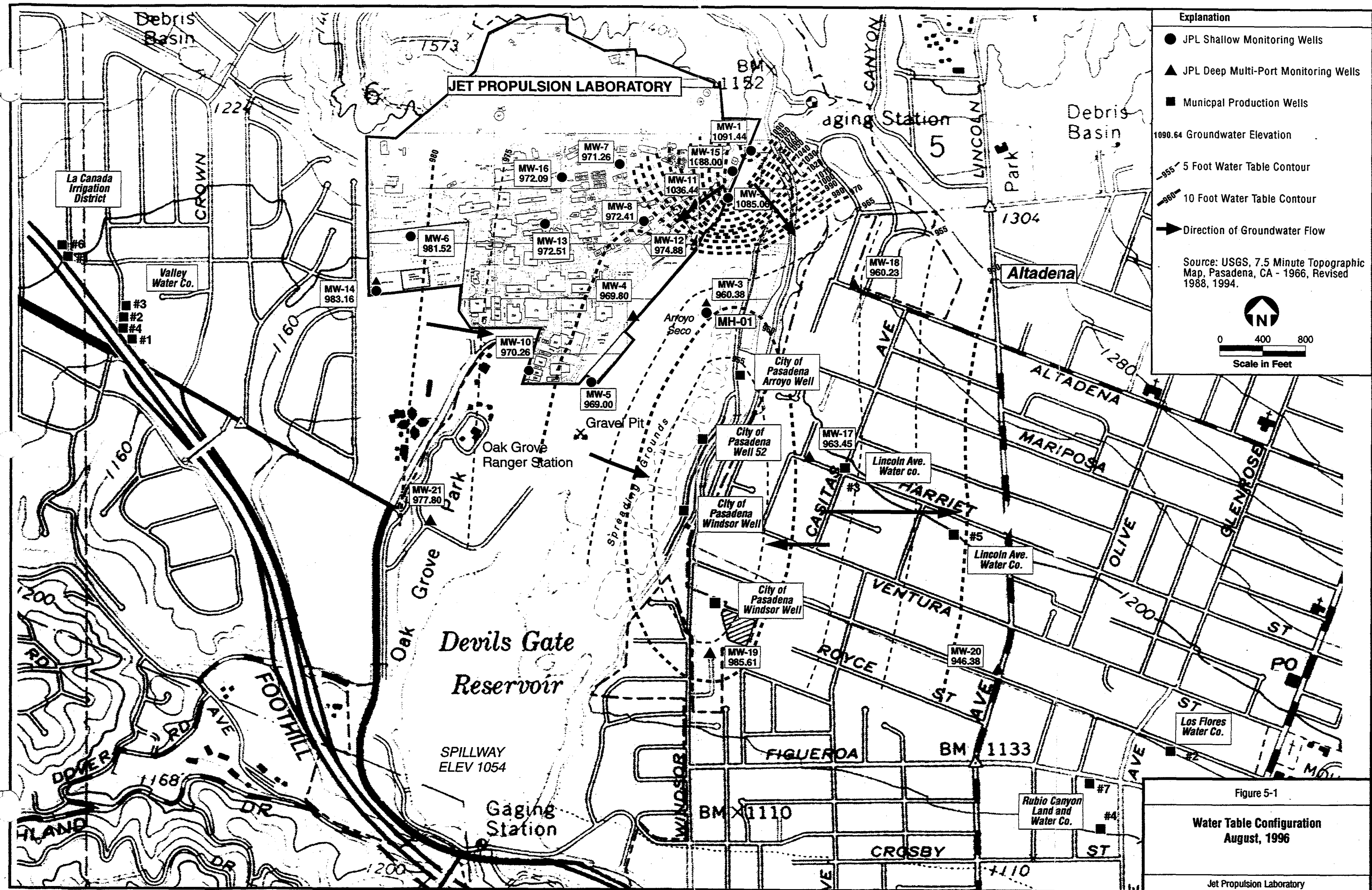
Explanation

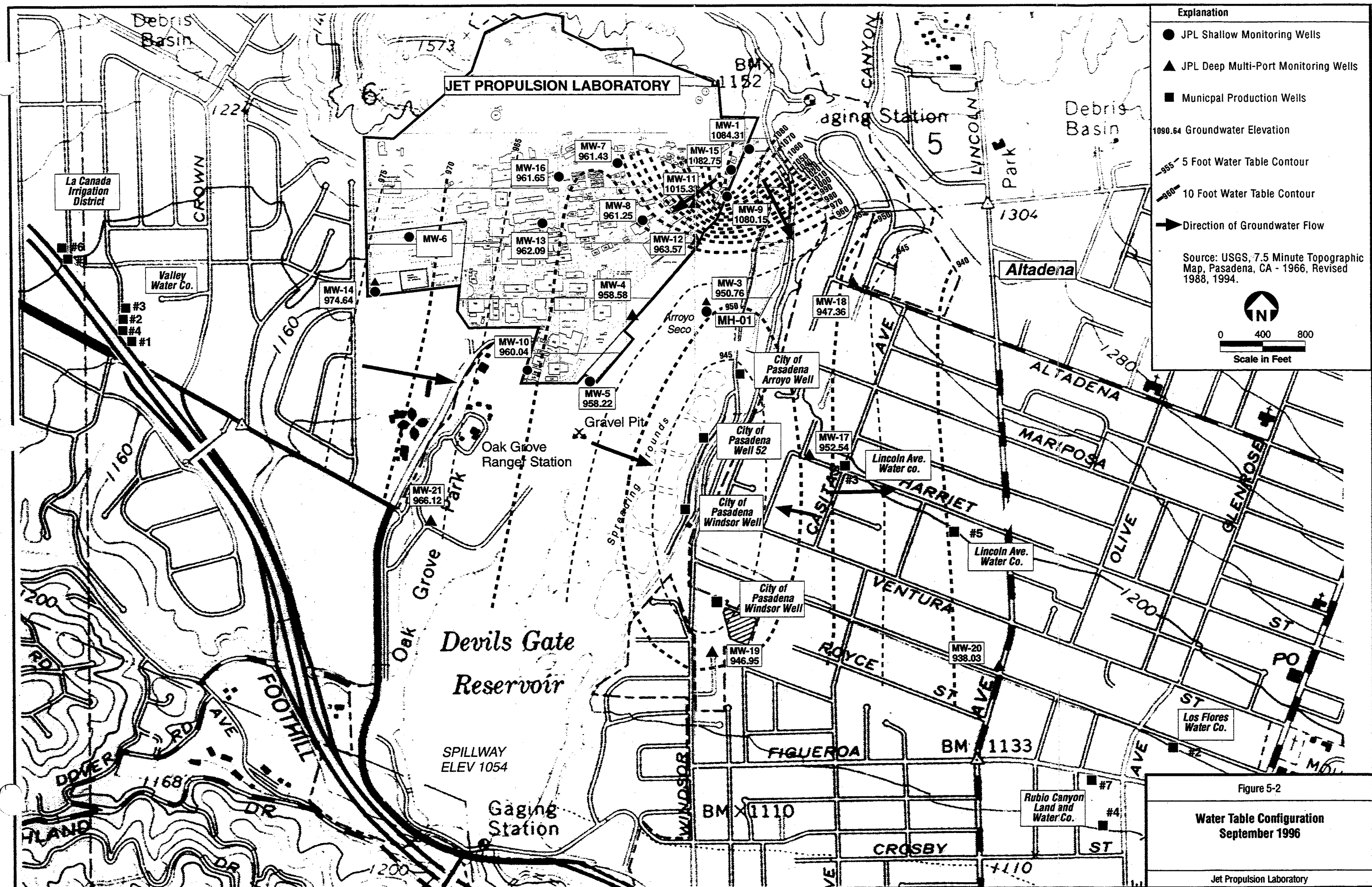
MW-21	Monitoring Well Number
XXXX	Screen Interval
General Water Types -	
1	Calcium - Bicarbonate
2	Sodium - Bicarbonate
3	Calcium - Bicarbonate/Chloride/Sulfate

Figure 4-2

Stiff Diagrams for the
August/September 1996
Groundwater Sampling Event for
JPL Off-Site Monitoring Wells

Jet Propulsion Laboratory
Pasadena, California





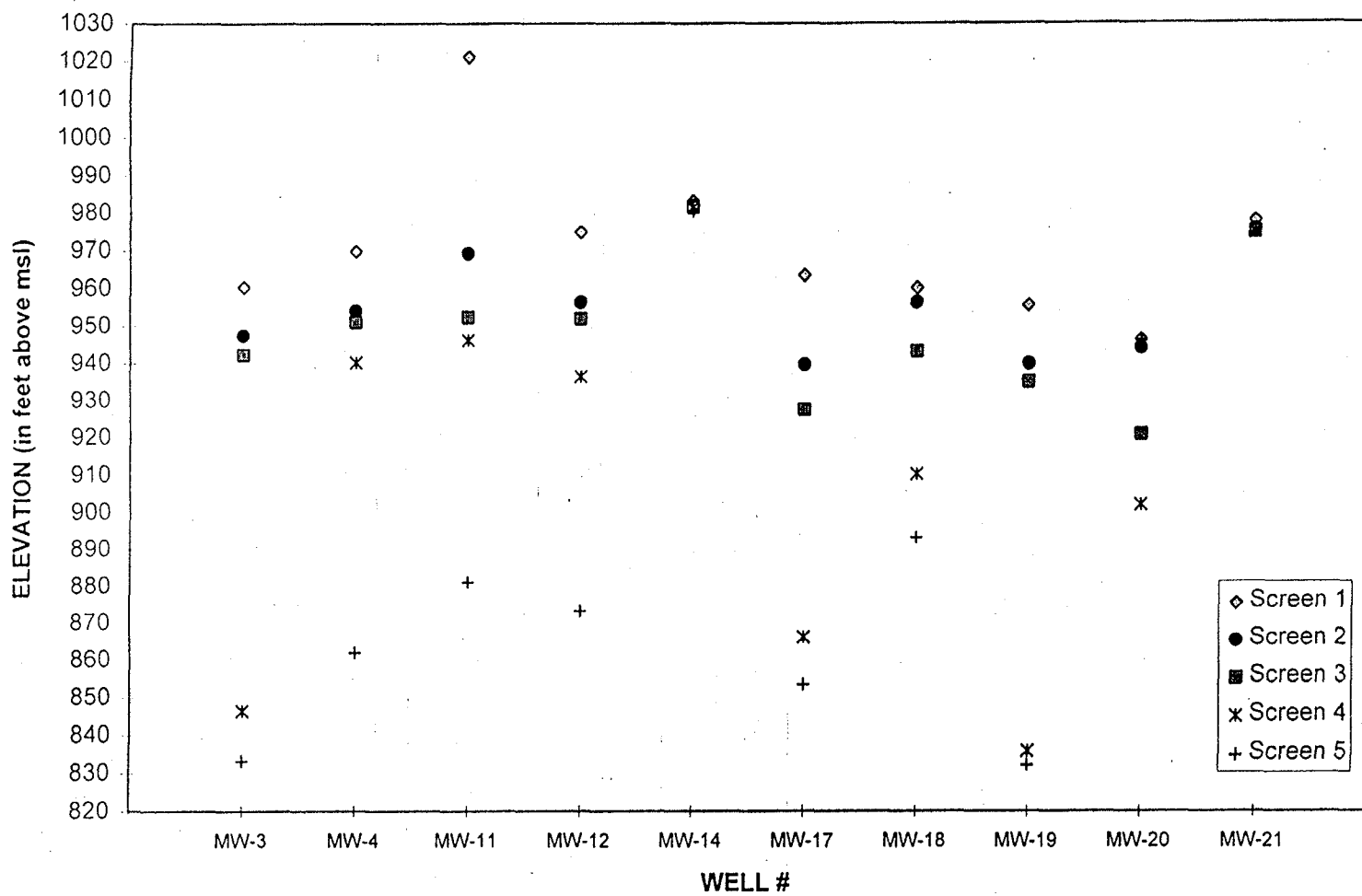


Figure 5-3

PIEZOMETRIC WATER LEVELS
FROM DEEP (MP) WELLS
AUGUST, 1996

Jet Propulsion Laboratory

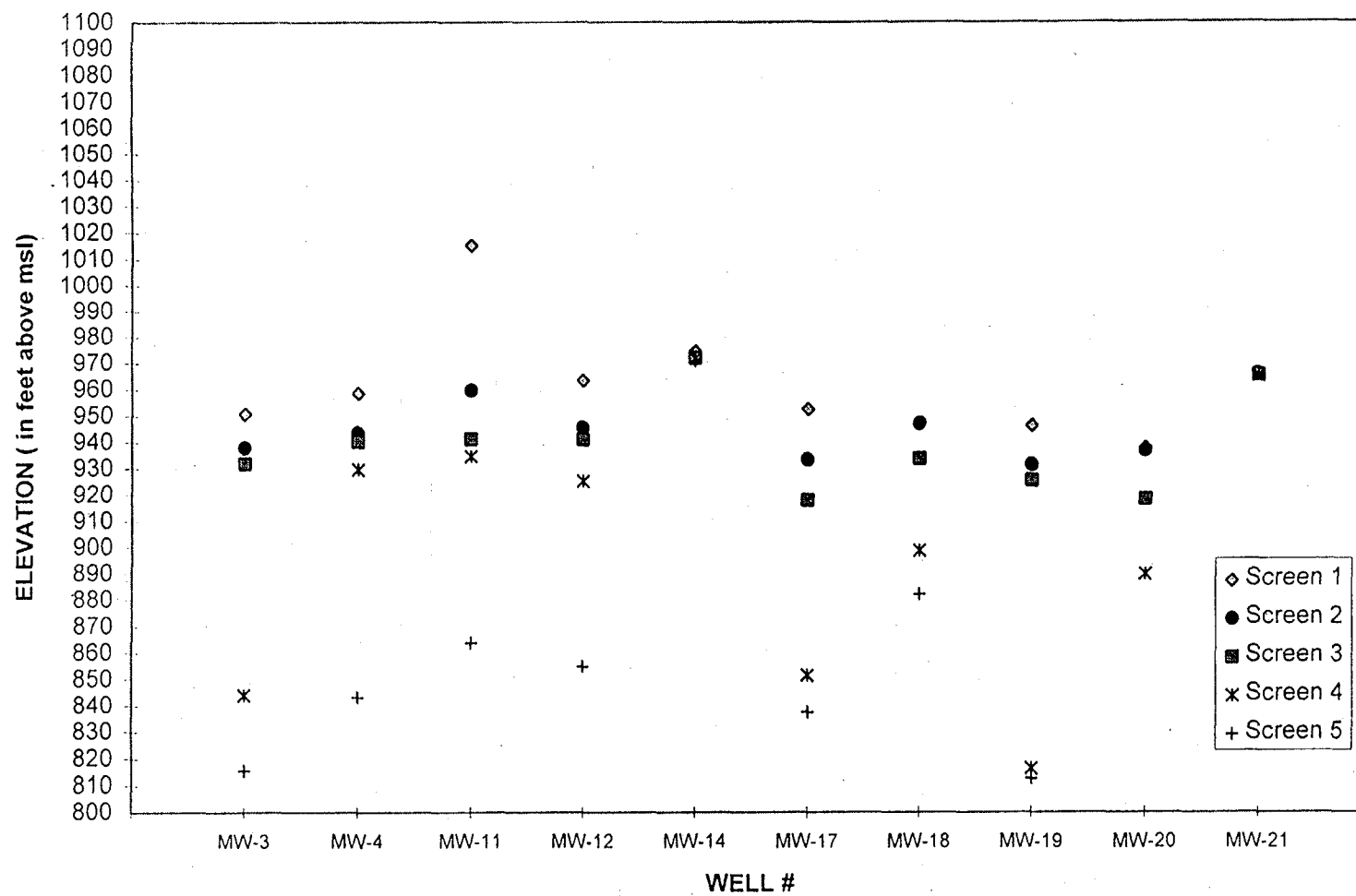


Figure 5-4

PIEZOMETRIC WATER LEVELS
FROM DEEP (MP) WELLS
SEPTEMBER, 1996

Jet Propulsion Laboratory

APPENDIX A

WELL DEVELOPMENT/WELL SAMPLING LOG FORMS FOR SHALLOW WELLS

Well Number : MW-1
Equipment : DRT-15C, YSI 350, TVA 1000
Solvent H₂O well water
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	<u>32.50</u>	<u>Top of 4" casing</u>	<u>32.50</u>
Depth to Sediment (ft)	<u>119.60</u>	<u>Top of 4" casing</u>	<u>119.6</u>
Thickness of Sediment (ft)	<u>0.40</u>		<u>0.40</u>
Depth of Well (ft)	<u>120.0</u>		
Diameter of Casing (ft)	<u>0.333</u>		
Water Column Height (ft)	<u>87.1</u>		
Casing Volume (gals) =	$\pi(\text{Diam. of Casing (ft)/2})^2 (\text{Water Column Height (ft)}) (7.48 \text{ gals/ft}^3) =$		<u>56.7</u>
		Casing Volumes Purged	<u>1.5</u>
Total Volume Purged (gals)	<u>87.6</u>		

[illegible]

Notes Sampling Procedures:

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL Well Number : MW-5
 Project Number : 1572.0202 Equipment : DRT-15C, YSE 3500, TVA 1000
 Date : 9/10/96 SOLINST H₂O level meter
 Site Engineer : T. BLANEY Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	<u>112.92</u>	<u>TOP OF 4" CASING</u>	<u>112.92</u>
Depth to Sediment (ft)	<u>139.80</u>	<u>TOP OF 4" CASING</u>	<u>139.80</u>
Thickness of Sediment (ft)	<u>0.20</u>		<u>0.20</u>
Depth of Well (ft)	<u>140</u>		
Diameter of Casing (ft)	<u>0.333</u>		
Water Column Height (ft)	<u>26.88</u>		
Casing Volume (gals) =	$\pi(\text{Diam. of Casing (ft)/2})^2 (\text{Water Column Height (ft)})(7.48 \text{ gals/ft}^3) =$		<u>17.5</u>
		Casing Volumes Purged	<u>3.94</u>
Total Volume Purged (gals)	<u>68.94</u>		

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1005					2.26	START Pump @ MW-5. CONTROL Box Set @ 275 Hz.
1010	6.94	38.3	17.3	298	2.26	WATER Cloudy; orange colored
1015	6.67	74.4	17.5	280	2.26	Water Dirty
1017					0.82	Reduce Control Box to 235 Hz.
1025	6.65	31.8	18.9	276	0.82	Water slightly cloudy
1030	6.45	33.9	18.4	281	0.82	Water slightly cloudy
1035	6.47	21.6	17.6	285	0.82	Water slightly cloudy
1040	6.44	13.96	18.0	284	0.82	Water slightly clear
1045	6.42	11.99	17.5	284	0.82	Water slightly clear
1050	6.45	9.99	17.9	285	0.82	Water clear
1055	6.44	5.48	18.4	286	0.82	Water clear
1100	6.42	6.75	18.7	285	0.82	Water clear
1105	6.44	3.81	18.2	286	0.82	Water very clear
1108	6.45	2.70	17.7	285	0.82	Water very clear; Ready to Sample
1115					0.02	REDUCE Control Box to 200 Hz
1115					0.02	Sample MW-961-25
1120					0.02	Sample MW-961-25-MS
1125					0.02	Sample MW-961-25-MSD
1130					0.02	Sample MW-961-26

Notes Sampling Procedures:

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572-0202
Date : 9/6/96
Site Engineer : T. BLANEY

Well Number : MW-6
Equipment : DRT-15C, PSI 3500, TVA 1000
Solinst water level meter
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	<u>215.43</u>	<u>Top of 4" Casing</u>	<u>215.43</u>
Depth to Sediment (ft)	<u>235.00</u>	<u>" " " "</u>	<u>235.00</u>
Thickness of Sediment (ft)	<u>10.0</u>		<u>10.0</u>
Depth of Well (ft)	<u>245.00</u>		
Diameter of Casing (ft)	<u>0.333</u>		
Water Column Height (ft)	<u>19.57</u>		
Casing Volume (gals) =	$\pi(\text{Diam. of Casing (ft)/2})^2 (\text{Water Column Height (ft)})(7.48 \text{ gals/ft}^3) =$		<u>12.75</u>
		Casing Volumes Purged	<u>6.27</u>
Total Volume Purged (gals)	<u>80.0</u>		

[illegible]

Notes Sampling Procedures:

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
 Project Number : 1572.0202
 Date : 9/10/96
 Site Engineer : T. BLANEY

Well Number : MW-7
 Equipment : D2T-15C, YSZ 3500, TVA1000
Solinst H₂O level meter
 Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	<u>252.62</u>	<u>Top of 4" Casing</u>	<u>252.62</u>
Depth to Sediment (ft)	<u>273.75</u>	<u>Top of 4" Casing</u>	<u>273.75</u>
Thickness of Sediment (ft)	<u>1.25</u>		<u>1.25</u>
Depth of Well (ft)	<u>275</u>		
Diameter of Casing (ft)	<u>0.333</u>		
Water Column Height (ft)	<u>21.13</u>		
Casing Volume (gals) = $\pi(\text{Diam. of Casing (ft)}^2)(\text{Water Column Height (ft)})(7.48 \text{ gals/ft}^3) =$			<u>13.77</u>
		Casing Volumes Purged	<u>3.95</u>
Total Volume Purged (gals)	<u>54.4</u>		

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0750					1.36	Start Pump @ MW-7. Control Box Set @ 375 Hz.
0755	7.13	19.6	21.8	452	1.36	Water slightly cloudy
0800	7.05	9.98	21.6	447	1.36	Water clean
0805	6.88	8.03	21.8	447	1.36	Water clean
0810	6.98	6.75	21.8	445	1.36	Water clean
0815	6.99	5.41	21.8	449	1.36	Water clean
0820	6.98	4.83	21.8	449	1.36	Water very clean
0823	6.97	4.78	21.8	439	1.36	Water very clean; Ready to Sample
0830					0.02	Reduce Control Box to 345 Hz.
0830					0.02	Sample MW-961-29
0840					0.02	Sample MW-961-30
0850					0.02	Sample MW-961-31 (Dep. of MW-961-29)
0900					0.02	Sample MW-961-32 (Dep. of MW-961-30)

Notes Sampling Procedures:

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL Well Number : MW-8
 Project Number : 1572.0202 Equipment : DRF-15L, YSE 3500, TVA 1000
 Date : 9/11/94 Solinst H₂O level meter
 Site Engineer : T. Bianney Contractor : None

	Before	Reference Point	After
Depth to Water (ft)	<u>178.36</u>	<u>Top of 4" casing</u>	<u>178.36</u>
Depth to Sediment (ft)	<u>203.00</u>	<u>Top of 4" casing</u>	<u>203.00</u>
Thickness of Sediment (ft)	<u>2.00</u>		<u>2.00</u>
Depth of Well (ft)	<u>205</u>		
Diameter of Casing (ft)	<u>0.333</u>		
Water Column Height (ft)	<u>24.64</u>		
Casing Volume (gals) =	$\pi(\text{Diam. of Casing (ft)}^2)(\text{Water Column Height (ft)})(7.48 \text{ gals/ft}^3) =$		<u>16.04</u>
		Casing Volumes Purged	<u>5.09</u>
Total Volume Purged (gals)	<u>81.7</u>		

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1130					1.90	Start Pump @ MW-8. Control Box Set @ 382 Hz
1135	7.11	51.6	19.6	339	1.90	Water cloudy
1140	7.02	42.5	19.2	336	1.90	Water cloudy
1145	6.93	28.4	19.1	329	1.90	Water slightly cloudy
1150	6.94	20.3	19.1	327	1.90	Water slightly cloudy
1155	6.91	14.5	19.0	332	1.90	Water slightly clear
1200	6.91	11.11	19.2	326	1.90	Water slightly clear
1205	6.85	5.37	19.1	332	1.90	Water clear
1210	6.90	4.87	19.1	332	1.90	Water very clear
1213	6.93	4.02	19.1	326	1.90	Water very clear; Ready to Sample
1220					0.02	Reduce Control Box to 300 Hz.
1220					0.02	Sample MW-961-33
1225					0.02	Sample MW-961-33-m5
1230					0.02	Sample MW-961-33-m50
1235					0.02	Sample MW-961-34

Notes Sampling Procedures:

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572-0202
Date : 9/11/96
Site Engineer : T. Blawie

Well Number : MW-9
Equipment : DET-15C, YSI 3500, TVA 1000
Solinst H2O level meter
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	<u>25.72</u>	<u>Top of 4" casing</u>	<u>25.72</u>
Depth to Sediment (ft)	<u>69.70</u>	<u>Top of 4" casing</u>	<u>69.70</u>
Thickness of Sediment (ft)	<u>0.30</u>		<u>0.30</u>
Depth of Well (ft)	<u>70.0</u>		
Diameter of Casing (ft)	<u>0.333</u>		
Water Column Height (ft)	<u>43.98</u>		
Casing Volume (gals) =	$\pi(\text{Diam. of Casing (ft)/2})^2 (\text{Water Column Height (ft)})(7.48 \text{ gals/ft}^3) =$		<u>28.65</u>
		Casing Volumes Purged	<u>2.00</u>
Total Volume Purged (gals)	<u>57.4</u>		

[illegible]

Notes Sampling Procedures:

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL Well Number : MW-10
 Project Number : 1572.0202 Equipment : D&T-15C, YSI 3500, TVA 1000
 Date : 9/9/96 Solinst H₂O level meter
 Site Engineer : T. BLANEY Contractor : NONE

	<u>Before</u>	<u>Reference Point</u>	<u>After</u>
Depth to Water (ft)	<u>127.07</u>	<u>Top of 4" casing</u>	<u>127.07</u>
Depth to Sediment (ft)	<u>150.92</u>	<u>Top of 4" casing</u>	<u>150.92</u>
Thickness of Sediment (ft)	<u>4.08</u>		<u>4.08</u>
Depth of Well (ft)	<u>155</u>		
Diameter of Casing (ft)	<u>0.333</u>		
Water Column Height (ft)	<u>23.85</u>		
Casing Volume (gals) =	$\pi(\text{Diam. of Casing (ft)/2})^2 (\text{Water Column Height (ft)})(7.48 \text{ gals/ft}^3) =$		<u>15.5</u>
		Casing Volumes Purged	<u>5.68</u>
Total Volume Purged (gals)	<u>88.0</u>		

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1205						START Pump @ MW-10; Control Box @ 280 Hz.
1210	7.01	53.0	21.5	670	1.0	Water slightly Dirty
1215	6.87	69.9	22.5	652	1.0	Water slightly Dirty
1220	6.81	56.8	22.1	652	1.0	Water slightly Dirty
1225	6.78	34.5	22.4	663	1.0	Water Cloudy
1230	6.79	23.6	21.2	654	1.0	Water slightly cloudy
1235	6.81	19.3	21.0	654	1.0	Water slightly cloudy
1240	6.82	16.1	21.1	662	1.0	Water slightly cloudy
1245	6.79	13.46	21.3	660	1.0	Water slightly clean
1250	6.75	11.76	21.9	660	1.0	Water slightly clean
1255	6.75	10.75	21.6	663	1.0	Water slightly clean
1300	6.75	10.32	20.9	659	1.0	Water slightly clean
1305	6.76	9.20	21.5	664	1.0	Water clean
1310	6.73	8.69	21.4	665	1.0	Water clean
1315	6.81	8.10	21.8	668	1.0	Water clean
1320	6.79	7.65	22.3	660	1.0	Water clean
1325	6.77	6.84	21.5	667	1.0	Water clean
1330	6.78	5.00	21.0	659	1.0	Water very clean
1333	6.81	4.52	21.0	663	1.0	Water very clean; Ready to Sample
1340					0.02	Reduce to 250 Hz. Sample MW-961-37
1350, 1410, 1420					0.02	Sample MW-961-38, MW-961-39, MW-961-40

Notes Sampling Procedures:

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL Well Number : MW-13
 Project Number : 1572.0202 Equipment : DRT-15C, YSI 3500, TWA 1000
 Date : 9/9/96 SOLINST H₂O level meter
 Site Engineer : T. BLANEY Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	<u>220.90</u>	<u>Top of 4" casing</u>	<u>220.90</u>
Depth to Sediment (ft)	<u>234.80</u>	<u>Top of 4" casing</u>	<u>234.80</u>
Thickness of Sediment (ft)	<u>0.20</u>		<u>0.20</u>
Depth of Well (ft)	<u>235.0</u>		
Diameter of Casing (ft)	<u>0.333</u>		
Water Column Height (ft)	<u>13.90</u>		
Casing Volume (gals) =	$\pi(\text{Diam. of Casing (ft)/2})^2 (\text{Water Column Height (ft)}) (7.48 \text{ gals/ft}^3) =$		<u>9.06</u>
		Casing Volumes Purged	<u>6.87</u>
Total Volume Purged (gals)	<u>62.25</u>		

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0850					0.75	Start Pump @ MW-13. Control Box Set @ 350 Hz.
0910	6.79	24.0	25.1	621	0.75	Water slightly cloudy
0915	6.84	10.95	25.2	599	0.75	Water slightly clear
0920	6.88	9.54	25.0	593	0.75	Water clear
0925	6.91	9.02	25.0	602	0.75	Water clear
0930	6.90	7.81	24.8	592	0.75	Water clear
0935	6.88	7.76	24.8	598	0.75	Water clear
0940	6.89	7.50	24.8	600	0.75	Water clear
0945	6.95	6.53	24.6	599	0.75	Water clear
0950	6.95	5.06	24.6	592	0.75	Water very clear
0955	6.96	5.70	24.6	586	0.75	Water very clear
1000	6.90	4.90	24.7	598	0.75	Water very clear
1003	6.93	5.50	24.6	592	0.75	Water very clear
1010	6.94	3.93	24.8	601	0.75	Water very clear
1013	6.93	4.07	24.9	593	0.75	Water very clear. Ready to sample
1015					0.02	Reduce Control Box to 300 Hz.
1015					0.02	Sample MW-961-61
1025					0.02	Sample MW-961-61-MS
1030					0.02	Sample MW-961-61-MSD
1040					0.02	Sample MW-961-62

Notes Sampling Procedures:

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0202
Date : 9/10/96
Site Engineer : T. Blaney

Well Number : MW-15
Equipment : DRT-15C, YSI 3500, TVA 1000
Solinst H₂O logger meter
Contractor : NONE

	<i>Before</i>
Depth to Water (ft)	<u>37.73</u>
Depth to Sediment (ft)	<u>74.84</u>
Thickness of Sediment (ft)	<u>0.16</u>

Reference Point
Top of 4" CASING
Top of 4" CASING

$$\begin{array}{r} \text{After} \\ 37.73 \\ \hline 74.84 \\ \hline 0.16 \end{array}$$

Depth of Well (ft)	75.0
Diameter of Casing (ft)	0.333
Water Column Height (ft)	37.11

$$\text{Casing Volume (gals)} = \pi (\text{Diam. of Casing (ft)/2})^2$$
$$\pi(\text{Diam. of Casing (ft)}/2)^2 (\text{Water Column Height (ft)})(7.48 \text{ gals/ft}^3) = \text{Casing Volumes Purged}$$
$$\begin{array}{r} 24.18 \\ \hline 1.67 \\ \hline \end{array}$$

Total Volume Purged (gals) 40.4

[illegible]

Notes Sampling Procedures:

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL Well Number : MW-16
 Project Number : 1572.0202 Equipment : DRT-15C, YSE 3500, TVA1000
 Date : 9/6/96 Selinst H₂O level meter
 Site Engineer : T. BLANEY Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	<u>273.63</u>	<u>Top of 4" casing</u>	<u>273.63</u>
Depth to Sediment (ft)	<u>285.00</u>	<u>Top of 4" casing</u>	<u>285.00</u>
Thickness of Sediment (ft)	<u>0</u>		<u>0</u>
Depth of Well (ft)	<u>285.00</u>		
Diameter of Casing (ft)	<u>0.333</u>		
Water Column Height (ft)	<u>11.37</u>		
Casing Volume (gals) =	$\pi(\text{Diam. of Casing (ft)}^2)(\text{Water Column Height (ft)})(7.48 \text{ gals/ft}^3) =$		<u>7.41</u>
		Casing Volumes Purged	<u>4.88</u>
Total Volume Purged (gals)	<u>36.2</u>		

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1150					0.6	START Pump @ mw-16
						Control Box Set @ 375 Hz
1205	6.80	65.5	27.8	569	0.6	Water Slightly Dirty
1210	6.93	50.3	29.6	578	0.6	Water Slightly Dirty
1215	6.93	28.7	28.5	575	0.6	Water Slightly Cloudy
1220	6.96	17.2	28.9	571	0.6	Water slightly clear
1225	6.93	12.25	28.2	566	0.6	Water slightly clear
1230	6.97	7.83	27.5	555	0.6	Water clear
1235	6.96	5.05	27.8	556	0.6	Water very clear
1240	6.93	4.81	28.5	553	0.6	Water very clear
1243	6.95	3.44	27.6	549	0.6	Water very clear, READY TO SAMPLE
1250					0.02	REDUCE CONTROL BOX TO 340 Hz to Sample
1250					0.02	Sample MW-961-75
1255					0.02	Sample MW-961-76

Notes Sampling Procedures:

APPENDIX B

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

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 15720202
Date : 9/5/96
Site Engineer : T. Blaney

Well Number : MW-3
Equipment : DRT-15C, YSI 3500
TVA 1000
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	_____	_____	_____
Depth to Sediment (ft)	_____	_____	_____
Thickness of Sediment (ft)	_____		_____
Depth of Well (ft)	_____		
Diameter of Casing (ft)	_____		
Water Column Height (ft)	_____		
Casing Volume (gals) =	$\pi(\text{Diam. of Casing (ft)/2})^2 (\text{Water Column Height (ft)})(7.48 \text{ gals/ft}^3) =$		
		Casing Volumes Purged	_____
Total Volume Purged (gals)	_____		

[illegible]

Notes Sampling Procedures: * See Piezometric Pressures/Levels Sheet for MW-3

Well Number : MW-4
Equipment : DRT-15C
YSI 3500
Contractor : NONE

[illegible]

Notes Sampling Procedures: * SEE PERIMETRIC PRESSURES/LEVELS SHEET for MW-4.

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0202
Date : 8/22/96
Site Engineer : T. BLANEY

Well Number : MW-4
Equipment : DRT-15C, VSI 3500
TVA 1000
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	X		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			
Depth of Well (ft)			
Diameter of Casing (ft)			
Water Column Height (ft)			
Casing Volume (gals) =	$\pi(\text{Diam. of Casing (ft)/2})^2 (\text{Water Column Height (ft)}) (7.48 \text{ gals/ft}^3) =$		
		Casing Volumes Purged	
Total Volume Purged (gals)			

[illegible]

Notes Sampling Procedures: * SEE PEIZOMETRIC PRESSURES/LEVELS SHEET FOR MW-4

Well Number : MW-4
Equipment : DRT-15C, YSZ 3500
TVA 1000
Contractor : _____

[illegible]

Notes Sampling Procedures: * SEE PEIZOMETRIC PRESSURES / LEVELS SHEET FOR MW-4.

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL Well Number : MW-11
 Project Number : 1572 0202 Equipment : DRT-15C, YSZ 3500
 Date : 8/26/96 TVA 1000
 Site Engineer : T. BLANEY Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	<u>X</u>		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			
Depth of Well (ft)			
Diameter of Casing (ft)			
Water Column Height (ft)			
Casing Volume (gals) =	$\pi(\text{Diam. of Casing (ft)/2})^2 (\text{Water Column Height (ft)}) (7.48 \text{ gals/ft}^3) =$		
		Casing Volumes Purged	
Total Volume Purged (gals)			

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0915	7.14	0.65	20.8	297	NIA	1 st Run @ Screen #5 Prior to Sampling
0915						Sample MW-961-49
1015						Sample MW-961-50
1015	7.89	0.49	23.2	318	NIA	LAST Run @ Screen #5 AFTER Sampling
1050	7.91	9.5	22.0	362	NIA	1 st Run @ Screen #4 Prior to Sampling
1115	7.91	8.5	22.0	362	NIA	2 nd Run @ Screen #4 Reducing Turbidity
1145	7.91	4.95	22.0	362	NIA	3 rd Run @ Screen #4 " "
1145						Sample MW-961-47
1215						Sample MW-961-48
1240	8.02	2.77	22.4	367	NIA	LAST Run @ Screen #4 AFTER Sampling
1305	7.99	0.45	24.1	399	NIA	1 st Run @ Screen #3 Prior to Sampling
1305						Sample MW-961-45
1400						Sample MW-961-46
1400	8.01	0.60	25.2	422	NIA	LAST Run @ Screen #3 AFTER Sampling
1420						Sample MW-961-200 (FIELD BLANK)

Notes Sampling Procedures: * SEE PEIZOMETRIC PRESSURES/LEVELS SHEET FOR MW-11.

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572 0202
Date : 8/27/96
Site Engineer : T. BLANEY

Well Number : MW-11
Equipment : DRT-15C, YSI 3500
TVA 1000
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)			
Depth to Sediment (ft)			
Thickness of Sediment (ft)			
Depth of Well (ft)			
Diameter of Casing (ft)			
Water Column Height (ft)			
Casing Volume (gals) =	$\pi(\text{Diam. of Casing (ft)/2})^2 (\text{Water Column Height (ft)}) (7.48 \text{ gals/ft}^3) =$		
		Casing Volumes Purged	
Total Volume Purged (gals)			

[illegible]

Notes Sampling Procedures: * SEE PERZOMETRIC PRESSURES/LEVELS SHEET FOR MW-11

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572 0202
Date : 8/27/96
Site Engineer : T. BLANEY

Well Number : MW-12
Equipment : DRT-15C , YSI 3500
TVA 1000
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	<u>X</u>		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			
Depth of Well (ft)			
Diameter of Casing (ft)			
Water Column Height (ft)			
Casing Volume (gals) =	$\pi(\text{Diam. of Casing (ft)/2})^2 (\text{Water Column Height (ft)}) (7.48 \text{ gals/ft}^3) =$		
		Casing Volumes Purged	
Total Volume Purged (gals)			

[illegible]

Notes Sampling Procedures: * SEE PEIZOMETRIC PRESSURES / LEVELS SHEET FOR MW-12.

Well Number : MW-12
Equipment : DRT-15C, YSI 350
TVA 1000
Contractor : NONE

[illegible]

Notes Sampling Procedures: ✓ SEE Piezometric Pressures / Levels SHEET FOR MW-12.

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572 0202
Date : 8/28/96
Site Engineer : T. BLANEY

Well Number : MW-12
Equipment : DRT-15C, YSI 3500
TVA 1000
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	X _____	_____	_____
Depth to Sediment (ft)	_____	_____	_____
Thickness of Sediment (ft)	_____		_____
Depth of Well (ft)	_____		
Diameter of Casing (ft)	_____		
Water Column Height (ft)	_____		
Casing Volume (gals) =	$\pi(\text{Diam. of Casing (ft)/2})^2 (\text{Water Column Height (ft)}) (7.48 \text{ gals/ft}^3) =$		
		Casing Volumes Purged	_____
Total Volume Purged (gals)	_____		

[illegible]

Notes Sampling Procedures: * SEE PEIZOMETRIC PRESSURES / LEVELS SHEET FOR MW-12

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572 0202
Date : 8/29/96
Site Engineer : T. BLANEY

Well Number : MW-12
Equipment : DRT-15C, YSI 3500
TVA 1000
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	X _____	_____	_____
Depth to Sediment (ft)	_____	_____	_____
Thickness of Sediment (ft)	_____		_____
Depth of Well (ft)	_____		
Diameter of Casing (ft)	_____		
Water Column Height (ft)	_____		
Casing Volume (gals) =	$\pi(\text{Diam. of Casing (ft)/2})^2 (\text{Water Column Height (ft)}) (7.48 \text{ gals/ft}^3) =$		
		Casing Volumes Purged	_____
Total Volume Purged (gals)	_____		

[illegible]

Notes Sampling Procedures: * SEE PIEZOMETRIC PRESSURES/LEVELS SHEET FOR MW-12.

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0202
Date : 8/20/96
Site Engineer : T. BLANEY

Well Number : MW-14
Equipment : DRT-15C, YSI 3500
TVA 1000
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	X _____	_____	_____
Depth to Sediment (ft)	_____	_____	_____
Thickness of Sediment (ft)	_____		_____
Depth of Well (ft)	_____		
Diameter of Casing (ft)	_____		
Water Column Height (ft)	_____		
Casing Volume (gals) =	$\pi(\text{Diam. of Casing (ft)/2})^2 (\text{Water Column Height (ft)}) (7.48 \text{ gals/ft}^3) =$		
		Casing Volumes Purged	_____
Total Volume Purged (gals)	_____		

[illegible]

Notes Sampling Procedures: * SEE PEIZOMETRIC PRESSURES/LEVELS SHEET FOR MW-14

Well Number : MW-14
Equipment : DRT-15C , YSI 3500
TVA 1000
Contractor : NONE

[illegible]

Notes Sampling Procedures: * SEE PERIOMETRIC PRESSURES/LEVELS SHEET FOR MW-14.

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572.0202
Date : 8/14/96
Site Engineer : T. BLANEY

Well Number : MW-17
Equipment : DRT-15C
YSI 3500
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	*		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			
Depth of Well (ft)			
Diameter of Casing (ft)			
Water Column Height (ft)			
Casing Volume (gals) =	$\pi(\text{Diam. of Casing (ft)/2})^2 (\text{Water Column Height (ft)}) (7.48 \text{ gals/ft}^3) =$		
		Casing Volumes Purged	
Total Volume Purged (gals)			

[illegible]

Notes Sampling Procedures: * SEE PEIZOMETRIC PRESSURES/LEVELS SHEET FOR MW-17

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572 0202
Date : 8/13/96
Site Engineer : T. BLANEY

Well Number : MW-17
Equipment : DRT-15C
YSE 3500
Contractor :

	Before	Reference Point	After
Depth to Water (ft)	X _____	_____	_____
Depth to Sediment (ft)	_____	_____	_____
Thickness of Sediment (ft)	_____		_____
Depth of Well (ft)	_____		
Diameter of Casing (ft)	_____		
Water Column Height (ft)	_____		
Casing Volume (gals) =	$\pi(\text{Diam. of Casing (ft)/2})^2 (\text{Water Column Height (ft)}) (7.48 \text{ gals/ft}^3) =$		
		Casing Volumes Purged	_____
Total Volume Purged (gals)	_____		

[illegible]

Notes Sampling Procedures: * SEE PIEZOMETRIC PRESSURES/LEVELS SHEET FOR MW-17

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572 0202
Date : 8/13/96
Site Engineer : T. BLANEY

Well Number : MW-18
Equipment : DET-15C
YSI 3500
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	X		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			
Depth of Well (ft)			
Diameter of Casing (ft)			
Water Column Height (ft)			
Casing Volume (gals) =	$\pi(\text{Diam. of Casing (ft)/2})^2 (\text{Water Column Height (ft)}) (7.48 \text{ gals/ft}^3) =$		
		Casing Volumes Purged	
Total Volume Purged (gals)			

[illegible]

Notes Sampling Procedures: * See Piezometric Pressures / Levels Sheet for MW-18

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL Well Number : MW-18
 Project Number : 1572-0202 Equipment : DGT-15C
 Date : 8/12/96 YSE 3500
 Site Engineer : T. BLANEY Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	<u>*</u>		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			
Depth of Well (ft)			
Diameter of Casing (ft)			
Water Column Height (ft)			
Casing Volume (gals) = $\pi(\text{Diam. of Casing (ft)}^2)(\text{Water Column Height (ft)})(7.48 \text{ gals/ft}^3) =$			
		Casing Volumes Purged	
Total Volume Purged (gals)			

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1100	7.39	3.5	23.5	311	N/A	1 st Run @ Screen #5 Prior to Sampling
1100						Sample MW-961-87
1215	7.68	2.08	22.6	299	N/A	LAST Run @ Screen #5 AFTER Sampling
1230	8.05	2.15	23.7	346	N/A	1 st Run @ Screen #4 Prior to Sampling
1235						Sample MW-961-86
1300	8.10	1.82	22.8	350	N/A	LAST Run @ Screen #4 AFTER Sampling
1335	7.83	2.58	22.5	441	N/A	1 st Run @ Screen #3 Prior to Sampling
1335						Sample MW-961-84
1345						Sample MW-961-84-MS (Matrix Sp. SE)
1350						Sample MW-961-84-MSO (Matrix Sp. Dep.)
1410						Sample MW-961-85 (Dup. of MW-961-84)
1425	7.74	5.72	25.7	478	N/A	LAST Run @ Screen #3 AFTER Sampling
1450	7.52	29.0	25.2	405	N/A	1 st Run @ Screen #2 Prior to Sampling
1515	7.50	4.95	26.0	408	N/A	2 nd Run @ Screen #2 Reducing Turbidity
1525						Sample MW-961-83
1610	7.49	2.00	25.2	407	N/A	LAST Run @ Screen #2 AFTER Sampling

Notes Sampling Procedures: * SEE PIEZOMETRIC PRESSURES/LEVELS SHEET FOR MW-18.

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL Well Number : MW-19
 Project Number : 1572.0202 Equipment : DRT-15C
 Date : 8/8/96 YSI 3500
 Site Engineer : T. BLANEY Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	<u>*</u>		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			
Depth of Well (ft)			
Diameter of Casing (ft)			
Water Column Height (ft)			
Casing Volume (gals) =	$\pi(\text{Diam. of Casing (ft)}^2)(\text{Water Column Height (ft)})(7.48 \text{ gals/ft}^3) =$		
		Casing Volumes Purged	
Total Volume Purged (gals)			

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
1205	7.22	4.90	22.0	688	N/A	1st Run @ Screen #5 PRIOR TO Sampling
1210						Sample MW-961-92
1235	7.23	4.87	21.9	679	N/A	LAST Run @ Screen #5 AFTER Sampling
1315	7.72	5.0	24.0	509	N/A	1st Run @ Screen #4 PRIOR TO Sampling
1320						Sample MW-961-91
1348	7.71	3.39	23.9	525	N/A	LAST Run @ Screen #4 AFTER Sampling
1405	7.33	3.5	24.4	639	N/A	1st Run @ Screen #3 PRIOR TO Sampling
1410						Sample MW-961-90
1428	7.33	2.5	23.9	637	N/A	LAST Run @ Screen #3 AFTER Sampling
1458	6.81	4.7	26.6	580	N/A	1st Run @ Screen #2 PRIOR TO Sampling
1500						Sample MW-961-89
1512	6.80	4.3	26.4	579	N/A	LAST Run @ Screen #2 AFTER Sampling
1525	7.40	5.0	24.5	353	N/A	1st Run @ Screen #1 PRIOR TO Sampling
1530						Sample MW-961-88
1545	7.39	4.9	23.9	362	N/A	LAST Run @ Screen #1 AFTER Sampling

Notes Sampling Procedures: * SEE PIEZOMETRIC PRESSURES / LEVELS SHEET FOR MW-19

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
Project Number : 1572-0200
Date : 8/14/96
Site Engineer : T. BLANEY

Well Number : MW-20
Equipment : DET-15C
YSI 3500
Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	X _____	_____	_____
Depth to Sediment (ft)	_____	_____	_____
Thickness of Sediment (ft)	_____		_____
Depth of Well (ft)	_____		
Diameter of Casing (ft)	_____		
Water Column Height (ft)	_____		
Casing Volume (gals) =	$\pi(\text{Diam. of Casing (ft)/2})^2 (\text{Water Column Height (ft)})(7.48 \text{ gals/ft}^3) =$		
		Casing Volumes Purged	_____
Total Volume Purged (gals)	_____		

[illegible]

Notes Sampling Procedures: * See PERIMETRIC PRESSURES / LEVELS SHEET FOR MW-20

Well Number : MW-20
Equipment : DRT-15C
YSI 3500
Contractor : NONE

[illegible]

Notes Sampling Procedures: * SEE PEIZOMETRIC PRESSURES/LEVELS SHEET FOR MW-20

WELL DEVELOPMENT LOG / WELL SAMPLING LOG

Project Name : JPL
 Project Number : 1572 0202
 Date : 8/16/96
 Site Engineer : T. BLANEY

Well Number : MW-21
 Equipment : D2T-15C
YSI 3500
 Contractor : NONE

	Before	Reference Point	After
Depth to Water (ft)	<u>X</u>		
Depth to Sediment (ft)			
Thickness of Sediment (ft)			
Depth of Well (ft)			
Diameter of Casing (ft)			
Water Column Height (ft)			
Casing Volume (gals) =	$\pi(\text{Diam. of Casing (ft)}^2)(\text{Water Column Height (ft)})(7.48 \text{ gals/ft}^3) =$		
		Casing Volumes Purged	
Total Volume Purged (gals)			

Time	pH	Turbidity (NTU)	Temp. (°C)	Conductivity (µmhos)	Pump Rate (gpm)	Comments
0852	6.40	12.0	22.1	655	N/A	1 st Run @ Screen #5 Prior to Sampling
0915	6.35	13.5	22.2	660	N/A	2 nd Run @ Screen #5 Reducing Turbidity
1000	7.52	29.0	22.0	674	N/A	3 rd Run @ Screen #5 " "
1022	7.49	21.7	22.6	677	N/A	4 th Run @ Screen #5 " "
1045	7.49	14.5	23.4	689	N/A	5 th Run @ Screen #5 " "
1110	7.42	14.7	23.6	694	N/A	6 th Run @ Screen #5 " "
1135	7.46	14.4	23.6	692	N/A	7 th Run @ Screen #5 " "
1150	7.46	4.90	23.6	695	N/A	8 th Run @ Screen #5 " "
1155						Sample MW-961-102
1210	7.47	4.85	24.2	727	N/A	Last Run @ Screen #5 After Sampling
1235	7.50	2.80	23.6	737	N/A	1 st Run @ Screen #4 Prior to Sampling
1235						Sample MW-961-101
1250	7.49	2.20	23.5	737	N/A	Last Run @ Screen #4 After Sampling
1315	7.12	12.5	26.1	927	N/A	1 st Run @ Screen #3 Prior to Sampling
1335	7.20	11.1	25.0	910	N/A	2 nd Run @ Screen #3 Reducing Turbidity
1355	7.22	8.1	24.9	918	N/A	3 rd Run @ Screen #3 " "
1415	7.21	4.32	25.0	911	N/A	4 th Run @ Screen #3 " "
1425						5 th Run @ Screen #3 " "
1445, 1450						Sampled MW-961-100-MS, Sampled MW-961-101-MS
1458	7.30	4.92	25.2	915	N/A	Last Run @ Screen #3 After Sampling

Notes Sampling Procedures: X SEE PERIMETERAL PRESSURES / LEVELS SHEET FOR MW-21.

Well Number : MW-21
Equipment : DRT-15C
YSI 3500
Contractor : NONE

[illegible]

Notes Sampling Procedures: * SEE PEIZOMETRIC PRESSURES/LEVELS SHEET for MW-21.

Parameters:

Dmp = Depth to water inside the MP Casing (ft) above MP
 Dz = Depth to static water level (ft)
 Dp = Depth of MP
 Pi = Pressure reading inside the MP Casing (ft)
 Po = Pressure reading outside the MP Casing (ft)
 Patm = Atmospheric Pressure
 H = Pressures outside the MP Casing minus Pressure inside the MP Casing divided by the weight of pure water (w)
 w = Weight of pure water = 0.4335 psi/ft
 Ez = Elevation of static water level
 R = Reference elevation

Calculations:

H = $P_o - P_i / w$ (When water is above MP)
 H = $P_o - P_{atm} / w$ (When water is below MP)
 Dz = Dmp - H (When water is above MP)
 Dz = Dp - H (When water is below MP)
 Ez = R - Dz

6.00		
6.00		0.00
8.00	6.67	0.00
20.00		0.00

Date	Well #	Screen	R	Dp	Dmp	Pi or Patm	Po	H	Dz	Ez
8/5/96	MW-3	5	1100.34	653	263.22	183.47	181.78	-3.90	267.12	833.22
		4	1100.34	558	263.70	142.23	153.84	26.78	236.92	863.42
		3	1100.34	346	264.72	50.26	96.51	106.69	158.03	942.31
		2	1100.34	252	0.00	14.88	57.87	99.17	152.83	947.51
		1	1100.34	172	0.00	14.79	28.68	32.04	139.96	960.38
8/5/96	MW-4	5	1082.84	513	219.56	141.68	141.13	-1.27	220.83	862.01
		4	1082.84	392	220.15	89.05	122.68	77.58	142.57	940.27
		3	1082.84	322	220.43	58.69	97.15	88.72	131.71	951.13
		2	1082.84	240	220.79	23.07	63.01	92.13	128.66	954.18
		1	1082.84	150	0.00	14.81	30.83	36.96	113.04	969.80
8/5/96	MW-11	5	1139.30	639	210.05	198.88	178.04	-48.07	258.12	881.18
		4	1139.30	524	210.64	149.39	157.06	17.69	192.95	946.35
		3	1139.30	429	211.09	108.58	119.10	24.27	186.82	952.48
		2	1139.30	259	211.96	35.09	53.30	42.01	169.95	969.35
		1	1139.30	149	0.00	14.73	28.10	30.84	118.16	1021.14
8/5/96	MW-12	5	1102.14	548	121.73	199.38	152.97	-107.06	228.79	873.35
		4	1102.14	436	122.31	150.69	131.93	-43.28	165.59	936.55
		3	1102.14	323	122.90	101.59	89.80	-27.20	150.10	952.04
		2	1102.14	243	123.30	66.79	57.09	-22.38	145.68	956.46
		1	1102.14	140	123.85	21.94	20.46	-3.41	127.26	974.88
8/5/96	MW-14	5	1173.47	540	202.68	161.07	165.22	9.57	193.11	980.36
		4	1173.47	456	203.10	124.50	129.32	11.12	191.98	981.49
		3	1173.47	382	203.51	92.35	97.33	11.49	192.02	981.45
		2	1173.47	277	204.04	46.69	52.08	12.43	191.61	981.86
		1	1173.47	207	204.38	16.30	22.40	14.07	190.31	983.16
8/5/96	MW-17	5	1191.21	726	350.72	177.75	183.35	12.92	337.80	853.41
		4	1191.21	582	351.44	115.25	126.65	26.30	325.14	866.07
		3	1191.21	468	351.98	65.70	104.00	88.35	263.63	927.58
		2	1191.21	370	352.49	23.12	66.91	101.01	251.48	939.73
		1	1191.21	250	0.00	14.69	24.33	22.24	227.76	963.45
8/5/96	MW-18	5	1225.41	684	329.41	168.38	167.13	-2.88	332.29	893.12
		4	1225.41	564	330.01	116.29	122.70	14.79	315.22	910.19
		3	1225.41	424	330.72	55.50	76.57	48.60	282.12	943.29
		2	1225.41	330	0.00	14.79	41.25	61.04	268.96	956.45
		1	1225.41	270	0.00	14.74	16.83	4.82	265.18	960.23
8/5/96	MW-19	5	1142.94	498	351.88	78.17	95.95	41.01	310.87	832.07
		4	1142.94	444	352.18	54.68	74.18	44.98	307.20	835.74
		3	1142.94	392	352.45	32.10	94.81	144.66	207.79	935.15
		2	1142.94	314	0.00	14.80	62.93	111.03	202.97	939.97
		1	1142.94	242	0.00	14.75	38.45	54.67	187.33	955.61
8/5/96	MW-20	5	1165.05	900	291.50	278.17	309.74	72.83	218.67	946.38
		4	1165.05	700	292.05	191.52	204.07	28.95	263.10	901.95
		3	1165.05	562	292.75	131.54	152.58	48.54	244.21	920.84
		2	1165.05	392	293.67	57.71	89.28	72.83	220.84	944.21
		1	1165.05	230	0.00	14.77	19.68	11.33	218.67	946.38
8/5/96	MW-21	5	1059.10	372	117.68	125.20	139.54	33.08	84.60	974.50
		4	1059.10	310	117.99	98.22	112.74	33.49	84.50	974.60
		3	1059.10	240	118.32	68.17	82.94	34.07	84.25	974.85
		2	1059.10	161	118.71	33.83	49.00	34.99	83.72	975.38
		1	1059.10	90	0.00	14.74	18.51	8.70	81.30	977.80

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: 8/5/96

Job No.: 1572

Serial No.: 1455

Well Name: MW-3

Elevation of

Range: 0 to 750 psia

Client: Jet Propulsion Laboratory

Datum(ft msl): 1100.34

Weather: Partly Cloudy and 70 °F

Casing Size: 1.5-inch Westbay Casing

Operator: T. Blaney and C. Jones

Ambient Reading (Pressure/Temperature/Time) Start: 14.68 / 22.25 / 1240

Finish: 14.67 / 19.38 / 1305

Screen No.	Depth (ft btoc)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	653	183.47			23.44	1240	263.22	267.12	833.22
			181.78			1241			
			181.78			1242			
			181.78			1243			
				183.47		1244			
4	558	142.23			22.69	1245	263.70	236.92	863.42
			153.84			1246			
			153.84			1247			
			153.84			1248			
				142.23		1249			
3	346	50.26			22.05	1250	264.72	158.03	942.31
			96.51			1251			
			96.51			1252			
			96.51			1253			
				50.26		1254			
2	252	14.88			21.52	1255	0.00	152.83	947.51
			57.87			1256			
			57.87			1257			
			57.87			1258			
				14.88		1259			
1	172	14.79			20.34	1300	0.00	139.96	960.38
			28.68			1301			
			28.68			1302			
			28.68			1303			
				14.79		1304			

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: 8/5/96 Job No.: 1572
 Serial No.: 1455 Well Name: MW-4
 Elevation of Datum(ft msl): 1082.84 Range: 0 to 750 psia Client: Jet Propulsion Laboratory
 Weather: Partly Cloudy and 70 °F Casing Size: 1.5-inch Westbay Casing
 Operator: T. Blaney and C. Jones
 Ambient Reading (Pressure/Temperature/Time) Start: 14.72 / 23.27 / 1110 Finish: 14.72 / 20.30 / 1140

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	513	141.68			23.11	1115	219.56	220.83	862.01
			141.13			1116			
			141.13			1117			
			141.13			1118			
				141.68		1119			
4	392	89.05			22.91	1120	220.15	142.57	940.27
			122.68			1121			
			122.68			1122			
			122.68			1123			
				89.05		1124			
3	322	58.69			22.22	1125	220.43	131.71	951.13
			97.15			1126			
			97.15			1127			
			97.15			1128			
				58.69		1129			
2	240	23.07			21.26	1130	220.79	128.66	954.18
			63.01			1131			
			63.01			1132			
			63.01			1133			
				23.07		1134			
1	150	14.81			20.61	1135	0.00	113.04	969.80
			30.83			1136			
			30.83			1137			
			30.83			1138			
				14.81		1139			

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: 8/5/96 Job No.: 1572
 Serial No.: 1455 Well Name: MW-11
 Elevation of Range: 0 to 750 psia Client: Jet Propulsion Laboratory
 Datum(ft msl): 1139.3 Weather: Partly Cloudy and 70 °F Casing Size: 1.5-inch Westbay Casing
 Operator: T. Blaney and C. Jones
 Ambient Reading (Pressure/Temperature/Time) Start: 14.71 / 23.58 / 1635 Finish: 14.67 / 19.47 / 1705

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	639	198.88			22.77	1640	210.05	258.12	881.18
			178.04			1641			
			178.04			1642			
			178.04			1643			
				198.88		1644			
4	524	149.39			22.66	1645	210.64	192.95	946.35
			157.06			1646			
			157.06			1647			
			157.06			1648			
				149.39		1649			
3	429	108.58			21.60	1650	211.09	186.82	952.48
			119.10			1651			
			119.10			1652			
			119.10			1653			
				108.58		1654			
2	259	35.09 *			20.51	1655	211.96	169.95	969.35
			53.30			1656			
			53.30			1657			
			53.30			1658			
				35.09		1659			
1	149	14.73			19.73	1700	0.00	118.16	1021.14
			28.10			1701			
			28.10			1702			
			28.10			1703			
				14.73		1704			

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: 8/5/96 Job No.: 1572
 Serial No.: 1455 Well Name: MW-12
 Elevation of Range: 0 to 750 psia Client: Jet Propulsion Laboratory
 Datum(ft msl): 1102.14 Weather: Partly Cloudy and 70 °F Casing Size: 1.5-inch Westbay Casing
 Operator: T. Blaney and C. Jones
 Ambient Reading (Pressure/Temperature/Time) Start: 14.72 / 22.52 / 1205 Finish: 14.68 / 18.13 / 1235

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	548	199.38			22.20	1210	121.73	228.79	873.35
			152.97			1211			
			152.97			1212			
			152.97			1213			
				199.38		1214			
4	436	150.69			22.03	1215	122.31	165.59	936.55
			131.93			1216			
			131.93			1217			
			131.93			1218			
				150.69		1219			
3	323	101.59			20.60	1220	122.90	150.10	952.04
			89.80			1221			
			89.80			1222			
			89.80			1223			
				101.59		1224			
2	243	66.79			19.68	1225	123.30	145.68	956.46
			57.09			1226			
			57.09			1227			
			57.09			1228			
				66.79		1229			
1	140	21.94			18.96	1230	123.85	127.26	974.88
			20.46			1231			
			20.46			1232			
			20.46			1233			
				21.94		1234			

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: 8/5/96

Job No.: 1572

Serial No.: 1455

Well Name: MW-14

Elevation of

Range: 0 to 750 psia

Client: Jet Propulsion Laboratory

Datum(ft msl): 1173.47

Weather: Partly Cloudy and 70 °F

Casing Size: 1.5-inch Westbay Casing

Operator: T. Blaney and C. Jones

Ambient Reading (Pressure/Temperature/Time) Start: 14.65 / 23.18 / 1010

Finish: 14.62 / 20.10 / 1050

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	540	161.07			22.63	1017	202.68	193.11	980.36
			165.22			1018			
			165.22			1019			
			165.22			1020			
				161.07		1021			
4	456	124.50			22.27	1022	203.10	191.98	981.49
			129.32			1023			
			129.32			1024			
			129.32			1025			
				124.50		1026			
3	382	92.34			21.50	1027	203.51	192.02	981.45
			97.33			1028			
			97.33			1029			
			97.33			1030			
				92.35		1031			
2	277	46.69			20.92	1032	204.04	191.61	981.86
			52.08			1033			
			52.08			1034			
			52.08			1035			
				46.69		1036			
1	207	16.30			20.50	1037	204.38	190.31	983.16
			22.40			1038			
			22.40			1039			
			22.40			1040			
				16.30		1041			

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: 8/5/96 Job No.: 1572
 Serial No.: 1455 Well Name: MW-17
 Elevation of Range: 0 to 750 psia Client: Jet Propulsion Laboratory
 Datum(ft msl): 1191.21 Weather: Partly Cloudy and 70 °F Casing Size: 1.5-inch Westbay Casing
 Operator: T. Blaney and C. Jones
 Ambient Reading (Pressure/Temperature/Time) Start: 14.58 / 20.01 / 0735 Finish: 14.60 / 17.34 / 0810

Screen No.	Depth (ft btoc)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	726	177.75			20.41	745	350.72	337.80	853.41
			183.35			746			
			183.35			747			
			183.35			748			
				177.75		749			
4	582	115.25			19.93	750	351.44	325.14	866.07
			126.65			751			
			126.65			752			
			126.65			753			
				115.25		754			
3	468	65.70			18.50	755	351.98	263.63	927.58
			104.00			756			
			104.00			757			
			104.00			758			
				65.70		759			
2	370	23.12			17.85	800	352.49	251.48	939.73
			66.91			801			
			66.91			802			
			66.91			803			
				23.12		804			
1	250	14.69			17.25	805	0.00	227.76	963.45
			24.33			806			
			24.33			807			
			24.33			808			
				14.69		809			

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: 8/5/96

Job No.: 1572

Serial No.: 1455

Well Name: MW-18

Elevation of

Range: 0 to 750 psia

Client: Jet Propulsion Laboratory

Datum(ft msl): 1225.41

Weather: Partly Cloudy and 70 °F

Casing Size: 1.5-inch Westbay Casing

Operator: T. Blaney and C. Jones

Ambient Reading (Pressure/Temperature/Time) Start: 14.68 / 22.92 / 1310

Finish: 14.66 / 18.04 / 1340

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	684	168.38			22.37	1315	329.41	332.29	893.12
			167.13			1316			
			167.13			1317			
			167.13			1318			
				168.38		1319			
4	564	116.29			21.74	1320	330.01	315.22	910.19
			122.70			1321			
			122.70			1322			
			122.70			1323			
				116.29		1324			
3	424	55.50			20.69	1325	330.72	282.12	943.29
			76.57			1326			
			76.57			1327			
			76.57			1328			
				55.50		1329			
2	330	14.79			19.15	1330	0.00	268.96	956.45
			41.25			1331			
			41.25			1332			
			41.25			1333			
				14.79		1334			
1	270	14.74			18.37	1335	0.00	265.18	960.23
			16.83			1336			
			16.83			1337			
			16.83			1338			
				14.74		1339			

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: 8/5/96 Job No.: 1572
 Serial No.: 1455 Well Name: MW-19
 Elevation of Range: 0 to 750 psia Client: Jet Propulsion Laboratory
 Datum(ft msl): 1142.94 Weather: Partly Cloudy and 70 °F Casing Size: 1.5-inch Westbay Casing
 Operator: T. Blaney and C. Jones
 Ambient Reading (Pressure/Temperature/Time) Start: 14.67 / 21.44 / 1425 Finish: 14.657 / 18.83 / 1455

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	498	78.17			20.75	1430	351.88	310.87	832.07
			95.95			1431			
			95.95			1432			
			95.95			1433			
				78.17		1434			
4	444	54.68			19.74	1435	352.18	307.20	835.74
			74.18			1436			
			74.18			1437			
			74.18			1438			
				54.68		1439			
3	392	32.10			19.21	1440	352.45	207.79	935.15
			94.81			1441			
			94.81			1442			
			94.81			1443			
				32.10		1444			
2	314	14.80			19.15	1445	0.00	202.97	939.97
			62.93			1446			
			62.93			1447			
			62.93			1448			
				14.80		1449			
1	242	14.75			18.98	1450	0.00	187.33	955.61
			38.45			1451			
			38.45			1452			
			38.45			1453			
				14.75		1454			

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: 8/5/96

Job No.: 1572

Serial No.: 1455

Well Name: MW-20

Elevation of

Range: 0 to 750 psia

Client: Jet Propulsion Laboratory

Datum(ft msl): 1165.05

Weather: Partly Cloudy and 70 °F

Casing Size: 1.5-inch Westbay Casing

Operator: T. Blaney and C. Jones

Ambient Reading (Pressure/Temperature/Time) Start: 14.70 / 22.97 / 1342

Finish: 14.68 / 18.17 / 1410

Screen No.	Depth (ft btoC)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	900	278.17			23.09	1348	291.50	218.67	946.38
			309.74			1349			
			309.74			1350			
			309.74			1351			
				278.17		1352			
4	700	191.52			22.62	1353	292.05	263.10	901.95
			204.07			1354			
			204.07			1355			
			204.07			1356			
				191.52		1357			
3	562	131.54			21.72	1358	292.75	244.21	920.84
			152.58			1359			
			152.58			1400			
			152.58			1401			
				131.54		1402			
2	392	57.71			20.82	1403	293.67	220.84	944.21
			89.28			1404			
			89.28			1405			
			89.28			1406			
				57.71		1407			
1	230	14.77			18.40	1408	0.00	218.67	946.38
			19.68			1409			
			19.68			1410			
			19.68			1411			
				14.77		1412			

Parameters:

Dmp = Depth to water inside the MP Casing (ft) above MP
 Dz = Depth to static water level (ft)
 Dp = Depth of MP
 Pi = Pressure reading inside the MP Casing (ft)
 Po = Pressure reading outside the MP Casing (ft)
 Patm = Atmospheric Pressure
 H = Pressures outside the MP Casing minus Pressure inside the MP Casing divided by the weight of pure water (w)
 w = Weight of pure water = 0.4335 psi/ft
 Ez = Elevation of static water level
 R = Reference elevation

Calculations:

H = Po-Pi/w (When water is above MP)
 H = Po-Patm/w (When water is below MP)
 Dz = Dmp - H (When water is above MP)
 Dz = Dp - H (When water is below MP)
 Ez = R - Dz

6.00		
6.00		0.00
8.00	6.67	0.00
20.00		0.00

Date	Well #	Screen	R	Dp	Dmp	Pi or Patm	Po	H	Dz	Ez
9/12/96	MW-3	5	1100.34	653	310.14	163.21	174.19	25.33	284.81	815.53
		4	1100.34	558	310.55	122.02	145.58	54.35	256.20	844.14
		3	1100.34	346	311.52	30.06	92.14	143.21	168.31	932.03
		2	1100.34	252	0.00	14.78	53.70	89.78	162.22	938.12
		1	1100.34	172	0.00	14.73	24.45	22.42	149.58	950.76
9/12/96	MW-4	5	1082.84	513	253.22	127.15	133.11	13.75	239.47	843.37
		4	1082.84	392	253.70	74.56	118.21	100.69	153.01	929.83
		3	1082.84	322	254.02	44.16	92.55	111.63	142.39	940.45
		2	1082.84	240	0.00	14.80	58.55	100.92	139.08	943.76
		1	1082.84	150	0.00	14.76	25.92	25.74	124.26	958.58
9/12/96	MW-11	5	1139.30	639	300.27	160.15	170.96	24.94	275.33	863.97
		4	1139.30	524	300.79	110.74	152.50	96.33	204.46	934.84
		3	1139.30	429	301.19	69.91	114.71	103.34	197.85	941.45
		2	1139.30	259	0.00	14.73	49.23	79.58	179.42	959.88
		1	1139.30	149	0.00	14.68	25.53	25.03	123.97	1015.33
9/12/96	MW-12	5	1102.14	548	202.02	164.78	145.24	-45.07	247.09	855.05
		4	1102.14	436	202.55	116.14	127.42	26.02	176.53	925.61
		3	1102.14	323	203.06	67.03	85.35	42.26	160.80	941.34
		2	1102.14	243	203.42	32.25	52.66	47.08	156.34	945.80
		1	1102.14	140	0.00	14.69	15.31	1.43	138.57	963.57
9/12/96	MW-14	5	1173.47	540	230.28	149.06	161.08	27.73	202.55	970.92
		4	1173.47	456	230.68	112.57	125.26	29.27	201.41	972.06
		3	1173.47	382	231.03	80.41	93.27	29.67	201.36	972.11
		2	1173.47	277	231.51	34.79	47.98	30.43	201.08	972.39
		1	1173.47	207	0.00	14.71	18.25	8.17	198.83	974.64
9/13/96	MW-17	5	1191.21	726	386.23	162.36	176.52	32.66	353.57	837.64
		4	1191.21	582	386.86	100.00	120.48	47.24	339.62	851.59
		3	1191.21	468	387.39	50.35	99.92	114.35	273.04	918.17
		2	1191.21	370	0.00	14.71	63.40	112.32	257.68	933.53
		1	1191.21	250	0.00	14.64	19.55	11.33	238.67	952.54
9/13/96	MW-18	5	1225.41	684	368.78	151.31	162.47	25.74	343.04	882.37
		4	1225.41	564	369.27	99.27	117.84	42.84	326.43	898.98
		3	1225.41	424	369.89	38.55	72.58	78.50	291.39	934.02
		2	1225.41	330	0.00	14.71	37.23	51.95	278.05	947.36
		1	1225.41	270	0.00	14.65	NA	#VALUE!	#VALUE!	#VALUE! No Water Above Port
9/13/96	MW-19	5	1142.94	498	352.19	77.96	87.48	21.96	330.23	812.71
		4	1142.94	444	352.53	54.47	65.74	26.00	326.53	816.41
		3	1142.94	392	352.79	31.88	90.67	135.62	217.17	925.77
		2	1142.94	314	0.00	14.72	59.24	102.70	211.30	931.64
		1	1142.94	242	0.00	14.67	34.40	45.51	196.49	946.45
9/13/96	MW-20	5	1165.05	900	292.85	277.42	306.00	65.93	226.92	938.13
		4	1165.05	700	293.75	190.69	198.80	18.71	275.04	890.01
		3	1165.05	562	294.30	130.76	151.50	47.84	246.46	918.59
		2	1165.05	392	295.17	56.93	86.02	67.10	228.07	936.98
		1	1165.05	230	0.00	14.66	15.95	2.98	227.02	938.03
9/13/96	MW-21	5	1059.10	372	118.86	124.51	135.35	25.01	93.85	965.25
		4	1059.10	310	119.14	97.58	108.55	25.31	93.83	965.27
		3	1059.10	240	119.46	67.61	78.85	25.93	93.53	965.57
		2	1059.10	161	119.83	33.29	44.93	26.85	92.98	966.12
		1	1059.10	90	0.00	14.68	NA	#VALUE!	#VALUE!	#VALUE! No Water Above Port

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: 9/12/96

Job No.: 1572

Serial No.: 1455

Well Name: MW-3

Elevation of

Range: 0 to 750 psia

Client: Jet Propulsion Laboratory

Datum(ft msl): 1100.34

Weather: Partly Cloudy and 70 °F

Casing Size: 1.5-inch Westbay Casing

Operator: T. Blaney

Ambient Reading (Pressure/Temperature/Time) Start: 14.66 / 22.82 / 1351

Finish: 14.61 / 18.98 / 1434

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	653	163.26			23.72	1402	310.14	284.81	815.53
			174.19			1403			
			174.19			1404			
			174.19			1405			
				163.15		1406			
4	558	122.03			23.77	1407	310.55	256.20	844.14
			145.56			1408			
			145.59			1409			
			145.59			1410			
				122.01		1411			
3	346	30.06			21.06	1419	311.52	168.31	932.03
			92.13			1420			
			92.13			1421			
			92.15			1422			
				30.06		1423			
2	252	14.78			20.75	1424	0.00	162.22	938.12
			53.69			1425			
			53.70			1426			
			53.70			1427			
				14.77		1428			
1	172	14.73			19.90	1429	0.00	149.58	950.76
			24.45			1430			
			24.45			1431			
			24.45			1432			
				14.73		1433			

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: 9/12/96

Job No.: 1572

Serial No.: 1455

Well Name: MW-4

Elevation of

Range: 0 to 750 psia

Client: Jet Propulsion Laboratory

Datum(ft msl): 1082.84

Weather: Partly Cloudy and 70 °F

Casing Size: 1.5-inch Westbay Casing

Operator: T. Blaney

Ambient Reading (Pressure/Temperature/Time) Start: 14.65 / 18.02 / 0840

Finish: 14.65 / 21.00 / 0915

Screen No.	Depth (ft btoc)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	513	127.15			22.94	840	253.22	239.47	843.37
			133.11			841			
			133.11			842			
			133.11			843			
				127.15		844			
4	392	74.56			22.63	848	253.70	153.01	929.83
			118.21			849			
			118.21			850			
			118.21			851			
				74.56		852			
3	322	44.16			22.02	853	254.02	142.39	940.45
			92.55			854			
			92.55			855			
			92.55			856			
				44.16		857			
2	240	14.80			21.16	900	0.00	139.08	943.76
			58.55			901			
			58.55			902			
			58.55			903			
				14.80		904			
1	150	14.76			21.02	905	0.00	124.26	958.58
			25.92			906			
			25.92			907			
			25.92			908			
				14.76		909			

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: 9/12/96 Job No.: 1572
 Serial No.: 1455 Well Name: MW-11
 Elevation of Datum(ft msl): 1139.3 Range: 0 to 750 psia Client: Jet Propulsion Laboratory
 Weather: Partly Cloudy and 70 °F Casing Size: 1.5-inch Westbay Casing
 Operator: T. Blaney
 Ambient Reading (Pressure/Temperature/Time) Start: 14.68 / 25.61 / 1305 Finish: 14.68 / 19.11 / 1350

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	639	160.15			22.39	1315	300.27	275.33	863.97
			170.96			1316			
			170.96			1317			
			170.96			1318			
				160.15		1319			
4	524	110.74			22.23	1321	300.79	204.46	934.84
			152.50			1322			
			152.50			1323			
			152.50			1324			
				110.74		1325			
3	429	69.91			21.38	1328	301.19	197.85	941.45
			114.71			1329			
			114.71			1330			
			114.71			1331			
				69.91		1332			
2	259	14.73			19.89	1335	0.00	179.42	959.88
			49.23			1336			
			49.23			1337			
			49.23			1338			
				14.73		1339			
1	149	14.68			19.03	1342	0.00	123.97	1015.33
			25.53			1343			
			25.53			1344			
			25.53			1345			
				14.68		1346			

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: 9/12/96

Job No.: 1572

Serial No.: 1455

Well Name: MW-12

Elevation of

Range: 0 to 750 psia

Client: Jet Propulsion Laboratory

Datum(ft msl): 1102.14

Weather: Partly Cloudy and 70 °F

Casing Size: 1.5-inch Westbay Casing

Operator: T. Blaney

Ambient Reading (Pressure/Temperature/Time) Start: 14.76 / 25.47 / 1059

Finish: 14.66 / 18.17 / 1143

Screen No.	Depth (ft btoc)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	548	164.77			22.42	1110	202.02	247.09	855.05
			145.24			1111			
			145.24			1112			
			145.24			1113			
				164.79		1114			
4	436	116.16			21.91	1117	202.55	176.53	925.61
			127.45			1118			
			127.42			1119			
			127.40			1120			
				116.11		1121			
3	323	67.03			20.09	1123	203.06	160.80	941.34
			85.35			1124			
			85.35			1125			
			85.35			1126			
				67.02		1127			
2	243	32.26			18.99	1130	203.42	156.34	945.80
			52.67			1131			
			52.65			1132			
			52.67			1133			
				32.24		1134			
1	140	14.69			18.19	1137	0.00	138.57	963.57
			15.32			1138			
			15.30			1139			
			15.32			1140			
				14.68		1141			

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: 9/12/96

Job No.: 1572

Serial No.: 1455

Well Name: MW-14

Elevation of

Range: 0 to 750 psia

Client: Jet Propulsion Laboratory

Datum(ft msl): 1173.47

Weather: Partly Cloudy and 70 °F

Casing Size: 1.5-inch Westbay Casing

Operator: T. Blaney

Ambient Reading (Pressure/Temperature/Time) Start: 14.71 / 22.75 / 1000

Finish: 14.61 / 20.01 / 1045

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	540	149.06			22.01	1009	230.28	202.55	970.92
			161.08			1010			
			161.08			1011			
			161.07			1012			
				149.05		1013			
4	456	112.57			22.03	1018	230.68	201.41	972.06
			125.26			1019			
			125.26			1020			
			125.26			1021			
				112.57		1022			
3	382	80.41			21.08	1024	231.03	201.36	972.11
			93.27			1025			
			93.27			1026			
			93.27			1027			
				80.40		1028			
2	277	34.78			20.03	1032	231.51	201.08	972.39
			47.98			1033			
			47.98			1034			
			47.98			1035			
				34.79		1036			
1	207	14.71			19.86	1037	0.00	198.83	974.64
			18.25			1038			
			18.25			1039			
			18.25			1040			
				14.71		1041			

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: 9/13/96

Job No.: 1572

Serial No.: 1455

Well Name: MW-17

Elevation of

Range: 0 to 750 psia

Client: Jet Propulsion Laboratory

Datum(ft msl): 1191.21

Weather: Partly Cloudy and 70 °F

Casing Size: 1.5-inch Westbay Casing

Operator: T. Blaney

Ambient Reading (Pressure/Temperature/Time) Start: 14.56 / 19.96 / 0830

Finish: 14.51 / 16.24 / 0916

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	726	162.35			20.05	842	386.23	353.57	837.64
			176.51			843			
			176.53			844			
			176.53			845			
				162.36		846			
4	582	100.01			19.59	848	386.86	339.62	851.59
			120.48			849			
			120.46			850			
			120.49			851			
				99.98		852			
3	468	50.37			17.06	856	387.39	273.04	918.17
			99.93			857			
			99.91			858			
			99.91			859			
				50.33		900			
2	370	14.72			16.43	901	0.00	257.68	933.53
			63.40			902			
			63.38			903			
			63.41			904			
				14.70		905			
1	250	14.66			16.02	908	0.00	238.67	952.54
			19.56			909			
			19.54			910			
			19.54			911			
				14.61		912			

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	684	151.29			21.64	747	368.78	343.04	882.37
			162.47			748			
			162.46			749			
			162.48			750			
				151.32		751			
4	564	99.27			21.43	752	369.27	326.43	898.98
			117.84			753			
			117.84			754			
			117.84			755			
				99.27		756			
3	424	38.55			19.76	758	369.89	291.39	934.02
			72.57			759			
			72.58			800			
			72.58			801			
				38.55		802			
2	330	14.69			18.39	805	0.00	278.05	947.36
			37.23			806			
			37.23			807			
			37.23			808			
				14.73		809			
1	270	14.66			17.60	809	No Water Over Measurement Port		
		Atmospheric				810			
		Atmospheric				811			
		Atmospheric				812			
				14.64		813			

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: 9/13/96

Job No.: 1572

Serial No.: 1455

Well Name: MW-19

Elevation of

Range: 0 to 750 psia

Client: Jet Propulsion Laboratory

Datum(ft msl): 1142.94

Weather: Partly Cloudy and 70 °F

Casing Size: 1.5-inch Westbay Casing

Operator: T. Blaney

Ambient Reading (Pressure/Temperature/Time) Start: 14.68 / 23.84 / 1246

Finish: 14.53 / 18.17 / 1317

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	498	77.96			20.26	1253	352.19	330.23	812.71
			87.47			1254			
			87.48			1255			
			87.48			1256			
				77.95		1257			
4	444	54.47			19.27	1258	352.53	326.53	816.41
			65.73			1259			
			65.74			1300			
			65.74			1301			
				54.47		1302			
3	392	31.87			18.86	1302	352.79	217.17	925.77
			90.67			1303			
			90.67			1304			
			90.67			1305			
				31.89		1306			
2	314	14.73			18.85	1306	0.00	211.30	931.64
			59.24			1307			
			59.24			1308			
			59.24			1309			
				14.71		1310			
1	242	14.69			18.56	1310	0.00	196.49	946.45
			34.40			1311			
			34.40			1312			
			34.40			1313			
				14.65		1314			

Screen No.:	Depth (ft btoc)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	900	277.40			22.78	942	292.85	226.92	938.13
			306.01			943			
			306.00			944			
			306.00			945			
				277.44		946			
4	700	190.69			23.00	949	293.75	275.04	890.01
			198.79			950			
			198.80			951			
			198.80			952			
				190.69		953			
3	562	130.75			21.48	957	294.30	246.46	918.59
			151.50			958			
			151.50			959			
			151.50			1000			
				130.76		1001			
2	392	56.94			19.40	1004	295.17	228.07	936.98
			86.02			1005			
			86.02			1006			
			86.02			1007			
				56.92		1008			
1	230	14.67			17.42	1012	0.00	227.02	938.03
			15.96			1013			
			15.94			1014			
			15.94			1015			
				14.65		1016			

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: 9/12/96

Job No.: 1572

Serial No.: 1455

Well Name: MW-21

Elevation of

Range: 0 to 750 psia

Client: Jet Propulsion Laboratory

Datum(ft msl): 1059.1

Weather: Partly Cloudy and 70 °F

Casing Size: 1.5-inch Westbay Casing

Operator: T. Blaney

Ambient Reading (Pressure/Temperature/Time) Start: 14.60 / 20.08 / 1103

Finish: 14.64 / 19.52 / 11.38

Screen No.	Depth (ft btoc)	Fluid Pressure Readings			Temp. (C)	Time (hrs:min)	Depth to Water (ft)	Piezometric Level Outside Port (ft)	Water Level Elevation (ft)
		Inside Casing (psia)	Outside Casing (psia)	Inside Casing (psia)					
5	372	124.49			20.49	1109	118.86	93.85	965.25
			135.34			1110			
			135.36			1111			
			135.36			1112			
				124.53		1113			
4	310	97.59			20.95	1114	119.14	93.83	965.27
			108.56			1115			
			108.54			1116			
			108.54			1117			
				97.57		1118			
3	240	67.63			19.99	1121	119.46	93.53	965.57
			78.84			1122			
			78.85			1123			
			78.85			1124			
				67.58		1125			
2	161	33.28			19.55	1127	119.83	92.98	966.12
			44.94			1128			
			44.92			1129			
			44.92			1130			
				33.29		1131			
1	90	14.67			19.47	1133	No Water Over Measurement Port		
		Atmospheric				1134			
		Atmospheric				1135			
		Atmospheric				1136			
				14.69		1137			



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-19 Depth: 494 Date: 8/8/96
Well Name: MW-19 Sampling Zone No.: 5 Starting Time: 1145 Finishing Time: 1240
Technicians T. BLANEY, C. JONES
Water Level Inside MP Casing (Beginning of Session) 80.22 PSIA Above Port (End of Session) 80.22 PSIA Above Port

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 (PSIA)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level In MP (PSIA) Remove Tape	
1	✓	✓	✓	✓	✓	✓	80.22	✓	1152	1155	✓	80.22	1	1st Run; NTU's = 4.9 NO ₃ 's + 1/2 CATIONS + Parameters 1/2 CATIONS, ANIONS + T-P AND Final Parameters.
2	✓	✓	✓	✓	✓	✓	80.22	✓	1220	1223	✓	80.22	1	
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-19 Depth: 444 Date: 8/8/96Well Name: MW-19 Sampling Zone No.: 4 Starting Time: 1243 Finishing Time: 1350Technicians: T. BLANEY, C. JONESWater Level Inside MP Casing (Beginning of Session) 56.57 psia Above Port (End of Session) 56.57 psia Above Port

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Cont./ner	Valve Closed	Deactivate Set Arm Locate Port	Water Level In MP (ft) psia	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level In MP (ft) psia Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	56.57	✓	1306	1309	✓	56.57	1	1ST Run ; NTUs = 5.0 Parameters; VOA's + 1/2 ANIONS + CATIONS
2	✓	✓	✓	✓	✓	✓	56.57	✓	1333	1337	✓	56.57	1	1/2 ANIONS + T-P + FINAL Parameters.
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-19 Depth: 392 Date: 8/8/96
Well Name: MW-19 Sampling Zone No.: 3 Starting Time: 1352 Finishing Time: 1430
Technicians: T. Blaney, C. Jones
Water Level Inside MP Casing (Beginning of Session) 34.01 psia over port (End of Session) 34.01 psia over port

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) 25.0 34.01	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape 24.22 34.01	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	25.0 34.01	✓	1357	1400	✓	24.22 34.01	1	1ST Run; Screen # 3.5; VOA's + CATIONS
2	✓	✓	✓	✓	✓	✓	34.01	✓	1423	1426	✓	34.01	1	ANIONS + T-P + Final Parameters
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-19 Depth: 314 Date: 8/8/96Well Name: MW-19 Sampling Zone No.: 2 Starting Time: 1440 Finishing Time: 1514Technicians: T. BLANEY, C. JONESWater Level Inside MP Casing (Beginning of Session) 14.87 (Atmospheric; No water over port) (End of Session) 14.87 (Atmospheric; No water)

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	✓	✓	✓	✓	✓	✓	14.87	✓	1444	1447	✓	14.87	1	1st Run; Parameters + VOAS + CATIONS + 1/2 Anions
2	✓	✓	✓	✓	✓	✓	14.87	✓	1504	1507	✓	14.87	1	1/2 Anions + T-P + Final Parameters.
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-19 Depth: 242 Date: 8/8/96
 Well Name: MW-19 Sampling Zone No.: 1 Starting Time: 1520 Finishing Time: 1556
 Technicians: T. Blaney, C. Jones
 Water Level Inside MP Casing (Beginning of Session) 14.72 (Atmospheric; No water above port) (End of Session) 14.72 (Atmospheric; No water above port)

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	✓	✓	✓	✓	✓	✓	14.72	✓	1523	1528	✓	14.72	1	1st Run: NTUs = 6.0 VOAS + 1/2 CATIONS
2	✓	✓	✓	✓	✓	✓	14.72	✓	1544	1549	✓	14.72	1	1/2 CATIONS + Anions + FP + Final Parameters
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

Comments: _____

Total Volume: _____

0.4335 $\frac{PST}{ft}$

26.3
153.75



FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-18 Depth: 684 Date: 8/12/96
 Well Name: MW-18 Sampling Zone No.: 5 Starting Time: 1030 Finishing Time: 1210
 Technicians: T. Blaney, T. Choi, J. Brunner
 Water Level Inside MP Casing (Beginning of Session) 153.76 psia Above Port (End of Session) 153.67 psia Above Port

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) psia	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level In MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	153.76	✓	1045	1048	✓	153.76	1	1st run. NTU's ~ 3.5 VOA's + 1/2 CATIONS
2	✓	✓	✓	✓	✓	✓	153.75	✓	1125	1127	✓	153.75	1	1/2 CATIONS + ANIONS + 1/2 T-P
3	✓	✓	✓	✓	✓	✓	153.67	✓	1154	1156	✓	153.67	1	1/2 T-P, Final parameters.
4														
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Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-18 Depth: 564 Date: 8/12/16
 Well Name: MW-18 Sampling Zone No.: 4 Starting Time: 1212 Finishing Time: 1305
 Technicians: T. Blanny, J. Brenner, T. Choi
 Water Level Inside MP Casing (Beginning of Session) 101.61 psia Above port (End of Session) 101.51 psia Above port.

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed		Water Level In MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level In MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	101.61	✓	1222	1224	✓	101.61	1	1st Run @ Screen #4; NTU's = 2.15 VOAs + CATIONS
2	✓	✓	✓	✓	✓	✓	101.51	✓	1250	1252	✓	101.51	1	Final Parameters + ANIONS + T-P
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Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-18 Depth: 423 Date: 8/12/91Well Name: MW-18 Sampling Zone No.: 3 Starting Time: 1310 Finishing Time: 1430Technicians: T. Blaney, T. Choi, J. BrennerWater Level Inside MP Casing (Beginning of Session) 40.86 psia Above port (End of Session) 40.75 psia Above port

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	✓	✓	✓	✓	✓	✓	40.86	✓	1318	1321	✓	40.86	1	1st Run NPLS = 2.58 VOAS, Dup, ms, msd
2	✓	✓	✓	✓	✓	✓	40.84	✓	1352	1355	✓	40.84	1	CATIONS, ANIONS
3	✓	✓	✓	✓	✓	✓	40.75	✓	1414	1416	✓	40.75	0.5	T-P, Final Parameters
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Comments: _____

Total Volume: _____

F2



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-18 Depth: 330 Date: 8/12/96
Well Name: MW-18 Sampling Zone No.: 2 Starting Time: 1435 Finishing Time: 1600
Technicians: T. Blaney, T. Choi, J. Brenner
Water Level Inside MP Casing (Beginning of Session) 14.87 (Atmospheric; No water above port) (End of Session) 14.87 (Atmospheric) psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed		Water Level In MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level In MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.87	✓	1440	1444	✓	14.87	1	1ST Run; NTU's = 29.0
2	✓	✓	✓	✓	✓	✓	14.90	✓	1509	1513	✓	14.89	1	2ND Run; NTU's = 4.95 VOAS + 1/2 CATIONS
3	✓	✓	✓	✓	✓	✓	14.85	✓	1533	1538	✓	14.85	1	1/2 CATIONS + ANIONS + 1/2 T-P
4	✓	✓	✓	✓	✓	✓	14.87	✓	1554	1557	✓	14.87	0.5	1/2 T-P + Final Parameters.
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Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-18 Depth: 270 Date: 8/13/91

Well Name: MW-18 Sampling Zone No.: 1 Starting Time: 0805 Finishing Time: 0915

Technicians T. Blaney, T. Chbi, S. Brenner

Water Level Inside MP Casing (Beginning of Session) 14.78 (Atmospheric; No water over port) (End of Session) 14.78 (Atmospheric; No water)

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	✓	✓	✓	✓	✓	✓	14.78	✓	0812	0818	✓	14.78	1	1st Run; Screen #1 NPLS = 0.4 VOAS + 1/2 CATIONS
2	✓	✓	✓	✓	✓	✓	14.78	✓	0836	0844	✓	14.78	1	1/2 CATIONS + ANIONS
3	✓	✓	✓	✓	✓	✓	14.78	✓	0858	0903	✓	14.78	1	T-P and Final Parameters
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Comments: _____

Total Volume: _____



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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-17 Depth: 726 Date: 8/13/96
Well Name: MW-17 Sampling Zone No.: 5 Starting Time: 0948 Finishing Time: 1255
Technicians: T. Blaney, T. Choi, S. Brenner
Water Level Inside MP Casing (Beginning of Session) 164.86 psia Above port (End of Session) 164.65 psia Above port

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 PSIA	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level In MP PSIA Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	164.86	✓	0952	0954	✓	164.86	1	1ST Run ; NTU's = 60.0
2	✓	✓	✓	✓	✓	✓	164.80	✓	1023	1025	✓	164.79	1	2ND Run ; NTU's = 50.0
3	✓	✓	✓	✓	✓	✓	164.80	✓	1055	1057	✓	164.78	1	3RD Run ; NTU's = 30.0
4	✓	✓	✓	✓	✓	✓	164.75	✓	1127	1129	✓	164.75	1	4TH Run ; NTU's = 19.9
5	✓	✓	✓	✓	✓	✓	164.71	✓	1202	1204	✓	164.71	1	5TH Run ; NTU's = 5.0 VOA's + CATRONS
6	✓	✓	✓	✓	✓	✓	164.65	✓	1238	1240	✓	164.65	1	ANIONS + T-P + Final Permeate.
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Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-17 Depth: 582 Date: 8/13/96Well Name: MW-17 Sampling Zone No.: 4 Starting Time: 1300 Finishing Time: 1420Technicians T. Blaney, T. Choi, J. BrennerWater Level Inside MP Casing (Beginning of Session) 102.15 psia Above port (End of Session) 101.02 psia Above port

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	✓	✓	✓	✓	✓	✓	102.15	✓	1310	1313	✓	102.15	1	1st Run; NTUs = 2.77 VOAs + 1/2 CATIONS
2	✓	✓	✓	✓	✓	✓	102.15	✓	1340	1343	✓	102.15	1	1/2 CATIONS + 2 ANIONS
3	✓	✓	✓	✓	✓	✓	101.02	✓	1407	1408	✓	101.02	0.5	T-P T-P + Final parameters
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Comments: _____

Total Volume: _____



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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-17 Depth: 468 Date: 8/13/96
Well Name: MW-17 Sampling Zone No.: 3 Starting Time: 1430 Finishing Time: 1600
Technicians: T. Blaney, T. Choi, J. Brenner
Water Level Inside MP Casing (Beginning of Session) 52.60 psia Above port (End of Session) 52.50 psia Above port

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  <i>psia</i>	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level In MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	52.60	✓	1434	1447	✓	52.60	1	1 st Run; NTUS = 4.95 VOAs + 1/2 Cations
2	✓	✓	✓	✓	✓	✓	52.51	✓	1515	1517	✓	52.51	1	1/2 CATIONS + Anions + 1/2 T-P
3	✓	✓	✓	✓	✓	✓	52.50	✓	1540	1543	✓	52.50	1	1/2 T-P + Parameters
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Comments: _____

Total Volume: _____



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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-17 Depth: 370 Date: 8/14/96

Well Name: MW-17 Sampling Zone No.: 2 Starting Time: 0835 Finishing Time: 0948

Technicians: T. Blaney, J. Brenner, T. Choi

Water Level Inside MP Casing (Beginning of Session) 14.86 (Atmospheric; No water over port) psia (End of Session) 14.86 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	✓	✓	✓	✓	✓	✓	14.86	✓	0851	0855	✓	14.86	1	1st Run, NTUs = 4.73 VOA's + 1/2 CATIONS
2	✓	✓	✓	✓	✓	✓	14.86	✓	0920	0928	✓	14.86	1	1/2 CATIONS, ANIONS + T-P
3	✓	✓	✓	✓	✓	✓	14.86	✓	0940	0945	✓	14.86	0.5	Final Parameters
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Comments: _____

Total Volume: _____


FOSTER WHEELER ENVIRONMENTAL CORPORATION
Groundwater Sampling
 Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-17 Depth: 250 Date: 8/14/96
 Well Name: MW-17 Sampling Zone No.: 1 Starting Time: 0950 Finishing Time: 1055
 Technicians: T. Blawie, J. Brunner, T. Choi
 Water Level Inside MP Casing (Beginning of Session) 14.84 psia (Atmospheric; No water Above port) (End of Session) 14.84 psia (Atmospheric)

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	✓	✓	✓	✓	✓	✓	14.84	✓	0953	1000	✓	14.84	1	1st Run; NTU's = 1.00 VOAS + 1/2 CATIONS
2	✓	✓	✓	✓	✓	✓	14.84	✓	1021	1028	✓	14.84	1	1/2 CATIONS + ANIONS + T-P
3	✓	✓	✓	✓	✓	✓	14.84	✓	1042	1146	✓	14.84	0.5	Final Parameters
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Comments: _____

Total Volume: _____



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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-20 Depth: 900 Date: 8/14/96

Well Name: MW-20 Sampling Zone No.: 5 Starting Time: 1242 Finishing Time: 1400

Technicians: T. Blaney, J. Brenner, T. Choi

Water Level Inside MP Casing (Beginning of Session) 280.15 psia (End of Session) 280.02 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	✓	✓	✓	✓	✓	✓	280.15 1256	✓	1256	1259	✓	280.15	1	1st Run: NTU's = 2.54 VOA's + 1/2 CATIONS
2	✓	✓	✓	✓	✓	✓	280.02	✓	1336	1338	✓	280.02	1	1/2 CATIONS + ANIONS + T-P + Parameters
3													+	Final Parameters
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Comments: _____

Total Volume: _____


FOSTER WHEELER ENVIRONMENTAL CORPORATION
Groundwater Sampling
 Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-20 Depth: 700 Date: 8/15/96
 Well Name: MW-20 Sampling Zone No.: 4 Starting Time: 0757 Finishing Time: 0850
 Technicians: T. Blaney, T. Choi, J. Brenner
 Water Level Inside MP Casing (Beginning of Session) 192.97 psia (End of Session) 192.97 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	✓	✓	✓	✓	✓	✓	192.97	✓	0807	0811	✓	192.97	1	1st Run; NTH's = 1.23 VOAS + CATIONS
2	✓	✓	✓	✓	✓	✓	192.97	✓	0844	0846	✓	192.97	1	ANIONS + T-P + Final Parameters
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Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JAL Location: MW-20 Depth: 562 Date: 8/15/96
Well Name: MW-20 Sampling Zone No.: 3 Starting Time: 0907 Finishing Time: 1007
Technicians: T. Blaney, T. Choi, J. Brenner
Water Level Inside MP Casing (Beginning of Session) 132.94 psia (End of Session) 132.94 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	✓	✓	✓	✓	✓	✓	132.94	✓	0924	0927	✓	132.94	1	1st Run; NTHS = 2.80 VOAs + CATIONS
2	✓	✓	✓	✓	✓	✓	132.94	✓	0952	0954	✓	132.94	1	ANIONS + T-P + Final Parameters
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Comments: _____

Total Volume: _____

F2



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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-20 Depth: 392 Date: 8/15/96
Well Name: MW-20 Sampling Zone No.: 2 Starting Time: 1015 Finishing Time: 1110
Technicians: T. Blaney, T. Choi, J. Brenner
Water Level Inside MP Casing (Beginning of Session) 59.12 psia (End of Session) 59.08 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	✓	✓	✓	✓	✓	✓	59.12	✓	1023	1026	✓	59.10	1	1st Run; NTUs = 4.4 VOAS + CATIONS
2	✓	✓	✓	✓	✓	✓	59.10	✓	1051	1055	✓	59.08	1	ANIONS + TAPP. + final parameters
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Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: MT JPL Location: MW-20 Depth: 230 Date: 8/15/96

Well Name: MW-20 Sampling Zone No.: 1 Starting Time: 11:15 Finishing Time: 1225

Technicians T. Blaney, T. Choi, J. Brenner.

Water Level Inside MP Casing (Beginning of Session) 14.86 psia (Atmospheric) (End of Session) 14.84 psia (Atmospheric)

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	✓	✓	✓	✓	✓	✓	14.86	✓	11:23	11:30	✓	14.82	1	1 st RUN 2 VOLS + 1/2 CATIONS NTUs = 3.9
2	✓	✓	✓	✓	✓	✓	14.84	✓	11:48	11:55	✓	14.84	1	1/2 CATIONS + AMIONS
3	✓	✓	✓	✓	✓	✓	14.84	✓	12:08	12:17	✓	14.84	0.5	T-P + Final Parameters
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12														

Comments: _____

Total Volume: _____

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JDL Location: MW-21 Depth: 372 Date: 8/16/96
Well Name: MW-21 Sampling Zone No.: 5 Starting Time: 0830 Finishing Time: 1210
Technicians: T. BLANEY, J. BRENNEN, T. CHOI
Water Level Inside MP Casing (Beginning of Session) 127.04 psia (End of Session) 126.87 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	✓	✓	✓	✓	✓	✓	127.04	✓	0838	0841	✓	127.04	1	1 st Run; NTU's = 12.0 500000
2	✓	✓	✓	✓	✓	✓	127.04	✓	0902	0905	✓	127.04	1	2 nd Run; NTU's = 13.5
3	✓	✓	✓	✓	✓	✓	126.97	✓	0946	0950	✓	126.97	1	3 rd Run; NTU's = 29.0
4	✓	✓	✓	✓	✓	✓	126.97	✓	1010	1013	✓	126.97	1	4 th Run; NTU's = 21.7
5	✓	✓	✓	✓	✓	✓	126.95	✓	1030	1033	✓	126.92	1	5 th Run; NTU's = 14.5
6	✓	✓	✓	✓	✓	✓	126.90	✓	1056	1059	✓	126.90	1	6 th Run; NTU's = 14.7
7	✓	✓	✓	✓	✓	✓	126.88	✓	1118	1121	✓	126.88	1	7 th Run; NTU's = 14.4
8	✓	✓	✓	✓	✓	✓	126.87	✓	1141	1144	✓	126.87	1	8 th Run; NTU's = 4.9 VOA's + Carbons
9	✓	✓	✓	✓	✓	✓	126.87	✓	1202	1204	✓	126.87	1	Anions + T-P + Final Parameters
10														
11														
12														

Comments: _____

Total Volume: _____



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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-21 Depth: 310 Date: 8/16/96Well Name: MW-21 Sampling Zone No.: 4 Starting Time: 1215 Finishing Time: 1255Technicians: T. BLANEY, J. BRENNER, T. ChoiWater Level Inside MP Casing (Beginning of Session) 99.80 psia (End of Session) 99.80 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed		Water Level In MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level In MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	99.80	✓	1223	1226	✓	99.80	1	1ST Run: NTUs = 2.8 DOAs + Cations + 1/2 Anions
2	✓	✓	✓	✓	✓	✓	99.80	✓	1246	1250	✓	99.80	1	1/2 Anions + T-P + Final Parameters
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Comments: _____

Total Volume: _____



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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-21 Depth: 241 Date: 8/16/96
Well Name: MW-21 Sampling Zone No.: 3 Starting Time: 1300 Finishing Time: 1500
Technicians T. BLANEY, J. Brenner, T. Choi
Water Level Inside MP Casing (Beginning of Session) 69.97 psia (End of Session) 69.82 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	✓	✓	✓	✓	✓	✓	69.97	✓	1303	1306	✓	69.97	1	1 ST Run; NTUs = 12.5
2	✓	✓	✓	✓	✓	✓	69.97	✓	1323	1326	✓	69.97	1	2 ND Run; NTUs = 11.1
3	✓	✓	✓	✓	✓	✓	69.94	✓	1344	1347	✓	69.94	1	3 RD Run; NTUs = 8.1
4	✓	✓	✓	✓	✓	✓	69.87	✓	1405	1407	✓	69.87	1	4 TH Run; NTUs = 4.32 4045
5	✓	✓	✓	✓	✓	✓	69.82	✓	1426	1429	✓	69.82	1	VOAs, ms, msd, CATIONS + 1/2 ANIONS
6	✓	✓	✓	✓	✓	✓	69.82	✓	1443	1446	✓	69.82	1	1/2 ANIONS + T-P + Final Run Parameters
7														
8														
9														
10														
11														
12														

Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-21 Depth: 162 Date: 8/19/96
Well Name: MW-21 Sampling Zone No.: 2 Starting Time: 0825 Finishing Time: 0900
Technicians T. Blaney, J. Brenner, T. Choi
Water Level Inside MP Casing (Beginning of Session) 35.44 psia (End of Session) 35.38 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	✓	✓	✓	✓	✓	✓	35.44	✓	0829	0834	✓	35.44	1	1st Run; Ntals = 2.13 VONS + CATIONS
2	✓	✓	✓	✓	✓	✓	35.38	✓	0848	0853	✓	35.38	1	ANIONS + T-P + Final Parameters
3														
4														
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Comments: _____

Total Volume: _____

F2



FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-21 Depth: 90 Date: 8/19/96
 Well Name: MW-21 Sampling Zone No.: 1 Starting Time: 1000 Finishing Time: 1050
 Technicians T. Blaney, J. Brenner, T. Choi
 Water Level Inside MP Casing (Beginning of Session) 14.80 psia (Atmospheric) (End of Session) 14.80 psia (Atmospheric)

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) psia	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.80	✓	1002	1012	✓	14.80	1	1st Run; NTU's = 1.01 VOAS + 1/2 CATIONS
2	✓	✓	✓	✓	✓	✓	14.80	✓	1023	1034	✓	14.80	1	1/2 CATIONS + ANIONS
3	✓	✓	✓	✓	✓	✓	14.80	✓	1044	1050	✓	14.80	0.75	T-P + Final Parameters
4														
5														
6														
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Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-14 Depth: 540 Date: 8/20/96

Well Name: MW-14 Sampling Zone No.: 5 Starting Time: 1000 Finishing Time: 1140

Technicians T. BLANEY, J. BRANNER

Water Level Inside MP Casing (Beginning of Session) 151.86 psia (End of Session) 150.63 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) <i>psia</i>	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level In MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	151.86	✓	1009	1011	✓	151.86	1	1st Run; NTUs = 0.98 Purge Filter + Parameters
2	✓	✓	✓	✓	✓	✓	151.74	✓	1037	1039	✓	151.74	1	VOAs + CATIONS + TOTAL Cr + 1/2 ANIONS
3	✓	✓	✓	✓	✓	✓	151.67	✓	1103	1105	✓	151.67	1	Dissolved metals + 1/2 ANIONS + + Cr VI +
4	✓	✓	✓	✓	✓	✓	150.63	✓	1131	1133	✓	150.63	0.5	Final Parameters
5														
6														
7														
8														
9														
10														
11														
12														

Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: PL Location: MW-14 Depth: 456 Date: 8/20/96
Well Name: MW-14 Sampling Zone No.: 4 Starting Time: 1150 Finishing Time: 1330
Technicians T. BLANEY, J. BRENNER
Water Level Inside MP Casing (Beginning of Session) 115.08 psia (End of Session) 114.00 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) psia	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level In MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	115.08	✓	1156	1158	✓	115.08	1	1st Run; NTA's = 2.95 Purge Filter + Parameters
2	✓	✓	✓	✓	✓	✓	115.06	✓	1224	1227	✓	115.06	1	VOAS + Cations + Total Cr + ANIONS
3	✓	✓	✓	✓	✓	✓	114.98	✓	1250	1252	✓	114.98	1	Dissolved metals + 1/2 ANIONS + Cr VI + T-P
4	✓	✓	✓	✓	✓	✓	114.00	✓	1316	1318	✓	114.00	0.5	Final Parameters
5														
6														
7														
8														
9														
10														
11														
12														

Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-14 Depth: 382 Date: 8/21/96

Well Name: MW-14 Sampling Zone No.: 3 Starting Time: 0815 Finishing Time: 1010

Technicians: T. Blaney, T. Choi, J. Brenner

Water Level Inside MP Casing (Beginning of Session) 82.66 P.S.I.A. (End of Session) 81.58 P.S.I.A.

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed		Water Level In MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level In MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	82.66	✓	0821	0824	✓	82.66	1	1st RUN, NTUS, CS, PARAMETERS
2	✓	✓	✓	✓	✓	✓	82.62	✓	0848	0851	✓	82.60	1	2nd RUN, UOAS, METALS, 1/2 ANIONS
3	✓	✓	✓	✓	✓	✓	82.65	✓	0913	0916	✓	82.58	1	INVALID RUN - CLOSED VALVE IN INNER CASING
4	✓	✓	✓	✓	✓	✓	82.62	✓	0934	0937	✓	82.62	1	4th RUN, FILTER, METALS, 1/2 ANIONS, Hex. CHROMIUM, T-P
5	✓	✓	✓	✓	✓	✓	81.59	✓	0959	1000	✓	81.58	0.5	5th RUN, PARAMETERS
6														
7														
8														
9														
10														
11														
12														

Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-14 Depth: 277 Date: 8/21/96
Well Name: MW-14 Sampling Zone No.: 2 Starting Time: 1015 Finishing Time: 1140
Technicians T. BLANEY, T. Choi, J. Brunner
Water Level Inside MP Casing (Beginning of Session) 37.00 (PSIA) (End of Session) 36.01 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	✓	✓	✓	✓	✓	✓	37.00	✓	1027	1031	✓	36.98	12	1 st RUN, NTUS = 5.0
2	✓	✓	✓	✓	✓	✓	36.99	✓	1051	1054	✓	36.97	12	2 nd RUN, VOA'S TOP, Carbon & CAT'S 1/2 ANION'S
3	✓	✓	✓	✓	✓	✓	36.95	✓	1113	1117	✓	36.93	12	3 rd RUN, DISSOLVED METALS, 1/2 ANION'S, HEX CHROME, T-P
4	✓	✓	✓	✓	✓	✓	35.95	✓	1135	1137	✓	36.01	12	4 th RUN, FINAL PARAMETERS
5														
6														
7														
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10														
11														
12														

Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-14 Depth: 212 Date: 8/21/96Well Name: MW-14 Sampling Zone No.: 1 Starting Time: 1145 Finishing Time: 1320Technicians: T. Blaney, T. Choi, S. BrennerWater Level Inside MP Casing (Beginning of Session) 14.85 (Atmospheric) (End of Session) 14.78 (Atmospheric)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed		Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.85	✓	1153	1159	✓	14.85	1	1st Run; NTUs = 4.01
2	✓	✓	✓	✓	✓	✓	14.91	✓	1226	1229	✓	14.91	1	VOA's + Metals/cations + 1/2 Anions
3	✓	✓	✓	✓	✓	✓	14.79	✓	1244	1250	✓	14.79	1	Dissolved metals + 1/2 Anions + Cr VI
4	✓	✓	✓	✓	✓	✓	14.78	✓	1305	1311	✓	14.78	1	T.P., Final Parameters
5														
6														
7														
8														
9														
10														
11														
12														

Comments: _____

Total Volume: _____

F2



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-4 Depth: 513 Date: 8/22/96
Well Name: MW-4 Sampling Zone No.: 5 Starting Time: 0800 Finishing Time: 0940
Technicians: T. BLANEY, J. BRENNER, T. Choi
Water Level Inside MP Casing (Beginning of Session) 129.40 PSIA (End of Session) 128.40 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	✓	✓	✓	✓	✓	✓	129.40	✓	0810	0813	✓	129.41	1	1 st RUN, NTU's = 4.97, PARAMETERS PURGE FILTER
2	✓	✓	✓	✓	✓	✓	129.43	✓	0840	0843	✓	129.42	1	2 nd RUN, 2 UGAs, METALS, 1/2 ANIONS
3	✓	✓	✓	✓	✓	✓	129.40	✓	0905	0907	✓	129.40	1	3 rd RUN, 1/2 ANIONS, HEX-CHR, T-P
4	✓	✓	✓	✓	✓	✓	128.40	✓	0933	0934	✓	128.40	0.5	4 th RUN FINAL PARAMETERS
5														
6														
7														
8														
9														
10														
11														
12														

Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-4 Depth: 392 Date: 8/22/96Well Name: MW-4 Sampling Zone No.: 4 Starting Time: 0950 Finishing Time: 1129Technicians: T. BLANEY, J. BRENNER, T. CHOIWater Level Inside MP Casing (Beginning of Session) 76.74 (PSIA) (End of Session) 75.73 (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	✓	✓	✓	✓	✓	✓	76.74	✓	0959	1001	✓	76.70	1.0L	1ST RUN, NTU = 2.03
2	✓	✓	✓	✓	✓	✓	76.78	✓	1029	1027	✓	76.70	1.0L	VOAS, METALS & 1/2 ANIONS 2ND RUN
3	✓	✓	✓	✓	✓	✓	76.75	✓	1049	1051	✓	76.73	1.0L	3RD RUN, DISSOLVED METALS, 1/2 ANION, HEX. CHROME, T-P
4	✓	✓	✓	✓	✓	✓	75.75	✓	1113	1114	✓	75.73	0.5L	4TH RUN - FINAL PARAMETERS
5														
6														
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8														
9														
10														
11														
12														

Comments: _____

Total Volume: _____

F2

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FOSTER WHEELER ENVIRONMENTAL CORPORATION

Groundwater Sampling

Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-4 Depth: 322 Date: 8/22/96
 Well Name: MW-4 Sampling Zone No.: 3 Starting Time: 1125 Finishing Time: 1255
 Technicians: T. BLANEY, J. BRENNER, T. Choi
 Water Level Inside MP Casing (Beginning of Session) 46.32 PSIA (End of Session) 45.24 psia

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed		Water Level In MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level In MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	46.32	✓	1134	1137	✓	46.32	1 L	1st RUN, NTU = 0.25, PURGE FILTER + PARAMETERS
2	✓	✓	✓	✓	✓	✓	46.30	✓	1150	1158	✓	46.29	1 L	2nd RUN, 2UOMs, METALS, 1/2 ANIONS
3	✓	✓	✓	✓	✓	✓	46.24	✓	1217	1220	✓	46.23	1 L	3rd RUN, FILTERED METALS, 1/2 ANIONS, 10X CH, T-P
4	✓	✓	✓	✓	✓	✓	45.24	✓	1239	1240	✓	45.24	0.5 L	4th RUN, FINAL PARAMETERS
5														
6														
7														
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9														
10														
11														
12														

Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-4 Depth: 240 Date: 8/23/96

Well Name: MW-4 Sampling Zone No.: 2 Starting Time: 0820 Finishing Time: 1007

Technicians: T. BLANEY, T. Choi, J. Brenner

Water Level Inside MP Casing (Beginning of Session) 14.91 (PSIA) atmospheric (End of Session) 14.89 (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	✓	✓	✓	✓	✓	✓	14.91	✓	0830	0833	✓	14.90	1 L	1st RUN, NTUS = 3.0, PARAMETERS PURGE FILTER
2	✓	✓	✓	✓	✓	✓	14.93	✓	0854	0858	✓	14.90	1 L	2nd RUN 1/2 ANIONS 1/2 METALS, 1/2 ANIONS DUPLICATE UDAS, MS, MS D, 1/2 DUP METALS
3	✓	✓	✓	✓	✓	✓	14.87	✓	0915	0918	✓	14.88	1 L	3rd RUN 1/2 METALS, 1/2 DUP. METALS, 1/2 ANIONS 1/2 T-P
4	✓	✓	✓	✓	✓	✓	14.86	✓	0933	0936	✓	14.88	1 L	4th RUN 3/4 METALS, DISSOLVED METALS, 3/4 DIS. METALS DUP
5	✓	✓	✓	✓	✓	✓	14.86	✓	0955	0958	✓	14.89	1 L	5th RUN 1/4 DIS. METALS, 1/2 DIS. METAL. DUP CR+G, CR+G DUP
6														FINAL PARAMETERS
7														
8														
9														
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12														

Comments: _____

Total Volume: _____


FOSTER WHEELER ENVIRONMENTAL CORPORATION
Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: SPL Location: MW-4 Depth: 150 Date: 8/23/96
Well Name: MW-4 Sampling Zone No.: 1 Starting Time: 1015 Finishing Time: 1129
Technicians: T. Blaney, T. Choi, J. Brenner
Water Level Inside MP Casing (Beginning of Session) 14.85 (PSIA) (End of Session) 14.86 (PSIA)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed		Water Level In MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level In MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.85	✓	1022	1027	✓	14.85	1L	1st RUN, SCREEN #1, NTUS = 2.59, PARAMETERS, FILTER PARGE
2	✓	✓	✓	✓	✓	✓	14.87	✓	1044	1049	✓	14.82	1L	2nd RUN, VOA'S, METALS, 1/2 ANIONS
3	✓	✓	✓	✓	✓	✓	14.89	✓	1104	1108	✓	14.85	1L	3rd RUN, DISOLVED METALS, 1/2 ANIONS, PARAMETERS
4	✓	✓	✓	✓	✓	✓	14.93	✓	1121	1126	✓	14.86	0.5L	4th RUN, FINAL PARAMETERS, C ₆ H ₆ , T ₁
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6														
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10														
11														
12														

Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-11 Depth: 638 Date: 8/26/96
Well Name: MW-11 Sampling Zone No.: 5 Starting Time: 0840 Finishing Time: 1020
Technicians: T. Blaney, T. Choi, J. Brunner
Water Level Inside MP Casing (Beginning of Session) 162.49 PSIA (End of Session) 162.48 (PSIA)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed		Water Level In MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level In MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	162.48	✓	0856	0859	✓	162.48	1	1st Run; NPL's = 0.65, 1/2 CATIONS PARAMETERS
2	✓	✓	✓	✓	✓	✓	162.49	✓	0928	0931	✓	162.50	1L	2nd Run: NO ₃ ⁻, 1/2 CATIONS, ANIONS, 1/2 HEX-CRIG
3	✓	✓	✓	✓	✓	✓	162.48	✓	1000	1003	✓	162.48	1L	3rd Run: Dissolved metals, 1/2 Cr ⁶⁺ + T-P + Final parameters
4														
5														
6														
7														
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9														
10														
11														
12														

F2

Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JAL Location: MW-11 Depth: 522 Date: 8/26/96
Well Name: MW-11 Sampling Zone No.: 4 Starting Time: 1025 Finishing Time: 1235
Technicians: T. Blaney, T. Choi, J. Brenner
Water Level Inside MP Casing (Beginning of Session) 112.94 (PSIA) (End of Session) 112.82 (PSIA)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed		Water Level in MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	112.94	✓	1036	1039	✓	112.93	1L	1st RUN, NTJS = 9.5
2	✓	✓	✓	✓	✓	✓	112.95	✓	1104	1106	✓	112.91	1L	2nd RUN, NTJS = 8.5
3	✓	✓	✓	✓	✓	✓	112.89	✓	1133	1135	✓	112.88	1L	3rd RUN, NTJS = 4.95 VOAS & 1/2 METALS
4	✓	✓	✓	✓	✓	✓	112.91	✓	1200	1203	✓	112.87	1L	4th RUN, 1/2 METALS, ANIONS, DISSOLVED METALS
5	✓	✓	✓	✓	✓	✓	112.82	✓	1227	1230	✓	112.82	1L	5th RUN, 1/2 ANIONS, HEX. CHROME, T.P., FINAL PARAMETERS
6														
7														
8														
9														
10														
11														
12														

F2

Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-11 Depth: 426 Date: 8/26/96

Well Name: MW-11 Sampling Zone No.: 3 Starting Time: 1242 Finishing Time: 1405

Technicians: T. Blaney, T. Chai, J. Brennan

Water Level Inside MP Casing (Beginning of Session) 72.00 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		Water Level In MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level In MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	72.00	✓	1250	1253	✓	72.01	1L	1st RUN: NUS = 0.45, PARAMETERS, 1/2 METALS
2	✓	✓	✓	✓	✓	✓	71.95	✓	1319 0149	1322 0142	✓	71.93	1L	2nd RUN: 1/2 METALS, ANIONS, 2 UOAs, 1/2 CHROMIUM
3	✓	✓	✓	✓	✓	✓	72.01	✓	1344 0144	1347	✓	71.95	1L	3rd RUN:
4														
5														
6														
7														
8														
9														
10														
11														
12														

F2

Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling
Field Data Sheet for Multi-Port Well

Project: SPL Location: MW-11 Depth: 258.5 ft Date: 8/27/96

Well Name: MW-11 Sampling Zone No.: 2 Starting Time: 0830 Finishing Time: 0930

Technicians T. Blaney, T. Choi, J. Brennes

Water Level Inside MP Casing (Beginning of Session) 14.65 PSIA (End of Session) 14.74 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	✓	✓	✓	✓	✓	✓	14.65	✓	0838	0842	✓	14.72	1L.	1 st RUN: NTU's = 4.14, PARAMETERS, 2.0MMS, METALS, 1/3 ANIONS
2	✓	✓	✓	✓	✓	✓	14.67	✓	0900	0904	✓	14.71	1L.	2 nd RUN: PURGE FILTER, 1/3 ANIONS,
3	✓	✓	✓	✓	✓	✓	14.72	✓	0919	0923	✓	14.74	1L.	3 rd RUN: Dissolved metals, C+P, T-P, Final Parameters
4														
5														
6														
7														
8														
9														
10														
11														
12														

F2

Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-11 Depth: 149.4 ft Date: 8/27/96

Well Name: MW-11 Sampling Zone No.: 1 Starting Time: 0935 Finishing Time: 1135

Technicians: T. Blaney, T. Choi, J. Brenner

Water Level Inside MP Casing (Beginning of Session) 14.72 PSIA (End of Session) 14.81 PSIA

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed		Water Level In MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level In MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.72	✓	0940	0946	✓	14.73	1 L	1st RUN: NUCS = 4, 35, PARAMETERS PURGE FILTER
2	✓	✓	✓	✓	✓	✓	14.72	✓	1000	1004	✓	14.73	1 L	2nd RUN: METALS, ZODAS, ANIONS
3	✓	✓	✓	✓	✓	✓	14.75	✓	1023	1026	✓	14.74	1 L	3rd RUN: DISSOLVED METALS, AROMAT C, T-P
4	✓	✓	✓	✓	✓	✓	14.83	✓	1125	1129	✓	14.84	0.5 L	4th RUN: FINAL PARAMETERS
5														
6														
7														
8														
9														
10														
11														
12														

F2

Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-12 Depth: 548 Date: 8/27/96
Well Name: MW-12 Sampling Zone No.: 5 Starting Time: 1240 Finishing Time: 1425
Technicians: T. Beasley, J. Brenner, T. Choi
Water Level Inside MP Casing (Beginning of Session) 137.16 (PSIA) (End of Session) 137.07 (PSIA)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed		Water Level In MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level In MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	137.16	✓	1305	1320	✓	137.19	1.0	1 st RUN, NTUS = 1.95 VOL'S, 1/2 METALS
2	✓	✓	✓	✓	✓	✓	137.18	✓	1346	1349	✓	137.17	1.0	2 nd RUN, DISSOLVED METALS 1/2 METALS, ANIONS, C ⁶ , 1/2 T-P
3	✓	✓	✓	✓	✓	✓	136.00	✓	1412	1414	✓	136.07	0.5	3 rd RUN VOL'S, FINAL PARAMETERS
4														
5														
6														
7														
8														
9														
10														
11														
12														

F2

Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-12 Depth: 436 Date: 8/28/96

Well Name: MW-12 Sampling Zone No.: 4 Starting Time: 0842 Finishing Time: 1005

Technicians: T. BLANEY, T. Choi, J. Brenner

Water Level Inside MP Casing (Beginning of Session) 88.45 PSIA (End of Session) 88.35 PSIA

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed		Water Level In MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level In MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	88.45	✓	0846	0849	✓	88.45	1L	1st RUN: NTUS = 0.50, PARAMETERS, PURGE FILTER
2	✓	✓	✓	✓	✓	✓	88.42	✓	0918	0920	✓	88.40	1	2nd RUN: 200A, METALS, ANIONS, 1/2 CR. 46
3	✓	✓	✓	✓	✓	✓	88.35	✓	0940	0949	✓	88.35	1	3rd RUN: 1/2 CR. 46, T-1, FINAL PARAMETERS
4														
5														
6														
7														
8														
9														
10														
11														
12														

F-2

Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-12 Depth: 323 Date: 8/28/96

Well Name: MW-12 Sampling Zone No.: 3 Starting Time: 1007 Finishing Time: 1115

Technicians: T. Blaney, J. Brennan, T. Choi

Water Level Inside MP Casing (Beginning of Session) 39.35 psia (End of Session) 39.30 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	✓	✓	✓	✓	✓	✓	39.35	✓	1015	1018	✓	39.35	1	1ST Run; NPL's = 2.30, Pump Filter + Permeation + 1/2 metals VOAs, 1/2 metals, Arsenic, Cr+6 T-P Dissolved metals + Final Parameters
2	✓	✓	✓	✓	✓	✓	39.32	✓	1037	1040	✓	39.32	1	
3	✓	✓	✓	✓	✓	✓	39.30	✓	1058	1101	✓	39.30	1	
4														
5														
6														
7														
8														
9														
10														
11														
12														

F2

Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-12 Depth: 140 Date: 8/28/96

Well Name: MW-12 Sampling Zone No.: 1 Starting Time: 1115 Finishing Time: _____

Technicians: T. Blaney, J. Brenner, T. Choi

Water Level Inside MP Casing (Beginning of Session) 14.84 (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		Water Level In MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level In MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.84	✓	1120	1130	✓	14.77	1.0	1 st RUN, NTU'S = 35.0
2	✓	✓	✓	✓	✓	✓	14.86	✓	1145	1153	✓	14.81	1.0	2 nd RUN, NTU'S = 95.0
3	✓	✓	✓	✓	✓	✓	14.80	✓	1300	1310	✓	14.80	1.0	3 rd RUN, NTU'S > 200
4	✓	✓	✓	✓	✓	✓	14.63	✓	1505	1513	✓	14.63	1.0	4 th RUN, NTU'S > 200
5	✓	✓	✓	✓	✓	✓	14.78	✓	1525	1530	✓	14.75	1.0	5 th RUN, NTU'S = 175
6														
7														
8														
9														
10														
11														
12														

F2

Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-12 Depth: 140 Date: 8/29/96
Well Name: MW-12 Sampling Zone No.: 1 Starting Time: 0930 Finishing Time: 1616
Technicians: T. BLANCY, R. STAHL
Water Level Inside MP Casing (Beginning of Session) 14.80 psia (Atmospheric) (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) psia	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level In MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.80	✓	0931	0941	✓	14.80	1	1 ST Run; NTU's = 66.5
2	✓	✓	✓	✓	✓	✓	14.80	✓	0953	1003	✓	14.80	1	2 ND Run; NTU's = 135.0
3	✓	✓	✓	✓	✓	✓	14.80	✓	1015	1028	✓	14.80	1	3 RD Run; NTU's = 148.0
4	✓	✓	✓	✓	✓	✓	14.91	✓	1313	1323	✓	14.91	1	4 TH Run; After Purge of Sample Port; NTU's = 87.7
5	✓	✓	✓	✓	✓	✓	14.92	✓	1332	1346	✓	14.92	1	5 TH Run; NTU's = 45.5
6	✓	✓	✓	✓	✓	✓	14.84	✓	1359	1409	✓	14.84	1	6 TH Run; 10 Vials, Purge Filter 1/2 TRIBUTYL TIN (1).
7	✓	✓	✓	✓	✓	✓	14.88	✓	1423	1433	✓	14.88	1	1/2 TRIBUTYL TIN (1) + 1/4 TRIBUTYL TIN (2).
8	✓	✓	✓	✓	✓	✓	14.87	✓	1441	1451	✓	14.87	1	1/2 TRIBUTYL TIN (2).
9	✓	✓	✓	✓	✓	✓	14.88	✓	1459	1509	✓	14.88	1	1/4 TRIBUTYL TIN (2) + 1/4 TRIBUTYL TIN (3).
10	✓	✓	✓	✓	✓	✓	14.81	✓	1519	1529	✓	14.81	1	3/4 TRIBUTYL TIN (3).
11	✓	✓	✓	✓	✓	✓	14.75	✓	1538	1547	✓	14.75	1	Metals, Anions, Cr 10.
12	✓	✓	✓	✓	✓	✓	14.78	✓	1558	1610			1	Dissolved Cr, T-P, Final Parameters

F2

Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-19 Depth: 242 Date: 8/30/96Well Name: MW-19 Sampling Zone No.: 1 Starting Time: 0800 Finishing Time: _____Technicians: T. BLANEY, R. STAHLWater Level Inside MP Casing (Beginning of Session) 14.79 psia (Atmospheric) (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		Water Level In MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level In MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.79	✓	0806	0809	✓	14.79	0.5	1st Run; NTUs = 76.0
2	✓	✓	✓	✓	✓	✓	14.79	✓	0831	0834	✓	14.79	0.5	2nd Run; NTUs = 50.1
3	✓	✓	✓	✓	✓	✓	14.75	✓	0846	0849	✓	14.75	0.5	3rd Run; NTUs = 36.0
4	✓	✓	✓	✓	✓	✓	14.74	✓	0908	0912	✓	14.74	1	4th Run; NTUs = 23.0
5	✓	✓	✓	✓	✓	✓	14.76	✓	0929	0933	✓	14.76	1	5th Run; NTUs = 9.6
6	✓	✓	✓	✓	✓	✓	14.80	✓	0952	0957	✓	14.79	1	6th Run; NTUs = 20.0
7	✓	✓	✓	✓	✓	✓	14.84	✓	1015	1019	✓	14.84	1	7th Run; NTUs = 16.1
8	✓	✓	✓	✓	✓	✓	14.90	✓	1037	1041	✓	14.81	1	8th Run; NTUs = 5.0; Vol's
9														
10														
11														
12														

F2

Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-12 Depth: 243 Date: 9/3/96

Well Name: MW-12 Sampling Zone No.: 2 Starting Time: 0900 Finishing Time: 1400

Technicians T. BLANEY, J. BRENNER

Water Level Inside MP Casing (Beginning of Session) 34.68 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) <u>psia</u>	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	34.68	✓	0910	0913	✓	34.68	1	1ST Run; NPL's = 3.98
2	✓	✓	✓	✓	✓	✓	34.61	✓	0938	0942	✓	34.61	1	VOC's + MS + MSD + MSD SVOC's Dup + SVOC's
3	✓	✓	✓	✓	✓	✓	34.58	✓	0958	1001	✓	34.58	1	SVOC's, MS, MSD, Dup of SVOC's
4	✓	✓	✓	✓	✓	✓	34.53	✓	1014	1018	✓	34.53	1	SVOC's, MS, MSD, Dup. of SVOC's
5	✓	✓	✓	✓	✓	✓	34.51	✓	1033	1037	✓	34.51	1	SVOC's, MS, MSD, Dup. of SVOC's
6	✓	✓	✓	✓	✓	✓	34.50	✓	1050	1054	✓	34.50	1	SVOC's, MS, MSD, Dup. of SVOC's
7	✓	✓	✓	✓	✓	✓	34.50	✓	1108	1112	✓	34.50	1	SVOC's, MS, MSD, Dup. of SVOC's
8	✓	✓	✓	✓	✓	✓	34.48	✓	1125	1132	✓	34.48	1	SVOC's, MS, MSD, Dup. of SVOC's
9	✓	✓	✓	✓	✓	✓	34.51	✓	1155	1200	✓	34.51	1	SVOC's, MS, MSD, Dup. of SVOC's
10	✓	✓	✓	✓	✓	✓	34.48	✓	1215	1220	✓	34.48	1	SVOC's, MS, MSD, Dup. of SVOC's
11	✓	✓	✓	✓	✓	✓	34.48	✓	1236	1240	✓	34.48	1	TBT (1)
12	✓	✓	✓	✓	✓	✓	34.44	✓	1254	1257	✓	34.44	1	TBT (2)

F2

Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-12 Depth: 243 Date: 9/3/96

Well Name: MW-12 Sampling Zone No.: 2 Starting Time: 0900 Finishing Time: 1400

Technicians: T. Blaney, J. Brenner

Water Level Inside MP Casing (Beginning of Session) 34.68 p.s.f. (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	✓	✓	✓	✓	✓	✓	34.43	✓	1314	1317	✓	34.43	1	1/2 TBT (3)
2	✓	✓	✓	✓	✓	✓	34.39	✓	1331	1334	✓	34.39	1	Metals, Anions, Gr 1/2 TBT (3)
3	✓	✓	✓	✓	✓	✓	34.37	✓	1349	1352	✓	34.37	1	T-P, Dissolved metals, G-16 Final Parameters
4														
5														
6														
7														
8														
9														
10														
11														
12														

F2

Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-3 Depth: 653 Date: 9/4/96

Well Name: MW-3 Sampling Zone No.: 5 Starting Time: 0855 Finishing Time: 1030

Technicians: T. Blawie, J. Brunner

Water Level Inside MP Casing (Beginning of Session) 165.12 psia (End of Session) 164.75 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) <i>plus</i>	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level In MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	165.12	✓	0903	0910	✓	165.12	1	1st Run; NTA's = 0.78
2	✓	✓	✓	✓	✓	✓	165.06	✓	0939	0941	✓	165.06	1	VOA's, metals, Anions, Cate, T-P
3	✓	✓	✓	✓	✓	✓	164.75	✓	1009	1011	✓	164.75	0.75	Dissolved metals & Final Parameters
4														
5														
6														
7														
8														
9														
10														
11														
12														

F2

Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-3 Depth: 558 Date: 9/4/96

Well Name: MW-3 Sampling Zone No.: 4 Starting Time: 1030 Finishing Time: 1207

Technicians: T. BLANEY, J. Brenner

Water Level Inside MP Casing (Beginning of Session) 123.89 (PSIA) (End of Session) 123.36 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	
1	✓	✓	✓	✓	✓	✓	123.89	✓	1045	1047	✓	123.91	1.0	1 ST RUN, NTU'S = 4.65
2	✓	✓	✓	✓	✓	✓	123.90	✓	1116	1118	✓	123.88	1.0	2 ND RUN, VOC'S, METALS, ANIONS, HCH, CHLORIDE, TSP
3	✓	✓	✓	✓	✓	✓	123.38	✓	1145	1147	✓	123.36	0.75	3 RD RUN, DISSOLVED METALS, FINAL PARAMETERS
4														
5														
6														
7														
8														
9														
10														
11														
12														

F2

Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: SPL Location: MW-3 Depth: 346 Date: 9/5/96

Well Name: MW-3 Sampling Zone No.: 3 Starting Time: 0830 Finishing Time: 1015

Technicians: T. BLANEY, J. BRENNER

Water Level Inside MP Casing (Beginning of Session) 31.73 psia (End of Session) 31.71 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) psia	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level in MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	31.73	✓	0839	0841	✓	31.73	1	1st Run; NTHs = 5.54
2	✓	✓	✓	✓	✓	✓	31.71	✓	0905	0907	✓	31.71	1	2nd Run; NTHs = 4.80 Purge filter, permeation
3	✓	✓	✓	✓	✓	✓	31.69	✓	0931	0941	✓	31.69	1	Void's, metals, Arsenic, Cr6 T-p
4	✓	✓	✓	✓	✓	✓	31.71	✓	0959	1002	✓	31.71	1	Dissolved metals + Filtration parameters
5														
6														
7														
8														
9														
10														
11														
12														

F2

Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

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Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-3 Depth: 252 Date: 9/5/90Well Name: MW-3 Sampling Zone No.: 2 Starting Time: 1025 Finishing Time: 1130Technicians: T. Blaney, J. BrennerWater Level Inside MP Casing (Beginning of Session) 14.85 (PSIA) (End of Session) 14.82 (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	✓	✓	✓	✓	✓	✓	14.85	✓	1031	1038	✓	14.81	1.0	1 st RUN, NTUS = 2.39 1/2 METALS
2	✓	✓	✓	✓	✓	✓	14.82	✓	1056	1102	✓	14.79	1.0	2 nd RUN, VOA'S, 1/2 METALS, ANIONS, NICKEL, MANGANESE
3	✓	✓	✓	✓	✓	✓	14.83	✓	1116	1120	✓	14.82	1.0	3 rd RUN, DISSOLVED METALS, T-P, FINAL PARAMETERS
4														
5														
6														
7														
8														
9														
10														
11														
12														

F2

Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

Page 1 of 1

Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-3 Depth: 172 Date: 9/5/96
Well Name: MW-3 Sampling Zone No.: 1 Starting Time: 1140 Finishing Time: 1305
Technicians: T. Blaney, J. Brenner
Water Level Inside MP Casing (Beginning of Session) 14.81 (PSIA) (End of Session) 14.65 (PSIA)

Run No.	Surface Function Checks					Position Sampler	Surface Collection Checks							Comments
	Activate	Vacuum Check Valve Closed	Valve Open	Evacuate Container	Valve Closed		Water Level In MP (ft)	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level In MP (ft) Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	14.81	✓	1149	1155	✓	14.78	1.0	1st RUN, NPL'S = 4.43 1/2 METALS
2	✓	✓	✓	✓	✓	✓	14.78	✓	1209	1215	✓	14.74	1.0	2nd RUN, VOL'S METALS, ANIONS, 3/4 G-6+
3	✓	✓	✓	✓	✓	✓	14.80	✓	1228	1233	✓	14.79	1.0	3rd RUN, 1/4 G-6+, T-P
4	✓	✓	✓	✓	✓	✓	14.73	✓	1249	1251	✓	14.65	1.0	4th RUN, 1/4 G-6+, T-P DISCLOSED METALS, FINAL PARAMETERS
5														
6														
7														
8														
9														
10														
11														
12														

Comments: _____

Total Volume: _____



FOSTER WHEELER ENVIRONMENTAL CORPORATION

Page 1 of 1

Groundwater Sampling Field Data Sheet for Multi-Port Well

Project: JPL Location: MW-4 Depth: 513 Date: 9/12/96

Well Name: MW-4 Sampling Zone No.: 5 Starting Time: 0802 Finishing Time: 0835

Technicians: T. Blaney, J. Brenner, T. Choi

Water Level Inside MP Casing (Beginning of Session) 128.15 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) <u>psia</u>	Activate	Valve Open Time	Valve Closed Time	Deactivate	Water Level In MP (ft) <u>psia</u> Remove Tape	Volume Retrieved (liters)	
1	✓	✓	✓	✓	✓	✓	128.15	✓	0814	0815	✓	128.15	0.5	1st Run; NPLS = 2.75
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

F2

Comments: _____

Total Volume: _____

APPENDIX C

FIELD INSTRUMENT CALIBRATION FORMS

CONDUCTIVITY/SALINITY/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
 Calibration by: T. BLANEY Date: 8/8/96
 Instrument Manufacturer: YSI Model: 3560
 Serial Number: 94C16863
 Probe Manufacturer: YSI Model: 3520
 Serial Number: 95A94403
 Calibration Solution Manufacturer: YSI
 Solution Conductivity: 1,000 μ S/cm Solution Expiration Date: 09/97

FIELD CALIBRATION

Time: 1050 Temperature of Solution: 21.6 °C
 Temperature Compensated Solution Conductivity (μ S/cm) * 934
 Instrument Response to Calibration Solution: 889
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐
 Time: 1600 Temperature of Solution: 26.7 °C
 Temperature Compensated Solution Conductivity (μ S/cm) * 1033
 Instrument Response to Calibration Solution: 1022
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐

The Temperature Compensated Solution Conductivity May Be Computed Using Following Equation:
 Conductivity (μ S/cm) = (Conductivity at 25°C) (A + BT + CT²)
 Where T = Temperature in °C

And

Conductivity @ 25°C (μ S/cm)	A	B	C
1,000	0.5407	0.0173	0.000043
10,000	0.5538	0.0168	0.000042
100,000	0.5825	0.0157	0.000040

Instrument is Calibrated if Response is:

- ± 6% of calibration solution if reading is ≤ 150 mmhos/cm on 500 scale;
≤ 1500 mmhos/cm on 5000 Scale; or ≤ 15,000 mmhos/cm on 50,000 scale.
- ± 4.5% to 6% of calibration solution if reading is > 150 and < 300
mmhos/cm on 500 scale; > 1500 and < 3000 mmhos/cm on 5000 scale;
and > 15,000 and < 30,000 mmhos/cm on 50,000 Scale.
- ± 4.5% of calibration solution if reading is ≥ 300 mmhos/cm on 500 scale;
≥ 3000 mmhos/cm on 5000 scale; and ≥ 30,000 mmhos/cm on 50,000 scale.

CONDUCTIVITY/SALINITY/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: IPL
 Calibration by: T. BLANEY Date: 8/12/96
 Instrument Manufacturer: YSI Model: 3500
 Serial Number: 94C16863
 Probe Manufacturer: YSI Model: 3520
 Serial Number: 95A94403
 Calibration Solution Manufacturer: YSI
 Solution Conductivity: 1,000 μ S/cm Solution Expiration Date: 9/97

FIELD CALIBRATION

Time: 1000 Temperature of Solution: 24.2
 Temperature Compensated Solution Conductivity (μ S/cm) * 985
 Instrument Response to Calibration Solution: 949
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐
 Time: 1600 Temperature of Solution: 40.5
 Temperature Compensated Solution Conductivity (μ S/cm) * 1320
 Instrument Response to Calibration Solution: 1320
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐

The Temperature Compensated Solution Conductivity May Be Computed Using Following Equation:
 Conductivity (μ S/cm) = (Conductivity at 25°C) $(A + BT + CT^2)$
 Where T = Temperature in °C

And

Conductivity @ 25°C (μ S/cm)	A	B	C
1,000	0.5407	0.0173	0.000043
10,000	0.5538	0.0168	0.000042
100,000	0.5825	0.0157	0.000040

Instrument is Calibrated if Response is:

- ± 6% of calibration solution if reading is ≤ 150 mmhos/cm on 500 scale;
 ≤ 1500 mmhos/cm on 5000 Scale; or ≤ 15,000 mmhos/cm on 50,000 scale.
- ± 4.5% to 6% of calibration solution if reading is > 150 and < 300
 mmhos/cm on 500 scale; > 1500 and < 3000 mmhos/cm on 5000 scale;
 and > 15,000 and < 30,000 mmhos/cm on 50,000 Scale.
- ± 4.5% of calibration solution if reading is ≥ 300 mmhos/cm on 500 scale;
 ≥ 3000 mmhos/cm on 5000 scale; and ≥ 30,000 mmhos/cm on 50,000 scale.

CONDUCTIVITY/SALINITY/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JD
 Calibration by: T. Blaney Date: 8/13/96
 Instrument Manufacturer: YSI Model: 3500
 Serial Number: 94C16863
 Probe Manufacturer: YSI Model: 3520
 Serial Number: 95A94403
 Calibration Solution Manufacturer: YSI
 Solution Conductivity: 1,000 μ S/cm Solution Expiration Date: 09/97

FIELD CALIBRATION

Time: 0750 Temperature of Solution: 25.0
 Temperature Compensated Solution Conductivity (μ S/cm) * 1,000
 Instrument Response to Calibration Solution: 985
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐
 Time: 1600 Temperature of Solution: 37.4
 Temperature Compensated Solution Conductivity (μ S/cm) * 1249
 Instrument Response to Calibration Solution: 1254
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐

The Temperature Compensated Solution Conductivity May Be Computed Using Following Equation:
 Conductivity (μ S/cm) = (Conductivity at 25°C) (A + BT + CT²)
 Where T = Temperature in °C

And

Conductivity @ 25°C (μ S/cm)	A	B	C
1,000	0.5407	0.0173	0.000043
10,000	0.5538	0.0168	0.000042
100,000	0.5825	0.0157	0.000040

Instrument is Calibrated if Response is:

- ± 6% of calibration solution if reading is ≤ 150 μ mhos/cm on 500 scale;
 ≤ 1500 μ mhos/cm on 5000 Scale; or ≤ 15,000 μ mhos/cm on 50,000 scale.
- ± 4.5% to 6% of calibration solution if reading is > 150 and < 300
 μ mhos/cm on 500 scale; > 1500 and < 3000 μ mhos/cm on 5000 scale;
 and > 15,000 and < 30,000 μ mhos/cm on 50,000 Scale.
- ± 4.5% of calibration solution if reading is ≥ 300 μ mhos/cm on 500 scale;
 ≥ 3000 μ mhos/cm on 5000 scale; and ≥ 30,000 μ mhos/cm on 50,000 scale.

CONDUCTIVITY/SALINITY/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
 Calibration by: T. Blaney Date: 8/14/96
 Instrument Manufacturer: YSI Model: 3500
 Serial Number: 94C16863
 Probe Manufacturer: YSI Model: 3520
 Serial Number: 95A 94403
 Calibration Solution Manufacturer: YSI
 Solution Conductivity: 1,000 μ S/cm Solution Expiration Date: 9/97

FIELD CALIBRATION

Time: 0815 Temperature of Solution: 24.6
 Temperature Compensated Solution Conductivity (μ S/cm) * ~~966~~ 992
 Instrument Response to Calibration Solution: 973
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐
 Time: 14:05 Temperature of Solution: 37.8
 Temperature Compensated Solution Conductivity (μ S/cm) * ~~1001.2~~ ~~1272~~ 1256
 Instrument Response to Calibration Solution: 1246
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐

The Temperature Compensated Solution Conductivity May Be Computed Using Following Equation:
 Conductivity (μ S/cm) = (Conductivity at 25°C) (A + BT + CT²)
 Where T = Temperature in °C

And

Conductivity @ 25°C (μ S/cm)	A	B	C
1,000	0.5407	0.0173	0.000043
10,000	0.5538	0.0168	0.000042
100,000	0.5825	0.0157	0.000040

Instrument is Calibrated if Response is:

- ± 6% of calibration solution if reading is $\leq$ 150 mmhos/cm on 500 scale;
 $\leq$ 1500 mmhos/cm on 5000 Scale; or $\leq$ 15,000 mmhos/cm on 50,000 scale.
- ± 4.5% to 6% of calibration solution if reading is $>$ 150 and $<$ 300
mmhos/cm on 500 scale; $>$ 1500 and $<$ 3000 mmhos/cm on 5000 scale;
and $>$ 15,000 and $<$ 30,000 mmhos/cm on 50,000 Scale.
- ± 4.5% of calibration solution if reading is $\geq$ 300 mmhos/cm on 500 scale;
 $\geq$ 3000 mmhos/cm on 5000 scale; and $\geq$ 30,000 mmhos/cm on 50,000 scale.

CONDUCTIVITY/SALINITY/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
 Calibration by: T. Blaney Date: 8/15/91
 Instrument Manufacturer: YSI Model: 3520
 Serial Number: 94C16863
 Probe Manufacturer: YSI Model: 3520
 Serial Number: 95A94403
 Calibration Solution Manufacturer: YSI
 Solution Conductivity: 1,000 μ S/cm Solution Expiration Date: 9/97

FIELD CALIBRATION

Time: 0730 Temperature of Solution: 23.2
 Temperature Compensated Solution Conductivity (μ S/cm) * 965
 Instrument Response to Calibration Solution: 978
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐
 Time: 12:20 Temperature of Solution: ~~24.3~~ 33.4
 Temperature Compensated Solution Conductivity (μ S/cm) * 1166.5
 Instrument Response to Calibration Solution: 1176
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐

The Temperature Compensated Solution Conductivity May Be Computed Using Following Equation:
 Conductivity (μ S/cm) = (Conductivity at 25°C) (A + BT + CT²)
 Where T = Temperature in °C

And	Conductivity @ 25°C (μ S/cm)	A	B	C
	1,000	0.5407	0.0173	0.000043
	10,000	0.5538	0.0168	0.000042
	100,000	0.5825	0.0157	0.000040

Instrument is Calibrated if Response is:

- ± 6% of calibration solution if reading is ≤ 150 mmhos/cm on 500 scale;
 ≤ 1500 mmhos/cm on 5000 Scale; or ≤ 15,000 mmhos/cm on 50,000 scale.
- ± 4.5% to 6% of calibration solution if reading is > 150 and < 300
 mmhos/cm on 500 scale; > 1500 and < 3000 mmhos/cm on 5000 scale;
 and > 15,000 and < 30,000 mmhos/cm on 50,000 Scale.
- ± 4.5% of calibration solution if reading is ≥ 300 mmhos/cm on 500 scale;
 ≥ 3000 mmhos/cm on 5000 scale; and ≥ 30,000 mmhos/cm on 50,000 scale.

CONDUCTIVITY/SALINITY/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
 Calibration by: T. BLANEY Date: 8/16/96
 Instrument Manufacturer: YSI Model: 3500
 Serial Number: 94C16863
 Probe Manufacturer: YSI Model: 3520
 Serial Number: 95A94403
 Calibration Solution Manufacturer: YSI
 Solution Conductivity: 1,000 μ S/cm Solution Expiration Date: 9/97

FIELD CALIBRATION

Time: 0735 Temperature of Solution: 23.0
 Temperature Compensated Solution Conductivity (μ S/cm) * 961
 Instrument Response to Calibration Solution: 950
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐
 Time: 1455 Temperature of Solution: 32.2
 Temperature Compensated Solution Conductivity (μ S/cm) * 1115
 Instrument Response to Calibration Solution: 1150
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐

The Temperature Compensated Solution Conductivity May Be Computed Using Following Equation:
 Conductivity (μ S/cm) = (Conductivity at 25°C) (A + BT + CT²)
 Where T = Temperature in °C

And

Conductivity @ 25°C (μ S/cm)	A	B	C
1,000	0.5407	0.0173	0.000043
10,000	0.5538	0.0168	0.000042
100,000	0.5825	0.0157	0.000040

Instrument is Calibrated if Response is:

- ± 6% of calibration solution if reading is ≤ 150 mmhos/cm on 500 scale;
 ≤ 1500 mmhos/cm on 5000 Scale; or ≤ 15,000 mmhos/cm on 50,000 scale.
- ± 4.5% to 6% of calibration solution if reading is > 150 and < 300
 mmhos/cm on 500 scale; > 1500 and < 3000 mmhos/cm on 5000 scale;
 and > 15,000 and < 30,000 mmhos/cm on 50,000 Scale.
- ± 4.5% of calibration solution if reading is ≥ 300 mmhos/cm on 500 scale;
 ≥ 3000 mmhos/cm on 5000 scale; and ≥ 30,000 mmhos/cm on 50,000 scale.

CONDUCTIVITY/SALINITY/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
 Calibration by: T. BLANEY Date: 8/19/96
 Instrument Manufacturer: YSI Model: 3500
 Serial Number: 94C 16863
 Probe Manufacturer: YSI Model: 3520
 Serial Number: 95A 94403
 Calibration Solution Manufacturer: YSI
 Solution Conductivity: 1,000 μ S/cm Solution Expiration Date: 9/97

FIELD CALIBRATION

Time: 0745 Temperature of Solution: 19.8
 Temperature Compensated Solution Conductivity (μ S/cm) * 900
 Instrument Response to Calibration Solution: 913
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐
 Time: 1055 Temperature of Solution: 22.0
 Temperature Compensated Solution Conductivity (μ S/cm) * 945
 Instrument Response to Calibration Solution: 945
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☐ No: ☐

The Temperature Compensated Solution Conductivity May Be Computed Using Following Equation:
 Conductivity (μ S/cm) = (Conductivity at 25°C) (A + BT + CT²)
 Where T = Temperature in °C

And	Conductivity @ 25°C (μ S/cm)	A	B	C
	1,000	0.5407	0.0173	0.000043
	10,000	0.5538	0.0168	0.000042
	100,000	0.5825	0.0157	0.000040

Instrument is Calibrated if Response is:

- ± 6% of calibration solution if reading is ≤ 150 mmhos/cm on 500 scale;
 ≤ 1500 mmhos/cm on 5000 Scale; or ≤ 15,000 mmhos/cm on 50,000 scale.
- ± 4.5% to 6% of calibration solution if reading is > 150 and < 300
 mmhos/cm on 500 scale; > 1500 and < 3000 mmhos/cm on 5000 scale;
 and > 15,000 and < 30,000 mmhos/cm on 50,000 Scale.
- ± 4.5% of calibration solution if reading is ≥ 300 mmhos/cm on 500 scale;
 ≥ 3000 mmhos/cm on 5000 scale; and ≥ 30,000 mmhos/cm on 50,000 scale.

CONDUCTIVITY/SALINITY/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
 Calibration by: T. BLANEY Date: 8/20/96
 Instrument Manufacturer: YSI Model: 3500
 Serial Number: 94 C 168 63
 Probe Manufacturer: YSI Model: 3520
 Serial Number: 95A 944 03
 Calibration Solution Manufacturer: YSI
 Solution Conductivity: 1,000 μ S/cm Solution Expiration Date: 9/97

FIELD CALIBRATION

Time: 0915 Temperature of Solution: 20.1
 Temperature Compensated Solution Conductivity (μ S/cm) * 906
 Instrument Response to Calibration Solution: 926
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐
 Time: 1335 Temperature of Solution: 27.8
 Temperature Compensated Solution Conductivity (μ S/cm) * 1055
 Instrument Response to Calibration Solution: 1036
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐

The Temperature Compensated Solution Conductivity May Be Computed Using Following Equation:
 Conductivity (μ S/cm) = (Conductivity at 25°C) (A + BT + CT²)
 Where T = Temperature in °C

And

Conductivity @ 25°C (μ S/cm)	A	B	C
1,000	0.5407	0.0173	0.000043
10,000	0.5538	0.0168	0.000042
100,000	0.5825	0.0157	0.000040

Instrument is Calibrated if Response is:

- ± 6% of calibration solution if reading is ≤ 150 mmhos/cm on 500 scale;
 ≤ 1500 mmhos/cm on 5000 Scale; or ≤ 15,000 mmhos/cm on 50,000 scale.
- ± 4.5% to 6% of calibration solution if reading is > 150 and < 300
 mmhos/cm on 500 scale; > 1500 and < 3000 mmhos/cm on 5000 scale;
 and > 15,000 and < 30,000 mmhos/cm on 50,000 Scale.
- ± 4.5% of calibration solution if reading is ≥ 300 mmhos/cm on 500 scale;
 ≥ 3000 mmhos/cm on 5000 scale; and ≥ 30,000 mmhos/cm on 50,000 scale.

CONDUCTIVITY/SALINITY/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
 Calibration by: T. BLANCO Date: 8/21/96
 Instrument Manufacturer: YSI Model: 3500
 Serial Number: 94L16863
 Probe Manufacturer: YSI Model: 3520
 Serial Number: 95A94403
 Calibration Solution Manufacturer: YSI
 Solution Conductivity: 1,000 μ S/cm Solution Expiration Date: 9/97

FIELD CALIBRATION

Time: 0725 Temperature of Solution: 17.1
 Temperature Compensated Solution Conductivity (μ S/cm) * 849
 Instrument Response to Calibration Solution: 863
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐
 Time: 1325 Temperature of Solution: 26.6
 Temperature Compensated Solution Conductivity (μ S/cm) * 1031
 Instrument Response to Calibration Solution: 1050
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐

The Temperature Compensated Solution Conductivity May Be Computed Using Following Equation:
 Conductivity (μ S/cm) = (Conductivity at 25°C) (A + BT + CT²)
 Where T = Temperature in °C

And

Conductivity @ 25°C (μ S/cm)	A	B	C
1,000	0.5407	0.0173	0.000043
10,000	0.5538	0.0168	0.000042
100,000	0.5825	0.0157	0.000040

Instrument is Calibrated if Response is:

- ± 6% of calibration solution if reading is ≤ 150 mmhos/cm on 500 scale;
 ≤ 1500 mmhos/cm on 5000 Scale; or ≤ 15,000 mmhos/cm on 50,000 scale.
- ± 4.5% to 6% of calibration solution if reading is > 150 and < 300
 mmhos/cm on 500 scale; > 1500 and < 3000 mmhos/cm on 5000 scale;
 and > 15,000 and < 30,000 mmhos/cm on 50,000 Scale.
- ± 4.5% of calibration solution if reading is ≥ 300 mmhos/cm on 500 scale;
 ≥ 3000 mmhos/cm on 5000 scale; and ≥ 30,000 mmhos/cm on 50,000 scale.

CONDUCTIVITY/SALINITY/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
 Calibration by: T. BLANEY Date: 8/22/96
 Instrument Manufacturer: YSI Model: 3500
 Serial Number: 94C16863
 Probe Manufacturer: YSI Model: 3520
 Serial Number: 95A94403
 Calibration Solution Manufacturer: YSI
 Solution Conductivity: 15000 μ S/cm Solution Expiration Date: 9/97

FIELD CALIBRATION

Time: 0730 Temperature of Solution: 16.9
 Temperature Compensated Solution Conductivity (μ S/cm) * 845
 Instrument Response to Calibration Solution: 842
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐
 Time: 12:52 Temperature of Solution: 31.7
 Temperature Compensated Solution Conductivity (μ S/cm) * 1132
 Instrument Response to Calibration Solution: 1158
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐

The Temperature Compensated Solution Conductivity May Be Computed Using Following Equation:
 Conductivity (μ S/cm) = (Conductivity at 25°C) (A + BT + CT²)
 Where T = Temperature in °C

And

Conductivity @ 25°C (μ S/cm)	A	B	C
1,000	0.5407	0.0173	0.000043
10,000	0.5538	0.0168	0.000042
100,000	0.5825	0.0157	0.000040

Instrument is Calibrated if Response is:

- ± 6% of calibration solution if reading is ≤ 150 mmhos/cm on 500 scale;
 ≤ 1500 mmhos/cm on 5000 Scale; or ≤ 15,000 mmhos/cm on 50,000 scale.
- ± 4.5% to 6% of calibration solution if reading is > 150 and < 300
 mmhos/cm on 500 scale; > 1500 and < 3000 mmhos/cm on 5000 scale;
 and > 15,000 and < 30,000 mmhos/cm on 50,000 Scale.
- ± 4.5% of calibration solution if reading is ≥ 300 mmhos/cm on 500 scale;
 ≥ 3000 mmhos/cm on 5000 scale; and ≥ 30,000 mmhos/cm on 50,000 scale.

CONDUCTIVITY/SALINITY/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
 Calibration by: T. BLANEY Date: 8/23/96
 Instrument Manufacturer: YSI Model: 3500
 Serial Number: 94C16863
 Probe Manufacturer: YSI Model: 3520
 Serial Number: 95A94403
 Calibration Solution Manufacturer: YSI
 Solution Conductivity: 1,000 μ S/cm Solution Expiration Date: 9/97

FIELD CALIBRATION

Time: 0740 Temperature of Solution: 20.0
 Temperature Compensated Solution Conductivity (μ S/cm) * ~~783~~ ~~905~~ 904
 Instrument Response to Calibration Solution: 905
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐
 Time: 1135 Temperature of Solution: 31.1
 Temperature Compensated Solution Conductivity (μ S/cm) * ~~1148~~ 1120
 Instrument Response to Calibration Solution: 1148
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐

The Temperature Compensated Solution Conductivity May Be Computed Using Following Equation:
 Conductivity (μ S/cm) = (Conductivity at 25°C) (A + BT + CT²)
 Where T = Temperature in °C

And

Conductivity @ 25°C (μ S/cm)	A	B	C
1,000	0.5407	0.0173	0.000043
10,000	0.5538	0.0168	0.000042
100,000	0.5825	0.0157	0.000040

Instrument is Calibrated if Response is:

- ± 6% of calibration solution if reading is ≤ 150 mmhos/cm on 500 scale;
≤ 1500 mmhos/cm on 5000 Scale; or ≤ 15,000 mmhos/cm on 50,000 scale.
- ± 4.5% to 6% of calibration solution if reading is > 150 and < 300
mmhos/cm on 500 scale; > 1500 and < 3000 mmhos/cm on 5000 scale;
and > 15,000 and < 30,000 mmhos/cm on 50,000 Scale.
- ± 4.5% of calibration solution if reading is ≥ 300 mmhos/cm on 500 scale;
≥ 3000 mmhos/cm on 5000 scale; and ≥ 30,000 mmhos/cm on 50,000 scale.

CONDUCTIVITY/SALINITY/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPc
 Calibration by: T. BLANEY Date: 8/26/96
 Instrument Manufacturer: YSI Model: 3520
 Serial Number: 94C16863
 Probe Manufacturer: YSI Model: 3520
 Serial Number: 95A94403
 Calibration Solution Manufacturer: YSI
 Solution Conductivity: 1,000 μ S/cm Solution Expiration Date: 9/97

FIELD CALIBRATION

Time: 0815 Temperature of Solution: 20.7
 Temperature Compensated Solution Conductivity (μ S/cm) * 917
 Instrument Response to Calibration Solution: 926
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐
 Time: 1415 Temperature of Solution: 43.8
 Temperature Compensated Solution Conductivity (μ S/cm) * 1449
 Instrument Response to Calibration Solution: 1449
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☐ No: ☐

The Temperature Compensated Solution Conductivity May Be Computed Using Following Equation:
 Conductivity (μ S/cm) = (Conductivity at 25°C) (A + BT + CT²)
 Where T = Temperature in °C

And

Conductivity @ 25°C (μ S/cm)	A	B	C
1,000	0.5407	0.0173	0.000043
10,000	0.5538	0.0168	0.000042
100,000	0.5825	0.0157	0.000040

Instrument is Calibrated if Response is:

- ± 6% of calibration solution if reading is ≤ 150 mmhos/cm on 500 scale;
 ≤ 1500 mmhos/cm on 5000 Scale; or ≤ 15,000 mmhos/cm on 50,000 scale.
- ± 4.5% to 6% of calibration solution if reading is > 150 and < 300
 mmhos/cm on 500 scale; > 1500 and < 3000 mmhos/cm on 5000 scale;
 and > 15,000 and < 30,000 mmhos/cm on 50,000 Scale.
- ± 4.5% of calibration solution if reading is ≥ 300 mmhos/cm on 500 scale;
 ≥ 3000 mmhos/cm on 5000 scale; and ≥ 30,000 mmhos/cm on 50,000 scale.

CONDUCTIVITY/SALINITY/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
 Calibration by: T. Blaney Date: 8/27/96
 Instrument Manufacturer: YSI Model: 3500
 Serial Number: 94C 16863
 Probe Manufacturer: YSI Model: 3520
 Serial Number: 95A 94403
 Calibration Solution Manufacturer: YSI
 Solution Conductivity: 1,000 μ S/cm Solution Expiration Date: 9/97

FIELD CALIBRATION

Time: 0800 Temperature of Solution: 18.1
 Temperature Compensated Solution Conductivity (μ S/cm) * 868
 Instrument Response to Calibration Solution: 889
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐
 Time: 1430 Temperature of Solution: 34.4
 Temperature Compensated Solution Conductivity (μ S/cm) * 1186
 Instrument Response to Calibration Solution: 1238
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐

The Temperature Compensated Solution Conductivity May Be Computed Using Following Equation:
 Conductivity (μ S/cm) = (Conductivity at 25°C) (A + BT + CT²)
 Where T = Temperature in °C

And

Conductivity @ 25°C (μ S/cm)	A	B	C
1,000	0.5407	0.0173	0.000043
10,000	0.5538	0.0168	0.000042
100,000	0.5825	0.0157	0.000040

Instrument is Calibrated if Response is:

- ± 6% of calibration solution if reading is ≤ 150 mmhos/cm on 500 scale;
 ≤ 1500 mmhos/cm on 5000 Scale; or ≤ 15,000 mmhos/cm on 50,000 scale.
- ± 4.5% to 6% of calibration solution if reading is > 150 and < 300
 mmhos/cm on 500 scale; > 1500 and < 3000 mmhos/cm on 5000 scale;
 and > 15,000 and < 30,000 mmhos/cm on 50,000 Scale.
- ± 4.5% of calibration solution if reading is ≥ 300 mmhos/cm on 500 scale;
 ≥ 3000 mmhos/cm on 5000 scale; and ≥ 30,000 mmhos/cm on 50,000 scale.

CONDUCTIVITY/SALINITY/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
 Calibration by: T. BLANEY Date: 8/28/96
 Instrument Manufacturer: YSI Model: 3500
 Serial Number: 94C 16863
 Probe Manufacturer: YSI Model: 3520
 Serial Number: 95A94403
 Calibration Solution Manufacturer: YSI
 Solution Conductivity: 1,000 μ S/cm Solution Expiration Date: 9/97

FIELD CALIBRATION

Time: 0805 Temperature of Solution: 18.6
 Temperature Compensated Solution Conductivity (μ S/cm) * 877
 Instrument Response to Calibration Solution: 919
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐
 Time: 1545 Temperature of Solution: 35.5
 Temperature Compensated Solution Conductivity (μ S/cm) * 1209
 Instrument Response to Calibration Solution: 1235
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐

The Temperature Compensated Solution Conductivity May Be Computed Using Following Equation:
 Conductivity (μ S/cm) = (Conductivity at 25°C) (A + BT + CT²)
 Where T = Temperature in °C

And

Conductivity @ 25°C (μ S/cm)	A	B	C
1,000	0.5407	0.0173	0.000043
10,000	0.5538	0.0168	0.000042
100,000	0.5825	0.0157	0.000040

Instrument is Calibrated if Response is:

- ± 6% of calibration solution if reading is ≤ 150 mmhos/cm on 500 scale;
 ≤ 1500 mmhos/cm on 5000 Scale; or ≤ 15,000 mmhos/cm on 50,000 scale.
- ± 4.5% to 6% of calibration solution if reading is > 150 and < 300
 mmhos/cm on 500 scale; > 1500 and < 3000 mmhos/cm on 5000 scale;
 and > 15,000 and < 30,000 mmhos/cm on 50,000 Scale.
- ± 4.5% of calibration solution if reading is ≥ 300 mmhos/cm on 500 scale;
 ≥ 3000 mmhos/cm on 5000 scale; and ≥ 30,000 mmhos/cm on 50,000 scale.

CONDUCTIVITY/SALINITY/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
 Calibration by: T. Stanley Date: 8/29/92
 Instrument Manufacturer: YSI Model: 3500
 Serial Number: 94C16863
 Probe Manufacturer: YSI Model: 3520
 Serial Number: 95A94403
 Calibration Solution Manufacturer: YSI
 Solution Conductivity: 1,000 μ S/cm Solution Expiration Date: 9/97

FIELD CALIBRATION

Time: 0840 Temperature of Solution: 25.3
 Temperature Compensated Solution Conductivity (μ S/cm) * 1006
 Instrument Response to Calibration Solution: 1040
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐
 Time: 1630 Temperature of Solution: 50.2
 Temperature Compensated Solution Conductivity (μ S/cm) * 1618
 Instrument Response to Calibration Solution: 1649
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐

The Temperature Compensated Solution Conductivity May Be Computed Using Following Equation:
 Conductivity (μ S/cm) = (Conductivity at 25°C) (A + BT + CT²)
 Where T = Temperature in °C

And

Conductivity @ 25°C (μ S/cm)	A	B	C
1,000	0.5407	0.0173	0.000043
10,000	0.5538	0.0168	0.000042
100,000	0.5825	0.0157	0.000040

Instrument is Calibrated if Response is:

- ± 6% of calibration solution if reading is ≤ 150 μ mhos/cm on 500 scale;
 ≤ 1500 μ mhos/cm on 5000 Scale; or ≤ 15,000 μ mhos/cm on 50,000 scale.
- ± 4.5% to 6% of calibration solution if reading is > 150 and < 300
 μ mhos/cm on 500 scale; > 1500 and < 3000 μ mhos/cm on 5000 scale;
 and > 15,000 and < 30,000 μ mhos/cm on 50,000 Scale.
- ± 4.5% of calibration solution if reading is ≥ 300 μ mhos/cm on 500 scale;
 ≥ 3000 μ mhos/cm on 5000 scale; and ≥ 30,000 μ mhos/cm on 50,000 scale.

CONDUCTIVITY/SALINITY/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
 Calibration by: T. BLANCH Date: 8/30/96
 Instrument Manufacturer: YSI Model: 3500
 Serial Number: 94C16863
 Probe Manufacturer: YSI Model: 3520
 Serial Number: 95A94403
 Calibration Solution Manufacturer: YSI
 Solution Conductivity: 1,000 μ S/cm Solution Expiration Date: 9/97

FIELD CALIBRATION

Time: 0815 Temperature of Solution: 24.9
 Temperature Compensated Solution Conductivity (μ S/cm) * 998
 Instrument Response to Calibration Solution: 1012
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐
 Time: 1100 Temperature of Solution: 32.8
 Temperature Compensated Solution Conductivity (μ S/cm) * 1154
 Instrument Response to Calibration Solution: 1184
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐

The Temperature Compensated Solution Conductivity May Be Computed Using Following Equation:
 Conductivity (μ S/cm) = (Conductivity at 25°C) (A + BT + CT²)
 Where T = Temperature in °C

And

Conductivity @ 25°C (μ S/cm)	A	B	C
1,000	0.5407	0.0173	0.000043
10,000	0.5538	0.0168	0.000042
100,000	0.5825	0.0157	0.000040

Instrument is Calibrated if Response is:

- ± 6% of calibration solution if reading is ≤ 150 mmhos/cm on 500 scale;
 ≤ 1500 mmhos/cm on 5000 Scale; or ≤ 15,000 mmhos/cm on 50,000 scale.
- ± 4.5% to 6% of calibration solution if reading is > 150 and < 300
 mmhos/cm on 500 scale; > 1500 and < 3000 mmhos/cm on 5000 scale;
 and > 15,000 and < 30,000 mmhos/cm on 50,000 Scale.
- ± 4.5% of calibration solution if reading is ≥ 300 mmhos/cm on 500 scale;
 ≥ 3000 mmhos/cm on 5000 scale; and ≥ 30,000 mmhos/cm on 50,000 scale.

CONDUCTIVITY/SALINITY/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
 Calibration by: T. BLANEY Date: 9/3/96
 Instrument Manufacturer: YSI Model: 3500
 Serial Number: 94C16863
 Probe Manufacturer: YSI Model: 3520
 Serial Number: 95A94403
 Calibration Solution Manufacturer: YSI
 Solution Conductivity: 1,000 μ S/cm Solution Expiration Date: 9/97

FIELD CALIBRATION

Time: 0805 Temperature of Solution: 18.8
 Temperature Compensated Solution Conductivity (μ S/cm) * 891
 Instrument Response to Calibration Solution: 917
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐
 Time: 1415 Temperature of Solution: 3
 Temperature Compensated Solution Conductivity (μ S/cm) * 1280
 Instrument Response to Calibration Solution: 1258
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐

The Temperature Compensated Solution Conductivity May Be Computed Using Following Equation:
 Conductivity (μ S/cm) = (Conductivity at 25°C) (A + BT + CT²)
 Where T = Temperature in °C

And

Conductivity @ 25°C (μ S/cm)	A	B	C
1,000	0.5407	0.0173	0.000043
10,000	0.5538	0.0168	0.000042
100,000	0.5825	0.0157	0.000040

Instrument is Calibrated if Response is:

- ± 6% of calibration solution if reading is ≤ 150 mmhos/cm on 500 scale;
 ≤ 1500 mmhos/cm on 5000 Scale; or ≤ 15,000 mmhos/cm on 50,000 scale.
- ± 4.5% to 6% of calibration solution if reading is > 150 and < 300
 mmhos/cm on 500 scale; > 1500 and < 3000 mmhos/cm on 5000 scale;
 and > 15,000 and < 30,000 mmhos/cm on 50,000 Scale.
- ± 4.5% of calibration solution if reading is ≥ 300 mmhos/cm on 500 scale;
 ≥ 3000 mmhos/cm on 5000 scale; and ≥ 30,000 mmhos/cm on 50,000 scale.

CONDUCTIVITY/SALINITY/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
 Calibration by: T. BLANEY Date: 9/4/96
 Instrument Manufacturer: YSI Model: 3500
 Serial Number: 94C16063
 Probe Manufacturer: YSI Model: 3520
 Serial Number: 95A94403
 Calibration Solution Manufacturer: YSI
 Solution Conductivity: 1,000 μ S/cm Solution Expiration Date: 9/97

FIELD CALIBRATION

Time: 0825 Temperature of Solution: 18.7
 Temperature Compensated Solution Conductivity (μ S/cm) * 879
 Instrument Response to Calibration Solution: 985
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐
 Time: 1205 Temperature of Solution: 23.6
 Temperature Compensated Solution Conductivity (μ S/cm) * 972
 Instrument Response to Calibration Solution: 960
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐

The Temperature Compensated Solution Conductivity May Be Computed Using Following Equation:
 Conductivity (μ S/cm) = (Conductivity at 25°C) (A + BT + CT²)
 Where T = Temperature in °C

And

Conductivity @ 25°C (μ S/cm)	A	B	C
1,000	0.5407	0.0173	0.000043
10,000	0.5538	0.0168	0.000042
100,000	0.5825	0.0157	0.000040

Instrument is Calibrated if Response is:

- ± 6% of calibration solution if reading is $\leq$ 150 mmhos/cm on 500 scale;
 $\leq$ 1500 mmhos/cm on 5000 Scale; or $\leq$ 15,000 mmhos/cm on 50,000 scale.
- ± 4.5% to 6% of calibration solution if reading is $>$ 150 and $<$ 300
 mmhos/cm on 500 scale; $>$ 1500 and $<$ 3000 mmhos/cm on 5000 scale;
 and $>$ 15,000 and $<$ 30,000 mmhos/cm on 50,000 Scale.
- ± 4.5% of calibration solution if reading is $\geq$ 300 mmhos/cm on 500 scale;
 $\geq$ 3000 mmhos/cm on 5000 scale; and $\geq$ 30,000 mmhos/cm on 50,000 scale.

CONDUCTIVITY/SALINITY/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
 Calibration by: T. BLANEY Date: 9/5/96
 Instrument Manufacturer: YSI Model: 3500
 Serial Number: 94C16863 Calibration Date: 9/5/96
 Probe Manufacturer: YSI Model: 3520
 Serial Number: 95A94403
 Calibration Solution Manufacturer: YSI
 Solution Conductivity: 1,000 μ S/cm Expiration Date: 9/97

FIELD CALIBRATION

Time: 0745 Temperature: 16.9
 Temperature Compensated Solution Conductivity (μ S/cm) 845
 Instrument Response: 817 Probe Constant: 0.000
 Time: 1310 Temperature: 26.0
 Temperature Compensated Solution Conductivity (μ S/cm) 1019
 Instrument Response: 1005 Probe Constant: _____
 Time: _____ Temperature: _____
 Temperature Compensated Solution Conductivity (μ S/cm) _____
 Instrument Response: _____ Probe Constant: _____

The Temperature Compensated Solution Conductivity May Be Computed Using:
 $\text{Conductivity } (\mu \text{ S/cm}) = (\text{Conductivity at } 25^\circ\text{C}) (A + BT + CT^2)$
 Where T = Temperature in $^\circ\text{C}$

And

Conductivity @ 25°C (μ S/cm)	A	B	C
1,000	0.5407	0.0173	0.000043
10,000	0.5538	0.0168	0.000042
100,000	0.5825	0.0157	0.000040

Probe Constant = Temperature Compensated Solution Conductivity/Instrument Response

Instrument is Calibrated if Response is:

- ± 6% of calibration solution if reading is $\leq 150 \mu\text{hos/cm}$ on 500 scale;
 $\leq 1500 \mu\text{hos/cm}$ on 5000 Scale; or $\leq 15,000 \mu\text{hos/cm}$ on 50,000 scale.
- ± 4.5% to 6% of calibration solution if reading is > 150 and < 300
 $\mu\text{hos/cm}$ on 500 scale; > 1500 and $< 3000 \mu\text{hos/cm}$ on 5000 scale;
and $> 15,000$ and $< 30,000 \mu\text{hos/cm}$ on 50,000 Scale.
- ± 4.5% of calibration solution if reading is $\geq 300 \mu\text{hos/cm}$ on 500 scale;
 $\geq 3000 \mu\text{hos/cm}$ on 5000 scale; and $\geq 30,000 \mu\text{hos/cm}$ on 50,000 scale.

CONDUCTIVITY/SALINITY/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
 Calibration by: T. Blaney Date: 9/6/96
 Instrument Manufacturer: YSI Model: 3500
 Serial Number: 94C16463 Calibration Date: 9/6/96
 Probe Manufacturer: YSI Model: 3520
 Serial Number: 95A94403
 Calibration Solution Manufacturer: YSI
 Solution Conductivity: 1,000 μ S/cm Expiration Date: 9/97

FIELD CALIBRATION

Time: 0745 Temperature: 19.2
 Temperature Compensated Solution Conductivity (μ S/cm) 888
 Instrument Response: 889 Probe Constant: 0.000
 Time: 1310 Temperature: 29.1
 Temperature Compensated Solution Conductivity (μ S/cm) 1081
 Instrument Response: 1101 Probe Constant: _____
 Time: _____ Temperature: _____
 Temperature Compensated Solution Conductivity (μ S/cm) _____
 Instrument Response: _____ Probe Constant: _____

The Temperature Compensated Solution Conductivity May Be Computed Using:
 $\text{Conductivity } (\mu \text{ S/cm}) = (\text{Conductivity at } 25^\circ\text{C}) (A + BT + CT^2)$
 Where T = Temperature in $^\circ\text{C}$

And

Conductivity @ 25°C (μ S/cm)	A	B	C
1,000	0.5407	0.0173	0.000043
10,000	0.5538	0.0168	0.000042
100,000	0.5825	0.0157	0.000040

Probe Constant = Temperature Compensated Solution Conductivity/Instrument Response

Instrument is Calibrated if Response is:

- ± 6% of calibration solution if reading is ≤ 150 μ hos/cm on 500 scale;
 ≤ 1500 μ hos/cm on 5000 Scale; or $\leq 15,000$ μ hos/cm on 50,000 scale.
- ± 4.5% to 6% of calibration solution if reading is > 150 and < 300
 μ hos/cm on 500 scale; > 1500 and < 3000 μ hos/cm on 5000 scale;
 and $> 15,000$ and $< 30,000$ μ hos/cm on 50,000 Scale.
- ± 4.5% of calibration solution if reading is ≥ 300 μ hos/cm on 500 scale;
 ≥ 3000 μ hos/cm on 5000 scale; and $\geq 30,000$ μ hos/cm on 50,000 scale.

CONDUCTIVITY/SALINITY/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
 Calibration by: T. Blaney Date: 9/9/96
 Instrument Manufacturer: YSI Model: 3500
 Serial Number: 94C16863
 Probe Manufacturer: YSI Model: 3520
 Serial Number: 95A94403
 Calibration Solution Manufacturer: YSI
 Solution Conductivity: 1,000 μ S/cm Solution Expiration Date: 9/97

FIELD CALIBRATION

Time: 0730 Temperature of Solution: 20.9
 Temperature Compensated Solution Conductivity (μ S/cm) * 0.912 0.919 0.919
 Instrument Response to Calibration Solution: ~~0.912~~ 0.919
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: X No:
 Time: 1350 Temperature of Solution: 35.3
 Temperature Compensated Solution Conductivity (μ S/cm) * 1.204
 Instrument Response to Calibration Solution: 1.240
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: X No:

The Temperature Compensated Solution Conductivity May Be Computed Using Following Equation:
 Conductivity (μ S/cm) = (Conductivity at 25°C) (A + BT + CT²)
 Where T = Temperature in °C

And

Conductivity @ 25°C (μ S/cm)	A	B	C
1,000	0.5407	0.0173	0.000043
10,000	0.5538	0.0168	0.000042
100,000	0.5825	0.0157	0.000040

Instrument is Calibrated if Response is:

- ± 6% of calibration solution if reading is ≤ 150 μ mhos/cm on 500 scale;
 ≤ 1500 μ mhos/cm on 5000 Scale; or ≤ 15,000 μ mhos/cm on 50,000 scale.
- ± 4.5% to 6% of calibration solution if reading is > 150 and < 300
 μ mhos/cm on 500 scale; > 1500 and < 3000 μ mhos/cm on 5000 scale;
 and > 15,000 and < 30,000 μ mhos/cm on 50,000 Scale.
- ± 4.5% of calibration solution if reading is ≥ 300 μ mhos/cm on 500 scale;
 ≥ 3000 μ mhos/cm on 5000 scale; and ≥ 30,000 μ mhos/cm on 50,000 scale.

CONDUCTIVITY/SALINITY/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JAL
 Calibration by: T. BLANNY Date: 9/10/96
 Instrument Manufacturer: YSI Model: 3500
 Serial Number: 94C16863
 Probe Manufacturer: YSI Model: 3520
 Serial Number: 95A94403
 Calibration Solution Manufacturer: YSI
 Solution Conductivity: 1,000 μ S/cm Solution Expiration Date: 9/97

FIELD CALIBRATION

Time: 0725 Temperature of Solution: 18.9
 Temperature Compensated Solution Conductivity (μ S/cm) * 883
 Instrument Response to Calibration Solution: 896
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐
 Time: 1340 Temperature of Solution: 30.4
 Temperature Compensated Solution Conductivity (μ S/cm) * 1106
 Instrument Response to Calibration Solution: 1154
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: ☒ No: ☐

The Temperature Compensated Solution Conductivity May Be Computed Using Following Equation:
 Conductivity (μ S/cm) = (Conductivity at 25°C) (A + BT + CT²)
 Where T = Temperature in °C

And

Conductivity @ 25°C (μ S/cm)	A	B	C
1,000	0.5407	0.0173	0.000043
10,000	0.5538	0.0168	0.000042
100,000	0.5825	0.0157	0.000040

Instrument is Calibrated if Response is:

- ± 6% of calibration solution if reading is ≤ 150 mmhos/cm on 500 scale;
 ≤ 1500 mmhos/cm on 5000 Scale; or ≤ 15,000 mmhos/cm on 50,000 scale.
- ± 4.5% to 6% of calibration solution if reading is > 150 and < 300
 mmhos/cm on 500 scale; > 1500 and < 3000 mmhos/cm on 5000 scale;
 and > 15,000 and < 30,000 mmhos/cm on 50,000 Scale.
- ± 4.5% of calibration solution if reading is ≥ 300 mmhos/cm on 500 scale;
 ≥ 3000 mmhos/cm on 5000 scale; and ≥ 30,000 mmhos/cm on 50,000 scale.

CONDUCTIVITY/SALINITY/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
 Calibration by: T. Blaney Date: 9/11/96
 Instrument Manufacturer: YSI Model: 3500
 Serial Number: 94C16863
 Probe Manufacturer: YSI Model: 3520
 Serial Number: 95A94403
 Calibration Solution Manufacturer: YSI
 Solution Conductivity: 1,000 μ S/cm Solution Expiration Date: 9/97

FIELD CALIBRATION

Time: 0800 Temperature of Solution: 17.2
 Temperature Compensated Solution Conductivity (μ S/cm) * 351
 Instrument Response to Calibration Solution: 375
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: X No:
 Time: 1230 Temperature of Solution: 30.4
 Temperature Compensated Solution Conductivity (μ S/cm) * 1126
 Instrument Response to Calibration Solution: 1130
 Instrument Response within Instrument and Probe Limits of Error: ** Yes: X No:

The Temperature Compensated Solution Conductivity May Be Computed Using Following Equation:
 Conductivity (μ S/cm) = (Conductivity at 25°C) (A + BT + CT²)
 Where T = Temperature in °C

And

Conductivity @ 25°C (μ S/cm)	A	B	C
1,000	0.5407	0.0173	0.000043
10,000	0.5538	0.0168	0.000042
100,000	0.5825	0.0157	0.000040

Instrument is Calibrated if Response is:

- ± 6% of calibration solution if reading is ≤ 150 mmhos/cm on 500 scale;
 ≤ 1500 mmhos/cm on 5000 Scale; or ≤ 15,000 mmhos/cm on 50,000 scale.
- ± 4.5% to 6% of calibration solution if reading is > 150 and < 300
 mmhos/cm on 500 scale; > 1500 and < 3000 mmhos/cm on 5000 scale;
 and > 15,000 and < 30,000 mmhos/cm on 50,000 Scale.
- ± 4.5% of calibration solution if reading is ≥ 300 mmhos/cm on 500 scale;
 ≥ 3000 mmhos/cm on 5000 scale; and ≥ 30,000 mmhos/cm on 50,000 scale.

CONDUCTIVITY/SALINITY/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
 Calibration by: T. BLANCH Date: 9/12/96
 Instrument Manufacturer: YSI Model: 3500
 Serial Number: 94C16863 Calibration Date: 9/12/96
 Probe Manufacturer: YSI Model: 3520
 Serial Number: 95A94403
 Calibration Solution Manufacturer: YSI
 Solution Conductivity: 1,000 μ S/cm Expiration Date: 9/97

FIELD CALIBRATION

Time: 0745 Temperature: 15.0
 Temperature Compensated Solution Conductivity (μ S/cm) 809
 Instrument Response: 828 Probe Constant: _____
 Time: 0823 Temperature: 18.0
 Temperature Compensated Solution Conductivity (μ S/cm) 867
 Instrument Response: 902 Probe Constant: _____
 Time: _____ Temperature: _____
 Temperature Compensated Solution Conductivity (μ S/cm) _____
 Instrument Response: _____ Probe Constant: _____

The Temperature Compensated Solution Conductivity May Be Computed Using:
 $\text{Conductivity } (\mu \text{ S/cm}) = (\text{Conductivity at } 25^\circ\text{C}) (A + BT + CT^2)$
 Where T = Temperature in $^\circ\text{C}$

And	Conductivity @ 25°C (μ S/cm)	A	B	C
	1,000	0.5407	0.0173	0.000043
	10,000	0.5538	0.0168	0.000042
	100,000	0.5825	0.0157	0.000040

Probe Constant = Temperature Compensated Solution Conductivity/Instrument Response

Instrument is Calibrated if Response is:

- ± 6% of calibration solution if reading is ≤ 150 μ mhos/cm on 500 scale;
 ≤ 1500 μ mhos/cm on 5000 Scale; or $\leq 15,000$ μ mhos/cm on 50,000 scale.
- ± 4.5% to 6% of calibration solution if reading is > 150 and < 300
 μ mhos/cm on 500 scale; > 1500 and < 3000 μ mhos/cm on 5000 scale;
 and $> 15,000$ and $< 30,000$ μ mhos/cm on 50,000 Scale.
- ± 4.5% of calibration solution if reading is ≥ 300 μ mhos/cm on 500 scale;
 ≥ 3000 μ mhos/cm on 5000 scale; and $\geq 30,000$ μ mhos/cm on 50,000 scale.

pH/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
Calibration by: T. BLANEY Date: 8/8/96
Instrument Manufacturer: YSI Model: 3560
Serial Number: 94C16863
pH Probe Manufacturer: YSI Model: 3530
Serial Number: 94A 803474
ATC Probe Manufacturer: YSI Model: 3510
Serial Number: N/A
Buffer Solution Manufacturer: API - LIRCO
Expiration Dates of Buffer Solutions pH 4.01: 2/28/98 pH 7.00: 2/28/98 pH 10.01: 2/28/98

INSTRUMENTATION CHECK-OUT

Time: 1045 Battery Condition: Good
Instrument Readings with Shorting Plug in, mV: N/A Temperature: 26.6 pH: 3.67 ISO: N/A
Reference Chamber Solution Changed?: ☒
pH Probe Condition: Good

FIELD CALIBRATION

Time: 1050 Slope: N/A Temperature: 26.1
Response to Low Buffer: 7.00 Response to High Buffer: 10.00
Time: 1600 Slope: N/A Temperature: 26.7
Response to Low Buffer: 7.00 Response to High Buffer: 10.00
Time: _____ Slope: _____ Temperature: _____
Response to Low Buffer: _____ Response to High Buffer: _____

Comments: GW Sampling @ MW-19

Calibrate to Accuracy of ± 0.05 pH Units
Slope Must Be Between 80 - 110%

pH/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
Calibration by: T. Blaney Date: 8/12/96
Instrument Manufacturer: YSI Model: 3500
Serial Number: 94616863
pH Probe Manufacturer: YSI Model: 3530
Serial Number: N/A
ATC Probe Manufacturer: YSI Model: 3510
Serial Number: N/A
Buffer Solution Manufacturer: API - LIRC
Expiration Dates of Buffer Solutions pH 4.01: _____ pH 7.00: 2-27-98 pH 10.01: 2-18-98

INSTRUMENTATION CHECK-OUT

Time: 1000 Battery Condition: Good
Instrument Readings with Shorting Plug in, mV: _____ Temperature: 25.5 pH: 3.77 ISO: _____
Reference Chamber Solution Changed?: ☒
pH Probe Condition: Good

FIELD CALIBRATION

Time: 1000 Slope: N/A Temperature: 24.9
Response to Low Buffer: 7.00 Response to High Buffer: 10.00
Time: 1600 Slope: N/A Temperature: _____
Response to Low Buffer: 7.00 Response to High Buffer: 10.00
Time: _____ Slope: _____ Temperature: _____
Response to Low Buffer: _____ Response to High Buffer: _____

Comments: _____

Calibrate to Accuracy of ± 0.05 pH Units
Slope Must Be Between 80 - 110%

pH/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
Calibration by: T. Blaney Date: 8/13/96
Instrument Manufacturer: YSI Model: 3500
Serial Number: 94C16863
pH Probe Manufacturer: YSI Model: 3530
Serial Number: N/A
ATC Probe Manufacturer: YSI Model: 3510
Serial Number: N/A
Buffer Solution Manufacturer: API-LIRCO
Expiration Dates of Buffer Solutions pH 4.01: _____ pH 7.00: 2/27/93 pH 10.01: 2/18/98

INSTRUMENTATION CHECK-OUT

Time: 0750 Battery Condition: Good
Instrument Readings with Shorting Plug in, mV: - Temperature: 25.5 pH: 3.98 ISO: -
Reference Chamber Solution Changed?: ✓
pH Probe Condition: Good

FIELD CALIBRATION

Time: 0750 Slope: N/A Temperature: 25.0
Response to Low Buffer: 7.00 Response to High Buffer: 10.00
Time: 1600 Slope: N/A Temperature: 38.8
Response to Low Buffer: 7.00 Response to High Buffer: 10.00
Time: _____ Slope: _____ Temperature: _____
Response to Low Buffer: _____ Response to High Buffer: _____

Comments: _____

Calibrate to Accuracy of ± 0.05 pH Units
Slope Must Be Between 80 - 110%

pH/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
 Calibration by: T. Blaney Date: 8/14/96
 Instrument Manufacturer: YSI Model: 3500
 Serial Number: 94C16863
 pH Probe Manufacturer: YSI Model: 3530
 Serial Number: N/A
 ATC Probe Manufacturer: YSI Model: 3510
 Serial Number: N/A
 Buffer Solution Manufacturer: APR - LIRCO
 Expiration Dates of Buffer Solutions pH 4.01: _____ pH 7.00: 2/27/98 pH 10.01: 2/8/98

INSTRUMENTATION CHECK-OUT

Time: 0815 Battery Condition: Good
 Instrument Readings with Shorting Plug in, mV: — Temperature: 23.1 pH: 3.97 ISO: —
 Reference Chamber Solution Changed?: ✓
 pH Probe Condition: Good

FIELD CALIBRATION

Time: 0815 Slope: N/A Temperature: 24.6
 Response to Low Buffer: 7.00 Response to High Buffer: 10.00
 Time: 14:05 Slope: N/A Temperature: 38.3
 Response to Low Buffer: 7.00 Response to High Buffer: 10.00
 Time: _____ Slope: _____ Temperature: _____
 Response to Low Buffer: _____ Response to High Buffer: _____

Comments: _____

Calibrate to Accuracy of ± 0.05 pH Units
 Slope Must Be Between 80 - 110%

pH/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
 Calibration by: T. Blanny Date: 8/15/96
 Instrument Manufacturer: YSI Model: 3500
 Serial Number: 94C16863
 pH Probe Manufacturer: YSI Model: 3530
 Serial Number: N/A
 ATC Probe Manufacturer: YSI Model: 3510
 Serial Number: N/A
 Buffer Solution Manufacturer: APR-LIRCO
 Expiration Dates of Buffer Solutions pH 4.01: _____ pH 7.00: 2/27/98 pH 10.01: 2/18/98

INSTRUMENTATION CHECK-OUT

Time: 0730 Battery Condition: Good
 Instrument Readings with Shorting Plug in, mV: — Temperature: 25.5 pH: 4.15 ISO: —
 Reference Chamber Solution Changed?: ☒
 pH Probe Condition: Good

FIELD CALIBRATION

Time: 0730 Slope: N/A Temperature: 23.0
 Response to Low Buffer: 7.0 Response to High Buffer: 10.0
 Time: 12:20 Slope: N/A Temperature: 34.3
 Response to Low Buffer: 7.0 Response to High Buffer: 10.0
 Time: _____ Slope: _____ Temperature: _____
 Response to Low Buffer: _____ Response to High Buffer: _____

Comments: _____

Calibrate to Accuracy of ± 0.05 pH Units
 Slope Must Be Between 80 - 110%

pH/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
Calibration by: T. BLANEY Date: 8/16/96
Instrument Manufacturer: YSI Model: 3500
Serial Number: 94C16863
pH Probe Manufacturer: YSI Model: 3530
Serial Number: N/A
ATC Probe Manufacturer: YSI Model: 3510
Serial Number: N/A
Buffer Solution Manufacturer: APR-LIRCO
Expiration Dates of Buffer Solutions pH 4.01: _____ pH 7.00: 2/27/98 pH 10.01: 2/18/98

INSTRUMENTATION CHECK-OUT

Time: 0735 Battery Condition: Good
Instrument Readings with Shorting Plug in, mV: _____ Temperature: 21.0 pH: 3.77 ISO: _____
Reference Chamber Solution Changed?: ☒
pH Probe Condition: Good

FIELD CALIBRATION

Time: 0735 Slope: N/A Temperature: 21.1
Response to Low Buffer: 7.00 Response to High Buffer: 10.0
Time: 1455 Slope: N/A Temperature: 32.2
Response to Low Buffer: 7.0 Response to High Buffer: 10.0
Time: _____ Slope: _____ Temperature: _____
Response to Low Buffer: _____ Response to High Buffer: _____

Comments: _____

Calibrate to Accuracy of ± 0.05 pH Units
Slope Must Be Between 80 - 110%

pH/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
Calibration by: T. BLANEY Date: 8/19/96
Instrument Manufacturer: YSI Model: 3500
Serial Number: 94C16863
pH Probe Manufacturer: YSI Model: 3530
Serial Number: NIA
ATC Probe Manufacturer: YSI Model: 3510
Serial Number: NIA
Buffer Solution Manufacturer: APR-LIRCO
Expiration Dates of Buffer Solutions pH 4.01: _____ pH 7.00: 2/27/98 pH 10.01: 2/18/98

INSTRUMENTATION CHECK-OUT

Time: 0745 Battery Condition: good
Instrument Readings with Shorting Plug in, mV: _____ Temperature: 21.7 pH: 3.89 ISO: _____
Reference Chamber Solution Changed?: ☒
pH Probe Condition: good

FIELD CALIBRATION

Time: 0745 Slope: NIA Temperature: 19.7
Response to Low Buffer: 7.00 Response to High Buffer: 10.00
Time: 1055 Slope: NIA Temperature: 21.9
Response to Low Buffer: 7.00 Response to High Buffer: 10.00
Time: _____ Slope: _____ Temperature: _____
Response to Low Buffer: _____ Response to High Buffer: _____

Comments: _____

Calibrate to Accuracy of ± 0.05 pH Units
Slope Must Be Between 80 - 110%

pH/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
Calibration by: T. BLANEY Date: 8/20/96
Instrument Manufacturer: YSI Model: 3500
Serial Number: 94C16863
pH Probe Manufacturer: YSI Model: 3530
Serial Number: N/A
ATC Probe Manufacturer: YSI Model: 3510
Serial Number: N/A
Buffer Solution Manufacturer: APR-LIRCO
Expiration Dates of Buffer Solutions pH 4.01: _____ pH 7.00: 2/27/98 pH 10.01: 2/18/98

INSTRUMENTATION CHECK-OUT

Time: 0800 Battery Condition: Good
Instrument Readings with Shorting Plug in, mV: — Temperature: 23.2 pH: 3.82 ISO: —
Reference Chamber Solution Changed?: ☒
pH Probe Condition: Good

FIELD CALIBRATION

Time: 0915 Slope: N/A Temperature: 20.1
Response to Low Buffer: 7.00 Response to High Buffer: 10.0
Time: 1335 Slope: N/A Temperature: 27.1
Response to Low Buffer: 7.00 Response to High Buffer: 10.0
Time: _____ Slope: _____ Temperature: _____
Response to Low Buffer: _____ Response to High Buffer: _____

Comments: _____

Calibrate to Accuracy of ± 0.05 pH Units
Slope Must Be Between 80 - 110%

pH/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
Calibration by: T. BLANEY Date: 8/2/98
Instrument Manufacturer: YSI Model: 3500
Serial Number: 94C16263
pH Probe Manufacturer: YSI Model: 3530
Serial Number: N/A
ATC Probe Manufacturer: YSI Model: 3510
Serial Number: N/A
Buffer Solution Manufacturer: APR - LIRCO
Expiration Dates of Buffer Solutions pH 4.01: _____ pH 7.00: 2/27/98 pH 10.01: 2/18/98

INSTRUMENTATION CHECK-OUT

Time: 0725 Battery Condition: Good
Instrument Readings with Shorting Plug in, mV: _____ Temperature: 16.8 pH: 4.28 ISO: _____
Reference Chamber Solution Changed?: ☒
pH Probe Condition: Good

FIELD CALIBRATION

Time: 0725 Slope: N/A Temperature: 16.8
Response to Low Buffer: 7.00 Response to High Buffer: 10.0
Time: 1325 Slope: N/A Temperature: 20.6
Response to Low Buffer: 7.00 Response to High Buffer: 10.0
Time: _____ Slope: _____ Temperature: _____
Response to Low Buffer: _____ Response to High Buffer: _____

Comments: _____

Calibrate to Accuracy of ± 0.05 pH Units
Slope Must Be Between 80 - 110%

pH/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JAL
Calibration by: T. BLANEY Date: 8/22/96
Instrument Manufacturer: YSI Model: 3500
Serial Number: 94C16863
pH Probe Manufacturer: YSI Model: 3530
Serial Number: N/A
ATC Probe Manufacturer: YSI Model: 3510
Serial Number: N/A
Buffer Solution Manufacturer: APR-LIACO
Expiration Dates of Buffer Solutions pH 4.01: _____ pH 7.00: 2/27/98 pH 10.01: 2/18/98

INSTRUMENTATION CHECK-OUT

Time: 0730 Battery Condition: Good
Instrument Readings with Shorting Plug in, mV: — Temperature: 17.7 pH: 4.18 ISO: —
Reference Chamber Solution Changed?: ✓
pH Probe Condition: Good

FIELD CALIBRATION

Time: 0730 Slope: N/A Temperature: 17.0
Response to Low Buffer: 7.00 Response to High Buffer: 10.0
Time: 1255 Slope: N/A Temperature: 35.2
Response to Low Buffer: 7.00 Response to High Buffer: 10.0
Time: _____ Slope: _____ Temperature: _____
Response to Low Buffer: _____ Response to High Buffer: _____

Comments: _____

Calibrate to Accuracy of ± 0.05 pH Units
Slope Must Be Between 80 - 110%

pH/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: 10L
Calibration by: T. BLANEY Date: 8/23/96
Instrument Manufacturer: YSI Model: 3500
Serial Number: 94C16863
pH Probe Manufacturer: YSI Model: 3530
Serial Number: N/A
ATC Probe Manufacturer: YSI Model: 3510
Serial Number: N/A
Buffer Solution Manufacturer: APR - LIRCO
Expiration Dates of Buffer Solutions pH 4.01: _____ pH 7.00: 2/27/98 pH 10.01: 2/18/98

INSTRUMENTATION CHECK-OUT

Time: 0740 Battery Condition: good
Instrument Readings with Shorting Plug in, mV: _____ Temperature: 20.0 pH: 4.80 ISO: _____
Reference Chamber Solution Changed?: ☒
pH Probe Condition: good

FIELD CALIBRATION

Time: 0740 Slope: N/A Temperature: 20.0
Response to Low Buffer: 7.00 Response to High Buffer: 10.0
Time: 135 Slope: N/A Temperature: 26.8
Response to Low Buffer: 7.00 Response to High Buffer: 10.00
Time: _____ Slope: _____ Temperature: _____
Response to Low Buffer: _____ Response to High Buffer: _____

Comments: _____

Calibrate to Accuracy of ± 0.05 pH Units
Slope Must Be Between 80 - 110%

pH/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
Calibration by: T. BLANEY Date: 8/26/96
Instrument Manufacturer: YSE Model: 3500
Serial Number: 94C 16863
pH Probe Manufacturer: YSE Model: 3530
Serial Number: N/A
ATC Probe Manufacturer: YSE Model: 3510
Serial Number: N/A
Buffer Solution Manufacturer: APR-LIRCO
Expiration Dates of Buffer Solutions pH 4.01: _____ pH 7.00: 2/27/98 pH 10.01: 2/18/98

INSTRUMENTATION CHECK-OUT

Time: 0735 Battery Condition: Good
Instrument Readings with Shorting Plug in, mV: — Temperature: 24.4 pH: 4.86 ISO: —
Reference Chamber Solution Changed?: ☒
pH Probe Condition: Good

FIELD CALIBRATION

Time: 0815 Slope: N/A Temperature: 20.7
Response to Low Buffer: 7.00 Response to High Buffer: 10.0
Time: 1415 Slope: N/A Temperature: 44.2
Response to Low Buffer: 7.00 Response to High Buffer: 10.0
Time: _____ Slope: _____ Temperature: _____
Response to Low Buffer: _____ Response to High Buffer: _____

Comments: _____

Calibrate to Accuracy of ± 0.05 pH Units
Slope Must Be Between 80 - 110%

pH/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
 Calibration by: T. Blaney Date: 8/27/96
 Instrument Manufacturer: YSI Model: 3500
 Serial Number: 94C16863
 pH Probe Manufacturer: YSI Model: 3530
 Serial Number: N/A
 ATC Probe Manufacturer: YSI Model: 3510
 Serial Number: N/A
 Buffer Solution Manufacturer: APR-LIRCO
 Expiration Dates of Buffer Solutions pH 4.01: _____ pH 7.00: 2/27/98 pH 10.01: 2/28/98

INSTRUMENTATION CHECK-OUT

Time: 0800 Battery Condition: Good
 Instrument Readings with Shorting Plug in, mV: _____ Temperature: 17.9 pH: 4.90 ISO: _____
 Reference Chamber Solution Changed?: ☒
 pH Probe Condition: Good

FIELD CALIBRATION

Time: 0800 Slope: N/A Temperature: 18.1
 Response to Low Buffer: 7.00 Response to High Buffer: 10.0
 Time: 1430 Slope: N/A Temperature: 35.00
 Response to Low Buffer: 7.00 Response to High Buffer: 10.0
 Time: _____ Slope: _____ Temperature: _____
 Response to Low Buffer: _____ Response to High Buffer: _____

Comments: _____

Calibrate to Accuracy of ± 0.05 pH Units
 Slope Must Be Between 80 - 110%

pH/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
Calibration by: T. BLANEY Date: 8/28/92
Instrument Manufacturer: YSE Model: 350
Serial Number: 94C16863
pH Probe Manufacturer: YSE Model: 3530
Serial Number: N/A
ATC Probe Manufacturer: YSE Model: 3510
Serial Number: N/A
Buffer Solution Manufacturer: APR - LIRCO
Expiration Dates of Buffer Solutions pH 4.01: _____ pH 7.00: 2/27/98 pH 10.01: 2/10/98

INSTRUMENTATION CHECK-OUT

Time: 0805 Battery Condition: good
Instrument Readings with Shorting Plug in, mV: _____ Temperature: 17.8 pH: 5.61 ISO: _____
Reference Chamber Solution Changed?: ☒
pH Probe Condition: good

FIELD CALIBRATION

Time: 0805 Slope: N/A Temperature: 18.9
Response to Low Buffer: 7.00 Response to High Buffer: 10.0
Time: 1545 Slope: N/A Temperature: 35.5
Response to Low Buffer: 7.00 Response to High Buffer: 10.0
Time: _____ Slope: _____ Temperature: _____
Response to Low Buffer: _____ Response to High Buffer: _____

Comments: _____

Calibrate to Accuracy of ± 0.05 pH Units
Slope Must Be Between 80 - 110%

pH/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPC
 Calibration by: T. SLANLEY Date: 8/29/96
 Instrument Manufacturer: YSI Model: 3500
 Serial Number: 94C16863
 pH Probe Manufacturer: YSI Model: 3530
 Serial Number: N/A
 ATC Probe Manufacturer: YSI Model: 3510
 Serial Number: N/A
 Buffer Solution Manufacturer: APR-LI200
 Expiration Dates of Buffer Solutions pH 4.01: _____ pH 7.00: 2/27/98 pH 10.01: 2/12/98

INSTRUMENTATION CHECK-OUT

Time: 0840 Battery Condition: Good
 Instrument Readings with Shorting Plug in, mV: _____ Temperature: 25.3 pH: 5.65 ISO: _____
 Reference Chamber Solution Changed?: ✓
 pH Probe Condition: Good

FIELD CALIBRATION

Time: 0840 Slope: N/A Temperature: 27.3
 Response to Low Buffer: 7.20 Response to High Buffer: 10.00
 Time: 1630 Slope: N/A Temperature: 53.1
 Response to Low Buffer: 7.0 Response to High Buffer: 10.0
 Time: _____ Slope: _____ Temperature: _____
 Response to Low Buffer: _____ Response to High Buffer: _____

Comments: _____

Calibrate to Accuracy of ± 0.05 pH Units
 Slope Must Be Between 80 - 110%

pH/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
Calibration by: T. BLANKY Date: 8/30/90
Instrument Manufacturer: YSI Model: 3500
Serial Number: 94C16863
pH Probe Manufacturer: YSI Model: 3530
Serial Number: 95A94403 N/A
ATC Probe Manufacturer: YSI Model: 3510
Serial Number: N/A
Buffer Solution Manufacturer: APR-LIQUO
Expiration Dates of Buffer Solutions pH 4.01: _____ pH 7.00: 2/27/98 pH 10.01: 2/18/98

INSTRUMENTATION CHECK-OUT

Time: 0815 Battery Condition: Good
Instrument Readings with Shorting Plug in, mV: — Temperature: 26.7 pH: 5.42 ISO: —
Reference Chamber Solution Changed?: ✓
pH Probe Condition: Good

FIELD CALIBRATION

Time: 0815 Slope: N/A Temperature: 24.9
Response to Low Buffer: 7.0 Response to High Buffer: 10.0
Time: 1120 Slope: N/A Temperature: 33.2
Response to Low Buffer: 7.00 Response to High Buffer: 10.0
Time: _____ Slope: _____ Temperature: _____
Response to Low Buffer: _____ Response to High Buffer: _____

Comments: _____

Calibrate to Accuracy of ± 0.05 pH Units
Slope Must Be Between 80 - 110%

pH/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
Calibration by: T. BLANEY Date: 9/3/96
Instrument Manufacturer: YSI Model: 3500
Serial Number: 94C 16863
pH Probe Manufacturer: YSI Model: 3530
Serial Number: N/A
ATC Probe Manufacturer: YSI Model: 3510
Serial Number: N/A
Buffer Solution Manufacturer: APR-LI200
Expiration Dates of Buffer Solutions pH 4.01: — pH 7.00: 2/27/98 pH 10.01: 2/18/98

INSTRUMENTATION CHECK-OUT

Time: 0800 Battery Condition: Good
Instrument Readings with Shorting Plug in, mV: — Temperature: — pH: — ISO: —
Reference Chamber Solution Changed?: ✓
pH Probe Condition: Good

FIELD CALIBRATION

Time: 0805 Slope: N/A Temperature: 18.8
Response to Low Buffer: 7.00 Response to High Buffer: 10.0
Time: 1415 Slope: N/A Temperature: 26.7
Response to Low Buffer: 7.00 Response to High Buffer: 10.0
Time: — Slope: — Temperature: —
Response to Low Buffer: — Response to High Buffer: —

Comments: —
—
—

Calibrate to Accuracy of ± 0.05 pH Units
Slope Must Be Between 80 - 110%

pH/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
Calibration by: T. BLANEY Date: 9/4/96
Instrument Manufacturer: YSI Model: 3500
Serial Number: 94C16863
pH Probe Manufacturer: YSI Model: 3530
Serial Number: N/A
ATC Probe Manufacturer: YSI Model: 3510
Serial Number: N/A
Buffer Solution Manufacturer: APR - LI2CO
Expiration Dates of Buffer Solutions pH 4.01: _____ pH 7.00: 2/27/99 pH 10.01: 2/18/98

INSTRUMENTATION CHECK-OUT

Time: 0820 Battery Condition: Good
Instrument Readings with Shorting Plug in, mV: _____ Temperature: 19.2 pH: 6.25 ISO: _____
Reference Chamber Solution Changed?: ✓
pH Probe Condition: Good

FIELD CALIBRATION

Time: 0825 Slope: N/A Temperature: 18.4
Response to Low Buffer: 7.00 Response to High Buffer: 10.0
Time: 1205 Slope: N/A Temperature: 24.3
Response to Low Buffer: 7.00 Response to High Buffer: 10.00
Time: _____ Slope: _____ Temperature: _____
Response to Low Buffer: _____ Response to High Buffer: _____

Comments: _____

Calibrate to Accuracy of ± 0.05 pH Units
Slope Must Be Between 80 - 110%

pH/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
 Calibration by: T. Blaney Date: 9/5/96
 Instrument Manufacturer: YSI Model: 3500
 Serial Number: 94C16863
 pH Probe Manufacturer: YSI Model: 3530
 Serial Number: N/A
 ATC Probe Manufacturer: YSI Model: 3510
 Serial Number: N/A
 Buffer Solution Manufacturer: APR - LIRCO
 Expiration Dates of Buffer Solutions pH 4.01: _____ pH 7.00: 2/27/96 pH 10.01: 2/18/96

INSTRUMENTATION CHECK-OUT

Time: 0740 Battery Condition: Good
 Instrument Readings with Shorting Plug in, mV: — Temperature: 17.9 pH: 6.72 ISO: —
 Reference Chamber Solution Changed?: ☒
 pH Probe Condition: Good

FIELD CALIBRATION

Time: 0745 Slope: N/A Temperature: 15.3
 Response to Low Buffer: 7.00 Response to High Buffer: 10.00
 Time: 1310 Slope: N/A Temperature: 26.0
 Response to Low Buffer: 7.00 Response to High Buffer: 10.00
 Time: _____ Slope: _____ Temperature: _____
 Response to Low Buffer: _____ Response to High Buffer: _____

Comments: _____

Calibrate to Accuracy of ± 0.05 pH Units
 Slope Must Be Between 80 - 110%

pH/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
Calibration by: T. BLANEY Date: 9/6/96
Instrument Manufacturer: YSI Model: 3500
Serial Number: 94C16863
pH Probe Manufacturer: YSI Model: 3530
Serial Number: N/A
ATC Probe Manufacturer: YSI Model: 3510
Serial Number: N/A
Buffer Solution Manufacturer: APR-LIRCO
Expiration Dates of Buffer Solutions pH 4.01: _____ pH 7.00: 2/27/98 pH 10.01: 2/18/98

INSTRUMENTATION CHECK-OUT

Time: 0735 Battery Condition: Good
Instrument Readings with Shorting Plug in, mV: _____ Temperature: 19.2 pH: 6.75 ISO: _____
Reference Chamber Solution Changed?: ☒
pH Probe Condition: Good

FIELD CALIBRATION

Time: 0740 Slope: N/A Temperature: 19.5
Response to Low Buffer: 7.00 Response to High Buffer: 10.0
Time: 1310 Slope: N/A Temperature: 27.9
Response to Low Buffer: 7.00 Response to High Buffer: 10.0
Time: _____ Slope: _____ Temperature: _____
Response to Low Buffer: _____ Response to High Buffer: _____

Comments: _____

Calibrate to Accuracy of ± 0.05 pH Units
Slope Must Be Between 80 - 110%

pH/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
Calibration by: T. Blaney Date: 9/9/90
Instrument Manufacturer: YSI Model: 3500
Serial Number: 94C16863
pH Probe Manufacturer: YSI Model: 3530
Serial Number: N/A
ATC Probe Manufacturer: YSI Model: 3510
Serial Number: N/A
Buffer Solution Manufacturer: APR-LISCO
Expiration Dates of Buffer Solutions pH 4.01: _____ pH 7.00: 2/27/98 pH 10.01: 2/18/98

INSTRUMENTATION CHECK-OUT

Time: 0725 Battery Condition: Good
Instrument Readings with Shorting Plug in, mV: _____ Temperature: 20.3 pH: 6.05 ISO: _____
Reference Chamber Solution Changed?: ☒
pH Probe Condition: Good

FIELD CALIBRATION

Time: 0730 Slope: N/A Temperature: 20.3
Response to Low Buffer: 7.00 Response to High Buffer: 10.0
Time: 1350 Slope: N/A Temperature: 34.0
Response to Low Buffer: 7.00 Response to High Buffer: 10.0
Time: _____ Slope: _____ Temperature: _____
Response to Low Buffer: _____ Response to High Buffer: _____

Comments: _____

Calibrate to Accuracy of ± 0.05 pH Units
Slope Must Be Between 80 - 110%

pH/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JFL
Calibration by: T. BLANCY Date: 9/10/96
Instrument Manufacturer: YSI Model: 3500
Serial Number: N/A 94C1663
pH Probe Manufacturer: YSI Model: 3530
Serial Number: N/A
ATC Probe Manufacturer: YSI Model: 3510
Serial Number: N/A
Buffer Solution Manufacturer: APR-LIRCO
Expiration Dates of Buffer Solutions pH 4.01: _____ pH 7.00: 2/27/98 pH 10.01: 2/18/98

INSTRUMENTATION CHECK-OUT

Time: 0700 Battery Condition: GOOD
Instrument Readings with Shorting Plug in, mV: — Temperature: 19.0 pH: 7.69 ISO: —
Reference Chamber Solution Changed?: ✓
pH Probe Condition: GOOD

FIELD CALIBRATION

Time: 0725 Slope: N/A Temperature: 21.5
Response to Low Buffer: 7.00 Response to High Buffer: 10.0
Time: 1345 Slope: N/A Temperature: 31.0
Response to Low Buffer: 7.00 Response to High Buffer: 10.0
Time: _____ Slope: _____ Temperature: _____
Response to Low Buffer: _____ Response to High Buffer: _____

Comments: _____

Calibrate to Accuracy of ± 0.05 pH Units
Slope Must Be Between 80 - 110%

pH/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
Calibration by: T. Blaney Date: 9/11/96
Instrument Manufacturer: YSI Model: 3500
Serial Number: 94C16863
pH Probe Manufacturer: YSI Model: 3530
Serial Number: N/A
ATC Probe Manufacturer: YSI Model: 3510
Serial Number: N/A
Buffer Solution Manufacturer: APR-LIRCO
Expiration Dates of Buffer Solutions pH 4.01: _____ pH 7.00: 2/27/98 pH 10.01: 2/18/98

INSTRUMENTATION CHECK-OUT

Time: 0755 Battery Condition: Good
Instrument Readings with Shorting Plug in, mV: _____ Temperature: 16.3 pH: 7.48 ISO: _____
Reference Chamber Solution Changed?: ☒
pH Probe Condition: Good

FIELD CALIBRATION

Time: 0800 Slope: N/A Temperature: 17.2
Response to Low Buffer: 7.00 Response to High Buffer: 10.0
Time: 1230 Slope: N/A Temperature: 28.8
Response to Low Buffer: 7.00 Response to High Buffer: 10.0
Time: _____ Slope: _____ Temperature: _____
Response to Low Buffer: _____ Response to High Buffer: _____

Comments: _____

Calibrate to Accuracy of ± 0.05 pH Units
Slope Must Be Between 80 - 110%

pH/TEMPERATURE METER FIELD CALIBRATION FORM

Project Name: JPL
Calibration by: T. Blaney Date: 9/12/96
Instrument Manufacturer: YSI Model: 3500
Serial Number: 94C16863
pH Probe Manufacturer: YSI Model: 3530
Serial Number: N/A
ATC Probe Manufacturer: YSI Model: 3510
Serial Number: N/A
Buffer Solution Manufacturer: APR-LIRCO
Expiration Dates of Buffer Solutions pH 4.01: _____ pH 7.00: 2/27/98 pH 10.01: 2/18/98

INSTRUMENTATION CHECK-OUT

Time: 0745 Battery Condition: Good
Instrument Readings with Shorting Plug in, mV: _____ Temperature: 16.4 pH: 7.62 ISO: _____
Reference Chamber Solution Changed?: ☒
pH Probe Condition: Good

FIELD CALIBRATION

Time: 0745 Slope: N/A Temperature: 16.4
Response to Low Buffer: 7.00 Response to High Buffer: 10.0
Time: 0835 Slope: N/A Temperature: 18.4
Response to Low Buffer: 7.00 Response to High Buffer: 10.0
Time: _____ Slope: _____ Temperature: _____
Response to Low Buffer: _____ Response to High Buffer: _____

Comments: _____

Calibrate to Accuracy of ± 0.05 pH Units
Slope Must Be Between 80 - 110%

TURBIDIMETER FIELD STANDARDIZATION FORM

Project Name: JPL
Standardization by: T. BLANEY Date: 8/8/96
Instrument Manufacturer: HF SCIENTIFIC Model: DRT-15C
Serial Number: 2918 Calibration Date: 8/8/96

STANDARDIZATION

Time: 1050 Selected Scale: 20 Instrument at Zero: Yes / No Stray Light Response: N/A
NTU of Standard: 0.02 Instrument Reading: 0.02
NTU of Standard: _____ Instrument Reading: _____

Time: 1600 Selected Scale: 20 Instrument at Zero: Yes / No Stray Light Response: N/A
NTU of Standard: 0.02 Instrument Reading: 0.02
NTU of Standard: _____ Instrument Reading: _____

Time: _____ Selected Scale: _____ Instrument at Zero: Yes / No Stray Light Response: _____
NTU of Standard: _____ Instrument Reading: _____
NTU of Standard: _____ Instrument Reading: _____

Time: _____ Selected Scale: _____ Instrument at Zero: Yes / No Stray Light Response: _____
NTU of Standard: _____ Instrument Reading: _____
NTU of Standard: _____ Instrument Reading: _____

Time: _____ Selected Scale: _____ Instrument at Zero: Yes / No Stray Light Response: _____
NTU of Standard: _____ Instrument Reading: _____
NTU of Standard: _____ Instrument Reading: _____

Time: _____ Selected Scale: _____ Instrument at Zero: Yes / No Stray Light Response: _____
NTU of Standard: _____ Instrument Reading: _____
NTU of Standard: _____ Instrument Reading: _____

Comments: GW SAMPLE @ MW-19

TURBIDIMETER FIELD STANDARDIZATION FORM

Project Name: NPL
Standardization by: T. BLANEY Date: 8/12/96
Instrument Manufacturer: HF Scientific Model: DRT-15C
Serial Number: 2918 Calibration Date: 8/12/96

STANDARDIZATION

Time: 1000 Selected Scale: 20 Instrument at Zero: Yes / No Stray Light Response: N/A
NTU of Standard: 0.02 Instrument Reading: 0.02
NTU of Standard: _____ Instrument Reading: _____

Time: 1612 Selected Scale: 20 Instrument at Zero: Yes / No Stray Light Response: N/A
NTU of Standard: 0.02 Instrument Reading: 0.02
NTU of Standard: _____ Instrument Reading: _____

Time: _____ Selected Scale: _____ Instrument at Zero: Yes / No Stray Light Response: _____
NTU of Standard: _____ Instrument Reading: _____
NTU of Standard: _____ Instrument Reading: _____

Time: _____ Selected Scale: _____ Instrument at Zero: Yes / No Stray Light Response: _____
NTU of Standard: _____ Instrument Reading: _____
NTU of Standard: _____ Instrument Reading: _____

Time: _____ Selected Scale: _____ Instrument at Zero: Yes / No Stray Light Response: _____
NTU of Standard: _____ Instrument Reading: _____
NTU of Standard: _____ Instrument Reading: _____

Time: _____ Selected Scale: _____ Instrument at Zero: Yes / No Stray Light Response: _____
NTU of Standard: _____ Instrument Reading: _____
NTU of Standard: _____ Instrument Reading: _____

Comments: _____

TURBIDIMETER FIELD STANDARDIZATION FORM

Project Name: JPL
Standardization by: T. Blaney Date: 8/13/96
Instrument Manufacturer: HE Scientific Model: DRT-15C
Serial Number: 2918 Calibration Date: 8/13/96

STANDARDIZATION

Time: 0750 Selected Scale: 20 Instrument at Zero: Yes / No Stray Light Response: N/A
NTU of Standard: 0.02 Instrument Reading: 0.02
NTU of Standard: _____ Instrument Reading: _____

Time: 1600 Selected Scale: 20 Instrument at Zero: Yes / No Stray Light Response: N/A
NTU of Standard: 0.02 Instrument Reading: 0.02
NTU of Standard: _____ Instrument Reading: _____

Time: _____ Selected Scale: _____ Instrument at Zero: Yes / No Stray Light Response: _____
NTU of Standard: _____ Instrument Reading: _____
NTU of Standard: _____ Instrument Reading: _____

Time: _____ Selected Scale: _____ Instrument at Zero: Yes / No Stray Light Response: _____
NTU of Standard: _____ Instrument Reading: _____
NTU of Standard: _____ Instrument Reading: _____

Time: _____ Selected Scale: _____ Instrument at Zero: Yes / No Stray Light Response: _____
NTU of Standard: _____ Instrument Reading: _____
NTU of Standard: _____ Instrument Reading: _____

Time: _____ Selected Scale: _____ Instrument at Zero: Yes / No Stray Light Response: _____
NTU of Standard: _____ Instrument Reading: _____
NTU of Standard: _____ Instrument Reading: _____

Comments: _____

